

IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF AIR TRANSPORT MANAGEMENT

MASTER'S THESIS

**IMPACT OF SPECIAL MILITARY OPERATION IN
UKRAINE AND WESTERN SANCTIONS ON
DEVELOPMENT OF RUSSIAN AVIATION MARKET**

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ISTANBUL, 2025

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DEVELOPMENT OF RUSSIAN AVIATION MARKET**

**by
ANDREY NIKOLAEV**

**A thesis submitted to the School of Graduate Studies in partial
fulfillment of the requirements for the Master of Science in Air
Transport Management**

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ÖZ

UKRAYNA'DAKİ ÖZEL ASKERİ OPERASYONUN VE BATI YAPTIRIMLARININ RUSYA HAVACILIK PAZARININ GELİŞİMİNE ETKİSİ

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AB ve ABD, Şubat 2022'de Ukrayna'da başlayan başarısız özel askeri operasyonu, Rusya'ya stratejik bir yenilgi yaşatmak için kullanmaya çalıştı. Havacılık sektörü, geniş bir toprak parçasına ve nispeten küçük bir nüfusa sahip bir ülke için kritik bir rol üstlenmesi nedeniyle, Batı yaptırım politikasının uygulandığı kilit alanlardan biri haline geldi. Batılı hükümetler, uçak üreticileri ve kiralayanlar, Rus havayolları filosunun %80'inden fazlasını oluşturan kiralık uçakların kullanımını ve sigorta, bakım ve yedek parça tedarikini yasakladı.

Rus hükümetinin, kiralık uçakların iade edilmesini yasaklayan koruyucu politikası, havayollarının filolarını iç pazar için korumalarına ve ülke içinde uçak bakımı yapmalarına olanak sağladı. Ekonominin ve havayolu sektörünün desteği, talepte keskin bir düşüşün ve önemli havayollarının iflasının önlenmesini mümkün kıldı ve iç pazarın gelişmesine ve ülkenin güney ve doğusunda yeni merkezlerin oluşmasına katkıda bulundu.

Bu çalışma, Rusya ile Batılı devletler koalisyonu arasında bir sektördeki ekonomik mücadeleleri analiz etmektedir. Bu araştırma, söz konusu koalisyonun agresif yaptırım politikasının ayrıntılarını ve egemen bir devletin uygulayabileceği koruyucu önlemleri değerlendirmektedir. Batılı ülkelerin Rus sivil havacılığına ne ölçüde zarar vermeyi başarabileceklerini ve buna yönelik yatkınlık faktörlerini değerlendirmektedir. Bu

alıřma, hava tařımacılıęı endüstrisi örneęini kullanarak, ekonomik sonuçlar ile siyasi kararlar arasındaki yakın karřılıklı iliřkiyi, etkin bir egemen ekonomik politikanın önemini ve onu siyasi ve ekonomik baskıya direnmek için kullanma becerisini göstermektedir.

Anahtar Kelimeler: AB Yaptırımlar, Havacılık Yaptırımları, Rusya Havacılık Pazarı Geliřimi, Yaptırımlara Uyum Politikası.



ABSTRACT

IMPACT OF SPECIAL MILITARY OPERATION IN UKRAINE AND WESTERN SANCTIONS ON DEVELOPMENT OF RUSSIAN AVIATION MARKET

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The EU and the United States tried to use the unsuccessful start of the special military operation in Ukraine in February 2022 to inflict a strategic defeat on Russia. The aviation industry has become one of the key areas of implementation of Western sanctions policy, because it's critical role for country with a large territory and relatively small population. Western governments, aircraft producers and lessors, banned usage of leased aircraft, which made up more than 80% of the fleet of Russian airlines, as well as supply of insurance, maintenance and spare parts for them.

Protective policy of the Russian government, which prohibited the return of leased aircrafts to lessors, have allowed airlines to preserve the fleet for domestic market and to arrange aircraft maintenance within the country. The support of the economy and the airline industry made it possible to avoid a sharp drop in demand and bankruptcy of key airlines, as well as contributed to the development of the domestic market and the formation of new hubs in the south and east of the country.

This work analyses economic struggle within one industry between Russia and coalition Western states. This research evaluates details of aggressive sanction policy of this coalition and protective measures sovereign state could implement. It assesses the scope of damage that Western countries could manage to inflict on Russian civil aviation and predisposing factors to that. Using air transport industry as an example,

this work shows the close interrelationship of economic results and political decisions, the importance of effective sovereign economic policy and the ability to use it to resist political and economic pressure.

Keywords: Aviation Sanctions, EU Sanctions, Russian Aviation Market Development, Sanctions Adaptation Policy.



DEDICATION

It is dedicated to my family.



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I want to thank my valuable advisor, Prof. Selim Zaim, who guided me in this research and helped me overcome my difficulties with their knowledge and experience

I present my endless love and respect to my family, who did not leave me alone at every stage of my thesis.

Andrey NIKOLAEV

İSTANBUL, 2025



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LIST OF SYMBOLS AND ABBREVIATIONS

AEVT	Association of Air Transport Operators (Russia)
AFU	Armed Forces of Ukraine
ALC	Air Lease Corporation
Amadeu	Global Distribution System (GDS) for Flight Bookings
ASK	Available Seat Kilometers
A-Technics	Aircraft Maintenance Company Within the Aeroflot Group
BCAA	Bermuda Civil Aviation Authority
BIS	Bureau of Industry and Security (U.S. Department of Commerce)
CAGR	Compound Annual Growth Rate
CFM LEAP-1A	Leading Edge Aviation Propulsion (Engine Model)
CIS	Commonwealth of Independent States
CRS	Computer Reservation System
CSTO	Collective Security Treaty Organization
DCFTA	Deep and Comprehensive Free Trade Area
DCS	Departure Control System
EAEU	Eurasian Economic Union
EASA	European Aviation Safety Agency
EC	European Commission
EU	European Union
FAP	Federal Aviation Regulations (Russia)
FSB	Federal Security Service (Russia)
FSUE	Federal State Unitary Enterprise (Russia)
G7	Group of Seven
GDP	Gross Domestic Product
GDS	Global Distribution System
HACC	High Anti-Corruption Court (Ukraine)
IAA	Irish Aviation Authority
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IL	Ilyushin (Aircraft Manufacturer)
IL-114-300	Russian Turboprop Aircraft

IL-96	Russian Long-Haul Wide-Body Aircraft
IT	Information Technology
KnAAZ	Komsomolsk-on-Amur Aviation Plant
LMS-901 Baikal	Russian Small Aircraft
MC-21	Russian Medium-Range Aircraft
MRO	Maintenance, Repair, and Overhaul
NABU	National Anti-Corruption Bureau (Ukraine)
NATO	North Atlantic Treaty Organization
NLK	National Leasing Company (Russia)
NWF	National Welfare Fund (Russia)
OEM	Original Equipment Manufacturer
OFAC	Office of Foreign Assets Control (U.S. Treasury)
ORS	Russian Booking System Developer
PD-14	Perm Engine-14 (Russian Aircraft Engine)
PD-8	Perm Engine-8 (Russian Aircraft Engine)
PW1100G	Pratt & Whitney Engine Model
RAS	Russian Accounting Standards
RBC	Ros Business Consulting (Russian Media Outlet)
RNPC	Russian National Reinsurance Company
Rosaviatsia	Federal Air Transport Agency (Russia)
RPK	Revenue Passenger Kilometers
S7 Technics	Aircraft Maintenance Company Within S7 Airlines
Sabre	Global Distribution System (GDS) for Flight Bookings
SaM-146	Russian-French Aircraft Engine
SAP	Specialized Anti-Corruption Prosecutor's Office (Ukraine)
SDN List	Specially Designated Nationals (U.S. Sanctions List)
SIG	Distribution Platform for Booking and Selling Tickets (Russian System)
SSJ	Sukhoi Superjet
SVO	Special Military Operation
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TAIS	Russian Inventory System for Airlines
THAIS	Russian Booking System
TU	Tupolev (Aircraft Manufacturer)

Tu-214	Russian Medium-Range Aircraft
U.S.	United States
UAC	United Aircraft Corporation (Russia)
UAE	United Arab Emirates
UN	United Nations
UZGA	Ural Plant of Civil Aviation (Russia)
YAK	Yakovlev (Aircraft Manufacturer)
Yak-42	Soviet/Russian Regional Aircraft



CHAPTER I

INTRODUCTION

Although sanctions, like trade preferences, are traditional instruments of trade and economic policy, their significance has expanded dramatically in the 20th and 21st centuries due to growing economic interdependence. Beyond purely economic aims, sanctions are frequently used to pursue political objectives, such as destabilizing adversarial regimes or even enabling their collapse. The most commonly targeted sectors include finance, energy, defense, and technology. Aviation sanctions, while often secondary to broader economic measures, can cause severe harm—resulting in heavy losses for national airlines, reduced route networks, declining passenger numbers, and a broader contraction of economic activity.

The escalating political rivalry between Russia and the West—primarily the EU and the U.S.—has triggered the widespread use of sanctions in their economic relations. Following Russia’s failed 2022 military intervention in Ukraine, aimed at regime change, the West imposed unprecedented sanctions in both scale and severity. One of the focuses of these measures has been the aviation sector. For Russia—a country with a vast territory but a relatively small population—civil aviation is vital for maintaining mobility and economic connectivity. However, since the collapse of the USSR, Russia’s aviation industry has relied heavily on Western suppliers for aircraft and maintenance, making it particularly vulnerable to sanctions.

The February–March 2022 sanctions plunged the Russian aviation industry into immediate crisis, with many analysts forecasting the imminent collapse of its civil aviation sector. The EU and U.S. closed their airspace to Russian carriers, while Boeing and Airbus abruptly terminated supply contracts and banned spare parts sales. Simultaneously, Western lessors issued ultimatums demanding the return of all leased aircraft—constituting over 80% of Russia’s commercial fleet—within weeks. Overnight, these ostensibly commercial entities prohibited aircraft operations, voided

insurance coverage, and halted maintenance support. This synchronized offensive left no doubt: the measures were deliberately designed to paralyze Russia's air transport system completely.

The sweeping Western sanctions delivered a seismic blow to Russia's aviation sector, yielding a paradoxical outcome. While they severely disrupted ongoing civil aircraft programs like the SSJ-100 and MC-21, they also exposed Russia's dangerous overreliance on foreign manufacturers—galvanizing political will and channeling investment into domestic aviation as a matter of national security. In response, the Russian government implemented a series of countermeasures to stabilize the aviation market, support airlines and airports, and strengthen the local industry. Simultaneously, the withdrawal of Western competitors created an unprecedented vacuum in the market, offering a critical opportunity for homegrown aviation technology to develop.

This work will answer the questions if there was an effect of Western sanctions on the Russian air transportation market and if the airline market can collapse because of them. In this regard, the primary objective of this study will be to assess the extent of damage inflicted by sanctions on Russia's air transport sector and perspective of its development. Specifically, the research evaluates whether the industry has sustained significant harm and whether such damage could precipitate its eventual collapse—potentially contributing to Russia's strategic defeat. To address these questions, this study employs qualitative analysis to examine both the nature of the sanctions and the effectiveness of countermeasures.

The study analyses the sanctions imposed by the EU, the UK, and the US on Russia's aviation sector from 2022 to 2024, the countermeasures implemented by the Russian government, and the subsequent transformations within the Russian air transport market resulting from this confrontation. Given that the research encompasses the period from 2022 to 2024, it is comprehensively positioned to identify the short-term impact of the Western sanctions on passenger traffic trends, airline profitability, foreign carrier presence, international flights geography, aircraft maintenance cost and major domestic airports performance.

The principal academic value of this study is its explanatory power regarding the markedly divergent impact of Western aviation sanctions on Russia compared to the effects of similar restrictive measures imposed on other nations. The investigation of the dramatic confrontation between the Russian government and the Western coalition in the aviation sector provides critical insights into the inherent limitations of even comprehensive sanctions when met with systematically developed countermeasures. This research systematically catalogues the specialized economic measures adopted by the Russian government, including support mechanisms for airlines and airports, stimuli for domestic air travel demand, and outlines implemented policy initiatives in aircraft manufacturing alongside their potential medium-term effects. A particular significance of this research stems from the fact that the scale of the examined countermeasures to imposed sanctions were unprecedented in nature and markedly divergent from the responses historically undertaken by other governments in comparable circumstances.

This study extensively uses periodical sources, including online publications, due to the unique temporal dynamics of its research focus. Conducted during the ongoing evolution of both the conflict and sanctions regime, the analysis necessarily engages with media-reported data that had not yet been systematically processed by the academic community. The research period coincided with peak intensity in information warfare—an intrinsic component of modern sanctions policy. Notably, early Western academic works on this conflict were significantly influenced by the information agenda and the first works on this conflict carried a one-sided view, being rather a part of propaganda, than rigorous scholarly analysis. Consequently, triangulating information across diverse media sources provided greater analytical objectivity than reliance on initial academic publications, which often suffered from ideological bias. Nevertheless, analyzing unfolding events inherently introduces interpretive subjectivity. The provisional nature of such assessments inevitably allows researchers' perspectives to influence findings more substantially than retrospective studies of concluded phenomena.

CHAPTER II

LITERATURE REVIEW

Sanctions have become a key instrument of international politics in the 21st century. The study of sanctions and their multifaceted impacts represents an interdisciplinary challenge that spans economics, political science, and international relations.

2.1. Definition and Types of Sanctions

The UN Charter formally defines sanctions as "measures not involving the use of armed force (comprising complete or partial interruption of economic relations) employed by the UN Security Council to maintain international peace" (UN Charter, Article 41). The classical academic understanding, as articulated by Hufbauer et al. (2007), characterizes economic sanctions as "the deliberate cessation of normal trade or financial relations with a target country, organization, or individual to compel policy or behavioral change." More contemporary scholarship, exemplified by Drezner (2021), expands this definition to encompass "tools of coercive diplomacy that include not only traditional trade and financial restrictions, but also targeted measures (asset freezes, visa bans), technological embargoes, and cyber sanctions." At their most severe, sanctions have been critically interpreted by Pape (1997) as constituting "a form of collective punishment that frequently impacts civilian populations more significantly than it influences elite behavior."

Sanctions serve as instruments for applying economic and political pressure against states, organizations, or individuals. According to Hufbauer et al. (2007), they typically fall into four main categories: trade embargoes, financial restrictions, travel bans, and sectoral sanctions. Scholars further classify sanctions along several dimensions: universal versus targeted, primary versus secondary, and the more recent concept of "smart" sanctions (Drezner, 2021). Biersteker et al. (2016) propose an alternative taxonomy distinguishing between individual-level measures (asset freezes,

visa bans), sectoral sanctions (affecting specific industries like energy or finance), and hybrid regimes combining multiple approaches.

Sanctions commonly target several strategic sectors: the financial sector (asset freezes, SWIFT disconnections, restrictions on sovereign debt transactions - Hufbauer et al., 2007; Biersteker et al., 2016); energy (oil/gas embargoes, prohibitions on extraction technologies - Drezner, 2021); defense industries (arms supply bans and dual-use technology restrictions - Biersteker, 2016); and IT/high-tech sectors (semiconductor export controls, software limitations - Farrell & Newman, 2022), as exemplified by restrictions on Huawei and SMIC. Notably, arms embargoes represent the most frequently employed measure, constituting 68% of all UN sanctions regimes between 1990-2020 (United Nations, 2021, Sanctions and Arms Embargoes: A Statistical Overview).

The efficacy of sanctions remains a contested subject in academic discourse. Scholarly research presents divergent conclusions, with numerous studies examining different dimensions of sanctions policy and frequently arriving at contradictory findings regarding their success.

The most famous authors who worked at sanction theory are Daniel W. Drezner, Gary Clyde Hufbauer and Bryan R. Early.

In *The Sanctions Paradox: Economic Statecraft and International Relations*, Drezner (2021) advances two central theses regarding the political economy of sanctions. First, he demonstrates that states are most likely to employ sanctions when the opportunity costs of forfeiting trade with the target country are minimal. Second, he identifies a fundamental paradox: despite their proliferation as tools of coercive diplomacy, sanctions frequently fail to achieve their declared political objectives due to three constraining factors: the target state's capacity to cultivate alternative economic partnerships, the relative immunity of authoritarian regimes to economic pressures, and the sanctioning states' reluctance to bear substantial economic costs.

Drezner's analysis reveals that sanctions primarily function as costly signals of political resolve rather than effective instruments of behavioral modification,

particularly in an interconnected global economy. The work further introduces the concept of the "threat paradox" - wherein the most potentially devastating sanctions regimes are seldom implemented, as their anticipated mutually destructive consequences incentivize restraint among both initiators and targets.

In the seminal work *Economic Sanctions Reconsidered* (3rd ed., 2007), Hufbauer, Schott, and Elliott establish the most comprehensive empirical framework for sanctions analysis to date. Their study, encompassing 204 cases from 1914-2006, introduces a rigorous 12-point effectiveness scale and demonstrates that sanctions achieve stated political objectives in merely 34% of instances, with success contingent upon three critical factors: clearly defined goals, degree of international coordination, and the target state's economic vulnerability.

The analysis reveals two fundamental paradoxes of sanctions regimes: while multilateral sanctions (e.g., against apartheid South Africa) exhibit significantly higher efficacy than unilateral measures (such as the U.S. embargo on Cuba), they frequently generate severe humanitarian consequences. Moreover, the authors document sanctions' counterproductive potential - notably their capacity to entrench authoritarian regimes and stimulate shadow economy growth (Hufbauer et al., 2007).

In *Busted Sanctions: Explaining Why Economic Sanctions Fail* (2015), Brent Early examines the fundamental flaw in sanctions regimes: systematic non-compliance by both state and non-state actors. Through analysis of over 100 cases spanning six decades of U.S. sanctions history, Early demonstrates that approximately 40% of sanctions regimes are significantly undermined by third-party violations—whether by rival states, commercial entities, or even allied nations—often rendering them entirely ineffective.

Early identifies three primary failure mechanisms: the economic incentives of intermediary states (exemplified by China and the UAE in circumventing Iran sanctions), coordination deficits among sanctioning parties (particularly evident in transatlantic EU-U.S. disagreements), and institutional corruption within target states (as seen in 1990s Serbia). The study particularly highlights evolving evasion techniques in globalized markets, including re-export schemes, shell company

networks, and cryptocurrency-based circumvention—collectively termed "gray area" bypass mechanisms (Early, 2015).

It is also worth noting the authors who view sanctions not as a separate tool of foreign policy, but merely as a step before the commencement of military actions.

In *The Use of Force: Military Power and International Politics* (8th ed., 2019), sanctions are analyzed as a strategic tool situated between diplomatic pressure and military intervention on the "escalation ladder," serving primarily as a means of demonstrating resolve and coercing adversaries rather than ensuring compliance. The authors argue that sanctions achieve greatest effectiveness when paired with credible military threats, as seen in the 2012–2015 Iran nuclear negotiations, but often prove inadequate against authoritarian regimes like Russia and Cuba, which exploit them for domestic mobilization.

In his seminal *International Security* article "Why Economic Sanctions Still Do Not Work" (1997), Robert A. Pape challenges conventional wisdom by demonstrating that only 5% of 20th-century sanctions campaigns achieved their political objectives, based on a systematic analysis of 115 cases. He identifies a central flaw in sanctions logic: even severe economic pressure rarely coerces target regimes, as elites insulate themselves by shifting costs to civilian populations while exploiting nationalist sentiment to bolster legitimacy—a dynamic termed the "rally around the flag" paradox. Pape further contrasts sanctions with military coercion, arguing that limited force (e.g., NATO's Bosnia air strikes) often proves more decisive than protracted economic measures, underscoring the superiority of kinetic leverage. His critique remains foundational, concluding that sanctions succeed only in narrow circumstances—against small, economically vulnerable states with fragile elite coalitions (e.g., apartheid South Africa) and when paired with credible military threats, thus relegating their utility to marginal exceptions rather than a reliable tool of statecraft.

2.2. Aviation Sanctions

Due to its strategic importance, aviation has also become one of the areas where sanctions were actively applied. The most notable cases of aviation sanctions include those against North Korea, Cuba, South Africa, Chile, Iran, Iraq, Yugoslavia, Libya and Syria.

2.2.1. US Aviation Sanctions Against North Korea (Period 1953–1994)

In the decades following the Korean War, the United States imposed selective sanctions on aviation technology exports to the DPRK. However, as scholars have noted, these measures proved largely ineffective. The primary reason was the USSR's unwavering support, which supplied Il-14, Il-18, and An-24 aircraft in sufficient quantities to offset Western restrictions entirely. By 1975, Air Koryo's fleet totaled 45 aircraft, 32 of which were newly delivered Soviet models (Hufbauer et al. 2007). The lack of global consensus further favored Pyongyang—only the U.S. and Japan enforced the embargo, while China and other socialist states continued cooperation.

Compared to similar cases (e.g., Cuba), North Korea's experience was exceptional. While Cuba lost 35% of its fleet due to sanctions, the DPRK saw only a 12% reduction, retaining full operational capacity (Hufbauer et al. 2007).

Bruce Cumings (2004) documents that the USSR delivered 48 civilian aircraft to Pyongyang between 1953 and 1965, completely neutralizing U.S. restrictions. Victor Cha (2012) corroborates this, noting that by the 1970s, Air Koryo boasted one of Asia's most modern fleets, thanks to Soviet assistance.

2.2.2. US Aviation Sanctions Against Cuba (Since 1960)

The United States imposed a comprehensive aviation embargo on Cuba in 1960, prohibiting the supply of spare parts for American aircraft and restricting international air transport. According to Hufbauer et al. (2007), by 1965 the country had lost 90% of its Western-manufactured aircraft fleet. However, Cuba rapidly adapted through massive Soviet equipment deliveries - between 1960 and 1990, the USSR supplied 158

aircraft including Il-62 and Tu-154 models, enabling the restoration of 75% of air transport capacity by 1980 (Davies, 1984).

As Hufbauer et al. (2007) conclude, the 46-year blockade demonstrated the limitations of aviation sanctions against resilient regimes. Rather than causing the expected collapse, Cuba developed a hybrid aviation system combining Soviet technology, domestic component production, and cooperation with third countries. This experience provided a crucial lesson for sanctions policy, revealing the necessity of a comprehensive approach.

2.2.3. Aviation Sanctions Against South Africa (1963-1994)

Aviation sanctions against South Africa began in 1963 (UN Resolution 181) and reached their peak in the 1980s when the EEC and the United States completely closed their airspace to South African airlines and prohibited the supply of aircraft equipment (Hufbauer et al., 2007).

South Africa's civil aviation sector faced serious operational difficulties. The national carrier South African Airways (SAA) lost access to modern Western aircraft and spare parts (Orkin, 1989). Research data shows that the average age of the aircraft fleet increased from 7 to 12 years during the sanctions period (Hufbauer et al., 2007). The airline was forced to adopt less efficient maintenance schemes, leading to a 25-30% increase in operating costs (Orkin, 1989). The situation became particularly challenging for long-haul operations - SAA had to completely revise its route network (Cortright & Lopez, 2000).

The volume of international air transport decreased by 40%, while passenger traffic dropped by 35% between 1980 and 1990 (Hufbauer et al., 2007). South Africa lost its status as a key transportation hub in the Southern Hemisphere (Cortright & Lopez, 2000). The sanctions caused an estimated \$2.5 billion in damage to the tourism sector and forced the country to completely restructure its route network (Orkin, 1989).

South Africa implemented several measures to mitigate the effects of sanctions. The country established alternative supply chains through Israel and Taiwan, organized its

own maintenance center, and developed a system of "gray" spare parts imports (Lipton, 1988). SAA reoriented itself toward regional transportation in Africa, creating transit hubs in Mauritius and Zimbabwe (Nephew, 2017). These measures allowed air traffic to be maintained, albeit with increased costs: fuel expenses rose by 25%, while flight delays reached 30% (Orkin, 1989).

The process of lifting restrictions began in 1990 following Nelson Mandela's release and was completed in 1994 with the holding of democratic elections (Hufbauer et al.). Industry recovery took about five years: by 2000, SAA had acquired 18 new aircraft and restored 85% of its international routes, while passenger traffic exceeded pre-crisis levels by 2002 (Landsberg, 2004). This case demonstrated both the effectiveness of multilateral transportation sanctions as a tool of political pressure and the ability of countries to adapt to such restrictions given sufficient resources and time (Nephew, 2017).

2.2.4. Aviation Sanctions Against Chile (1973-1978)

Following the 1973 military coup, the United States and several European nations imposed comprehensive aviation sanctions against Pinochet's regime. These measures included an embargo on aircraft supplies (particularly Boeing and Airbus), prohibitions on servicing Chilean aircraft abroad, and flight restrictions for LAN Chile to NATO countries (Hufbauer et al., 2007). These sanctions significantly degraded the industry: the fleet's average age increased from 6 to 11 years, international traffic declined by 30%, and operational costs rose by 40-45% (Petras, 1978). Flight safety became a critical concern, with three major aviation accidents occurring between 1975-1977 due to technical failures.

The Chilean government implemented effective countermeasures to mitigate the sanctions' impact. As Nephew (2017) documents, Chile established alternative supply chains through Argentina and Brazil, created shell companies in Panama to procure spare parts, and developed domestic maintenance capabilities. Despite the restrictions, these measures preserved core aviation operations through reorientation toward regional Latin American routes (Cortright & Lopez, 2000). While preventing total transportation collapse, they couldn't fully offset economic losses.

The gradual easing of sanctions beginning in 1977 and their complete removal by 1978 enabled rapid aviation recovery. By 1980, LAN Chile had restored 80% of international routes, renewed its fleet with seven new Boeing aircraft, and achieved 15% higher passenger traffic than pre-crisis levels (Hufbauer et al., 2007). This case demonstrated both the aviation sector's vulnerability to sanctions and nations' adaptive capacity when supported by regional partners and flexible economic policies (Nephew, 2017).

2.2.5. Aviation Sanctions Against Iran (Since 1979)

After the 1979 Islamic Revolution, the United States and its allies implemented comprehensive sanctions against Iran's civil aviation sector. The primary restrictions included prohibitions on supplying Western-manufactured aircraft and spare parts (Boeing, Airbus), blocking maintenance services for Iranian aircraft abroad, and financial restrictions on aviation transactions. According to Hufbauer et al. (2007), these measures led to a dramatic reduction in Iran's commercial fleet - from 80 modern airliners in 1979 to just 39 by the 2000s.

The prolonged sanctions had devastating consequences for Iran's civil aviation. As Nephew (2017) documents, the average aircraft age exceeded 25 years compared to the global average of 10-12 years, significantly increasing safety risks. Between 1980 and 2015, 17 aviation accidents occurred due to technical failures (Cortright & Lopez, 2015). International air transport declined by 65%, and since 2010 Iranian airlines have been banned from EU airspace due to safety violations (ICAO, 2021).

Despite temporary sanctions relief during 2015-2018 under the nuclear deal, when Iran ordered 200 new aircraft, deliveries were frozen after the U.S. withdrew from the agreement (Drezner, 2019). Consequently, Iran has been forced to maintain its aging fleet through smuggled spare parts and outdated technologies. Research indicates that while the sanctions severely damaged Iran's civil aviation, they failed to achieve their primary objective of changing the Iranian government's political course (Hufbauer et al., 2007; Nephew, 2017).

2.2.6. Aviation Sanctions Against Iraq (1990-2003)

The comprehensive aviation sanctions imposed on Iraq following its 1990 invasion of Kuwait represented one of the most severe restrictions on civilian air transport in modern history. As analyzed by Hufbauer et al. (2007), UN Security Council Resolution 661 established a complete ban on international flights, aircraft sales, and maintenance services for Iraqi Airways. Cortright and Lopez (2000) document how these measures reduced Iraq's weekly domestic flights from 150 to just 5-10 by 1993, effectively crippling the national carrier.

The humanitarian consequences were particularly devastating. Nephew (2017) highlights three critical impacts: the grounding of 95% of Iraq's commercial fleet (only 15 of 300 aircraft remained operational), a 90% reduction in passenger traffic, and severe limitations on medical evacuations. Gordon's (2010) research reveals how Iraq's attempts to circumvent sanctions through Jordanian charters and parts smuggling proved largely ineffective. The International Air Transport Association (IATA, 2003) safety audits showed most remaining aircraft fell below international standards, creating significant flight risks.

The sanctions were lifted following the 2003 US invasion of Iraq, but post-sanction recovery proved exceptionally challenging. Cortright (2004) observes that even after restrictions ended, Iraqi Airways struggled to rebuild its fleet and regain international route access due to lingering legal disputes and damaged infrastructure. As Drezner (2011) notes, the first international commercial flight only occurred in 2005, with full industry rehabilitation taking over a decade. Hufbauer et al. (2007) classify the Iraq case as demonstrating how excessive aviation sanctions can cause disproportionate civilian harm while failing to achieve political objectives.

2.2.7. Aviation Sanctions Against Yugoslavia (1992–1995)

Aviation sanctions against Yugoslavia were imposed by UN Security Council Resolution 757 on May 30, 1992. As noted by Hufbauer, Schott and Elliott (2007), the measures included a complete ban on international flights by Yugoslav airlines, an embargo on aircraft and spare parts supplies, and freezing of foreign assets of air

carriers. Additionally, in October 1992 NATO established a no-fly zone over Bosnia (Resolution 781), which, according to Cortright and Lopez (2000), effectively paralyzed regional air traffic.

The sanctions dealt a catastrophic blow to Yugoslavia's civil aviation. According to Woodward's research (1995), passenger traffic decreased by 85% - from 2.1 million people in 1991 to 300,000 in 1994. The national carrier JAT Airways lost 90% of its international routes, while the average aircraft age increased from 8 to 14 years. Although, as Nephew notes (2017), Yugoslavia attempted to circumvent restrictions through charter flights and Cypriot shell companies, these measures had minimal effect. The consequences for flight safety were particularly severe - according to IATA data, by 1994 only 40% of the remaining fleet met international standards.

Russia became an unofficial channel for partially bypassing restrictions, although the scale of assistance remained limited. According to research by Woodward (1995) and Hufbauer et al. (2007), Moscow supplied spare parts for Soviet aircraft (Tu and Il), provided maintenance services and allowed transit charter flights through its airports. However, as Nephew notes (2017), this support covered only 15-20% of Yugoslav aviation's needs, failing to prevent its deep crisis - passenger traffic fell by 85%, and 90% of international routes were closed.

After the signing of the Dayton Accords in 1995, sanctions began to be gradually eased. However, as Daalder analyzes (2000), full recovery of the industry took three years - JAT Airways managed to restore only 60% of pre-war routes, while damage to aviation infrastructure was estimated at \$420 million. Hufbauer et al. (2007) rate this sanctions regime as "moderately effective" (3 out of 4 points), noting that while aviation restrictions contributed to political settlement, their humanitarian consequences for civilians remain a subject of debate among international sanctions experts.

2.2.8. Aviation Sanctions Against Libya (1992–1999)

In March 1992, the UN Security Council imposed the first aviation sanctions against Libya (Resolution 748), which were strengthened in November 1993 (Resolution 883).

These measures, as noted by Hufbauer et al. (2007), included a complete ban on international flights by Libyan airlines, an embargo on the supply of aircraft and spare parts, and a freeze on the foreign assets of Libyan Airlines. Cortright and Lopez (2000) emphasize that the sanctions were complemented by a ban on the maintenance of Libyan aircraft abroad, making them one of the most severe in history.

The sanctions dealt a devastating blow to Libyan civil aviation. According to research by Nephew (2017), by 1995, the national carrier Libyan Airlines had completely ceased international flights, and its fleet was reduced from 38 to 9 aircraft. All scheduled flights were cancelled and passenger traffic fell by 85%. Attempts to circumvent sanctions via Malta and Tunisia, as Davis (2001) notes, were ineffective due to strict controls by the international community. The consequences for flight safety were particularly severe, with most of the remaining aircraft failing to meet international standards.

Following the extradition of the Lockerbie suspects by Libya, sanctions were suspended in April 1999. However, as Hufbauer et al. (2007) show, it took more than five years for the industry to recover. Libyan Airlines was able to resume only 30% of its pre-war routes by 2004, and damage to the aviation infrastructure exceeded \$600 million. Cortright and Lopez (2000) assess the sanctions regime as "effective but overly harsh", emphasizing its devastating impact on the civilian population.

2.2.9. Aviation Sanctions Against Syria (Since 2011)

The European Union imposed aviation sanctions on Syria in September 2011 (Regulation No. 878/2011), prohibiting aircraft and spare parts supplies to Syrian Arab Airlines, freezing its EU-based assets, and restricting aviation fuel (Nephew, 2017). These measures were intensified after the 2013–2014 probable chemical attacks, forming part of a broader strategy to isolate the Assad regime (Hufbauer et al., 2020). While humanitarian flights were technically exempt, the sanctions deliberately targeted Syria's transport infrastructure, aiming to weaken the government's logistical capabilities without direct military intervention.

The sanctions crippled Syria's civil aviation, reducing Syrian Arab Airlines' fleet from 12 to 5 operational aircraft by 2022 and cutting passenger traffic by 85% (IATA, 2022). Ticket prices surged ten-to-fifteenfold, while the regime adapted through Iranian-leased aircraft, gray-market spare parts from the UAE, and military transport for essential goods (Cortright and Lopez, 2015). However, as Chatham House (2021) notes, these measures failed to disrupt military supply chains supported by Russia and Iran or VIP flights using private jets, exposing key enforcement loopholes.

By 2023, Syria's aviation sector operated at just 15% of pre-war capacity, with flights limited to Moscow, Tehran, and Dubai. Analysts conclude that while sanctions effectively dismantled civilian aviation, they failed to destabilize the Assad regime in short term due to external support (Nephew, 2017; Hufbauer et al., 2020).

2.3. Impacts of Aviation Sanctions

The historical application of aviation sanctions reveals a significant shift in their effectiveness. During the Cold War, such sanctions had limited impact due to the bipolar international system - targeted states like North Korea and Cuba easily compensated for Western restrictions by acquiring Soviet aircraft. However, following the USSR's collapse and the decline of Russia's aviation industry, Western sanctions gained unprecedented potency as alternative sources of aviation technology virtually disappeared, transforming them into a powerful economic weapon particularly effective against smaller nations.

Since the 1990s, Western countries have leveraged their near-monopoly in aircraft manufacturing to systematically dismantle the aviation sectors of targeted states. This has led to the bankruptcy of national flag carriers, fleet degradation, and the collapse of tourism revenues, often precipitating humanitarian crises. Syria (2011-2024) saw its fleet shrink by 60%, Iran (1979-2023) maintains aircraft averaging over 25 years old, while Libya (1992-1999) completely ceased international flights - demonstrating aviation sanctions' capacity to paralyze civil aviation, though their political efficacy remains debatable given the severe humanitarian consequences witnessed in Iraq, Haiti, and Sierra Leone.

Some targeted states have developed adaptation strategies through alternative supply chains (Iran via UAE, Syria via Russia) or domestic maintenance capabilities (Chile, South Africa). However, the success of such measures depends critically on external alliances and sanction duration. The post-Cold War era has shown that even authoritarian regimes with international support cannot fully overcome technological obsolescence and parts smuggling dependencies imposed by sanctions.

Western nations have weaponized their dominance in modern aviation technology to systematically destroy civil aviation in targeted countries, as evidenced by Iraq (1990-2003), Yugoslavia (1992-1995), and Iran (since 1979). These measures achieve comprehensive impact by simultaneously crippling transportation infrastructure, devastating tourism, disrupting international trade, and obstructing humanitarian shipments - creating multi-dimensional pressure on non-compliant regimes while often causing severe collateral damage to civilian populations.

CHAPTER III

ANALYSIS OF THE RUSSIAN AVIATION MARKET UNDER SANCTIONS

3.1. Pre-Sanctions Development

The Russian air transportation market from 1990 to 2021 largely followed the dynamics of the economy, though with some differences. This period can be divided into three-time intervals, which almost coincide with decade boundaries and the pandemic. Each of these intervals had its own distinct characteristics and internal dynamics, reflecting the state of the industry at the time.

3.1.1. Collapse of Air Transport in the 1990s

The peak of air traffic in Soviet Russia was reached in 1990, with 94.3 million passengers and 159.5 billion passenger-kilometers. After that, a prolonged decline began, driven by the economic collapse of the 1990s. The lowest figures were recorded in 1999—just 28.5 million passengers and 53.4 billion passenger-kilometers. Over the course of the decade, traffic volumes had fallen by two-thirds (Federal Air Transport Agency, 2022).

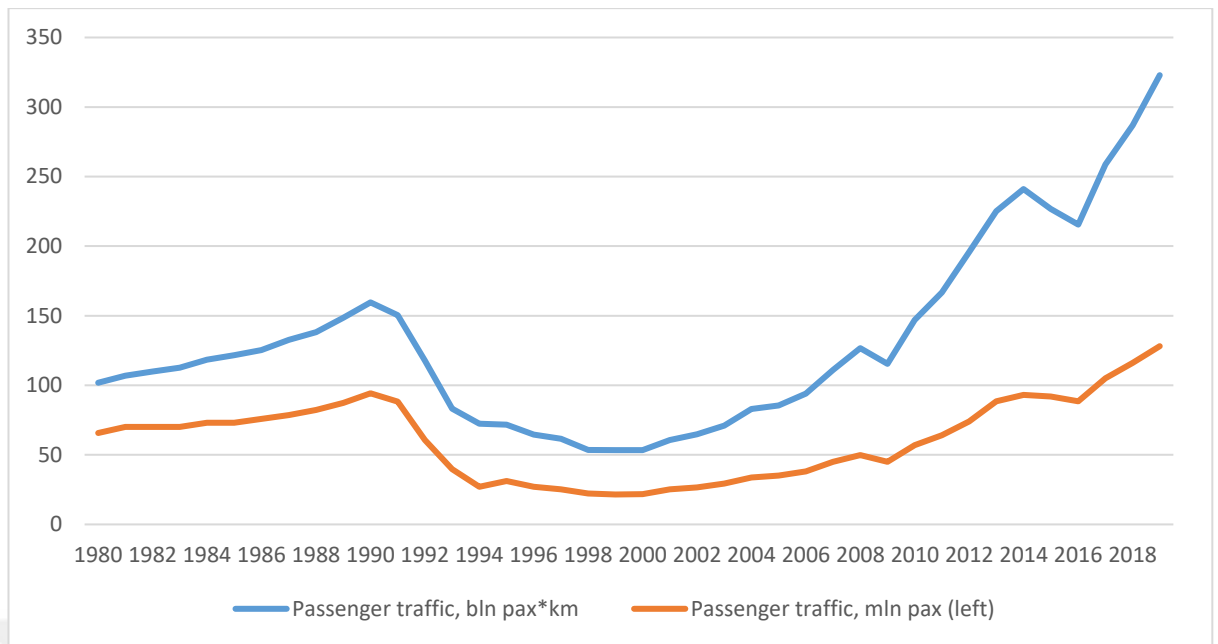


Figure 3.1. 1980-2019 Passenger Traffic

Reference: Reference: Rosaviatsia

The turbulence in Russia's aviation sector during the 1990s directly reflected the wider economic and political instability following the Soviet Union's collapse. Following the dissolution of the Soviet Union in 1991, Russia's civil aviation sector faced the unprecedented challenge of transitioning to a market-based system. The 1991 dissolution of Aeroflot - the world's largest airline under the Soviet monopoly - resulted in its fragmentation into numerous regional branches. These spin-offs rapidly formed independent carriers, proliferating to 383 commercial operators by 1994 (IATA, 1993; Komissarov & Gordon, 2006).

