Stock Investors’ Confidence on Low-Cost and Traditional Airlines in Asia During Financial Crisis 2007-2009: Evidence from Air Asia and Singapore Airlines

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ABSTRACT

The birth of low-cost carriers (LCC) in recent years, have added a new dimension to the aviation business, especially in Asia. There have been several success stories of these LCCs, compared with conventional full-serviced carriers. Two renowned airlines in Asia, Air Asia and Singapore Airlines have been chosen as our sample companies for the purpose of this research paper. Air Asia will represent the LCC segment, while Singapore Airlines is the proxy for traditional carriers. These two classes of airlines have different business models, which prompt us to find out how each has performed in the recent financial meltdown in 2007/08.

In this paper, we will use financial ratios and stock analysis to find out the performance of Air Asia and Singapore Airlines. This quantitative and event methodology approach is apt to provide market participants, such as investors, which segment of the airline industry tend to outperform in time of an economic crisis.

Based on our empirical findings, we have found that Air Asia has a better financial performance and is a less risky stock, compared with Singapore Airlines, during such economic downturn. So investors seeking for a more sound investment in such troubled times, may be able to find some gem in LCCs.
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LIST OF ACRONYMS

The following are the acronyms used in this study.

LCC: Low-cost carrier
SARS: Severe Acute Respiratory Syndrome
EBIT: Earnings Before Interest and Taxes
ROA: Return of Assets
ROE: Return of Equity
CAPM: Capital Asset Pricing Model
OLS: Ordinary Least Square
\( R_m \): Market Return
\( \beta_i \): Beta for stock ‘i’
\( \varepsilon \): Residual Error
\( \alpha \): Intercept in regression model
\( \sigma^2_m \): Variance for the market return
\( R^2 \): Systematic Risk in regression measure
\( \sigma_i^2 \): Total Variance of stock ‘i’.
\( \beta_i^2 \): Systematic Risk of stock ‘i’.
\( \sigma^2_{ui} \): Unexplained Variance caused by Idiosyncratic Risk
\( AR_{it} \): Abnormal Return on stock ‘i’ at time ‘t’
\( R_{it} \): Actual Return of stock ‘i’ at time ‘t’
\( \hat{R}_{it} \): Predicted (or required) return of stock ‘i’ at time ‘t’
\( CAR_{t+n} \): Cumulative Abnormal Return from period ‘t’ to ‘t+n’
\( r_{ft} \): Risk Free Rate at time ‘t’
\( E(\bar{r}_{mt}) \): Expected Market Return
\( \beta_{it} \): Stock ‘i’ beta at time ‘t’
\( R_g \): Geometric Mean Return for period T
\( R_e \): Geometric Mean Return for holding period
CAR: Cumulative Abnormal Return
CHAPTER 1 INTRODUCTION

This chapter intends to introduce the background and formulate the problems and purpose in the study.

1.1 BACKGROUND

The aviation industry in Asia has had a roller coaster ride in the recent decade due to several crises, such as the 9/11 terrorist attacks and economic shocks. During these turbulent times, two most prominent airlines in the region, Air Asia and Singapore Airlines were not spared. Air Asia is a regional low-cost carrier (LCC), while Singapore Airlines is an international full service airline. In particular, the success story of Air Asia is remarkable. It started when Tony Fernandes approached the Prime Minister of Malaysia to indicate his desire to start a low-cost airline. However, the Malaysian government only allowed him to take over a heavily indebted government owned airline company – Air Asia (The Economist 19th Mar 2009). He bought Air Asia with RM1 that tied him with RM40 million debts. Barely three days after the deal was inked, the 9/11 terrorist attacks took place (Roger 2010). In 2003, the Severe Acute Respiratory Syndrome (SARS) outbreak severely hit the airline industry. Just lately, the most severe financial crisis after World War II that unfolded in 2007 also had huge negative impact on the aviation industry. Yet, Air Asia has become the best low-cost airline in the world in 2010 according to SKYTRAX. Similarly, another successful traditional airline - Singapore Airlines has experienced similar challenges in this decade. Hitherto, Singapore Airlines is the “world's most admired airline” in the world according to Fortune ranking (CNN 2010). Both airlines are primarily based in Southeast Asia and have extraordinary past performance track records. Nevertheless, they embrace different business models to excel in the aviation industries.

The research from Morell (2008) found that the unit cost for LCC business model is generally 50%-60% lower than traditional airlines. He explained how LCCs are able to generate cost savings and achieve higher aircraft turnaround. First, aircraft turnaround is generally faster for LCCs since they mainly operate on less congested airports, especially in secondary airports, and pay lesser airport fees, compared with traditional airlines. As such, LCCs are able to increase aircraft and crew utilization. In contrast, traditional airlines generally have longer ground time as they use more
congested, established airports for all their flights. Second, LCCs are usually 'no frills' airlines. There is no seat assignment in LCCs. As such, this helps to increase aircraft turnaround. Third, LCCs primarily operate on point-to-point market and the turnaround of LCC aircraft is higher. Fourth, LCCs' long haul aircraft have higher productivity that stems from high seat densities. Fifth, the passenger load factor for LCCs is higher than traditional airlines. Sixth, LCCs also enjoy lower input prices since they are more price-sensitive when negotiating with labour and suppliers. Hence, Morell (2008) pointed out that these LCCs enjoy significant lower overhead costs, such as distribution, passenger services, crew and airport and handling fee, than their conventional counterparts.

Although LCCs presented several advantages in terms of costs, traditional airlines differentiate themselves through value added services. According to O'Connell and Williams (2005), they said traditional airlines operate in primary airports in cities. These airports have better accessibility and are nearer to the main cities, compared with secondary airports, which could be miles away. On top of that, traditional airlines have different classes of seats to cater to different segment of travellers. For example, they offer business class travellers with superior comfort, while economy class travellers with other amenities, such as assigned seats, free in-flight meals and in-flight entertainment. In LCCs, amenities like these have to be paid for. Besides traditional airlines have code sharing programmes with other carriers and provide frequent flyer programmes for travellers.

Putting them altogether, the business models of LCCs and traditional airlines yield different advantages. Therefore, we think it will be an interesting topic to find out the stock investors’ confidence on Air Asia and Singapore Airlines during the recent financial crisis in this decade.

1.2 PROBLEM DISCUSSION
Much of the previous literature about the financial performance of airlines in crisis time was mainly focus on aviation disaster events. For example, Walker, Thiengtham and Lin (2005) investigated how 138 aviation disasters affect performance of airlines and aircraft manufacturers in short- and long-term horizon between 1962 and 2003. They found that stocks of airlines and aircraft manufacturers experienced abnormal negative returns on news of adverse events. Furthermore, stocks of aircraft
manufacturers were found to have fallen on a smaller magnitude compared with airlines' counters across the board. The size of impact also varies depending on the types of events.

The 9/11 terrorist attacks event was arguably the most severe crisis for the global aviation industry in the recent decade. Therefore, several studies had been carried out focusing on the aftermath of the 9/11 event. For instance, Carter and Simkins (2004) studied the market reaction towards airline stock prices following the 9/11 event. They discovered that the market reacted rationally towards the price of the airline stocks after the 9/11 event. This is because market participants were able to differentiate the financial position (i.e. the cash reserves) of the airline firms who were facing the challenge of financial distress. This is contradicting to general perception that rational behavior is unlikely to exist in such severe psychological driven event. They also found that investors expected the 9/11 event to contribute to a higher level of negative impact on American airlines than international airlines and cargo air carriers.

In a similar study, Flouris and Walker (2005) investigated the impact of 9/11 event on accounting and stock performance of airlines in the United States. They claimed that they used a more holistic quantitative approach in the study. Their study focuses on the stock market reaction toward the stocks of low cost carriers and full-service airlines. Their findings showed that the accounting and stock performance of full-service airlines were inferior to low-cost carriers in the aftermath of 9/11 event. They ascribed the result to the business model of low-cost airlines. That is, market participants believe the low-cost business model renders more financial and operational flexibility that allows low-cost airlines to be more versatile to stringent conditions in time of crisis period.

In another research, Flouris and Walker (2005) investigated the confidence of investor in JetBlue's airline performance in difficult market conditions due to the 9/11 event. JetBlue issued an Initial Public Offering a few months after the event of 9/11. They compared the JetBlue's financial and stock performance with Southwest Airlines, another American low-cost airline, and two other major conventional airlines in the United States. First, their financial analysis showed that low-cost airlines, especially JetBlue, have better operational efficiency and financial flexibility. They also found
that the market views low-cost carriers as growth stock, while stocks of conventional airlines are believed to be cyclical.

These findings are not surprisingly new since some researchers already proposed similar ideas from qualitative analysis to strategy perspective. For example, Lawton (2003) explained that the low cost strategic management principles and operational processes enable low-cost carriers to cope better during crisis period. He also said that the financial markets generally perceive low-cost airline stocks to experience higher growth than stocks of traditional airlines, which are sensitive to business cycles. These advantages allow many low-cost carriers to successfully survive in various aviation disasters and continue to gain market share.

1.3 PROBLEM FORMULATION

Many previous studies have investigated the disparity of stock markets confidence between low-cost carriers and traditional airlines after aviation-related disasters, especially the 9/11 event in the United States. It appears that U.S. stock investors are rational and able to identify low-cost airline stocks are better investment assets than traditional airline stocks in such psychological driven events. Unfortunately, there is no similar research conducted on airline stocks in Asian stock markets. Therefore, we feel that it is interesting to find out if investors in Asia are also rational when stock markets are affected by severe psychological driven event. On top of that, we find that there is a lack of research on one of the significant psychological driven events - economic recession or financial crises. Also, we have just witnessed one of the most severe financial crises in the recent decades was in 2007/2009, which has tremendous impact on Asian stock markets (Naoui, Khemiri & Liouane 2010). It is very likely that such similar financial crisis could repeat again in the future, which heightens concern to stock investors and the management team of airline companies especially in the global aviation industry and Asian stock markets. Obviously, there is a strong sense of urgency to understand the confidence level of stock investors on low cost airlines and traditional airlines during financial crisis based on empirical evidences rather than qualitative theoretical frameworks. Hence, we have decided to focus our
research on top performer of two different type airlines in Asia – low cost airline and traditional airline. As such, the below research question is formulated.

