

Analysis For the CEA's Future Development on Condition of COVID-19'S Influence

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Abstract. This article highlights the operating performance and economics of the civil aviation industry in the context of the pandemic. It mainly focuses on the industry's trends and corporate profitability by analyzing a target company. The aviation and transportation industry plays a great role in a country's economy. Notably, the COVID-19 outbreak in 2019 presents a major obstacle globally, with the situation not fully recovered until 2022. For such an industry with a high-cost structure, a strong and stable revenue stream is of vital importance. In this paper, we summarize various factors that affect airline business operating results. The weaknesses of this article also exists. The short-term impact of the pandemic has been dramatic, but the condition after decades is unpredictable.

Keywords: operating performance; COVID-19; civil aviation industry.

1. Introduction

Tony Jannus, an American pilot, piloted a seaplane with the mayor of St. Petersburg on January 1, 1914, covering 35 kilometers in 23 minutes. In the history of air travel, this was the first manned flight ever. [1] Since this event, many people have been taking airplanes as a way of transportation. The production and maintenance of aviation equipment, as well as aviation operation and service, are the key components of the aviation industry. Just over a century ago, the aviation industry was founded, and since then, it has brought forth incredible blessings and generated enormous advantages for the populace.

As one of the most rapidly growing industries in the 20th century, the commercial airline business is a byproduct of globalization and provides the service of fast transportation of customers and goods. It also has a significant influence on human civilization. The fifth-generation contemporary jet civil aircraft, represented by the Boeing 777, and the Airbus A320/A340 entered service one after the other in the 1990s. Mankind has finally achieved the long-held goal of flying across the skies after extensive research and practice. The evolution of aviation is a narrative of how human ingenuity was used to rule the skies. The structure of transportation has altered as a result of the development of jet aircraft, and airplanes are now a crucial mode of transportation that is strongly linked to the economy of the country and the daily lives of its citizens.

The growth of aviation perfectly shows the potent strength of research and technology, and it is also the crystallization of contemporary industry and science. Air travel has represented "the affluent and powerful" ever since the development of the airplane. The effect of "reshaping the entire aviation industry" was achieved with the later development of airlines. Since then, low-cost airlines have swept the globe, aviation has transformed from an aristocratic mode of transportation to a popular one, and the scale of air travel has rapidly increased, forming a network of routes around the world. The aviation sector now accounts for almost 20 million employment, ranking 19th globally, and favorably supports 34 million additional jobs. A crucial function for air travel is played on a worldwide scale. New markets are created and import/export operations are enhanced with ties to air transport. The global economy is driven by the aviation industry.

2. Data analysis

The global epidemic and rapid spread of COVID-19 that began in 2019 has impacted a substantial number of real sectors, causing catastrophic economic and financial losses as well as a major concern. The most affected sector has been the global transportation sector. CEA is the first Chinese airline to be listed in New York, Hong Kong, and Shanghai. CEA is a member of SkyTeam, and as such, its route network covers most regions and countries all over the world, carrying more than 130 million people annually.

CEA is among the top 10 list of global airlines and it has been aggressively maintaining its social obligations for a long time, performing numerous emergency disaster assistance and international travel activities. Even though the WHO does not advise any travel or trade restrictions, most nations across the world are starting to enact entrance restrictions as of January 30, 2019, when the World Health Organization declared the new corona virus epidemic a "public health emergency of worldwide concern." [2] International routes were reduced by half or more, and epidemic prevention and control frequently resulted in meltdowns.

Because of the epidemic, China routes have been reduced in frequency or even discontinued for several important cities. To allay worries about the escalating number of new corona virus infections, the Civil Aviation Administration of China (CAAC) drastically limited foreign flights in March 2020. Each Chinese airline is only permitted to schedule a single trip per week to a single country under China's so-called "Five-One" foreign flight policy, which stands for "one airline, one route, and one flight per week." Foreign flights to China were limited to once a week. [3] Travelers are afraid to travel because of the dire situation of the pandemic spreading worldwide, in addition to the restricted international policy and circumstances.