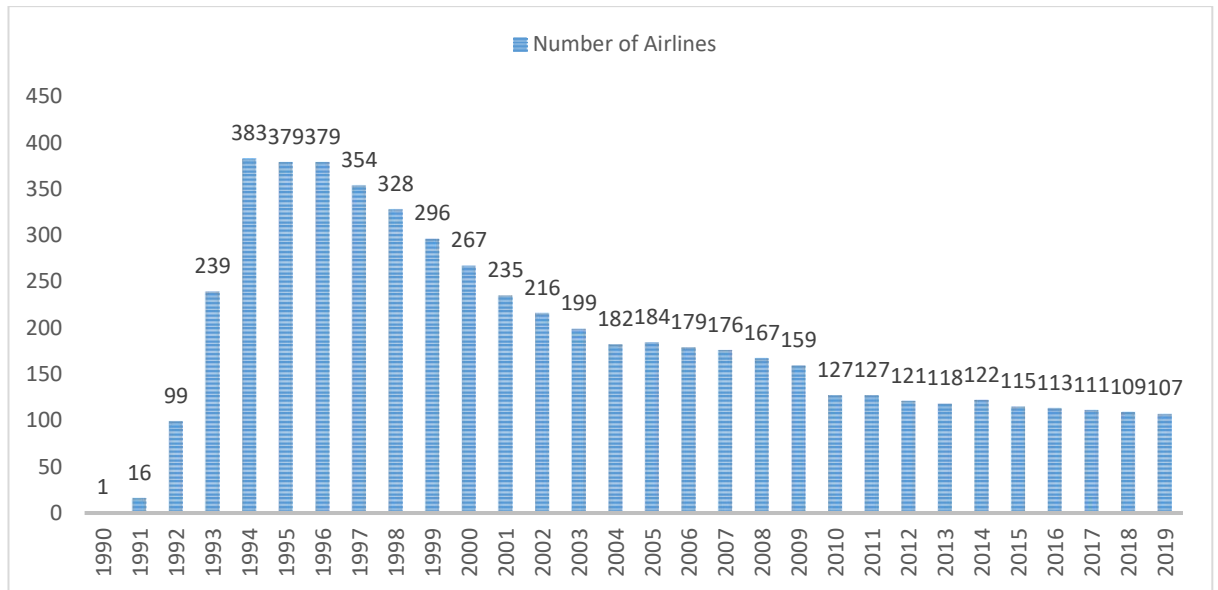


Figure 3.2. Number of Airlines Registered in Russia, 1990-2019

Reference: Rosaviatsia

This period proved particularly challenging for Russia's high-tech sector, with the aviation industry being especially hard-hit. In 1992, the first foreign-made aircraft - an Airbus A310 - arrived at Moscow's Sheremetyevo Airport, marking a significant shift in the country's aviation landscape. The following year saw Transaero, Russia's first private airline, commence operations using Boeing aircraft. These Western-manufactured aircraft would eventually become the backbone of Russian commercial aviation fleets, displacing domestic models.

While Soviet airlines operated profitably within the planned economy system, the USSR's collapse in 1991 severed crucial economic ties and triggered hyperinflation exceeding 2,500% annually by 1992 (Gaidar, 2007). The industry faced particular challenges in international market integration, as Soviet aircraft like the Tupolev Tu-154 and Ilyushin Il-86 had been designed primarily for domestic operations, failing to meet international noise and emissions standards (ICAO, 1993). This technological gap left Russian carriers unable to compete globally without complete fleet modernization (Komissarov & Gordon, 2006).

In 1993, the first domestically developed long-range wide-body aircraft, the IL-96-300, based on the IL-86, entered service. However, it failed to compete with global

giants and never entered mass production. Nevertheless, the IL-96 secured its place in the history of world civil aviation as one of the safest passenger aircraft, with no fatal accidents recorded. Today, the IL-96-300 is used by the Rossiya Special Flight Detachment to transport top state officials.

In 1996, the Tu-204/214 aircraft, developed in the late 1980s and early 1990s as a replacement for the Tu-154, took its first flight. The new model's performance was comparable to that of Airbus aircraft. However, production of the Tu-204/214 remained limited. By 2018, Tu-214s had nearly disappeared from passenger service after Red Wings Airlines phased them out of scheduled flights (Vedomosti, 2023).

3.1.2. Structural Changes and Fleet Modernization in the 2000s

Beginning in the 2000s, Russia experienced an economic boom that also revitalized its civil aviation sector. Soaring oil prices and a surge in foreign currency earnings from exports boosted consumer spending and significantly increased state revenues. This period saw a wave of Western companies entering the market, accompanied by the rapid construction of shopping malls and the expansion of international brands across the country.

A gradual recovery in air transportation began to take shape. Despite a brief downturn caused by the 2008-2009 global crisis, Russian airlines rebounded strongly by the end of the first decade of the 21st century. They not only doubled passenger volumes but even tripled passenger turnover, ultimately surpassing 1990 levels.

Alongside the traffic growth, the industry underwent a comprehensive modernization. Russian civil aviation transitioned from obsolete Soviet-era technology to operating modern Western aircraft, while personnel underwent retraining and English became the industry's operational language. This shift to Western technology represented a fundamental transformation for the sector. The industry adapted to new crew training systems and mastered the operational culture for foreign aircraft. Notably, while Airbus and Boeing aircraft are flown by just two pilots (captain and first officer), their Soviet counterparts required a four-person flight crew - highlighting the technological leap forward.

Simultaneously, Europe implemented stricter noise and emissions regulations, effectively closing foreign markets to Soviet-era aircraft like the Tu-154 and IL-62 (the long-range predecessor to the IL-96). The record-high oil and jet fuel prices of 2006-2007 dealt the final blow to the Soviet aviation industry, as domestic aircraft were significantly less fuel-efficient than their Airbus and Boeing counterparts. During the 2000s, the Russian government eliminated import duties on foreign mainline aircraft, further accelerating the fleet's transition to more efficient Western models.

During the 2000s, fueled by high oil prices, Russia experienced robust economic growth and rising household incomes, which in turn drove rapid expansion in the aviation sector. This growth was further accelerated by intense market competition, with industry leaders like Aeroflot, S7 (then operating as Siberia Airlines), Transaero, Utair, and Krasair pulling the entire industry forward. A significant milestone came in 2004 with the complete liberalization of the domestic aviation market. Prior to this, airlines needed approval from the State Commission for Civil Aviation to launch new routes - if officials determined there was insufficient demand, the flights would not be authorized.

The competitive landscape was further transformed when Aeroflot shifted its focus to domestic routes in the early 2000s. This marked a strategic change from the 1990s, when the carrier had concentrated primarily on international flights, leveraging the extensive global network inherited from its Soviet predecessor.

This transformation dramatically improved flight accessibility for ordinary Russians. As competition intensified and operational efficiencies increased, the real cost of air travel relative to average incomes fell substantially - effectively democratizing air travel across the population.

3.1.3. Industry Consolidation and Growth in the 2010s

Since 2010, Russia's aviation sector has experienced record-breaking growth that consistently outpaced global trends. Between 2009 and 2019, both passenger numbers and passenger-kilometers nearly tripled. Remarkably, this expansion continued despite the 2015 economic crisis, which saw the ruble's value halve, reduced consumer

purchasing power, and significant sanctions pressure. The crisis only temporarily affected performance metrics - while passenger-kilometers declined in 2015-16, the actual number of travelers remained stable at 2014 levels."

The emergence of Aeroflot as a global competitor facilitated the development of Sheremetyevo Airport into a major international transit hub. This marked a historic first for Russian aviation, enabling viable transit routes between Europe and Asia or between Israel and the United States via Russian airspace. The hub model proved successful elsewhere as well, with S7 Airlines developing effective operations at both Domodedovo and Tolmachevo airports. In a significant move for industry integration, Aeroflot joined the SkyTeam alliance in 2006, followed by S7's accession to the Oneworld alliance in 2010.

The hub-and-spoke model, supported by transit passenger traffic, enabled airlines to maintain high flight frequencies across numerous routes—including some that wouldn't have been viable relying solely on point-to-point traffic. A striking example was Aeroflot's Moscow-Los Angeles route, where transit passengers accounted for over 50% of total traffic. This boom in international transit spurred massive investment in hub airport infrastructure across Russia.

The growth of air transport has led to investments in airports and their significant renovation. Dmitry Kamenshchik's East Line Group, which bought out Domodedovo Airport, became the first major investor in airports that managed to make this a highly profitable business in the mid-1990s, followed by private investors of Vnukovo Airport Vitaly Vantsev and Andrey Skoch in the late 1990s. In the 2000s, large regional airports also became investment targets. Viktor Vekselberg, Oleg Deripaska and Roman Trotsenko created the Airports of the Regions, Basel-Aero and Novaport holding companies, respectively, which now own more than 30 regional airports in total. All major airports of these holdings underwent major reconstruction, and Vekselberg's holding built two airports completely from scratch – Platov in Rostov-on-Don and Gagarin in Saratov (Vedomosti, 2019).

In parallel with the growth of transportation, there was a tremendous consolidation of the industry. The number of airlines decreased up to 267 by 2001, and by the end of

the 2010s it had dropped to about 100, with the 35 largest airlines accounting for 99.6% of passenger traffic. In the chaos of the 1990s, a large number of airlines were formed by privatizing the aircraft divisions of the once-monopoly Aeroflot. It was believed that it was enough to gain independence, put a pilot in charge, and the airline would succeed. In reality, the management of an avia company turned out to be a much more complex process, and as a result, many could not stand the competition.

The aviation expansion was accompanied by massive industry consolidation. While Russia had 267 airlines in 2001, by the end of the 2010s this number had plummeted to about 100, with just 35 carriers handling 99.6% of all passenger traffic. This consolidation reversed the fragmentation that occurred during the chaotic 1990s, when numerous airlines emerged through the privatization of Aeroflot's former regional divisions. Many operators at the time mistakenly believed that independence alone - often coupled with putting pilots in leadership roles - would guarantee success. In reality, effective airline management proved far more complex than anticipated. Lacking proper business expertise and facing intense market competition, most of these newly formed carriers ultimately failed.

During the second half of the 2000s, Russia's Federal Air Transport Agency quietly adopted policies to restrict market entry for new airlines. The country implemented some of the world's strictest requirements for aviation startups: operators must maintain a fleet of at least eight aircraft to launch regular flights and demonstrate two years of domestic operations before expanding internationally. These regulatory barriers, combined with periodic bankruptcies, effectively prevented new competitors from emerging. As a result, established carriers like Aeroflot and other major players steadily consolidated their market dominance during this period.

Since the 2000s, Russia's aviation sector has undergone significant consolidation through bankruptcies of major carriers like Krasair (the industry's first high-profile collapse), Transaero (once the nation's second-largest airline), and others including Dalavia, KD Avia, Avianova, and VIM-avia, coupled with government-mandated mergers that transferred state-owned operators like Rossiya, Orenburg Airlines, Vladivostok Avia, and Sakhalin Airways to Aeroflot Group.

The industry consolidation coincided with the systematic phase-out of aging Soviet-era aircraft. By the late 2010s, nearly all iconic Soviet models had been retired: Alrosa Airlines withdrew the last Tu-134 (the USSR's primary regional jet) in 2019, following the 2018 retirement of the final Tu-154 (the most successful Soviet medium-haul aircraft) and Red Wings' decommissioning of its Tu-204 fleet. Aeroflot had already discontinued its long-haul Il-96s in 2014. Only regional operators—lacking funds for fleet modernization—continued operating a handful of Soviet-era aircraft, primarily An-24 turboprops and An-2 utility aircraft.

3.1.4. The Russian Air Transport Market During the COVID-19 Pandemic

Like elsewhere globally, the COVID-19 pandemic dramatically reshaped Russia's aviation market. In 2020, passenger numbers plummeted to 69.2 million—a 46% decline from 2019's 128.1 million—while passenger-kilometers fell even more sharply by 52.5%. This collapse resulted from international flight bans, domestic anti-pandemic measures, and widespread self-isolation practices. The crisis effectively wiped out nearly a decade of growth, reducing traffic volumes to 2011-2012 levels overall and pushing international passenger numbers back to 1990s figures. Despite these severe impacts, Russia's aviation sector—alongside China's—emerged as one of the world's best-performing markets during the pandemic year (Aviastat, 2021).

The pandemic's impact on Russian aviation proved surprisingly short-lived. By 2021, passenger traffic had rebounded dramatically to 111 million - a remarkable 60.3% increase over 2020 figures, though still 13.4% below pre-pandemic 2019 levels. Most strikingly, domestic routes achieved an all-time record, carrying over 87.5 million passengers as Russians turned to local travel amid ongoing international restrictions.

While Russian aviation had not fully rebounded to 2019 levels, it nevertheless led the world in post-pandemic recovery, with 2021 traffic reaching 111 million passengers (60.3% above 2020 but still 13.4% below 2019). The sector demonstrated remarkable resilience, particularly in domestic travel which set new records at 87.5 million passengers. The three-year trend perfectly mirrored pandemic waves: stable pre-crisis operations in 2019 gave way to March 2020's dramatic collapse (with a brief summer recovery before the second wave hit), followed by 2021's steady climb that nearly

matched pre-pandemic volumes by August - a recovery trajectory that outpaced most global markets (Aviastat, 2022)

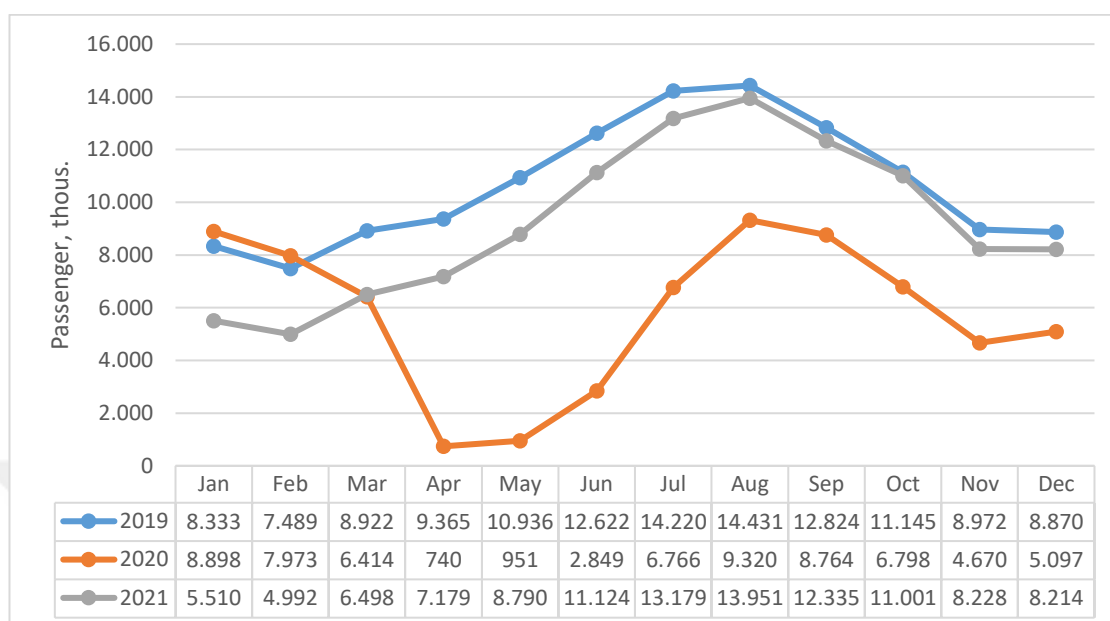


Figure 3.3. Passenger Traffic by Months (Years 2019, 2020, 2021)

Reference: Rosaviatsia

During the brief summer recovery period of August-September 2020, Russia's domestic air traffic volumes actually surpassed 2019 levels. While the second pandemic wave caused a seasonal dip that autumn, the domestic market rebounded strongly in early 2021 - consistently outperforming pre-pandemic 2019 figures throughout the year, often by significant margins. This robust recovery pattern contrasted sharply with most international markets that continued to struggle with COVID-related restrictions.

3.1.5. Pre-Sanctions Development Summary

Following the USSR's collapse in 1991, Russia's aviation industry entered a decade-long crisis that persisted until 2000. The subsequent economic revival fueled the sector's recovery, driving a consolidation process that created globally competitive airlines operating modern Western aircraft and IT systems—several of which eventually joined international aviation alliances. By the late 2010s, passenger traffic

not only rebounded to 1990 levels but substantially exceeded them. Soaring oil prices played a dual role: generating substantial foreign currency inflows while simultaneously boosting travel demand and accelerating carriers' transition to fuel-efficient Western aircraft.

The industry's transformation during the 2010s—marked by fleet modernization, regional airport investments, and enhanced management practices—enabled growth rates that consistently outpaced the national economy. Though COVID-19 caused severe disruption in 2020 (with traffic plunging to 2011-12 levels), the recovery in 2021 nearly restored pre-pandemic volumes, positioning the sector to surpass 2019 records in 2022 had normal growth patterns continued.

3.2. Geopolitical Background

3.2.1. Ukraine as a Divided Nation

While modern Ukraine's territory formed the core of medieval Kyivan Rus' (9th-13th centuries), the Mongol invasion of 1240 terminated its political sovereignty, transforming the region into a contested borderland for six centuries between the Polish-Lithuanian Commonwealth (west) and Russian state (northeast). The prolonged Polish-Russian rivalry generated frequent border revisions and created enduring regional divisions, as western Ukraine developed under Polish Catholic influence while eastern territories gradually integrated into Russian Orthodox political and cultural spheres.

The formation of modern Ukrainian identity emerged from a complex synthesis of Russian and Polish cultural influences, significantly shaped by Soviet territorial policies. During the creation of the Ukrainian Soviet Republic in 1917-1922, Lenin incorporated historically Russian-dominated regions—including Odessa, Yekaterinoslav (modern Dnipro), and Kharkiv—to bolster the republic's pro-Soviet orientation. This eastern orientation was counterbalanced in 1945 when Stalin annexed western Ukrainian territories (Galicia and Volhynia) from Poland, incorporating cities like Lviv with their distinct Polish-Austrian heritage. These deliberate Soviet border adjustments created an artificial geopolitical entity containing fundamentally different

historical experiences: Russian-influenced industrial east versus Polish-influenced agrarian west—a dichotomy that would later fuel regional political divisions.

Ukraine's historical regional divisions became politically salient following independence in 1991, as evidenced by the 1994 presidential election. The vote revealed a stark east-west divide: Western and central regions, particularly the formerly Polish territories of Galicia and Volhynia (joined USSR in 1939-1945), strongly supported incumbent Leonid Kravchuk—a former Communist Party official turned nationalist leader who had declared independence. Conversely, the southeastern industrial regions (Crimea and Donbas) overwhelmingly backed Leonid Kuchma, who promoted moderate policies and closer ties with Russia. This electoral geography reflected enduring cultural and political fault lines between areas with Polish/Austrian legacies and those with deeper Russian historical roots.

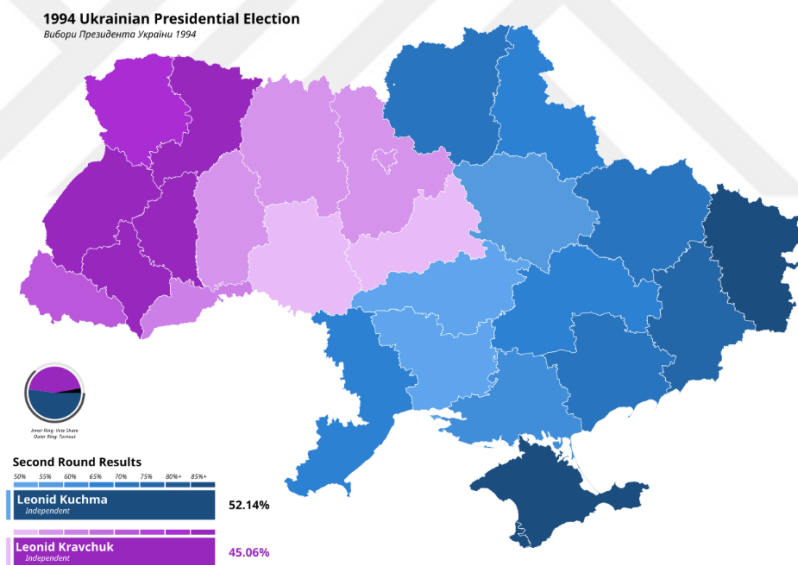


Figure 3.4. Ukrainian President Election, 1994, Second Tour

Reference: Electoral Geography

The regional difference became especially significant after 2004. For example, in the 2004 Ukrainian presidential election, the division in electoral preferences between the nationalist Yushchenko and the pro-Russian candidate Yanukovich was largely replicated by the results of the 1994 elections. The presidential campaign of 2010 had a similar result, where the main rivalry unfolded between the pro-Western nationalist

Yulia Tymoshenko and re-participating in the elections pro-Russian Viktor Yanukovich.

Ukraine's regional political divide intensified significantly after 2004, mirroring historical voting patterns. The contentious 2004 presidential election revealed nearly identical geographic fault lines to the 1994 contest, with western and central regions overwhelmingly supporting the nationalist Viktor Yushchenko while eastern and southern districts favored the pro-Russian Viktor Yanukovich. This polarization persisted in the 2010 election, which again pitted pro-Western forces (represented by Yulia Tymoshenko) against Yanukovich's pro-Russian bloc. The consistent electoral geography demonstrated how Ukraine's historical regional cleavages had crystallized into enduring political divisions

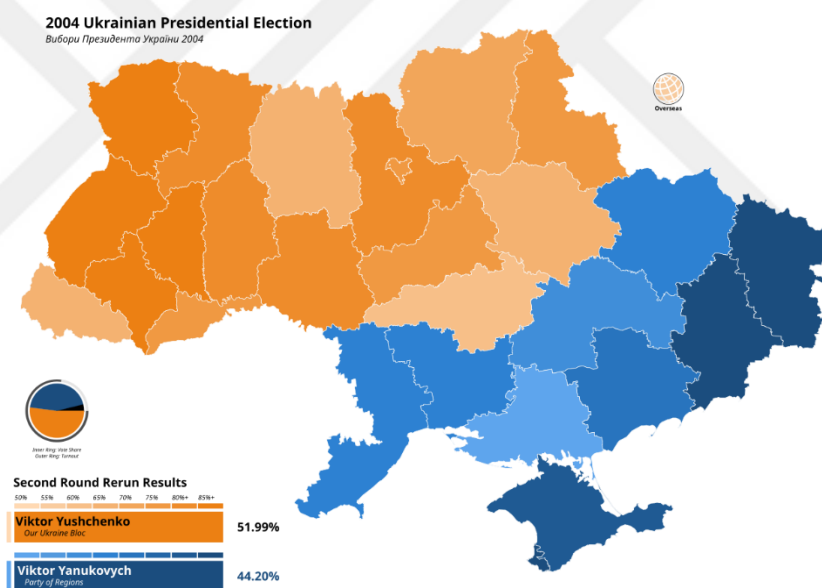


Figure 3.5. Ukrainian President Election, 2004, Second Tour

Reference: Electoral Geography

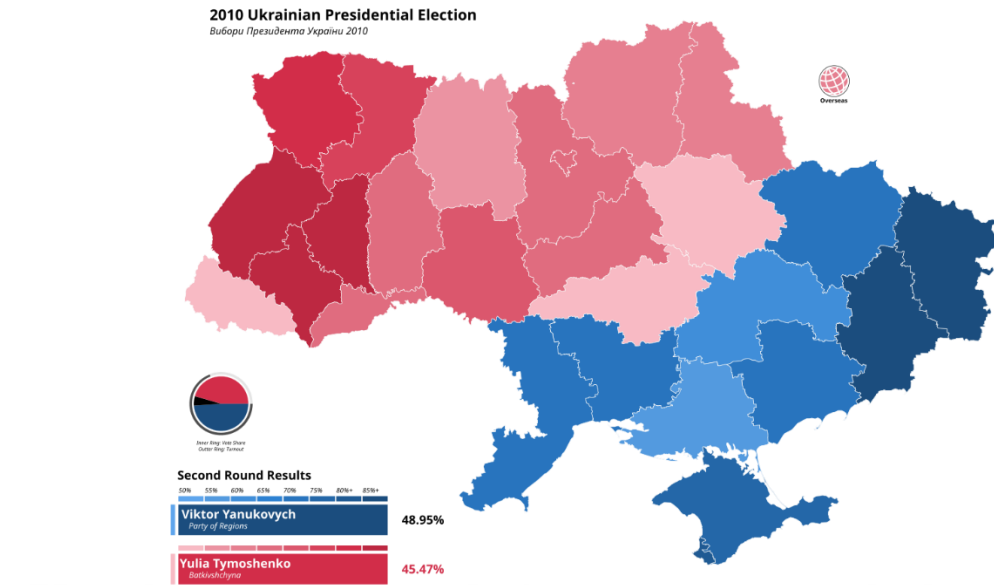


Figure 3.6. Ukrainian President Election, 2010, Second Tour

Reference: Electoral Geography

The electoral results underscore Ukraine's profound societal divisions, which have increasingly reflected civilizational fault lines over time. The growing political salience of linguistic (Russian vs. Ukrainian), religious (Moscow Patriarchate vs. Kyiv Patriarchate), and geopolitical (pro-European vs. pro-Russian) factors revealed fundamentally competing visions of national identity. These divisions called into question the historical accident of Ukraine's territorial unity, which was largely shaped by Soviet administrative borders rather than by the natural processes of nation formation and the historical accident of its unification into a single state.

3.2.2. Eastern Partnership and the EAEU

In addition to Ukraine's internal divisions, external factors played a crucial role in the crisis and its escalation. Throughout the 1990s, despite Russia's severe economic crisis and domestic turmoil, it maintained significant influence across the post-Soviet space. Russia actively mediated regional conflicts and deployed peacekeeping forces to separate warring parties in various hotspots, establishing itself as the primary security guarantor in the region.

At the same time, the 2004 NATO enlargement and EU expansions in 2004/2007, which incorporated former Warsaw Pact states, eliminated strategic buffer zones by creating direct borders between these Western blocs and CIS countries. While Russian leadership viewed EU expansion with relative tolerance, NATO's eastward movement was perceived as a fundamental breach of alleged 1990 agreements about non-expansion - promises Moscow claims were made during German reunification negotiations. This perceived betrayal significantly shaped Russia's subsequent security calculus regarding its 'near abroad', particularly Ukraine (Rossiyskaya Gazeta, 2022).

The economic revival of Russia and the expansion of Western institutions in the 2000s spurred deeper integration in the post-Soviet space. In 2001, Russia and its allies established the Eurasian Economic Community (EurAsEC) to promote EU-style economic cooperation, which evolved into a Customs Union in 2010 (initially comprising Russia, Belarus, and Kazakhstan, later joined by Kyrgyzstan and Armenia). Parallel to this, the Collective Security Treaty Organization (CSTO), founded in 2002, sought to strengthen military and political ties among member states, reinforcing Russia's role as a regional security guarantor. These initiatives reflected Moscow's strategic push to consolidate influence amid growing Western engagement in its traditional sphere.

In parallel to Eurasian integration efforts, the EU launched its Eastern Partnership initiative on May 7, 2009, during the Prague Summit—a Polish-led project mirroring the Euro-Mediterranean Partnership (1995) and targeting six post-Soviet states (Ukraine, Moldova, Belarus, Georgia, Armenia, and Azerbaijan). While promoting democratic governance, human rights, and rule of law, the program's proposal for a Deep and Comprehensive Free Trade Area (DCFTA) created inherent incompatibility with Russian-led trade blocs like the Customs Union. This economic conditionality effectively forced partner countries to choose between Brussels or Moscow, intensifying geopolitical competition for influence in the shared neighborhood.

In parallel with working with the official authorities of these countries within the framework of the Eastern Partnership, European structures were building up a wide network of Western NCOs working directly with the population. As a result, despite the fact that the Eastern Partnership assumed only some kind of "association with the

EU," participation in it was presented as a step towards full-fledged membership in the EU, which was perceived by the population of most post-Soviet countries (including Russia) as a path to well-being and prosperity. As a result, even the pro-Russian president of Ukraine, Viktor Yanukovich, who was elected in 2010, coming under pressure from the EU and domestic pro-Western factions, and for a long time could not officially refuse to participate in this Polish project.

Alongside official government-level cooperation under the Eastern Partnership program, EU institutions fostered an extensive network of Western NGOs operating directly with local populations. While the initiative formally offered only association agreements with the EU, it was consistently framed - both by EU representatives and domestic pro-Western groups - as a pathway to eventual full membership. This narrative gained significant traction among populations across post-Soviet states (including Russia), where EU integration became widely viewed as synonymous with prosperity and development. The resulting dynamics placed even Ukraine's pro-Russian president Viktor Yanukovich (elected in 2010) in an untenable position, coming under pressure from the EU and domestic pro-Western factions. For an extended period, he found himself unable to formally withdraw from this Polish-originated initiative, despite Moscow's objections - a political dilemma that would ultimately contribute to the 2013-2014 crisis.

As expected, judging from the beginning of 2025, participation in the Eastern Partnership has not led to EU membership for any of the countries. On the contrary, at various periods, most of the participants faced a serious destabilization of the political situation associated with the destructive actions of pro-Western forces. Thus, despite participating in the project, Moldova (2015-2016, result: electoral system change, coming to power in 2020), Armenia (2018, result: velvet revolution, arrival of pro-Western forces, defeat in the second Karabakh war with Azerbaijan in 2020), Belarus (2020 result: suppression of protests, sanctions against the country, withdrawal from the Eastern Partnership), Georgia (2024, suppression of protests, stopping the process of European integration initiated by the EU). Despite local variations, all these protests propagated an identical causal logic: EU integration required the removal of incumbent elites, and preserving the current leadership would automatically halt European integration

Ukraine experienced the most severe consequences among Eastern Partnership countries from pro-Western protests. Triggered by pro-Russian President Yanukovych's refusal to join the EU free trade zone (part of the Polish-led initiative) and his pursuit of membership in the Customs Union with Russia, Belarus and Kazakhstan, these protests capitalized on Ukraine's societal divisions. They escalated into violent clashes between supporters and opponents of the Eastern Partnership. The collapse of Ukraine's government, Yanukovych's flight, and the subsequent rise to power of nationalists from Western Ukraine and pro-Western forces then provoked massive pro-Russian protests across the country's southeast.

The overt involvement of Western officials in the pro-European protests—alongside militant Ukrainian nationalist factions (including neo-Nazi elements)—and their support for the unconstitutional removal of Ukraine's pro-Russian president signaled to Moscow that the EU had abandoned established norms of political competition. Within six days of the violent power transition in Kyiv, Russian forces mobilized in Crimea, where local authorities promptly called a referendum on separation from Ukraine. The subsequent pro-Russian victory in the March 2014 Crimean referendum, Russia's immediate recognition of the results, and Crimea's de facto annexation produced dual consequences: it galvanized pro-Russian movements in southeastern Ukraine while intensifying the anti-Russian stance of the new nationalist-led government in Kyiv.

The Kosovo factor played a direct role in the decision of the Russian leadership to support the pro-Russian authorities of Crimea and the recognition of its independence. In 1999, using an overwhelming advantage in military potential, the NATO bloc, in violation of the UN Charter, committed aggression against the Republic of Yugoslavia, subsequently occupying the Serbian region of Kosovo and Metohija. In 2008, despite the UN Security Council resolution 1244 adopted by the West itself, confirming the territorial integrity of Serbia, the local authorities created by the occupying forces declared independence, and the leading Western countries had approved it. The use of military superiority for aggression against a sovereign country with the aim of secession of part of its territories, and then diplomatic recognition and support of these territories, bypassing UN resolutions, created a precedent that could not but be repeated.

The Kosovo precedent directly influenced Russia's decision to support Crimean authorities and recognize its independence. In 1999, NATO—leveraging its overwhelming military superiority—conducted an unauthorized intervention against Yugoslavia, violating the UN Charter. This was followed by the alliance's occupation of Kosovo and Metohija, Serbia's historic heartland. Despite UN Security Council Resolution 1244 (which reaffirmed Yugoslav territorial integrity), Western powers in 2008 recognized Kosovo's unilateral declaration of independence by local authorities established under their occupation. This sequence—military intervention to facilitate territorial secession, followed by diplomatic recognition circumventing UN resolutions—established a geopolitical precedent, was bound to be invoked in future geopolitical conflicts.

In the absence of a legitimate central government, pro-Russian forces announced the creation of the Donetsk (April 7, 2014), Kharkiv (April 7), Odessa (April 14), Lugansk (April 27) Republics and began forming militia units. On April 13, the first armed clash between a militia unit and the Ukrainian agents took place near the city of Slavyansk in the north of the Donetsk region. In response, the new Ukrainian authorities announced an anti-terrorist operation against pro-Russian forces. Thus, the political competition between European and Russian integration projects escalated into a civil war in Ukraine.

3.2.3. Civil War, Minsk Agreements, and the SVO

The active combat phase of Ukraine's civil war (April 13, 2014 – February 12, 2015) ended with the Minsk Agreements, after pro-Russian protests were violently suppressed in Kharkiv and Odesa (including the deadly May 2, 2014 Trade Unions House fire), while in Donetsk and Luhansk oblasts, protesters mounted sustained armed resistance and held independence referendums on May 11, 2014.

While Russia refrained from recognizing the independence referendums and publicly advocated for peaceful conflict resolution, the newly elected Ukrainian President Petro Poroshenko (May 2014) launched a major military offensive against the separatist republics, capitalizing on Moscow's lack of overt military intervention. Despite initial territorial gains—including the near-encirclement of Donetsk in summer 2014—

Ukraine's armed forces suffered devastating defeats at Ilovaisk (August 2014) and the Debaltseve salient (January-February 2015), where Russian-backed forces surrounded large groups of Ukrainian troops. These battlefield reversals compelled Kyiv to abandon its military solution and pursue political negotiations, culminating in the Minsk II agreements of February 2015

The February 2015 Minsk Agreements, signed by Ukraine and the Donetsk/Luhansk leadership under international mediation, mandated a ceasefire, limited autonomy for the separatist-held territories, amnesty for combatants, local elections under Ukrainian law, and eventual Ukrainian border control restoration. Although unanimously approved by UN Security Council Resolution 2202 and supported through multilateral formats (Normandy Four, Trilateral Contact Group), the accords ultimately froze rather than resolved the conflict—stabilizing frontline positions while failing to bridge fundamental disagreements over constitutional reforms and implementation timelines, leaving Donbas' political status unresolved.

Both Petro Poroshenko, who was elected president of Ukraine after an armed coup in 2014, a native of Odessa and a former priest of the Russian Orthodox Church, and Vladimir Zelensky, a native of Eastern Ukrainian city Zaporizhia, who called himself "the president of all Ukrainians," were under intense pressure from the West and Ukrainian nationalists and sabotaged the implementation of the Minsk agreements. Thus, the world's largest unrecognized state Donetsk and Lugansk Republics, with a total population of 4 million people, remained in a political vacuum for 8 years. Later, the leaders of Germany and France at that time, Angela Merkel and Francois Hollande, who were participants in the negotiations in the Normandy Four format, would confirm that the Minsk agreement was only a tactical pause and gave Ukraine time to rearm.

Simultaneously, Ukraine underwent transformative processes that reveal the root causes of this study's focus. Merely eight days after the February 2014 Kyiv government transition, the interim administration signed the political provisions of the EU-Ukraine Association Agreement (March 2), followed by the economic section on June 27. While the economic effectively barred Ukraine from alternative integration blocs, the political mandated 'public administration reform' and anti-corruption

measures. Under this pretext, parallel governance structures emerged to oversee local elites while operating independently from elected authorities.

On April 16, 2014, Ukraine established the National Anti-Corruption Bureau (NABU)—a security agency with broad investigative powers over senior officials. Its director required approval by a commission including three foreign experts (from the IMF, EU, and OSCE), effectively granting international actors veto power. That same year, at the EU's insistence, Ukraine created the Specialized Anti-Corruption Prosecutor's Office (SAP), nominally subordinate to the Prosecutor General but functionally autonomous. In 2019, the High Anti-Corruption Court (HACC) was added through direct EU pressure to ensure 'independent review' of NABU cases, with judicial candidates vetted by international advisors.

These institutions received substantial Western funding (e.g., €70 million from Denmark's EUACI program, 2020-2025), yet demonstrated questionable efficacy: over a decade, NABU recovered just \$20 million against operational costs exceeding \$100 million annually—raising concerns about either institutional incompetence or unstated operational priorities. In 2021, NABU's powers expanded further to include unrestricted surveillance capabilities without judicial oversight (Ukraina.ru, 2021).

The EU also demanded the creation of such structures from other Eastern Partnership participants, but it was in Ukraine where they were implemented most extensively. Nevertheless, similar influential bodies were established in Georgia (the Anti-Corruption Bureau and the Special Prosecutor's Office) and Moldova (the National Anti-Corruption Center and the Anti-Corruption Prosecutor's Office), both of which signed Association Agreements with the EU. Other Eastern Partnership members—Armenia (the Corruption Prevention Commission and the Special Investigative Service) and Azerbaijan (the Anti-Corruption Agency)—also set up anti-corruption institutions, but deliberately limited their authority, leaving them with merely symbolic functions. Facing massive pro-Western protests in 2020, Belarus banned the independent anti-corruption agencies pushed by the EU.

Meanwhile, the dominance of Ukrainian nationalists in the political arena has led to sustained pressure on the Russian-speaking population in territories under Kyiv's

control. The language law adopted under Poroshenko banned the use of Russian in education and television, while extrajudicial measures against the pro-Russian opposition—implemented under Zelensky—resulted in the shutdown of popular TV channels covering Western influence in Ukraine’s domestic politics, as well as the arrest of pro-Russian party leaders, including Viktor Medvedchuk (the godfather of Putin’s daughter).

In February 2022, the Russian Federation launched a Special Military Operation (SVO) aimed at establishing a friendly government in Kyiv, conducting "denazification" by eliminating Ukrainian neo-Nazi groups allegedly responsible for attacks on pro-Russian figures and discriminatory policies against Russian language and culture, and achieving demilitarization through Ukraine's transformation into a neutral state with significantly reduced military capabilities. The operation provoked absolute hysteria in the EU and US, as its potential success threatened to undo years of EU and U.S. efforts to integrate Ukraine into Europe's economic sphere and maintain Western external control over it. In response, the West imposed harsh economic sanctions on Russia, while providing direct military and financial support to the Ukrainian government, in an effort to undermine Russia's economy and lead it to a strategic defeat comparable to the Cold War defeat.

3.2.4. SVO as an Opportunity for Russian Strategic Defeat

Immediately following the launch of its Special Military Operation, Russia faced an unprecedented wave of sanctions targeting all sectors of its economy. Between 2022 and 2024, over 28,000 restrictive measures were imposed against Russia - more than the total number of sanctions applied against all other countries worldwide combined.

The initial EU sanctions packages (1–4) included measures such as freezing the assets of Russian individuals and entities linked to the country’s leadership, oligarchs and the military sector. They also restricted Russia’s access to EU financial markets and froze the Russian Central Bank’s reserves, which account around €300 billion in foreign exchange reserves. In addition, key Russian banks, including Sberbank and VTB, were cut off from the SWIFT system, and payment services such as Visa, Mastercard and ApplePay were suspended. Additional restrictions included a ban on the export of

dual-use items such as advanced technology, microchips and software, as well as components critical to the military industry.

With each new package, the EU sanctions expanded to target increasingly critical sectors of the Russian economy. The fifth package introduced an embargo on Russian coal imports, closed EU ports to Russian vessels, and banned exports of oil and gas equipment. The sixth package imposed a phased ban on seaborne Russian crude oil (effective December 2022) and petroleum products (February 2023), while the seventh package prohibited Russian gold imports and extended sanctions to space and chemical industry firms. The eighth package, coordinated with the G7, set a \$60-per-barrel price cap on Russian oil and restricted IT, engineering, and legal services to Russian entities. Finally, the ninth package banned broadcasting by Russian state-affiliated media, including RT, Sputnik, and Izvestia, further tightening economic and political pressure on Russia.

The sanctions triggered a severe economic shock, leading to a sharp currency depreciation and soaring inflation. The ruble plummeted, with the dollar exchange rate nearly doubling to 130 rubles, while monthly inflation hit 7.6% in — the highest in two decades. Banks faced massive cash withdrawals, prompting restrictions on foreign currency purchases. Imports collapsed by 40-80% due to the exodus of Western firms and supply chain disruptions, leaving shopping centers with 70-80% of their storefronts shuttered and causing widespread shortages. To avert a financial meltdown, trading on the Moscow Stock Exchange was suspended for nearly a month. These disruptions underscored the immediate and profound impact of the sanctions on Russia's economy.

The sanctions triggered widespread panic, particularly among young Russians, exacerbated by Western-aligned media coverage. This atmosphere spurred the largest emigration wave in a decade, with an estimated 500,000 to 1.3 million people—predominantly young, urban professionals—fleeing the country in 2022 alone.

The situation at the front further aggravated these challenges. Despite some successes in the Special Military Operation, including the capture of significant territories in southern Ukraine and the regional center of Kherson, the operation ultimately failed

in its primary objective. The Russian army was unable to seize Kyiv within the planned three days, and their advance stalled just 15 kilometers from the Ukrainian capital due to fierce resistance from the Armed Forces of Ukraine and logistical difficulties. Although they briefly encircled them, the Russian forces also failed to capture the northern Ukrainian regional centers of Kharkiv, Chernihiv, and Sumy.

A month after the start of the military operation, it became clear that Russia's initial objectives were unattainable by force. As a result, Moscow began withdrawing its troops from the Kyiv and Chernihiv regions, and peace negotiations commenced in Istanbul.

During the negotiations in Istanbul on March 29–30, 2022, the parties reached a tentative agreement on key issues: Ukraine would adopt neutral status (renouncing NATO membership but remaining open to potential EU integration), Russian forces would withdraw to pre-invasion positions, and the status of Crimea and Donbas would be frozen for 15 years. Additionally, security guarantees for Ukraine were to be provided by the U.S., U.K., Germany, China, and Turkey. However, the proposed terms faced resistance in the West. Russia's economic vulnerabilities and the exposed weaknesses of its military led some Western leaders to believe that a more decisive strategy could inflict a strategic defeat on Moscow—potentially even triggering the collapse of the Russian state. As a result, the Istanbul agreements ultimately failed to materialize.

