Problems of World Air Transportation Market Globalization

Dmytro Bugayko, Mykola Kulyk, Volodymyr Kharchenko, Oksana Ilienko
The National Aviation University (Kyiv), Ukraine

The principles of civil aviation safety and efficiency in conditions of air transportation market globalization are considered. The paper paid special attention to the civil aviation threats and risks in the context of globalization processes. The paper deals with problems of changes of multilateral and bilateral regulations philosophy, the liberalization of airlines designation, national ownership and control provisions, the development of airline alliances, code-sharing agreements and franchising, the development of low-cost carriers operations, the outsourcing of ground handling, aircraft repair and maintenance, the globalization and commercialization of airports and air navigation service providers, the significant growth of air cargo and logistics transportations.
Keywords: globalization, liberalization, effectiveness, efficiency, safety, security, air carriers, airports, ATC providers..

1. INTRODUCTION

The present international civil aviation regulatory system is based on the Chicago Convention, which imposes upon Contracting States the responsibility for compliance with standards, practices and procedures adopted by International Civil Aviation Organization (ICAO), unless differences are notified. Under this system, a clear linkage is established between an operator and the State in which it has its principal place of business and clear lines of responsibility may be identified between the parties involved for the regulatory oversight of international air transport. This mechanism has been working well over the past fifty years and more, and has contributed to the safe and orderly growth of civil aviation [1].

However, globalization and economic liberalization in the last years have brought about fundamental changes in the structure and operating environment of the air transport industry. Globalization is the process of making, transformation of things or phenomena into global ones. Worldwide economic globalization develops integration of national economies into the international economy through trade, foreign direct investment, capital flows, migration, technology progress and, of course, international air transportations. In these conditions world aviation transport is thus the one that increasingly operates within a liberal market context. The trends in globalization and economic liberalization which have safety and security implications include the following:

- the changes of multilateral and bilateral regulations philosophy
- the liberalization of airlines designation, national ownership and control provisions;
- the development of airline alliances, code-sharing agreements and franchising;
- the development of modern airline business models;
- the outsourcing of ground handling, aircraft repair and maintenance;
- the globalization and commercialization of airports and air navigation service providers;
- the significant growth of air cargo and logistics transportations.

2. THE CHANGES OF MULTILATERAL AND BILATERAL REGULATIONS PHILOSOPHY

History of multilateral and bilateral regulation of international air transport business represents constant struggle between two basic conceptions - strict commercial regulation and philosophy of deregulation. The advantages of strict regulation are regulatory protection of their own air transportation markets and, respectively, airlines from foreign airlines competition. The negative component is limiting access to foreign air transportation markets. The advantages of deregulation include the development of free competition and, consequently, the development of a flexible, customer-oriented aviation business. The threats are in the refusal of the national airlines state protection and, sometimes, the actual prohibition of its state support. More than 50 years in inter-governmental relationships dominated philosophy of strict regulation. Most international agreements used items of Bermuda – 1 and Bermuda- 2 typically agreements. Strict commercial regulation as a rule includes passenger and cargo fares, maximum commercial loads, provision of no more than 4 freedoms of the air, etc. Implementation of this philosophy provides the possibilities of achieving the status quo. However, the globalization processes of the world economy on the one hand, and the steady increase of carriers operating costs on the other, provoke changes not only in civil aviation commercial policy, but also in international civil aviation regulation framework. The key instruments of deregulations are multilateral and bilateral "Open Skies" agreements, which either partially or fully don't implement any commercial control and protection from the states. Under these conditions, each carrier is in a situation of constant growth of direct and indirect aircraft operating costs, primarily due to the dynamic growth of aviation fuel prices and permanent increasing of airport and air navigation charges, taxes and fees. At the same time carriers actually are not able to proportionally increase air fares due to tough competition. Typically, the introduction of additional fuel surcharges is not sufficient. Unfortunately, this period is marked by a number of airlines bankruptcies. On the other hand, the process of permanent aircraft operation costs reducing could threaten the overall world civil aviation safety and security levels [2].

On the other hand, the adaptation of the "Open Skies" policy can bring to aviation accounts for $1 trillion in global economic activity and create 22 million jobs.