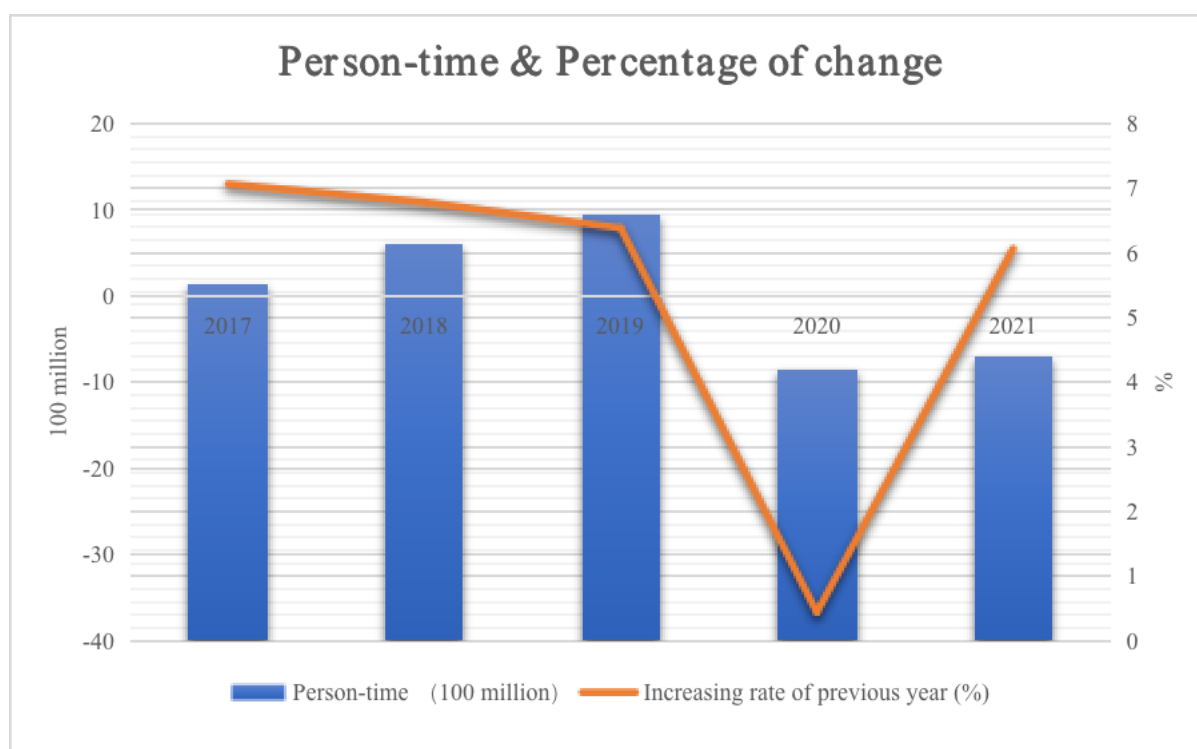


Fig. 1 2017-2021 The Number of Passengers for Civil Aviation Transportation and percentage of change

As shown in Figure 1, major airline companies' passenger traffic volume dramatically declined after 2020. The total number of passengers handled by the industry in 2020 was 418 million, a decline of 36.7% from the year before. In China alone, there were 408 million passengers carried on domestic routes, a decrease of 30.3% percent from the previous. Of these, 1 million passengers were transported

on routes to Hong Kong and Macau, a decrease of 91.3% from the year before. There were 10 million passengers transported on international routes, a decrease of 87.1% from the year before. According to the report, since January 2020, air passenger demand has dropped significantly and air transportation has almost come to a standstill. (Table 1.)

Shutdowns caused by COVID-19 brought a significant decrease in revenues and cash flows. Many industries were forced to impose salary reductions and layoffs. CEA started to rectify and reform the salaries of their employees in August 2022. Both the salaries and bonuses of the ground workers were significantly reduced. As bonuses are linked to the number of flights, there was a reduction in salaries caused by a decrease in the number of international flights. There comes a result that has led to a considerable drop in real earnings for flight crews. After the change, the bonus was even deducted from more than half.

