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CONSEQUENCES FOR THE AVIATION MARKET IN RUSSIA'S AGGRESSION AGAINST UKRAINE

Abstract

The Russian invasion of Ukraine has led to the closure of airspace in the conflict area. This has resulted in the closure of some routes and also cut off Russia's national carrier. European Union sanctions also affect the supply of aircraft parts. The aviation industry has faced two years of significant challenges due to the Covid 19 pandemic and now the armed conflict. The purpose of this article is to examine how the civil aviation sector is doing in the war crisis. The research method used in this study focused on a conceptual and comparative approach. The results of the research analysis mapped the current effects of the war on the international aviation sector, such as the change in passenger traffic, cargo traffic, jet fuel prices and airfares, which directly affects the development of the global economy. According to the forecast of IATA – the International Air Transport Association – the current conflict will not allow aviation to quickly return to the state of 2019.

Keywords: *war, conflict, Russia, Ukraine, aviation, crisis, consequences, business, companies, embargo*

Methodology: The paper was prepared with the use the critical literature review method mainly in the field of safety aviation and global problem with consequences for the aviation market in Russia's aggression against Ukraine. The article uses empirical and theoretical methods on the basis of available source materials.

Introduction

Following the Russian attack on Ukraine in February 2022, the airspace of Ukraine, Russia, Belarus and Moldova was closed and all passenger flights scheduled to Ukraine were grounded. The following months brought new sanctions and restrictions on air traffic between the West and Russia. This had a huge impact on the aviation sector, especially in Central and Eastern Europe, while on a global scale the problem did not have any significant impact (Dube K. & Nhamo G. & Chikodzi D. 2021). The affected mainly were airlines operating flights in the airspace over Siberia, which was closed. The Russian, Belarusian, Ukrainian and Moldovan markets together accounted for only 2.3% of all air traffic in 2021, and approximately 7% of global air traffic took place over Siberia. Indirectly, the most serious effect of the war was the increase in aviation fuel prices, which has a significant impact on the level of airline costs (IATA). The war in Ukraine is one of the factors limiting the activities of European carriers, especially the impact of the conflict on fuel prices. Nearly 40 countries, including EU countries, the UK and the US, have closed their airspace to Russian airlines. Russia, in turn, has banned airlines from most of these countries from entering or overflying Russia. Several airlines from countries not directly affected by sanctions have also temporarily restricted flights to/from Russia, such as Japan and South Korea (Dreger Ch. & Kholodili K.A. & Ulbricht D., Fidrmuc J.,2016). With Russian airspace closed, flights were diverted or canceled. The most affected markets are Europe-Asia and Asia-North America. This includes flights between the United States and Northeast Asia, as well as between Northern Europe and most of Asia (Global Outlook, 2022). The inability to offer routes in war-affected markets, as well as long-haul flights operating over Siberia, had to change (International Monetary Fund, 2022).

The main research problem concerns the impact of the political crisis on the aviation market. The general situation and mood in Europe have caused difficulties in implementing air traffic services at some communication hubs (Aviation Market, 2022).

Aviation problems during the conflict in the East

The European Aviation Development Strategy indicates that *Aviation is a strong engine for economic growth, employment, trade and mobility in the European Union (…)* The direct benefits of air transport are related to GDP growth and job creation. On a macroeconomic scale, the air transport market is among the largest sectors of the global economy.

Airports and air carriers should be highlighted as key elements of this powerful market. In recent decades, the sector has been greatly liberalized in Europe and the United States, but many markets are still closed. Aviation is not disconnected from the world in which it operates, its shape is a consequence of political decisions made by various governments.

Globalization of the world resulting primarily from the development of transportation and, consequently, the world economy, means that the movement of people and goods has become increasingly easier and, more importantly, faster. Phenomenon, this has always been perceived as a positive aspect of the development of transportation, and technological development has been directed, among other things, to the continuous increase in the parameters of travel, with additional consideration of travel comfort (Cohen, Ewing, 2022).

The unsettled situation has significantly affected the oil market, which is ultimately reflected in fuel increases. For airlines, fuel is one of the high operating costs which translates into airline profitability. Introduced restrictions min: closed airspace extends flight time, which affects higher fuel consumption and more working hours of flight crews and consequently higher ticket prices (Kopijka W. & Perepełycia G. & Politeja 2015).