“How stock investors’ confidence on low cost airline and traditional airline change due to global financial crisis of 2007-2009 in Asia?”

1.4 PURPOSE OF STUDY
The purpose of the empirical evidence in this study is to provide the cornerstone for investors to make investment decision on airline stocks during economic downturns.

1.5 DE-LIMITATIONS
This study only limited to two renowned airlines in Asia. We chose Air Asia as the proxy of low-cost airlines, while Singapore Airline as the representative of traditional airlines. These two airlines shared a similarity which they had experienced high growth rate in net earnings from 2004 to 2007 according to their annual reports.

In this study, we will emphasize on financial and stock analysis. We decided to refer to the quantitative methods and event methodology used in the studies of Flouris and Walker (2005) as the guideline to develop theory and methods in the study. This approach certainly provides a consistency in methodology; hence, our result can be used for comparison purpose in the research context.

1.6 THESIS’S STRUCTURE
The thesis is organized as follows: in the second section, we begin by discussing previous relevant studies followed by explaining our chosen theoretical frameworks such as financial ratios, Capital Asset Pricing Model (CAPM) beta and event study in the study; next, we will discuss the research methods include how we carry out the research and data collections; and in the third part, we will present the empirical findings in the study in details. This is followed by an analysis of the empirical results and relating it with our research question. Finally, we will make the conclusion from our research and provide some probable explanation about the implications of findings.
CHAPTER 2 THEORY

This chapter shows the development of theoretical frameworks that will be used in the study. It begins with presentation of relevant theoretical frameworks used in previous research. These frameworks include financial ratios, CAPM beta and event study methodology.

2.1 REVIEW OF THEORETICAL FRAMEWORKS USED IN PREVIOUS RESEARCH

The performance of stock markets is closely related to overall economic health. Whenever a crisis occurs, it often produces negative impact on stock markets and airline stocks are not exempted. Many previous researches utilised various theoretical frameworks that associate with quantitative and statistical approach to measure how stock market (or investors) confidence on airline stocks before, during and after a crisis event. In the following part, we intend to discuss relevant theoretical frameworks used in previous research in aviation industry to identify appropriate theories in this study.

Lawton (2003) argued the crisis (i.e. September 2001 terrorist attacks and economy recession) on average yield negative effect on stock market's confidence on airline stocks. This is primarily caused by the fears that corporate profit of airline companies were more likely to perform badly and bankruptcy risk will increase during the crisis time. However, corporate profit and bankrupt risk differ between traditional and low cost airline companies due to different corporate financial structure and operational efficiency. This is caused by traditional and low cost airlines employing different strategic management principles and operational processes to sustain their desirable market niche.

On the other hand, Lawton (2003) found that low cost airlines in general have higher operating margin than traditional airlines, which denotes that low cost airlines have higher operating efficiency. Furthermore, the strategic principles of low cost airlines generally focus on profitability and cash flow generation, while traditional airlines are attracted to gaining immediate market share in high-yield routes. Lawton explained this is the reason why stock markets believe low cost airline companies have stronger resilience to survive (i.e. lower bankruptcy risk) and will achieve better profitability during the crisis time compared to traditional airlines. Similarly, Carter and Simkins
(2004) argued that in the event of an unexpected negative shock (i.e. the 9/11 terrorist attack), airline stock prices tend to fluctuate according to how stock investors view the airlines’ bankruptcy risk. Some researchers (Li, Oum and Zhang 2004) added that the efficient use of firms’ resources is another significant determinant on the performance of stock prices of airline companies relative to financial performance. Therefore, we believe that conducting financial ratios analysis of airline companies will reflect their profitability, operating efficiency and bankruptcy risk.

Another two recent research from Flouris and Walker (2005) have been devoted to investigate the U.S. stock market confidence due to the 9/11 event on traditional airlines in the United States. They found that stock investors possess higher confidence level on low cost airlines (i.e. Southwest and JetBlue airlines) in the United States as their corporate financial structure are more effective to generate sustainable earnings, higher operational efficiency and has higher immunity on bankruptcy risk. In the research, they utilised three theoretical frameworks, which are (1) financial ratio analysis, (2) stock risk analysis and (3) event study methodology.

In the first research, Flouris and Walker (2005) explained that financial ratio analysis is a useful theoretical framework to capture the reason why stock investors have different views between low cost and traditional airline stocks. They argued that stock investors usually relied on accounting performance of airline companies such as revenue, profitability, liquidity and other financial ratios to analyse the corporate performance of airline companies. When a significant event (e.g. financial crisis 2007-2009) happens, accounting performance of airline companies becomes an important determinant that affect the confidence of stock investors on airline stocks. This is based on the assumption that stock investors are rational, on average, and they understand which airline companies are more likely to survive and have good growth prospect after the crisis event. Therefore, rational stock investors will continue to hold (or buy) airline stocks that are more likely to survive (i.e. lower bankruptcy risk) and produce better accounting performance. In this context, financial ratio analysis approach can be employed to measure bankruptcy risk and accounting performance.

In another Flouris and Walker (2005) study, it expounded that stock risk analysis can reflect how investors view the riskiness of the airlines stocks. They argued that it is important to investigate how the stock risk varies from before-crisis to after-crisis
event. The stock risk can be captured using linear regression model to calculate the CAPM beta of airline stocks. The stock risk (i.e. CAPM beta) can be further analysed to separate the risk contributed by market and firm's unique characteristics. In turn, stock risk analysis will tell us how the overall stock market view riskiness of each airline stock due to a crisis event. In other words, the CAPM beta is the proxy to show the confidence level of stock investors on airline stocks based on risk. For instance, when a crisis event occurred and stock markets are adversely affected; in general, stock prices tend to go down. However, if stock market has high confidence on certain airline companies, these airline stocks will be less vulnerable to adverse impact (i.e. overall downward trend) caused by a crisis event.

Flouris and Walker (2005) also proposed an event study methodology to measure overall investors’ confidence on airline stock. They reason that if stock investors believe certain airline companies are more likely to achieve better corporate earnings and survive during and after the crisis, stock investors are more willing to hold (or buy) the aforementioned airline companies’ stocks. The core concept of event study methodology is to measure the price performance of stocks when the crisis event happened. For example, if the price performance of low cost airline stocks is superior compared to traditional airline stocks, this means stock investors are more willing to hold (or buy) low cost airline stocks because they have higher confidence of low cost airline stocks. The stock’s price reaction of airline companies after unexpected negative events (i.e. aircraft crashes) is also a good measurement on negative impact on financial performance of airline companies from rational stock investors’ point of view (Chance and Ferris 1987).

Using event study methodology to investigate the stock investors’ confidence on airline stocks is not new. One of comprehensive research in aviation industry (Walker, Thiengtham and Lin 2005) also adopted event study methodology to study the price performance of different airline stocks after a crisis event occurred. Furthermore, the researchers examined the factors that greatly influence the performance of various airline stocks. This denotes some factors causing the stock market to have different level of confidence of airline stocks; hence, the stock performance differs. In the study, researchers found that different crisis event will contribute to different level of adverse impact on stock performance. For example, the 9/11 terrorist shock had greater negative impact on price performance compared to other airline crashes.
Furthermore, each type of airline companies will be affected differently. Another example is that, a normal airline crash will cause stock investors to believe airline companies may face legal liability claims. Therefore, the stock performance of airline companies that involves in airplane crash will perform badly relative to airplane manufacturers companies.

In summary, we believe that financial ratios and stock risk analysis as well as event study methodology must co-exist to measure stock investors’ confidence on airline stocks around the period of financial crisis. This is based on our belief that if stock investors are rational, on average, they know which airline companies are likely survive and generate better profitability growth in future. Stock investors can easily gain this information by analysing accounting performance (i.e. financial ratios analysis). In turn, they will rationally choose to hold (or buy) good airline stocks and dispose (sell) airline stocks with bleak prospect.

2.2 FINANCIAL RATIOS
Rational investors in the stock market always make decision based upon their analysis. When there is a significant crisis event, rational investors would try to identify the prospects of stocks first before making the decision to trade stocks. In this case, financial ratio analysis serves as an important valuation tool to gauge financial health, profitability, operational efficiency and other performance measure of companies. A researcher in the aviation industry (Lawton 2003) pointed out that stock investors tend to have higher confidence on airline companies that are likely to survive and have higher profitability growth potential during- and post-crisis periods. Recent aviation research (Flouris and Walker 2005) also discovered empirical evidence that U.S. stock investors are more willing to hold (or buy) low cost airlines stocks compared to traditional airlines stocks based on the accounting performance of airline companies. Therefore, we will choose financial ratio analysis, which is a widely adopted method by stock investors to interpret the profitability, bankruptcy risk and operational efficiency of the sample companies for our study - Air Asia and Singapore Airlines. This performance measure is important since financial crisis event always affect the profitability and bankruptcy risk of corporations, including airlines companies.

Financial ratio analysis allows us to use standard ratios regardless of the size of the companies (Ross, Westerfield & Jordan 2003, p.94). As such for the purpose of our
study, we will keep the home currency of the respective airlines the same. For example, financial figures from Air Asia will still be in Malaysian ringgit, while Singapore Airlines will be in Singapore dollars. According to Vasign, Fleming & Mackay (2010), ratio analysis also enables us to compare “the strength and weakness” of two competing companies within the same industry, which typically are made up of different sizes (Vasign, Fleming & Mackay 2010, p.168). The authors also said ratio analysis presents a historical perspective on the financial performance of companies. We will be using four categories under the ratio analysis, which are (1) Liquidity ratios, (2) Leverage ratios, (3) Profitability ratios and (4) Operational ratios (Vasign, Fleming & Mackay 2010, p.167).