Moreover, the layoff is another important policy. In 2020, more than 400,000 workers were laid off by international airlines. More than 35 airlines also faced financial trouble. [4] Even though civil aviation companies have made every effort to save money, the pandemic still harmed the operating results. Additionally, a lot of airlines have started “side hustles,” such as selling a sideline range of products. To recover companies’ losses caused by the decline of travel demand and the drastic reduction of flight business, CEA launched a product called “Wild Weekends” [5]. From the time of purchase until December 31, 2020, customers can fly CEA on any weekend, to any major Chinese city (aside from Hong Kong, Macao, and Taiwan). The package service with favorable terms of payment launched by CEA brought people's attention to the current situation of the civil aviation industries under the impact of the epidemic.

3. Literature References

In the “Pre-Epidemic Performance” section, we analyzed the operating results of CEA before the epidemic in five segments, such as debt securities listing, record high revenue, and continuous increase in profit, by using quarterly results and financial disclosures of the company, including its corresponding data, such as share price, revenue, profit, EPS and net assets

3.1 Price of company's shares BEFORE COVID (stock code 600115)

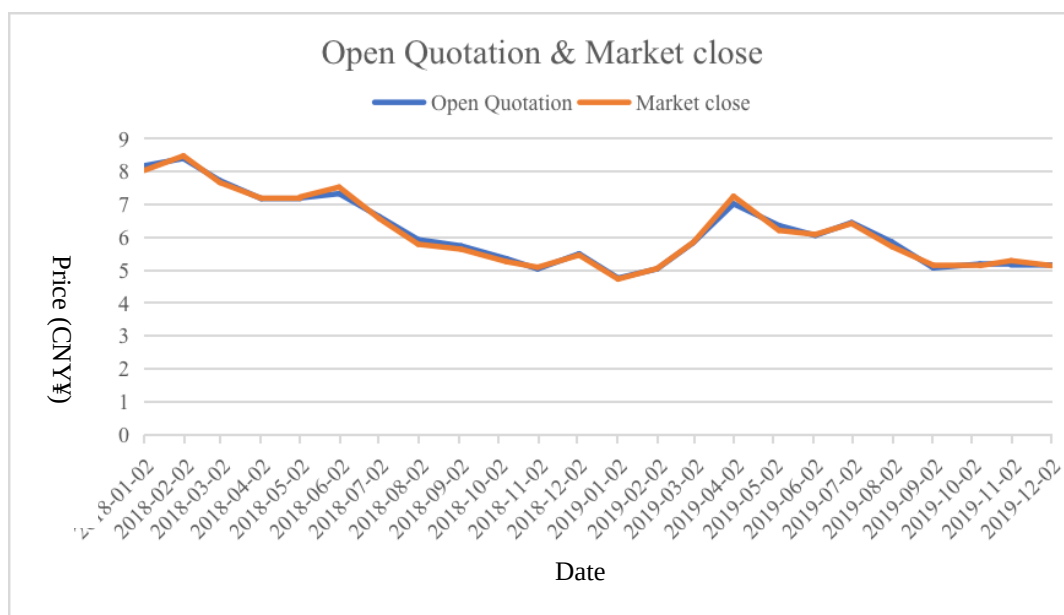


Fig. 2 2018-2019 Opening price & Closing price (BEFORE Covid-19)

As the pioneer of civil air transportation in China, CEA began 2018 with a stock offering price of ¥8.04 per share which clarified in Figure 2. A month later, it reached its highest opening price in two years of ¥8.4 per share. The following day, it reached an intraday high of ¥8.64 per share, up 1.56%, and closed the day at ¥8.48 per share. Over the following two quarters, the stock traded at a steadily decreasing and then gradually warmed up, hitting ¥7.53 per share, a decline of 6.34%.

However, this recovery did not last very long. The company's shares suddenly dropped off a cliff beginning in July. Up until November of 2018, this persisted. After that, despite a little uptick, the main trend was down, and by the end of 2018, when the stock closed at ¥4.73, it had fallen to a two-year low. The stock of CEA rapidly increased in value at the beginning of the year 2019, and over the next three months, it reached its peak 2019. The stock first opened at ¥7.02 per share and rose to an intraday high of ¥7.52 per share, an increase of 4.47%, before closing at ¥7.25 per share.

