

Research on the Impact of Epidemic Control on Airlines—Taking Chinese and American Aviation Industries as Examples

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ABSTRACT

After the outbreak in 2019, the novel coronavirus ravaged the world in less than half a year. The novel coronavirus not only causes inconvenience to people's lives and travels, but also greatly hinders the development of the world economy and even leads to some extent to an anti-globalization trend. Many countries have regulated the transportation and tourism industries, especially the aviation industry. Based on this background, this paper takes China Airlines Company and American Airlines Company as examples and compares these two companies to analyze the impact of the epidemic development on government control, then analyzes the government control on aerospace profits and stocks while at the same time using Travel Daily data to reduce company losses through such measures as relaxing flight control, strengthening enterprise management, and increasing auxiliary business. The author concludes from the data that novel coronaviruses will coexist with humans for a long time, while small and medium-sized space enterprises will exit the market because they are not adequately funded to withstand the impact of the outbreak, and large civil aviation will enter an oligopoly because there are fewer companies competing with them for the market.

Keywords: *Epidemic, Government control, Airlines, Auxiliary revenue*

1. INTRODUCTION

Novel coronavirus can infect humans and animals[1], and some countries have adopted policies to limit people travel to slow the spread of COVID-19[2]. These aviation losses resulted in a decline of 0.02%–0.12% in the world's GDP in the first quarter of 2020[3]. Ultra long-haul flights outperformed other business models [4]. This is the main background of the research. At present, most of the research based on the development of the epidemic is about supermarkets, online trading, and the survival of small and micro-enterprises, ignoring the development of industries related to foreign trade. By reading the existing literature, it is not difficult to see that some scholars believe that the epidemic will have an impact on the aviation industry. For example, Freiby Airways has been crushed; KLM will cut 2,000 jobs and suspend up to 40% of its flights [5]. Considering the different degrees of epidemic control at home and abroad, space companies in different countries, especially those with transnational space business transactions, will be affected to varying degrees by the epidemic and control, and the duration of the impact is

also different. In the face of this situation, how space companies should solve the problem of demand reduction caused by people's travel restrictions, how to broaden their business in the epidemic period, and what the future of the space industry will be like This research will observe the operating conditions of China Airlines Company and American Airlines Company, respectively, and analyze the reasons, identify the general shortcomings of China's aviation industry, and suggest how the American aviation industry can improve. Finally, consider the outlook for this industry. The purpose of this paper is to identify improvements that the Chinese and American aviation industries can make to resist the impact of the pandemic. The author believes that by adopting the opinions in this article, the aviation industry may see new developments in the future.

2. BUSINESS DATA OF CHINA AIRLINES COMPANY LIMITED DURING THE EPIDEMIC PERIOD

In terms of the epidemic in China, from the

discovery of the first unknown pneumonia patient in December 2019 to the surge of pneumonia infection in mid-April 2021, the deaths were stable at 4,642 to 4,654, and there was no large-scale breakthrough in the infection cases. It is worth noting that domestic manufacturers are not starting to resume work and production after the epidemic is basically under control, but have continued to work since the end of February. It is not the epidemic but the government control that affects the production and operation of enterprises, and the government control is not strengthened with the severity of the epidemic. Zhang Su and Xu Yaxuan's

research showed that the cost of controlling the epidemic includes the management costs caused by banning people from going out, and the cost losses caused by employees unable to work[6]. These costs rose in the early stages of the epidemic and gradually declined. The way to minimize the economic costs is to try to resume work in about 30 days. Chinese airlines have resumed their business as soon as possible, but because the epidemic is still severe, they have to restrict international flights, thus massively reducing their business volume.

Table 1 . China Airlines Company Financial Summary

Financial target	2021-03-31	2020-12-31	2020-09-30	2020-06-30	2020-03-31
Basic earnings per share (yuan)	-0.450	-1.050	-0.740	-0.690	-0.350
Net assets per share (yuan)	4.92	5.34	5.60	5.70	6.14
Cash flow per share (yuan)	-0.09	-0.10	-0.12	-0.53	-0.60
ROE (%)	-8.33	-16.86	-11.56	-10.69	-5.26
Gross profit rate (%)	-31.96	-8.82	-9.27	-15.23	-12.23
Profit statement (yuan)					
Total revenue	14.581billion	69.504billion	48.454billion	29.646billion	17.256billion
Gross benefit	-8.638billion	-18.475billion	-13.569billion	-13.099billion	-6.789billion
retained profits	-6.208billion	-14.409billion	-10.112billion	-9.441billion	-4.80billion

Table 2. The China Airlines Company's profit trend

	Quarter			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2019	2.723	0.417	3.623	-0.354
2020	-4.805	-4.636	-0.671	-4.298
2021	-6.208	/	/	/

By observing the profit trend, we can see that after the first patient appeared at the end of 2019, China Airlines Company had a sharp reaction, showing a lot of profit losses. The first half of 2020 was the time when China suffered the most impact. Although the government was relatively relaxed after the first quarter, the public's fear did not weaken, so people still restricted their scope of activities, causing sustained losses on the income of the traffic industry. In the third quarter, the domestic epidemic was basically under control, and the number of flights picked up briefly, but it was still not

as good as before the epidemic. Then, with the arrival of a high incidence of infectious diseases (winter), the government called on people to reduce their travel, which caused further unsalable China Airlines Company air tickets.