The following are principal features of "Open Sky" policy:

- open routes and points of flights;
- increasing routing flexibility;
- unlimited capacity and frequency;
- development of code-sharing flights;
- rejection of airlines passenger and cargo tariffs states control;
- liberalization of non schedule and charter flights;
- liberalization of cargo transportations;
- high level of safety and security requirements;
- possibilities to provide self-handling at abroad airports;
- charges, taxes and fees market orientation;
- open competition and airlines state-support prohibition;
- liberalization of airlines sales and computer reservation systems use.

3. THE LIBERALIZATION OF AIRLINES DESIGNATION, NATIONAL OWNERSHIP AND CONTROL PROVISIONS IN CONDITIONS OF WORLD AIR TRANSPORTATION MARKET GLOBALIZATION

Historically, states generally do not provide the air routes rights for carriers, that are not in a preferred state ownership and are not under the *de facto* control from the state. As a result of globalization and liberalization the criterion of national ownership and control has become increasingly irrelevant. Many carriers don't belong to the state, and some states provide controlling availability to own citizens. The positive aspect of these tendencies casts no doubt, because more efficient carriers, as a rule, support the required safety level and provide more attractive fares and high-quality aviation service. But in this situation we can't be sure that air carrier will primarily represent the interests of their own country. Powerful global air carriers actively develop new forms of commercial cooperation. Many states have in recent years relaxed restrictions on foreign investment in their national air carriers. Now large airlines from different regions of the world

successfully buy controlling shares of foreign carriers. In this situation we can identify risks as the potential emergence of "flags of convenience" in the absence of effective regulatory measures to prevent them, and potential deterioration of safety and security standards when there is an increasing emphasis on commercial outcomes. Relaxation of national ownership and control provisions needs to be accompanied by appropriate measures to prevent the emergence of "flags of convenience" and to ensure that safety and security are not compromised [1].

4. THE DEVELOPMENT OF AIRLINE ALLIANCES, CODE-SHARING AGREEMENTS AND FRANCHISING

As noted before, globalization trend has resulted in a significant increasing of aviation market competition level. At the same time commercial activity on the verge of profitability is dangerous for aviation safety. For solving these problems powerful airlines successfully practice non competition philosophy of commercial activity collaboration and coordination. The first step is signing of Bilateral Interline Agreement (BITA). Second step - is representation of joint transfer directions tariffs system (in the framework of Special Prorate Agreement (SPA)). The following step of consolidation is signing of code – share agreement: at beginning with a proportional block sale (Code – Share Blocked Space Agreement (CSBSA)), and then with free distribution of two airlines (Code – Share Free Sale Agreement (CSFSA)). These procedures show development of marketing alliances relations. It has been used by many airlines to extend their scope of market access and has proved very effective in developing synergies and increasing revenues of the airlines concerned. Concern relates to the security implications caused by the potential transfer of a security threat, which may exist against one airline and be spread to its partner or partners in a code-sharing arrangement, and any subsequent additional security measures imposed by the appropriate authorities.

The next step of airlines collaboration is development of strategic and global airlines alliances. Consolidation of most powerful airlines, which represent all of world regions, results in geometrical growth of their competitive advantages gained due to: multilateral co-ordination of international fares, harmonization of the airlines loyalty systems, distribution of air transportation sales under conditions of Multilateral Interline Agreement (MITA), global compatible exploitation of routes, commercial optimizations of aircrafts parks, promotion of the optimized direct and transfer time-table. As a result of these coordinated actions the alliance member airline can conduct the substantial economy of direct and indirect operating costs, marketing, sales, administrative and other overheads costs. The above mentioned positions result in the full implementation of economy of scale and give possibility to offer to customers more flexible, cheap and effective international fare policy. As a result, now members of global alliances serve more than 66 percent of global passenger flow (in Fig.1 you can see Air Transportation Market Segmentation and Structure of Global Alliances of Air Carriers).