The share price of CEA fluctuated significantly throughout the ensuing three months, rising and falling. The fifth wave of Eastern's stock price slide started in July 2019 and ended two months later, in September. The stock entered a rare stable phase in September of that year, with swings staying within around ¥0.1, and it persisted through the start of the outbreak.

3.2 Operating Revenue

Table 1. 2017-2019 Operational Revenue Summary

Unit: 1 million (CNY¥)				
	2019	2018	increase percentage (%)	2017
Operation Revenue	120,860	114,930	5.16%	101,721

As shown in Table 1, CEA achieved operating revenue of CNY 114.930 billion in 2018, a record high of 13% year-on-year growth, and a net operating cash flow of CNY 22.338 billion, a 14.13% year-on-year increase, further enhancing its risk resistance. As an outcome, China's airline passenger transportation industry will benefit from the continued improvement in the global economic situation and strong income growth. The recovery in the global economy will help China's airline passenger transportation industry, which will lead to a significant increase in income. Throughout 2018, CEA actively pursued external collaboration while promoting its "internationalization" and "Internalization" initiatives. With well-known international airlines, the company expanded its complete commercial partnership and greatly improved operational revenue. In 2019, CEA carried 130.3 million passengers, up 7.5% from the previous year, and generated operating revenue of CNY 120.9 billion, up 5.2% from the prior year.

3.3 Profit

Table 2. 2018 & 2019 Profit Details

Unit: hundred million (CNY ¥)		
Project	2019	2018
Operating profit	34.64	29.58
(+) other income	0.876	0.977
(-) another cost	0.038	0.068
Total	43.02	38.67

CEA 2018 results released; the company's profit fell. The report showed operating profit reached CNY 295.8 million, a drop of 59.18 % compared to 2017. In 2018, two serious problems of oil exchange led to a sharp decline in CEA's net profit, because oil prices and exchange rates are the main risks in the airline's operation. In the first half year, the impact of rising oil prices on airlines'

net profits was more significant than the impact of exchange rate changes. These expenses could have a direct impact on net profit if they are not covered by fuel surcharges. Assuming that oil prices do not rise significantly in 2019, the company's profits will recover with stable revenue. Operating profit for 2019 in Table 2 as depicted in ¥34.64 hundred million, up 17.11% from ¥29.58 hundred million for the same period in 2018. The total operating profit reached CNY 4.3 billion, up 11.25% year on year. In the Pre-pandemic period, CEA sought improvement in stability and actively responded to changes to epidemic risk control policies. By seizing the chances, CEA has the opportunity to achieve an increase in profit.

3.4 EPS

In 2018 and 2019, the increase in main corporate profits will remain strong. CEA Business Express, which has an abundance of resources, will fully benefit from the super cycle boom and be the first to embark on a path of high-profit development. Keep the ¥0.48/¥0.82 per share (EPS) projection for 2018–19, with a 9%–73% annual increase. 2018's primary business net profit is anticipated to increase by over 70% year over year, excluding investment income from the sale of CEA Logistics and currency gain.

3.5 Total assets

Table 3. 2018-2019 Total assets

Unit: 1 billion (CNY¥)		
	2019	2018
Total assets	282.9	236.75

As of December 31 in 2018, the Company's total assets were demonstrated in Table 3 that it was CNY 236.75 billion, an increase of 4.09% from the end of 2017. Total current assets, which include cash equivalents, accounts receivable, prepaid accounts, other receivables, and inventories, were CNY 15.932 billion, a decrease of 12.91% from the end of 2017, while fixed assets, which include purchased and financed aircraft, were CNY 220 billion. Purchased and financed leased aircraft total of CNY 220.833 billion in fixed assets, an increase of 5.58% from the end of 2017. Purchased and financed leased aircraft total of CNY 220.833 billion in fixed assets, an increase of 5.58% from the end of 2017.