Another problem is the supply of raw materials and aircraft parts. An example is titanium, a metal used in aircraft manufacturing. Ukraine and Russia are among the major producers of titanium, and the Russian company VSMPO-Avista has been a supplier of titanium to Boeing and Airbus since 1991(Wasyłenko W.,2017). Boeing has invested heavily in Russia and independent Ukraine, opening offices for engineers and customer service personnel in both countries. The two leading aircraft manufacturers, in line with the growing conflict situation, terminated cooperation with the Russian titanium supplier despite the fact that titanium imports from Russia are not covered by sanctions imposed on Moscow after its aggression against Ukraine (Mardones C. 2023).

The European Union's policy has strongly condemned the war since its inception, resulting in the emergence of a whole series of trade restrictions and embargoes, meaning that the supply of Russian and Belarusian products and raw materials within the Community is restricted – at least formally. Such a situation creates tensions related to their supply and the increase in their prices (Roubini, Nouriel 2022). Here, psychological and speculative factors appear in turn, stemming from fears about what the future holds for citizens? Public sentiment is volatile, directly influenced by the duration of the war and the degree of support for Ukrainians (Hoffmann & Neuenkirch,2017). The war has kept many tourists from traveling. According to the World Tourism

Organization (UNWTO), European destinations are now affected, as many tourists will stay away from the war-ravaged continent.

On the other hand, the restrictions imposed on the Russian side also significantly weakened the market for airplane tourism (Mardones, 2022). Russian tourists provided about $14 billion in revenue worldwide and accounted for 3 percent of tourism revenue in 2020 Russians were eager to visit countries such as Cuba, Indonesia, Thailand, Turkey, Maldives, Seychelles, Sri Lanka, Cyprus, Germany and Greece(BBC, 2022).

In 2021, international traffic between Russia and the rest of the world accounted for 5.2% of global international traffic, but only 1.3% of global total traffic. International air traffic to and from Russia accounted for 5.7% of total European traffic in 2021(fig. 1).

Figure 1. *Traffic shares for selected markets impacted by the conflict.*

% share of passenger numbers in 2021	Total European traffic (excl. Russia domestic)	Global traffic
Ukraine	3.3%	0.8%
Belarus	0.3%	0.1%
Moldova	0.4%	0.1%
Russia international	5.7%	1.3%

Source: IATA Economics using DDS, 2022.

Terrorism as a global and local threat to civil aviation security

In the situation of the attack by Russia on Ukraine, it is important to mention the terrorist activities that are a direct threat to air navigation. Not only aimed at the carriers themselves but more at critical infrastructure, which includes airports. Continued threats against the state most supportive of Ukraine cannot be ignored (Nataliia & Simakhova, 2018). One must always be one step ahead of hostile actions. Unfortunately, in the current escalation of the conflict, threats aimed at Poland must be openly and seriously addressed. The Prime Minister has introduced the third degree of CHARLIE-CRP out of the four alert degrees specified in the Law on Anti-Terrorist Activities (gov.pl) . This degree is introduced in the event of an event confirming the likely target of a terrorist attack in cyberspace, or the receipt of credible information about a planned event. Faced with such a situation, airport managers in consultation with safety and security services should take measures that require the involvement of a variety of technical means and the work of high-level specialists to ensure security . The special nature and importance of airports mean that their security issues are reflected in many legal regulations. However, maintaining a high level of security at airports is possible with the proper functioning of the quality assessment system and the efficient operation of the security system based on continuous monitoring, staff cooperation and optimized and effective management based on the guidelines of the National Civil Aviation Security Program, the European Plan for Aviation Security (EPAS, 2022) and the Global Aviation Security Plan (GASP,2022).

The new National Security Strategy of the Republic of Poland was developed by the government and approved by the President of Poland on May 12, 2020. The provisions of the Polish document coincide with the strategies of the North Atlantic Treaty Organization (NATO) and the European Union (EU) (Nowakowski, 2014). The regional dimension of the strategy refers to the security of Europe determined by four factors: NATO, the EU, the strategic presence of the US on the European continent and relations with Russia (Kacperska, 2017). In recent years, a wide spectrum of forms of armed conflict can be observed, varying in scale, intensity, complexity and duration, among other things, and blurring the boundaries between war and peace (Rajchel&Grenda&Nowak,2014).

