

# ***Study on the Risk and Investment Value of Listed Companies in the Aviation Industry***

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**Abstract:** The objective of this research paper is to thoroughly examine the risks and investment opportunities that exist within the aviation industry for publicly listed companies. The aviation industry encompasses a wide range of sectors, including airlines, aviation manufacturers, and aviation service providers, all of which play a vital role in the overall economy. Many airlines operating within this industry have shares listed on public stock exchanges, providing investors with the opportunity to engage in buying and selling activities. As a result, it is of utmost importance for investors to develop a comprehensive understanding of the associated risks and investment potential associated with publicly listed companies operating within the aviation sector. However, researchers conducting such an analysis must possess a certain level of knowledge and comprehension regarding the intricacies of the aviation industry and its interconnected markets. Acquiring in-depth knowledge about the industry and related market dynamics is crucial for accurately assessing the risk factors and determining the investment value of these listed aviation companies.

**Keywords:** risk assessment, industry outlook, comparative analysis

## **1. Introduction**

### **1.1. Background**

The study on the risk and investment value of listed companies in the aviation industry holds significant importance for various stakeholders, including investors, financial institutions, industry analysts, and policymakers. This study plays a crucial role in guiding investment decisions and promoting informed investment strategies within the aviation industry.

For investors, understanding the risk and investment value of listed aviation companies is essential in making sound investment decisions. By examining financial performance, market positioning, and risk profiles, investors can evaluate the potential returns and risks associated with investing in the aviation sector. This analysis helps investors identify companies with strong growth potential, solid financial stability, and effective risk management practices.

Policymakers and regulators also find this study significant as it informs policy decisions and regulatory frameworks within the aviation industry. By examining the risk factors and investment value of listed aviation companies, policymakers can shape regulations that promote safety, fair competition, and investor protection.

In conclusion, the study on the risk and investment value of listed companies in the aviation industry serves as a critical tool for investors, financial institutions, industry analysts, and policymakers. It guides investment decisions, facilitates risk management, provides sector-specific insights, influences policies, and contributes to the overall development and efficiency of the aviation industry.

## 1.2. Related Research

Carter et al. Discuss the fuel hedging practices of 28 U.S. airlines from 1992 to 2003. The authors aimed to determine whether fuel hedging provides value to airlines and, if so, how it contributes to their operations. The airline industry offers a suitable setting for investigating the relationship between hedging and value due to several reasons. Firstly, the industry is predominantly competitive and exhibits remarkable uniformity among its participants. Secondly, airlines face a single, volatile input commodity, namely jet fuel, which represents a significant economic expense for all competitors. Lastly, the competitive nature of the industry makes it difficult to pass on fuel price increases to customers due to the pressure to remain competitive. They analyzed the fuel hedging activities of the 28 U.S. airlines over the specified time period to understand the impact of hedging on their financial performance. By hedging, airlines attempt to mitigate the risks associated with fluctuating fuel prices by entering into derivative contracts, such as futures or options, to secure fuel at predetermined prices [1]. Based on data released by the National Transportation Safety Board, the occurrence of accidents per million miles flown varied between 0.0033 and 0.00731 during the period spanning from 1990 to 2006. On average, more than 77 individuals lost their lives each year in these accidents. Despite their low frequency, airline accidents can have substantial impacts on an airline's stock price, profitability, and insurance premiums. Although airline accidents are rare events, their consequences can be significant for an airline's financial aspects. When accidents do happen, particularly those resulting in fatalities, investor confidence often declines, leading to a potential decrease in the airline's stock price. Negative media coverage and public perception surrounding accidents can erode consumer trust, possibly resulting in a decline in passenger bookings, thereby affecting the airline's revenue. In summary, although airline accidents occur infrequently, their consequences can have wide-ranging effects on an airline's financial performance. The negative impacts on stock prices, potential decrease in passenger bookings, direct costs associated with accidents, and the influence on insurance premiums all present challenges to an airline's profitability and overall business operations [2]. In recent decades, the East Asian airline industry has faced increased exposure to frequent and high levels of systematic risk. These risks encompass various factors such as unpredictable oil prices, disease outbreaks, financial crises, and economic recessions. As a result, the share prices of publicly listed airline companies in the region can be vulnerable and influenced by these systematic risks, leading to an unstable source of equity capital. While systematic risk arises from uncontrollable external factors, managerial decisions can influence the extent to which an airline is exposed to such risks. Managerial decisions related to finance, operations, and investments can have an impact on an airline's financial performance, which in turn affects its exposure to systematic risk. For example, during an economic recession, an airline can choose strategies that help manage the extent to which the economic slowdown affects its operating profits. While the airline cannot prevent the economic downturn itself, it can make decisions to mitigate the negative impact on its financial performance. It is important to note that while managerial decisions can influence an airline's exposure to systematic risk, they cannot completely eliminate the effects of external factors. The airline industry will still be susceptible to the inherent volatility and uncertainties associated with these risks. However, effective decision-making by airline managers can help minimize the negative impact and enhance the industry's resilience in the face of systematic risks [3]. Malighetti et al examines the