Fixed assets are undoubtedly important to the business since they may, while being few, have a long-term influence on how CEA operates and stay in its original physical form for a very long period. The Company's total assets were CNY 282,936 million as of December 31, 2019, a 19.50% rise from the end of 2018. This was mostly brought on by the sale of operating leases and purchase rights for a few of the company's new aircraft, which resulted in large financial gains.

Among them, the sum of all current assets reached CNY 19,743 million, up 23.92% from the end of 2018. With quick turnover and robust liquidity, current assets are closely linked with output and circulation in many forms. CEA 2019's massive stockpile of current assets undoubtedly increased the company's resiliency.

Non-current assets increased by 19.18% from the end of 2018 to CNY 263.193 billion. The aircraft (fixed assets), the company's primary method of labor production, are improving at a substantial speed, which is a crucial basis for CEA to be able to effectively survive and experience rapid expansion in 2019.

4. Post-pandemic performance

4.1 Price of company's shares AFTER COVID (stock code 600115)

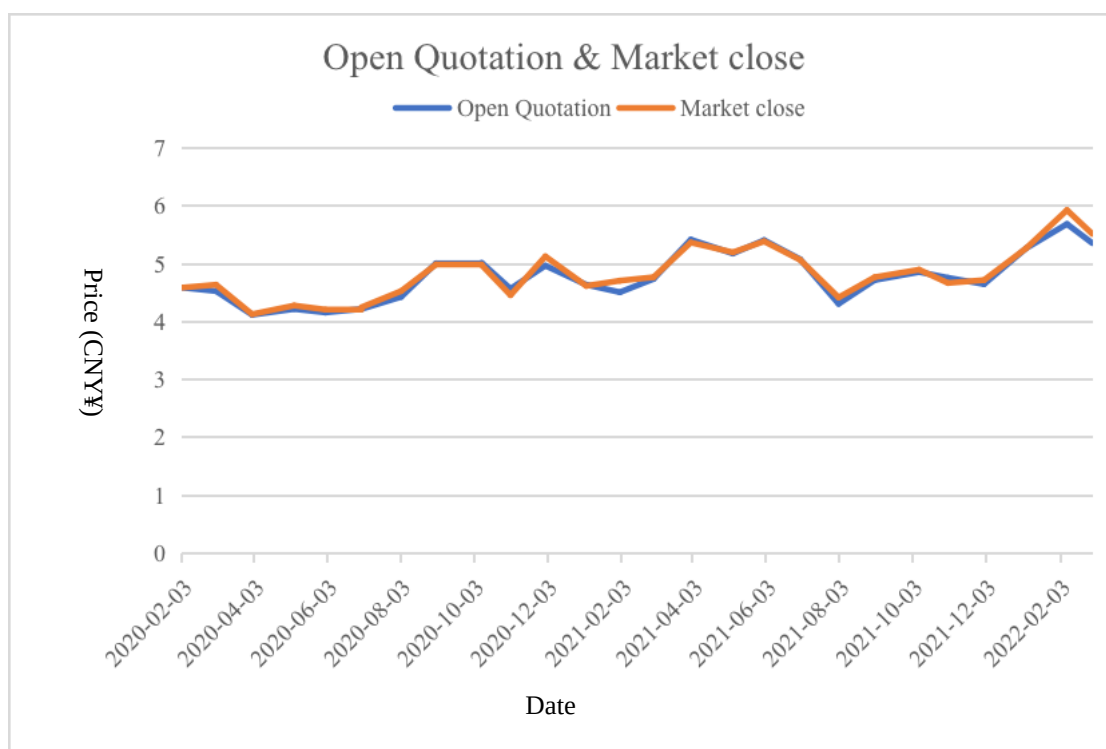


Fig. 3 2020-2022 First Quarter CEA Open Quotation & Market Close & Date

In the first quarter of 2020, there has been a negative tendency in the price of CEA's shares according to Figure 2. According to available information, CEA's share price increased by 90% from ¥4.58 per share on February 3, 2020, to ¥ 5.13 per share on March 30. Among them, the share price increased more noticeably from July to September, and from September to October, there was essentially no growth. The share price fell precipitously in 2021 between June and August, recovered between August and October, then saw minor ups and downs until peaking in December and continuing to decline. The first quarter of 2022 was up 5.03% as of March 1, 2022, closing. By aggressively expanding interaction and engagement with the capital market and all sorts of investors, attentively observing data from all areas of society, and actively responding to market concerns, CEA works hard to eliminate abnormal fluctuations in the price of the company's stock.