Under liquidity ratios, we will be using quick ratio. Quick ratio measures how fast the company can use its current assets to pay its short-term debt. Vasign, Fleming and Mackay (2010) stated that these current assets include cash and marketable securities. But quick ratio excludes inventories as they are deemed to be more difficult to convert into cash quickly.

\[
\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}
\]

For leverage ratios, we will use debt ratio and times interest earned ratio. Debt ratio is used to ascertain how much long-term debt the company is getting to pay off its assets. A higher debt ratio would mean the company is taking up more loans and is more leveraged. While, times interest earned ratio measures the company’s ability to meet its debt obligations (Vasign, Fleming & Mackay, 2010, p.179).

\[
\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}
\]

\[
\text{Times Interest Earned Ratio} = \frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest Expense}}
\]

As for profitability ratios, we will be using three ratios. Firstly, we will use operating profit margin ratio. This ratio aims to find out how much operating profit the company makes based on the total revenue generated. Vasign, Fleming and Mackay (2010) said this ratio is useful as it does not include one-off items, interest expense and taxes, which can be affected by “macro-structure” of the firm (Vasign, Fleming &
Next, return on assets calculates how much net profit is generated for every asset invested by the company. The last profitability ratio is return on equity (ROE). ROE measures the net income earned using shareholders’ money.

\[
\text{Operating Profit Margin} = \frac{\text{Operating Profit}}{\text{Total Revenue}}
\]

\[
\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}}
\]

\[
\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Total Stockholders’ Equity}}
\]

For operational ratios, we will use total asset turnover ratio to compare how much revenue is generated for every dollar invested in the assets in our sample companies (Ross, Westerfield & Jordan 2003, p.101).

\[
\text{Total Asset Turnover Ratio} = \frac{\text{Total Revenue}}{\text{Total Assets}}
\]

### 2.3 USING CAPM BETA APPROACH AS A MEASURE OF RISK

The risk of a stock can be classified into systematic and unsystematic risk. Unsystematic risk is also known as undiversified risk. In equity valuation, the risk has direct implication to cost of equity and stock price. Furthermore, the beta is used as risk adjustment for cost of equity in Capital Asset Pricing Model (CAPM) because the beta captures the sensitivity of the return of a particular asset against the market. Higher beta means the stock is riskier and companies tend to have higher cost of debt (Damodaran 2005). In turn, the cost of capital of the company will be higher. There are various techniques in estimating the beta, which are (1) historical market beta, (2) fundamental beta, (3) bottom-up beta and (4) accounting beta (Damodaran 2006, p.48-56).

Previous research found (Corgel & Djogopolos 2000) that major commercial service providers in stock markets such as Bloomberg, Bridge, Compustat, Dow Jones and Ibbotson use ordinary least square (OLS) method in linear regression model (i.e. the statistical model) to estimate the historical market beta. This also means using the linear regression model to estimate beta is the most widely adopted approach in stock markets. In addition to that, previous researchers (Flouris and Walker 2005) also used
the CAPM beta by using linear regression model to estimate the riskiness of airline 
stocks in the United States around 9/11 event (i.e. a crisis event). It is particularly 
useful since stock risks vary across before, during and post crisis periods. The CAPM 
beta can help us to understand how stock investors view the riskiness of stocks. It also 
reflects confidence of stock investors. This is our motivation to use the 
aforementioned statistical model - the ordinary least square method in linear 
regression model to estimate the CAPM beta in this thesis since it is consistent with 
real practice in the finance industry. Furthermore, it is more suitable to our research 
question that focuses on stock market perspective.

The CAPM beta of a particular stock can be estimated using the linear regression 
statistical model as shown in equation --- (1)\(^1\) (Modigliani and Pogue 1974). Note that 
the beta (\(\beta_i\)) represents systematic risk for stock ‘i’. The ‘\(r_i\)’ is the return for stock ‘i’. 
And, the residual error (\(\varepsilon\)) in the linear regression model represents unsystematic risk 
(or unsystematic component of return) while ‘\(\alpha\)’ is the intercept.

\[
    r_i = \alpha + \beta_i \cdot R_m + \varepsilon \quad \text{(1)}
\]

To estimate the CAPM beta (\(\beta_i\)), it is necessary to define and select the parameters for 
independent variable (\(r_i\)) and dependent variable (\(R_m\)) in equation --- (1). First, it is 
required to determine the interval of data for variable ‘\(r_i\)’ and ‘\(R_m\)’. In practice, the 
beta of the stock can be measured on the basis of historical data in short intervals such 
as days, weeks or months depending on the decision of researchers. Using shorter 
intervals, for example daily, will increase the accuracy of calculated CAPM beta. 
Next, one market index must be chosen as proxy to calculate the market return (\(R_m\)). 
The choice of proxy market index is primarily based on the investors’ portfolios 
(Damodaran 2006, p.49). Theoretically speaking, if investors only hold domestic 
stocks, the proxy market index should based on the local market index. In contrast, 
investors should use a global market index as proxy market if their portfolios consist 
of stocks spread over various global markets. Once the market index is chosen, the 
market return (\(R_m\)) with selected interval can be calculated. Similarly, the stock return 
(\(r_i\)) with selected interval can be computed. Note that the stock ‘i’ is the stock 
investigated by researchers. Finally, the CAPM beta (\(\beta_i\)) can be calculated using 
ordinary least square method in the linear regression model (i.e. statistical model). In

\(^1\) The CAPM linear regression model also is known as Single Factor Model (Haugen 1997, p. 153).
general, the linear regression model can be performed by using a spreadsheet in Microsoft Excel or statistical software such as STATA, SPSS and SAS. The linear regression model output includes coefficient of independent variable (i.e. CAPM beta), R-Squared and others. The variance of variables also can be computed when it is needed.

The CAPM beta ($\beta_i$) in (1) is also equivalent to covariance ($r_i, R_m$)/ $\sigma_m^2$, which $\sigma_m^2$ is the variance for the market return (Damodaran 2006, p. 48). That is, the total risk is the summation of systematic risk and unsystematic risk, which is shown in (2).

Total Risk (or Variance) = Systematic Risk + Unsystematic Risk --- (2)

The output of linear regression result in the linear regression model (i.e. the R-Squared) can also be used to estimate the risk of stock. The statistical explanation for $R^2$ is the explanatory power of the regression model. It can be translated to systematic risk. That is, the proportion of systematic risk is represented by the $R^2$ in the linear regression model (Damodaran 2001, p.86; Maharaj 2005, p.66) while the residual error ($\varepsilon$) is the unsystematic risk, which is (1-$R^2$) (Maharaj 2005, p.66). Hence, the equation (2) can be transformed to equation (3) and proportion of the unsystematic risk is obtained.

Unsystematic risk = (1- $R^2$) x Variance of Stock Return --- (3)

Haugen (1997, p.156) also explained that the total risk in (2) could be translated to (4) for portfolio (or security) variance. This means there are two factors contributing to the total variability of stock return. First is systematic risk. Systematic risk is essentially risk that is cannot be eliminated through diversification. Next, unsystematic risk is the unexplained variance that attributed to the unique stock characteristic. Note that the total variance of stock ‘i’ is represented by $\sigma_i^2$. The total variance of market returns is denoted as $\sigma_m^2$ while the $\beta_i^2 \sigma_m^2$ represents the systematic risk of stock ‘i’. The $\sigma_u^2$ is the unexplained variance caused by idiosyncratic risk (also called as unsystematic risk). In practice, the equation (3) and (4) is interchangeable since it yield similar result.

$$\sigma_i^2 = \beta_i^2 \sigma_m^2 + \sigma_u^2$$

--- (4)
2.4 EVENT STUDY
In financial research, event study is one of the most important topics. The main purpose of event study is to allow us to know how quickly the stock price reacts to the new information in certain way (Schweitzer 1989). The rationale of event study is that if market participants act rationally in stock market, the stock price will react to new information accordingly. In this context, the event study is a useful tool to evaluate the aforementioned scenario existence over the time (MacKinlay 1997). This study is also beneficial to market participants, financial managers and regulators to check market’s reaction to certain events (Schweitzer 1989).

Many previous event studies have been devoted on events such as announcements of capital structure change, mergers and acquisitions, bank regulatory changes, adverse news in banking and others (Schweitzer 1989). Furthermore, event study can be used to measure stock prices of Asian and Russian financial crisis. Therefore, we believe that using event study methodology is appropriate to investigate our study on stock investors’ confidence on airline stocks when a significant event (e.g. economic events) happened. That is, we use economic events during financial crisis as the trigger events to measure the change in stock investors’ confidence based on the fluctuation of stock prices of Air Asia and Singapore Airlines.

Peterson (1989) illustrated that the timeline of the event study is shown in Figure 1. It began with defining the interested event and its period, which affect the security prices. Peterson (1989) explained that normally researchers would choose the estimation period for normal returns based on judgment. The abnormal return is calculated during the event period (or event window). For instance, the event of earning announcement consists of one-day event window. In the research context, the event window is frequently extended to more than a day after the announcement day (MacKinlay 1997).
A represents the beginning period used to estimate the normal return. The ‘pre-’ is the beginning period used to estimate abnormal return. The ‘E’ is the time when event occur. The ‘post-’ is the last period used to estimate the abnormal return.

Figure 1: Timeline of Event Study

After the timeline of event study is determined, researchers can use CAPM market model (i.e. statistical approach) to calculate the normal return (i.e. the future required return expected by stock investors). Afterwards, the abnormal return (i.e. the excess return over actual stock return) can be obtained using quantitative measure. The basic idea of abnormal return is to compare between the initial expected required return by stock market and actual stock return. In this thesis, we will use this quantitative approach to compare the abnormal return between two airline stocks. To enhance the reliability of the results, two-sample statistical test can be carried out to provide statistical evidence on results.