In order to better observe the operating situation, the author will calculate China Airlines Company's pre-tax profit (retain two decimal places), using the formula: gross profit margin = gross profit / operating income × 100%.

Table 3. Computing result of gross profit

2021-03-31	2020-12-31	2020-09-30	2020-06-30	2020-03-31
-4.660 billion	-6.130 billion	-4.491 billion	-4.515 billion	-2.110 billion

The reason for China Airlines Company's continued declining decline is not only the epidemic, but also the

company takes ticket sales as the main source of revenue. In fact, air tickets can not bring a lot of revenue

to the company, so we should develop auxiliary business. This measure will be analyzed specifically in module 4.

3. BUSINESS DATA OF AMERICAN AIRLINES COMPANY GROUP INC. DURING THE EPIDEMIC PERIOD

The first new coronavirus case in the US occurred a month after China, and although more deaths occurred during the epidemic, its aviation operating losses were much lighter than in China, because the US government did not take too strict control measures. In this case, the theory of management costs is not very applicable, that is to say, compared with government's control, the performance of American aviation is more about public fear of novel coronavirus

Table 4. American Airlines Company Group Inc. Financial Summary

Report date	2021-03-31	2020-12-31	2020-09-30	2020-06-30	2020-03-31
Financial reporting type	Q1	Q4	Q3	Q2	Q1
Closing date	12-31	12-31	12-31	12-31	12-31
Currency	U S D	U S D	U S D	U S D	U S D
Profitability					
Income (billion)	4.008	4.027	3.173	1.622	8.515
Revenue growth	-52.93%	-64.40%	-73.36%	-86.44%	-19.55%
Gross profit (billion)	-1.678	-1.372	-1.939	-2.823	0.798
Gross profit rate	-310.28%	-145.36%	-158.85%	-182.18%	-69.47%

The result of gross profit is shown in the figure, and the data comes from the Oriental Wealth Network, this paper requires no further calculation, above calculated that the gross profit of China Airlines Company is expressed in RMB, due to the exchange rate often

changes, this paper pays more attention to the analysis of gross margin rate than gross margin. In order to make the article to be more unified, the American aviation gross profit margin needs to be calculated

Table 5. Computing result of gross profit rate

2021-03-31	2020-12-31	2020-09-30	2020-06-30	2020-03-31
-41.87%	-34.07%	-61.11%	-174.04%	9.37%

It can be seen that although the United States was in the virus outbreak from January to March 2020, it did not overly affect public travel, so the US aviation in the first quarter of the normal revenue, fear has been brewing among the Americans. As a result, people go out as little as possible, when order cancellations increase, American Airlines Company faces insufficient demand, and its fares are 20% lower than the last

century, which is even more conducive to the company's recovery. It can be seen from the data that American Airlines Company are greatly affected by the epidemic, so the government should play a positive role in implementing subsidies to airlines to help them tide over the difficulties. Specific measures will be discussed in Part 4.

Table 6. Top 10 Airlines--Total Ancillary Revenue (US dollars)

Annual Results--2018		Approximate Sources of Revenue		
		Frequent Flyer Program	A la Carte Such As Bags	Travel Retail Commissions
American	\$ 7,245,000,000	77%		23%
United	\$ 5,802,000,000	73%		27%
Delta	\$ 5,570,000,000	74%		26%
Southwest	\$ 4,049,000,000	84%		16%
Ryanair	\$ 2,801,536,938	None		100%
Lufthansa Group	\$ 2,628,328,912	32%		68%

Air France/KLM Group	\$ 2, 579, 438, 796*	21%	79%
easyJet	\$ 1, 597, 900, 258	None	100%
Spirit	\$ 1, 493, 108, 000	3%	97%
Air Canada	\$ 1, 452, 733, 488	39%	61%
2018 carrier results were based upon recent 12-months financial period disclosures *IdeaWorksCompany estimate based upon updated past disclosure and other sources. Local currencies converted to US dollars at July 2018 rates of exchange.			