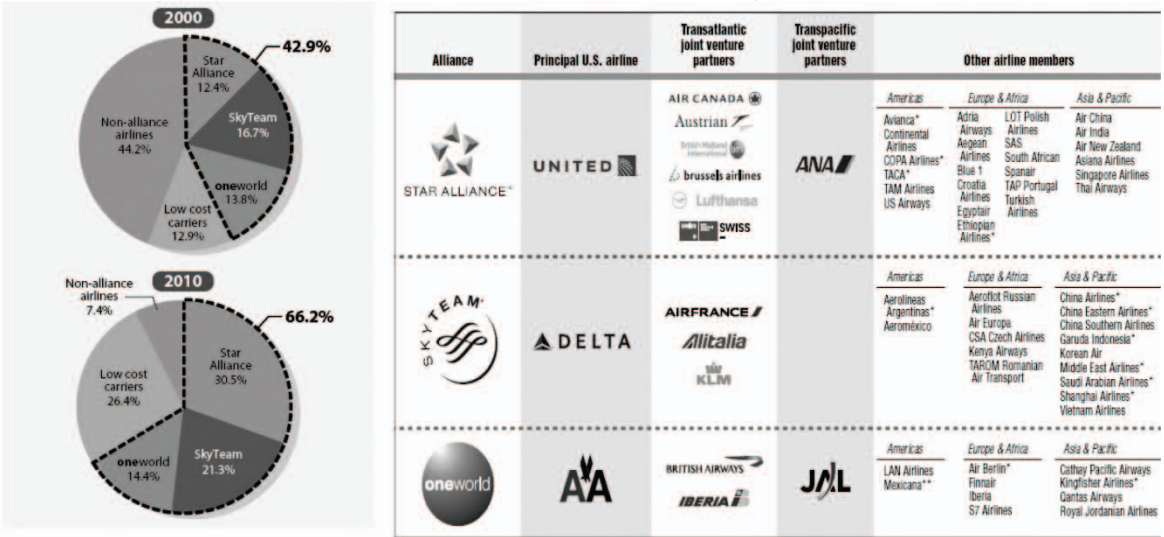

Fig. 1. Air Transportation Market Segmentation and Structure of Global Alliances of Air Carriers [3]

5. THE DEVELOPMENT OF MODERN AIRLINE BUSINESS MODELS

In recent years, successful low-cost carriers (LCCs) have been challenging the full-service network airlines. Characteristics of typical low-cost operational strategy:

- limited passenger services;
- frequent and reliable departures;
- short-haul, point-to point services;
- small & medium sized airports, preferably secondary;
- low ticket prices;
- lean, productive crew;
- maximum aircraft utilization.

Cost advantages of the low-cost airline business model include:

- homogenous and young fleet;
- high-density seating, fewer galleys and toilets;
- no free meals and drinks, lounges and flight frequency programs;
- no seat reservations;
- use of smaller airports;
- no interlining, no flight connections;
- focus on direct sales
- low prices sell themselves, aggressive PR.

The growth of LCCs has prompted some larger airlines to create subsidiaries or separate units to compete with them. Over the past 10 years, the LCCs air passenger transportation segment increased from 12,9 percent to 26,4 percent (See Fig.1). According to Eurocontrol data in 2012 can be noted an increase in the number of LCCs flights in European region (+1.4 % and total - 25 percent of operations in the structure of all European flights). Regular classic carriers steadily reduce the proportion of flights in the region (- 4.1 % and total 55 percent of operations in the structure of all European flights) (see Tab.1) [4].

Table 1. Breakdown of traffic per European market segment (data of EUROCONTROL [4]).

Market Segment	Average Daily Flights	Market Share	Growth on 2012
Traditional scheduled	14 355	55%	-4.1%
Low cost	6 537	25%	1.4%
Business aviation	1 870	7%	-4.0%
Charter	1 414	5%	2.6%
Cargo	918	4%	-4.6%
Other*	995	4%	-9.6%
TOTAL	**26 089**	**100%**	**-2.67%**

In these conditions it is possible to establish the gradual evolution of two airlines models (classical and low cost) directed on meeting each other. So the low cost airlines utilize the discounted fares, which are actively and widely shown in advertising, at the same time gradually increase base fares. Regular international airlines are engaged at the structured aircraft operating cost economy and implement the complex of consolidation actions, directed on the use of economy of scale [2]. However, the program of cost savings represents a potential threat to the level of safety and service quality of classic carriers.