2.4.1 MODEL FOR ESTIMATING NORMAL RETURN IN EVENT STUDY

In this thesis, we will be using CAPM market model to estimate the required return of equity (or normal return) as shown in equation (5). For stock ‘i’ at time ‘t’, the required return of equity is represented by \( R_{it} \), the \( r_{ft} \) is the risk free rate, \( E(r_{m,t}) \) is the expected market return and \( \beta_{it} \) is the stock’s beta. Note that the required return of equity in CAPM model is derived from two sources of expectation, which are the expected sensitivity of stock to the market (\( \beta_{it} \)) and expected market risk premium (Penman 2010, p.112).

\[
R_{it} = r_{ft} + \beta_{it}[E(r_{m,t}) - r_{ft}] \tag{5}
\]

In CAPM model, we make two assumptions which are (1) there are no transaction costs in capital market and (2) market participants have no access to private information of the firm (Damodaran 2006, p.32). In choosing the risk free rate, it is required to assume that the asset is default-free and the reinvestment rates is constant.
over time; and, normally government’s bonds are used as the proxy of risk free asset in practice (Damodaran 2006, p.35). On the other hand, analyst must choose a suitable time period to estimate the historical risk premium and it may vary due to differences of period (Damodaran 2006, p.40). The market risk premium is our expected return from owning a risky asset over the risk free asset. This is represented as \[ E(r_{m,e}) - r_{f,e} \] in equation 5. Previous researches recommended that geometric average should be used in estimating the risk premium (Damodaran 2006, p.40). This is because the arithmetic average return tends to overstate the risk premium while the geometric average return is real compounded return that is a more appropriate measure from the perspective of investors.

\[
R_g = \left[ \sum_{t=1}^{T} (1 + R_t) \right]^{1/T} - 1 \quad (6)
\]

The appropriate formula for geometric mean of stock return formula is shown at --- (6) (DeFusco, McLeavey etc. 2007, p.90). The geometric mean return for period T and holding period return is represented by \( R_g \) and \( R_e \) respectively. The frequency of geometric mean of stock return is determined by the need of compound rate. For example, the holding period return can be daily, weekly, monthly and so forth.

### 2.4.2 QUANTITATIVE MEASURE OF ABNORMAL RETURN

Metrics are significant component to investigate the price movement of stocks in event study including normal return and abnormal return. Researchers recommended that abnormal return could be used to assess the reaction of stock prices to a specific event (Peterson 1989; Schweitzer 1989). The abnormal return is the excess return over the predicted return that based on a model, which is shown in equation --- (7). Abnormal return on stock ‘i’ at time ‘t’ is represented by \( AR_{t,i} \). The \( R_{t,i} \) is the actual return of stock ‘i’ at time ‘t’ while \( R_{t,\bar{i}} \) is the predicted (or required) return of stock ‘i’ at time ‘t’.

\[
AR_{t,i} = R_{t,i} - R_{t,\bar{i}} \quad (7)
\]

If it is required to investigate the cumulative effect in event study, all single period of the abnormal return can be accumulated to produce cumulative abnormal return (Peterson 1989) as shown in the equation --- (8). The cumulative abnormal return
The selection of the period for cumulative abnormal return generally relies on the judgment of researchers.

\[ CAR_{t:t+n} = \sum_{t}^{t+n} AR_i \]  

--- (8)

### 2.4.3 Statistical Measure of Abnormal Return

We aimed to increase the reliability and robustness of our quantitative result through two-sample statistical test. According to Moore (2004, p. 485), the purpose to conduct the two-sample test is to compare the response of two samples statistically. In the test, we assumed that each sample is from different population and the response of each sample is independent.

We know that in practice, no distribution is perfectly normally distributed. If researchers would like to use non-parametric significance test for two-sample test, the Wilcoxon Rank Sum test can be used (Moore & McCabe 2005). The first step in the test is ‘rank transformation’ which all observations are ranked from smallest to largest. Then, the smallest observation is giving with rank 1 and so forth. Afterwards, summation of ranks for observation for each distribution is carried out in order to obtain the sum of ranks for each distribution. The sum of ranks for the first sample distribution is defined as Wilcoxon Rank Sum statistic. The null hypothesis of the Wilcoxon Rank Sum test is that two populations have identical distributions. If the rank sum of the test deviates from its mean or the p-value is greater than the significance level set by researchers, the null hypothesis is rejected. In this thesis, we will use Stata software to carry out the Wilcoxon Rank Sum test. Stata software also produces alternative hypothesis test to check the probability of one sample distribution greater than its paired sample (Stata 2011).
CHAPTER 3 METHOD

The main purpose of this chapter is to describe the type of our research we have chosen, research approach and method as well as the consideration of data collection.

3.1 CHOICE OF AIRLINE COMPANIES
We have chosen Air Asia and Singapore Airlines as the sample of study for several reasons. First, both airlines are the leader in their market niches. Air Asia is the best low-cost airline, while Singapore Airline is the best traditional airlines in the world (SKYTRAX 2010). Second, these airlines are based in Asia, which matches the needs in this study to cater new empirical evidences about stock investors’ confidence on airline stocks during difficult time. We believe the new empirical from Asia will supplement existing similar empirical evidence found in aviation industry in the United States and Europe.

3.2 TYPES OF RESEARCH
We have decided to adopt a combination of research methods based on the research question we have formulated, the magnitude of control over the event and the focus on past event (Yin 2009, p.8). In our case, the focus of event will be the financial crisis in 2007/2008. The basis of our research question focuses on “how” stock investors’ confidence was affected by the event and “what” should they do if a similar event happen in the future. Therefore, we have chosen to use two methods - an “archival analysis” and “history” (Yin 2009, p.9). Besides, these two research methods do not allow us to have control over the event and the data we gathered will be based on past information, such as primary and secondary data (Yin 2009, p.11). Hence, our study is essentially analytical. This means we will use existing information (ie. accounting and stock prices data) to evaluate our findings (Kothari 2004, p.2). This study is also an applied research because we will seek to employ the results from the findings of our analysis to the practical issue on, for example which stock is more superior low-cost airlines or traditional airlines. Furthermore, we have adopted empirical research to support previous findings about confidence of investors on various types of airline stocks in the United States.
3.3 RESEARCH APPROACHES
Previous quantitative empirical evidence is used as a basis in our study. This approach is known as the “analytic generalization” (Yin 2009, p.38). Under such research, Yin said past established theories are used as a guide for us to follow and compare our empirical findings. We strictly follow the developed standards of research design beforehand and then apply it to quantitative measurement (Adam, Hafiz & Raeside 2007, p.26). This approach allows us to infer the characteristics of population (Kothari 2004 p.5), which Air Asia is the proxy for low-cost airlines, while Singapore Airlines is the representative for traditional carriers. Besides, we are adopting the “pattern-matching” technique (Yin 2009, p.136). Yin said this technique makes comparison with other empirical studies and if the patterns concur, our study will be more credible.

Furthermore, our research question is essentially underpinned by previous empirical results, which classify our study as inductivism – the style of reasoning (Ghauri & Gronhaug 2005, p.15). In other words, we have based our empirical verification of general conclusion from existing limited observations (i.e. previous findings) (Adam, Hafiz & Raeside 2007, p. 29) with the intention to produce new empirical evidence.

3.4 RESEARCH METHOD
We also designed our study to adopt various statistical techniques, such as regression, quantitative analysis and two-sample statistical test, to carry out the analysis to investigate the relationships from the data, which is a widely used research method (Kothari 2004, p.5). These methods are based on the theoretical frameworks in finance. Statistical approach is particular apt as it will add more accuracy and reliability to our study. Yin adds that an analysis will meaningful and have a clearer interpretation in a study when formulas and tools are used (Yin 2009, p.127).

First, we have decided to use linear regression analysis (i.e. statistical model) by using two inputs of variables. They are the stock returns of Air Asia and the stock returns of Singapore Airlines during global financial crisis in 2007/2008. Our intention is investigate the stock investors’ confidence on Air Asia and Singapore Airlines

We explained the rationales to choose these theoretical frameworks in ‘Chapter 2 Theory’. Furthermore, these theories and how the quantitative and statistical procedures are expounded in the same chapter.
through analysis that expounded in chosen theoretical frameworks such as CAPM beta, systematic and unsystematic risks.

Second, we used event study methodology (i.e. quantitative and statistical analysis) to investigate the stock investors’ confidence on Air Asia and Singapore Airlines due to unexpected economic events occurred during the financial crisis in 2007-2009. The quantitative analysis is formed using the theoretical framework of event study methodology. We also use two-sample statistical test is to provide statistical evidence to analyzed quantitative result.

3.5 METHODS OF DATA COLLECTION
According to Yin, this is known as “documentation” (Yin 2009, p.103). Documentation is particular crucial for our study because it provides the stability, precision and “broad coverage” of past similar events (Yin 2009, p.102). We will also use “archival records” as Yin pointed out that such data are accurate and quantitative. So we opted to use secondary data since these data have been collected and analyzed (Kothari 2004, p.111). This is a more efficient way since using secondary data will shorten the data gathering time, less costly and provides proven background information in our research (Brannick & Roche 1997, p.217).

On the other hand, we are concerned that the reliability, suitability and adequacy of secondary data (Kothari 2004, p.111). We have chosen secondary data in this study carefully to ensure reliability and credibility. That is, we collect these data are directly from data suppliers. That is, we mainly rely on the external sources of secondary data (Ghauri & Gronhaug 2005, p.100) such as firm's quarterly and annual report, data from government for risk free security and stock market data from third party supplier (i.e. Yahoo! Finance). To our knowledge, this form of data source is frequently used by professional financial analysts and researchers. For example, the data about government securities is obtained from government’s statistical official website. This data is very reliable and accurate since government is the issuer of these securities.