Jet fuel prices and their impact on air traffic demand

In 2021, the aviation fuel bill increased by nearly 30% as a result of the easing of travel restrictions and the initial recovery of global passenger traffic demand(fig.2).

Figure 2. *Aviation low.*

Table 5: Fuel

Worldwide airline industry	2019	2020	2021e	2022f
Fuel spend, $bn	190	80	103	192
% change over year	6.8%	-58.0%	29.2%	86.2%
% opex	23.9%	16.2%	18.7%	24.1%
Fuel use, billion litres	359	196	229	321
% change over year	1.0%	-45.3%	16.5%	40.4%
Fuel efficiency, fuel/100 ATK	22.0	21.7	21.7	21.5
% change over year	-2.0%	-1.7%	0.2%	-1.4%
CO_2, million tonnes	905	495	577	809
% change over year	1.0%	-45.3%	16.5%	40.4%
Fuel price, $/barrel	79.7	46.6	77.8	125.5
% change over year	-7.4%	-41.5%	67.0%	61.3%
% spread over oil price	22.6%	11.6%	10.1%	24.0%

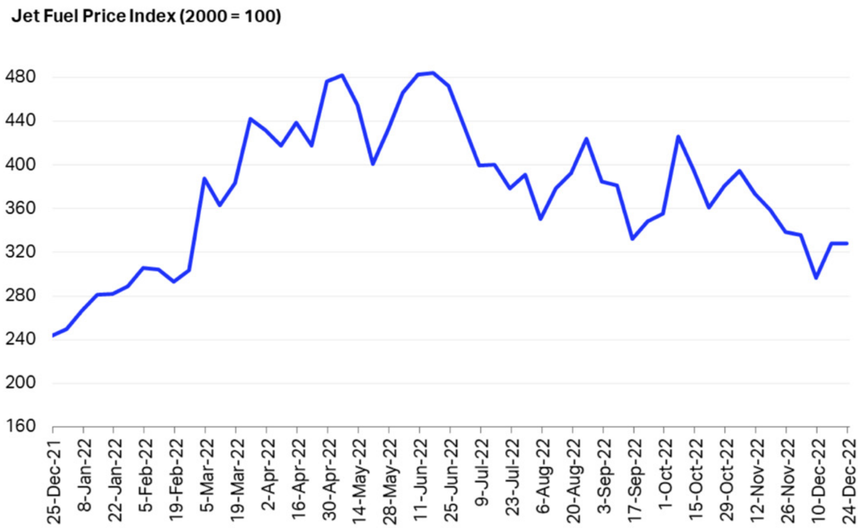
Source : IATA Economics

Source: IATA Economics, 2022 r.

By default, fuel accounts for about 20-25% of operating costs for airlines. This year its share of total costs is likely to be much higher than in 2021, due to the conflict between Russia and Ukraine, which has pushed up global oil prices (Ramji-Nogales, 2022). A peculiar feature of this year's fuel market is the wide spread between oil and jet fuel prices. This spread, remains well above historical norms, mainly due to refinery production constraints. According to IATA data, jet fuel in the markets has been rising much faster than Brent crude, where the latest spread was nearly $67 per barrel, reaching the 2008 economic crisis(Dominik Héjj, 2022).

The jet fuel price index shown in Figure 3 provides the latest price data from leading energy information provider Platts. The index and price data show the global average price paid at a refinery for jet fuel on the date shown and are published by S&P Global Platts (IATA, 2022).

Figure 3. *Aviation fuel price index.*



Source: S&P Global

Passenger and cargo air transport carried out in 2022.