British Prime Minister Boris Johnson, during his visit to Kyiv on April 9, urged Ukrainian leadership not to sign any agreements and to continue fighting. He pledged large-scale military aid, including advanced weapons like HIMARS missile systems and tanks, while promising Western support for a complete military defeat of Russia. Following this, Ukraine withdrew from negotiations, abandoning the Istanbul peace framework (RBC, 2024a)

As a result, what began as a "special military operation" rapidly escalated into a protracted, full-scale war—fought not only on the battlefield but also through economic pressure and societal resilience. Given the vast disparity in resources between Russia and the collective West, the conflict soon became a war of survival for

Russia, testing its ability to withstand prolonged military, economic, and political strain.

3.3. Sanctions Against Russian Aviation

Sanctions against Russian civil aviation have proven to be among the most severe in the history of aviation. Their design made it clear that their objective was the strategic defeat of Russia and the potential destabilization of the state.

Civil aviation has emerged as one of the most vulnerable points in Russia's socio-economic structure. Given the country's status as the world's largest by area and its relatively sparse population, a functional civil aviation sector is a cornerstone of normal economic activity. It is this sector that binds the vast nation into a single economic entity. For instance, the distance between Moscow, the capital, and Vladivostok, a key city and major port in the Far East, is 9,062 km. Civil aviation covers this distance in approximately 9 hours, whereas the same journey by train takes roughly 7 days.

3.3.1. Airspace Closure

The first wave of sanctions against Russian aviation involved the complete closure of Western airspace to Russian airlines. Following the onset of the Special Military Operation, the United Kingdom was the first nation to initiate a comprehensive sanctions campaign against Russia. The measures announced on February 24th included an asset freeze on Russian companies and a flight ban prohibiting Aeroflot from operating within UK airspace. At the time, Aeroflot was operating six weekly flights between Moscow's Sheremetyevo Airport and London Heathrow. The airline also held a prominent commercial position as the official carrier for Manchester United Football Club (RBC, 2022a). The UK further escalated its measures on February 26th by completely closing its airspace to all Russian aircraft. The country's Transport Secretary, Grant Shapps, announced that the restrictions would be expanded to include all Russian privately owned planes.

Also on February 24th, Poland declared its intention to close its airspace to Russian airlines. Prime Minister Mateusz Morawiecki specified that the prohibition would take effect at midnight on February 26th. That same day, the Czech Republic similarly announced the closure of its airspace to Russian flights, effective February 26th (RBC, 2022b).

Bulgaria became the next country to close its airspace. The country's Ministry of Transport announced a ban on all aircraft with licenses issued by the Russian Federation from entering its sovereign airspace and territorial waters (Ministry of Transport and Communications of Bulgaria, 2022).

Following the decisions of Poland, the Czech Republic, and Bulgaria, Latvia and Estonia also closed their airspace to Russian aircraft. The Latvian carrier airBaltic concurrently announced the suspension of all its flights to Russia. Lithuania joined Latvia and Estonia in closing its skies to Russian aircraft, effective February 26 (RBC, 2022d). Simultaneously, Romania closed its airspace. Romanian Foreign Minister Bogdan Aurescu called for similar actions from other EU member states in a statement posted on Twitter (ERR, 2022).

Slovenia became the ninth country to close its airspace to Russian aircraft, as announced on Twitter by Slovenian Minister of Infrastructure Jernej Vrtovec. The prohibition applied to all aircraft registered in Russia, as well as those operated by Russian-based airlines whose air operator's certificate was issued by the Russian Federation (RBC, 2022c).

On February 27, a significant wave of closures was announced by numerous other nations, including Finland, Austria, Denmark, Iceland, Germany, Sweden, France, Canada, Spain, North Macedonia, Albania, and Norway, all of which banned Russian aircraft and airlines from their airspace.

North Macedonia also imposed a ban on flights by Russian-operated aircraft. A statement to this effect was published on the official government website. Although the country is not an EU member state, its authorities decided to align with the

recommendations of the European Union and its members by prohibiting all airlines from the Russian Federation from entering North Macedonian airspace.

On the evening of February 27, the European Union formally instituted a ban on Russian aircraft across its entire territory. This measure was part of a new sanctions package announced by European Commission President Ursula von der Leyen at a press conference in Brussels.

"We are closing EU airspace to Russian [planes]. We are imposing a ban on all aircraft owned by Russia, which are registered in Russia or controlled by Russia. These planes will not be able to land, take off or fly over the territory of the EU," she said. Von der Leyen clarified that the ban applies to all aircraft, including those used for private purposes (RBC, 2022f).

However, nearly all EU member states had already closed their airspace to Russian carriers prior to this unified decision. By that time, the airspace of only seven of the 27 EU countries remained open: Hungary, Greece, Cyprus, Luxembourg, Malta, Slovakia, and Croatia. With non-EU states such as the United Kingdom, Norway, Iceland, and North Macedonia also joining the aviation sanctions, Russian carriers were effectively barred from flying over the entirety of Europe.

Despite the existence of a few non-EU countries in the Europe that had not closed their airspace, their open status had a negligible impact on the overall situation. The geographical distribution of the closed airspace made it logistically impossible to chart viable flight paths between Russia and Europe by circumventing the banned zones through the remaining open countries. Consequently, all direct air travel between Russia and Europe was effectively severed (Komsomolskaya Pravda, 2022).

The wave of closures continued. On February 28, Switzerland, a nation traditionally known for its policy of neutrality, banned Russian aircraft from its airspace. This was followed by Montenegro, which announced the closure of its skies to Russian aircraft on March 1 (RBC, 2022h). A highly significant move occurred on March 2, when the United States joined the sanctions regime. The closure of U.S. airspace to Russian

aircraft took effect at 9 p.m. Eastern Time on March 2 (5:00 a.m. Moscow Time on March 3).

As a result, the airspace of the entire European Union, alongside Switzerland, Albania, North Macedonia, Iceland, Montenegro, Canada, and the United States, was officially closed to Russian aviation. This comprehensive closure dealt a severe blow to Russian airlines. A substantial portion of their international flight schedule—traditionally more profitable than domestic routes—was directed toward European destinations. Furthermore, following the pandemic, air traffic to and from the EU had been experiencing a significant and growing recovery, making the sudden loss of these routes particularly damaging to their financial health and operational viability (RBC, 2022i).

In just one day on February 27, and from Sheremetyevo airport alone, aircraft departed for numerous European destinations, including Madrid, Milan, Málaga, Helsinki, Athens, Amsterdam, Barcelona, Nice, Larnaca, Venice, Oslo, Budapest, Munich, Frankfurt, Stockholm, Copenhagen, Berlin, Zurich, Geneva, Paphos, Brussels, and Thessaloniki. Additional flights to Prague, Ljubljana, Sofia, Riga, Vienna, and Alicante, as well as evening services to various German and Italian cities, were scheduled but were canceled at the last moment due to the imposition of sanctions. After 4:00 p.m. on February 27, not a single flight departed from Sheremetyevo for Europe. While the volume of traffic was lower at Domodedovo, Vnukovo, and Zhukovsky airports, the overall situation was identical (Komsomolskaya Pravda, 2022).

Among Russian airlines, Aeroflot operated the most extensive route network to Europe. The national carrier canceled flights incrementally as each country announced restrictions—first to Warsaw and Prague, then to Sofia and Bucharest, and so on. By March 1, it had canceled all its European flights.

S7 Airlines also served numerous destinations in the Europe. Proactively, and without waiting for the formal EU-wide decision, the carrier canceled all its flights to Europe on February 25. The canceled routes included services to very popular tourist

destinations such as Burgas, Varna, Munich, Vienna, Dusseldorf, Berlin, Verona, Bologna, Milan, Alicante, Barcelona, Larnaca, Paphos, Thessaloniki, Nice, and Paris.

Ural Airlines was forced to abruptly curtail its newly launched charter program to the Portuguese island of Madeira. In a stark illustration of the sudden nature of the airspace closures, a Ural Airlines flight en route to Madeira with tourists on board was compelled to turn around mid-flight on February 27 after Portuguese authorities closed the country's airspace without prior warning (RBC, 2022g). The airline had also scheduled regular services to other European destinations, including Barcelona, Budapest, Burgas, Varna, Heraklion (Crete), Larnaca, Paphos, and Sofia. Beyond Ural Airlines, European flights operated by Rossiya, Pobeda, and Nordwind were also canceled (Komsomolskaya Pravda, 2022).

Initially, as the first EU restrictions were announced, Russia's largest airlines attempted to adapt by altering their flight paths. This strategy appeared to be a viable, though costly, short-term solution. The rerouted flights experienced increased travel times, ranging from an additional 15 to 20 minutes for some destinations to over an hour for others, particularly those in Southern Europe and Egypt. However, this workaround became entirely obsolete within a week, following the comprehensive EU-wide decision to close all airspace to Russian-operated aircraft (RBC, 2022f).

3.3.2. EU Aviation Sanctions

Immediately following the onset of the Special Military Operation, the European Union adopted several coordinated packages of sanctions against Russia. The second package, in particular, dealt a crippling blow to Russia's civil aviation sector. On February 26, as a core component of this package, the EU instituted a comprehensive ban on the sale, supply, leasing, maintenance, and insurance of aircraft and related equipment to Russia (European Council, 2022a).

The official text of the regulation stipulated the following:

"It shall be prohibited to sell, supply, transfer or export, directly or indirectly, goods and technology suited for use in aviation or the space industry, as listed in Annex XI,

whether or not originating in the Union, to any natural or legal person, entity or body in Russia or for use in Russia" (European Union, 2022).

In practice, this entailed an export ban covering all goods and technology destined for the aviation and space industries, a prohibition on the provision of insurance, reinsurance, and maintenance services related to those goods and technologies, a ban on providing any related technical or financial assistance.

This comprehensive ban on the sale of all aircraft, spare parts, and equipment to Russian airlines is designed to degrade a key sector of Russia's economy and significantly reduce the country's connectivity. The measure is particularly impactful given that an estimated three-quarters of Russia's commercial air fleet were manufactured in the EU, U.S., and Canada (European Council, 2022a).

According to the EU sanctions regulations, it is prohibited to provide any insurance or reinsurance services for European aircraft currently in Russia, along with repair, modification, or defect remediation services for these aircraft. The sanctions allow for a limited grace period: deliveries of aircraft from the European Union may continue only until March 28, 2022, but solely under contracts that were concluded before February 26 (Kommersant, 2022b).

These unprecedented sanctions against the Russian aviation industry effectively prevent Russian airlines from operating European-made aircraft. New deliveries, along with maintenance and insurance services from all parties, are prohibited. Furthermore, aircraft already leased under previous contracts must be returned to their lessors within a one-month timeframe. Notably, the repair and insurance restrictions also applied to aircraft that are directly owned by Russian airlines, leaving virtually no operational workaround for these carriers.

This stringent sanctions package was finalized following a meeting attended by Irish Prime Minister Micheál Martin—a key figure given that a significant portion of the global aircraft leasing fleet is registered in Ireland—along with major international lessors. The meeting resulted in the approval of the most severe possible restrictions: a comprehensive ban covering not only new contracts but also existing ones, with a

brief transition period lasting until March 28. This measure effectively mandated the withdrawal from Russia of all Airbus aircraft and many others, rendering their full and legal operation impossible for Russian airlines.

Prior to the meeting's conclusion, lessors had hoped for an exemption that would allow existing contracts to remain in force. However, their appeals were unsuccessful. The adopted package explicitly prohibited the "sale, supply, transfer, or export, directly or indirectly" of all aircraft, helicopters, space technology, and their components. As stated in an explanatory document sent by lessors to Russian airlines: "The ban also covers aircraft leasing, as it is considered a form of 'supply.' Consequently, new leasing contracts cannot be concluded, and existing ones must be terminated." The sole exception granted to European companies was the permission to conduct pre-flight inspections of aircraft (European Union Aviation Safety Agency, 2022).

The standard terms of leasing agreements included clauses that permitted the lessor to reclaim aircraft if the lessee could no longer guarantee the aircraft's safe operating conditions. These contractual provisions provided the legal basis for the mass repatriation of aircraft to their lessors.

Although the sanctions themselves lacked formal extraterritorial application, they contained a critical provision: EU-based suppliers of aircraft, parts, and components were required to ensure their products were not ultimately destined for Russian entities. This condition, which addressed the question of third-country maintenance, severely complicated or entirely prevented Russian carriers from obtaining repair and servicing for their Western-made aircraft anywhere in the world (Abdullina, A., 2022).

The G7 Leaders' Statement, published on February 24, 2022:

We as the G7 are bringing forward severe and coordinated economic and financial sanctions

(European Council (2022b)).

3.3.2.1. Ban From EASA

On March 14, the European Union Aviation Safety Agency (EASA) published a "Safety Information Bulletin" outlining the full scope of restrictive measures against Russian civil aviation. The bulletin stated that EASA had suspended all certificates it had issued—including those for products, spare parts, appliances, and aircraft—where the certificate holder is located or resides in Russia (European Union Aviation Safety Agency, 2022).

Furthermore, the agency announced it would not accept any new applications for certification from organizations or individuals based in Russia or otherwise subject to sanctions until further notice.

EASA also reinforced the EU's airspace closure, explicitly prohibiting any aircraft operated by Russian air carriers, registered in Russia, or controlled by any Russian natural or legal person, organization, or authority from landing, taking off, or overflying EU territory.

The agency prohibited the conclusion of new lease and code-sharing agreements with Russian aircraft operators or for aircraft registered in Russia, mandating that any such existing agreements be terminated.

Critically, holders of EASA type certificates and other design organization approvals were prohibited from providing airworthiness support or any other form of technical assistance for aircraft registered, designed, or operated in Russia where Russia acts as the state of operation.

This prohibition encompassed all major and routine repairs, inspections, replacements, modifications, or defect resolutions, with the sole exception of pre-flight inspections. De facto, for political reasons, the European agency responsible for the safety of European-manufactured aircraft had de facto significantly reduced the operational safety of these same aircraft in Russia solely based on their Russian registration (Aviation21, 2022).

3.3.2.2. Sanctions Impact Assessment

The Russian civil aviation industry, encompassing both aircraft manufacturers and airlines, was among the first sectors targeted by sanctions from the European Union and the United States. European Commission President Ursula von der Leyen announced that the EU had halted the supply of all aircraft, spare parts, and related equipment to Russia. She emphasized that this measure was strategically designed to degrade a key sector of the Russian economy and sever the country's connectivity, noting that "three quarters of Russia's current commercial air fleet were built in the European Union, the US and Canada. And therefore, they are massively depending on that" (European Neighbourhood Council, 2022; Abdullina, A., 2022).

These sanctions starkly highlighted the critical dependence of Russia's aviation industry on Western technology, maintenance, and support. Analysts projected that, collectively, these measures could force the grounding and effective removal of more than half of the Russian commercial fleet within a matter of months, potentially reducing it by more than two times.

By the end of 2021, the Russian air transport industry exhibited a profound reliance on foreign lessors and manufacturers. More than half (55%) of the entire national passenger fleet was leased from international companies. Out of a total of 980 passenger airliners operated by Russian carriers, 777 were under lease agreements. Among these, 515 aircraft, with an estimated collective market value of \$10 billion, were leased from foreign owners (Abdullina, A., 2022). The scale of foreign dependence is further illustrated by the broader fleet composition. According to the Russian Federation's transport agency, the national fleet in 2020 consisted of 1,290 aircraft of all types and 2,260 helicopters. Of these, 824 aircraft (64%) and a significant portion of helicopters were of foreign manufacture.

Airbus airliners were particularly critical to the national infrastructure. A fleet of 322 Airbus aircraft was responsible for approximately 40% of the country's total passenger traffic. Ten of the top twenty Russian airlines, which collectively accounted for 97% of all passengers carried, operated Airbus aircraft. Major carriers such as Aeroflot, S7 Airlines, and Ural Airlines were heavily dependent on this European manufacturer.

Aeroflot's fleet included 117 Airbus aircraft. S7 Airlines operated 66 Airbus aircraft. Ural Airlines' fleet consisted exclusively of 54 Airbus aircraft. While these airlines also operated Boeing aircraft, the data underscores that Airbus formed the backbone of their—and by extension, the nation's—commercial passenger operations.

Table 3.1. Number of Foreign Aircraft in the Fleet of Russian Airlines (End of 2021)

Number of Aircraft			
	Produced in EU, US, Canada and Brazil	Produced in Russia	All
Aeroflot	176	9	185
S7	102		102
Rossiya	59	67	126
Utair	56		56
Ural Airlines	54		54
Nordwind	45		33
Pobeda	44		21
Azur Air	33		31
Avrora	21		15
Red Wings	15	16	31
Smartavia	15		15
Pegas Fly	15		15
Yamal	13	15	28
Royal Flight	13		13
RusLine	13		13
NordStar	10		10
Yakutia	8	4	12
ALROSA	6	5	11
IrAir	2	27	29
Azimut		15	15

Reference: Rosaviatsia, 2022

The American aerospace corporation Boeing, Airbus's primary competitor, was also extensively utilized by Russian airlines, holding a 36% share of the market. Mirroring the trend with Airbus, the most prevalent model was the medium-haul Boeing 737.

This aircraft type formed the entire fleet of the low-cost carrier Pobeda, which operated 44 of these planes. Although global issues surrounding the certification and safety of the newer Boeing 737 MAX model had dampened interest in the manufacturer, the earlier variants of the B737, such as the NG (Next Generation) series, remained among the most widely used and reliable workhorses in the Russian commercial aviation sector prior to the imposition of sanctions (RBC, 2022e).

Table 3.2. The Number of Aircraft in the Fleet of Russian Airlines by Origin of Production

Origin of manufacture	Number of planes in fleet of Russian Airlines	Share, %
EU	337	39
USA	308	36
Russia (USSR)	158	18
Canada	32	4
Brazil	23	3

Reference: Rosaviatsia, 2022

The sanctions effectively deprived carriers of the ability to operate their fleets. Even a complete halt to international flights did not resolve the fundamental challenges facing Russian airlines, as the sanctions had effectively cut off access to the majority of their aircraft. With few viable alternatives, carriers were left with three options: return the planes to lessors, attempt to buy them back, or sever ties with lessors altogether to retain the fleet for domestic operations within Russia. However, experts expressed skepticism regarding the possibility of sustaining these aircraft for more than six months without manufacturer support—even if airlines resorted to cannibalizing parts of the fleet for spare parts. Moreover, experts estimated that replacing these aircraft with Russian-made alternatives such as the MC-21 and SSJ-100 would require five to seven years, underscoring the profound medium-term challenges (Kommersant, 2022a).

Another critical issue was insurance. Airlines unanimously agreed that operating international flights without reinsurance—previously secured in European markets—

was impossible. This was especially relevant for third-party liability insurance, which requires exceptionally high coverage limits that were now inaccessible (Kommersant, 2022b).

As Oleg Panteleev, a leading aviation expert and executive director of the Aviaport agency, noted:

“Therefore, it is right to say that the imposition of these sanctions means the paralysis of Russian civil aviation, at least in the short term. For a country like Russia, the termination of flights is a dramatic blow to territorial connectivity and the economy.” (Kommersant, 2022a)

Faced with the sudden collapse of the international regulatory and contractual framework, the only recourse to prevent catastrophic consequences for the industry was for the Russian government to implement countermeasures opposing these sanctions.

3.3.3. Bermuda (UK) and Ireland Sanctions

3.3.3.1. Scope of Restrictions

On March 12, 2022, the Bermuda Civil Aviation Authority (BCAA) announced the suspension of the Certificates of Airworthiness for all Russian-operated aircraft registered in Bermuda. This decision was made under a bilateral agreement between the two nations. The regulator stated that international sanctions against Russia's aviation sector had severely impaired its ability to oversee and guarantee the safety of these aircraft (Monocle, 2022d).

In an official statement, the BCAA explained:

"The airworthiness assurance system has been limited to such an extent that the BCAA cannot confidently approve these aircraft as airworthy. Effective 02:59 Moscow time on March 13, 2022, the BCAA is temporarily suspending the validity of all Certificates of Airworthiness for aircraft operated under the agreement between Bermuda and the Russian Federation" (Monocle, 2022c).

The suspension of airworthiness certifications by international registries dealt a crippling blow to the operational legality of Russia's Western-made fleet. According to the Bermuda Civil Aviation Authority (BCAA), international sanctions had severely impaired its ability to conduct safety oversight for Russian-operated aircraft on its registry. In a press statement, the BCAA declared: "The airworthiness system has been restricted to the point that the Bermuda Civil Aviation Authority (BCAA) is unable to confidently approve these aircraft as being airworthy." Consequently, effective 23:59 UTC on March 12, 2022, the BCAA provisionally suspended all Certificates of Airworthiness for aircraft operating under the Article 83bis agreement between Bermuda and the Russian Federation. For any aircraft still airborne at that time, the suspension took effect immediately upon landing (Bermuda Civil Aviation Authority, 2022).

This action was highly significant as, according to data from February 24, 768 aircraft operated by Russian airlines—primarily Airbus and Boeing models—were registered in Bermuda. The local authority cited the imposed sanctions, including the ban on the supply of spare parts, as the direct reason for its inability to guarantee airworthiness (Koryakin, I., 2022a).

Following Bermuda's lead, the Irish Aviation Authority (IAA) took identical action on March 15. The IAA formally notified Russian airlines that it was revoking the Certificates of Airworthiness for all aircraft registered in Ireland and operated by them, effectively grounding those aircraft as well (Aviation Week, 2022). The mass revocation of airworthiness certificates by offshore registries rendered a vast portion of the Russian fleet legally grounded. According to the Federal Air Transport Agency, as of February 25, Russian airlines operated 37 aircraft registered in Ireland, utilized by carriers including Rossiya, Alrosa, and iFly. An airliner cannot legally operate without a valid Certificate of Airworthiness, which is issued by the civil aviation authority of the country of registry (RBC, 2022k).

The scale of this dependency was immense. As reported by TASS, Russian airlines operated more than 800 foreign-made aircraft registered in offshore jurisdictions. Notably, approximately 95% of these aircraft were registered under the nationality of

the United Kingdom (via its Overseas Territory, Bermuda) and Ireland (Kommersant, 2022e).

The Bermuda Civil Aviation Authority (BCAA) confirmed that a significant proportion of the 900+ aircraft on its registry were utilized by Russian commercial operators. As an Overseas Territory of the United Kingdom, Bermuda is obligated to enact UK foreign policy, including sanctions. Consequently, the BCAA was suspended nearly 85% of its issued Certificates of Airworthiness in a single day (Bermuda Civil Aviation Authority, 2022a). This action came at a significant financial cost to Bermuda itself; as Transport Minister Lawrence Scott warned, the projected loss of \$25 million in aviation revenue due to sanctions threatened to erase the BCAA's anticipated \$17.8 million profit for the year (Royal Gazette, 2022).

3.3.3.2. Significance of the Sanctions

Typically, nations register their aircraft in national registries and operate them under domestically issued Certificates of Airworthiness. However, following the dissolution of the USSR, the Russian Federation's transition from Soviet to global aviation standards created a legal and regulatory gap that initially prevented the direct certification of Western-manufactured aircraft like Boeing and Airbus for domestic registration.

As an interim solution, these aircraft were registered in offshore jurisdictions, notably Bermuda and Ireland, which operate under internationally recognized standards. Although intended to be temporary, this arrangement persisted for decades. Despite Russian airlines and regulators fully adopting international safety standards by the 2000s, both lessors and carriers showed little impetus to transfer aircraft to the Russian national registry.

This inertia was driven by several factors. For lessors, keeping aircraft on well-established Western registries provided superior legal protection and facilitated easier repossession in case of contract disputes. For Russian airlines, it helped avoid costly import duties that would be levied on aircraft officially imported and registered domestically (Airways Magazine, 2022; Viktorov, V., 2022). Consequently, on the eve

of the full-scale invasion of Ukraine in February 2022, the majority of aircraft operated by Russian airlines remained registered in Bermuda and Ireland and were leased from Western lessors, creating a critical strategic vulnerability that was swiftly exploited by international sanctions.

Conventionally, nations register aircraft in their national registries and operate them under domestically issued certificates of airworthiness. The Russian Federation, however, represented a historical exception. Following the dissolution of the USSR, its regulatory framework underwent a prolonged transition from Soviet to global (ICAO) standards. This process initially created a legal impediment that prevented the direct certification of Western-manufactured aircraft like Boeing and Airbus for immediate service within Russia.

As a result, an interim solution was adopted: these aircraft would be registered in offshore jurisdictions, primarily Bermuda and Ireland, operating under their airworthiness certificates. Although intended to be temporary, this arrangement persisted for decades. Crucially, even after Russian aviation authorities had fully adopted international standards by the 2000s, a combination of factors prevented a large-scale repatriation of the fleet to the national registry.

For foreign lessors, the primary owners of these aircraft, there was a significant distrust in the transparency and completeness of Russia's airworthiness maintenance procedures. Furthermore, international aviation law, specifically the provisions of Article 83-bis of the Chicago Convention, designates the country of registry as responsible for the oversight and certification of an aircraft's airworthiness. Registering an aircraft in more than one country is prohibited. Consequently, lessors preferred to keep aircraft on the well-established registries of Bermuda and Ireland to maintain control and ensure standardized, internationally recognized oversight.

For Russian airlines, the financial incentive was also a deterrent; registering aircraft domestically would trigger costly import duties (Airways Magazine, 2022; Viktorov, V., 2022).

Therefore, on the eve of the 2022 invasion, the majority of foreign aircraft used by Russian airlines were both leased from Western lessors and registered offshore. This dependency created a critical vulnerability. When international sanctions were imposed, the aviation authorities of Bermuda and Ireland suspended the certificates of airworthiness for all Russian-operated aircraft on their registries. According to international law, this action rendered it illegal to operate these aircraft, effectively grounding the bulk of Russia's commercial fleet.

3.3.3.3. Consequences of the Sanctions

The suspension of foreign airworthiness certificates did not inherently mean the aircraft had immediately become unsafe to fly; rather, it rendered their operation illegal under international and Russian law. The Russian Air Code explicitly prohibits flights without a valid certificate of airworthiness. Since most airlines had not yet managed to re-register their foreign-made aircraft in the Russian registry, a vast majority of flights on the Russian air transport market became illegal overnight (Kommersant, 2022e).

Confronted with the imminent collapse of a critically important national industry, the Russian authorities and airlines were forced to adopt a new operational paradigm. Adherence to the rules that governed "a previous life" was set aside in favor of ensuring national connectivity and economic function. This necessary disregard for previously sacrosanct international norms and regulations became the new normality to keep the aviation sector operational (Koryakin, I., 2022).

3.3.4. US Aviation Sanctions

Mirroring the EU's initial actions, the United States began imposing and expanding sanctions against Russian aviation, particularly targeting aircraft of American origin. However, a critical distinction emerged: US sanctions possessed an extraterritorial nature. This meant they threatened any party worldwide—not just US entities—with secondary sanctions if they were found to be facilitating violations. While EU sanctions primarily prohibited maintenance, US restrictions went further by explicitly

banning the operation of US-origin aircraft, effectively declaring any flight by such an aircraft a sanctionable offense.

The US measures unfolded in a rapid, escalating sequence. On February 24, the US imposed restrictions on the export of aviation-related goods to Russia. On March 2, these export controls were extended to Belarus. The new rules mandated that any aircraft manufactured in the US or containing more than 25% US-origin content required a special license for export to these countries—a license that was effectively impossible to obtain. Also on March 2, the US officially closed its airspace to all Russian aircraft (RBC, 2022l).

On March 2, Boeing suspended the supply of spare parts, all technical support for Russian airlines, and shuttered its state-of-the-art training center in Moscow's Skolkovo district (TASS, 2022a).

3.3.4.1. Aircraft Sanction Lists

Following the approval of sanctions, the U.S. export control authority, the Bureau of Industry and Security (BIS) under the Department of Commerce, in coordination with law enforcement agencies, initiated stringent monitoring for violations of the new regulations. A key enforcement tool was the public identification of sanctioned aircraft.

On March 18, 2022, the U.S. Department of Commerce published its first list of 99 Boeing aircraft operating within Russia that were in violation of U.S. export controls. The list, which targeted specific airlines, included 33 aircraft operated by Aeroflot, 23 by Azur Air, 14 by Nordwind Airlines, 12 by AirBridgeCargo (Volga-Dnepr Group), 12 by Utair and 5 by Aviastar-TU (Kommersant, 2022k).

The U.S. government then disseminated this list to aviation industry entities worldwide with a clear directive: providing services such as refueling, maintenance, or repair to any of the identified aircraft would constitute a violation of U.S. sanctions.

In an official statement, the U.S. Department of Commerce explained the measure's intent:

"By preventing these aircraft from receiving any service we are effectively grounding them by eliminating their ability to fly internationally."

The statement further clarified that any such service, including the sale of spare parts, directly contravened U.S. export regulations. Violators, including foreign entities, were warned they would face severe penalties, including significant jail time, fines, loss of export privileges, and other restrictions (U.S. Department of Commerce, 2022).

The U.S. enforcement of aviation sanctions continued to escalate throughout the spring of 2022. On March 30, the U.S. Department of Commerce expanded its list of aircraft violating export controls by adding 73 new entries. In a concurrent action, the agency removed 12 aircraft from the list, permitting their return to lessors in partner countries, which indicated a targeted approach to enforcement.

A more severe punitive measure followed on April 7, when the Department of Commerce imposed direct export sanctions on three major Russian carriers: Aeroflot, Utair, and Azur Air. Its Bureau of Industry and Security (BIS) announced it had "revoked the export privileges of these three airlines... in connection with ongoing violations" of the restrictions. This action formally severed the airlines' access not only to U.S. products but also to any goods of U.S. origin from abroad, effectively instituting a comprehensive trade embargo against them by blocking re-exports (TASS, 2022b).

The scope of sanctions continued to widen. On May 20, BIS announced the denial of export privileges to Rossiya Airlines. Accompanying this decision was an updated list of 157 Boeing aircraft operating in violation of sanctions within the fleets of Russian companies, as well as Belarus's Belavia and for private use. The list saw a slight increase from previous versions, notably incorporating a second Boeing 787 Dreamliner linked to Roman Abramovich (RBC, 2022q).

The United States continued to systematically expand its list of sanctioned aircraft throughout 2022 and into 2023. On August 2, 2022, the U.S. Department of Commerce

prohibited the maintenance of an additional 25 aircraft operating in Russia. The new restrictions targeted Airbus airliners operated by Ural Airlines, S7 Airlines, Red Wings, Yamal, Nordwind, and iFly. This action brought the total number of Russian commercial and private aircraft under U.S. sanctions to nearly 200 (RBC, 2022q).

In a significant escalation a year later, on August 30, 2023, the United States added another 121 aircraft to the list. This expansion notably targeted the business aviation sector for the first time, sanctioning jets from several corporate operators.

The update also extensively targeted the mainline carrier fleet, adding 117 new aircraft operated by Aeroflot, Pobeda, S7 Airlines, Nordwind, Nordstar, Ural Airlines, Utair, Yamal, Smartavia, and other carriers. This marked the first inclusion of aircraft from Smartavia on the sanctions list. With this update, the total number of aircraft on the U.S. sanctions list reached 297 units, demonstrating a continued and widening campaign to ground Russia's aviation capacity (Lvova, A., 2023).

3.3.4.2. The Impact of US Sanctions

The U.S. sanctions were uniquely potent due to their extraterritorial nature, which empowered the Bureau of Industry and Security (BIS) to act as a primary global enforcer. By identifying U.S.-origin aircraft operating within Russia, BIS compiled and published lists of specific aircraft that were denied access to refueling, spare parts, and maintenance services *anywhere in the world*. Any entity, regardless of location, providing such services to a listed aircraft faced the threat of severe secondary sanctions from the United States (AviaPort, 2022).

In defiance of these bans, Russian airlines continued to operate the sanctioned aircraft on a limited basis. For instance, a Utair Boeing 767-200 (registration RA-73081), explicitly named on the U.S. Department of Commerce list, completed a flight from Vnukovo to Dushanbe and back on March 20-21, 2022. On the same day, a second sanctioned Utair Boeing 767 (RA-73082) flew to Tashkent and returned.

However, the practical impact of the sanctions was still severe. They drastically limited the operational geography of these aircraft. The Russian Federal Air Transport Agency

(Rosaviatsia) was forced to issue permits authorizing flights only to countries where the risk of immediate seizure was deemed low. (Kommersant, 2022k).

3.3.5. Immediate Consequences of Western Sanctions

The Russian civil aviation industry, encompassing both aircraft manufacturers and commercial airlines, was among the first and most comprehensively targeted sectors for sanctions imposed by the European Union and the United States. The scope and severity of these measures remain unparalleled when compared to other sanctioned industries. Through a combination of formal legislation and subsequent regulatory clarifications, Western nations instituted a sweeping prohibition on the sale, leasing, and insurance of aircraft to Russian entities; the continuation of all services under existing contracts, including maintenance, the supply of spare parts, and the provision of specialized software (e.g., navigation systems, flight operations, and business management platforms), mutual overflight and landing rights with virtually all Western countries and numerous other states aligned with the sanctions regime (Monocle, 2022h).

A direct and immediate consequence was the demand from Western lessors for the return of over 500 foreign-made aircraft, with an estimated aggregate value of \$20 billion. Russian Transport Minister Vitaly Savelyev characterized this demand as a "political decision," confirming that attempts by Russian airlines to negotiate a resolution had been entirely unsuccessful (RBC, 2022o). This confrontation placed the vast majority of the modern commercial fleet at immediate risk of seizure abroad or forced repatriation, threatening to cripple the country's air transport capacity.

The operational impact of the sanctions was swift and severe. Major Russian airlines, including Aeroflot, Pobeda, S7, and Nordwind, immediately began facing the risk of aircraft arrests upon flying to international destinations. By March 22, Transport Minister Vitaly Savelyev reported that carriers had "lost" 78 of the country's 1,367 commercial aircraft. This figure represented approximately 6% of Russia's total fleet and 10% of all foreign-made aircraft in the country, which were either seized abroad or formally returned to lessors in compliance with demands. (RBC, 2022n).

Concurrently, the industry experienced a significant leadership crisis. On March 4, Andrei Kalmykov, the founding CEO of Pobeda Airlines (Russia's first low-cost carrier), resigned at his own request. This was followed on March 10 by the resignation of Mikhail Poluboyarinov, CEO of Aeroflot, alongside Andrey Panov—the architect of the airline's development strategy—and a substantial portion of its top management (RBC, 2022j; RBC, 2022m). The sanctions imposed by the West were perceived by many experts and airline executives as the end.

3.3.6. Comparison of Aviation Sanctions Against Russia and Other Countries

The aviation sanctions imposed on Russia following its 2022 military operation in Ukraine represent a significant and novel evolution in the use of restrictive measures. While they share the core objective of historical precedents—to cripple a target's civil aviation by restricting access to aircraft, spare parts, and technology—their comprehensive nature, technological sophistication, and implementation mechanism mark a distinct new chapter. A comparison with past cases against Iran, Yugoslavia, Iraq, and Libya highlights these critical differences.

When compared to the long-standing sanctions against Iran, the measures against Russia demonstrate an evolution in Western strategy. Both cases feature core bans on aircraft and components from manufacturers like Boeing and Airbus. However, key differences emerge. The Iranian sanctions were implemented gradually over decades, whereas a severe and comprehensive package was applied to Russia immediately in 2022. Furthermore, the technological restrictions against Russia are far more severe, incorporating unprecedented digital elements like the blocking of computer-aided design (CAD/CAM) systems and air traffic control software, reflecting the modern aviation industry's deep reliance on digital technology.

The contrast with historical sanctions against Yugoslavia, Iraq, and Libya is even starker, primarily in legal status and complexity. A fundamental difference is legitimacy: the earlier sanctions were imposed via UN Security Council resolutions, granting them global legitimacy. In contrast, the sanctions against Russia were enacted by a Western coalition circumventing the UN, which reduced their universality but allowed for swift implementation without a Russian veto. In terms of scope, the

historical sanctions were total, involving a complete ban on all international air traffic. The Russian sanctions are more selective and sophisticated, employing tools like selective airspace closure, targeted financial restrictions, and bans on servicing specific aircraft types. Their implementation also differs; past sanctions relied on traditional border controls, while modern measures against Russia use advanced tools like digital aircraft tracking, automated banking blocks, and intense pressure on third countries with threats of secondary sanctions.

In terms of scale and legitimacy, the sanctions against Russia are unprecedented. The U.S. employed a new level of detail, publishing full lists of all Russian airlines' aircraft and prohibiting any maintenance, including refueling—a measure that forced third countries like Turkey to comply. The target itself is new: for the first time, restrictions are aimed not at a single airline or military aviation, but at the entire civil aviation ecosystem of a major nation, including manufacturing, IT systems, and global logistics. However, this unprecedented scale exists alongside dubious legitimacy under international law. Unlike UN-backed historical sanctions or broadly supported measures like those against South Africa, the sanctions on Russia have received weak support among non-Western countries, emphasizing their narrow political motivation from a Western coalition rather than a true global consensus.

The aviation sanctions against Russia thus represent a paradigm shift in economic statecraft, moving beyond the blanket embargoes of the twentieth century to forge a new model of targeted, technologically sophisticated coercion. By amalgamating the severe financial isolation once reserved for pariah states like Iran with an unprecedented digital siege on critical software and supply chains, these measures have weaponized the very interconnectedness of global aviation. Their implementation by a coalition outside the UN framework, while lacking the universal legitimacy of past actions, demonstrates a new capacity for swift and devastatingly detailed enforcement, from individual aircraft registries to refueling bans. Ultimately, the sanctions against Russia are not merely punitive but architectural, aiming to dismantle and isolate an entire industrial ecosystem, thereby setting a formidable precedent for how modern economic power can be projected in an increasingly digital and fragmented world order.

3.4. Russian Government's Countermeasures

The unprecedented volume of sanctions and the reality of the prospect of economic collapse forced the Russian government to take active anti-crisis measures. The set of measures adopted by the government can be divided into several categories, namely: retaliatory closure of airspace for airlines from "unfriendly" countries, measures to preserve the fleet of Russian airlines, measures to support airlines and domestic air transport market, measures to restructure the infrastructure of the air transportation market, as well as work on the earliest possible release of Russian aircraft to completely neutralize the effect of sanctions.

3.4.1. Special Economic Measures

The main instrument for implementing the counter-sanctions policy became special economic measures. The law "On special economic measures", adopted on December 30, 2006, gave the right to the head of the Russian state to introduce special economic measures in the conditions of international emergency situations.

The document generally regulated the introduction of restrictions on other states, their authorities, officials due to unfriendly actions or violations of current international legal norms. The measures included, among other things, the suspension of programs in the field of economic, technical, military assistance, a ban on financial and foreign economic transactions, a ban on ships entering ports, using Russian airspace, and others. The document also established that specific lists of actions to implement the decision of the head of state are adopted by the Government of the Russian Federation. The Law "On Special Economic Measures" has already been applied many times before this point. For example, it was used to introduce sanctions imposed within the framework of UN Security Council resolutions: in 2007 - to introduce sanctions against Iran, in 2009 - against Eritrea due to events in Somalia, in 2010 - against the DPRK after nuclear tests in this country, in 2014 - as part of the implementation of the UN resolution regarding the Central African Republic. On January 16, 2009, in accordance with this law, Russian President Dmitry Medvedev signed a decree banning the supply of military and dual-use products to Georgia.

Special economic measures were also taken against Turkey. In response to the incident on November 24, 2015, when a Turkish plane shot down a Russian Su-24 bomber in the skies over the Syrian-Turkish border, on December 28 of the same year, Putin signed a decree banning charter flights between Russia and Turkey, hiring Turkish workers and importing food products, and suspended several agreements. After the normalization of relations in 2016, special measures were relaxed in several stages (TASS, 2023a).

The Western sanctions introduced after the reunification with Crimea in 2014 also led to the use of special economic measures by Russia. The decree "On the application of certain special economic measures in order to ensure the security of the Russian Federation" signed by Putin on August 6, 2014 led to the introduction by the Russian government of a ban on the import of agricultural products, raw materials and food from the United States, the European Union, Norway, Australia and Canada. A year later, on August 13, 2015, the Russian government added Albania, Montenegro, Iceland, Liechtenstein and Ukraine to the list (sanctions against Ukraine came into effect on January 1, 2016). Subsequently, the Russian embargo was repeatedly extended and is still in effect.

3.4.2. Closure of Russian Airspace to “Unfriendly” Countries

Russia's first response to aviation sanctions was a symmetrical closure of its airspace. In parallel with the introduction of restrictions for Russian airlines by Western countries, the Russian Aviation Authority Rosaviatsia introduced mirror restrictions for airlines from these countries. In response to the first bans, the Federal Air Transport Agency closed its airspace to British aircraft on February 25 (Federal Air Transport Agency, 2022a), and to Bulgarian, Polish and Czech airlines on February 26, including transit flights (Federal Air Transport Agency, 2022b). By February 28, flights over Russia were banned for airlines from 36 countries, including the EU and Canada (Federal Air Transport Agency, 2022c).