factors that determine the value of airports and airlines. The analysis is based on a sample of 24 airport operators and 87 airlines that were listed on international financial markets as of December 31, 2007. The study focuses on the determinants of Tobin's Q, a measure of market valuation. On average, airport operators have higher market valuations compared to airlines [4]. Abdi and other researchers examine the relationship between financial performance and environmental, social, and governance disclosure in the airline industry. The research aims to expand existing knowledge on this topic and also investigates the moderating effect of state-ownership on the FP-ESG relationship. The study analyzes data from 36 airlines worldwide over the period 2008-2019 [5]. Chee-Wooi et al address a knowledge gap regarding the sources of systematic risk exposure in the East Asia airline industry. The research focuses on a panel regression analysis of seven well-established listed airline companies in the region. The findings indicate that only size and operating efficiency have a positive and significant relationship with systematic risk, while airline safety exhibits a negative and significant association with systematic risk [6].

Cunningham et al address the impact of regulatory reform on a firm's systematic risk, specifically focusing on the recent deregulation of the US airline industry. Previous research has not provided much evidence on the relationship between regulatory reform and systematic risk in transitional or post-transitional periods. The study finds that after the deregulation, both trunk carriers and regional carriers experienced an initial increase in systematic risk. However, this increase was followed by a significant decline in systematic risk. Ultimately, the systematic risk for trunk carriers fell to a level significantly lower than that during the regulated period, while the risk for regional carriers reached a level similar to that of the regulated period [7]. Heracleous et al focuses on the exceptional performance and sustained competitive advantage of Singapore Airlines (SIA) over its competitors in the airline industry, despite operating in a challenging environment. The research explores the strategies employed by SIA to achieve this success, namely differentiation through service excellence and innovation, coupled with cost leadership within its peer group. The study also examines the organizational elements that have enabled SIA to execute these strategies effectively. The authors illustrate the strategic alignment of SIA using a vertical alignment framework. The author concludes by emphasizing the significant challenges that lie ahead for the airline [8].

Loudon examine the financial risks that are crucial for the airline industry, including interest-rate risk, currency risk, and fuel-price risk. The study focuses specifically on the airline industries of Australia and New Zealand. The authors employ both linear and non-linear specifications to estimate the exposure to these risks across different time horizons. The findings suggest that exposure to these financial risks becomes more apparent and significant as the return horizon is extended. Interestingly, the study reveals that the exposure to these risks remains largely unchanged even in the face of significant events such as the terrorist attacks and the collapse of a major competitor in September 2001 [9]. Kökény investigates the impact of the business model on the stock market performance of European listed airlines during the first wave of the COVID-19 pandemic. The analysis focuses on low-cost carriers (LCCs) and full-service carriers (FSCs) among 11 airlines in the sample. Through event study analysis, the study reveals that negative phases with significant deviations from expected returns were observed during the entire pandemic and the third stage of the crisis. Notably, FSCs performed better than LCCs, particularly on 24 February when European stock markets were severely affected. The study concludes by discussing potential future research directions in this area [10].