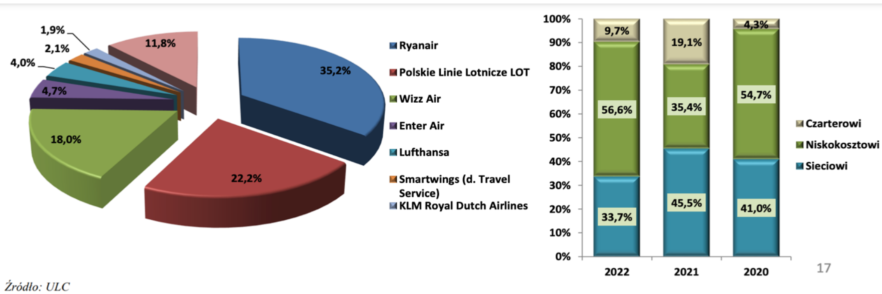
International ticket sales in global markets are unlikely to have felt much change. Maybe at the beginning of the conflict and there was a significant withdrawal of passengers and also changes in the schedule of airlines due to restrictions on the use of airspace in the area of the Ukraine-Russia conflict, thus slot allocations, or slots, at key airports around the world. However, bookings made in mid-March 2022 have already surpassed pre-conflict levels, amounting to about 57% of the value for 2019. Even on routes that face longer flight times and higher costs after the closure of Russian airspace, increased ticket bookings can be seen. Bookings for travel between Asia and Europe fell only briefly in early March. Maximum flexibility is needed to minimize disruption and allow airlines to execute as much of the planned schedule as possible. IATA is working closely with the Worldwide Airport (Slot) Coordinator Group to ensure such flexibility and to communicate schedule updates to airline stakeholders and passengers as quickly as possible (IATA, 2022).

The onset of the Ukraine-Russia conflict was felt first by airlines not only Ukrainian, but such as Wizz Air, Turkish Airlines, Ryanair and LOT, as it was these airlines that operated more international flights from Poland to Ukraine in 2019. Wizz Air even opened a base in Kiev and Lviv, even before the conflict, where unfortunately four planes from the carrier's fleet remained. PLL LOT also had its route network significantly tied up with routes to Ukraine, as well as a shortcut through Siberia, which was strategically very important for profitable flight service between Europe and Northeast Asia.

Unfortunately, as a result of the Ukrainian-Russian conflict, any changes in connections significantly lengthened routes, which ultimately resulted in a change in the national carrier's transportation and economic policy and thus the cutting of some long-haul routes (Airlines, 2022).

Low-cost airlines, whose business model is very flexible and quickly adapts to a given situation, did well. In the first half of 2022 relative to 2021, network carriers recorded an increase of 219.5% in the number of passengers carried, low-cost carriers increased by 588.5%, and charter carriers recorded an increase of 118.4%.

Figure 4. *Market share by transport volumes & business model.*



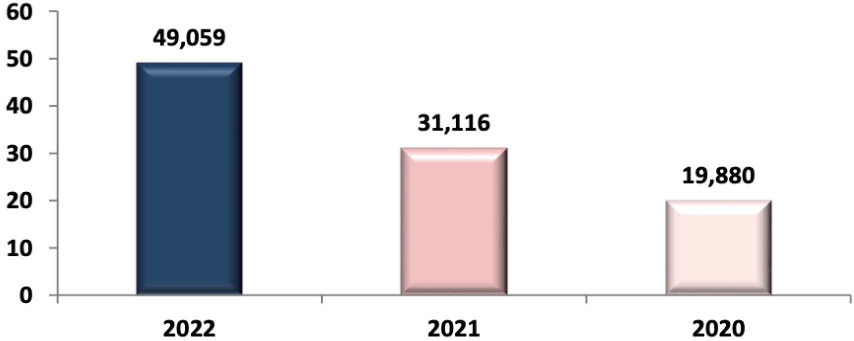
Source: Departament Rynku Transportu Lotniczego Warszawa, ULC, grudzień 2022 r.

Accordingly(fig 4)the market share of low-cost carriers increased (by 21.2 p.p.), while the share of network carriers (by 11.7 p.p.) and charter carriers decreased (by 9.4 p.p.). Ryanair had the largest market share, at 35.2%. The second carrier in terms of market share was PLL LOT, and the third was Wizz Air.

The largest increases in the entire six months relative to the first half of 2021 were recorded by the carriers Ryanair (+5.1 million passengers), Wizz Air (+2.5 million passengers) and PLL LOT (+2.5 million passengers) (DRTL,2022).