By early March, Russian airspace was closed to airlines from Austria, Albania, Anguilla (an overseas territory of Great Britain), Belgium, Bulgaria, the British Virgin Islands, Great Britain, Hungary, Germany, Gibraltar, Greece, Denmark, Jersey,

Ireland, Iceland, Spain, Italy, Canada, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Finland, France, Croatia, the Czech Republic, Sweden, Estonia and Cyprus.

Thus, in response to the closure of the airspace of the EU countries, Russia has closed its airspace to all airlines from these countries (Izvestia, 2022). Given that Russia is the largest country in the world, the decision was painful for European companies. In addition to being unable to fly to Russia, airlines from these countries lost the ability to use its airspace. This dealt a serious blow to air traffic between Europe and Asia, with northern European airlines suffering the greatest losses. Finnish carrier Finnair, whose Helsinki hub is located north of the 60th parallel, was forced to cut 23% of its flights to Asia after facing huge route deviations - the route to Beijing was extended by 1,729 nautical miles, adding four hours of flight time. Other airlines, such as Lufthansa (Frankfurt-Beijing +710nm/90min) and British Airways, experienced less severe but still significant impacts, showing a clear “geographical dependency”: airports north of the 50th parallel experienced flight times of over 100 minutes on Asian routes, and Scandinavian hubs experienced flight times of 200+ minutes on some routes. (He et al, 2025, Ennen et al.,2024).

These operational difficulties resulted in significant costs in the form of increased fuel burn, reduced aircraft efficiency, and loss of competitiveness compared to carriers that retained access to Russian airspace. While Chinese and Indian airlines continued to use Russian airspace unimpeded, some Japanese and Korean carriers voluntarily abandoned its use, sacrificing efficiency for political reasons. This has given an advantage to Middle Eastern and Asian airlines on Europe-Asia routes, while European carriers have been scrambling to rebuild their network.

The symmetry of the Russian response, as expected, did not lead to a crisis in EU aviation similar to the one that happened in Russia, since the costs of this measure were distributed among many European airlines, but it laid the foundation for the loss of competitive advantages by the Europeans in the medium term and significantly increased the cost of their sanctions policy.

3.4.3. Actions to Preserve the Aircraft Fleet

One of the most important tasks of the Russian Government in March 2022 was the neutralization of Western sanctions aimed at immediate stop of the operation of civil aviation and depriving airlines of the aircraft they use.

3.4.3.1. The Re-Registration of Aircraft in Russia

The primary task in ensuring uninterrupted air traffic was to organize the legal basis for re-registering Russian airlines' aircraft in Russian jurisdiction. This, in turn, required the urgent development and adoption of a law allowing ignorance of the requirements of aviation institutions in Western countries, caused sanction policies of Western governments.

Most of the foreign aircraft used by Russian airlines were leased abroad. The owners of the aircraft did not want to register them in the registry of the Russian Federation due to distrust of transparency and completeness of procedures for maintaining airworthiness, so they registered them in Bermuda and Ireland. It is the country of registration that, according to Annex 83-bis to the Chicago Convention, is responsible for maintaining airworthiness and certifying changes to the design of ships, and registration in more than one country is prohibited.

Most of the foreign aircraft used by Russian airlines were leased from foreign companies. The owners of these aircraft did not want to register them in the Russian registry due to concerns over the transparency and completeness of airworthiness maintenance procedures. Instead, they registered them in Bermuda and Ireland. According to Appendix 83-bis of the Chicago Convention, the country of registration was responsible for maintaining airworthiness and certifying any design changes to the aircraft. Additionally, dual registration of an aircraft in more than one country is prohibited.

When Russian aviation came under sanctions, Bermuda and Ireland suspended the certificates of airworthiness of Russian aircraft, after which it became illegal to take them into the sky. Then the carriers began to transfer them to the registry of the Russian

Federation, where until February 2022 there were only about a dozen large Airbus and Boeing (Kommersant, 2022q).

As part of special economic measures, the Russian government proposed registering foreign-leased aircraft under Russian jurisdiction on March 10, 2022. The corresponding bill was submitted to the State Duma, which passed it in three readings on March 11 (United Russia, 2022). President Vladimir Putin signed the legislation on March 14, and it came into force immediately (Kommersant, 2022f). The new law amended the Russian Air Code and several related legal statutes.

The key provision of the new law was that it allowed foreign-leased aircraft operated by Russian companies to be re-registered in Russia and issued Russian airworthiness certificates. This gave Russian airlines a legal pathway to retain their foreign-made fleets and continue operating them on domestic routes. Under the law, civil aircraft certification was to be conducted through authorized certification centers and testing laboratories, with requirements set by the Ministry of Transport (Monocle, 2022b). Later, a government resolution further streamlined the re-registration process, permitting airlines to formalize ownership rights and list aircraft in the state register within just five days.

3.4.3.2. Cancellation of Agreements with Bermuda

Russian Government Decree No. 503-r, issued on March 15, 2022, suspended the agreement with Bermuda concerning the supervision of aircraft registered under its jurisdiction. This agreement had been in force since 1999 (Russian Government, 2022a).

According to the explanatory note, the decision was prompted by the Bermuda aviation authorities' revocation of airworthiness certificates for Russian-operated civil aircraft and their failure to conduct proper aircraft maintenance. Following Bermuda's suspension of these certificates, Russian airlines risked having their aircraft detained abroad due to non-compliance with international safety regulations. By transferring the aircraft to the Russian state register, the Federal Air Transport Agency assumed responsibility for overseeing their airworthiness, replacing foreign regulatory bodies.

The decree specifically applied to aircraft leased by Russian airlines but registered in Bermuda, where local authorities had previously issued their airworthiness certificates. After the imposition of large-scale Western sanctions, the agreement with Bermuda became obsolete. Re-registration shifted regulatory authority to Russian aviation agencies, which then became responsible for issuing the necessary permits.

Terminating the agreement facilitated the inclusion of these aircraft in the Russian civil aircraft registry, mitigating risks to passenger air travel (Kommersant, 2022i).

3.4.3.3. Restrictions on the Return of Aircraft

One of the key decisions by the government in response to unprecedented sanctions was refusing to return leased aircraft. On March 8, Russian President Vladimir Putin signed a decree "On Special Economic Measures in Foreign Economic Activity to Ensure the Security of the Russian Federation." This decree authorized the Russian Government to compile lists of products and raw materials prohibited from import or export (TASS, 2023a).

On March 9, Russian Prime Minister Mikhail Mishustin implemented the presidential decree by signing three government resolutions that approved the relevant lists. These included bans on exporting various categories of goods, particularly technological and telecommunications equipment, medical equipment, vehicles and agricultural machinery, electrical equipment previously imported into Russia.

In particular, Russian Government Decree No. 312 dated March 9, 2022 established a licensing procedure for exporting certain types of vehicles, their parts and components from the territory of the Russian Federation according to the list specified in Appendix No. 2 to the decree. Appendix No. 2 of the government decree included aircraft (e.g., helicopters, airplanes) (HS code 8802), turbojet and turboprop engines (8411), parts for aircraft engines (8409 10 000 0), landing gear and their parts (8807 20 000 0), other parts of airplanes, helicopters or unmanned aerial vehicles (8807 30 000 0). A detailed list of Appendix No. 2 is presented in Table No. 1. (Russian Government, 2022b).

On the evening of March 29, 2022 - one day after the expiration of all European leasing contracts - the Ministry of Transport issued an order establishing new rules for approving aircraft exports abroad. According to the order, decision-making authority regarding which aircraft could be exported for maintenance or returned to foreign owners was transferred to the Ministry of Defense and the Federal Security Service (FSB). Airlines' applications to export aircraft or spare parts would now be evaluated based on potential threats to national defense and state security. The order, signed by Transport Minister Vitaly Savelyev, was published on March 29 (Kommersant, 2022k).

The regulations stipulated that airlines must provide detailed descriptions, quantities, timelines, and destination countries for any aircraft exports, supported by either supply agreements authorizing the export or sales contracts with manufacturers/intermediaries. After a two-day document review by the Transport Ministry, applications proceed to Rosaviatsia for compliance checks, while the FSB and Defense Ministry conduct a ten-day national security assessment. These security agencies had to submit their findings to the Transport Ministry within ten days, which then communicates the decision to applicants within two additional days, with denied applicants retaining the right to reapply through the same procedure (Interfax, 2022).

This order formalized what was already a de facto ban on returning aircraft to European lessors. By instituting mandatory reviews by the Ministry of Defense and FSB, authorities gained control over the scale of fleet repatriation, effectively reclassifying civilian aircraft as strategic commodities subject to export controls comparable to those governing military hardware. The approval process for civilian aircraft exports became functionally identical to arms export protocols, with "approved destination countries" determined by geopolitical alignment, existing international agreements, and Russia's strategic partnerships. These regulations nullified lessors' "legitimate" contract termination demands under Western law, replacing them with new "legal" requirements framed as national security imperatives binding for Russian airlines. The situation demonstrated that either party could unilaterally rewrite contractual rules mid-game, with each side's legal formalizations rendering their respective positions "lawful" within their own jurisdictions.

3.4.3.4. Lease Payment Modifications

On March 19, 2022, the Russian Government issued Decree No. 412, establishing special provisions for financial lease (leasing) agreements and foreign aircraft rentals under sanctions. The decree modified procedures for contractual payments, insurance, operations, and maintenance of foreign aircraft and engines in response to restrictive measures imposed by "unfriendly" states. Article 3 specifically required that lease obligations be fulfilled in accordance with Russian legislation on special economic measures, later refined by Presidential Decree No. 179 (April 1), which detailed payment mechanisms for foreign creditors from sanctioning countries. (Russian Government, 2022c, 2022d)

The framework introduced alternative payment options for obligations to lessors from unfriendly states. Payments could be made in rubles to Russian-resident parent companies at the Central Bank's exchange rate, regardless of the original contract currency. For transactions involving subsidiaries in non-sanctioning countries, payments were permitted in either the local currency or rubles. This applied to foreign entities meeting specific criteria, including registration in, primary operations within, or profit derivation from unfriendly states.

The provisions took full effect on April 11, 2022, through Government Resolution No. 635, creating a compliant payment mechanism under Russia's counter-sanctions framework. The system aimed to maintain contractual obligations while circumventing Western financial restrictions, particularly for aircraft, engines, and auxiliary power units leased through foreign companies.

Despite these provisions, most foreign lessors rejected the modified terms. European lessors, bound by EU regulations prohibiting lease payments, unilaterally terminated contracts and wrote off aircraft as losses. Their refusal to accept alternative payment methods - even when legally available - highlighted the political motivations behind their stance and prioritization of sanction compliance over contractual obligations (Monocle, 2022g).

At the same time, this law made it possible to accelerate the transfer to the Russian financial system of a small part of the fleet of aircraft, the leasing of which was issued to the European divisions of Russian banks, despite the fact that their very existence and activities in the new conditions became questionable (Monocle, 2022h).

3.4.3.5. Buyout of Leased Aircraft

The re-registration of aircraft in Russia enabled their continued operation on domestic routes but failed to resolve disputes with foreign owners. By late March 2022, Transport Minister Vitaly Savelyev acknowledged the government would need to negotiate the purchase of over 500 aircraft from foreign lessors, with a combined residual value of \$20 billion. The primary incentive for transferring aircraft to Russian ownership was their removal from Bermuda and Irish registries, which would theoretically permit their use on international flights. This strategic move aimed to circumvent restrictions imposed by foreign jurisdictions (Kommersant, 2023a). However, most Western lessors rejected negotiated settlements. Instead, they declared the aircraft losses and initiated insurance claims to seek compensation, opting for litigation over cooperation with Russian authorities.

3.4.3.5.1. Authorization for Financial Lease Buyouts

Already in the spring of 2022, faced with the impossibility of returning Russian aircraft, the EU softened its position on certain categories of aircraft. Against the background of ongoing negotiations between Russia and Ukraine in Istanbul, along with the adoption of the fifth package of sanctions on April 8, 2022, the European Union allowed its companies to fulfill financial leasing contracts concluded with Russian airlines until February 26.

With financial leasing, which is traditionally less common in aviation, aircraft always become the property of the operator, whereas with operational aircraft they are returned to their lessors (Kommersant, 2023c). Given that after the expiration of the contract, the planes would have already become the property of carriers from the Russian Federation, de facto lessors were simply allowed to receive payments for aircraft that legally belonged to Russian airlines. At the same time, the EU authorities

clarified in their explanations that Russian airlines should not be provided with "any economic resources, except for the transfer of ownership of the aircraft after full reimbursement of the financial lease" (Kommersant, 2022m).

As a result of this indulgence, in the spring of 2022, Aeroflot bought eight Airbus A330s from foreign owners, and Utair bought Boeing aircraft, including European structures of Sberbank (Kommersant, 2022o).

3.4.3.5.2. Development of Buyout Mechanisms

The acquisition of financially leased aircraft failed to resolve the broader dispute, serving primarily as a mechanism for lessors to recover payments for assets that had already legally transferred to Russian airlines. Western entities continued ignoring attempts to address operational lease disputes, leaving hundreds of aircraft in legal limbo despite ongoing sanctions.

Throughout 2022, Russian authorities explored mechanisms to regularize foreign-owned aircraft. In August, the Transport Ministry proposed using National Welfare Fund (NWF) resources to purchase these assets, requesting 20 major airlines to submit valuations and justification for acquiring aircraft - including those over 20 years old. This initiative sought to create a structured approach to transitioning the fleet to Russian control.

The state-backed NLK-Finance leasing entity was created in late 2022 under the Federal Air Transport Agency's airport administration. Designed to mitigate aviation sector risks from sanctions and insurance disruptions, the company received 300 billion rubles (\$4 billion) from the NWF as a 15-year loan at 1.5% interest. These funds were earmarked for purchasing foreign aircraft and leasing them back to Russian carriers (Monocle, 2023c).

NLK-Finance served as the institutional mechanism for transitioning aircraft ownership from foreign lessors to Russian control through a structured "leasing transfer" process. The entity acquired aircraft from international leasing companies and established new contractual arrangements with domestic carriers, enabling these

assets to remain in active service under either operational or financial lease frameworks. This approach effectively reclassified foreign-owned aircraft as Russian-controlled assets while ensuring their continued commercial operation. The model constituted a government-backed solution designed to sustain aviation operations despite international sanctions, creating an alternative ownership and leasing ecosystem within Russia's jurisdiction.

3.4.3.5.3. Permission From the USA and the EU

The Transport Ministry's aircraft buyout initiative found no traction with European authorities. As Ukraine abandoned negotiations and declared the necessity of a military victory over Russia, even economically favorable resolutions for operationally leased aircraft in Russia would have undermined the political impact of aviation sanctions. Western policymakers, perceiving a realistic path to strategically defeating Russia, allowed discussions to reach a deadlock. Faced with this impasse, European aviation regulators and lessors ultimately chose to disengage entirely-declaring the aircraft lost rather than pursuing compromise solutions (Kommersant, 2022o).

Despite the lack of progress in the purchase of aircraft from operational leasing, the mechanism developed by the Russian government began to work. Through NLK-Finance, Aeroflot successfully acquired 10 Boeing 777-300ER wide-body jets that had been under financial lease arrangements with an Irish lessor since 2013-2014. This landmark deal demonstrated the practical functionality of the government-developed transfer mechanism for foreign-owned aircraft.

By late 2022, it became apparent that neither side could secure a swift military victory, forcing both Russia and the West to prepare for a prolonged confrontation. As economic and societal adaptation to the new reality progressed, Western attitudes toward aviation sanctions began to shift. Despite the sanctions' intended long-term impact, Russia had managed to avert a market collapse, maintaining operational continuity for its repurposed foreign aircraft fleet in the domestic market.

On December 16, 2022, the European Union implemented its ninth sanctions package against Russia, which included Decision 2022/2478 granting temporary exemptions

from import/export restrictions. This derogation applied to all products covered by Regulation (EU) No 833/2014 - including aircraft - but only for items physically located in Russia when the original prohibitions took effect. The exemption, designed to facilitate foreign companies' market exit, remained valid until September 30, 2023.

This gave a new start to negotiations on the purchase of the fleet of Russian airlines. The process did not go smoothly. During these negotiations, it was only by July that the EU issued clarifications: the purchase of aircraft remained prohibited, but insurance settlement of leasing contracts for aircraft remaining in the Russian Federation was allowed. Nevertheless, most companies received permission to settle with insurance counterparties immediately after the EU clarifications in early July 2023. Initially, they operated for three months, until the end of September. Later, due to the difficulties of coordination, they were extended for another three months. In July, OFAC (Office of Foreign Assets Control), part of the US Treasury, also issued licenses to lessors allowing them to make payments in foreign banks, which expired at the end of September (Kommersant, 2023d). OFAC licenses also allowed for the direct purchase of airliners.

3.4.3.5.4. Implementation of Aircraft Buyout Mechanisms

The "leasing transfer" mechanism proved significantly more complex to implement than anticipated, requiring not only approvals from European and American authorities but also negotiations over the terms of state funding and existing lease contracts. With the soft loan to NLK-Finance covering just 20-30% of the Western-built fleet, each aircraft purchase required individual coordination with the Ministry of Transport, with airlines submitting detailed applications that included aircraft specifications (quantity, age), agreed transaction terms and pricing, and justifications for acquisition - such as the social importance of routes or operational requirements (Forbes Russia, 2023). This rigorous approval process, while ensuring alignment with national transportation priorities, substantially slowed the fleet transition efforts.

In August 2023, three carriers—Aeroflot, Ural Airlines, and iFly Airlines—secured preliminary approval from the Ministry of Transport for National Welfare Fund (NWF) allocations to convert 40 foreign-leased aircraft to Russian ownership. Aeroflot

planned to acquire 18 additional AerCap (Ireland) airliners valued at 53 billion rubles through NLK-Finance, while Ural Airlines arranged to purchase 19 aircraft from various lessors for 33 billion rubles, and iFly committed to three Airbus A330s from Air Lease Corporation (U.S.) for 10 billion rubles. S7 Airlines and Rusline also finalized deal terms in August, with the latter intending to buy eight regional CRJ aircraft. Separately, airlines negotiated financial terms with the Ministry of Finance regarding NLK-Finance contracts. While Aeroflot (50% state-owned) accepted NLK-Finance's standard contract, private carriers found the terms prohibitive: leases required 30–40% upfront deposits (versus the global standard of 15–20%) and mandated annual profit-sharing payments (30–40% of net profit) rather than fixed lease fees—a structure that, despite tolerance for higher deposits, was deemed excessively burdensome for operational viability.

Facing resistance from private carriers, the Ministry of Finance—responsible for approving NLK-Finance leasing terms—revised the conditions for aircraft acquisitions. The government extended the financial lease period from 15 to 17 years and eliminated the contentious 30–40% annual profit-sharing requirement. Instead, airlines were obligated to repay prior subsidies through "compensation" fees based on 2022 profits, a compromise that largely appeased the industry. By October, S7—joining Aeroflot, Ural Airlines, and iFly—submitted an application to purchase 45 aircraft worth 50–70 billion rubles under the revised terms.

The government's proposed conditions ultimately proved equitable given its unprecedented 2022 support for civil aviation. Rather than the typical 20–30 billion rubles in annual funding, authorities allocated 172.3 billion rubles to industry stabilization—a measure that contributed to the 27 largest passenger airlines collectively earning 87.8 billion rubles in net profit (2.8× higher than 2021). The leasing mechanism specifically required airlines to reinvest these subsidy-fueled profits into acquiring critically needed aircraft (Monocle, 2023e), creating a sustainable cycle of state-backed fleet modernization.

3.4.3.5.5. Aircraft Buyout Results

Through transactions completed between late 2023 and early 2024, Russian airlines successfully acquired 165 aircraft from foreign lessors, fully utilizing the 300 billion rubles allocated for this purpose from the National Welfare Fund (NWF). The purchased aircraft accounted for about 40% of the imported fleet (approximately 400 aircraft), which belonged to Western lessors and remained in Russia, despite the sanctions imposed in 2022 and the demands of foreign lessors to return the airliners.

Aeroflot, Russia's largest aviation group, has successfully resolved ownership disputes for 93 aircraft with foreign lessors through a series of transactions funded by the National Welfare Fund (NWF), beginning with the acquisition of 10 Boeing 777 wide-body aircraft in December 2022, followed by subsequent tranches of 18 aircraft and 5 engines in September 2023, 30 aircraft in October 2023, 28 aircraft in December 2023, and concluding with the settlement of 7 additional aircraft with two lessor groups on February 16, 2024 - systematically transitioning its fleet to Russian jurisdiction while fully utilizing the allocated NWF resources.

In December 2023, S7 Airlines completed a deal to settle relations with a group of foreign lessors with the participation of the insurance company IC NSK LLC for 45 medium-range aircraft and 4 aircraft engines. In accordance with the reached agreements, the lessors, including AerCap, ALC, CMC Aviation Capital, have terminated their claims against the Russian parties both under insurance policies and under lease agreements for these aircraft. The purchased 45 aircraft accounted for almost 50% of the S7 fleet, that consisted of According to the Federal Air Transport Agency, at the end of October, 63 European Airbus A320/321, 19 American Boeing 737, 17 Brazilian Embraer were listed in the airline's operator's certificate (Interfax, 2023b).

In December 2023, S7 Airlines finalized a settlement agreement with foreign lessors—including AerCap, ALC, and CMC Aviation Capital—through insurer IC NSK LLC, acquiring 45 narrow-body aircraft and 4 engines while terminating all lessor claims under both insurance policies and lease agreements. The purchased 45 aircraft accounted for nearly 50% of S7 Airlines' total fleet, which - according to Federal Air

Transport Agency records (Interfax, 2023b) - consisted of 63 European Airbus A320/A321, 19 American Boeing 737, and 17 Brazilian Embraer aircraft as of October 2023. This strategic acquisition through the state-supported leasing transfer mechanism significantly strengthened the carrier's operational capacity despite ongoing international sanctions.

At the same time, Ural Airlines confirmed the buyout of 19 Airbus aircraft. On December 19, Kirill Skuratov, First Deputy General Director of Ural Airlines, confirmed at a press conference that Ural Airlines was expanding its flight program abroad (RBC Yekaterinburg, 2023). Another eight medium-haul Airbus A319 were transferred to Russian ownership by the Far Eastern airline Aurora. Five of these vessels, previously registered in Bermuda, were removed from this registry between October 2023 and January 2024. After that, they were able to fly abroad without hindrance. Another private airline, charter iFly, applied for state support for the purchase of three of its aircraft, but it did not receive the NWF money and the purchase never took place (RBC, 2024b).

Russian airlines financed their aircraft acquisitions through a combination of National Welfare Fund (NWF) allocations and internal capital, utilizing their 2022 net profits to supplement state support. Pobeda Airlines allocated its entire 15 billion ruble net profit toward fleet settlements, while S7 and Ural Airlines collectively received 30-40 billion rubles from the NWF while contributing an additional 34 billion and 13.4 billion rubles respectively from their own earnings. Aurora Airlines similarly funded purchases through operational profits, having reported 1.98 billion rubles under RAS accounting standards in 2022. This blended financing approach enabled carriers to maximize fleet acquisitions while operating within the state-supported leasing framework.

Given the \$20 billion total value of the sanctioned foreign fleet, Russian authorities focused state support on systemically important carriers, allocating approximately \$4 billion in preferential financing (supplemented by \$700-750 million from airlines' 2022 profits). This targeted approach prioritized four of Russia's five largest airlines operating key domestic routes, with the exception being regional carrier Aurora— included due to its critical role serving the remote and sparsely populated Far East.

The selective funding distribution reflects the government's strategy to maintain essential air connectivity while optimizing limited financial resources under sanctions. The acquired aircraft ultimately proved sufficient to meet international route demand.

Despite foreign lessors refusing payments for leased aircraft, Russian airlines continued fulfilling obligations through alternative mechanisms. When lessors suspended foreign currency transactions in 2022, carriers began depositing ruble equivalents into designated Russian bank accounts—a measure confirmed by Transport Minister Vitaly Savelyev (Kommersant, 2023c). When settlements were ultimately reached with foreign lessors, these accumulated reserves—originally earmarked for lease obligations—were converted into accounting gains for the airlines. Pobeda Airlines recognized 21.27B rubles in 2023 profit from insurance settlements covering 12 aircraft. Ural Airlines attributed over 50% of net profit due to settlements for 19 aircraft. S7 Airlines wrote off 27B rubles in liabilities through lessor agreements (Kommersant, 2023c).

The resolution of aircraft insurance disputes and the resulting profits became the major event in the industry in 2023, leading to both positive financial results for airlines amid reduced government anti-crisis support and further growth in international flights in 2024.

3.4.4. Actions to Support Airlines and the Domestic Market

The start of the Special Military Operation came as a shock to the air transport market. Eleven airports near the conflict zones were shut down. Due to Western sanctions, Russian airlines were barred from flying over the airspace of the EU, the U.S., and Japan, leading to the cancellation of hundreds of international and domestic flights. To prevent a collapse in demand and airline bankruptcies, the Russian government swiftly developed and implemented a series of anti-crisis subsidies for airlines and the affected airports.

3.4.4.1. Airport and Airline Support

On April 14, 2022, the Russian Government adopted Resolution No. 662, allocating 19.5 billion rubles as one-time subsidy to airlines to compensate for lost revenue caused by the termination of transportation contracts. This measure was a response to the mass cancellation of international and domestic flights under external sanctions pressure (*Russian Government, 2022e*). Aeroflot, as Russia's flag carrier with the most extensive international route network, received the largest share of state support - 11.5 billion rubles - primarily to cover passenger refunds for sanctions-related flight cancellations. Other major recipients included S7 Airlines (2.9 billion rubles), Pobeda Airlines (980.4 million rubles), and Ural Airlines (528 million rubles). Smaller allocations went to Nordwind (366 million rubles), Azimut (301 million rubles), and UTair (149 million rubles). The subsidy program attracted applications from 27 carriers, with the Federal Air Transport Agency ultimately approving 20 airlines for compensation (Monocle, 2022i).

In a parallel measure on April 14, 2022, the Russian Government enacted Resolution No. 664, establishing an operational expense compensation program for airports in southern and central Russia (*Russian Government, 2022f*). The initiative allocated 3.1 billion rubles to support 11 airports for the period from March to June 2022. Subsequently airport assistance program expanded significantly, with total funding reaching approximately 7 billion rubles in 2022 and exceeding 8 billion rubles in 2023 (*Interfax, 2023a*).

Additionally, under Government Decree No. 955 dated May 27, 2022, a separate 2.9 billion ruble subsidy program was created for cargo airlines (*Russian Government, 2022g*). The funds were distributed among four cargo carriers based on their freight turnover performance between April and October 2022.

The most substantial support mechanism was introduced through Government Decree No. 761 (April 27, 2022), establishing a demand-stimulating subsidy for domestic air travel (*Russian Government, 2022h*). This program enabled airlines to reduce ticket prices while maintaining profitability, helping to sustain passenger demand amid economic pressures. In 2022, the program received an unprecedented allocation of 100

billion rubles, followed by a reduced extension of 25.3 billion rubles for the first quarter of 2023 (Kommersant, 2024a). The subsidy amounts were calculated based on actual passenger volumes, with a key requirement that airlines maintain at least 72% of their 2021 domestic passenger traffic levels to qualify for support.

The domestic flight subsidy aimed to stabilize Russia's air transport market and meet the government's baseline passenger forecast (approved June 2022), which predicted a 10% drop to 100 million passengers in 2022 followed by recovery to 116 million by 2030 - growth to be driven mainly by domestic travel. This prompted parallel initiatives to boost production of Russian aircraft.

Table 3.3. The Basic Scenario of Passenger Traffic

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Volume of Traffic on Domestic Air Routes (mln passenger)	90	91,1	92	92,9	94,7	96,5	98,4	101,4	104,5
Volume of Traffic on International Air Routes (mln passenger)	10	10,1	10,2	10,3	10,5	10,7	10,9	11,3	11,6
Total	100	101,2	102,2	103,2	105,2	107,2	109,3	112,7	116,1

Reference: Russian Federation Government (2022)

The Russian government's 100-billion-ruble domestic flight subsidy program operated from April to October 2022, with the Federal Air Transport Agency's report revealing detailed allocation figures (Federal Air Transport Agency, 2022e). The Aeroflot Group emerged as the primary beneficiary, receiving a combined 49.9 billion rubles distributed among its subsidiaries: Aeroflot (25.7 billion), Rossiya Airlines (10.3 billion), and low-cost carrier Pobeda (13.9 billion). Other major recipients included S7

Group (22.2 billion for Sibir and Globus), Ural Airlines (8.9 billion), and the UTair Group (4.6 billion across its subsidiaries). Smaller allocations went to Smartavia (3.8 billion), NordStar and Nordwind (1.4 billion each), and Yakutia Airlines (1 billion). In total, 32 carriers qualified for this state support program designed to offset operational costs on domestic routes during the sanctions period.

The subsidy program implemented by the Federal Air Transport Agency was specifically designed to encourage operational efficiency among airlines by tying subsidy amounts directly to passenger-kilometers performed. This performance-based incentive structure successfully stimulated growth in Russia's domestic aviation market by rewarding carriers that expanded their operations - whether through increased passenger numbers, longer flight distances, or greater flight frequency.

The program proved particularly effective in helping major airlines maintain domestic traffic volumes during 2022. Aeroflot emerged as the strongest performer, achieving a 40% increase in domestic passenger-kilometers during the first half of the year, reaching 28 billion. Meanwhile, Pobeda saw a 10% reduction to 11.2 billion passenger-kilometers, and Rossiya Airlines experienced a 17% decline to 9.8 billion. Regional carriers demonstrated more moderate growth, with Ural Airlines increasing its performance by 7% and S7 Airlines by 8%. Industry feedback confirmed the program's significant impact, with S7 Airlines estimating that without the subsidy support, domestic passenger traffic would have contracted by at least 20% due to sanctions-related pressures (Monocle, 2022i).

Several airlines, including Red Wings, Azimut, and Azur Air, opted not to participate in the subsidy program established by Resolution 761. These carriers primarily declined support due to their strategic pivot toward international markets, notably expanding flight operations to Turkey and the UAE from various Russian cities.

Among those that did apply, UTair failed to meet the program's key requirement of maintaining at least 72% of its April–October 2021 domestic flight activity, achieving only 58%. Instead, the airline significantly increased its international operations, where passenger traffic surged by nearly 300% (Kommersant, 2022p). Despite this non-compliance, the Federal Air Transport Agency did not seek to reclaim the 4.6

billion rubles in subsidies already disbursed to UTair. Instead, the two parties reached an additional agreement, adjusting compensation based on the carrier's actual domestic flight operations (Kommersant, 2022l).

These state support measures proved critical in sustaining airline liquidity and preserving domestic route networks, while shuttered airports in southern and central Russia were able to retain staff and maintain essential infrastructure (Monocle, 2022j). The combination of subsidies and regulatory flexibility helped stabilize the sector during a period of significant operational restructuring under sanctions.

3.4.4.2. Fuel Price Damper Mechanism

In addition to the targeted anti-sanction measures, the previously established fuel price damper mechanism emerged as a critical support tool for airlines amid growing sanctions pressure and economic turbulence. While this mechanism was not specifically designed as an anti-sanction measure—having been developed and implemented well before the Ukraine crisis—it gained particular significance following the start of the Special Military Operation.

The global aviation industry faced one of its most severe challenges in 2022 following the start of the Special Military Operation (SMO) - skyrocketing fuel prices. This price surge resulted from two key factors: international efforts to restrict Russian oil supplies and the loss of Ukrainian refining capacity from global markets. These developments not only drove up worldwide oil prices but also significantly widened the price differential between crude oil and aviation fuel.

While airlines worldwide struggled with these unprecedented fuel costs, Russian carriers were largely insulated from the crisis due to a unique stabilizing mechanism. The Russian government's pre-existing fuel price "damper" system, originally designed to mitigate normal market fluctuations, proved particularly valuable during this period of extreme volatility.

The Russian government developed the fuel price damping mechanism in 2018 during a period of significant fuel price volatility, implementing it in 2019 as a stabilizing

measure for the aviation sector. This mechanism was designed to protect airlines from sharp fluctuations in jet fuel costs by establishing a compensation system tied to export prices. Under the program's rules, when the export price of jet fuel exceeded a government-determined benchmark price, carriers would receive compensation covering two-thirds of the difference from the state budget. For 2019, the benchmark price for jet fuel was settled as 48,300 rubles per 1 ton, and subsequently this rate was increasing by 5% per year. In 2020, it amounted to 50,700 rubles, and in 2021 - 53,250 rubles, respectively.

For the first two years of operation (2019-2020), global fuel prices remained below these thresholds, meaning the mechanism remained inactive and airlines received no payments. The situation changed in September 2021 when export prices first surpassed the domestic reference level, triggering the compensation system. During the initial activation period from September to December 2021, Russian airlines collectively received approximately 8 billion rubles in damping compensation payments.

In 2022, wholesale jet fuel prices in Russia rose by approximately 20%, reaching 69,500 rubles per ton according to SPIMEX exchange data. Russian airlines, which consumed an average of 450,000 tons of kerosene monthly at domestic airports, received substantial government support to offset these rising costs. Through the fuel price damper mechanism, carriers obtained 95.4 billion rubles in compensation over the course of the year. Additionally, they benefited from a reverse excise tax on kerosene, set at 2,800 rubles per ton, which provided a further 16.3 billion rubles in financial relief.

March 2022 marked the peak period for compensation payments, with airlines receiving 20 billion rubles amid a sharply weakening ruble against the US dollar and rising kerosene prices in Europe. Payments subsequently declined to 12 billion rubles in April, then stabilized at approximately 11 billion rubles monthly through the summer months. During autumn, the compensation amounts gradually decreased from 8 billion to 5 billion rubles, reaching their lowest point in December at just 4 billion rubles as global oil prices fell.

Thus, the total payments under the damper mechanism ultimately exceeded the 100-billion-ruble anti-crisis subsidy for airlines and approached the full amount of federal aviation support in 2022. When combined with other measures - including the 19.5 billion rubles allocated for compensation of canceled flights - the government's total aviation subsidies reached 146.8 billion rubles for the year. This demonstrates how fuel price stabilization became one of the largest components of Russia's aviation support package during the crisis period.

The damper mechanism served as a crucial stabilizing tool, effectively shielding airlines from volatile jet fuel prices during a period of extreme market turbulence. By implementing this system, the Russian government facilitated a strategic redistribution of resources - channeling a portion of oil companies' excess profits to support the aviation sector's stability.

3.4.5. Actions to Restructure the Market Infrastructure

The imposed Western sanctions necessitated a rapid restructuring across various sectors affecting aviation industry operations. After addressing the immediate priority of preserving the aircraft fleet, the government implemented a comprehensive set of measures, including reestablishing a domestic aircraft reinsurance market, certifying Russian aircraft maintenance centers and accelerating airlines' transition to domestic booking systems. These initiatives created an independent infrastructure to ensure the stable operation of the country's air transport system under new economic conditions. Particular emphasis was placed on developing national alternatives to critical Western technologies and services, which became a key factor in maintaining the industry's operational capabilities during the transition period.

3.4.5.1. Relaunch of the Aircraft Insurance Market

On February 26, the European Union imposed sanctions prohibiting the supply, sale, leasing, maintenance, and insurance of aircraft to Russia. Then, on the night of March 8, most Russian airlines received notifications from European lessors about the termination of reinsurance contracts. The airlines interpreted this development as

effectively grounding their fleets, since without valid insurance coverage, they would be unable to legally operate flights.

This sudden withdrawal of reinsurance support created an immediate operational crisis, threatening to paralyze Russia's commercial aviation sector overnight. The dual impact of losing both leasing agreements and insurance coverage left airlines in an unprecedented regulatory and financial bind, requiring urgent government intervention to keep aircraft flying.

Insurance coverage represented a critical challenge for Russia's aviation industry following the sanctions. While most aircraft were originally insured through Russian providers, these domestic insurers had typically reinsured the majority of risks with international partners - the Russian insurance market lacked sufficient capacity to absorb these massive liabilities independently. The aviation sector's unique requirements compounded this problem, particularly regarding third-party liability coverage. Whereas European standards demanded coverage limits approaching \$600 million per aircraft, Russian insurers could typically only offer \$10-50 million in coverage (Kommersant, 2022f). This substantial gap in protection levels created significant operational and regulatory hurdles for airlines attempting to maintain international operations.

Recognizing the critical importance of aviation insurance, the Russian government implemented special economic measures to address this sector. Government Resolution No. 411, adopted on March 19, 2022, mandated that: "Lessees (tenants) shall insure foreign aircraft and reinsure associated risks with Russian insurance and reinsurance organizations under terms equivalent to those specified in the original contracts..." (Russian Government, 2022i). This legislative measure created a legal framework requiring Russian airlines, which had lost their international insurance coverage, to transfer their risk management entirely to domestic insurance providers within Russian jurisdiction.

The implementation of Government Resolution No. 411 in March 2022 marked a pivotal shift in Russia's aviation insurance landscape, with the Russian National Reinsurance Company (RNPC) emerging as the cornerstone of the new system.

Originally established by the Central Bank in 2016 to develop domestic reinsurance capacity and reduce reliance on Western firms, RNPC's role expanded exponentially following the 2022 sanctions.

When European lessors withdrew coverage due to sanctions in March 2022, RNPC immediately stepped in as the reinsurer of last resort for Russian carriers. To enable this critical function the Central Bank massively expanded RNPC's capacity, increasing its authorized capital from 71 to 300 billion rubles and total guarantee coverage to 750 billion rubles. The company began underwriting aviation reinsurance contracts within weeks of the sanctions taking effect.

The withdrawal of European insurers, while presenting significant challenges, ultimately did not paralyze Russia's air transport sector. Instead, it prompted the development of a new, more self-sufficient aviation insurance market operating under sovereign conditions.

3.4.5.2. Actions for Relaunch of the MRO Market

The second EU sanctions package imposed a comprehensive ban on maintaining aircraft operated by Russian airlines and supplying spare parts for any aircraft. EU authorities further mandated the termination of all existing contracts with Russian entities, a move that deliberately compromised both the technical airworthiness of Russia's fleet and overall flight safety standards. In compliance with these political directives, all aviation service providers in Russia had their licenses revoked for maintaining foreign-made aircraft - which constituted the majority of the country's commercial fleet.

In response to Western sanctions, Russian authorities swiftly implemented measures to localize aircraft maintenance and repair capabilities. While these sanctions presented significant challenges for the aviation industry, they simultaneously served as a catalyst for domestic development. The government, in collaboration with industry stakeholders, rapidly initiated efforts to establish an independent aircraft maintenance system, marking a strategic pivot toward self-sufficiency in aviation technical services.

In March 2022, Russian authorities implemented urgent regulatory reforms mandating that all aircraft maintenance, insurance, and reinsurance operations be conducted exclusively within Russia. This decisive move was accompanied by Federal Air Transport Agency launching an extensive certification program for domestic aviation service providers.

The first results appeared in the spring of 2022. The largest service providers, A-Technics (part of Aeroflot) and S7 Technics, received FAP-285 and FAP-21J certificates, allowing Boeing and Airbus maintenance, as well as the development of non-standard repairs and modifications. This allowed Russian airlines to adapt Western aircraft to new conditions without looking back at the original manufacturers (Monocle, 2023b).

By 2023, the process had deepened: Aeroflot and S7 Technics had expanded their certification, gaining the right to make changes even to critical systems, such as fuel and control. S7 Technics also began manufacturing components for Airbus, Boeing, and other aircraft, including interior parts and filters (Monocle, 2023d).

In October 2023, S7 Technics achieved a major technological breakthrough by mastering the overhaul of the hot section of CFM56 engines—the most common powerplant for Airbus A320 and Boeing 737 aircraft. EU and U.S. sanctions in 2022 had cut off access to official maintenance services, jeopardizing the operation of hundreds of aircraft, as Russia lacked full-cycle repair capabilities for the hot section—the most complex component requiring high-precision restoration of heat-resistant alloys. Before 2022, airlines had not prioritized developing this type of repair domestically, considering it too technically challenging, and instead sent engines abroad for service (Kommersant, 2024b).

The localization of these repairs has not only prevented fleet groundings but also delivered significant cost savings: where repairing a single engine previously cost \$1–1.5 million, expenses have now dropped by 30–40%, creating new opportunities for Russia's MRO sector. This case demonstrates how the aviation industry is adapting to sanctions, though long-term sustainability will depend on deeper import substitution efforts.

The exit of Lufthansa Technik—previously a dominant force in Russia's MRO (Maintenance, Repair, and Overhaul) sector—along with other Western service providers created an immediate market void that was swiftly filled by domestic companies. In a strategic move, Aeroflot redeployed more than 2,000 technical specialists to its subsidiary A-Technics, elevating it to become the market's primary MRO services provider (RBC, 2022p). Contrary to Western projections, the sanctions did not cripple Russian aviation but instead catalyzed the development of indigenous capabilities—from advanced repairs to component manufacturing.