The data in the study involves low-cost airlines and traditional airlines and are divided into pre-, during and post-financial crisis. This means our data set is based on cross-sectional and time series data. In other words, our research is a cross-sectional study with time dimension. This involves gathering the different sample at each point and it
repeated at various time points (Vaus 2001, p.173). Simply put, our data set consists of comparable samples over time.

3.6 VALIDITY AND RELIABILITY
The design of our research methodology has added validity and reliability to our study. Validity seeks to measure the “trustworthiness and credibility” of the concepts we use in our study (Yin 2009, p.40). According to Yin, reliability aims to find out if the same procedures in our study will garner the same results when performed later by another study. First and foremost, our empirical evidence is gathered from various sources and our study adopts a “pattern-matching” approach and expresses previous empirical data explanation, adding strength to “construct and internal validity” (Yin 2009, p.41). Our study also uses “replication logic in multiple-case studies” to deal with “external validity”, according to Yin. Finally, our study has reliability as we have used previous empirical studies as a basis in this thesis, minimizing errors and adding accuracy by using statistical tools and event study. Therefore, our study has satisfied all three validity and reliability tests outlined by Yin (Yin 2009, p.41). Based on our various methods of collecting data, our study the research method, we are adopting the “pattern-matching” technique (Yin 2009, p.136). Yin said this technique makes comparison with other empirical studies and if the patterns concur, our study will have a stronger “internal validity”.

3.7 FURTHER DISCUSSION OF DATASET

3.7.1 DATASET FOR FINANCIAL ANALYSIS
The data used in financial ratio analysis is obtained from the financial statements (i.e. income statement and balance sheet) that are available in annual and quarterly financial reports. We will analyze four quarterly reports of both companies before the crisis, starting from January 2007. We will also evaluate six quarterly financial reports during financial crisis for each firm. Thereafter, we will examine six more post crisis quarterly financial statements, ended December 2010. These documents are publicly available at the investor relations website of our sample companies. We have decided to use quarterly figures to better reflect our empirical study. This is because quarterly data enable us to present our findings more accurately and timely to demonstrate the current situation at that time.
3.7.2 DATASET FOR CAPM BETA AND EVENT STUDY THEORETICAL FRAMEWORKS

Besides, analyzing the accounting data of Air Asia and Singapore Airlines, we seek to find out the risk level of the two airlines using CAPM theoretical framework. The framework will enable us to identify and establish the risk level of companies. For this risk analysis, we will use data from May 2006 for 19 months.

Table 1: The Component used in CAPM model for Air Asia and Singapore Airlines

The stock exchange represents the exchange, which the stock is listed. The market index is the proxy to represent the whole stock exchange. The risk free rate explains what security is used to represent the risk free rate for each airline stock.

<table>
<thead>
<tr>
<th></th>
<th>Air Asia</th>
<th>Singapore Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Exchange</td>
<td>Bursa Malaysia</td>
<td>Singapore Exchange</td>
</tr>
<tr>
<td>Market Index</td>
<td>FTSE Bursa Malaysia KLCI Index</td>
<td>Straits Times Index</td>
</tr>
<tr>
<td>Risk Free Rate</td>
<td>Malaysian Government Securities</td>
<td>Singapore Government Securities</td>
</tr>
</tbody>
</table>

(Data adopted from Yahoo! Finance website 2011)

Table 1 shows the main components used in CAPM model for Air Asia and Singapore Airlines. In this thesis, we will use yields of 90-day government treasury bills as the risk free rate for CAPM BETA model. The main rationale is that short-term bond is more liquid and has lower credit risk than bond has longer maturity.

We observed that the economic events started to occur from 7th September 2008. Therefore, we have defined 8th September 2008 (Monday) as the first day and will evaluate the daily prices of the stock for Air Asia and Singapore Airlines for a period of 12 weeks. For the CAPM and stock performance analysis, the daily prices data of the stock for the two airlines are taken from the Yahoo! Finance website – (Yahoo! Finance 2011). Note that these daily closing prices have been adjusted for dividends and stock split. Similarly, the price data for FTSE Bursa Malaysia KLCI Index and Straits Times Index are also extracted from Yahoo! Finance website. Lastly, the risk free rate that used in the study is Malaysian Government Securities (Malaysian Government Securities Indicative Prices 2011) and Singapore Government Securities (Historical Price, Singapore Government Securities 2011) which are publicly available at their official website.
CHAPTER 4 EMPIRICAL FINDINGS

This chapter presents empirical findings in financial ratio and stock analysis. The results of event study are also expounded.

4.1 FINANCIAL RATIOS

For this first part of the findings, we will look at the accounting numbers and financial ratios of Air Asia and Singapore Airlines to compare their performance before, during and after the financial crisis in 2008/09. Table 2a, b and c present the findings of these figures to show how the two sample airlines have performed during the 16 quarters in 2008/09. From the three tables, we found that Singapore Airlines’ steady profit growth was in line with the trend of its rising revenue. While, Air Asia experienced relatively strong profit growth during the same period, but in one of the quarters there was a slight dip in profit growth, despite rising revenue. This was due to higher depreciation and finance costs after it took delivery of a new aircraft during the September 2007 quarter (Air Asia Quarter 1 Financial Report ended 30 September 2007, p.12). During the crisis, revenue for both airlines dropped and their bottom line were hurt. Air Asia made losses in two quarters, i.e. September and December 2008, while Singapore Airlines was in the red for the June 2009 quarter. After the crisis, things started to pick up and both companies returned to the black and Air Asia registered stronger profit growth than in the pre-crisis period.

Table 2: Accounting Data and Financial Ratios of Air Asia and Singapore Airlines

We used 16 quarterly financial statements from the period January 2007 to December 2010 to calculate the ratios. These statements were obtained from the quarterly reports of the two sample airlines from their respective websites.

Table a: Accounting data and financial ratios during pre-financial crisis

<table>
<thead>
<tr>
<th>Pre-Financial Crisis</th>
<th>Air Asia</th>
<th>Singapore Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mar 07</td>
<td>Jun 07</td>
</tr>
<tr>
<td>Period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue (RM' 000)</td>
<td>396,179</td>
<td>432,154</td>
</tr>
<tr>
<td>Net Income (RM' 000)</td>
<td>86,873</td>
<td>185,050</td>
</tr>
<tr>
<td>Quick Ratio</td>
<td>1.39</td>
<td>1.75</td>
</tr>
<tr>
<td>Debt Ratio</td>
<td>0.66</td>
<td>0.65</td>
</tr>
<tr>
<td>Times Interest Earned</td>
<td>0.40</td>
<td>3.16</td>
</tr>
<tr>
<td>Operating Profit Margin</td>
<td>0.30</td>
<td>0.43</td>
</tr>
<tr>
<td>Return on Assets (ROA)</td>
<td>0.02</td>
<td>0.04</td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td>Total Asset Turnover</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>Period</td>
<td>Mar 08</td>
<td>Jun 08</td>
</tr>
<tr>
<td>--------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Revenue (RM '000)</td>
<td>535,156</td>
<td>608,383</td>
</tr>
<tr>
<td>Net Income (RM '000)</td>
<td>161,277</td>
<td>9,417</td>
</tr>
<tr>
<td>Quick Ratio</td>
<td>1.64</td>
<td>1.38</td>
</tr>
<tr>
<td>Debt Ratio</td>
<td>0.68</td>
<td>0.73</td>
</tr>
<tr>
<td>Times Interest Earned</td>
<td>1.26</td>
<td>-1.79</td>
</tr>
<tr>
<td>Operating Profit Margin</td>
<td>0.24</td>
<td>0.25</td>
</tr>
<tr>
<td>Return on Assets (ROA)</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
<td>0.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Total Asset Turnover</td>
<td>0.08</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Table c: Accounting data and financial ratios post-financial crisis

<table>
<thead>
<tr>
<th>Period</th>
<th>Sep 09</th>
<th>Dec 09</th>
<th>Mar 10</th>
<th>Jun 10</th>
<th>Sep 10</th>
<th>Dec 10</th>
<th>Sep 09</th>
<th>Dec 09</th>
<th>Mar 10</th>
<th>Jun 10</th>
<th>Sep 10</th>
<th>Dec 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (RM '000)</td>
<td>738,668</td>
<td>894,059</td>
<td>878,041</td>
<td>940,656</td>
<td>987,558</td>
<td>1,186,467</td>
<td>3,082.10</td>
<td>3,418.00</td>
<td>3,335.80</td>
<td>3,465.80</td>
<td>3,631.20</td>
<td>3,841.00</td>
</tr>
<tr>
<td>Net Income (RM '000)</td>
<td>130,072</td>
<td>76,657</td>
<td>224,110</td>
<td>198,930</td>
<td>327,286</td>
<td>316,551</td>
<td>140.70</td>
<td>415.40</td>
<td>293.90</td>
<td>267.90</td>
<td>394.90</td>
<td>301.60</td>
</tr>
<tr>
<td>Quick Ratio</td>
<td>1.62</td>
<td>1.56</td>
<td>1.34</td>
<td>1.29</td>
<td>1.34</td>
<td>1.66</td>
<td>1.08</td>
<td>1.32</td>
<td>1.45</td>
<td>1.53</td>
<td>1.78</td>
<td>1.55</td>
</tr>
<tr>
<td>Debt Ratio</td>
<td>0.76</td>
<td>0.76</td>
<td>0.76</td>
<td>0.76</td>
<td>0.74</td>
<td>0.72</td>
<td>1.05</td>
<td>1.03</td>
<td>1.04</td>
<td>1.04</td>
<td>1.03</td>
<td>1.03</td>
</tr>
<tr>
<td>Times Interest Earned</td>
<td>0.54</td>
<td>1.53</td>
<td>1.80</td>
<td>0.59</td>
<td>2.28</td>
<td>3.01</td>
<td>-10.18</td>
<td>-14.80</td>
<td>3.24</td>
<td>12.07</td>
<td>83.28</td>
<td>16.96</td>
</tr>
<tr>
<td>Operating Profit Margin</td>
<td>0.31</td>
<td>0.36</td>
<td>0.34</td>
<td>0.39</td>
<td>0.44</td>
<td>0.48</td>
<td>-0.06</td>
<td>0.09</td>
<td>0.07</td>
<td>0.07</td>
<td>0.10</td>
<td>0.13</td>
</tr>
<tr>
<td>Return on Assets (ROA)</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
<td>0.02</td>
<td>0.03</td>
<td>0.02</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
<td>0.05</td>
<td>0.03</td>
<td>0.08</td>
<td>0.07</td>
<td>0.10</td>
<td>0.09</td>
<td>0.01</td>
<td>0.03</td>
<td>0.02</td>
<td>0.02</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>Total Asset Turnover</td>
<td>0.07</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td>0.09</td>
<td>0.15</td>
<td>0.16</td>
<td>0.15</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Looking at the financial ratios, the data showed that Air Asia’s quick ratio, which measures liquidity, is generally higher than Singapore Airlines’ in the pre and during crisis period. But after the financial crisis, Singapore Airlines’ liquidity improves, which means that Singapore Airlines was able to generate better current assets (i.e. cash) to pay off its short-term debts than Air Asia.

