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Financial Resilience of Airlines During The Covid-19 Period

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ABSTRACT

One of the sectors most adversely affected by the negative economic impacts of the pandemic has been airline transportation, primarily due to international travel restrictions. During this period, airline companies, facing significant revenue losses, also experienced substantial declines in their stock prices. This study focuses on the stock market performance related to the measurement of financial resilience during the Covid-19 pandemic exhibited by the top 10 airline companies in terms of market capitalization. The study aims to create a forecast for investors in similar adverse events that may occur in the future. In this context, firstly, a resistance index was created to measure companies' resistance score against the pandemic by comparing the average stock prices before and during the pandemic period with the benchmark indices they are included in. Additionally, a recovery index was created to measure the recovery scores of companies after the pandemic by measuring the change in average stock prices between the pandemic period and the post-pandemic period. The results have shown that the stocks of low-cost carriers exhibited a significantly better resistance to the adversities of the pandemic. Additionally, companies that were able to provide high supply to meet the revived demand post-pandemic and create operational differences demonstrated better recovery.

Keywords: *Financial Resistance, Financial Recovery, Airlines*

Havayolu Şirketlerinin Covid-19 Sürecindeki Finansal Dayanıklılıkları

ÖZET

Pandemi sürecinin olumsuz ekonomik etkilerinin en yüksek görüldüğü sektörlerden biri uluslararası ulaşım kısıtlamalarıyla sebebiyle havayolu ulaştırmacılığı olmuştur. Söz konusu süreçte ciddi gelir kayıpları yaşayan havayolu şirketlerinin hisse senedi değerlerinde de önemli ölçüde değer kayıpları yaşanmıştır. Bu çalışma ile piyasa değeri bakımından en büyük 10 havayolu şirketinin pandemi sürecinde gösterdikleri finansal dayanıklılığın ölçümüne dair borsa performansları ele alınmıştır. Çalışma bu sayede gelecekte yaşanabilecek benzer olumsuz olaylarda, yatırımcılara yönelik bir öngörü oluşturma amacı taşımaktadır. Bu bağlamda ilk olarak şirketlerin pandemi sürecine karşı finansal direnç skorunu ölçmeye yönelik, pandemi dönemi öncesi ve sonrası ortalama hisse senedi fiyatlarını, kapsamında oldukları gösterge endeksleriyle kıyaslayan finansal direnç

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endeksi oluşturulmuştur. Ayrıca pandemi süreci sonrasında gösterdikleri finansal iyileşme skorlarını ölçmeye yönelik, pandemi dönemi ve pandemi sonrası dönem arasındaki ortalama hisse senedi fiyatlarındaki değişimi ölçen bir finansal iyileşme endeksi oluşturulmuştur. Sonuçlar düşük maliyet modeliyle çalışan şirketlerin hisse senetlerinin bariz bir şekilde pandemi sürecinin olumsuzluklarına karşı daha iyi bir finansal direnç gösterdiğini bulgulamıştır. Aynı zamanda pandemi sonrası dönemde tekrar canlanan talebi karşılamada yüksek arz sunabilen ve operasyonel farklılıklar yaratabilen şirketlerin daha iyi bir finansal iyileşme sergilediği görülmüştür.

Anahtar Kelimeler: *Finansal Direnç, Finansal İyileşme, Havayolu Şirketleri*

1. INTRODUCTION

The first case of Covid-19 was detected in the city of Wuhan on December 31, 2019. As the virus quickly spread to other provinces of China, the World Health Organization declared a global emergency on January 30, 2020. The rapid spread of the virus to other countries and an increase in cases (with the United States and Italy experiencing the highest increases in cases outside of China in the early stages) led the World Health Organization to declare Covid-19 a pandemic on March 11, 2020. While the health effects of Covid-19 continue, on the other hand, the global economy has come to the brink of the worst crisis since the Great Depression (Capelle-Blancard & Desroziers, 2020). During the Covid-19 period, measures such as lockdowns and travel bans taken by governments have had serious effects on the real economy. Many factories reduced production levels or halted production altogether. Offices were closed, and employees were sent home. The service sector was one of the first and hardest-hit sectors by Covid-19. Tourism came to a standstill, and significant problems began to emerge in supply chains (Xu et al., 2020; Ullah, 2023). All these developments have led to a combination of supply, demand, and uncertainty shocks in the real markets, negatively impacting companies in almost all sectors (Shen et al., 2020).