### 1.3. Objective

This paper discusses the Method and development environment of the airlines in chapter 2, and compares the multiple financial indicators of the three companies (American Airline, Southwest

Airline, Singapore Airline) in chapter 3. Finally, chapter 4 explains some suggestions for investing in airlines.

## **2. Method and Development Environment**

The study on the risk and investment value of listed companies in aviation industry is a comprehensive analysis focusing on the financial status, operation ability, market competitiveness and macroeconomic environment of airlines. Here is an overview of some of the methods introduced and the development environment.

### **2.1. Method**

To thoroughly evaluate an airline company, various aspects need to be analyzed. Financial analysis is essential, which involves examining the company's financial statements, including the income statement, balance sheet, and cash flow statement. By doing so, one can assess the company's profitability, solvency, and cash flow status.

Apart from financial analysis, the economic environment analysis is also crucial. This involves investigating the impact of macroeconomic factors on the aviation industry, such as domestic and foreign economic growth trends, interest rate levels, exchange rate fluctuations, fuel prices, etc. By doing so, one can predict the development prospects of the industry and identify opportunities and threats.

Competitive analysis is another important aspect of evaluating an airline company. This entails studying the market share, service quality, airline network, and other factors of competitors in the aviation industry. Through competitive analysis, one can evaluate the company's competitiveness in the market and identify areas for improvement.

Management team evaluation is also essential, as it involves analyzing the airline's management capabilities, experience, and execution. It also involves assessing their strategic planning and business development plans to evaluate the company's long-term growth potential.

Lastly, technology innovation evaluation is essential in evaluating the future competitive advantages of airlines. This involves examining their investment and innovation ability in technology, such as new aircraft procurement, green technology, and digital transformation. By doing so, one can determine the company's ability to adapt to changing technological trends and remain competitive in the market.

### **2.2. Development Environment of the Aviation Industry**

As for the macroeconomic environment, the development of the aviation industry is closely related to the macroeconomic environment, including domestic and foreign economic growth, changes in policies and regulations, monetary policy and other factors.

Firstly, fuel is one of the major costs for airlines, and its price fluctuations have a significant impact on company profitability, so changes in the global oil market are of great significance to the investment value of the aviation industry.

Secondly, the aviation industry is highly competitive. The changes of competition pattern and market share have an impact on the company's profitability and market position, so it is necessary to pay close attention to the development of competitors in the industry.

The aviation industry is facing a wave of technological innovation and digital transformation, including the application of new aircraft, e-commerce, data analysis and other technologies. These changes will have a significant impact on the industry landscape and company competitiveness.

Lastly, the aviation industry has been rocked in the wake of the COVID-19 outbreak, with global travel restrictions and changes in government policy having a significant impact on airline operations and investment value.

Based on the analysis of the above methods and development environment, investors can evaluate the risk and investment value of listed companies in the aviation industry, so as to make corresponding investment decisions. However, it should be noted that the aviation industry is cyclical and uncertain to a certain extent, and investors should have a clear understanding of the risks in the industry, and carry out adequate risk management and diversification of investment.

### 3. Comparison

#### 3.1. ROE

As shown in Table 1, Southwest Airlines Achieved a 10.13% ROE at the end of 2021, a significant improvement over the-32.86% at the end of 2020. This could indicate that the company has achieved a better level of profitability in 2021. American Airlines The ROE is 0% or negative at the end of 2020,2020 and 2021 at the end of 2022. That could mean that the company has not made a profit in these years and could even make a loss. Singapore Airlines Achieved a return on equity of 2.95% at the end of 2022, an improvement from-0.92% at the end of 2020. However, it is still relatively low compared to the other two companies.

Table 1: ROE of three companies.

	Southwest Airlines	American Airlines	Singapore Airlines
12/31/2020	-32.86%	0	-0.92%
12/31/2021	10.13%	0	0.38%
12/31/2022	5.32%	-1.90%	2.95%

#### 3.2. ROA

Table 2 presents that Southwest Airlines, ROA was-10.17% at the end of 2020, then 2.76% at the end of 2021 and 1.57% at the end of 2022. This shows that Southwest Airlines has improved the efficiency of its assets and improved profitability over the past few years. American Airlines, ROA was 0.19% at the end of 2020, then decreased to-3.10% at the end of 2021 and-14.57% at the end of 2022. This could mean that American Airlines was challenged by declining profitability during these years, and may have been affected by financial difficulties. Singapore Airlines The ROA was relatively low but fluctuating in the past few years. From-0.39% at the end of 2020 to 1.26% at the end of 2022. This shows an improvement in the company's asset utilization efficiency, but still relatively low.