4. MEASURES THAT THE AIRLINES CAN TAKE

4.1. In China Airlines Company side

Most airlines in China do not properly develop ancillary operations. In fact, auxiliary business is the main source of profit. Take the A320, the most commonly used by Chinese airlines, the high cost and fuel cost constitutes the main cost, and the ticket income alone is far from returning. This reflects the importance of increasing ancillary revenue (for airline operations, other than traditional passenger and freight operations). The comparison found that China's aviation auxiliary business only accounts for a small part of the total revenue, which is also the reason for China's imperfect aviation.

Thus, none of the top 10 companies in auxiliary income belong to China.

Table 7. Air America Income Analysis

American Airlines Company	
Source and Type	Multiple ancillary revenue activities
Ancillary Revenue	\$ 7, 245, 000, 000
As a % of Revenue	16. 3%
Dollars per Passenger	\$ 35. 56
Financial Period	Calender year 2018
Total Revenue	\$ 44, 541, 000, 000
Passengers	203, 745, 000

Table 8. China Airlines Company Income Analysis

Source and Type	Multiple ancillary revenue activities
Ancillary Revenue	\$ 138, 602, 255
As a % of Revenue	0. 7%

Dollars per Passenger	\$ 1. 26
Financial Period	Calendar year 2018
Total Revenue	\$ 20, 673, 047, 727
Passengers	109, 726, 590

According to the photo (from: Snowball: Global Information) , China Airlines Company should increase its attention to auxiliary income and improve the construction of the aviation industry.

4.2. In Air America side

By contrast, the American aviation industry is more perfect and developed, but given its recent unoptimistic business, the government has the obligation to save it. In fact, the government had funded \$25 billion to airlines in March 2020, provided layoffs cannot be cut by October 1. This left the airlines in trouble and paying without flights was a waste of the grant. It's not hard to see that layoffs are inevitable and that what the government should do is not to keep airline employees, but to ensure that they get other jobs and get new sources of income.

Thinking in a different direction, the problem becomes much easier. Too much leisure staff increases the cost of the company and increases the risk of bankruptcy, and once the company fails, it will be a disastrous blow to all employees. In a special period of declining labor demand, layoffs are wise and concluded from the long-term interests of the company.

To address the problem of laid-off employees' reemployment, the government should focus on what emerging industries the epidemic drives, provide special training for these employees, and then move them to new areas of work. For example, the e-commerce market in Europe and the United States is very large and in a stage of rapid growth, and Europe and the United States have always been the main consumer market for China's cross-border e-commerce. E-commerce work does not require too high education and exquisite technology, these people can be successfully transformed into the third platform staff, the reasons

why doesn't China Airlines Company need to cut off many staffs are that China's labor force is cheap and low wages, layoffs will not significantly reduce the company's costs, and its losses can be made up by auxiliary services. Besides, China Airlines Company can also make appropriate layoffs.

Both countries have places to learn and learn from each other. China should learn the business model of American Airlines Company, improve its own aviation industry structure; the United States can learn the reasons for Chinese e-commerce development, improve the local e-commerce market, and solve the employment problem of surplus labor.

5. DISCUSSION

The future of the aviation industry is directly linked to the epidemic. If the new coronavirus breaks out in a certain area, the virus can be eliminated as long as the area is isolated for the appropriate time. But the reality is more complex. So novel coronaviruses are taking root all over the world, and vaccine development is not as fast as a variable, so it is no longer likely to be eliminated. Humans will coexist with the virus for a long time, and the government will relax the supervision of people's travel year by year. But people will automatically reduce their use of long-distance travel and public transportation; that is, the aviation industry will never return to pre-epidemic levels, and small airlines around the world will not afford the loss and will gradually get out of the market. Only well-funded companies can survive tough times and transform by reducing costs and opening up new businesses. Soon, the aviation industry will usher in an oligopoly period.

6. CONCLUSION

According to the previous research results, the research reached the following conclusion: the intensity of government control and the development degree of the epidemic have an U-shaped relationship. The government should relax control about a month after the beginning of the epidemic, accelerate the resumption of work and production. This reflects the characteristics of the policy design [7], and appropriately liberalize the restrictions on people's travel, which are conducive to the early recovery of the aviation industry. To solve the reduction in travel caused by the epidemic, airlines should either adjust income sources according to their own business structure or request the government to provide financial and policy help. China's aviation industry is imperfect, and its income structure has great room for adjustment [8]. China Airlines Company, which increases auxiliary income, is a good choice. In the face of these developed airlines in their own country, the US government should adopt more policy funding and solve the life problems of laid-off employees. The

above measures work only for low-cost large airlines, and smaller civil aviation will be under pressure to face bankruptcy. The research significance of this paper is to provide acceptable measures for the aviation industry near bankruptcy to help in its recovery and reduce the likelihood of it being eliminated by the times.

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