In the segment of air cargo, the highly sophisticated airline/parcel express delivery companies, which grew substantially in the past decade, continue to expand this specialized service. These companies operate large jet cargo fleets combined with surface delivery systems to provide continental overnight deliveries and second day intercontinental services via strategically placed sorting hubs. This concept has also been adopted by a number of postal administrations [5].

6. THE OUTSOURCING OF GROUND HANDLING, AIRCRAFT REPAIR AND MAINTENANCE

The outsourcing is the next trend of air transportation market globalization. Outsourcing may be well illustrated by ground handling, aircraft repair and maintenance. We can see tendency of

liberalization of these activities in many bilateral and multilateral air services agreements. Now usually ground handling, aircraft repair and maintenance are outsourced to specialized companies. These companies are not constrained by national ownership restrictions. This can represent new threats for aviation safety and security. To address this concern, ICAO has recently conducted a study on the safety aspects of ground handling, aircraft repair and maintenance which has led to a review of, and amendments to, the existing standards and recommended practices (SARPs).

7. THE GLOBALIZATION AND COMMERCIALIZATION OF AIRPORTS AND AIR NAVIGATION SERVICE PROVIDERS

The next trend of air transportation market globalization is the commercialization or privatization of airports and air navigation service providers and change in ownership and control of these formerly state-owned entities, or the transfer of operations by governments to autonomous entities or to the private sector. ICAO has recommended that where an autonomous body or entity is established, the State should condition its approval of the new body by requiring that it observe all relevant obligations of the State specified in the Chicago Convention and its Annexes. Of particular significance is the fact that aviation security has now taken on the highest importance with consequences for facilitation of passengers, costs of providing increased security measures and, in differing degrees around the world, public confidence. World aviation needs to ensure that security measures do not disrupt or impede the flow of passengers, freight, mail or aircraft, and to take positive measures to restore public confidence in air travel and revitalize the air transport industry. In this regard, close coordination amongst air transport regulators, law-enforcement authorities, airlines and airports should help bring about complementary facilitation and security programs that could reduce the negative effects and achieve maximum efficiency in border clearance operations and high quality security and law enforcement [1].

Table 2 is excerpted from a table of the world's 100 largest (by revenue) airport groups. Of these 100 largest airport entities, 36 are either fully or partially owned by investors (or are in the process of becoming so, as in Spain and Portugal). In cases of partial privatization, either a minority or majority stake is held by the national, regional or local government entity in which the airport is located. A number of these global airport groups also manage overseas airports, on a contract basis, without actually obtaining an ownership share, a good example being Fraport with Cairo Airport. Several smaller airport companies (e.g., Hochtief Airport, HRL Morrison/Infratil, Peel Airports) had 2010 revenues below the threshold for inclusion in the top 100, so are not included in the table. Total revenue for the 36 privatized entities was $33.6 billion, which is 45% of the revenue of the entire top 100 airport groups [6] (in Tab.2 you can see Largest Privatized Airport Groups).

Table 2. Largest Privatized Airport Groups [6].