Table 2: ROA of three companies.

	Southwest Airlines	American Airlines	Singapore Airlines
12/31/2020	-10.17%	0.19%	-0.39%
12/31/2021	2.76%	-3.10%	0.19%
12/31/2022	1.57%	-14.57%	1.26%

### 3.3. Gross Margin

As shown in Table 3, Southwest Airlines The gross profit margin was-24.15% at the end of 2020, and then reached 28.87% at the end of 2021 and 22.01% at the end of 2022. This shows that Southwest Airlines has improved its profitability over the past few years, with a gradual increase in gross margin. American Airlines The gross profit margin was-49.68% at the end of 2020, then rose to 1.01% at the end of 2021 and 19.73% at the end of 2022. This could mean that American Airlines improved its profitability in these years, from loss to profit. Singapore Airlines Gross margin was 24.31% at the end of 2020, then decreased to-27.57% at the end of 2021, but rose again to 13.46% at the end of 2022. This shows that the company's gross profit margin has fluctuated greatly over the past few years, but overall it has maintained a certain profitability.

Table 3: Gross margin of three companies.

	Southwest Airlines	American Airlines	Singapore Airlines
12/31/2020	-24.15%	-49.68%	24.31%
12/31/2021	28.87%	1.01%	-27.57%
12/31/2022	22.01%	19.73%	13.46%

### 3.4. Comparison

Southwest Airlines performed relatively well in most indicators. Net margin, gross margin, ROE and ROA have all been positive over the past few years, especially net margin and gross margin improving significantly by the end of 2021. American Airlines Is relatively weak in terms of net interest margin and ROE, especially in the negative ROE at the end of 2022. However, the significant increase in gross margin by the end of 2022 may indicate an improvement in the company's profitability. Singapore Airlines The performance of net profit margin and gross profit margin is relatively stable, but the overall level is relatively low. ROE and ROA have remained positive over the past few years, but with limited growth.

## 4. Capital Proposals

When selecting an airline for investment, it's important to consider various factors that can impact the company's financial performance and resilience. Firstly, market position and competitive advantage are crucial in determining a company's ability to withstand risk in competitive industries and maintain pricing power. Thus, choosing an airline with a higher market share and competitive advantage is recommended.

Secondly, financial performance should be carefully analyzed to ensure the airline has stable, sustainable revenues, profits, and cash flow. Key financial indicators such as net profit margin, ROE, and ROA should be evaluated to determine the company's profitability stability.

Thirdly, cost control and efficiency are critical to profitability. Airlines that focus on cost management and efficiency improvements, such as through innovative initiatives in fuel costs, human resources, and operational processes, are more likely to maintain profitability.

Lastly, considering the airline's route network and market diversity is important. A wide route network and diversified market portfolio can reduce the company's dependence on specific markets and improve risk diversification capabilities. Overall, taking these factors into consideration can help investors select a financially healthy airline with a strong competitive edge.

## 5. Conclusion

By comparing the ROE, ROA and gross profit margin of the three airlines, this paper mainly analyzes the profitability and investment risk of the three companies. The ROE is a measure of the ability of a business to create profits using its owners' equity, which reflects the rate of return of its shareholders' equity in their operating activities. High ROE usually means that companies effectively use their shareholder funds. ROA can tell us how companies manage its assets to generate profits. In general, the higher the ROA, the better the company is at using its existing assets to make profits. Gross profit margin refers to the ratio between the profit generated by the sale of goods or services and the sales revenue. It can measure the basic level of enterprise profitability, and the effect of the enterprise in controlling costs. To sum up, the analysis of these three indicators can help investors to better understand the profitability and investment risks of different companies, and make corresponding decisions according to their investment objectives and risk preferences.

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