Through coordinated public-private sector collaboration, Russia has substantially reduced its dependence on Western aviation technology. While persistent challenges remain (notably fleet depreciation issues), the newly established infrastructure has successfully maintained aircraft operational readiness while progressively building self-reliance in critical technological domains.

3.4.5.3. Actions for Parallel Import of Spare Parts

The prohibition on supplying spare parts for foreign aircraft operating in Russia presented yet another formidable challenge for the domestic aviation industry. In March 2022, industry analysts voiced grave concerns, with the most pessimistic forecasts suggesting that without access to replacement components, Russia's fleet would only remain compliant with international safety standards for a matter of months (Kommersant, 2022i). It was believed that the existing worldwide market for the "resale" of aircraft spare parts, which is used to maintain airworthiness by Iranian, Syrian and other airlines, would not be sufficient for Russia, since the Russian aviation market is much larger and the equipment is often the latest, requiring more advanced maintenance and more noticeable spare parts (Monocle, 2022h).

To address this critical situation in spring 2022, the Russian government adopted Resolution "On the Specifics of Licensing Regimes in Aviation" in response to sanctions imposed by the United States, Canada, and the European Union. This legislative act authorized the use of imported aircraft components manufactured in third countries rather than solely in the aircraft's country of origin. The list of approved source countries ultimately included Iran, Egypt, Uzbekistan, Israel, Mexico, Turkey,

India, Brazil, China, United Kingdom, United Arab Emirates, Jordan, Thailand, South Africa. This marked a significant policy shift, as Russia had previously only recognized airworthiness certifications from the US, EU, Canada, Bermuda, and Ireland (Transport Russii, 2022). The resolution created a parallel certification system that enabled continued aircraft maintenance while circumventing Western sanctions.

In practice, parallel import channels for aircraft spare parts were established relatively quickly, partially mitigating market shortages. Trying to stop these processes, in 2024, the United States escalated sanctions enforcement by targeting third-party suppliers facilitating these transactions. Specifically, the U.S. imposed sanctions on companies based in the United Arab Emirates and Hong Kong that had been supplying American-made aircraft components to Russia (Lenta.ru, 2024). US sanctions targeting third-country companies represent just the visible dimension of an ongoing, cyclical pattern of sanctions enforcement and evasion strategies.

The disruption to international market created surplus aircraft capacity that major Russian carriers strategically leveraged for parts cannibalization. While comprehensive solutions remained unattainable for a market of Russia's scale, this adaptive approach—combined with parallel import channels—prevented critical operational failures during the review period.

3.4.5.4. Actions on Russian Booking Systems

On March 3, 2022, the two largest flights booking and sales systems—the American Sabre and the Spanish Amadeus—terminated their distribution agreements with Aeroflot. This move highlighted the vulnerability of Russian airlines and the broader Russian air transportation market to politically motivated actions by Global Distribution Systems (GDS).

Most major Russian airlines relied on foreign passenger service systems: Aeroflot and Rossiya used the American Sabre, Pobeda operated on Navitaire, while Ural Airlines and S7 Airlines utilized the Spanish Amadeus (which owns Navitaire). Despite the existence of Russian booking systems, domestic passenger service platforms were widely considered inferior to their foreign counterparts and unable to meet the

demands of large Russian carriers. For instance, they lacked critical functionalities required for alliance operations—such as SkyTeam for Aeroflot and Oneworld for S7. The key limitation was the inability of local systems to seamlessly process frequent flyer transactions between partner airlines—such as crediting miles for flights operated by alliance members or redeeming them for tickets on partner carriers. For example, a Russian provider could not credit Aeroflot passengers with miles for flights operated by SkyTeam members like Air France or Delta, nor could it process reciprocal transactions (Vedomosti, 2022).

Until 2022, the Sabre booking system held 28% of the Russian market share, while Amadeus accounted for 24.1%. Navitaire, an Amadeus subsidiary, represented approximately 12% of the market. Russian booking systems accounted for 35% of the domestic market share, with Sirena-Travel dominating at 33.5% and the LFS system making up the remaining 1.5%. The Russian Leonardo reservation system (part of Sirena-Travel, the market leader) serves 59 companies, though only one major carrier—Utair—uses it as its primary inventory system. Other clients include smaller Russian airlines such as NordWind, RedWings, and Russian charter operators (Vedomosti, 2022).

To protect passengers' personal data and ensure technological sovereignty, the Russian government had already introduced measures in summer 2019 through Decree No. 955. This legislation required airlines to migrate their inventory systems to Russian servers by October 2021. However, the Ministry of Transport extended the compliance deadline by one year - until October 2022 - due to challenges posed by the COVID-19 pandemic.

At the time, major carriers anticipated that foreign providers would relocate their servers to Russia. The American company Sabre had announced localization plans, establishing a 50/50 joint venture called Sabre Intergroup with system integrator Integro Technologies in 2019 for this purpose. In May 2021, Spain's Amadeus similarly committed to localizing Russian passenger data in domestic cloud infrastructure. However, following the events of February 24 2022, both companies suspended their Russian operations.

In August 2022, the government enacted Directive No. 1393, mandating that booking systems must be either state-owned or operated by organizations without foreign shareholders or Russian dual citizens. Furthermore, these automated systems must exclude any functionality for remote forced updates or foreign-based management. These measures aim to prevent potential airline operational disruptions that could arise, as stated in the resolution's provisions, if foreign information system owners impose usage restrictions (Russian Government, 2022k).

By late October 2022, all major Russian carriers had transitioned to domestic systems. This shift effectively eliminated foreign providers from the market—entities that had controlled approximately 65% of Russia's booking system share in 2021.

By year-end 2022, Russia's Ministry of Transport confirmed the complete transition of 53 major airlines to domestic automated booking systems. Deputy Minister Dmitry Bakavin emphasized that this transition safeguarded transportation data security, ensured operational continuity, and mitigated risks of passenger and crew data leakage (Ministry of Transport of the Russian Federation, 2022).

3.4.6. Actions to Restore Production of Civil Aircraft

One of the Russian government's primary tasks after the imposition of aviation sanctions has been to revive domestic aircraft production, which had effectively collapsed in the 1990s. Despite the USSR's robust aircraft manufacturing capabilities—with airlines operating 100% domestically produced fleets before its collapse—Russia's aviation industry entered the sanctions era in a weakened state. The Soviet workhorse, the Tu-154 (over 1,000 units produced), had become irreversibly obsolete. Its intended replacement, the Tu-204, never achieved serial production due to the economic turmoil of the 1990s.

Since the 2000s, several projects for the production of modern aircraft have been launched in the Russian aviation industry. Sukhoi, a military aircraft manufacturer, ventured into the civilian sector with the SSJ100 regional jet. Launched in 2011, it was Russia's first post-USSR passenger aircraft, designed with extensive foreign collaboration—70-80% of its systems, including French engines and U.S. avionics,

were imported. While this approach accelerated certification and export potential, e.g., early sales to Indonesia and Ireland's CityJet, it later backfired. Dependence on Western components led to operational disruptions, low flight hours (approximately 5.5 hours/day), and U.S. export controls blocking deals like Iran's 40-jet order. After 2014 Ukraine crisis, geopolitical tensions and poor reliability of foreign parts forced Russia to pursue import substitution. Western suppliers, viewing Russia as a competitor, inflated prices for spare parts and showed little support for troubleshooting. Despite initial plans to produce 830 aircraft by 2030, production targets were repeatedly scaled back due to weak domestic demand and challenges in international cooperation (Monocle, 2022e).

The second major project was the development of a medium-haul aircraft, the most widely used type in Russia's aviation sector. The MC-21, Russia's medium-range airliner, evolved from earlier Soviet-era projects like the Yak-242, which was shelved in the 1990s due to economic turmoil. Revived in 2002 under a state competition to replace aging aircraft like the Tu-154, the MC-21 program gained funding in 2007. Initially, it was designed to accommodate both foreign and Russian engines, with Pratt & Whitney selected in 2009 for the first test flights in 2017. Meanwhile, Russia developed its own PD-14 engine, certified in 2018, with flight tests on the MC-21 beginning in 2020, marking a key step toward import substitution.

The introduction of Western sanctions severely impacted both the SSJ, which had already established serial production, and the newly developed MC-21, which was just preparing for mass deliveries. The ban on Western component supplies effectively halted production of both aircraft models.

3.4.6.1. Comprehensive Development Program for Air Transport 2022

Faced with the real prospect of transportation collapse and strategic defeat in its confrontation with the West, the Russian government acted decisively and radically.

On April 21, 2022, the Ministry of Transport instructed Russian air carriers to calculate—within a single working day—the number of aircraft that would need to be decommissioned annually until 2030, as well as the number of new domestically

produced aircraft required to replace them. A letter containing a report template was sent to 24 airlines, requesting responses by 4 p.m. that same day. The carriers were given options for "replacing outgoing aircraft with domestic models," including the MC-21, SSJ 100, Tu-214, Il-96, LMS-901 Baikal, and Il-114. (*Kommersant*, 2022n).

The forecast was necessary to refine aircraft production plans. On June 27, using data collected from airlines and the Federal Air Transport Agency, the Russian government unveiled an ambitious industry development program for air transport through 2030. The plan aimed to transition a significant portion of Russia's commercial aviation fleet to domestically produced aircraft by the end of the decade, thereby eliminating the sector's reliance on Western manufacturers amid sanctions. Russian aviation industry was tasked with a critical objective: increasing the share of domestically produced airliners from 33% to 81%.

Table 3.4. Forecast of Russian Aircraft Production

Aircraft Type	Capacity passenger	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
SSJ-NEW	98-103	-	2	20	20	20	20	20	20	20	142
MC-21-310	181 - 211	-	-	6	12	22	36	50	72	72	270
IL-114-300	64 – 68	-	-	2	8	12	12	12	12	12	70
TU-214	150 - 215	-	3	7	10	10	10	10	10	10	70
IL-96-300	237 - 300	-	-	-	2	2	2	2	2	2	12
TVRS-44 Ladoga	44	-	-	-	15	25	25	25	25	25	140
L-410	15-19	18	20	20	20	20	20	20	20	20	178
LMS-901 Baikal	9	-	-	14	15	25	25	25	25	25	154
Ил-100		15	25	69	102	136	150	164	186	186	1036

Reference: Russian Federation Government (2022)

To support this transition, the Russian government allocated over 400 billion rubles to the aircraft manufacturing segment of the program, spanning nine years. The

production plan included 270 MC-21-310 medium-range jets, 142 modernized SSJ-NEW regional aircraft, 70 Tu-214 mid-range planes, along with turboprop Il-114-300s and 12 wide-body Il-96s. All large aircraft in this lineup are manufactured by enterprises under the United Aircraft Corporation (UAC), part of Rostec, representing a comprehensive effort to rebuild Russia's aviation capabilities amid escalating sanctions and technological isolation. The program's success would determine whether Russia could maintain its air transport infrastructure without Western technology and components.

At the time of the program's adoption, Russia was actively pursuing import substitution within its flagship aircraft programs—the MC-21 and Superjet 100—aiming to replace as many Western-made components as possible with domestically produced alternatives. The first deliveries of the modified MC-21-310, equipped with Russian systems, were slated for 2024, with annual production projected to ramp up from 6 units initially to 72 by 2029.

Similarly, the SSJ-NEW, a fully import-substituted version of the Superjet, was scheduled for its first delivery in 2023 (2 units). Production was expected to scale to 20 units annually starting in 2024, matching the full capacity of the Komsomolsk-on-Amur Aviation Plant (KnAAZ). Meanwhile, serial production of the Il-114-300 turboprop was set to begin in 2024, reaching a target output of 12 aircraft per year by 2026.

The Tu-214 and Il-96, originally developed over 30 years ago, were phased out of commercial service in the early 2010s. Under the new program, Russia planned to revive serial production of the Tu-214, aiming for up to 10 aircraft annually. Similarly, the Il-96—a wide-body, long-range aircraft—had seen limited production, with only two units assembled per year. Commercial deliveries of the Il-96 were not expected before 2025.

The program also emphasized small aircraft production, led by the private Ural Plant of Civil Aviation (UZGA). UZGA sought to manufacture 178 L-410 turboprops (19-seat aircraft previously produced under Czech license) and develop two new models: the 44-seat TVRS-44 Ladoga (scheduled for 2025) and the 9-seat LMS-901

Baikal (2024). By 2030, the plant planned to deliver 140 TVRS-44s and 154 LMS-901s, significantly expanding Russia's domestic aviation capabilities.

The planned gradual replacement of Western aircraft was intended to maintain annual passenger traffic at 100–110 million passengers by 2030.

3.4.6.2. Aircraft Production 2022-2024 Results

The results of this program were contradictory. The Russian aviation industry faced significant challenges in meeting the government's ambitious targets. Airlines and industry experts cautioned that these projections failed to account for the sector's actual capabilities.

By 2024, it had become clear that the program required significant revision. The Ministry of Industry and Trade and Rostec State Corporation officially announced delays in the delivery schedules for all Russian passenger aircraft under development - including the SJ-100, MC-21, Tu-214, and Il-114-300 - intended to replace Western-made fleets. Initial deliveries, originally planned for 2024, were rescheduled for 2025-2026 (Interfax, 2024a, 2024b).

In 2023, Aeroflot faced delays in receiving the first two import-substituted SJ 100 aircraft due to unfinished testing of the Russian PD-8 engines, pushing deliveries to 2024. While this delay was manageable, it raised concerns about the feasibility of Russia's aviation development program, which aimed to deliver 34 SJ 100s to Aeroflot by 2025. The key issue was the PD-8 engine's failure to meet performance standards in December 2023 tests. Although most systems for the import-substituted SSJ-NEW were ready, the project originally relied on the Russian-French SaM146 engine, production of which was halted due to Western sanctions. This forced Russia to develop the PD-8 as a replacement, complicating the aircraft's certification and rollout.

The flagship MS-21 program encountered particularly significant issues, with the aircraft becoming nearly 6 tons heavier than planned. This weight increase - primarily due to the heavier airframe of the import-substituted MC-21-310 model - led to substantial reductions in both range and flight altitude. Compared to the original MS-

21-300 (which utilized foreign components and Western engines), the domestically produced version's empty weight increased by 5.75 tons, a consequence of using Russian-made composites and new aircraft systems. These changes reduced its maximum commercial range (with a 20.3-ton payload) to under 2,800 km (and potentially below 2,000 km according to some reports). Without significant weight reductions to both the airframe and systems, achieving the originally planned performance metrics became impossible (Kommersant, 2024b)

Despite these challenges, Rostec (the MC-21's manufacturer) maintained it could eventually meet the aircraft's original specifications - including a 3,000 km range and capacity for 150-170 passengers. The corporation acknowledged that while the import substitution program's timelines were originally set for 2026, political considerations had accelerated the schedule. Nevertheless, Rostec still planned to deliver 30 new SJ-100 aircraft by 2026. Separately, UAC reported delivering the first specially configured Tu-214 to a government customer in 2023, with another unit completed in 2024.

Russia's aviation industry faced significant hurdles in meeting its production targets by 2030, with experts identifying two key problems: a shortage of skilled personnel, machine tools, and funding—resources that have been largely diverted to fulfill state defense orders—and overly optimistic timelines based on unreliable supplier commitments.

Initial forecasts assumed smooth certification and production processes, but in reality, even first-tier suppliers often lacked contracted components, leading to delays. International experience shows that aircraft programs rarely proceed without setbacks, yet Russia's 2022 projections did not fully account for these risks.

3.4.6.3. Air Transport Comprehensive Development Program Perspectives

Despite unsatisfactory results in aircraft production from 2022 to 2024, the Comprehensive Air Transport Development Program has effectively revitalized the Russian aviation industry. Hundreds of manufacturing projects were initiated to substitute imported components in new aircraft models. This response was a natural

reaction by the Russian state to shifting geopolitical conditions and the adversary's active use of aviation as a tool for political objectives.

The current situation resembled a perfect storm. Russia possessed a sizable domestic air transportation market and had made progress in developing regional and medium-range aircraft. However, the mass production of Russian aircraft models faced delays due to skepticism among domestic airlines regarding their economic efficiency, as well as the more favorable financial conditions for operating Western-made aircraft. The Special Military Operation created a scenario in which the long-term viability of using Western aircraft vanished entirely, while their short-term use remained possible. This provided crucial time to refine Russian aircraft designs.

To restore the aviation industry, the Russian state took unprecedented steps: on one hand, it made substantial investments in aviation manufacturing, and on the other, it established leasing financial institutions to ensure demand for domestically produced aircraft.

Aeroflot Airlines, which holds a 50% share of Russia's air transportation market, came under 73% state control in 2022 following a share issuance. In 2023, the airline formulated a development strategy in line with the Air Transport Industry Development Program until 2030 and subsequently signed an agreement for the supply of a significant number of domestically produced aircraft.

With the withdrawal of Western manufacturers from the market—combined with state support for Russian producers and domestic demand—the government has created near-ideal conditions for the revival of the aviation industry. The establishment of national leasing companies, which offer preferential terms for leasing Russian-made aircraft, has further facilitated the industry's full-scale recovery. Thus, the Special Military Operation has effectively rebooted the air transport sector—this time on a more economically sustainable and favorable footing. The high-tech aviation industry, which had been in decline since the Cold War defeat, experienced a revival.

3.4.7. Summary of Countermeasures

The Russian government's response to Western sanctions in the aviation sector represents a comprehensive and multifaceted strategy aimed at preserving the country's air transport capabilities while establishing long-term self-sufficiency. Through a combination of immediate crisis management measures and structural reforms, Russia has managed to mitigate the most severe impacts of sanctions and initiate a transformation of its aviation industry.

One of the most critical achievements has been the preservation of the aircraft fleet. The rapid re-registration of foreign-leased aircraft under Russian jurisdiction, coupled with the creation of state-backed leasing mechanisms such as NLK-Finance, allowed airlines to maintain operational capacity despite the loss of access to Western leasing markets. By early 2024, approximately 40% of the Western-built fleet had been successfully transitioned to Russian ownership, ensuring the restoration of passenger traffic on international routes.

The government's extensive subsidy programs played a vital role in stabilizing the market during the initial shock of sanctions. The allocation of 100 billion rubles to support domestic air travel, along with 95 billion rubles in fuel price damping compensation, helped maintain passenger demand and airline profitability. Additional measures, such as targeted support for airports and cargo carriers, further bolstered the sector's resilience. These interventions were crucial in preventing a collapse of Russia's air transport infrastructure during the most challenging phase of sanctions.

Technological sovereignty emerged as a central priority, with significant progress made in localizing maintenance capabilities and developing domestic alternatives to Western systems. The certification of Russian MRO providers like A-Technics and S7 Technics enabled the continued operation of foreign-made aircraft, while the establishment of parallel import channels for spare parts addressed critical supply shortages. The transition to Russian booking systems, completed by late 2022, eliminated another key dependency on Western technology.

Perhaps the most ambitious aspect of Russia's response has been the effort to revive domestic aircraft production through the Comprehensive Air Transport Development Program. With over 400 billion rubles allocated, the program aims to deliver 1,036 new aircraft by 2030, including modernized versions of the SSJ-NEW and MC-21 with domestically produced components. This represents a fundamental shift toward rebuilding Russia's aviation manufacturing capabilities after decades of decline.

3.4.8. Russia's Approach to Aviation Sanctions Compared to Historical Cases

Russia's response was more systematic and resource-backed than past cases, avoiding total collapse but facing long-term hurdles in domestic aircraft competitiveness. Unlike isolated states (Cuba, Iran), Russia was able to leverage global supply chains via third countries, while rebuilding industrial sovereignty—a unique middle path between survival and revival.

Russia's response to aviation sanctions demonstrates a fundamentally different approach from countries like Iran, Iraq, Yugoslavia, Libya, and Cuba that previously faced similar restrictions. This divergence stems from Russia's stronger industrial base, greater financial resources, and more sophisticated adaptation strategy.

Russia's aviation sector faced sanctions with several unique advantages: a modern fleet of over 1,100 aircraft (mostly Western-made), an intact aerospace industry, and substantial government resources. This contrasts sharply with historical cases where countries typically had smaller, outdated fleets and no domestic manufacturing capacity. Where Iran and Cuba relied on cannibalizing existing planes or smuggling parts, Russia implemented a comprehensive strategy combining immediate stopgap measures with long-term industrial transformation.

The Russian response stands out for its systematic, state-coordinated nature. The government passed more than 50 regulatory acts, established specialized institutions like NLK-Finance for aircraft leasing, and committed over \$13 billion in funding. This level of organization and financial commitment far exceeds the ad hoc approaches seen in other sanctioned states, where responses were typically fragmented and underfunded.

Unlike Iraq or Yugoslavia whose aviation industries collapsed under sanctions, Russia maintained critical capabilities in aircraft and engine manufacturing. Projects like the MC-21 airliner and PD-14 engine demonstrate an ability to develop domestic alternatives that most sanctioned states lacked. While Iran achieved some success in reverse-engineering components, no other sanctioned country mounted a comparable effort to develop next-generation aircraft.

Russia's large domestic market (over 100 million annual passengers) and connections to alternative suppliers in China, the Middle East and Eurasia provided crucial buffers absent in previous cases. Where Cuba became completely isolated and Yugoslavia's market disintegrated, Russia preserved both demand and some international supply channels while reorienting toward non-Western partners.

The Russian model represents a new approach to sanctions resistance - neither complete isolation like Cuba nor permanent dependency on smuggling like Iran, but rather a managed transition toward selective self-sufficiency. While challenges remain in achieving full technological independence, Russia's response has proven more sustainable than historical precedents, maintaining operational capabilities while rebuilding industrial sovereignty.

3.5. Impact of Sanctions (2022-2024)

This section assesses the impact of the Special Military Operation and Western sanctions on the Russian air transport market. Since the performance of civil aviation is heavily influenced by the overall state of the economy, the introductory section will provide a brief overview of the Russian economy in 2022–2024. This review of the sanctions' impact on the economy reveals general market trends affecting airlines.

The main obstacle to a comprehensive analysis of the market's condition is the lack of official, complete data from all market participants. After the initial shock of the SVO and sanctions, most airlines stopped publishing full operational data. The Russian aviation authority, Rosaviatsiya, which previously regularly released detailed market reports, ceased publishing any reports in 2022 amid the information war, only resuming in 2023 with limited data on passenger traffic.

Using general market data, the chapter reviews key passenger traffic trends, a comparison of passenger traffic trends after the shocks of the COVID-19 pandemic in 2020 and Western sanctions in 2022, as well as the alignment of actual passenger traffic in 2022–2024 with the Russian government's 2022 target forecast.

Evaluation of impact of Western sanctions on the profitability of Russian airlines was obtained from reports by the Russian Association of Air Transport Operators, which published profitability information in summary form. This data provides insight into the overall state of the industry and allows for general conclusions about the sanctions' effect on profitability.

Data on passenger traffic at major Russian airports, though general in nature, also helps assess changes in the market, particularly the shift in passenger flow directions and the active development of additional regional hubs by leading airlines.

In assessing the impact of Western sanctions on the Russian market, data from the reports of Aeroflot Group proved particularly valuable. Despite being listed on the Moscow Stock Exchange, Aeroflot suspended the publication of detailed reports in 2022 with the Russian government's approval. However, as the market stabilized in 2025, Russia's leading carrier released a detailed financial and operational report covering 2022–2024. This report enabled an assessment of the performance of Russia's major airlines and the role of foreign carriers in the Russian market.

Given that Aeroflot Group includes Russia's flag carrier Aeroflot, the largest low-cost airline Pobeda, the regional carrier Rossiya, and holds half of the Russian market share, a detailed analysis of the group's performance provides a comprehensive understanding of key market trends. Using this report, the chapter will examine impact of sanctions on international flight routes, fleet conditions and MRO (maintenance, repair, and overhaul) expenses.

3.5.1. Impact of EU and US Sanctions on the Russian Economy

When analyzing the impact of sanctions on the Russian aviation market, it is necessary to take into account the general macroeconomic background. After the start of the

Special military operation in February 2022, Western countries, led by the United States and the EU, imposed a huge package of economic sanctions aimed at isolating Russia from the global financial system, blocking technological development and undermining trade ties. The purpose of these measures was to provoke a deep economic crisis, which, according to the initiators, was supposed to lead to a strategic defeat and political collapse of the state.

However, contrary to pessimistic forecasts (GDP was expected to fall by 20-30%), the Russian economy has demonstrated high resilience. In 2022, GDP decreased by only 1.4%, and growth was recorded in 2023-2024 (4.08% and 4.1%, respectively). This exceeded the pre-crisis pace (an average of 2% in 2016-2019) and turned out to be comparable to the recovery after the COVID-19 pandemic (5.9% in 2021).

Table 3.5. Macroeconomic Indicators of the Russian Economy

Subject Descriptor	Gross domestic product, constant prices	Gross domestic product, current prices	Inflation, average consumer prices	Unemployment rate	Current account balance	Current account balance
Units	Percent change	U.S. dollars	Percent change	Percent of total labor force	U.S. dollars	Percent of GDP
Scale	Units	Billions	Units	Units	Billions	Units
2015	-2,0	1,356.70	15,5	5,6	67,8	5,0
2016	0,2	1,280.65	7,0	5,5	24,5	1,9
2017	1,8	1,575.14	3,7	5,2	32,2	2,0
2018	2,8	1,653.01	2,9	4,8	115,7	7,0
2019	2,2	1,695.72	4,5	4,6	65,7	3,9
2020	-2,7	1,488.12	3,4	5,8	35,4	2,4
2021	5,9	1,828.93	6,7	4,8	125,0	6,8
2022	-1,4	2,295.53	13,8	4,0	237,7	10,4
2023	4,1	2,059.76	5,9	3,2	49,4	2,4
2024	4,1	2,161.21	8,4	2,5	62,3	2,9

Reference: International Monetary Fund, World Economic Outlook Database (2025)

Foreign trade and financial stability have become the main factor in the sustainability of the Russian economy. Attempts by Western countries to exclude Russia from world trade have led to a significant increase in energy prices, in which Russia played a significant role in supplying world markets. Due to high energy prices, in turn, the current account surplus reached 10.4% of GDP (\$237.7 billion) in 2022, which allowed significant reserves to be accumulated, and the effect of the Russian foreign exchange reserves thievery from the Western institutions (about \$ 300 billion) was almost eliminated.

Despite the announced embargo, Russia was able to redirect energy exports to the countries of the global south. In the end, even the EU countries also continued to purchase petroleum products refined in India, Turkey and China from Russian oil. The introduction of restrictions on capital withdrawal and the mandatory sale of foreign exchange earnings supported the ruble exchange rate. It remained stable during the period under review - 74 rubles/USD (early 2022) and 78.64 rubles/USD (January 1, 2025), although the dynamics remained dependent on oil prices. High key interest rates (up to 16% in 2024), in turn, restrained inflation, which decreased from 13.75% (2022) to 5.86% (2023), effectively leveling the inflationary effect of sanctions.

Thus, despite the obvious negative effect due to interrupted production chains, outright theft of Russian assets by Western structures (e.g. theft of Russian foreign exchange reserves), refusal by many Western companies to fulfill prepaid contracts and refund money under the pretext of sanctions, stopping technology transfer and foreign investment, some of the sanctions even helped the Russian economy. The chaotic and irrational sale of Russian assets by Western companies significantly below their objective value (according to anti-sanctions laws, outgoing companies had to discount their assets in the amount of 40% of the business value estimated by auditors), the purchase of Western assets by "patriotic" business structures and the massive return of Russian capital from the West, led to a significant increase in the share and influence of national capital in the economy. In fact, during this period, Western business was "nationalized", not by the state, but by that part of Russian business that closely associated itself with the state and the country.

It is obvious that the sanctions did not work as their initiators intended. The architects of the sanctions overestimated Russia's dependence on external financing and underestimated Russian exports. Low levels of external debt (about 20% of GDP) and limited integration into global financial markets have minimized vulnerability to sanctions. The Russian economy turned out to be poorly dependent on external financing, but the dependence of the global economy on Russian goods demonstrated quite high level. In addition, the same EU continued to purchase petroleum products produced in third countries from Russian crude oil. The West found itself severely limited in the possibilities of sanctions due to the large volume of Russia in the commodity markets and could not exclude it with sanctions like the Iranian ones. Even in the second half of 2022, it became clear that the Russian economy is withstanding the sanctions pressure better than initially expected.

3.5.2. Impact of Sanctions on Air Traffic Dynamics

After the start of the Special Military Operation on February 24, 2022, Russia and its economy entered a new reality. Western countries imposed unprecedented sanctions on Russian airlines, including aircraft seizures, frozen accounts, restrictions on international flights, bans on technical maintenance and flight information services, and a halt to spare parts supplies. Additionally, personal sanctions targeted key industry figures. At first glance, these measures seemed capable of paralyzing the aviation sector and crippling airlines' operations. But the reality proved otherwise.

Despite the severe restrictions, the industry demonstrated resilience. Russian carriers adapted by re-registering aircraft under local certificates, sourcing parts through alternative channels, and expanding domestic and friendly-country routes. While challenges remain, the predicted collapse of the aviation sector did not materialize, showcasing the ability to navigate even the most aggressive external pressures.

Despite initial fears, Russian airlines transported 95.2 million passengers in 2022—a decline of just 14.2% compared to 2021. Given the immense pressure on the aviation sector since February 2022, this outcome is remarkable. The revocation of Bermuda and Irish airworthiness certificates threatened to ground most of the fleet, potentially paralyzing air travel.

However, swift action by the Russian government and the Ministry of Transport averted disaster. Airlines rapidly re-registered aircraft in the Russian registry, secured new airworthiness certificates, and fully restored operations on domestic routes. This decisive response not only stabilized the industry but also demonstrated its ability to adapt under extreme pressure.

Russian civil aviation managed to avoid a complete collapse, limiting the decline in passenger traffic to just 14.2% compared to 2021 and 25.7% compared to pre-pandemic 2019 levels. The primary drivers of this decline were flight bans to Europe, North America, and several other countries, along with sanctions targeting foreign-made aircraft operated by Russian airlines. These restrictions forced carriers to focus primarily on domestic routes and flights to friendly nations, significantly narrowing their operational scope. Yet, the industry's ability to stabilize under such pressure highlights its resilience in the face of unprecedented external constraints.

Table 3.6. Domestic and International Passenger Traffic

Year	Passenger total, mln	Domestic passengers, mln	International passengers, mln
2016	88,6	56,4	32,2
2017	105,1	62,6	42,5
2018	116,2	68,8	47,4
2019	128,1	73	55,1
2020	69,2	56,1	13,1
2021	111	87,5	23,5
2022	95,1	77,7	17,4
2023	105,4	83	22,4
2024	111,7	84,7	27

Reference: Rosaviatsia (2025)

Indeed, after the initial downturn in 2022, Russia's aviation market rebounded strongly in 2023–2024, not only recovering but surpassing pre-sanction passenger traffic levels. By 2024, airlines carried 111.7 million passengers, slightly exceeding the 111 million recorded in 2021—a clear sign of the industry's resilience and adaptability.

Amid the West's aggressive policies, Russian airlines pivoted decisively toward strengthening domestic connectivity and redirecting tourist flows from abroad to Crimea, Sochi, and the Caucasus Mineral Waters region. Simultaneously, proactive diplomacy with friendly nations spurred a 55% surge in international passenger traffic—from 17.4 million in 2022 to 27 million in 2024. Key destinations driving this growth included Turkey, the UAE, Thailand, China (post-COVID reopening), and CIS countries, while traffic to Europe and the U.S. remained near zero.

By 2024, the industry had fully transitioned to a new operational model, anchored by robust domestic demand and a steady revival of international routes aligned with the shifting geopolitical landscape. This adaptation underscores Russian aviation's ability to recalibrate successfully under external pressure, turning constraints into opportunities for growth.

While Russian airlines have yet to fully match their 2019 peak traffic levels, the aviation sector has successfully weathered the sanctions shock. The West's strategic goal—spelling out an industry collapse in EU sanctions documents—failed to materialize. Instead, the domestic market not only stabilized but gained new momentum, proving the resilience and adaptability of Russian aviation in the face of unprecedented external pressure.

3.5.2.1. Market Shocks: COVID-19 and Sanctions

In the short span between 2020 and 2024, Russia's air transport industry faced two major external shocks. The first, in 2020, resulted from the global COVID-19 pandemic, while the second, in 2022, was triggered by the aggressive sanctions imposed by the U.S. and the EU. Comparing these two crises—particularly the pandemic's impact with that of Western sanctions—provides a more objective assessment of the consequences for Russian air transportation.

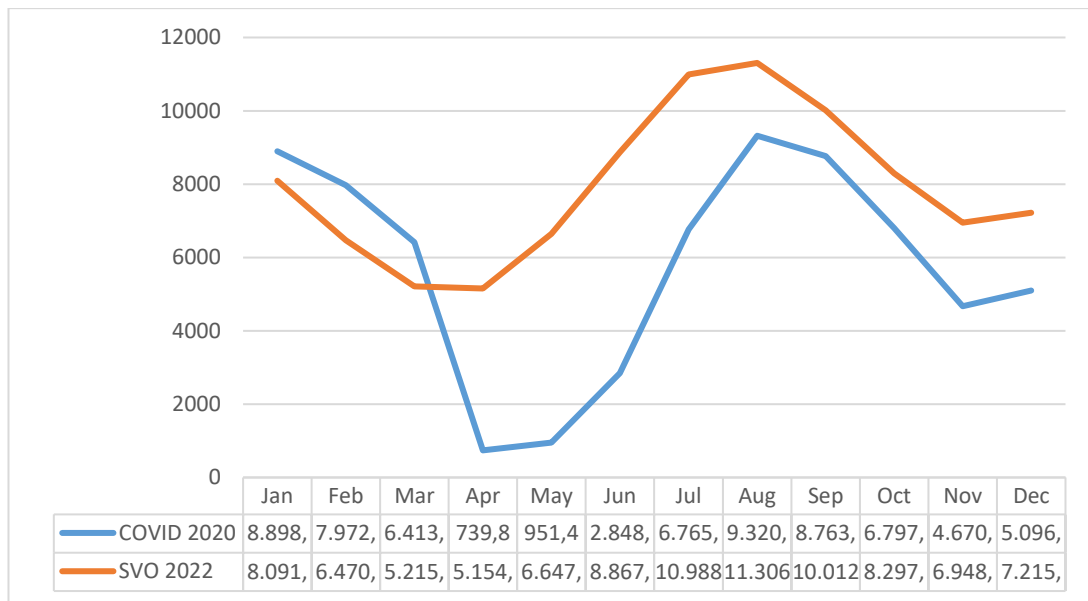


Figure 3.7. Impact of COVID and Sanctions on Passenger Traffic (by Months)

Reference: Rosaviatsia

These crises share common features but also exhibit significant differences. Their most notable similarity is an external origin—independent of the industry’s internal dynamics—along with apocalyptic forecasts at their outset. Both crises began in spring (April 2020 for COVID-19, March 2022 for the Special Military Operation) and directly disrupted the peak summer season. Additionally, they nearly halted international flights, grounded large portions of aircraft fleets, and led to widespread airline staff layoffs. Yet despite these parallels, the long-term consequences for Russia’s aviation industry diverged sharply.

The COVID-19 pandemic in 2020 triggered a catastrophic drop in passenger traffic—by April, volumes had plummeted to just 739,800 passengers, a 92% decline compared to January. In contrast, the 2022 sanctions caused a less severe contraction, with the April low reaching 5.15 million passengers (-36%). This stark difference underscores the Russian Government’s significantly faster and more effective crisis response, as well as its greater determination, preparedness, and proactive approach to supporting and revitalizing the industry.

Consequently, the recovery pace to pre-crisis levels also varied dramatically. After COVID-19, passenger traffic took over eight months to rebound, whereas following

the start of the Special Military Operation in February 2022, volumes surpassed January levels by July—just five months later. This accelerated recovery can be attributed to three key factors: the preservation of the domestic market, lessons learned from crisis management in 2020, and swift government support measures.

The government's timely support measures at the onset of the Special Military Operation helped preserve the industry's operational stability. This stands in stark contrast to the pandemic's impact: COVID-19 completely disrupted traditional seasonality patterns, reducing peak summer 2020 traffic to just 40% of normal levels. In 2022, however, the characteristic seasonal fluctuations remained intact. While summer traffic showed a smaller amplitude than in pre-crisis years, it still demonstrated the expected 70% growth from April levels. This resilience indicates that despite sanctions pressure, the fundamental demand dynamics of the aviation market remained structurally sound.

Contrary to expert predictions that the crisis following the Special Military Operation would prove more severe than the pandemic, the aviation sector experienced less dramatic consequences. The industry's accumulated adaptation experience enabled effective mitigation of the initial shock, demonstrating Russian aviation's proven capacity to respond to extreme challenges.

3.5.2.2. Impact on Air Traffic Through Economy Dynamics

Beyond the direct aviation sanctions, the air transport industry was inevitably impacted by broader economic sanctions against Russia. Western restrictions significantly influenced Russia's GDP growth trajectory, which in turn affected air travel demand. This correlation between GDP dynamics and passenger traffic has been well-documented in reports by international organizations including IATA (2023), ICAO (2023), and the World Bank (2020). As highlighted in IATA's analysis: "Historically, air travel demand grows at 1.5 to 2 times the rate of GDP growth - a relationship that has remained consistent for decades, with emerging markets typically demonstrating even greater elasticity."

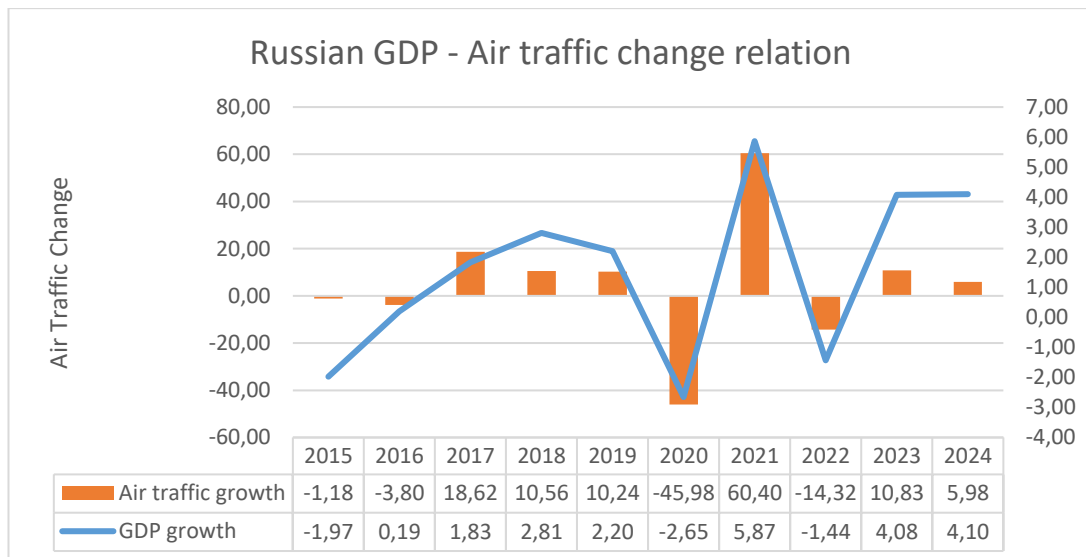


Figure 3.8. GDP-Air Traffic Change Relation

Reference: IMF, Rosaviatsia

The correlation between Russia's GDP and air travel volumes from 2015 to 2024 demonstrates the interplay of macroeconomic trends, external shocks, and subsequent recoveries. As illustrated in Figure 5, while Russian air traffic generally follows GDP patterns, it exhibits greater volatility when facing external disruptions (sanctions and pandemics). The 2014-2015 period provides a clear example: plunging oil prices and the ruble's sharp devaluation led to consecutive GDP contractions (-2.0% in 2015, -0.2% in 2016). These economic shocks rapidly translated into aviation sector impacts through reduced domestic demand (due to declining household incomes and ruble-denominated fare increases) and fewer international flights (from diminished tourist flows). The resulting air travel declines of 1.18% (2015) and 3.8% (2016) underscore the sector's heightened sensitivity to macroeconomic instability compared to overall GDP fluctuations.

By 2016, the aviation sector had begun adapting through strategic shifts, particularly as airlines aggressively expanded domestic route networks amid gradual economic stabilization. During the 2017-2019 recovery period, while Russia's GDP grew at a moderate 1.5–2.5% annual rate, air travel demand surged ahead at an exceptional 13% average yearly growth. This remarkable divergence shows Russian air transport

growing 6.5 times faster than GDP—far exceeding the typical 1.5–2 multiplier observed in developing economies.