Airport Group	Global Rank	Main Airports	2011 Revenue($M)	Privatization Status
AENA	1	Madrid, Barcelona	$4,521	On hold
Ferrovial	2	Heathrow	$3,956	Full
Aeroports de Paris	3	Paris de Gaulle and Orly	$3,497	Partial
Fraport	4	Frankfurt	$3,314	Partial
TAV Airport Holding	14	Istanbul, Ankara	$1,231	Full
Flughafen Zurich	19	Zurich	$1,028	Full
Southern Cross Airports	20	Sydney	$1,015	Full
Beijing Capital Intl. Airport Group	21	Beijing	$1,008	Partial
Airports of Thailand	22	Bangkok	$945	Partial
Malaysia Airports Holding Berhad	23	Kuala Lumpur	$902	Partial
SEA Aeroporti de Milano	24	Milan	$901	Partial
Aeroporti di Roma	25	Rome Fiumicino and Ciampino	$883	Full
Flughafen Wien	28	Vienna	$814	Full
Airports Company South Africa	30	Johannesburg, Cape Town	$775	Partial
Guangzhou Baiyun International	35	Guangzhou	$657	Partial
Copenhagen Airports	36	Copenhagen	$628	Partial
Aeroportos de Portugal	38	Lisbon	$604	In process
Flughafen Dusseldorf	41	Dusseldorf	$585	Partial
GMR Infrastructure	42	New Delhi, Hyderabad	$563	Partial
Australia Pacific Airports Corp.	43	Melbourne	$559	Full
Brussels Intl. Airport Corp.	45	Brussels	$527	Full
Aeropuertos Argentina 2000	48	Buenos Aires EZE and AEP	$470	Full
Athens Intl. Airport	50	Athens	$465	Partial
Brisbane Airport	51	Brisbane	$456	Partial
Abertis	57	London Luton, Cardiff, Belfast	$409	Full
Grupo Aeroportuario del Pacifico (GAP)	59	Guadalajara, Tijuana	$396	Full
Aeropuertos del Sureste (ASUR)	66	Cancun	$367	Full
Flughafen Hamburg	68	Hamburg	$354	Partial
Auckland International Airport	77	Auckland	$304	Partial
Westralia Airports	78	Perth	$300	Full
Aeroports de la Cote d'Azur	82	Nice	$265	Partial
Operadora Mexicana de Aeropuertos (OMA)	86	Monterrey, Acapulco	$197	Full
Hannover-Lengenhagen	87	Hannover	$192	Partial
SAVE Aeroporto Marco Polo	89	Venice	$177	Partial
Adelaide	93	Adelaide	$152	Full
Birmingham Airport Holdings	95	Birmingham	$150	In process

During the past two decades, more than 50 governments have "commercialized" their air traffic control systems. That means they have organizationally separated the ATC function from their transport ministry (putting it at arm's length for safety regulation), removed it from civil service, and made it self-supporting from fees charged to aircraft operators for ATC services. As of mid-2012, the association for air navigation service providers, CANSO (the Civil Air Navigation Services Organization) lists 76 full members, i.e. entities that provide air navigation services. Of those, over 50 are commercialized; these include the ANSPs of Australia, New Zealand, Thailand, India, Canada, the U.K., Ireland, Germany, Spain, Portugal, Austria, Switzerland, most of the rest of the E.U. countries, and South Africa. Governmental ANSPs include

Cyprus, Luxembourg, Greece, the Maldives, and the FAA's Air Traffic Organization (which is still embedded within that agency and funded by annual appropriations from the federal budget) [7].

Contrary to the United States, Europe does not have a single sky, one in which air navigation is managed at the European level. Furthermore, European airspace is among the busiest in the world with over 33,000 flights on busy days and high airport density. This makes air traffic control even more complex. The EU Single European Sky is an ambitious initiative launched by the European Commission in 2004 to reform the architecture of European air traffic management. It proposes a legislative approach to meet future capacity and safety needs at a European rather than a local level. The Single European Sky is the only way to provide a uniform and high level of safety and efficiency over Europe's skies [8].

The key objectives are to:

- restructure European airspace as a function of air traffic flows;
- create additional capacity;
- increase the overall efficiency of the air traffic management system.

The major elements of this new institutional and organizational framework for Air Traffic Management in Europe consist of:

- separating regulatory activities from service provision, and the possibility of cross-border Air Traffic Management services;
- reorganizing European airspace that is no longer constrained by national borders;
- setting common rules and standards, covering a wide range of issues, such as flight data exchanges and telecommunications.