As for the leverage ratios, from Table 2a, b and c, we can see Singapore Airlines’ debt ratio is significantly higher than Air Asia throughout the whole period from January 2007 to December 2010. This means Singapore Airlines is a riskier company compared to Air Asia, as it has more leverage due to higher loans. Despite this, in Figure 2 it shows, Singapore Airlines has higher times interest earned ratio before the
crisis than Air Asia. This shows that Singapore Airlines is better able to pay off their debts than its low-cost counterpart. But during the crisis, both airlines showed they have some difficulties in meeting their loan obligations. For Air Asia, there were three negative quarters, while Singapore Airlines has two quarters. Even after the crisis period, Singapore Airlines continued to demonstrate some difficulties in paying its debts. Air Asia, on the other hand, was better able to meet its loan obligations.

Figure 2: Times Interest Earned at pre, during and post-financial crisis for Air Asia and Singapore Airlines

![Times Interest Earned](Data adopted from Quarterly and Annual Report of Air Asia and Singapore Airlines 2006-2010)

Turning to profitability, Table 2a, b and c show that Air Asia has stronger profitability levels than Singapore Airlines before and after the crisis. In Figure 3, Air Asia posted healthy operating profit margin levels during the crisis, while Singapore Airlines displayed two negative quarters during the same period.

Figure 3: Operating profit margin at pre, during and post-financial crisis for Air Asia and Singapore Airlines

![Operating Profit Margin](Data adopted from Quarterly and Annual Report of Air Asia and Singapore Airlines 2006-2010)
Although, Figure 4 shows Air Asia’s ROE is lower than Singapore Airlines in the during financial crisis period, it continued to outperform Singapore Airlines after the crisis. On the whole, this clearly shows that Air Asia was able to garner better profits than the more established Singapore Airlines.

Figure 4: Return on equity (ROE) at pre, during and post-financial crisis for Air Asia and Singapore Airlines

(Data adopted from Quarterly and Annual Report of Air Asia and Singapore Airlines 2006-2010)

Finally, a look at the operational ratio, Figure 5 shows both air carriers experienced a similar constant trend in their total asset turnover during the sixteen quarters. This means the amount of revenue generated by their assets has been consistent. However, we can see that Singapore Airlines has a higher total asset turnover than Air Asia.

Figure 5: Total asset turnover at pre, during and post-financial crisis for Air Asia and Singapore Airlines

(Data adopted from Quarterly and Annual Report of Air Asia and Singapore Airlines 2006-2010)
4.2 STOCK VOLATILITY AND RISK

In this study, we follow the financial crisis timeline given by the U.S. government agency – National Bureau of Economic Research. That is, the financial crises began in December 2007 and reached the trough in June 2009. Based on this, we have classified three 19-month periods in study, and we measure the stock volatility and risk as follows: (1) pre-crisis period May 2006 - Nov 2007; (2) financial crisis period Dec 2007 - Jun 2009; and, (3) post-crisis period July 2009 - Jan 2011.

Table 3: The risk and stock volatility for Air Asia and Singapore Airlines at pre-, during and post-financial crisis periods

The table shows the estimation result for stock volatility and risk. The CAPM beta for two airline is estimated from a linear regression model in the form as: \( r_i = \alpha + \beta_i \cdot R_m + \varepsilon \). We also estimate the total variance of stock return. The systematic risk component is obtained from \( R^2 \) multiplied by total risk while the unsystematic risk is product of \((1 - R^2)\) and total risk.

<table>
<thead>
<tr>
<th>Period</th>
<th>Pre-Financial crisis (19 Calendar Months)</th>
<th>Financial crisis (19 Calendar Months)</th>
<th>Post-Financial crisis (19 Calendar Months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airline</td>
<td>Air Asia</td>
<td>Singapore Airlines</td>
<td></td>
</tr>
<tr>
<td>Beta</td>
<td>1.00338</td>
<td>-0.05832</td>
<td>0.77137</td>
</tr>
<tr>
<td>Proportion of systematic risk ((R^2))</td>
<td>0.19570</td>
<td>0.00210</td>
<td>0.13710</td>
</tr>
<tr>
<td>Proportion of unsystematic risk ((1-(R^2)))</td>
<td>0.80430</td>
<td>0.99790</td>
<td>0.86290</td>
</tr>
<tr>
<td>Total risk ((\sigma^2_i))</td>
<td>0.00041</td>
<td>0.00025</td>
<td>0.00069</td>
</tr>
<tr>
<td>Systematic risk ((\sigma^2_i \cdot R^2))</td>
<td>0.00008</td>
<td>0.00000</td>
<td>0.00009</td>
</tr>
<tr>
<td>Unsystenmatic risk ((\sigma^2_i \cdot (1-R^2)))</td>
<td>0.00033</td>
<td>0.00024</td>
<td>0.00059</td>
</tr>
</tbody>
</table>

Table 3 demonstrates the stock volatility and risk before-, during and post-financial crisis period. First, we found that the beta for Singapore Airlines is very insensitive to market condition (i.e. beta = -0.058) before financial crisis. The negative beta also means Singapore Airlines seemed like a good hedging asset against market movement. However, the beta of Singapore Airlines increased to 0.834 during financial crisis and reduced to 0.779 after the crisis. This means that the stock market movement that caused financial crisis had a huge impact and made Singapore Airlines’ stock price fluctuated wildly. This is contradicted to pre-crisis period which overall stock market movement only has small impact on Singapore Airlines’ stock price. On the other hand, the beta (1.003) of Air Asia before crisis shows that it is sensitive to market condition, which means the movement of stock price is almost moving is same direction and magnitude with overall stock market. However, the beta reduced to 0.771 during financial crisis and then further decreased to 0.132 after the crisis. Simply put, the stock price movement of Air Asia was becoming less affected by overall stock market price trend. This result is completely opposite with Singapore Airlines. We can say that Singapore Airlines is greatly influenced by the overall stock market trend when the financial crisis occurred while Air Asia demonstrated opposite characteristic. The suddenly change of stock risk for Singapore Airlines and Air Asia may implies that the stock market confidence already altered by the financial crisis event.

Turning attention to the proportion of systematic and unsystematic risk, we found that the proportion of systematic risk of Singapore Airlines was 0.002, which is less than Air Asia before the financial crisis. However, it increased sharply to 0.562 during the financial crisis. Meanwhile, the proportion of systematic risk for Air Asia underwent an opposite direction and decreased during the crisis period. Although, the proportion of systematic risk for both airline stocks went down after the crisis, Singapore Airlines had a greater proportion of systematic risk than Air Asia's. In short, the level of systematic risk of Singapore Airlines suddenly became greater than Air Asia during and post-financial crisis denotes that stock markets believe Singapore Airlines are very sensitive to overall market conditions. That is to say if stock investors expect majority of companies listed in stock exchange are likely to experience great negative future prospects, the stock investors also view Singapore Airlines is experiencing the same bleak prospect.
To better illustrate the comparison of total risk and risk components between Singapore Airlines and Air Asia, we constructed the Figure 6. The figure indicates the ratio of total risk and risk components of Singapore Airlines over Air Asia in before, during and post-financial crisis period. The risk component with ratio greater than one denotes that Singapore Airlines is riskier than Air Asia and vice versa. Intriguingly, the systematic risk of Singapore Airlines was less than Air Asia before crisis. However, the systematic risk of Singapore Airlines became greater relative to Air Asia during the crisis period and increased further after the crisis. However, total risk and unsystematic risk of Singapore Airlines was less than Air Asia’s in all periods. Clearly, the result shows that Air Asia is greatly influenced by good market condition before the financial crisis. After the financial crisis began, the Air Asia became resistance to bad stock market condition. On the contrary, the Singapore Airlines is less influenced by good stock market condition (i.e. pre-financial crisis period) but became sensitive to bad market condition caused by the financial crisis.

Figure 6: The ratio total risk, Systematic risk and unsystematic risk of Singapore Airlines over Air Asia at pre-, during and post-financial crisis


4.3 EVENT STUDY
4.3.1 QUANTITATIVE EVIDENCE FROM EVENT STUDY
Arguably, September 2008 was the peak of the financial crisis. We observed that the economic events started to occur from 7th September 2008. In this study, we define 8th September 2008 (Monday) as the first day in 12-week event period.
We also define 12-week prior to the event period as the estimation period. That is, we assume that a 12-week geometric average return of the market return as the estimate for market return in the event period. This approach is also consistent with previous similar researches (Flouris & Walker 2005).