4.2 Operating revenue

Table 4. Operating revenue & Variable proportion of 2020–2021

Unit: 1 billion (CNY ¥)		
	Operating revenue	Percentage of change (%)
2019	120.86	-5.16
2020	58.64	-51.48
2021	67.13	14.48

Table 4 illustrates visually that CEA reported operating revenues of CNY 58.64 billion in 2020, a decrease of 51.48% from the year before. The pandemic's impact in 2020 is obvious, that the passenger demand dropped significantly. As a result, operating income and other income both significantly decreased. However, the company's cargo revenue significantly increased due to the use of unusual passenger flights to transport supplies for pandemic prevention. [6]

In 2021, facing the complex epidemic situation, CEA insisted on seeking progress stably. The Company will carry 79.10 million passengers and achieve an income of CNY 67.13 billion, an increase of 14.5% compared to 2020.

Table 5. Operating income & Variable proportion of 2022 first quarter

Unit: 1 billion (CNY ¥)		
	Operating revenue	Percentage of change (%)
2020 First Quarter	12.7	-5.45

In Table 5 certificate that 2022 CEA reported operating revenues of CNY 12.7 billion as of the first quarter, a reduction of 5.45% from the same time in 2021 and a little less than the level of the same period the year before. CEA must maintain stable production operations by actively preventing and controlling the epidemic.

4.3 Profit

Table 6. 2020&2019 profit details

Unit: 1 billion (CNY ¥)			
	2020	2019	Variable proportion (%)
Operating profit	-16.801	3.464	-585.02
(+) other income	0.37	0.88	-58.33
(-) other cost	0.045	0.038	18.42
Total	-16.481	34.302	-483.10

The Company's other income was 0.37 billion in 2020, a drop of 58.33% compared to the previous year, mostly because of the lower staff turnover brought on by the reduced flight capacity and the resulting lower income. Operating profit for 2020 will be CNY 16.801 billion, a drop of 585.02% from the previous year. The impact of the pandemic drastically reduced demand for passenger travel, and the company changed the number of flights as a response. This led to a dramatic decline in operating profit.

Table 7. 2021&2020 profit details

Unit: 1 billion (CNY ¥)			
	2021	2020	Variable proportion (%)
Operating profit	-17.788	-16.801	not available
(+) other income	0.38	0.37	-16.99
(-) another cost	0.028	0.045	-37.78
Total	-17.513	-16.481	not available

The other operating costs of CEA in 2021 were CNY 1.302 billion, a fall of 24.26% from the previous year, mostly as a result of the Covid-19's impact on the industry's and its subsidiaries' non-airline operations. Operating profit for the CEA in 2021 was CNY -17.788 billion, which shows clearly in Table 7, up from CNY -16.801 billion during the same time in the previous year. As the company was impacted by a number of variables, including the pandemic and the rise in global oil prices, operating costs rose and exceeded operating Profits.

Table 8. 2022 First Quarter Profit Details

Unit: 1 billion ¥	
	2022 first quarter
Operating profit	-8.307
(+) other income	0.058
(-) other costs	0.004
Total	-8.253
(-) income tax expense	0.016
Net profit	-8.269

The pictorial information in Table 8 enables for analysis the CEA profit during the first quarter of 2022 was CNY -8.037 billion, a 70% decrease from the first quarter of the previous year. Net profit decreased by 50% to -826.9 million yuan in comparison to the first quarter of the previous year. CEA stated both before and after the pandemic that the business planned to reinforce cost management in the first quarter of 2021, including the restraint of maintenance costs. However, CEA Flight MU5735 was involved in an aircraft accident on March 21 of the same year. The plane tragedy made matters worse for the CEA, which was already struggling to survive due to the pandemic.