As a part of the Single European Sky initiative, SESAR (Single European Sky ATM Research) represents its technological dimension. It will help to create a "paradigm shift", supported by state-of-the-art and innovative technology. The SESAR program will give Europe a high-performance air traffic control infrastructure which will enable the safe and environmentally friendly development of air transport. The Definition phase (2004-2008) delivered the ATM master plan defining the content, the development and deployment plans of the next generation of ATM systems. This definition phase was led by Eurocontrol, and co-funded by the European Commission under the Trans European Network - Transport program and executed by a large consortium of all air transport stakeholders. The Development phase (2008-2013) will produce the required new generation of technological systems, components and operational procedures as defined in the SESAR ATM Master Plan and Work Program. The Deployment phase (2014-2020) will see the large scale production and implementation of the new air traffic management infrastructure, composed of fully harmonized and interoperable components guaranteeing high performance air transport activities in Europe [8](in Fig.2 you can see SESAR Technical Architecture).

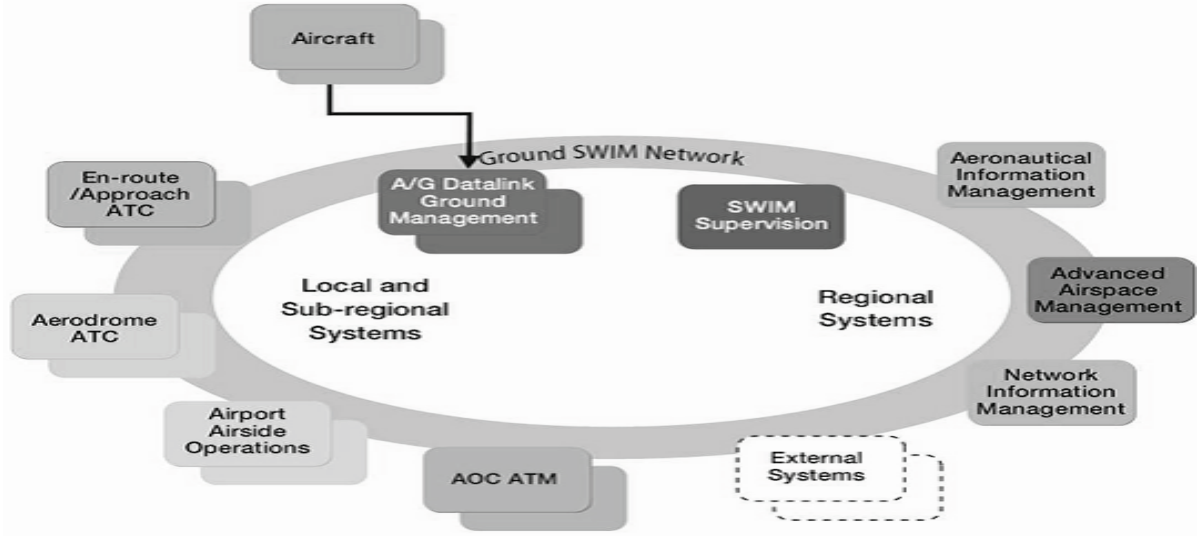

Fig. 2. SESAR Technical Architecture [8].

8. THE PROBLEMS OF AIR CARGO AND LOGISTICS TRANSPORTATION IN CONDITIONS OF GLOBALIZATION

Air cargo and logistics are important components of international air transport in conditions of globalization. They play an increasingly important role in the global economy, as well as in the national development and international trade of many States. The past two decades has seen substantial growth worldwide in air cargo traffic. This tendency is true for future. By the ICAO forecast - projected growth rate of 6.6 per cent per annum for world scheduled freight tonne-kilometres for the period 2005–2025 [6]. By the opinion of Boeing experts - over the next 20 years, world air cargo traffic will grow by 5.2% per year [10](see Fig.3 and Tab.3).

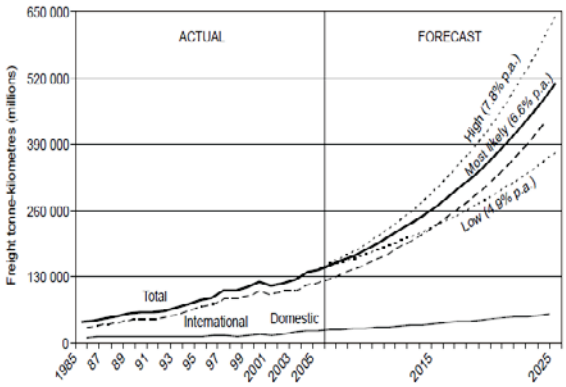

Fig. 3. Trends in scheduled freight traffic — World (1985–2025) (ICAO Contracting States)[6].