- On 7th September 2008 (Sunday), the Federal Reserve of the United States announced the takeover of problematic Frannie Mae and Freddie Mac that owning USD 5 trillion in home loans during the subprime crisis (David 2008).
- On 14th September 2008 (Sunday), Merrill Lynch announced it would be sold to Bank of America and Lehman Brothers filed bankruptcy (Sorkin 2008).
- On 21st September 2008 (Sunday), the Federal Reserve announced that Goldman Sachs and Morgan Stanley would convert from investment banks to bank holding companies (Sorkin & Bajaj 2008)

In this study, we employed CAPM model to calculate the normal return before the event period. Note that we use local stock market index as the proxy for Air Asia and Singapore Airlines respectively. The rationale is that we assume investors primarily hold domestic stocks and; therefore, the local market index is more appropriate market index in CAPM model (Damodaran 2006, p.49). We also argue that stock returns for Air Asia and Singapore Airlines are comparable since identical assumptions and methods are used in CAPM model to calculate normal returns for both airlines.

Turning to the risk free rate, we used yield of the 90-day Malaysia treasury bills as the proxy of risk free rate for Air Asia stock. Similarly, the yield of 90-day Singapore treasury bills will represent the risk free rate for Singapore Airlines. The choice of the yield of 90-day government treasury bills is also consistent with previous similar researches (Flouris & Walker 2005).

Figure 7 shows the FTSE Bursa Malaysia KLCI index and Straits Times Index, which is the stock market index for Air Asia and Singapore Airlines respectively. We can see that both stock market indices are in very similar downward trend during the 12-week event period. This price movement is likely affected by the economic events occurred in the United States. On the other hand, we can notice that the trend of the stock prices for Air Asia and Singapore Airlines. It is clear that the stock price of
Singapore Airlines was in a downward trend. In week 8, the share price of Singapore Airlines rebounded. This price movement was also in the same direction of the Straits Times Index according to Figure 7. However, the stock price of Air Asia did not demonstrate a clear movement trend. The stock price increased dramatically in the first five weeks and then went down in the next three weeks. Thereafter, the price fluctuated within certain range. In short, we believe that these prices movements imply that Singapore Airlines is sensitive to overall negative downward trend while Air Asia is somewhat resistant to negative stock market condition.

Figure 7: The stock market indices for Singapore and Malaysia; and Stock Price of Air Asia and Singapore Airlines in 12-week event period

(Data adopted from Yahoo! Finance 2011)

We can notice from Figure 8 that the daily stock returns of Air Asia and Singapore Airlines in the event periods. It is observed that the stock returns of Singapore Airlines swung more wildly than Air Asia. Furthermore, the stock returns of Air Asia are fluctuated within ±4% most of the time and the magnitude was also smaller in relative to Singapore Airlines.
Additionally, Figure 8 shows the trailing 60-trading days of daily beta for the stocks of Air Asia and Singapore Airlines in the 12-week event period. The beta of Singapore Airlines was bigger in terms of magnitude. This means it is more affected by market condition in the event period. The beta fluctuates within the range of 0.6 to 1. On the other hand, the beta for Air Asia is below 0.6 in the event period. This also means that the volatility of stock returns for Air Asia was less sensitive to the stock market movement compared to Singapore Airlines.

Figure 8: The daily stock return and time varying beta for Air Asia and Singapore Airlines over the 12-week Following the Economic Events

(Data adopted from Yahoo! Finance 2011)

Table 4 shows the cumulative abnormal return for the stocks of Air Asia and Singapore Airlines over 12 weeks following the economic events. The economic events contributed to negative cumulative abnormal return for Singapore Airlines at most time. However, the cumulative abnormal return for Air Asia is positive in the 12 weeks. From our observation, it is clear that the cumulative abnormal return trend for both airlines almost completely contradicted following the economic events. That is
the cumulative abnormal returns for Air Asia stock were continuously higher than Singapore Airlines’ in all the time with the exception of first few days. Additionally, there was a huge gap of cumulative abnormal return between Air Asia and Singapore Airlines. It can be interpreted that the occurrence of economic events during the peak of financial crisis had delivered significant negative impacts on stock markets. Singapore Airlines stock was one of the victims that affected by negative stock market price movement. In contrast, Air Asia stock is quite resistant to stock market trend and continuously delivered higher than expected stock return (i.e. positive cumulative abnormal return).

Table 4: Cumulative Abnormal Return Following Economic Events

The abnormal return is the difference between the actual return and normal return that derived from CAPM model. We use short-term approach to calculate the estimate in CAPM model as follow: first, we use 60-trading-day trailing beta and (60-trading days) historical returns as expected market return; second, we calculate the market risk premium minus daily yields on 90-day government treasury bills.

<table>
<thead>
<tr>
<th>Time Elapsed Since Financial crisis</th>
<th>Air Asia</th>
<th>Singapore Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 week</td>
<td>12.30%</td>
<td>3.57%</td>
</tr>
<tr>
<td>2 weeks</td>
<td>14.49%</td>
<td>1.56%</td>
</tr>
<tr>
<td>4 weeks</td>
<td>17.39%</td>
<td>-1.28%</td>
</tr>
<tr>
<td>6 weeks</td>
<td>14.52%</td>
<td>-9.25%</td>
</tr>
<tr>
<td>8 weeks</td>
<td>11.30%</td>
<td>-12.72%</td>
</tr>
<tr>
<td>10 weeks</td>
<td>10.65%</td>
<td>-5.56%</td>
</tr>
<tr>
<td>12 weeks</td>
<td>11.96%</td>
<td>-5.35%</td>
</tr>
</tbody>
</table>

(Data adopted from Yahoo! Finance 2011)

4.3.2 STATISTICAL EVIDENCE FROM EVENT STUDY

Table 5 shows the Wilcoxon Rank Sum statistical test result from the Stata software. Note that the null hypothesis of the statistical test is that the distribution of abnormal returns for both airlines is indistinguishable statistically. The \( p \)-value of the Wilcoxon Rank Sum test reveals that the null hypothesis is cannot be rejected. In other words, we can say the abnormal return of Air Asia and it’s paired distribution (i.e. Singapore Airlines) is statistical indistinguishable at 95% significance level.

Table 5: The result of Wilcoxon Rank Sum test between abnormal returns of Air Asia and Singapore Airlines in 12-week event period

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3 We employed geometric means to calculate the daily market return for past 60-trading day.
The test statistic less than 1.96 and p-value > 0.05 denotes that the distribution of abnormal return for Air Asia and Singapore Airlines is statistically indistinguishable.

<table>
<thead>
<tr>
<th>Wilcoxon Test Statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.414</td>
<td>0.6786</td>
</tr>
</tbody>
</table>

(Data adopted from Yahoo! Finance 2011)

In addition, the Stata software also runs the additional hypothesis test to check if probability for the first distribution is higher than the second distribution of abnormal return. In this test, Air Asia is the first group and Singapore Airlines is the second group. The result shows that there is about 52% probability that the abnormal return of Air Asia is higher than Singapore Airlines’. It also can be said that the abnormal return of Air Asia is statistically higher in 12-week event period.

The Wilcoxon Rank Sum result is important since it provides statistical evidence to prove the abnormal return of Air Asia stock is statistically higher than Singapore Airlines stock’s following the economic events in 12-week period. This implies stock investors preferred to hold (or buy) Air Asia stock since they may believe Air Asia stock is more likely to generate greater return in future.

Note that previous relevant research (Flouris & Walker 2005) did not use Wilcoxon rank sum statistical test to verify research result, this does not means their result is unreliable. Our intention to use Wilcoxon rank sum test is to provide additional supportive result to add accuracy to our study.
CHAPTER 5 ANALYSIS

The main purpose of this chapter is to analyze the empirical findings. We shall relate the analysis with research questions in the study.

5.1 FINANCIAL RATIO ANALYSIS

Based on our findings, we found that the overall financial ratio analysis showed that Air Asia displayed slightly superior performance than Singapore Airlines. On the liquidity aspect, Air Asia showed that it is better able to convert its assets into cash readily than Singapore Airlines between January 2007 and December 2010. However, on the debt servicing part, Air Asia is relatively in a weaker position to pay interest on its debt compared to Singapore Airlines during the crisis period. This was evident as the time interest earned ratio of Air Asia has three negative quarters, while Singapore Airlines has two quarters. Nevertheless, the debt obligation for Air Asia is smaller due to lower debt ratio (i.e. leverage) in comparison to Singapore Airlines. This means Air Asia is still better able to service its debt with highly liquid assets to lower the amount of debt. This result unfolded itself after the crisis, time interest earned ratio of Air Asia rebounded stronger which denotes it is better capable to service its debt obligation than Singapore Airlines. This result is the evident to show Air Asia has lower bankruptcy risk than Singapore Airlines, which is a plus point for investors, as they believed Air Asia would survive during difficult times. Turning to profitability ratios, Air Asia posted stronger profits than Singapore Airlines in the 16 quarters in 2008/09. Any savvy investors buying into a company would want it to generate heaps of profits. In this way, stock investors can be assured of the continuity of the company as well as possible appreciation in the stock prices. Strong ROE in the case of Air Asia makes the company an attractive investment. This means stock investors have a good income from the money they invested in the company. Finally, on the asset turnover ratios, the findings revealed that Singapore Airlines is better able to efficiently use its assets to generate revenue as compared with Air Asia. However, Air Asia has higher operating efficiency in keeping profit with higher operating margin. Even with higher usage of Singapore Airlines’ assets, the carrier was not able to match Air Asia’s strong profitability. According to reports, this was because Singapore Airlines had sold some of its older aircraft to other counterparts and a delivery delay of A380 aircraft from Airbus during 2007 (Singapore Airlines Full
Year Financial Report ended 30 March 2007, p.13). As such, Singapore Airlines has lost some of its lucrative business to competitors.