This growth pattern reflects Russia's gradual recovery from the 2014 sanctions, achieved through two parallel developments: expanded Asian route networks (particularly to China, Thailand, and Vietnam) and the successful emergence of domestic-focused low-cost carriers. The budget airline Pobeda exemplified this trend, tripling its passenger traffic during this three-year period. These developments culminated in 2019's record-breaking performance, with 128 million passengers carried - an all-time high for Russian aviation. While maintaining the fundamental relationship between economic growth and air travel demand, Russia's aviation sector grew at rates substantially exceeding global benchmarks during this recovery period.

Following the stable growth patterns of 2017-2019, the COVID-19 pandemic and subsequent geopolitical developments (SVO) disproportionately impacted air transport relative to overall economic performance. While Russia's GDP contracted by just 3% in 2020, air passenger traffic plummeted by 60%. Conversely, when GDP rebounded with 5% growth in the recovery period, air travel surged by 40%. This amplified volatility reflects two critical factors: the severe disruption of international travel due to border closures and reopenings during 2020-2021, and the effectiveness of government stabilization measures for airlines, which began bearing fruit in 2021.

The initiation of the Special Military Operation and subsequent imposition of severe Western sanctions in 2022 negatively impacted both GDP and air travel, though to differing degrees. While Russia's economy contracted by a modest 2% in 2022 - mitigated by government counter-sanction measures - air passenger traffic declined more sharply by 15%. The subsequent economic recovery (4% growth in 2023-2024) coincided with even stronger aviation sector growth of 10-15% annually. This disproportionate volatility in air travel reflects both the targeted nature of aviation sanctions and the sector's rapid adaptation to circumvent these restrictions.

The analysis reveals that Russia's air transport sector has been impacted not only by direct aviation sanctions but also by broader economic restrictions. While air traffic volumes generally correlate with GDP trends, the aviation industry demonstrates

greater volatility during crises. During periods of economic expansion, air travel grows proportionally; however, when facing external shocks (such as sanctions or pandemics), the sector experiences disproportionately severe contractions. This phenomenon became particularly pronounced after 2020, when successive crises created a growing divergence between the rates of GDP fluctuation and air transport recovery.

3.5.2.3. Impact on Passenger Traffic and Government Forecast

In June 2022, the Russian government adopted a comprehensive development program for the air transport industry through 2030. The initiative incorporated dual support mechanisms: demand-side stimulation through domestic flight subsidies in 2022, and supply-side assistance for state-owned aircraft manufacturers to boost production capacity. The program established baseline traffic projections, anticipating an initial decline to 100 million passengers in 2022 followed by steady recovery to 116.1 million by 2030.

Table 3.7. Forecast and Actual Passenger Traffic in 2022-2024

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Volume of Traffic on Domestic Air Routes (mln passenger)	90	91,1	92	92,9	94,7	96,5	98,4	101	105
Volume of Traffic on International Air Routes (mln passenger)	10	10,1	10,2	10,3	10,5	10,7	10,9	11,3	11,6
Total	100	101	102	103	105	107	109	113	116
	Actual Passenger Traffic								
Volume of Traffic on Domestic Air Routes (mln passenger)	77,7	83	84,7						

Table 3.7. (cont.)

Volume of Traffic on International Air Routes (mln passenger)	17,4	22,4	27						
Total	95,1	105	112						

Reference: Russian Federal Government, Rosaviatsia

The industry's actual performance deviated significantly from initial projections. In 2022, domestic air traffic reached only 77.7 million passengers - falling 13.7% short of the forecasted 90 million. However, this gap narrowed to 7.9% by 2024 (actual: 84.7 million vs projected: 92 million). Notably, while the 2022 decline was steeper than anticipated, the subsequent recovery outpaced expectations, with annual growth rates of +4.5% in 2023 and +2% in 2024 compared to the projected +1.2% annual increase.

International traffic performance contrasted sharply with projections. In 2022, actual volumes reached 17.4 million passengers - surpassing the 10 million forecast by a remarkable 74%. This overperformance accelerated further by 2024, with traffic to "friendly" nations (those not recognizing Western sanctions against Russian carriers) exceeding expectations by 165% (actual: 27 million vs projected: 10.2 million). The international segment's resurgence proved substantially stronger than anticipated, driven primarily by aggressive route expansion to sanction-neutral destinations.

The aviation industry's recovery significantly outperformed the 2022 projections. By 2024, Russian airlines transported 111.7 million passengers - exceeding both the forecast (102.2 million) and remarkably achieving pre-sanction traffic levels five years ahead of schedule. This accelerated recovery stemmed from multiple factors: successful economic stabilization following the 2022 crisis, rapid fleet reorganization through aircraft re-registration and purchases from lessors, and strategic expansion of alternative international routes.

3.5.3. Impact on Airlines' Profitability

The dynamics of the Russian aviation industry's financial results from 2022 to 2024 serve as a clear indicator of the efficacy of state countermeasures against Western sanctions. A calibrated policy of industry support successfully averted a transport collapse while preventing the need for total nationalization of carriers. Consequently, the sector reported aggregate net profits throughout this period, despite facing unprecedented external pressure and a contraction in passenger traffic.

A year-by-year analysis reveals the distinct drivers of this profitability: 2022's results were attributable to significant government subsidies; 2023's were defined by one-time insurance settlements related to leased aircraft; and 2024's return to profit was commercially driven by a recovery in high-margin international flight operations.

3.5.3.1. Impact on Industry Profitability in 2022

Even under severe sanctions, the largest airlines, apart from Aeroflot and Rossiya, posted record profits. The sector's leaders saw a combined profit of ₮88 billion in 2022, a figure largely attributable to government subsidies designed to support the domestic market.

Sanctions imposed in March 2022 struck a Russian civil aviation sector that was highly integrated into the global market, causing a severe contraction. Passenger traffic fell by 14.2% overall to 95.2 million people. This was driven by two main factors: an 11.2% drop in domestic traffic (to 77.7 million) following the closure of 11 southern airports, and a 25.6% plunge in international traffic due to the EU flight ban. Consequently, Russian airlines abruptly lost vital international routes, leasing contracts, foreign maintenance, and insurance instruments.

In response to sanctions, the Russian government was compelled to provide additional state support to stabilize the aviation industry. Record government support reached 172.3 billion rubles in 2022, as reported by the Association of Air Transport Operators (AEVT), a group representing the largest airlines. This funding included 100 billion rubles specifically for domestic transportation support. An additional 98.6 billion

rubles were paid to airlines through a damper mechanism, implemented to compensate for a sudden jump in jet fuel prices. Primarily due to this financial intervention, the sector maintained relative stability. The subsidies effectively contained ticket price inflation, preserving public access to affordable air travel.

Despite an aggregate operating loss of approximately 100 billion rubles for the industry, the financial picture was mixed. While 13 airlines posted a combined profit of 34 billion rubles, the remaining carriers suffered losses of 134 billion. When government subsidies are included, 27 of the 30 largest airlines—which account for nearly 100% of air traffic—achieved a net profit.

More than half of this net profit (47.8 billion rubles) was generated by the two largest private carriers: S7 Airlines and Ural Airlines. S7 reported a profit of 34.4 billion rubles (a 2.3-fold increase year-on-year), and Ural Airlines reported 13.5 billion rubles (a 2.5-fold increase). For both companies, this was their highest profit in at least six years (2017-2022). Another top-five carrier, the low-cost airline Pobeda (part of the Aeroflot group), also posted a significant result with a net profit of 15 billion rubles—a 4.4-fold increase and a record since its founding.

The sanctions, however, left a deep mark on the industry. This was most evident at Aeroflot, the nation's largest carrier, which incurred a massive loss of 65.3 billion rubles in 2022. This result reflects the performance of the Aeroflot and Rossiya airlines, excluding the group's low-cost subsidiary, Pobeda. The main cause of this loss was Aeroflot's heavy reliance on its extensive international route network, where it directly competed with global giants for premium passengers. The sudden closure of EU and US markets forced the group to completely overhaul its business model and network strategy (RBC, 2023).

3.5.3.2. Impact on Industry Profitability in 2023

In 2023, the combined net profit of the largest airlines amounted to 85.3 billion rubles, slightly decreasing compared to 2022. This year was marked by the end of "anti-crisis" subsidies for domestic flights and the beginning of aircraft buyouts from foreign

lessors. Within this context, the primary factor driving the industry's positive result was a one-time gain from settlements related to foreign aircraft.

The origin of this gain lies in 2022, when airlines were compelled to create cash reserves for lease payments that lessors would not receive. Once the disputes were settled via buyouts and insurance, these reserves were written back, appearing as profit on their books. This financial boost occurred just as the industry began facing increased pressure from rising maintenance costs.

The first quarter of 2023 marked the final period in which airlines received "anti-sanction" subsidies for domestic flights, totaling 25.3 billion rubles. Despite this support ending, the 32 largest Russian airlines—accounting for nearly 100% of passenger traffic—collectively achieved a positive operating profit of 13.2 billion rubles. This figure, which reflects earnings from ticket sales alone and excludes government subsidies and one-time items, reveals a divided industry: 12 airlines were profitable with a combined gain of 65 billion rubles, while 17 were unprofitable, incurring aggregate losses of 56.2 billion.

Bolstered by the final round of subsidies and the one-time effect of the aircraft buyout, the net profit of Russian airlines reached 85.3 billion rubles in 2023. This was only a slight decrease from the previous year's result of 89 billion. A total of 24 out of 32 airlines were net profitable, compared to 27 in 2022. Despite this minor dip, the result represents a significant achievement for the industry, especially when contrasted with the pre-crisis year of 2019—one of the most successful in Russian aviation—which saw a net profit of just 20 billion rubles.

Most of the net profit in 2023 was concentrated among twelve carriers. The leaders were Pobeda (21.3 billion rubles), S7 Airlines (21 billion), and Ural Airlines (17 billion), followed by Red Wings (4.3 billion), Utair (3.4 billion), Aurora (3.4 billion), and Smartavia (3.4 billion). Azimut reported a profit of 2.1 billion rubles. Among charter carriers, Icarus earned 1.8 billion, Nordwind 1.7 billion, and Nordstar 1.6 billion. Finally, Severny Veter (North Wind) closed the list with 1.5 billion rubles.

As noted earlier, a significant portion of the industry's net profit stemmed from the resolution of insurance disputes over leased aircraft. For instance, Pobeda Airlines' entire profit of 21.27 billion rubles was generated by a successful insurance settlement for 12 aircraft. Similarly, more than half of Ural Airlines' net profit resulted from a settlement for 19 aircraft. Meanwhile, S7 Airlines, the second-largest carrier, wrote off 27 billion rubles in accounts payable after settling its disputes with foreign lessors.

Despite a significant improvement in the industry's overall operating results, two top-five airlines—Aeroflot and Rossiya—reported substantial losses under Russian Accounting Standards (RAS): 29.5 billion and 31 billion rubles, respectively. These losses were significantly influenced by a non-cash "paper" effect, specifically the depreciation of the ruble, which increased the value of their foreign debt obligations. According to Aeroflot's estimates, when excluding the impact of these foreign exchange revaluations, the company would have reported a net profit of 50.4 billion rubles. This contrasts sharply with an adjusted net loss of 40.4 billion rubles for 2022.

3.5.3.3. Impact on Industry Profitability in 2024

The Russian airline industry demonstrated significant financial improvement in 2024. Total revenue from passenger carriers increased by 23% year-on-year to 1.77 trillion rubles. This revenue growth was accompanied by a sharp rise in profitability: the combined net profit of leading airlines exceeded 100 billion rubles, while their operating profit (profit from sales) reached at least 95 billion rubles. This figure excludes Pobeda Airlines, which does not disclose its financial results.

Table 3.8. Airlines by Revenue

Airline	Revenue (bln, Rub)	
	2023	2024
Aeroflot	497,5	712,9
S7	186,5	188
Rossiaya	119,6	167,6
Ural Airlines	110,9	143,4
Pobeda	92,3	100

Table 3.8. (cont.)

Utair	65,4	81,2
North Wind	52,4	66,4
Red Wings	46,1	51,5
Smartavia	25,5	29,7
Gazprom Avia	55,7	29,5

Reference: Reference: RBC (2025)

The aggregate revenue of 30 major airlines, which account for nearly all passenger traffic, reached 1.77 trillion rubles—a 23% increase over 2023 and a 65% surge from 2022. This figure is based on Russian Accounting Standards (RAS) reports from 29 airlines (totaling 1.67 trillion rubles) and an estimated 100 billion rubles for Pobeda. Pobeda ceased public disclosure after its addition to the U.S. SDN List in spring 2024, though industry sources confirm the estimate's reliability.

Table 3.9. Airlines by Net Profit

Airline	Profit (bln, Rub)	
	2023	2024
Aeroflot	-29,4	21,9
Pobeda	21,3	20
Ural Airlines	17,1	17,1
S7	21	14
North Wind	1,7	6,5
Smartavia	3,4	4,9
RusLine	-0,019	4,4
Red Wings	4,3	4,1
NordStar	1,6	3,7
Ikar	1,8	2,4

Reference: RBC (2025)

The combined net profit for 22 airlines was 104 billion rubles. This total consisted of approximately 85 billion rubles from 21 carriers and an estimated 20 billion from Pobeda. This aggregate figure represents a 22% increase over 2023 and a 16% improvement compared to 2022. Despite this overall growth, eight airlines remained unprofitable, though their combined net loss of 27.9 billion rubles was a significant

reduction from the 69 billion rubles lost in 2023. Consequently, the industry's aggregate net profit reached 76 billion rubles. Analysts consider this final figure to be the most reliable indicator of the sector's financial health, given the lack of complete disclosure from all individual companies.

The positive financial results of 2024 stand in stark contrast to those of the preceding years, which were largely shaped by government subsidies in 2022 and one-time gains from insurance settlements in 2023. The recovery in 2024, however, was organic and market-led, signaling the sector's successful adjustment to the post-sanction landscape.

3.5.4. Impact on Russian and Foreign Airlines in the Market

3.5.4.1. The Impact on Major Russian Airlines

The Russian aviation market demonstrated notable resilience in the face of the Special Military Operation and Western sanctions, with its major carriers largely insulated from catastrophic impact. This stability was underpinned by two critical factors: substantial government support measures and retaliatory counter-sanctions, which averted the bankruptcy of key airlines. Furthermore, the retention of a significant fleet of foreign aircraft enabled the industry to gradually restore its flight capacity to pre-sanction levels.

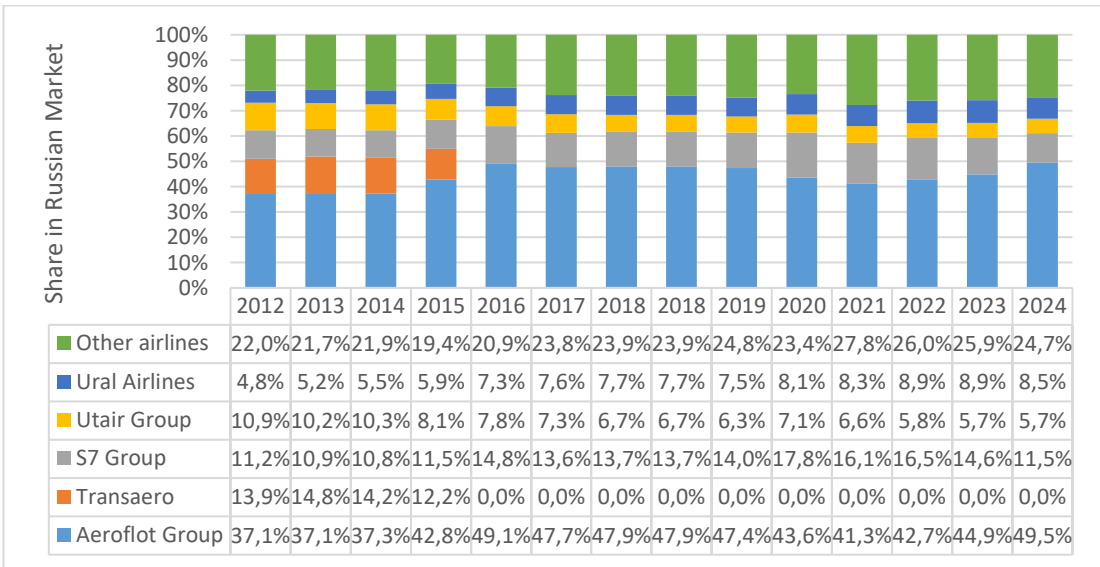


Figure 3.9. Major Russian Airlines, Market Share in Percentage
Reference: Aeroflot (2025)

One of the most significant market shifts has been the declining market share of the S7 Group, which fell from 14% in 2019 to 11.5% in 2024. This contraction stemmed largely from fleet-related challenges that forced the airline to adjust its flight program.

During its fleet modernization, S7 invested heavily in what was then considered one of the most advanced aircraft: the Airbus A320neo. The carrier progressively increased the share of this model to 40% of its total fleet, anticipating significant advantages in fuel efficiency and a reduced carbon footprint. However, this strategy encountered a major setback. The A320neos were equipped with Pratt & Whitney PW1100G engines, which subsequently proved to be highly problematic. In contrast, competitors Aeroflot and Ural Airlines, which also operated A320neos, had selected models fitted with the rival CFM LEAP-1A engine—a powerplant widely regarded as more reliable (Lenta.ru, 2025).

In 2023, Pratt & Whitney's recall of approximately 200 PW1100G engines worldwide—and its plan to inspect an additional 1,000 for defects—had a disproportionate impact on S7 Airlines. Compounding the issue, the U.S. manufacturer suspended servicing for these engines within S7's fleet. As the sole Russian carrier utilizing the PW1100G model, S7 faced a uniquely localized operational crisis. The resulting technical constraints and maintenance delays forced a significant reduction in its flight program.

Consequently, these engine-specific problems precipitated a sharp decline in the airline's market share. After reaching a peak of 17.8% during the post-pandemic recovery, S7's share fell to 11.5% by 2024. Crucially, because the issue was confined to a single airline's strategic fleet choice, its overall impact on the Russian aviation industry remained very limited.

Following a decline to 41.3% in 2021—driven by a slower recovery in its international segment compared to the domestic market—Aeroflot successfully restored its market share to 49.5% by 2024. This figure exceeds its average share of approximately 45% observed throughout the review period, though the deviation is not statistically significant. The rebound was primarily fueled by substantial government support,

particularly through state-facilitated aircraft fleet acquisitions, which enabled the airline to pursue a more aggressive expansion of its international routes.

The muted impact of the 2022 sanctions on Russia's major airlines becomes particularly evident when contrasted with the 2014-2015 crisis. The earlier sanctions, imposed following the reunification of Crimea, triggered a severe economic shock that culminated in a 72% devaluation of the ruble against the US dollar. This collapse in currency value, combined with a sharp decline in consumer demand and a surge in the cost of dollar-denominated leasing and credit, proved catastrophic for the industry. These factors directly precipitated the bankruptcy of Transaero Airlines—the nation's second-largest carrier, which held a 14.2% market share in 2014.

In stark contrast, the government's response in 2022 was markedly more effective. Direct support for airlines and domestic travel demand, coupled with a successful countercyclical macroeconomic policy, effectively insulated the sector from a similar collapse. These coordinated measures not only mitigated the immediate shock of the sanctions but also laid the foundation for the industry's robust growth in 2023-2024, thereby safeguarding the stability of the country's primary air carriers.

3.5.4.2. Impact on Foreign Airlines in the Russian Market

The share of foreign airlines in the Russian market, which had remained stable at approximately 30% from 2012 to 2018, became a key indicator of the sector's disruption following the Special Military Operation and subsequent sanctions. This share initially declined to 23.5% in 2020-2021 due to COVID-19 travel restrictions imposed on foreign carriers.

The events of 2022 precipitated a far more dramatic shift. For Russian airlines, access to traditional international markets (Europe and the U.S.) was severed, and operational capacity was hampered by insurance disputes over leased aircraft. Conversely, Western counter-sanctions barred EU carriers—who had traditionally dominated the premium segment—from operating in Russia.

This dual exclusion created a strategic vacuum, which was swiftly filled by airlines from nations that did not join the sanctions regime. Carriers from Turkey and the UAE moved decisively to capture the liberated market in 2022. They were later joined, in 2023-2024, by Chinese airlines, which expanded their presence significantly following the lifting of China's domestic COVID restrictions. Consequently, the composition of foreign carriers in Russia has been fundamentally reshaped, shifting from a European-centric model to one dominated by airlines from "friendly" countries.

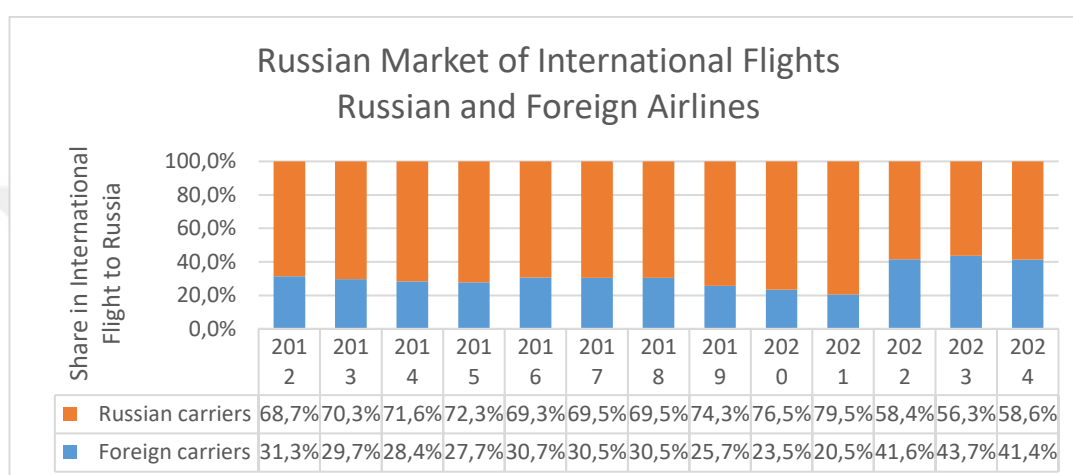


Figure 3.10. Russian and Foreign Airlines, Share in International Flights
Reference: Aeroflot (2025)

Consequently, foreign carriers captured an unprecedented 40% share of Russia's international air travel market during this period. Although their market share showed a modest upward trend throughout 2022-2023, this growth was ultimately curtailed. Russian airlines were able to stabilize their competitive position through two key developments: the massive buyout of foreign-owned aircraft from domestic lessors and the successful resolution of related insurance disputes. These actions facilitated a significant expansion of their international flight programs.

However, this increased market share for foreign airlines is less dramatic when examined in absolute terms. While passenger numbers on foreign carriers approached pre-pandemic levels in 2024, they did not exceed them, plateauing at 19 million passengers. This stagnation in absolute volume, contrasted with the growing share,

indicates that the expansion of foreign carriers was primarily a function of the overall market's contraction rather than their own aggressive growth.

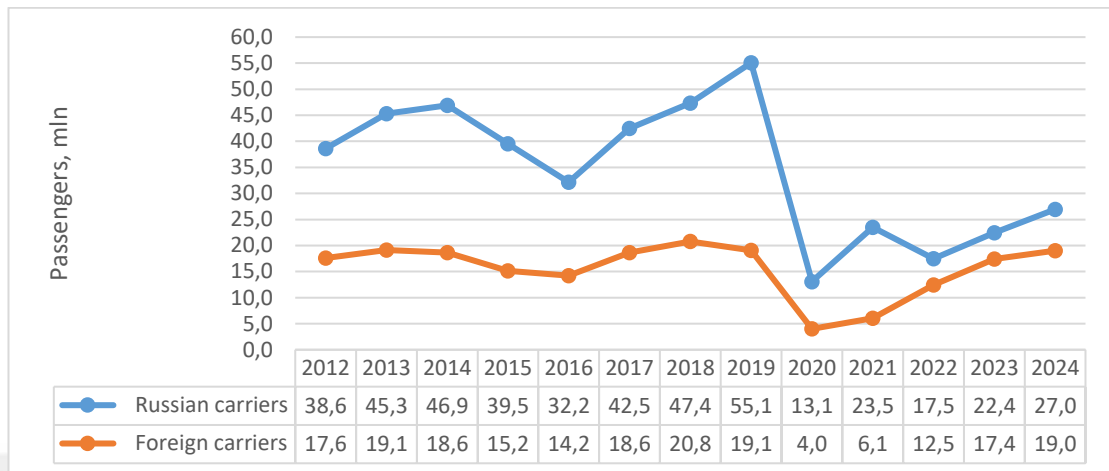


Figure 3.11. Russian and Foreign Airlines, Mln Passenger
Reference: Aeroflot (2025)

In reality, the period from 2021 to 2024 represented a recovery phase for foreign carriers following the catastrophic decline of 2020. Within this context, the events of 2022 did not create new growth but rather accelerated their existing recovery trajectory. The sudden reduction in competition from Russian airlines allowed foreign carriers to capture market share at an unprecedented pace. This is evidenced by explosive passenger growth rates of 51% in 2021 and 106% in 2022. However, this growth slowed dramatically to 39.8% in 2023 and just 9.21% in 2024, indicating that the market was approaching its pre-pandemic saturation point and that future expansion would be far more modest.

A key observation is the stabilization of foreign carrier traffic at a natural demand boundary of 19-20 million passengers annually, despite a complete transformation in the segment's composition. The exit of leading Western holdings—Lufthansa, Air France-KLM, and IAG, which previously controlled over half the market—did not create a vacuum. Instead, airlines from Turkey, the UAE, and China seamlessly absorbed their share.

A notable exception to this trend was Air Serbia. Despite continuing its flights to Russia, the carrier succumbed to EU pressure by voluntarily capping flight frequencies and abandoning its strategy to become a major transit hub for Russian travelers. Consequently, it remained a niche operator serving primarily the Balkan region and failed to capitalize on the significant opportunities presented by the market's redistribution.

3.5.5. The Impact on the Airport Industry

3.5.5.1. Impact of Closure of Southern Russian Airports

In response to the onset of the Special Military Operation in Ukraine, Russian authorities closed a significant portion of the country's airspace to civilian flights. Effective 03:45 Moscow Time on February 24, the Federal Air Transport Agency (Rosaviatsia) imposed temporary flight restrictions on 11 southern airports: Anapa, Belgorod, Bryansk, Voronezh, Gelendzhik, Krasnodar, Kursk, Rostov-on-Don, Simferopol, Stavropol, and Elista. The airport in Lipetsk was added to the list later that same day. Stavropol airport resumed normal operations on February 25, 2022.

Initially, the restrictions were intended to be short-term, announced to last only until March 2, 2022. However, the closure persisted far longer than initially anticipated. For the first week, the Federal Air Transport Agency extended the deadline to March 5, then to March 8. This pattern continued, with the agency issuing weekly notifications to prolong the flight ban. This process repeated for 49 consecutive weeks (RBC, 2022r). On December 30, 2022, the agency issued its final notification and ceased providing weekly updates, leaving the flight restrictions indefinitely in place (Forbes Russia, 2023).

As of May 28, 2024, Elista Airport resumed operations by accepting its first flight following its temporary closure. However, flight restrictions remain in effect for the remaining ten airports (TASS, 2023b).

The airports closed in February 2022 had collectively served over 20 million passengers in 2021. The largest hubs affected were Simferopol (6.83 million

passengers), Krasnodar (5.025 million), Anapa (2.9 million), Rostov-on-Don (2.9 million), and Gelendzhik (1.04 million). Smaller regional airports, including Voronezh (807,500), Belgorod (582,500), Bryansk (141,000), Kursk (103,200), and Elista (97,500), were also shut down. Lipetsk airport, which reported only 59,500 passengers in the first half of 2021, was included in the restrictions.

Given that the total passenger volume for the Russian market in 2021 was 117.1 million, the closure directly affected airports representing 17% of national traffic. Despite this significant potential impact, the overall market declined by only 8.02% in 2022. This discrepancy indicates that the severe potential disruption was largely mitigated. A portion of the passenger traffic was likely redirected to other regional airports, while other travelers switched to alternative domestic tourist destinations.

Consequently, even before considering the additional complications of sanctions and closed airspace from unfriendly countries, the negative impact of closing 11 airports near the Ukrainian border was substantially offset by internal market adaptations and growth drivers elsewhere in the system.

3.5.5.2. Impact on Major Airports

An analysis of Russia's 25 largest airports reveals a pronounced growth trend, particularly among regional hubs, driven by a surge in domestic air travel. This shift is most evident in the significant expansion of airports located in the Urals, Siberia, and the Russian Far East.

For instance, the airports of Yekaterinburg and Novosibirsk have seen passenger traffic grow by 28.37% and 37.84%, respectively, compared to the last pre-pandemic year. Crucially, the majority of this growth has occurred since the start of the Special Military Operation in 2022, with increases of 33.94% and 39.60% respectively during this period.

This pattern extends to other key regional centers such as Tyumen, Surgut, Krasnoyarsk, Irkutsk, Khabarovsk, and Vladivostok. These airports have also demonstrated substantial growth, a trend that has accelerated since 2022, coinciding

with the shift in focus towards domestic market support and the development of intra-regional connectivity.

This regional growth is directly attributable to the expanding operations of major Russian carriers utilizing these airports as key hubs. Specifically, the rising passenger volumes at Yekaterinburg, Novosibirsk, and Tyumen are driven by the positive performance of Ural Airlines, S7 Airlines, and Utair, respectively.

Table 3.10. Major Russian Airports, Total Passengers, 2019, 2021, 2024

	Airport	City	2019	2021	2024	2024/19	2024/21
1	Sheremetyevo	Moscow	49,44	30,62	43,70	-11,61%	42,72%
2	Domodedovo	Moscow	28,25	25,06	15,50	-45,14%	-38,15%
3	Vnukovo	Moscow	24,00	18,00	16,00	-33,34%	-11,11%
4	Pulkovo	Saint Petersburg	19,58	18,04	21,00	7,25%	16,41%
5	Sochi (Adler)	Sochi	6,76	11,08	13,70	102,63%	23,65%
6	Koltsovo	Yekaterinburg	6,23	5,97	8,00	28,37%	33,94%
7	Tolmachevo	Novosibirsk	6,75	6,66	9,30	37,84%	39,60%
8	Simferopol	Simferopol	5,14	6,83		-100,00%	-100,00%
9	Pashkovsky	Krasnodar	4,63	5,02		-100,00%	-100,00%
11	Platov	Rostov-on-Don	3,06	2,90		-100,00%	-100,00%
10	Ufa	Ufa	3,56	4,00	4,20	18,11%	5,00%
12	Kazan	Kazan	3,47	3,88	5,30	52,69%	36,74%
13	Kurumoch	Samara	3,00	2,99	3,60	20,04%	20,28%
14	Knevichi	Vladivostok	3,08	1,81	3,00	-2,57%	65,38%
15	Yemelyanovo	Krasnoyarsk	2,48	2,70	4,28	72,44%	58,81%
16	Mineralnye Vody	Mineralnye Vody	2,53	3,21	4,86	92,40%	51,64%
17	Irkutsk	Irkutsk	2,43	2,08	3,95	62,28%	90,09%
18	Khrabrovo	Kaliningrad	2,37	3,91	4,80	102,53%	22,73%
19	Khabarovsk Novy	Khabarovsk	2,19	1,78	2,50	14,42%	40,37%
20	Roschino	Tyumen	2,04	2,24	2,80	37,32%	24,89%
21	Surgut	Surgut	1,87	1,84	2,22	18,97%	20,46%
22	Balandino	Chelyabinsk	1,71	1,81	2,17	26,60%	19,63%

Table 3.10. (cont.)

23	Bolshoye Savino	Perm	1,65	1,93	2,00	21,43%	3,73%
24	Vityazevo	Anapa	1,64	2,93		-100,00%	-100,00%
25	Uytash Airport	Makhachkala	1,50	2,03	2,90	93,20%	42,86%

Reference: Rosaviatsia

Furthermore, the significant increase in traffic at airports like Irkutsk stems from S7 Airlines' establishment of a secondary hub there. A similar strategy was employed by Aeroflot in Krasnoyarsk and Vladivostok. This hub expansion is a direct result of the industry's strategic pivot toward the domestic market in search of new growth drivers. The strategy has been enabled by a more efficient deployment of medium-haul aircraft, which form the backbone of Russian carriers' fleets, allowing them to optimize connectivity and frequency on these regional routes.

The remarkable growth witnessed at the airports of Makhachkala, Kaliningrad, Mineralnye Vody, and Kazan is primarily driven by the active development of new domestic tourism destinations. This trend received a significant initial boost during the COVID-19 pandemic, when international travel was halted, and was further reinforced by subsequent sanctions and restrictions on international travel.

The scale of this growth is substantial. Since 2019, passenger traffic has increased by 93.2% in Makhachkala, 102.52% in Kaliningrad, 92.4% in Mineralnye Vody, and 52.7% in Kazan. A significant portion of this expansion has occurred since the start of the Special Military Operation, with growth rates of 42.9%, 23.7%, 51.7%, and 34.7% respectively, underscoring the continued strength and strategic reorientation of domestic tourism.

The closure of major southern airports—including Rostov-on-Don, Krasnodar, and Simferopol—catalyzed the transformation of Sochi Airport into the primary regional hub on Russia's Black Sea coast. As the only operational airport in the region, Sochi experienced substantial growth, with passenger traffic increasing by 102.6% since 2019 and 23.65% since the start of the Special Military Operation.

This expansion was driven by two key factors: firstly, its role as a gateway for tourists traveling from across Russia for beach holidays, and secondly, its strategic selection as a hub for Rossiya Airlines. The airline utilizes Russian-made Sukhoi Superjet 100 (SJ-100) aircraft to operate flights from cities throughout Russia to Sochi, with onward connections to friendly nations such as Turkey, the UAE, and Iran.

St. Petersburg's Pulkovo Airport has solidified its position as Russia's second-largest airport by passenger traffic. It has achieved modest yet positive growth, with traffic rising 7.25% above the 2019 peak and increasing by 16.4% since the start of the Special Military Operation. This performance can be attributed to two key factors: the aforementioned nationwide surge in domestic tourism and the airport's monopolistic position as the primary aviation gateway for Russia's second-most populous city.

Sheremetyevo International Airport, a key component of the Moscow Aviation Hub and the primary base for Russia's largest carrier, Aeroflot, has increased its passenger traffic by 42.7% since the start of the Special Military Operation. Despite this significant growth, its passenger volume remains 11.4% below the 2019 peak.

This performance directly mirrors the overall trajectory of Aeroflot, which has aggressively expanded its international network to friendly countries yet still operates below its pre-sanction capacity. A strategic move that contributed to Sheremetyevo's resilience was the Aeroflot Group's resource optimization strategy. As part of this initiative, the group relocated its low-cost subsidiary, Pobeda Airlines, from Vnukovo to Sheremetyevo. This consolidation improved operational efficiency and helped mitigate costs, further supporting traffic growth at the hub.

The remaining airports in the Moscow aviation hub have experienced a more pronounced decline in passenger traffic. Domodedovo Airport, once the country's second-largest, saw a 45.1% reduction in traffic in 2024 compared to 2019, with the majority of this decline (38.1%) occurring after the start of the Special Military Operation.

This collapse in passenger numbers is attributed to a confluence of two major factors: the cessation of flights by Western airlines and severe operational challenges faced by

its anchor carrier, S7 Airlines. S7, which uses Domodedovo as its main hub, was forced to drastically reduce its flight program due to a critical shortage of operational aircraft, a direct result of widespread issues with its Pratt & Whitney engines.

Vnukovo Airport also experienced a decline in passenger traffic, falling 33.3% compared to 2019 and 11.1% since the start of the Special Military Operation. A more severe downturn was averted primarily due to a substantial increase in traffic from Turkish Airlines, which significantly expanded its flight operations following the withdrawal of Western competitors. However, the relocation of Pobeda Airlines to Sheremetyevo negatively impacted Vnukovo's operational results and was a key factor in the overall passenger decline observed after 2022.

Collectively, passenger traffic at Moscow's three main airports (Sheremetyevo, Domodedovo, and Vnukovo) in 2024 remained 25% below the 2019 peak and has grown by a mere 2% since the start of the Special Military Operation. This stagnation highlights a broader transformational trend within the Russian aviation industry. Airlines are increasingly capitalizing on domestic market growth by de-emphasizing their focus on Moscow and shifting operations to the regions. There, they are establishing secondary hubs to optimize network efficiency and capture growing passenger flows.

Furthermore, Moscow's geographical location—far from the country's center—inherently limits its share of the domestic travel boom. Despite sustained local demand, this peripheral positioning has largely excluded the capital's airports from the most dynamic growth now occurring in domestic air travel.

3.5.6. Impact on International Flights Geography

Using Aeroflot as an example, we can clearly see how Western sanctions have affected the geography of its international flights. This analysis is especially important given that international routes are crucial for the company's profitability. Passenger turnover on these flights grew steadily until 2019, peaking at 80 billion passenger-kilometers. Throughout this period, Europe remained the primary destination, with traffic reaching 30 billion passenger-kilometers—a logical trend due to the region's geographic

proximity and historical ties. Asia (26.9 billion RPK) and America (8.6 billion RPK) were also significant markets in 2019.

The Covid-19 pandemic caused a 4.2-fold decrease in overall passenger traffic in 2020. This decline was consistent across all regions, with traffic falling by approximately 4 to 5.5 times in every major destination. The recovery in 2021 was uneven. While traffic to CIS countries, the Middle East (namely Istanbul, Dubai, and Tel Aviv), and America began to rebound, the key European and Asian markets—which had been the primary sources of international traffic—continued to decline due to persistent Covid-19 restrictions. Consequently, after the more than fourfold collapse in 2020, the overall recovery in 2021 was weak, with international passenger traffic growing by only 17% from the severely depressed base of the previous year.

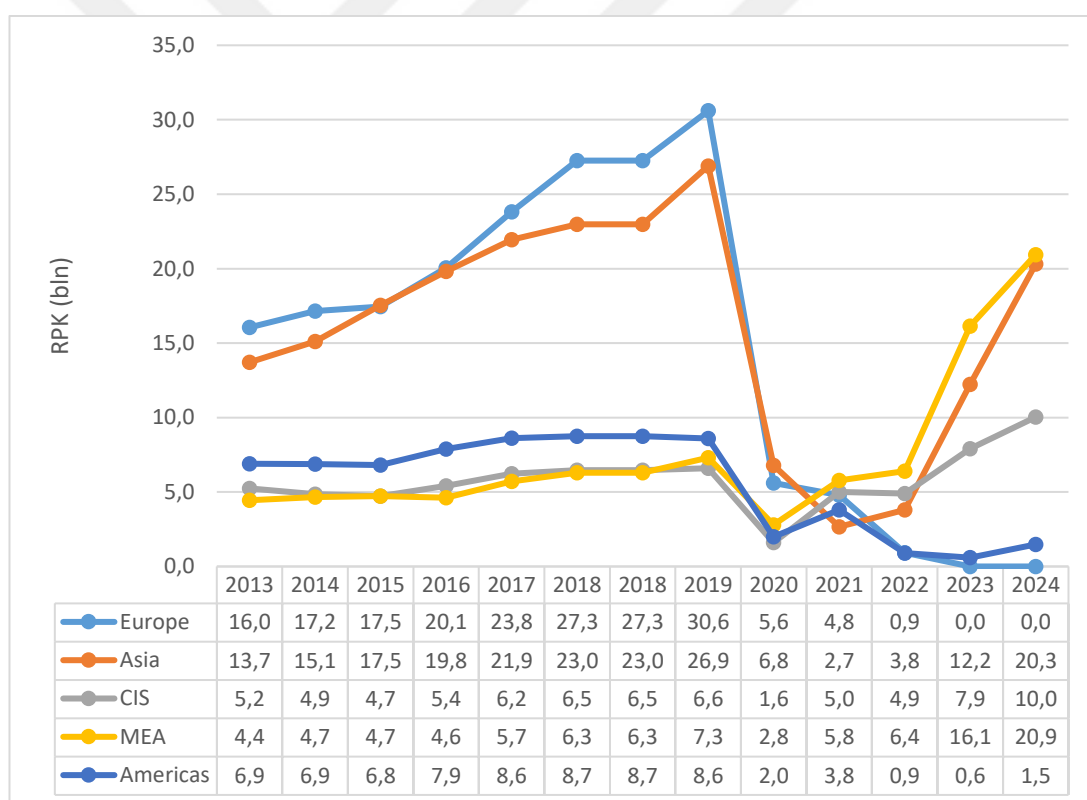


Figure 3.12. International Traffic of Aeroflot Group by Region, Bln RPK

Reference: Aeroflot (2025)

The start of the special military operation in 2022 triggered significant structural changes in the group's international network. The closure of EU airspace to Russian

carriers effectively halted all traffic to European destinations by 2023-2024. In response, the company's strategy shifted towards expanding air links with countries deemed "friendly" by the Russian government, creating a new pool of destinations. Furthermore, the gradual lifting of COVID-19 restrictions in key Asian markets, particularly China, removed the final barrier to restoring and expanding traffic to that region.