However, the effects of Covid-19 on financial markets began to be seen much more quickly than the effects it created in the real markets and the negative impact on companies' revenues. Because the fundamental dynamics of financial markets, especially stock markets, rely on confidence. Any disruptions in confidence may lead investors to redirect their savings to investments they perceive as safe havens. The uncertainties heightened by Covid-19 have caused a loss of confidence among investors and resulted in significant adverse effects on the stock markets (Liu et al., 2020). Additionally, the negative effects of Covid-19, including health concerns and travel restrictions, as well as lockdowns, have influenced the psychology of individuals, thereby impacting investment decisions. Investment decisions are greatly influenced by anxiety and stress, and individuals experiencing anxiety may adopt a pessimistic outlook on the future. This can lead to individuals being less inclined to take risks and adopting a cautious approach in their investments (Baker & Wurgler, 2007). During the Covid-19 period, one of the main factors increasing anxiety levels among investors and creating a negative impact on stock markets has been the increase in death and case numbers (Al-Awadhi et al., 2020; Khan et al., 2020; Ashraf, 2020). In addition, some studies focusing on the relationship between Google search volume and stock market performance have shown the negative impact of the

increase in people's bad mood and anxiety levels on the stock market. These studies have concluded that new information about Covid-19 strengthens the atmosphere of uncertainty and has a negative effect on the stock market (Lyócsa et al., 2020; Szczygielski et al., 2021; Smales, 2021).

One of the biggest impacts of the Covid-19 pandemic, apart from the health and food sectors (Alam et al., 2020), has undoubtedly been observed in the airline sector (Maneenop & Kotcharin, 2020). Especially as the scale and scope of travel restrictions increased, airlines experienced significant revenue losses. During this period, almost all airlines have been forced to ground their aircraft. With a significant decrease in revenue for companies during this time, fixed expenses have remained the same. This situation has placed airlines that are not financially strong in great difficulty. Furthermore, concerns about the near future of the airline sector have arisen since the early moments of the virus's spread and the onset of travel restrictions.The expectation of revenue loss for airlines led investors to rapidly exit the sector, causing the market values of companies to plummet. This study examines the resilience of selected airline companies against the negative shocks created by the pandemic on the airline industry. It aims to investigate whether the specific structures of companies make a difference in mitigating the impact of adversities during such adverse periods. The results are believed to provide foresight for both company executives and investors in similar future scenarios.

2. LITERATURE REVIEW

2.1. Airlines during the Covid-19

The airline sector is highly sensitive to various systemic risks that may arise periodically. Among the sectors most affected by unusual circumstances such as wars, terrorist incidents, natural disasters, financial crises, and pandemics, is undoubtedly the airline sector (Cam, 2008; Wang, 2013). In financial markets, investors make their investments based on their expectations. Expectations determine which sectors and companies investors will focus on and whether their risk appetite will increase or decrease. The factors that shape these expectations are events experienced in the past and present. Therefore, it is generally assumed that during such unusual adverse events, people will cancel or postpone their non-essential travels, except for those that are necessary. This expectation creates the anticipation of a temporary decrease in revenue for airline companies. The airline sector has a direct relationship with and has been deeply impacted by one of the historically significant terrorist attacks, which is 9/11. While the statistical likelihood of such a disaster befalling any passenger traveling by air is quite low, the 9/11 attacks had significant negative effects on airline stocks (Gillen & Lall, 2003; Alderighi & Cento, 2004; Carter & Simkins, 2004; Drakos, 2004; Blunk et al., 2006), which is entirely related to investor expectations. The situation is not solely limited to the 9/11 attacks; various airline disasters have had a negative impact on airline stock prices (Chance & Ferris, 1987; Borenstein & Zimmerman, 1988; Bosch et al., 1998; Kaplanski & Levy, 2010). Moreover, wartime conditions also constitute another factor negatively impacting the market values of airline

companies (Martins & Cró, 2023). Global financial crises, like those affecting all sectors, also have negative effects on the airline sector (Choudhry, 2005; Wang, 2013).