On the whole, we can conclude that Air Asia performed better than Singapore Airlines before, during and after the crisis in 2007/08. This is akin to previous research paper that low-cost carriers are able to withstand downturn shocks better than full-service airlines (Flouris & Walker 2005). This will be more apparent in the following sections.

5.2 STOCK VOLATILITY AND RISK BETWEEN LOW COST- AND TRADITIONAL AIRLINES
The empirical results reveal that the beta of Singapore Airlines has changed to a greater magnitude compared with Air Asia since financial crisis. This shows that the fluctuation of stock price of Singapore Airlines is greatly influenced by adverse market condition during financial crisis period. On the contrary, Air Asia is very sensitive to good stock market condition before financial crisis and become less sensitive to bad stock market condition during and after financial crisis.

The analysis of the proportion of systematic risk also renders similar result. In particular, 56% of the total variance of stock price for Singapore Airlines is contributed by systematic risk while only 14% of the variance of Air Asia stock price return is affected by systematic risk during financial crisis period.

The results support the argument that stock investors have lower confidence level on Singapore Airlines relative to Air Asia. This is the reason why stock price of Air Asia moves together with positive market condition but resistant towards downward trend of stock market during and after the financial crisis. The stock price of Singapore Airlines, on the other hand, demonstrates opposite traits. Prices of Singapore Airlines followed the negative trend of the stock market consistently, meaning when the market is on the negative note, the stock prices of Singapore Airlines will be down. However, the stock price of Singapore Airlines is less affected by positive stock market condition.

Previous research (Flouris & Walker 2005) also found that the beta and systematic risk of traditional airlines increased at a greater proportion compared to low cost airline stocks in the United States in the aftermath of the 9/11 event. This result is
identical to our findings. We think this is due the fact that investors have greater confidence on low-cost airlines in financial crisis time and; hence, the stock price of Air Asia is less affected by the overall downward pressure in the market. Investors may also tend to evaluate the idiosyncratic risk (i.e. the firm unique risk) in pricing the stock of Air Asia.

5.3 EVENT STUDY
We find that the stock markets in Malaysia and Singapore started to experience downward trend following the events. This shows that the economic event occurred in the United States may had negative impact on the stock markets in Asia. At first glance, the stock price of Singapore Airlines demonstrates a downward trend in the event period while Air Asia does not show any clear trend. Interestingly, the stock returns of Singapore Airlines also fluctuated more wildly than Air Asia. Furthermore, the magnitude of time-varying beta of Singapore Airlines is bigger than Air Asia. This implies that Singapore Airlines is more sensitive to the negative stock market condition. These evident suggest that downward market price movement is one of determinant that causes the price drop of the stock for Singapore Airlines in 12-week event period. This denotes that stock investors generally have lower level of confidence on Singapore Airlines compared to Air Asia during unexpected economic events occurred.

The quantitative analysis from cumulative abnormal return (CAR) for both airlines stocks yields similar result. The CAR for Air Asia was positive in the event period. In contrast, the CAR of Singapore Airlines became negative since week 3. In the 12-week event period, Air Asia stock had positive CAR while Singapore Airlines had negative CAR. Overall, the abnormal return of Air Asia was higher than Singapore Airlines. The result implies that stock investors are more willing to hold (or buy) Air Asia stock compared to Singapore Airlines. Obviously, this means stock investors have higher confidence level on Air Asia.

The concordance of result is also found in previous research that using event study methodology to investigate the stock market confidence on low cost airlines versus traditional airlines after the 9/11 terrorist attacks (Flouris & Walker 2005). Their research shows that the cumulative abnormal return for low cost airlines in the United States is greater than traditional airlines. Our empirical study renders new evidence
from Asia, which stock markets tend to have higher level of confidence on low cost airlines relative to traditional airlines when a significant adverse crisis event occurred.

In this study, we proposed and used the Wilcoxon Rank Sum statistical test to carry out a two-sample test on abnormal stock return for Air Asia and Singapore Airlines. The test reveals two important results. First, the abnormal return of both airlines is statistically distinguishable. Second, the probability result shows that the abnormal stock return of Air Asia was higher than Singapore Airlines in the event period. The statistical evidence supports the previous quantitative empirical results that based on Cumulative Abnormal Return (CAR) in this study. That is, the stock markets prefer to hold Air Asia stock over Singapore Airlines since stock investors have more confidence in Air Asia.
CHAPTER 6 CONCLUSION AND IMPLICATION
This chapter includes conclusion and recommendations to this study.

6.1 CONCLUSION

This research uses a holistic quantitative and statistical approach, such as financial analysis, CAPM beta and event study to investigate how the stock investors’ confidence changed in Air Asia and Singapore Airlines stocks due to the financial crisis in 2007-2009.

Accounting performance and bankruptcy risk from financial analysis perspectives are major determinants (Lawton 2003; Flouris and Walker 2005) that affect the confidence of stock investors during the crisis. We conducted the financial analysis and discovered that Air Asia performed better in terms of bankruptcy risk and corporate profit compared to Singapore Airlines before and during the financial crisis period. First, Air Asia has a lower debt ratio (i.e. about 0.6) than Singapore Airlines (i.e. about 1.1) before the financial crisis period. During the financial crisis, the debt ratio of Air Asia continued to remain at 20% lower than Singapore Airlines. This means that Air Asia’s debt amount is smaller relative to assets compared to Singapore Airlines. Second, Air Asia has sufficient earnings and liquid assets to pay its interest expense before and during the financial period. This evidence proved that Air Asia had significantly lower risk than Singapore Airlines. Third, the corporate accounting data showed that Air Asia had higher profitability and (i.e. more than twofold in terms of return on equity and operating profit margin) most of the time before and during the financial crisis periods compared to Singapore Airlines. This means Air Asia had higher disposable net income for stock investors and it continued to operate at higher efficiency. After the financial crisis, Air Asia continues to generate higher profit and presents lower bankruptcy risk (i.e. based on quick ratio, times interest earned ratio, operating profit margin and ROE) compared to Singapore Airlines. This serves to affirm that stock investors’ decisions were rational.

To better observe how stock investors confidence reflected on airline stocks, the CAPM beta framework (Flouris and Walker 2005) and event study methodology (Flouris and Walker 2005; Walker, Thiengtham and Lin 2005) were employed to describe the how good (or adverse) market condition affect the stocks from systematic
risk perspective. First, we conducted the analysis based on CAPM beta framework and indentify the systematic risk for both airline stocks. In comparison to Singapore Airlines, the systematic risk for Air Asia is higher (i.e. $\beta = 1.00$) before the financial crisis but it was lower (i.e. $\beta = 0.77$) during the financial crisis. This denotes the stock return of Air Asia is more influence by good market condition but less affected by adverse market condition. Singapore Airlines, however, show opposite traits with lower CAPM beta (i.e. $\beta = -0.06$) before financial crisis but higher beta (i.e. $\beta = 0.83$) during financial crisis. This means that stock investors had higher confidence on Air Asia compared to Singapore Airlines. Second, our event study analysis indicated that the cumulative abnormal stock return of Air Asia is slightly positive over the 12-week window period following the negative economic events (e.g. the bankrupt news of Lehman Brother and others) during the peak period of financial crisis. In contrast, the accumulative abnormal return for Singapore Airlines stock is significantly negative. Our new proposed statistical test (i.e. Wilcoxon Rank Sum test) also generated similar result - the abnormal return of Air Asia is statistically higher than Singapore Airlines at 95% significance level during the 12-week window period in event study.

To summarize, better accounting performance and lower bankruptcy risk of Air Asia had caused the stock investors to have higher level of confidence in Air Asia when the financial crisis slowly unfolded itself, compared to Singapore Airlines. The outcome is that the stock return of Air Asia is less affected by adverse stock market condition. The abnormal stock return of Air Asia is also higher than Singapore Airlines. Stock investors also appeared to be more willing to hold (or buy) into companies that are able to generate strong, sustaining earning power and low bankruptcy risk. In this case, it is Air Asia.

Interestingly, previous research in U.S. (Lawton 2003; Flouris and Walker 2005) indicated also that low cost carriers are pliable in their operation leading to better financial results in terms of profitability and bankruptcy risk than conventional airlines, which leads to greater confidence on stock investors. Unsurprisingly, our study added identical empirical evidence from Asia. This is important since investors in U.S. and Asian stock markets, on average, are rational and able to distinguish which business model is able to cope better in time of a crisis.
Our thesis renders a main important finding: we predict that the stock prices of low cost airlines are likely to perform better than traditional airlines in Asia when a significant crisis unfolded providing that low cost airlines have better accounting performance and lower bankruptcy risk.

6.2 FURTHER RESEARCH

In this study new empirical evidence shows LCCs are more resilient in difficult times as investors have greater confidence on LCCs compared to traditional airlines. However, this study is limited to two airlines in the Asian region. In general, LCCs employ the same business model but they may still differ in profitability and financial structure. The Static Trade-off theory in finance (Jong, Verbeek & Verwijmeren 2009) suggests that firms seek optimal capital structure to balance between finance distress cost and tax benefit from debt. Hence, we suggest that a further research could cover more LCCs to investigate the extent and what kind of profitability and financial structure can deliver great confidence from investors.

Besides in this study, we focus on using financial tools and measures to evaluate the business models of our sample airlines. Our empirical findings are based on the quantitative aspects, such as financial ratios and stock volatility. Besides using these financial tools, other non-economic factors may also be contributors to the performance of low-cost and full-serviced airlines. These could be quality of service, safety controls and employee welfare. A study could be done to include these factors to compare low-cost carriers and traditional airlines. This may lend more support to this current paper.
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