4.4 EPS

As of 2022-08-07, a total of 10 institutions have predicted CEA's 2022 annual results within six months; they predicted EPS of CNY -0.65 in 2022, an increase of 10.62% from last year, and a net income of CNY-12.31 billion, a decrease of 0.81% from the previous year. The income per RPK has decreased as a result of the change in route structure. Domestic revenue per RPK was CNY 0.49, down -0.41% year over year, while overseas revenue per RPK was CNY 1.54, up 131.73% year over year, for a total of CNY 0.5, down 6.02% from the same time previous year. Regional revenue per RPK decreased 17.75% year over year to CNY 0.72. Under the strain of the pandemic, demand will quickly rebound, and peak season resilience will soon be seen. So we can see the following two points from the EPS of CEA after COVID-19.

In the near term, demand is recovering quickly despite the epidemic's strain, and peak season resilience is ready to show.

Over the long term: The need for aircraft will continue to expand steadily. The bustling area economy offers CEA, the biggest airline located in Shanghai, significant demand support for its growth.

4.5 Total assets

Table 9. 2019-2021 total assets

Unit: 1 billion (CNY ¥)		
Years	Total assets	Percentage of change (%)
2019	282.936	Not applicable
2020	282.408	-0.19
2021	286.548	1.47

Due to the effects of COVID-19, the Company's total assets as of December 31, 2020, were CNY 282.408 billion which can clearly and easily be observed from Table 9, down 0.19% from the year-ago conclusion. The outbreak caused a sharp decline in demand for passenger travel, which in turn negatively impacted the Company's flights, transportation turnover, and overall revenues. All employees actively contributed, yet the company's assets nevertheless decreased by 528 million. They

included total current assets of CNY 22.5 billion, up 13.95% from the end of the previous year, and non-current assets of CNY 259.910 billion, down 1.25 percent from the end of 2019. The firm will invest more in the purchase of aircraft assets in 2020 to increase its market competitiveness; nevertheless, given the size of the company's current and future big projects, there will continue to be some pressure on asset expenditure.

The demand for passenger transportation resumed growth on December 31, 2021, as travelers' willingness to fly increased. As of the end of 2020, the Company's total assets were CNY 286.55 billion, a growth of 1.47%. The Company raised its capacity and the number of flights in response to passenger demand, which resulted in a rise in landings and takeoffs. As passenger traffic increased to over 90% of pre-epidemic levels, total current assets reached CNY 27.9 billion, an increase of 24.06% from the end of 2020. Non-current assets totaled CNY 258.6 billion, down 0.49% from the end of the prior year.

5. Contrast discussion (Suggestions or analysis of reasons, discussion)

5.1 Price of Company Shares

In 2018 China Eastern Airlines' share price showed a significant growth trend and with the launch of the vaccine in October 2020, the share price started to rise as the travel rate of Eastern Airlines became higher. But unfortunately, with the mutation of the delta strain, the American dollar started to appreciate rapidly again and the appreciation of the dollar directly led to the plunge of CEA's share price. As well as in June 2021 due to the resurgence of the outbreak, CEA's profits decreased and the stock price started to plummet again. Based on the current view that even though stocks often experience small increases and large decreases, the undeniable point is that pandemics have become a major factor in the share price of the airline industry.

5.2 Operating Revenues

The company's fleet size and market share have consistently held the top spots in the industry thanks to its active opening of new routes and expansion of capacity investments. Additionally, the operation of its business has been reliable. CEA's business revenue for 2021 was CNY 67.1 billion, which was upgraded 14.48% from CNY 58.6 billion last year. This increase was primarily the result of a gradual recovery in transportation demand. Although the epidemic continued to have an onslaught on CEA, demand for travel and shipping slowly recovered, leading to a steady increase in revenue.