One of the systematic risks facing the airline industry is pandemics. In the past, pandemics like Ebola and SARS, although limited in comparison to the spread of Covid-19, still had negative impacts on airline companies' market values (Zeng et al. 2005; Loh, 2006; Ichev & Marinč, 2018). The Covid-19 pandemic has created a lasting impact on the airline industry for years to come. The magnitude of this impact is incomparable to other disasters. In the airline industry, in March 2020, revenue passenger kilometers (RPKs) fell by a massive 52.9% compared to the previous year (IATA, 2020a). Thus, global passenger volumes returned to levels last seen in 2006. In April 2020, the decline in RPKs reached 94.3% compared to the previous year (IATA, 2020b). In 2020, compared to 2019, there was a 50% decrease in the total seats offered by airlines, the number of world total passengers decreased by 2,703 million (approximately 60%), and airline companies experienced a revenue loss of approximately 372 billion USD. In 2021, the crisis in the airline sector continued, with a 40% decrease in total seats offered by airlines compared to 2019, world total passengers decreased by 2.201 billion (approximately 49%), and airlines experienced approximately 324 billion USD in revenue loss (ICAO, 2023). Covid-19 has created the biggest shock to the airline sector since World War II (IATA, 2020c). It took approximately 4 years for the airline sector to fully recover and return to the 2019 figures (IATA, 2024). During this period, airline companies' stock prices, along with passenger numbers and revenues, also experienced significant declines (Maneenop & Kotcharin, 2020; Martins & Cró, 2022).

2.2. The Components of Financial Resilience: Financial Resistance and Financial Recovery

There is no consensus in the literature regarding the components and measurement of the resilience factor, but studies on the subject have increased significantly in recent years. Generally, the index method is used to measurement of the resilience. The concept of resilience for a system can be considered as the ability to reduce the likelihood of any shock occurring, to mitigate its effects if it occurs, and to return to the pre-shock period as quickly as possible. In this regard, the created resilience indices focus on measuring the reduction in the likelihood of failure, mitigating the negative effects in case of failure and the duration to return to normal performance levels (Wang & Wei, 2021). One of the pioneering studies on resilience, Martin (2012), addresses resilience in four main dimensions: resistance, recovery, reorientation, and renewal. Subsequent studies (Di Caro, 2015; Lagravinese, 2015, Faggian et al., 2018; Olivia & Lazzeretti, 2018) based on and building upon this research, have also examined the concept of resilience, focusing on the dimensions of resistance (sensitivity) and recovery, and conducted measurements accordingly. When examining the literature, resilience measurements in an economic system are generally conducted at three basic levels (Rose & Kraussman, 2013): Microeconomic (individual entity or household), Mesoeconomic (individual industry or sector), and Macroeconomic (combination of all economic entities).

In this study, the concept of resilience is examined in the sub-dimensions of resistance and recovery. The measurement of resistance and recovery has been carried out using the index method, which is widely used in the literature. This is a mesoeconomic study, focusing on the absorption of failure resulting from adverse conditions in a specific sector and the ratio of returning to normal performance levels within a certain period.

3. METHODOLOGY

In this section of the study, the data and research design used in the research are explained.

3.1. Data

In the study, the top 10 airline companies with the highest market capitalization (as of the research conducted on March 15, 2024) were examined. Benchmark indices to which the companies belong were used to calculate resistance scores. The airline companies included in the study, their current market prices, and the benchmark indices used for comparison are summarized in Table 1.

Table 1. Data in Research

Airlines	Market Cap	Country	Benchmark Index
Ryanair	$32,18 B	Ireland	ISEQ
Delta Air Lines	$27,76 B	USA	NYSE Composite
Southwest Airlines	$16,78 B	USA	NYSE Composite
InterGlobe Aviation	$14,92 B	India	NIFTY100
Air China	$14,89 B	China	Shanghai SE Composite
Singapore Airlines	$14,19 B	Singapore	FTSE Straits Times
United Airlines	$14,17 B	USA	NASDAQ Composite
China Southern Airlines	$12,63 B	China	Shanghai SE Composite
Turkish Airlines	$11,68 B	Turkey	BIST100
China Eastern Airlines	$10,21 B	China	Shanghai SE Composite

The event date considered for the research is March 11, 2020 when the World Health Organization declared Covid-19 as a pandemic. Accordingly, the pre-pandemic period covers the period from March 11, 2018 to March 10, 2020 and the post-pandemic period covers the period from March 11, 2020 to March 11, 2022. For the recovery index, the period from March 11, 2023 to March 11, 2024 is used, marking the completion of global vaccination and significant improvement in pandemic conditions. The companies' stock prices and benchmark index prices have been considered in terms of U.S. dollars. Daily closing prices have been used, and arithmetic averages have been utilized for the period prices. The dataset is obtained from Refinitiv Eikon.