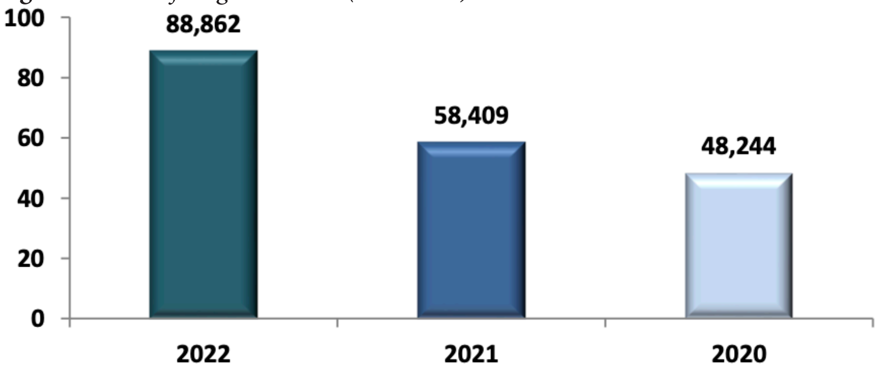
According to analysis by the Civil Aviation Authority, nearly 88,900 tons of cargo *on board* were transported in the first half of 2022, an increase of 52.1% compared to the same period in 2021 and 55.2% over the first half of 2019. In the second quarter, the increase was 57.7% over the second quarter of 2021 and 63.9% over the second quarter of 2019, and 49.1 thousand tons of cargo were transported during the period.

Figure 5 *Value of cargo on board (in th. tonnes) – Q2.*



Source: Departament Rynku Transportu Lotniczego Warszawa, ULC, grudzień 2022 r.

Figure 6 *Value of cargo on board (in th. tons) – cumulative.*



Source: Departament Rynku Transportu Lotniczego Warszawa, ULC, grudzień 2022 r.

PLL LOT carried the most cargo in the first half of 2022, as well as in the second quarter, with 23.3 thousand tons in the half-year and 12.4 thousand tons in the quarter. This was followed by DHL and UPS in the half-year, and DHL and Kalitta Air in the quarter. PLL LOT (+4.4 thousand tons) boasted the largest volume increase relative to the first half of 2021, followed by Kalitta Air (+4.2 thousand tons) and Bluebird Nordic (+2.9 thousand tons). In the second quarter, Kalitta Air (+3.9 thousand tons), Bluebird Nordic (+1.6 thousand tons) and PLL LOT (+1.3 thousand tons) recorded the largest quantitative increase over the same period in 2021.

Conclusion

Russia's attack on Ukraine led to an escalation of geopolitical tensions and a series of unprecedented sanctions imposed on Russia and Belarus by the EU, the US and other countries. Unfortunately, the economic and social situation after the Covid 19 pandemic did not have time to recover, as the resulting Russian-Ukrainian conflict affected the entire world economy, in particular Europe.

A number of factors in the international aviation sectors, such as passenger and cargo traffic, fuel prices and airline tickets, also influence the development of the wider economy. A very important area regardless of the circumstances is aviation safety, where IATA has a long-standing policy of opposing sanctions that could worsen aviation safety. For example, a ban on the export of aircraft spare parts could impact the aviation safety of all aircraft operating in or flying over or near Russian airspace. This includes aircraft that may have to divert to Russian airports in an emergency situation (Dreger Ch.&Kholodili K.A.&Ulbricht D., Fidrmuc J., 2018).

The aim of the article was achieved in the research process, which analyzed aviation problems that emerged as a result of the Russian-Ukrainian conflict.

Representatives of countries associated in aviation organizations, as well as people responsible for security, are working on new solutions to the deepening armed conflict between Russia and Ukraine. The main efforts are aimed at expediting a peace agreement as well as full compliance with international law on the safety and security of international civil aviation security and safety. Longer routes caused by the need to avoid Russian airspace and the conflict zone have become problematic for aviation, which can lead to crew fatigue, both for pilots and cabin crew. Fatigue risks associated with extended duty hours should be identified and addressed in the management systems of aviation organizations. It is important for aviation to restore safe and profitable air traffic as soon as possible and to strengthen the aviation industry so that it can survive times of crisis. Unfortunately, despite precise provisions and analyses in countries' security strategies, all the time air traffic may encounter unpredictable situations due to the conflict in the East.

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