5.3 Profit

The Company's net profit attributable to the Company in 2020 is around CNY -9.8 to -12.5 billion due to the epidemic's destructive effects in the year 2019. However, CEA's operating result drastically improved in 2021 by continued improvements in China's disease prevention and control circumstances. Net profit in 2021 will be between CNY 11.0 billion and 13.5 billion.

Additionally, the impact of dramatically higher global oil prices as well as the CNY's devaluation against the US dollar in 2022 has raised the company's cost constraints and decreased profit income. The Company closely monitored changes in market demand in response to these negative effects, promptly adjusted capacity allocation, strengthened passenger and cargo linkages, implemented stricter cost control measures, guaranteed stable operating cash flow, and worked to lessen the epidemic's negative effects [7-9].

5.4 Costs

The sharp rise in oil costs would significantly impede the airline industry's ability to grow steadily and sustainably. As jet fuel accounts for around 40% of operating costs, the sharp rise in crude oil prices would significantly reduce airline profits and worsen their financial status, which will

eventually have an impact on how large their operations may be. Additionally, when the CNY exchange rate versus the USD is impacted by the slowing economic growth rate, the effect of capital outflow will worsen. The substantial foreign currency income and interest-bearing obligations of international routes may have a greater impact on CEA [10].

5.5 Total assets

Using the total assets in 2019 and 2021 for comparison reveals the following two points. Although the industry overall has been hit by COVID 19, and even CEA has a loss to shareholders of 12.21 billion CNY in 2021, which is a negative profit, the company's total assets have increased rather than decreased, probably due to the company's larger scale and better ability to adapt to the impact of the accident.

The debt ratio in 2021 is 5.72%, higher than in 2019 which is before the pandemic, possibly due to bank loans or borrowing from financial institutions to reduce the shrinkage of assets caused by the COVID 19, or due to the need to pay employee's salaries despite the negative profitability.

6. Conclusion

International air travel is now becoming increasingly significant to the global economy as the process of global integration continues to accelerate and countries become more interconnected. International aviation organizations also support all of mankind by fostering international cooperation and enabling genuinely quick global travel. In reality, the fundamental sectors of the country's economy—such as tourism, logistics, trade, and transportation—are strongly linked to civil aviation. The development of commerce is facilitated by the aviation sector, which also contributes to the prosperity of the world economy and generates considerable profits. The global aviation industry's net profit was CNY 29.3 billion by the year 2020. Flights have been grounded, freight has been left stranded, and people's mobility has been constrained since the COVID-19 epidemic started in 2019. Airlines have been heavily damaged; their revenues are almost zero.

Even while the pandemic has severely impacted airlines, it has also presented possibilities. The pandemic has negatively impacted the civil aviation sector's short-term profitability, but there is a great chance for the industry to rebound in the medium and long term. The ability to travel increased as the epidemic gradually recovered. The passion for travel will be stoked by the supposed depression of traveling, which will also result in a sharp rise in prospective travel demand and an improvement in the financial performance of the civil aviation sector.

CEA is one of China's top three airlines, therefore CEA's importance is very obvious. Future recovery will need strategic corporate planning, enhanced customer service, and decreased pricing and costs. In addition, due to China's aviation industry's later development than other European and American nations, the development of the CEA's airplanes relied largely on imports of whole planes or references to foreign engines, and the engines or planes' purchase was greatly influenced by international politics. As a result, CEA should engage in China's own aircraft plans to increase the desire for the C919 to go global. In addition, it can continue to support projects that promote afforestation, the production of renewable energy, the output of natural gas, and other initiatives to offset the carbon dioxide equivalent produced by flights. It will allow it to maintain "life-cycle carbon neutrality" from the extraction, transportation, refining, and combustion of crude oil as well as jet fuel.

This article examined CEA's pre-epidemic and post-epidemic data and performance indicators, which gives us insights into how aviation businesses were able to function. Its study findings are applicable and usable. The subject has a strict logical framework and is a current societal concern. However, the weaknesses mostly come from the incomplete chain of arguments and the lack of research depth. The short-term impact of the pandemic has been dramatic, but the condition after decades is unpredictable. Therefore, scholars should dig further into the development trend of enterprises after the epidemic to deduce the subsequent impact.

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