3.2. Research Design

In this study, the resistance and recovery scores of airline companies' stock prices during the Covid-19 period are measured using the resistance index and recovery index borrowed

from the study of Olivia & Lazzeretti (2018). In this regard, Formula 1 and Formula 2 have been formulated. Formula 1 is used to measure the financial resistance of airline company stocks during the pandemic period compared to benchmark indices, while Formula 2 is used to measure the financial recovery exhibited by airline company stocks in the post-pandemic period based on their performance.

$$\beta_{res}=(P_{i,t}/P_{i,t-1})/(P_{w,t}/P_{w,t-1}) \quad (1)$$

In formula;

β_{res} as the score of the financial resistance,

$P_{i,t}$ as stock price of single airline during the period of the pandemic,

$P_{i,t-1}$ as stock price of single airline during the period before pandemic,

$P_{w,t}$ as price of benchmark index during the period of the pandemic,

$P_{w,t-1}$ as price of benchmark index during the period before pandemic.

$$\beta_{rec}=(\Delta P_i/P_{i,t}) \quad (2)$$

In formula;

β_{rec} as the score of the financial recovery,

ΔP_i represents the change in the price of the airline companies' stock from the pandemic period to the post-pandemic period.

For B_{res}, the threshold value is 1. Companies with a B_{res} score higher than 1 can be said to have performed better in terms of resistance compared to the benchmark index. A score lower than 1 indicates that the company performed worse than the benchmark index. For B_{rec}, there is no specific threshold value; however, a higher B_{rec} score indicates a more positive recovery performance.

4. RESEARCH FINDINGS

The resilience performances of airline companies during the pandemic period have been measured using the resistance index and recovery index. The results are summarized in Table 2.

Table 2. Resilience Performances of Airlines

Airlines	Stock Price Fluctuation	Benchmark Index Fluctuation	Resistance Score	Recovery Score
Ryanair	1,16176	1,17089	0,99220	0,07854
Delta Air Lines	0,67968	1,14816	0,59197	0,03925
Southwest Airlines	0,84208	1,14816	0,73342	-0,33191
InterGlobe Aviation	1,13798	1,18008	0,96432	0,45728

Air China	0,90147	1,20288	0,74943	0,00397
Singapore Airlines	0,67491	0,90431	0,74632	0,44451
United Airlines	0,51876	1,61845	0,32052	0,04574
China Southern Airlines	0,82388	1,20288	0,68492	-0,02204
Turkish Airlines	0,59038	0,87090	0,67790	4,03427
China Eastern Airlines	0,85846	1,20288	0,71367	-0,15172

When Table 2 is examined, it is observed that Ryanair demonstrates the best performance in terms of resistance score. The second place is closely followed by InterGlobe Aviation. United Airlines Holdings has the worst resistance score. When resistance scores are examined, it can be seen that all company stocks have values below 1. In other words, all the airline companies examined have shown weaker resistance compared to benchmark indices during the pandemic period. It is observed that there are two companies, Ryanair and InterGlobe Aviation, which have a better average during the pandemic period compared to their averages before the pandemic. The average prices of all other companies have been lower during the pandemic period compared to the pre-pandemic period. The company with the most significant decrease in average price is again United Airlines Holdings. When benchmark indices are examined, it is seen that all indices except FTSE Straits Times and BIST100 have increased their average prices during the pandemic period.

When the companies' recovery scores are examined, Turkish Airlines stands out with a striking performance. It is observed that Turkish Airlines increased its average price approximately 5 times compared to the pandemic period in the post-pandemic period. The next best recovery performances were demonstrated by InterGlobe Aviation and Singapore Airlines, respectively. Southwest Airlines, China Eastern Airlines, and China Southern Airlines, on the other hand, have obtained negative recovery scores. This indicates that their average prices in the post-pandemic period have decreased compared to the pandemic period.

When both resistance and recovery performances are considered together, InterGlobe Aviation stands out (as the second-best company in both scores). The company has exhibited resistance close to the benchmark index during the pandemic period, while also increasing its average price approximately 1,5 times in the post-pandemic period.