In the group's reconfigured international network, the role of Europe has been reduced to zero, while the significance of the Middle East and Asia has surged. Middle Eastern traffic (primarily to Turkey and the UAE) accounts for 20.9 billion passenger-kilometers. Meanwhile, Asian traffic has expanded 7.5 times since 2021, reaching 20.3 billion passenger-kilometers—though this is still short of its 2019 high of 26.9 billion.

Political ties also led to a more prominent role for the CIS region in the network. In the Americas, traffic contributed 1.5 billion passenger-kilometers, a figure sustained entirely by Rossiya Airlines' flights to Cuba and Venezuela. The closure of U.S. airspace—which had previously been the group's largest market in the region—has severely curtailed any potential for growth.

Driven by expanded operations in Asia and the Middle East, the group's total international passenger traffic reached 52.4 billion passenger-kilometers in 2024. While this figure remains significantly below the pre-pandemic peak of 80 billion recorded in 2019, the recovery from a low of 16.9 billion in 2022 was sufficient to significantly improve the group's financial performance. This rebound enabled the company to report a net profit for the first time since 2019.

3.5.7. The Impact on the Aeroflot Fleet

The commencement of the special military operation and the imposition of severe Western sanctions resulted in Western aircraft manufacturers halting all equipment supplies to Russia. Consequently, Russian airlines lost access to aircraft they had already ordered and paid for. This has had a profound impact on the composition and average age of the national fleet. Data from Aeroflot, as a market leader, provides a

critical lens through which to examine these emerging challenges within the Russian aviation industry.

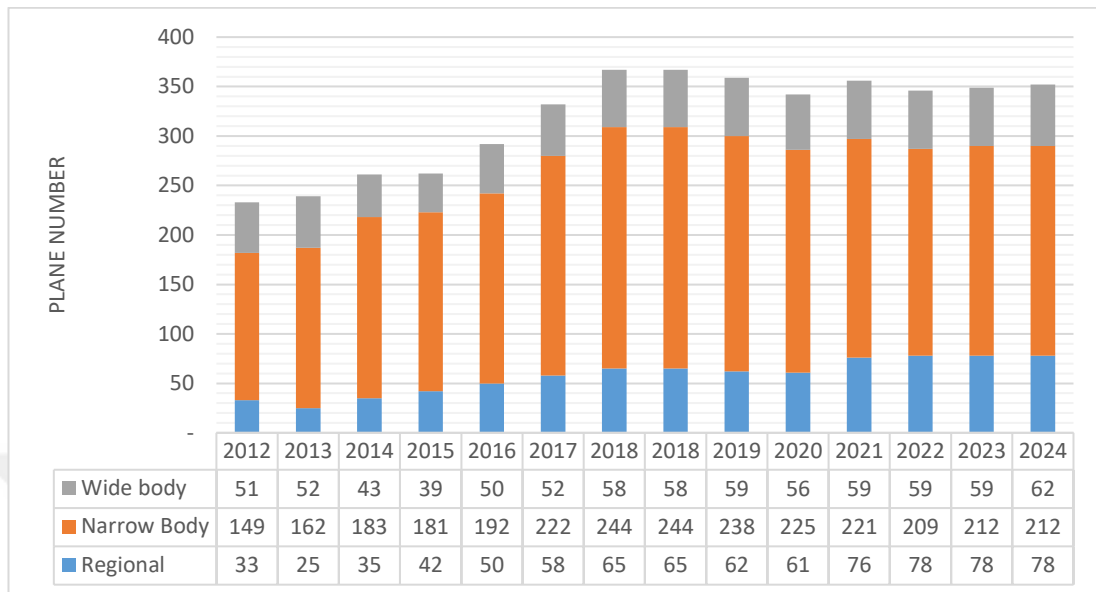


Figure 3.13. Aeroflot Group Fleet by Plane Type

Reference: Aeroflot (2025)

The fleet structure was characterized by a strong focus on medium-haul aircraft, which comprised roughly 60% of the total. A strategic concentration on high-yield, long-haul operations by the group's flagship carrier, Aeroflot, was evidenced by its possession of 62 wide-body aircraft (Airbus A330 and Boeing 777). Concurrently, the group's regional subsidiary, Rossiya Airlines, served as the largest operator of the Russian-made Sukhoi Superjet 100 (SSJ-100).

The outset of the special military operation and the West's aggressive sanctions policy resulted in the seizure of 78 Russian-owned airliners that were abroad at the time. The Aeroflot Group accounted for 12 of these impounded aircraft. The Russian government's swift response, which included a law prohibiting aircraft from being returned to foreign lessors, helped stabilize the situation. Remarkably, by 2024, Aeroflot had not only mitigated these losses but also expanded its fleet, acquiring three long-haul Airbus A330-300 aircraft from the defunct airline iFly, which had previously operated them on charter flights.

Throughout the 2010s, Aeroflot actively modernized its fleet, phasing out outdated Soviet-era aircraft and replacing them with Western models. This strategy resulted in one of the youngest fleets in the world by the end of the decade; the average age of Aeroflot's own aircraft was 4.2 years in 2018, while the average across the entire group stood at 6.9 years.

However, the pandemic—which delayed deliveries of new aircraft—and subsequently the start of the special military operation (SVO)—which halted them entirely—arrested this modernization. Consequently, the fleet has aged significantly. By 2024, the average age of Aeroflot's aircraft had reached 8.9 years, and the average for the entire group had increased to 9.9 years.

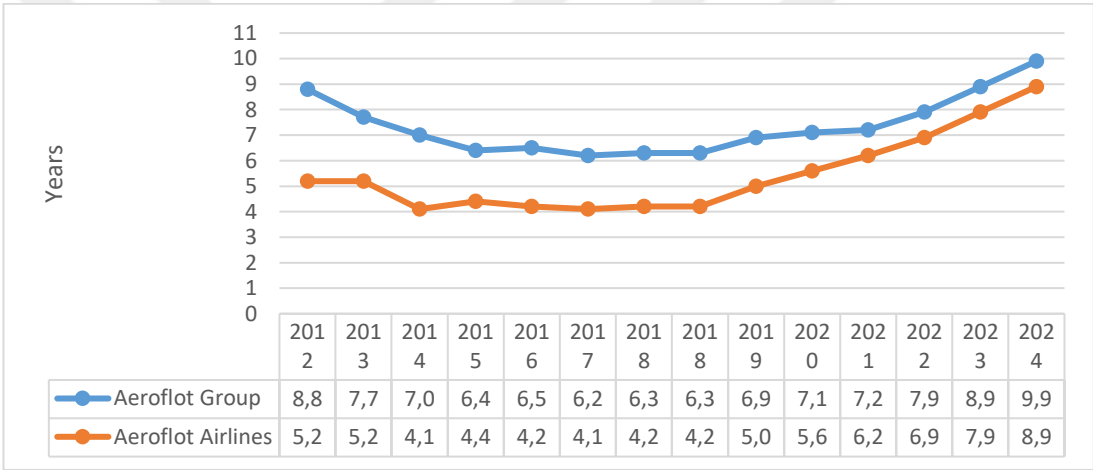


Figure 3.14. Fleet Average Age of Aeroflot Group

Reference: Aeroflot (2025)

Fleet aging is an inevitable challenge now facing the entire Russian air transportation sector. The case of Aeroflot, which holds a 50% market share, illustrates that this aging is not yet a critical issue in the short term. The comprehensive fleet renewal undertaken in the 2010s provided a substantial safety margin, enabling the airline to maintain its flight program at approximately 2018-2019 levels.

However, in the long term, without access to new aircraft, this trend will lead to significant industry degradation. The refusal of Western manufacturers to supply new equipment has severely curtailed prospects for passenger traffic growth. This

constraint can only be lifted by the delivery of new Russian-manufactured aircraft, which the company is projected to receive in sufficient quantities in the medium term.

3.5.8. Impact on Maintenance, Repair, and Overhaul Costs

Russian airlines reported a sharp increase in Maintenance, Repair, and Overhaul (MRO) expenses starting in 2023. According to periodicals, Ural Airlines' operating costs for fleet maintenance increased by 72% that year. This trend was reflected across the industry: S7 Airlines' expenses grew by 67% to 30.2 billion rubles, while Aeroflot recorded an 82% surge, with costs reaching 23 billion rubles (Kommersant, 2023c). The detailed data available from the Aeroflot group provides a valuable opportunity to analyze the dynamics of this cost category more closely.

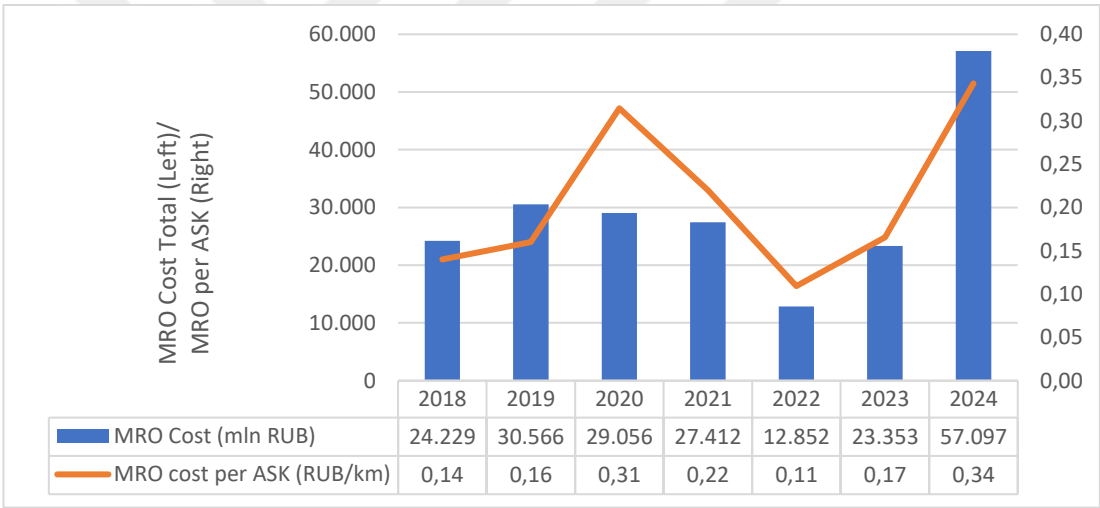


Figure 3.15. MRO Total Cost and MRO per ASK

Reference: Aeroflot (2025)

An analysis of Aeroflot Group's data confirms a substantial increase in Maintenance, Repair, and Overhaul (MRO) costs following the start of the special military operation (SVO) and the imposition of Western sanctions. Between 2019 and 2024, aircraft maintenance expenses surged from 30.5 billion rubles to over 57 billion rubles.

This trend is also reflected in the cost structure. The share of MRO in the Cost per Available Seat Kilometer (CASK) grew significantly, more than doubling from 0.16 rubles/km in 2019 to 0.34 rubles/km in 2024. This increase starkly reflects the new

empirical reality for Russian airlines, which are forced to procure parts through alternative, more expensive channels to bypass sanctions on Western aviation equipment.

However, this statistical surge also contains a manipulative element pertaining to the timing of expense recognition. In 2022 and part of 2023, many airlines deferred complex maintenance procedures due to a lack of reliable supply chains for essential spare parts. Once the necessary parts were acquired, these deferred repairs were executed, but their associated costs were booked in the 2023-2024 financial periods, thereby concentrating expenses and amplifying the year-on-year growth rate.

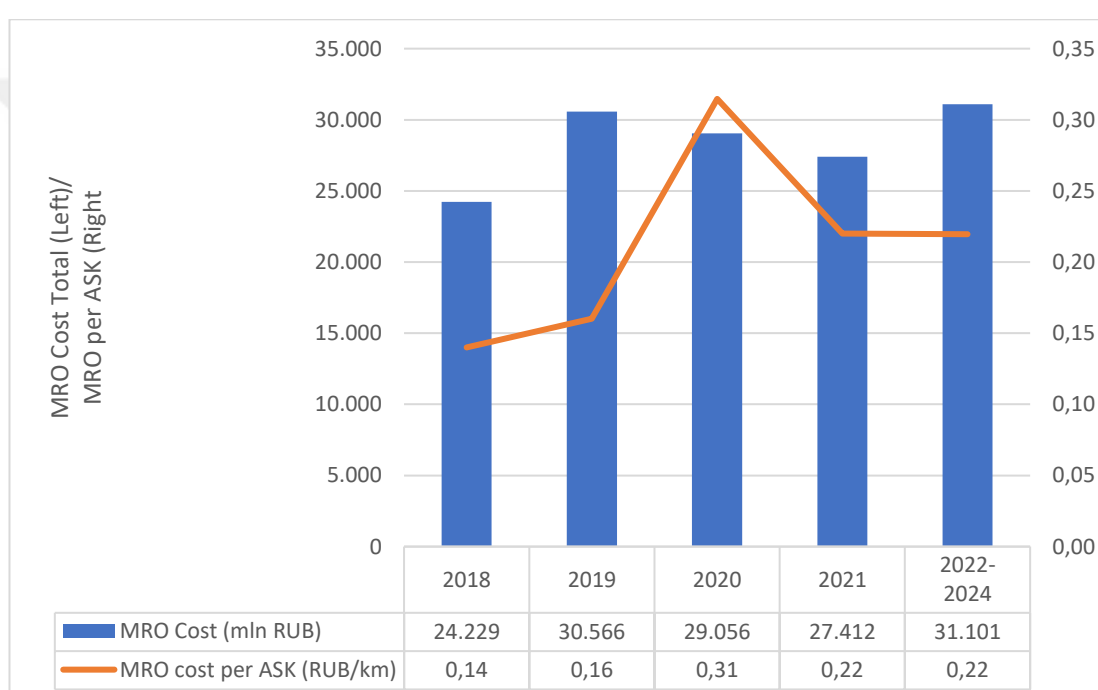


Figure 3.16. MRO Total Cost and MRO per ASK, 2022-2024 Average

Reference: Aeroflot (2025)

Averaging the data from the 2022-2024 period significantly alters the perspective. For the Aeroflot Group, the total annual MRO cost during these years remained around 30 billion rubles. Furthermore, the MRO cost per Available Seat Kilometer (ASK) increased from 0.16 rubles/km to an average of 0.22 rubles/km. While this represents a notable rise, it is not as critical as initially feared.

Therefore, a more accurate analysis based on the Group's data reveals that although average MRO expenses were indeed higher than in the pre-pandemic era, the growth was not the multiples initially predicted in 2022. The overall financial impact on this cost category has been contained.

3.5.9. Impact on Aeroflot Strategy

In 2019, the Aeroflot Group provided a development strategy - 2028. This document assumed the growth of passenger traffic of the group's airlines to 130 million passengers per year by 2028. The strategy provided for increased specialization of the Group's airlines (Aeroflot, 2020). Aeroflot gradually transformed into a "five-star" airline that would focus on high-margin and long-haul flights. The airline was positioned as an international premium carrier developing transit through Moscow. Low-cost airline Pobeda ensured the development of budget transportation to the level of 55-65 million passengers per year, increasing the fleet to 170 aircraft and becoming the largest airline in Russia with a market share of about 30% by 2028. This figure was six times higher than it was in 2019, when the company served 10.3 million people with a pair of 30 aircraft. The development of a low-cost airline would make it possible to reduce prices and make transportation affordable for more Russian citizens. Rossiya Airlines focused on the development of a hub in Russia's second largest city, St. Petersburg, regional transportation within the country, socially significant destinations, and the operation of a fleet of domestic aircraft. By the end of the period, the total number of aircraft in the Group's fleet would be up to 600 units, of which 235 are domestic (RBC, 2020).

The Aeroflot Group's record-breaking performance in 2019, during which it carried 60 million passengers, was abruptly halted by two consecutive crises. The COVID-19 pandemic caused passenger numbers to halve in 2020. While the pandemic severely impacted operations, it did not fundamentally alter the Group's long-term "Strategy 2028." However, the subsequent onset of the special military operation rendered this strategy entirely obsolete.

In the summer of 2022, Aeroflot unveiled a new "Strategy 2030," which reflected a dramatic scaling back of ambitions in response to the new geopolitical and economic

realities. The strategy's focus shifted fundamentally from aggressive development and growth to operational survival and adaptation.

This recalibration is evident in its targets: the Group's passenger traffic goal for 2030 was set at 65 million passengers. This figure aims to secure a 50% share of the Russian market but represents an increase of only 8% over the Group's pre-pandemic 2019 results (Aeroflot, 2023), underscoring the constrained outlook for the entire industry.

While the 2028 strategy was predicated on fleet renewal with Airbus and Boeing aircraft, the new Strategy 2030 is fundamentally reliant on the large-scale acquisition of Russian-manufactured aircraft. The plan mandates that by 2030, the Group's fleet must be predominantly composed of the Russian medium-haul MC-21 (210 units) and the regional Sukhoi Superjet 100 (SSJ-100), with 170-180 units of the latter.

The total fleet is projected to grow to 500 aircraft by the end of the decade (Monocle, 2023a). Crucially, domestic models are expected to constitute 70% of this total, representing a complete strategic realignment towards import substitution and technological sovereignty. Due to the effective prohibition on acquiring Western aircraft and the low probability of an efficient Russian long-haul aircraft entering serial production by 2030, the Group's strategy pivoted towards developing regional bases and secondary hubs. This network model is designed to maximize the utility of its future fleet of medium-haul MC-21 and regional SSJ-NEW aircraft, effectively circumventing the need for a large, modern wide-body fleet in the short to medium term.

A cornerstone of the new strategy was a complete transition to Russian IT systems, mandating the development of domestic replacements for critical software, including an airworthiness management system (analogous to AMOS), an air messaging network (similar to SITA), a reservation system (to replace platforms like Sabre), and an enterprise resource planning (ERP) system (to substitute for SAP). Concurrently, the strategy outlined a massive expansion of its Maintenance, Repair, and Overhaul (MRO) operations, encompassing the development of all technical maintenance forms for the Group's fleet, enhancing component repair capabilities, establishing a national competence center to reverse-engineer and develop solutions for Boeing and Airbus

aircraft, and creating a full-cycle production system for both technical operations and the manufacture of components as part of a comprehensive import substitution program.

Therefore, the strategy shifted from one of extensive growth and global integration, predicated on stable international conditions and a focus on international transportation, to one focused on adaptation to sanctions, import substitution, and a pronounced reorientation toward the domestic market. While its targets for air transportation are more modest, the new strategy provides a viable pathway for survival in a hostile geopolitical environment, thereby averting the collapse of both the national carrier and the broader Russian aviation industry.

The procurement of Russian aircraft, as outlined in the strategy, was integral to a broader national plan for developing the domestic aviation industry. By guaranteeing a large-scale order book, Aeroflot provided the demand necessary to sustain Russian aircraft manufacturers, which were themselves receiving substantial state investment. In this capacity as the primary customer, Aeroflot was slated to acquire the majority of new domestically produced aircraft: 210 of the 270 planned MC-21 medium-haul jets, 78 of the 142 new SJ-100 regional aircraft, and 40 of the 115 Tu-214s.

By assuming this role as the anchor customer for Russian aviation and a cornerstone of the national industry development strategy until 2030, Aeroflot's actions supported the creation of tens of thousands of jobs across hundreds of enterprises within the aviation sector and its supply chain. Furthermore, it catalyzed the emergence of a new, high-tech economic sector—one whose accelerated development was directly precipitated by the geopolitical isolation resulting from the SVO and Western sanctions.

3.5.10. Impact Summary

The Special Military Operation and subsequent Western sanctions triggered a profound and rapid transformation of Russia's air transport market. Despite predictions of collapse, the industry demonstrated remarkable resilience, with passenger traffic rebounding from 95.1 million in 2022 to 111.7 million by 2024—exceeding pre-

sanction levels and surpassing government forecasts years ahead of schedule. This recovery was underpinned by massive state support, the rapid re-registration of aircraft, and a strategic reorientation toward domestic tourism and flights to "friendly" nations, particularly in Asia and the Middle East, replacing vanished European routes.

The crisis required a complete revision of the strategic vision of the industry, which is especially noticeable in the change in strategy of the largest national carrier, the Aeroflot group of companies, which replaced the ambitious, globally oriented "Strategy 2028" with the pragmatic "Strategy 2030". This new roadmap emphasizes technological sovereignty and import substitution, mandating a transition to Russian-made aircraft like the MC-21 and Sukhoi Superjet, with a target for 70% of the fleet to be domestically produced by 2030. Concurrently, a critical effort is underway to replace Western software and MRO systems with domestic alternatives and to establish self-sufficient maintenance capabilities. The strategy also involves developing regional hubs to optimize networks with medium-haul aircraft, effectively circumventing the lack of new Western long-haul planes.

Financially, the industry navigated the crisis through phased adaptation: first via government subsidies in 2022, then through one-time gains from insurance settlements on impounded leased aircraft in 2023. By 2024, it achieved organic profitability, with net profits exceeding ₹100 billion, signaling a successful adjustment to the new sanctions environment. The market landscape also shifted significantly, with carriers like Aeroflot consolidating their leadership while others faced unique challenges. A notable trend emerged with the rapid growth of regional airports, as airlines de-emphasized Moscow and tapped into booming domestic demand, fostering connectivity across the Urals, Siberia, and the Far East.

In conclusion, while the sanctions inflicted severe short-term shocks, they ultimately catalyzed a forced modernization and consolidation of Russian aviation. The industry has not only survived but established a new, self-reliant operational baseline, decisively breaking from its previous globalized orientation. Having successfully averted collapse and carved a viable path forward under entirely new geopolitical reality, its future trajectory is now inextricably linked to the success of domestic aircraft production and the development of economic ties with non-Western nations.

3.5.11. Comparison of Sanctions' Impact and Historical Cases

The impact of Western sanctions on Russian aviation is fundamentally different from historical cases involving Iran, Yugoslavia, Libya, Iraq, Cuba, and North Korea. While all sanctions caused severe damage, Russia's experience is unique. This uniqueness stems from its deep pre-sanction integration into the global aviation system, its significant economic capacity, and its industrial capability to attempt a forced transformation. While other nations were largely isolated from the global aviation community, Russia is being forcibly expelled from it and is attempting to build a parallel, sovereign system.

Russia's starting point was unique. The pre-sanctions baseline for Russia was one of deep global integration. Before 2022, Russia was a core member of the global aviation community. Its fleet of over 500 mainline aircraft was overwhelmingly composed of modern, Western-made Boeing and Airbus jets acquired through international lessors. Its entire ecosystem—including maintenance, repairs, insurance, pilot training, and software—was inextricably linked to Western companies and global standards. In stark contrast, other sanctioned nations operated for decades under restrictions with already-isolated and aging fleets, often consisting of old Soviet-era aircraft or a handful of outdated Western models acquired before sanctions.

Furthermore, Russia's scale and economic heft provide a significant buffer. Possessing a large domestic market and a state with substantial financial resources, Russia was able to commit over \$13 billion in immediate state aid to mitigate the impact and fund import substitution efforts. Other sanctioned nations had smaller economies and fleets, making them far more vulnerable to complete isolation and economic stagnation without any comparable financial safety net.

The core challenge facing Russia differs markedly from that of other nations. For Russia, the immediate and paramount threat is preserving a modern, foreign-made fleet without legal access to spare parts, technical data, and manufacturer support. This creates a grave risk of systemic erosion in air safety standards due to practices like cannibalizing parked aircraft and using uncertified parts sourced through gray channels. In response, Russia has adopted a two-pronged, state-coordinated strategy:

a short-term approach to manage the existing fleet via "gray imports" (sourcing parts through third countries) and cannibalization, and a long-term project to force a rapid switch to domestically produced aircraft and create a self-sufficient, sovereign aviation ecosystem.

For other nations, the challenges were distinct. Iran's primary struggle has been managing the extreme age and obsolescence of a fleet it could never properly renew; its part-smuggling and reverse-engineering efforts are for survival, not for building a new industry. North Korea and Cuba face near-total isolation and the impossibility of fleet renewal, leading to a state of permanent stagnation with minimal international activity. For Iraq and Libya, the physical destruction of aviation infrastructure during wars was a primary factor alongside sanctions, making their challenge one of reconstruction rather than decoupling. Yugoslavia in the 1990s presents a closer precursor, where a modern European airline (JAT) was suddenly cut off, but the scale was smaller, the duration shorter, and the country lacked Russia's industrial base to attempt a sovereign path, leading to rapid decline instead of transformation.

Capacity for import substitution became Russia's unique advantage. This capacity is the most significant differentiator determining long-term trajectory. Russia possesses a singular advantage: a legacy aerospace industry (Sukhoi, Tupolev, Ilyushin) and active, state-funded civilian aircraft programs (like the Sukhoi Superjet and MC-21). Sanctions have acted as a brutal catalyst for a project that was already a strategic national goal. Its large economy and geopolitical ties also enable it to establish robust "gray import" supply chains through third countries. No other sanctioned country had this option. Iran's attempts at domestic production were modest and could not replace a modern fleet, while others had no viable domestic manufacturing and were far more limited in their ability to establish alternative supply chains due to stricter enforcement and smaller economies.

This divergence in capacity led to a fundamental difference in long-term outcomes. Russia's goal was nothing less than forced sovereignization. The state was undertaking an incredibly ambitious and expensive project to create a separate, self-sufficient aviation system. While the outcome was uncertain and fraught with safety, technical, and logistical challenges, it was a national priority with massive resources behind it.

The sector was not expected to collapse but to become more isolated and diverge from global standards. For all other compared nations, the long-term outcome was permanent stagnation and isolation. Their aviation sectors shrank and fossilized, operating a handful of risky flights on antiquated equipment with no credible path to modernization or reintegration into the global system. Sanctions locked them into a state of perpetual decay rather than triggering a transformative, if desperate, national project.

In conclusion, the analysis posits that Russian aviation is experiencing a unique crisis. It is not a simple collapse but a managed—and dangerous—unraveling of a globally integrated system and its frantic replacement by a state-mandated national alternative. The historical experience of sanctions against other nations was to be prevented from joining or maintaining a connection to the global system. Russia's experience is to be forcibly expelled from it and to use its unique resources to attempt to build its own.

CHAPTER IV

CONCLUSION

Since the collapse of the Soviet Union and its centrally planned economy, Russia's air transport industry has undergone dramatic changes. After the collapse in traffic volume in the last decade of the 20th century, caused by the collapse of the economy and the restructuring of the industry through the transition to decentralized market management, there was a recovery in the 2000s. Airlines formed from various branches of the once-monopoly Aeroflot switched to more efficient Western aircraft and IT, and the two largest Russian carriers became members of international aviation alliances.

Russia's economic recovery has led to the resurgence of political influence in the countries of the former USSR, where Russia's interests often clashed with those of other world and regional powers. The competition for economic influence in Ukraine led to a political confrontation with the EU, which resulted in a war in the Donbas, and then a full-scale war that began as a short-term military operation to change the anti-Russian regime. The failure of the initial stage of SVO, in turn, prompted the EU and the United States to impose an unprecedented number of economic and political sanctions in order to inflict maximum damage on Russia and ultimately inflict a strategic defeat similar to the strategic defeat of the USSR in the Cold War. Aviation has become one of the key areas of application of sanctions, due to its critical importance for such a large and sparsely populated country as Russia.

The sanctions imposed by Western countries against Russian civil aviation after the start of the SVO were of a relentless nature. These sanctions were aimed at strategically weakening Russia by exploiting the vulnerability of the aviation industry, which is critically important for such a vast country. The closure of the airspace was the first and most significant blow. EU countries, the USA, Canada and other countries

have completely banned Russian airlines from flying over their territories, which has led to a sharp reduction in international flights and the loss of key revenue destinations.

Bans on the supply, leasing and maintenance of aircraft (the second package of EU sanctions) have deprived Russian airlines of access to spare parts, maintenance and insurance of Western-made aircraft. This jeopardized the operation of most of the fleet, as 75% of Russia's commercial fleet was produced in the EU, USA and Canada. The revocation of airworthiness certificates by Bermuda and Ireland has made the operation of many aircraft illegal, exacerbating the crisis. This decision highlighted Russia's dependence on foreign jurisdictions for aircraft registration and certification. The US sanctions were extraterritorial in nature, threatening secondary sanctions against any companies providing services to Russian airlines. This has limited repair and maintenance options even in third countries.

The consequences of the sanctions were catastrophic for the industry. Russian airlines' planes began to be arrested abroad, airline executives resigned en masse, and the threat of flight services being cut off due to the inability to maintain the fleet became real.

The sanctions exposed the critical dependence of both the air transport and aircraft manufacturing industries of Russia on Western equipment and technologies. The lack of domestic analogues in the production of aircraft, spare parts, and the underdevelopment of local booking systems made the industry extremely vulnerable to sanctions pressure. The sanctions against Russian aviation were among the toughest in history and aimed not only to cause economic damage, but also to undermine the country's territorial integrity by disrupting its transport connectivity.

To overcome the crisis, the Russian government adopted a set of counter-sanction measures that were implemented in the shortest possible time and covered all key aspects of the functioning of civil aviation, which made it possible to avoid the collapse of the industry and ensure its sustainability in the new conditions.

Special economic measures urgently adopted by the Russian government included re-registration of aircraft to the Russian registry, the cancellation of agreements with Bermuda, restrictions on aircraft returns and changes in leasing payment mechanisms,

which provided a legal and operational basis for the continued operation of the fleet. Financial support for airlines helped maintain carriers' liquidity, stabilize airfare prices and support domestic passenger traffic. A national insurance system was established and the transition to Russian booking systems was ensured, which reduced the industry's dependence on foreign technologies and services, increasing its technological independence. Support for the MRO market and parallel import of spare parts made it possible to compensate for the loss of access to Western services and spare parts, ensuring the technical serviceability of aircraft.

The purchase of aircraft from leasing through state support mechanisms allowed to resolve ownership issues and preserve a significant part of the fleet for operation on international flights. The closure of airspace for "unfriendly" countries was a symmetrical response to restrictions on Russian airlines. This decision, although painful for European carriers, did not lead to a crisis in the EU, but created advantages for Asian airlines, especially Chinese ones.

The Russian government demonstrated high efficiency in adapting the aviation industry to the pressure of sanctions. A comprehensive approach, including legislative, financial and organizational measures, not only prevented a crisis, but also laid the foundation for further development of the industry in conditions of isolation from Western markets. These measures emphasized the strategic importance of civil aviation for the economy and security of the country, as well as the ability of the Russian authorities to prompt respond to external challenges.

Despite unprecedented sanctions aimed at isolating Russia from the global aviation system, the industry has demonstrated a high adaptability. Thanks to measures by the government, the predicted collapse was avoided. Passenger traffic, which decreased by 14.2% in 2022, exceeded the figures for 2021 by 2024, reaching 111.7 million passengers. This indicates the recovery of the industry and its transition to a new operating model.

The sanctions accelerated structural changes that began during the COVID-19 pandemic. Russian airlines continued to reorient themselves towards the domestic market. The share of domestic traffic increased, and airlines actively developed

regional tourist routes such as Kazan, Sochi and the Caucasian Mineral Waters. Airlines have increased the number of international destinations in "friendly" countries. Turkey, the UAE, Thailand and the CIS countries became new key destinations, which partially compensated for the loss of the European and American markets. Thanks to counter-sanctions and restrictions on European carriers, Russian airlines have maintained their dominant position in the market.

During the period under review, the industry demonstrated acceptable financial results. If in 2022 the financial stability of the industry was ensured by government subsidies, after 2023 airlines' profits were generated by insurance settlements on leased aircraft and an increase in the marginality of international flights. In 2024, the combined profits of the largest airlines exceeded 100 billion rubles, which is one of the best results in the history of Russian aviation and indicates the total recovery in profitability.

At the same time, the sanctions have created serious technological challenges. The ban on the supply of Western aircraft and spare parts has led to a gradual increase in the average age of aircraft and an increase in the cost of their maintenance. In the medium term, this makes the industry critically dependent on the ability of the Russian industry to produce competitive Russian aircraft such as the MC-21 and SJ-100. On the one hand, this dependence shows the vulnerability of the air transport industry. But at the same time, it is only part of the overall challenge faced by Russian aviation, a kind of transformation stage that the industry must go through in its movement towards technological sovereignty.

The conducted analysis of the impact of sanctions on the Russian air transportation market in the period 2022-2024 clearly shows that the sanctions have not achieved their main goal — the paralysis of the industry. Instead, they have become a catalyst for structural change, strengthening focus on the domestic market and cooperation with "friendly" countries. Despite the obvious "fragility" of the observed stability and the long-term challenges associated with the difficulties of import substitution and possible technological lag, the short-term success of the Russian counter-sanctions policy is unconditional.

The Western sanctions adopted in circumvention of the UN Security Council did not gain universal recognition, which opened avenues for their evasion, as described in Brent Early's work "Busted Sanctions: Explaining Why Economic Sanctions Fail" (2015). Thus, the effect of the sanctions was neutralized through the development of relations with third countries (Turkey, China, UAE), import substitution, and the establishment of gray-market schemes for importing necessary spare parts.

As noted by the authors of "The Use of Force: Military Power and International Politics," Robert J. Art and Kenneth N. Waltz (2019), within the framework of the "escalation ladder" concept, sanctions are merely an intermediate tool between diplomatic pressure and military intervention, serving to demonstrate resolve and coercion. The impossibility of direct military intervention against Russia, a nuclear power, largely negated the demonstrative effect of the sanctions.

As highlighted in the work "Why Economic Sanctions Still Do Not Work" (Pape, 1997), sanctions only work under exceptional conditions—against small countries with vulnerable elites and when backed by a military threat. The absence of a direct military threat, an extensive domestic market, and the determination of elites to pursue development turned sanctions into a tool for technological advancement. The sanctions imposed against Russia not only failed to achieve their goal but also provided an opportunity for a leap forward by Russian producers, freeing the market from its most technologically advanced competitors.

The Russian air transportation market has not only survived the sanctions shock, but has also adapted to it, demonstrating resilience and the ability to transform. So, the sanctions imposed against Russia not only failed to achieve their goal, but also provided an opportunity for Russian manufacturers to make a breakthrough, freeing the market from the most technologically advanced competitors.

REFERENCES

- Abdullah, I. (2004). *Between democracy and terror: The Sierra Leone civil war*. Dakar, Senegal: CODESRIA.
- Abdullina, A. (2022, February 26). Rossiyskoy aviatsii slomayut kryl'ya [Russian aviation will have its wings broken]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5236969>
- Aeroflot. (2020). *Strategiya razvitiya PAO "Aeroflot" na period do 2028 goda* [Development Strategy of Aeroflot PJSC until 2028]. Retrieved from https://www.aeroflot.com/media/aflfiles/media/strategy/strategy_2028_rus.pdf
- Aeroflot. (2022, June 17). '«A-Tehniks» poluchil razreshenie Rosaviacii na vypolnenie tehobsluzhivaniya samolyotov zapadnogo proizvodstva s rossijskoj registraciej' [A-Technix has received permission from the Federal Air Transport Agency to perform maintenance on Western-made aircraft with Russian registration]. *Aeroflot - Russian Airlines*. Retrieved from <https://www.aeroflot.ru/ru-ru/news/62308>
- Aeroflot. (2023). *Strategiya razvitiya PAO "Aeroflot" na period do 2030 goda* [Development Strategy of Aeroflot PJSC until 2030]. Retrieved from https://www.aeroflot.ru/media/aflfiles/media/strategy/strategy_2030_1.pdf
- Airways Magazine. (2022, June 27). Russia: Bermuda deregister aircraft. *Airways Magazine*. Retrieved from <https://www.airwaysmag.com/legacy-posts/russia-bermuda-deregister-aircraft>
- American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.
- Art, R. J., & Greenhill, K. M. (Eds.). (2015). *The use of force: Military power and international politics* (8th ed.). Lanham, MD: Rowman & Littlefield.
- AviaPort. (2022, August 3). 'SShA vveli sankcii protiv 25 samoletov Airbus rossijskih aviakompanij' [The United States imposed sanctions against 25 Airbus aircraft of Russian airlines]. *AviaPort*. Retrieved from <https://www.aviaport.ru/news/726375/>
- Aviation21. (2022). Bolivar mozhet nadorvatsya: kak sanktsii povliayut na rossiyskuyu aviatsiyu [Bolivar may not be able to take it: How sanctions affect Russian aviation]. *Aviation21*. Retrieved from <https://aviation21.ru/bolivar-mozhet-nadorvatsya/>

- Aviation Week. (2022). Irish regulator pulls airworthiness certificates from Russian fleet. *Aviation Week*. Retrieved from <https://aviationweek.com/air-transport/safety-ops-regulation/irish-regulator-pulls-airworthiness-certificates-russian-fleet>
- Aviastat. (2021, February 5). Perevozki passazhirov v Rossii - itogi 2020 goda [Passenger traffic in Russia: 2020 results]. *Aviastat*. Retrieved from <https://www.aviastat.ru/statistics/73-perevozki-passazhirov-v-rossii-itogi-2020-goda>
- Aviastat. (2022, February 6). Perevozki passazhirov v Rossii - itogi 2021 goda [Passenger air transportation in Russia: 2021 results]. *Aviastat*. Retrieved from <https://www.aviastat.ru/statistics/123-aviaperevozka-passazhirov-v-rossii-itogi-2021-goda>
- Bermuda Civil Aviation Authority. (2022a, February 28). *BCAA statement regarding sanctions*. Retrieved from <https://www.bcaa.bm/bcaa-statement-regarding-sanctions>
- Bermuda Civil Aviation Authority. (2022b, March 12). *International sanctions press statement*. Retrieved from <https://www.bcaa.bm/international-sanctions-press-statement>
- Biersteker, T., Eckert, S. E., & Tourinho, M. (Eds.). (2016). *Targeted sanctions: The impacts and effectiveness of UN action*. Cambridge, England: Cambridge University Press.
- Cha, V. (2018). *The impossible state: North Korea, past and future*. New York, NY: Ecco.
- Cortright, D., & Lopez, G. A. (2000). *The sanctions decade: Assessing UN strategies in the 1990s*. Boulder, CO: Lynne Rienner Publishers.
- Cummings, B. (2004). *North Korea: Another country*. New York, NY: The New Press.
- Daalder, I. H. (2000). *Getting to Dayton: The making of America's Bosnia policy*. Washington, DC: Brookings Institution.
- Davidson, G. E. (1993). United States' use of economic sanctions, treaty bending, and treaty breaking in international aviation. *Journal of Air Law and Commerce*, 59, 291-328.
- Davies, R. E. G. (1984). *Airlines of Latin America since 1919*. Washington, DC: Smithsonian Institution Press.
- Davis, J. (2001). *Libyan politics: Tribe and revolution*. London, England: I.B. Tauris.
- De Waal, A. (2018). *Sudan's unfinished democracy: The promise and betrayal of a people's revolution*. Oxford, England: Oxford University Press.