Table 3. ICAO scheduled freight traffic forecasts — World (1985–2025) (ICAO Contracting States) [6].

	Actual 1985	Actual 2005	Forecast 2025	Average annual growth rate (per cent) 1985-2005	2005-2025
Freight tonne-kilometres (millions)					
Total	39 813	142 580	510 000	6.6	6.6
International	29 384	118 480	452 120	7.2	6.9
Domestic	10 429	24 100	57 880	4.3	4.5
Freight tonnes carried (thousands)					
Total	13 742	37 660	145 000	5.2	5.5
International	5 884	22 630	110 000	7.0	6.5
Domestic	7 858	15 030	35 000	3.3	3.4

Source: ICAO.

The current worldwide air cargo regulatory regime primarily composed of some 4000 bilateral air services agreements. But strong growing trend of air cargo and logistics transportations illuminate needs for regulatory platform development and for special regulatory base separate from that for passenger service. In an increasingly globalized and liberalized environment, air cargo operations need to be as efficient, economical, and expeditious as possible to meet user demands, particularly for transport of high value and time-sensitive freight. One of the main air cargo problem is the framework of market access rights in multilateral and bilateral air services agreements. The restrictions are usually imposed in respect of freedom of air, points, routes, fares, frequency, etc. But cargo has different transportations structure of flows, seasonal codes, fares etc than passengers. In considering greater globalization and liberalization of the air cargo sector, it should be recognized that there remain some concerns about whether there should be special or separate regulatory platform for international air cargo operations. Globalization and liberalization of air cargo market access would give a major impetus to economic growth by permitting market forces to determine flows of cargo in the interdependent global marketplace. Most importantly, cargo liberalization would open up new opportunities for secondary airports, relieve pressure on capacity-constrained hubs, lead to a more efficient use of scarce airport capacity in general, and provide a stimulus for world trade and job creation [1].

Security is one of the main strategic targets of the worldwide aviation activity development. The key problem is the dynamical growth of aviation logistics system and increasing of number of shippers and consignees, which are involved in the aviation logistics transportation. In connection with this problem 37 ICAO Assembly decided to include aviation logistics in the scope of aviation security. Paragraph 4 of Declaration on Aviation Security of 37th ICAO Assembly declared: “develop and implement strengthened and harmonized measures and best practices for air cargo security, taking into account the need to protect the entire air cargo supply chain” [11]. At present, we can identify the following areas of security for world logistics system: Physical security - aircraft protection; tampering; access control to logistics infrastructure. Cyber security - same standards as for CNS systems: protection of software and data links from hacking; spoofing; interference or malicious hijack.

9. CONCLUSION

The globalization of international air transport includes many aspects and play important role in

process of world civil aviation development. Among the positive aspects of globalization it is possible to determine:

- development of global civil aviation safety system, which unites leading international and regional, intergovernmental and non-governmental organizations in order to improve safety, security, efficiency and economic feasibility of aviation activities;
- development and commercialization of world airport system;
- coordination, standardization and expansion of cross-border limits in the segment of air navigation services,
- development of air carriers competitive and non-discriminatory environment for international air transportation market.
- significant increase of air cargo and logistics transportations.

On the other hand, globalization has the following threats and risks:

- possible loss of states control over their own commercial airline market and stakeholders (air carriers, airports, ATC providers);
- bankruptcy of national air carriers due to strong competition from financially strong global alliance member airlines and LCC;
- airlines cost savings programs represent a potential threat to the level of safety and service quality.

The complex issue of world air transpiration market globalization processes is the basis for recent development of civil aviation activity.

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Dmytro Bugayk
The National Aviation University (Kyiv), Ukraine
bugaiko@nau.edu.ua

Mykola Kulyk
The National Aviation University (Kyiv), Ukraine

Volodymyr Kharchenko
The National Aviation University (Kyiv), Ukraine

Oksana Ilienko
The National Aviation University (Kyiv), Ukraine