5. CONCLUSION AND RECOMMENDATIONS

The Covid-19 pandemic has had adverse effects on almost all sectors in global markets (with exceptions like the food and health sectors). Due to pandemic conditions and restrictions imposed by countries, many sectors have experienced a contraction in supply and demand, negatively impacting the economic growth of countries. One of the sectors most affected by the pandemic is the airline industry. Airlines have faced a challenging

period due to both people's health concerns leading to reduced travel and travel restrictions imposed by countries. Airlines are obliged to bear fixed expenses such as personnel costs, financial leasing payments, and certain maintenance expenses when they are not operating flights. During this period, many airlines have attempted to reduce costs by implementing measures such as significant layoffs. The adverse situation in the sector has also significantly affected the stock performance of airlines. While past events such as terrorist attacks, political crises, and similar outbreaks have traditionally had negative effects on the airline industry, these effects have generally been regional and temporary. However, the global impact and duration of the Covid-19 pandemic have made it one of the biggest crises the airline industry has ever faced.

This study aimed to measure the resilience of selected airline companies' stock performances during the pandemic. Thus, it sought to address not only the systematic risks posed by Covid-19 but also the non-systematic risks specific to airline companies. Upon examining the study results, it was found that particularly low-cost carrier companies exhibited significantly more successful resistance compared to others. Additionally, it was observed that companies with higher liquidity and lower debt structure had higher resistance scores. Furthermore, companies with higher resistance scores were found to have fewer fleet size and flight destinations.

Turkish Airlines has shown a significant increase in value compared to other companies (moving up 16 ranks to 9th place in market cap rankings). Among the main reasons for this are believed to be Turkish Airlines' ability to triple its operating margin compared to the pre-pandemic period, while other airlines have managed to bring their operating margins back to pre-pandemic levels. The main factors enabling this success include increasing cargo operations and surpassing European and global averages in the number of available seats. During the pandemic, while passenger traffic declined, air cargo transportation gained significant momentum. Turkish Cargo, a subsidiary of Turkish Airlines, played an active role, particularly in pharmaceutical shipments, becoming one of the largest air cargo brands worldwide and significantly expanding the company's revenue base. Another advantage for Turkish Airlines emerged from exchange rate fluctuations resulting from local economic policies in the post-pandemic period. With a substantial portion of its revenue denominated in foreign currencies, Turkish Airlines significantly increased its local currency revenues due to the weakening of the real effective exchange rate. This led to record profitability figures in 2022 and 2023, and the resulting strong financial performance intensified investor interest in the stock.

Examining all extraordinary processes and clearly determining their effects, from global-scale financial crises affecting all markets to events that have an impact on specific sectors or industries, can prevent investors from exhibiting panic movements in these extraordinary situations. This will facilitate the restoration of the environment of confidence in the markets, which is one of the fundamental dynamics of a healthy economy. The study focuses on the airline sector, which was most affected during the pandemic. The resilience capabilities of airline companies' stock prices against the adverse economic effects of the

pandemic have been examined. Thus, a predictive result has been provided for savers regarding similar situations in the future. As frequently mentioned in financial literature, each crisis actually presents an opportunity for potential investors. In this context, especially for investors who embrace value investing, such exraordinary situations provide an opportunity to direct their savings towards effective investments. The recovery criterion of the study provides a predictive result regarding which companies will emerge from the negative effects of the crisis and effectively return to average in similar adverse situations that may occur in the future. Thus, investors taking long positions in such stocks may have the chance to achieve significant returns. The resistance criterion aims to provide insight into investors' actions to preserve the value of their investments, particularly in the short term.

Furthermore, minimizing these uncertainties as much as possible for investors will contribute to maintaining or rebuilding confidence in the markets. This situation is of great importance for preserving the efficient structure of the markets. In this way, the disruption of the capital flow from savers to companies can be prevented, and companies can avoid potential financing problems during such crisis periods. At the core of this, which can provide a win-win situation for both investors and companies, lies the examination of past events and the minimization of uncertainties about the future as much as possible, as previously mentioned.

Statement of Research and Publication Ethics

In all processes of the article, the principles of research and publication ethics of the Manisa Celal Bayar Üniversitesi Journal of Social Sciences were followed.

Contribution Rates of Authors to the Article

The authors contributed equally to the study.

Declaration of Interest

The author has no conflict of interest with any person or organization.

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