- Drezner, D. W. (2011). Sanctions sometimes smart: Targeted sanctions in contemporary security policy. *International Security*, 36 (3), 9-15. doi:10.1111/j.1468-2486.2010.01001.x
- Drezner, D. W. (2019). Economic statecraft in the age of Trump. *The Washington Quarterly*, 42 (3), 7-24. doi:10.1080/0163660X.2019.1663072
- Drezner, D. W. (2021). *The sanctions paradox*. Cambridge, England: Cambridge University Press.
- Early, B. (2015). *Busted sanctions: Explaining why economic sanctions fail*. Stanford, CA: Stanford University Press.
- Electoral Geography. (n.d.). *Prezidentskie vybory na Ukraine 1994* [Presidential elections in Ukraine, 1994]. Retrieved from <https://www.electoralgeography.com/new/ru/countries/u/ukraine/ukraine-presidential-election-1994.html>
- Electoral Geography. (n.d.). *Prezidentskie vybory na Ukraine, 2004* [Presidential elections in Ukraine, 2004]. Retrieved from <https://www.electoralgeography.com/new/ru/countries/u/ukraine/ukraine-presidential-election-2004.html>
- Electoral Geography. (n.d.). *Prezidentskie vybory na Ukraine, 2010* [Presidential elections in Ukraine, 2010]. Retrieved from <https://www.electoralgeography.com/new/ru/countries/u/ukraine/ukraina-prezidentskie-vybory-2010.html>
- ERR. (2022, February 26). Strany Baltii zakryvayut svoe vozdushnoe prostranstvo dlya rossiyskikh samoletov [The Baltic states are closing their airspace to Russian aircraft]. *ERR.ee*. Retrieved from <https://rus.err.ee/1608513515/strany-baltii-zakryvayut-svoe-vozdushnoe-prostranstvo-dlja-rossijskih-samoletov>
- European Council. (2022a, February 25). *Russia's military aggression against Ukraine: EU imposes sanctions against President Putin and Foreign Minister Lavrov and adopts wide-ranging individual and economic sanctions*. Retrieved from <https://www.consilium.europa.eu/en/press/press-releases/2022/02/25/russia-s-military-aggression-against-ukraine-eu-imposes-sanctions-against-president-putin-and-foreign-minister-lavrov-and-adopts-wide-ranging-individual-and-economic-sanctions/>
- European Council. (2022b, February 24). *G7 leaders' statement on the invasion of Ukraine by armed forces of the Russian Federation*. Retrieved from <https://www.consilium.europa.eu/en/press/press-releases/2022/02/24/g7-leaders-statement-on-the-invasion-of-ukraine-by-armed-forces-of-the-russian-federation/>
- European Neighbourhood Council. (2022, February 25). Ursula von der Leyen: Massive new sanctions will have maximum impact against Russia. *EU Neighbours East*. Retrieved from <https://euneighbourseast.eu/news/latest->

news/ursula-von-der-leyen-massive-new-sanctions-will-have-maximum-
impact-against-russiasanctions/

European Union. (2022a, February 25). Council Regulation (EU) 2022/328 of 25 February 2022 amending Regulation (EU) No 269/2014 concerning restrictive measures in respect of actions undermining or threatening the territorial integrity, sovereignty and independence of Ukraine. *Official Journal of the European Union*, L 49, 1–18. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2022:049:FULL>

European Union. (2024, June 24). Decision (EU) 2024/1738 of the European Parliament and of the Council of 24 June 2024. *Official Journal of the European Union*, L series. Retrieved from <https://eur-lex.europa.eu/eli/dec/2024/1738/oj>

European Union Aviation Safety Agency. (2022, March 14). *Notice to stakeholders - Withdrawal of certificates issued by EASA in the Russian Federation*. Retrieved from <https://www.easa.europa.eu/en/the-agency/restrictive-measures-russia/notice-stakeholders>

Farrell, H., & Newman, A. (2019). Weaponized interdependence: How global economic networks shape state coercion. *International Security*, 44(1), 42–79. doi:10.1162/isec_a_00351

Federal Air Transport Agency. (2022a, February 25). Informacionnoe soobshchenie [Information message]. *Federal Air Transport Agency (Rosaviatsia)*. Retrieved from <https://favt.gov.ru/novosti-novosti/?id=8947>

Federal Air Transport Agency. (2022b, February 26). O poletah v/iz Bolgarii, Polshi i Chekhii [About flights to/from Bulgaria, Poland and the Czech Republic]. *Federal Air Transport Agency (Rosaviatsia)*. Retrieved from <https://favt.gov.ru/novosti-novosti/?id=8956>

Federal Air Transport Agency. (2022c, March 11). O poletah v Azerbajdzhan, Armeniyu, Kazahstan, Kirgiziyu, Tadzhikistan, Turkmenistan, Uzbekistan i Iran [About flights to Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Iran]. *Federal Air Transport Agency (Rosaviatsia)*. Retrieved from <https://favt.gov.ru/novosti-novosti/?id=8999>

Federal Air Transport Agency. (2022d, April 22). Informacionnoe soobshchenie [Information message]. *Federal Air Transport Agency (Rosaviatsia)*. Retrieved from <https://favt.gov.ru/novosti-novosti/?id=8962>

Federal Air Transport Agency. (2022e, December 28). V Rosaviacii podveli predvaritelnye itogi passazhirskih aviaperevozok [The Federal Air Transport Agency summed up the preliminary results of passenger air transportation]. *Federal Air Transport Agency (Rosaviatsia)*. Retrieved from <https://favt.gov.ru/novosti-novosti/?id=9811>

Federal Air Transport Agency. (2022f). *Annual report on Russian air traffic, 1990–2021*. Moscow, Russia: Author.

- Felbermayr, G., Kirilakha, A., Syropoulos, C., Yalcin, E., & Yotov, Y. V. (2021). Understanding economic sanctions: Interdisciplinary perspectives on theory and evidence. *European Economic Review*, 140, 103776. doi:10.1016/j.euroecorev.2021.103776
- Finam. (2020, July 16). Sovet direktorov Aeroflota utverdil strategiyu gruppy do 2028 goda [Aeroflot's Board of Directors Approved the Group's Strategy until 2028]. *Finam*. Retrieved from <https://www.finam.ru/publications/item/sovet-direktorov-aeroflota-utverdil-strategiyu-gruppy-do-2028-goda-20200716-180315/>
- Forbes Russia. (2023a, October 19). Nevzletnaya polosa: kak vyzhivayut zakrytye s nachala spetsoperatsii 11 aeroportov [Runway trouble: How 11 airports closed since the start of the special operation are surviving]. *Forbes Russia*. Retrieved from <https://www.forbes.ru/biznes/498314-nevzletnaa-polosa-kak-vyzivaut-zakrytye-s-nacala-specoperacii-11-aeroportov>
- Forbes Russia. (2023b). Kommersant uznao o soglasovanii sdelok po vykupu zapadnykh samoletov s Mintransom [Kommersant learned about the approval of deals for buying Western aircraft with the Ministry of Transport]. *Forbes Russia*. Retrieved from <https://www.forbes.ru/finansy/495588-kommersant-uznao-o-soglasovanii-sdelok-po-vykupu-zapadnykh-samoletov-s-mintransom>
- Frank, M. (2016). *Cuban aviation: Surviving sanctions*. Havana, Cuba: Editorial José Martí.
- Gaidar, Y. (2007). *Collapse of an empire: Lessons for modern Russia*. Washington, DC: Brookings Institution Press.
- Garfield, R. (1999). *The impact of economic sanctions on health and well-being*. London, England: Routledge.
- Gibbons, E. D. (1999). *Sanctions in Haiti: Human rights and democracy under assault*. Westport, CT: Praeger.
- Gordon, J. (2010). *Invisible war: The United States and the Iraq sanctions*. Cambridge, MA: Harvard University Press.
- Grimme, W., Maertens, S., & Bingemer, S. (2024). An analysis of Russian international air traffic in times of war. *Transportation Research Procedia*, 81, 128–137. doi:10.1016/j.trpro.2024.11.014
- Haggard, S., & Noland, M. (2022). *Hard target: Sanctions, inducements, and the case of North Korea*. Stanford, CA: Stanford University Press.
- Hufbauer, G. C., Schott, J. J., & Elliott, K. A. (2007). *Economic sanctions reconsidered* (3rd ed.). Washington, DC: Peterson Institute for International Economics.

- Hufbauer, G. C., Schott, J. J., Elliott, K. A., & Oegg, B. (2020). *Economic sanctions revisited* (4th ed.). Washington, DC: Peterson Institute for International Economics.
- Human Rights Watch. (2020). *Syria: Sanctions and humanitarian impact*. New York, NY: Author.
- Interfax. (2022). Pri vybore "razreshennyh stran" oni rukovodstvuyutsya obshchepoliticheskimi principami, dejstvuyushimi mezhdunarodnymi dogovorennostyami i predstavleniyami o soyuznyh stranah [When selecting "permitted countries" they are guided by general political principles, current international agreements and notions of allied countries]. *Interfax*. Retrieved from <https://www.interfax.ru/russia/832286>
- Interfax. (2023a, June 21). Pravitelstvo RF vydalo na podderzhku zakrytykh aeroportov 3,9 mlrd rub. [The Russian government has allocated 3.9 billion rubles to support closed airports.]. *Interfax*. Retrieved from <https://www.interfax.ru/russia/967569>
- Interfax. (2023b, December 22). S7 pereformila v rossijskuyu sobstvennost 45 inostrannykh samoletov [S7 has transferred 45 foreign aircraft to Russian ownership]. *Interfax*. Retrieved from <https://www.interfax.ru/russia/937529>
- Interfax. (2024a, April 17). Minpromtorg nameren do konca goda izmenit Kompleksnyuyu programmu razvitiya aviaotrasli. [The Ministry of Industry and Trade intends to change the Comprehensive Aviation Industry Development Program by the end of the year]. *Interfax*. Retrieved from <https://www.interfax.ru/russia/1021406>
- Interfax. (2024b, May 18). Vlasti RF uhudshili prognoz aviaperevozok v 2024-28 gg. na fone sdviga postavok samoletov. [The Russian authorities have worsened the forecast of air transportation in 2024-28 amid a shift in aircraft supplies.]. *Interfax*. Retrieved from <https://www.interfax.ru/russia/961165>
- International Air Transport Association. (1993). *The development of air transport in the CIS*. Geneva, Switzerland: IATA Publications.
- International Air Transport Association. (2022). *Middle East aviation report*. Montreal, Quebec, Canada: Author.
- International Air Transport Association. (2023). *Economic performance of the airline industry*. Retrieved from <https://www.iata.org/contentassets/c81222d96c9a4e0bb4ff6ced0126f0bb/annual-review-2023.pdf>
- International Civil Aviation Organization. (1993). *Noise certification standards for subsonic jet aeroplanes* (Annex 16, Vol. I). Montreal, Quebec, Canada: Author.
- International Civil Aviation Organization. (2021). *Safety report: Middle East region 2020*. Montreal, Quebec, Canada: Author.

- International Civil Aviation Organization. (2023). *Economic development of air transport*. Retrieved from <https://www.icao.int/Pages/default.aspx>
- International Monetary Fund. (2025). *World economic outlook database, April 2025 edition*. Retrieved from <https://www.imf.org/en/Publications/WEO/weo-database/2025/april>
- Izvestia. (2022, February 28). Rossiya zapretila polety aviakompanii iz 36 stran [Russia banned flights of airlines from 36 countries]. *Izvestia*. Retrieved from <https://iz.ru/1298203/2022-02-28/rossiia-zapretila-polety-aviakompanii-iz-36-stran>
- Keen, D. (2005). *Conflict and collision in Sierra Leone*. Oxford, England: James Currey.
- Kempe, W., & Lowenberg, A. (2007). The political economy of economic sanctions. In T. Sandler & K. Hartley (Eds.), *Handbook of defense economics* (Vol. 2, pp. 867-911). doi:10.1016/S1574-0013(06)02027-8
- Komissarov, D., & Gordon, Y. (2006). *Russian airlines and their aircraft*. Hinckley, England: Midland Publishing.
- Kommersant. (2022a, February 26). Na chem rossiyskie aviakompanii budut letat posle zapreta postavok Airbus [What Russian airlines will fly on after the ban on Airbus deliveries]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5251081>
- Kommersant. (2022b, February 28). Nechitaemoe aviasoobshchenie [Unreadable air traffic message]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5237424>
- Kommersant. (2022c, March 4). «Aeroflot» poprosili sdat bilet [Aeroflot was asked to hand over the ticket]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5240316>
- Kommersant. (2022d, March 5). Nashi samolety sovershili posadku [Our planes landed]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5240922>
- Kommersant. (2022e, March 14). Irlandiya otzvala letnuyu licenziyu dlya rossijskih samoletov [Ireland revoked flight license for Russian aircraft]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5258279>
- Kommersant. (2022f, March 14). Putin razreshil registrirovat prava na inostrannye samolety, nahodyashiesya v lizinge [Putin allowed to register the rights to foreign leased aircraft]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5258025>

- Kommersant. (2022g, March 14). Samolet vyleteli iz bermudskogo treugolnika [Aircraft flew out of the Bermuda Triangle]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5252553>
- Kommersant. (2022h, March 14). "Ural'skie avialinii" prodolzhlili polet s priostanovlennymi sertifikatami letnoy godnosti samoletov [Ural Airlines continued flights with suspended airworthiness certificates]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5252679>
- Kommersant. (2022i, March 15). Pravitelstvo priostanovilo soglasenie s Bermudami po nadzoru za samoletami [Government suspends agreement with Bermuda on aircraft surveillance]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5258855>
- Kommersant. (2022j, March 16). Samolet vykhodyat iz zony riska [Aircraft are leaving the risk zone]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5259336>
- Kommersant. (2022k, March 22). Nebesa arestovannye [Heaven is under arrest]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5270319>
- Kommersant. (2022l, March 29). Samolety na uderzhanii [Planes on hold]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5281573>
- Kommersant. (2022m, April 9). ES razreshil sohranit starye kontrakty finlizinga s rossijskimi aviakompaniyami [EU allowed to keep old financing contracts with Russian airlines]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5304001>
- Kommersant. (2022n, April 22). Prognoz vysokogo poletat [High-flying forecast]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5318433>
- Kommersant. (2022o, September 14). Samoletam predlozhili podemnyye [The planes were offered lifting]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5559540>
- Kommersant. (2022p, November 14). Utair ne naletala na subsidii [Utair did not fly on subsidies]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5667057>
- Kommersant. (2022q, December 9). Vylet iz Bermudskogo treugolnika [Departure from the Bermuda Triangle]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5708622>
- Kommersant. (2022r, December 26). Utair poluchila po faktam [Utair received the facts]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5747358>

- Kommersant. (2023a, August 13). Mintrans gotovit samolety dlya deneg [The Ministry of Transport is preparing planes for money]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/6186398>
- Kommersant. (2023b, August 15). Pokupatel'naya sposobnost aviakompanij [The purchasing power of airlines]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/6148377>
- Kommersant. (2023c, October 4). Lizing samoletov poshel na vtoroj krug [Aircraft leasing has entered the second round]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/6252748>
- Kommersant. (2024a, April 9). Dengi ne s neba upali [Money didn't fall from the sky]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/6634578>
- Kommersant. (2024b, May 13). Aviatory mogut sdavat motory [Aviators can donate engines]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/6690483>
- Komsomolskaya Pravda. (2022, February 27). ES zakryl vozdushnoe prostranstvo dlya rossijskih samoletov [The EU has closed its airspace to Russian aircraft]. *Komsomolskaya Pravda*. Retrieved from <https://www.kp.ru/daily/27369.5/4551861>
- Koryakin, I. (2022, March 14). "Bermudskiy treugolnik" aviaotrasli ["Bermuda Triangle" of the aviation industry]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5252821>
- Landsberg, C. (2004). *The quiet diplomacy of liberation: International politics and South Africa's transition*. Johannesburg, South Africa: Jacana.
- Lenta.ru. (2024, June 14). SShA vveli sankcii protiv postavshikov aviadetalej v Rossiiu [The United States has imposed sanctions on suppliers of aircraft parts to Russia]. *Lenta.ru*. Retrieved from <https://lenta.ru/news/2024/06/14/avia/>
- Lenta.ru. (2025, April 18). Proklyatie neo [The Neo curse]. *Lenta.ru*. Retrieved from <https://lenta.ru/articles/2025/04/18/proklyatie-neo/>
- Lipton, M. (1988). *Sanctions and South Africa: The dynamics of economic isolation*. London, England: Economist Intelligence Unit.
- Lvova, A. (2023, August 30). Granitsy vysokogo poleta: SShA uvelichili chislo sanktsionnykh samoletov iz RF na 121 bort [High-altitude borders: US increased number of sanctioned Russian aircraft by 121 tail numbers]. *Izvestia*. Retrieved from <https://iz.ru/1566059/anastasiia-lvova/granitsy-vysokogo-poleta-ssha-uvelichili-chislo-sanktsionnykh-samoletov-iz-rf-na-121-bort>
- Maley, W. (2002). *The Afghanistan wars* (2nd ed.). New York, NY: Palgrave Macmillan.

- Michałowska, M. (2023). EU sanctions in the aviation and space sectors adopted following Russia's aggression against Ukraine. *Review of European and Comparative Law*, 52(2), 113-136. Retrieved from <https://www.ceeol.com/search/article-detail?id=1082213>
- Ministry of Industry and Trade of the Russian Federation (2023) 'V 2023 godu dolya otechestvennykh avtomobiley na rynke novykh legkovykh avtomobiley sostavila bolee 65%' [In 2023, the share of domestic cars in the new passenger car market exceeded 65%], Minpromtorg.gov.ru, 15 June 2023. Available at: https://minpromtorg.gov.ru/press-centre/news/#!v_2023_godu_dolya_otchestvennykh_avtomobiley_na_rynke_novykh_legkovykh_avtomobiley_sostavila_bolee_65 (Accessed: 15 June 2023).
- Ministry of Transport and Communications of Bulgaria (2022) 'България затваря небето си за всички руски самолети' [Bulgaria closes its skies to all Russian aircraft], Ministry of Transport and Communications of Bulgaria, 26 February 2022. Available at: <https://www.mtc.government.bg/bg/category/1/bulgariya-zatvarya-nebeto-si-za-vsichki-ruski-samoleti> (Accessed: 01 January 2023).
- Ministry of Transport of the Russian Federation (2022) '53 krupnejshie aviakompanii Rossii polnost'yu pereshli na otechestvennye sistemy oformleniya aviaperevozok' [53 major Russian airlines have completely switched to domestic air transportation processing systems], Ministry of Transport of the Russian Federation, 15 December. Available at: <https://mintrans.gov.ru/press-center/news/10467> (Accessed: 23 July 2025).
- Monocle. (2022a, February 28). Rossiyskaya grazhdanskaya aviatsiya popala v idealnyy shtorm [Russian civil aviation caught in a perfect storm]. *Monocle*. Retrieved from <https://monocle.ru/2022/02/28/rossiyskaya-grazhdanskaya-popala-v-idealnyy-shtorm/>
- Monocle. (2022b, March 11). Gosduma prinyala zakonoproekt o podderzhke transportnoy otrasli srazu v dvukh chteniyakh [State Duma passed a bill to support the transport industry in two readings at once]. *Monocle*. Retrieved from <https://monocle.ru/2022/03/11/gosduma-prinyala-zakonoproekt-o-podderzhke-transportnoy-otrasli-srazu-v-dvukh-chteniyakh/>
- Monocle. (2022c, March 13). Bermudy priostanovili sertifikaty godnosti samoletov aviakompaniy RF [Bermuda suspended airworthiness certificates of Russian airlines' aircraft]. *Monocle*. Retrieved from <https://monocle.ru/2022/03/13/bermudy-priostanovili-sertifikaty-godnosti-samoletov-aviakompaniy-rf/>
- Monocle. (2022d, March 14). Putin razreshil registrirovat' v RF nakhodyashchiyesya v lizinge u rossiyskikh kompaniy samolet' [Putin allowed registration of leased aircraft in Russia]. *Monocle*. Retrieved from <https://monocle.ru/2022/03/14/vladimir-putin-podpisal-zakon-pozvolyayushchiy-registrirovat-inostrannyye-samolety-v-rf/>

- Monocle. (2022e, April 1). Red Wings v 2022 godu uvelichit park SSJ100 s 15 do 18 laynerov [Red Wings to expand SSJ100 fleet from 15 to 18 aircraft in 2022]. *Monocle*. Retrieved from <https://monocle.ru/2022/04/1/red-wings-v-2022-godu-uvelichit-park-ssj100-s-15-do-18-laynerov/>
- Monocle. (2022f, April 4). Rossiya 9 aprelya otmenit vvedennyye iz-za pandemii ogranicheniya na polety v 52 strany [Russia will cancel pandemic-related flight restrictions to 52 countries on April 9]. *Monocle*. Retrieved from <https://monocle.ru/2022/04/4/rossiya-9-aprelya-otmenit-vvedennyye-iz-za-pandemii-ogranicheniya-na-polety-v-52-strany/>
- Monocle. (2022g, April 13). Pravitel'stvo utverdilo novye vremennyye pravila avializinga [Government approved new temporary rules for aircraft leasing]. *Monocle*. Retrieved from <https://monocle.ru/2022/04/13/pravitelstvo-utverdilo-novyye-vremennyye-pravila-avializinga/>
- Monocle. (2022h, April 27). Polet v usloviyakh zhestkoy turbulentnosti [Flight in conditions of severe turbulence]. *Monocle*. Retrieved from <https://monocle.ru/2022/04/27/polet-v-usloviyakh-zhestkoy-turbulentnosti/>
- Monocle. (2022i, June 3). Aeroflot i Pobeda poluchat 125 mlrd rubley subsidii za otmenennyye iz-za sanktsiy reysy [Aeroflot and Pobeda to receive 125 billion rubles in subsidies for flights canceled due to sanctions]. *Monocle*. Retrieved from <https://monocle.ru/2022/06/3/aeroflot-i-pobeda-poluchat-125-mlrd-rubley-subsidiy-za-otmenennyye-iz-za-sanktsiy-reysy/>
- Monocle. (2022j, August 1). Rosaviatsiya otchitalas o realizatsii mer podderzhki aviakompaniy [Rosaviatsia reported on the implementation of airline support measures]. *Monocle*. Retrieved from <https://monocle.ru/2022/08/1/rosaviatsiya-otchitalas-o-realizatsii-mer-podderzhki-aviakompaniy/>
- Monocle. (2022k). Na chem my poletim, poplyvem i poyedem [What we'll fly, sail and ride on]. *Monocle Expert*, 37. Retrieved from <https://monocle.ru/expert/2022/37/na-chem-my-poletim-poplyvem-i-poyedem/>
- Monocle. (2023a, January 30). Aviapark Aeroflota k 2030 godu sostavit okolo 500 samoletov [Aeroflot's aircraft fleet will reach about 500 planes by 2030]. *Monocle*. Retrieved from <https://monocle.ru/2023/01/30/aviapark-aeroflota-k-2030-godu-sostavit-okolo-500-samoletov/>
- Monocle. (2023b, March 9). Kompanii Aeroflot razreshili razrabatyvat modifikatsii samoletov i komponentov k nim [Aeroflot company allowed to develop aircraft modifications and related components]. *Monocle*. Retrieved from <https://monocle.ru/2023/03/9/kompanii-aeroflot-razreshili-razrabatyvat-modifikatsii-samoletov-i-komponentov-k-nim/>
- Monocle. (2023c, April). Aviatorg umesten [Aviatorg is appropriate]. *Monocle*. Retrieved from <https://monocle.ru/monocle/2023/04/aviatorg-umesten/>

- Monocle. (2023d, June 26). Kompanii S7 Technics razreshili vypuskat komponenty dlya samoletov zarubezhnogo proizvodstva [S7 Technics company allowed to produce components for foreign-made aircraft]. *Monocle*. Retrieved from <https://monocle.ru/2023/06/26/kompanii-s7-technics-razreshili-vypuskat-komponenty-dlya-samoletov-zarubezhnogo-proizvodstva/>
- Monocle. (2023e). Russkiy aviaprom otvoyevyayet nebo [Russian aviation industry reconquers the sky]. *Monocle Expert*, 36. Retrieved from <https://monocle.ru/expert/2023/36/russkiy-aviaprom-otvoyevyayet-nebo/>
- Médecins Sans Frontières. (1998). *Emergency report: Sierra Leone*. Geneva, Switzerland: Author.
- Olçen, Ö. (2024). The lessons from sanctions on Iran and their impacts on the development of civil aviation and Iranian airlines. *Journal of Aviation*, *8*(3), 368–376. doi:10.30518/jav.1534561
- Orkin, F. M. (1989). *The impact of sanctions on South African transport infrastructure*. Johannesburg, South Africa: South African Institute of International Affairs.
- Pape, R. (1997). Why economic sanctions do not work. *International Security*, *22*(2), 90–136. Retrieved from <http://www.jstor.org/stable/2539368>
- Parker, R. A. C. (1993). *Chamberlain and appeasement: British policy and the coming of the Second World War*. Basingstoke, England: Macmillan.
- Patey, L. (2014). *The new kings of crude: China, India, and the global struggle for oil in Sudan and South Sudan*. London, England: Hurst & Company.
- Peksen, D. (2019). Autocracies and economic sanctions: The divergent impact of authoritarian regime type on sanctions success. *Journal of Peace Research*, *56*(3), 405–420. doi:10.1177/0022343318822822
- Pirie, G. H. (1990). Aviation, apartheid and sanctions: Air transport to and from South Africa, 1945–1989. *GeoJournal*, *22*(3), 231–240.
- Prakasa, S. U. W. (2022). The effect of Russia-Ukraine war on international aviation sectors. *KnE Social Sciences*, 572–581. doi:10.18502/kss.v7i15.12132
- RBC. (2020, July 14). «Аэрофлот» представил стратегию развития. Ее главная фишка — «Победа» [Aeroflot presented its development strategy. Its main feature is "Pobeda"]. Retrieved from <https://www.rbc.ru/quote/news/article/5f0d86649a79475e52d24f71>
- RBC. (2022a, February 24). Britaniya vvела sankcii protiv VTB, «Aeroflota», «Rosteha», OSK i OAK [Britain has imposed sanctions against VTB, Aeroflot, Rostec, USC and UAC]. *RBC*. Retrieved from <https://www.rbc.ru/economics/24/02/2022/6217bb319a794742ff809dc1>

- RBC. (2022b, February 25). Chehiya zakroet vozdushnoe prostranstvo dlya rossijskih aviakompanij [Czech Republic to close airspace for Russian airlines]. *RBC*. Retrieved from <https://www.rbc.ru/politics/25/02/2022/6218f2529a7947c4663f9d26>
- RBC. (2022c, February 26). Devyataya strana zapretila polety samoletov iz Rossii [The ninth country has banned flights from Russia]. *RBC*. Retrieved from <https://www.rbc.ru/politics/26/02/2022/621a5ee09a7947338514c2a6>
- RBC. (2022d, February 26). Estoniya i Latvija zakroyut vozdushnoe prostranstvo dlya rossijskih samoletov [Estonia and Latvia will close their airspace to Russian aircraft]. *RBC*. Retrieved from <https://www.rbc.ru/politics/26/02/2022/621a02469a794713eaa6f2fa>
- RBC. (2022e, February 26). Na chem rossiyskie aviakompanii budut letat posle zapreta postavok Airbus [How will Russian airlines fly after the ban on Airbus supplies]. *RBC*. Retrieved from <https://www.rbc.ru/business/26/02/2022/6218bf3d9a7947a5bed5b1ab>
- RBC. (2022f, February 27). Evrosoyuz polnostyu zakryl nebo dlya rossijskih samoletov [The European Union has completely closed the skies to Russian aircraft]. *RBC*. Retrieved from <https://www.rbc.ru/business/27/02/2022/621b4ed29a7947716083978e>
- RBC. (2022g, February 28). Rossijskij samolet razvernuli v nebe nad Portugaliyej [The Russian plane was deployed in the skies over Portugal]. *RBC*. Retrieved from <https://www.rbc.ru/politics/28/02/2022/621cbbfe9a79476f348a2ae8>
- RBC. (2022h, March 2). Kakie strany zakryli vozdushnoe prostranstvo [Which countries have closed their airspace]. *RBC*. Retrieved from <https://www.rbc.ru/politics/02/03/2022/621789149a79471c07e91c5c>
- RBC. (2022i, March 2). Ssha zakryli nebo dlya rossijskih samoletov [The United States has closed the skies to Russian planes]. *RBC*. Retrieved from <https://www.rbc.ru/politics/02/03/2022/621f7b349a79470f0ccddcc5>
- RBC. (2022j, March 4). Glava «Pobedy» ushel v otstavku [The head of Pobeda has resigned]. *RBC*. Retrieved from <https://www.rbc.ru/business/04/03/2022/622206689a794720b39c629b>
- RBC. (2022k, March 14). Irlandiya otzvala letnye dokumenty u samoletov rossijskih aviakompanij [Ireland has revoked flight documents from Russian airlines]. *RBC*. Retrieved from <https://www.rbc.ru/politics/14/03/2022/622f68559a79478c4c0c43b2>
- RBC. (2022l, March 18). SShA zapretili obsluzhivat samolet Abramovicha i 33 lajnera «Aeroflota» [The United States banned the maintenance of Abramovich's plane and 33 Aeroflot airliners]. *RBC*. Retrieved from <https://www.rbc.ru/economics/18/03/2022/6234ae719a7947f29aa05429>

- RBC. (2022m, March 19). Vsled za gendirektorom «Aeroflot» pokinet polovina pravleniya [Half of the board will leave Aeroflot after the CEO]. *RBC*. Retrieved from <https://www.rbc.ru/business/19/03/2022/62330e2b9a79474acfd686a8>
- RBC. (2022n, March 22). Rossiya poteryala 10% importnyh samoletov. Kak eto otrazitsya na cene bileta [Russia has lost 10% of imported aircraft. How will this affect the ticket price]. *RBC*. Retrieved from <https://www.rbc.ru/business/22/03/2022/6239e4a39a7947e926f82194>
- RBC. (2022o, March 23). Lizingodateli potrebovali ot Rossii vernut 500 samoletov na \$20 mlrd [Lessors demanded that Russia return 500 aircraft worth \$ 20 billion]. *RBC*. Retrieved from <https://www.rbc.ru/business/23/03/2022/623b3dfa9a7947670f0f97d9>
- RBC. (2022p, July 7). Sotrudniki «Aeroflota» pozhalovalis na reformu tehobsluzhivaniya samoletov [Aeroflot employees complained about aircraft maintenance reform]. *RBC*. Retrieved from <https://www.rbc.ru/business/07/07/2022/62c456b89a794784077ad5bd>
- RBC. (2022q, August 2). Mintorg SShA zapretit obsluzhivanie eshche 25 ispol'zuemyh v Rossii samoletov [The US Department of Commerce will ban the maintenance of another 25 aircraft used in Russia]. *RBC*. Retrieved from <https://www.rbc.ru/politics/02/08/2022/62e9547a9a79476518e8c629>
- RBC. (2022r, December 30). Rosaviaciya priostanovila opovesheniya o prodlenii zakrytiya aeroportov [Rosaviatsia suspended notifications about the extension of airport closures]. Retrieved from <https://www.rbc.ru/politics/30/12/2022/63ace81f9a794710a78e9d2c>
- RBC. (2023, April 23). Krupnejshie aviakompanii Rossii poluchili rekordnuyu pribyl na fone sankcij [Russia's largest airlines have made record profits amid sanctions]. Retrieved from <https://www.rbc.ru/business/23/04/2023/6442b1969a794764554a9a5d>
- RBC. (2024a, February 20). Rossiya vykupila bolee 160 samoletov u inostrannyh lizingodatelej [Russia has bought more than 160 aircraft from foreign lessors]. Retrieved from <https://www.rbc.ru/business/20/02/2024/65c38cba9a7947e305182879>
- RBC. (2024b, June 26). Arahamiya rasskazal o sovete Zapada, sorvavshem peregovory v 2022 godu [Arahamia spoke about the Council of the West, which disrupted negotiations in 2022]. Retrieved from <https://www.rbc.ru/politics/26/06/2024/667b7d719a7947776993811e>
- RBC Yekaterinburg. (2023, December 22). 19 Airbus «Uralskih avialinij» smogut letat za rubezh [19 Ural Airlines Airbuses will be able to fly abroad]. Retrieved from <https://ekb.rbc.ru/ekb/freenews/65852c439a794714c6c59af6>
- Richards, P. (1996). *Fighting for the rain forest*. Oxford: James Currey.

- Rincon, C. J., & Lodiagin, B. A. (2024). Assessing the effects of international sanctions on Russian airports: The case of Pulkovo airport. *Transportation Research Procedia*, 81, 229–239. <https://doi.org/10.1016/j.trpro.2024.11.014>
- Rossiyskaya Gazeta. (2022, February 18). ‘Der Spiegel: obnaruzhen dokument 1991 goda o nedopustimosti rasshireniya NATO na vostok’ [Der Spiegel: a 1991 document on the inadmissibility of NATO expansion to the east has been discovered]. Retrieved from <https://rg.ru/2022/02/18/der-spiegel-obnaruzhen-dokument-1991-goda-o-nepriemlemosti-rasshireniia-nato-na-vostok.html>
- Royal Gazette. (2022, March 4). Effect of Russian sanctions on aircraft register is "very fluid". Retrieved from <https://www.royalgazette.com/transport/news/article/20220304/effect-of-russian-sanctions-on-aircraft-register-is-very-fluid/>
- Rubin, B. R. (2002). *The fragmentation of Afghanistan: State formation and collapse in the international system* (2nd ed.). New Haven, CT: Yale University Press.
- Russian Government. (2022a, March 15). Pravitel'stvo rasporyadilos priostanovit dejstvie soglasheniya s Bermudami po nadzoru za samolyotami [The government has ordered the suspension of the agreement with Bermuda on the supervision of aircraft]. Retrieved from <http://government.ru/news/44812/>
- Russian Government. (2022b, March 30). Ob utverzhdenii perechnya inostrannykh vozдушnykh sudov, na kotorye rasprostranyaetsya deystvie postanovleniya Pravitel'stva Rossiyskoy Federatsii ot 30 marta 2022 g. № 526 [On approval of the list of foreign aircraft covered by RF Government Resolution No. 526 of March 30, 2022]. Retrieved from <http://static.government.ru/media/files/JOhvHYuj24vKijHD2wSA1KByLkMDJMXv.pdf>
- Russian Government. (2022c, March 23). Federal'nyy zakon ot 23 marta 2022 g. № 60-FZ "O vnesenii izmeneniy v Vozдушnyy kodeks Rossiyskoy Federatsii i ot del'nye zakonodatel'nye akty Rossiyskoy Federatsii" [Federal Law No. 60-FZ of March 23, 2022 "On Amendments to the Air Code of the Russian Federation and Certain Legislative Acts of the Russian Federation"]. Retrieved from <http://publication.pravo.gov.ru/Document/View/0001202203230019>
- Russian Government. (2022d, March 30). Postanovlenie Pravitel'stva RF ot 30 marta 2022 g. № 526 "O vnesenii izmeneniy v nekotorye akty Pravitel'stva Rossiyskoy Federatsii" [Decree of the Government of the Russian Federation No. 526 of March 30, 2022 "On Amendments to Certain Acts of the Government of the Russian Federation"]. Retrieved from <http://government.ru/docs/all/140126/>
- Russian Government. (2022e, April 27). Postanovleniye Pravitel'stva RF ot 27 aprelya 2022 goda № 768 "O merakh po obespecheniyu razvitiya transportnoy otrasli v usloviyakh sanktsiy" [Decree of the Government of the Russian Federation No. 768 of April 27, 2022 "On measures to ensure the development of the transport sector under sanctions"]. Retrieved from <http://government.ru/docs/45157/>

- Russian Government. (2022f, April 27). Novyye меры podderzhki transportnoy otrasli [New measures to support the transport sector]. Retrieved from <http://government.ru/news/45157/>
- Russian Government. (2022g, May 27). Postanovlenie Pravitelstva Rossijskoj Federacii ot 27.05.2022 g. № 955 [Decree of the Government of the Russian Federation No. 955 dated 05/27/2022]. Retrieved from <http://government.ru/docs/all/141143/>
- Russian Government. (2022h, April 27). Postanovlenie Pravitelstva Rossijskoj Federacii ot 27.04.2022 g. № 761 [Decree of the Government of the Russian Federation No. 761 dated 04/27/2022]. Retrieved from <http://government.ru/docs/all/140680/>
- Russian Government. (2022i, March 23). Federal'nyy zakon ot 23 marta 2022 g. № 60-FZ "O vnesenii izmeneniy v Vozdushnyy kodeks Rossiyskoy Federatsii i ot del'nye zakonodatel'nye akty Rossiyskoy Federatsii" [Federal Law No. 60-FZ of March 23, 2022 "On Amendments to the Air Code of the Russian Federation and Certain Legislative Acts of the Russian Federation"]. Retrieved from <http://publication.pravo.gov.ru/Document/View/0001202203230019>
- Russian Government. (2023, August 25). Federal'nyy zakon ot 25 avgusta 2023 g. № 372-FZ "O vnesenii izmeneniy v Vozdushnyy kodeks Rossiyskoy Federatsii i ot del'nye zakonodatel'nye akty Rossiyskoy Federatsii v chasti sovershenstvovaniya gosudarstvennogo regulirovaniya v oblasti grazhdanskoj aviatsii" [Federal Law No. 372-FZ of August 25, 2023 "On Amendments to the Air Code of the Russian Federation and Certain Legislative Acts of the Russian Federation Regarding Improvement of State Regulation in Civil Aviation"]. Retrieved from <http://publication.pravo.gov.ru/document/0001202308250028>
- Strang, G. B. (2013). *Collision of empires: Italy's invasion of Ethiopia and the coming of World War II*. London, England: Routledge.
- TASS. (2022a, March 2). Boeing priostanovil postavki zapchastej rossijskim aviakompaniyam [Boeing has suspended the supply of spare parts to Russian airlines]. Retrieved from <https://tass.ru/ekonomika/13925021>
- TASS. (2022b, April 7). SShA nalozhili eksportnye ogranicheniya na "Aeroflot", Azur Air i Utair [The United States imposed export restrictions on Aeroflot, Azur Air and Utair]. Retrieved from <https://tass.ru/ekonomika/14313965>
- TASS. (2023a, July 20). Istoriya vvedeniya Rossiej specialnyh ekonomicheskikh mer protiv tretih stran [The history of Russia's introduction of special economic measures against third countries]. Retrieved from <https://tass.ru/info/18325689>
- TASS. (2023b, June 15). Kak v Rossii vvodili i snimali ogranicheniya na rabotu aeroportov posle nachala SVO [How restrictions on airport operations were introduced and lifted in Russia after the start of its]. Retrieved from <https://tass.ru/info/20661591>

- Transport Russia. (2024, May 30). Obespechit standarty letnoy godnosti [Ensuring airworthiness standards]. *Transport Rossii*. Retrieved from <https://transportrussia.ru/razdely/vozdushnyj-transport/10985-obespechit-standarty-letnoj-godnosti.html>
- U.S. Department of Commerce. (2022, March). Commerce Department identifies commercial and private aircraft exported to Russia in apparent violation of U.S. export controls. Retrieved from <https://www.commerce.gov/news/press-releases/2022/03/commerce-department-identifies-commercial-and-private-aircraft-exported>
- Ukraina.ru. (2021, October 20). SShA v 1991 godu obeshali Moskve ne rasshiryat NATO – Der Spiegel’ [The United States promised Moscow in 1991 not to expand NATO – Der Spiegel’]. Retrieved from <https://ukraina.ru/20211020/1032500894.html>
- United Nations. (1945). Charter of the United Nations, Article 41. Retrieved from <https://www.un.org/ru/charter-united-nations/index.html>
- United Nations Children's Fund. (1995). *Children on the frontline: The impact of sanctions on the children of Haiti*. New York, NY: UNICEF.
- United Nations Children's Fund. (2000). *Children of war: Sierra Leone case study*. New York, NY: UNICEF.
- United Nations Development Programme. (1999). *Human development report: Sierra Leone*. New York, NY: United Nations.
- United Nations Expert Group. (2021). *Sanctions and arms embargoes: A statistical overview*. Retrieved from <https://docs.un.org/S/2021/379>
- United Nations Security Council. (1997). *Resolution 1132 (1997)*. New York, NY: United Nations.
- United Nations Security Council. (1999). *Resolution 1267 (1999)*. New York, NY: United Nations.
- United Nations Security Council. (2000). *Report of the Panel of Experts on violations of security council sanctions against UNITA (S/2000/203)*. New York, NY: United Nations.
- United Nations Security Council. (2001). *Resolution 1373 (2001)*. New York, NY: United Nations.
- United Nations Security Council. (2001). *Final report of the Monitoring Mechanism on Angola Sanctions (S/2001/363)*. New York, NY: United Nations.
- United Nations Security Council. (2006). *Resolution 1718 (2006)*. New York, NY: United Nations.

- United Nations Security Council. (2009). *Resolution 1874 (2009)*. New York, NY: United Nations.
- United Nations Security Council. (2016). *Resolution 2270 (2016)*. New York, NY: United Nations.
- United Nations Security Council. (2019). *Sanctions frameworks: A comparative analysis*. Retrieved from <https://www.un.org/securitycouncil/sanctions/information>
- United Russia. (2022, March 14). Vladimir Putin podpisal zakon o registratsii prav na inostrannye samolet [Vladimir Putin signed the law on registration of rights to foreign aircraft]. Retrieved from <https://er.ru/activity/news/vladimir-putin-podpisal-zakon-o-registracii-prav-na-inostrannye-samolety>
- Vedomosti. (2019, November 26). Kak Rossiya 20 let vosstanavlivala aviacionnyj i zheleznodorozhnyj transport [How Russia spent 20 years restoring its aviation industry]. Retrieved from <https://www.vedomosti.ru/business/articles/2019/11/26/817115-kak-rossiya-20-let-vosstanavlivala>
- Vedomosti. (2022, October 27). Kak aviakompanii perekhodyat na otechestvennyye sistemy bronirovaniya [How airlines are transitioning to domestic booking systems]. Retrieved from <https://www.vedomosti.ru/business/articles/2022/10/27/947564-kak-aviakompanii-perekhodyat-na-otechestvennie-sistemi-bronirovaniya>
- Vedomosti. (2023, February 10). Vek na krylyah [A century on wings]. Retrieved from <https://www.vedomosti.ru/business/articles/2023/02/10/962424-vek-na-krilyah>
- Viktorov, V. (2022, March 16). Samolet vykhodyat iz zony riska [Aircraft are leaving the risk zone]. *Kommersant*. Retrieved from <https://www.kommersant.ru/doc/5259336>
- Woodward, S. L. (1995). *Balkan tragedy: Chaos and dissolution after the Cold War*. Washington, DC: Brookings Institution.
- World Bank. (2020). *Air transport and economic growth*. Retrieved from <https://documents.worldbank.org>
- Zack-Williams, A. (2001). Child soldiers in Sierra Leone. *Review of African Political Economy*, 28(87), 73–82. <https://doi.org/10.1080/03056240108704504>

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