The Analysis of Air Service Liberalization in Kyrgyzstan: Measuring the Degree of Liberalization and Impact to Passenger Traffic Flow

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I. Introduction

The impact of air transport on economic development is considerable. Air transport is a vital factor that affects trade, tourism, and other significant sectors of the economy (IHLG, 2019, p.7). In the era of the expansion of the market economy, air transport plays a crucial role in connecting states into global markets in a timely and effective way. The air transport industry's economic impact reached around USD 2.7 trillion; that is 3.6% of global GDP (Airbus, 2019, p.3). Also, the air transport industry supports around 65.5 million jobs worldwide (IHLG, 2019, p.7; Airbus, 2019, p.3).

As globalization has progressed, air traffic flow has doubled every fifteen years and continues to increase. The World Bank identified that air traffic reached around 4.23 billion passengers (WB, 2020). Furthermore, about 58 million tons of cargo were carried by air transport globally in 2018 (IHLG, 2019, p.6). These endeavors included tourists and labor, commodities and goods, businesses, and investors worldwide.

As many countries recognized the significance of air transport for economic growth, they have attempted to liberalize their air services over the last several decades (Arvis et al., 2011). This deregulation is generally called "Air Service Liberalization." (ICAO, 2015). The International Civil Aviation Organization (ICAO) defines this liberalization as follows:

> *It is a process of entering into agreements generally known as liberalized air agreements characterized by more generous market access, minimal (if any) capacity regulation, and significantly reduced governmental controls*

> *on air carrier pricing. Some include other liberalizing provisions and matters such as charter flights, all-cargo services, and computer reservation systems.* (ICAO, 2018, p.II-3-2).

To promote this direction, the ICAO has initiated the liberalization policy for all signatories and sets air service liberalization from traditional to transitional and full liberalization.[1]

As many previous studies have indicated, air service liberalization significantly impacts transport development, which is an engine for expanding trade and other related domains of the economy. Some scholars have argued that air service liberalization leads to an increase in new air services and reduces fares, promoting air traffic growth and connectivity, bringing about the development of the economy and creating new jobs (InterVISTAS-ga, 2006, pp.86-89). The study of Piermartini et al. (2008) proved a proximate and notable effect of air service liberalization on air traffic flow. Implementation of a semi-liberal air service regime leads to passenger traffic growth by 30 percent, but full liberalization type of bilateral air service agreements (BASAs) could increase the air passenger traffic between BASA signatory states by up to 78 percent. Furthermore, there is a direct relationship between airfares and air traffic; empirical studies of air service liberalization between 1990-2014, depending on the period of market research, indicate that fares on some routes fell by 10%-40% while air traffic jumped around by 18%-75%. Meanwhile, the growth of air traffic by 16 percent led by liberalization would generate additional employment of approximately nine million jobs in the air transport industry and tourism supported by aviation, worldwide (InterVISTAS, 2015, p.60). Estimating economic benefits, a study made in 2006 shows that each 10 percent rise in international air service made a significant increase in GDP by 0.07 percent (InterVISTAS, 2009, p.ii).

In this context, the United States was the first state that started to implement such liberalization. Deregulation reform for the international air transport market began in 1978 in the USA. Since 1992, it pioneered the so-called "open skies" policy with partner states.[2] In theory, this policy enables the air carriers of signatory countries to operate international flights on a bilateral basis with the principle of the 5th and 6th freedom rights toward the free air transport market.[3] On the other hand, the EU also adopted air service

liberalization in 1987 and fully implemented it by 1997. As a result of air service reforms in the EU, competition in air transport increased and led to the decline of airfares up to 34 percent, which caused a growth in passenger traffic flow by 108 percent. Similarly, the United States deregulation reform led to growth in the air transport market (InterVISTAS-EU, 2009b, p.9).

The US and EU experiences of air service liberalization inspired many countries to implement such reform and promote competition between air carriers. This reform has become extremely important for developing states in the Commonwealth of Independent States (CIS), where lands exist between the advanced economies of the EU and those of East Asia, since the reform has the potential to open access to markets, increasing economic growth opportunities. As one of the landlocked developing economies and the country that has the lowest air connectivity performance among the humble and lower-middle-income transitional economies in the region (Figure 1), Kyrgyzstan has paid attention to liberalization needs.

Indeed, air passenger traffic is highlighted in this study due to its significance for landlocked economies and connectivity. In particular, air passenger transport
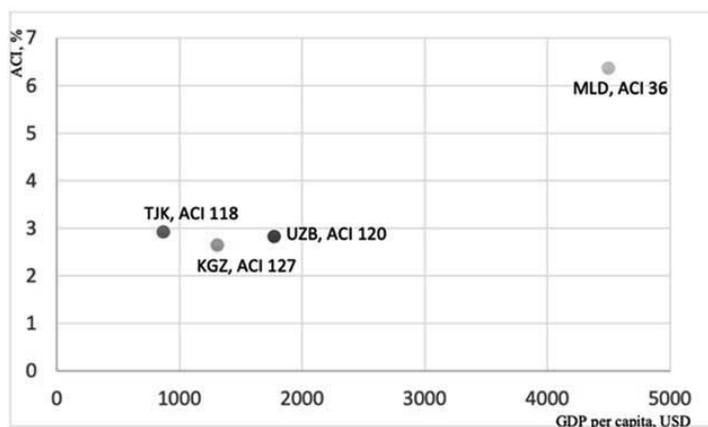

Figure 1. Correlation Between Air Connectivity Index and Economic Size of Small Landlocked Economies in CIS (KGZ - Kyrgyzstan, MLD - Moldova, TJK - Tajikistan, UZB - Uzbekistan)

Source: The author, based on the following data:
1) "GDP per capita (current US$) - Kyrgyz Republic, Moldova, Uzbekistan, Tajikistan," the World Bank Data, 2019 from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=KG-MD-TJ-UZ. (Accessed 10 August 2020).
2) "The Air Connectivity Index," Arvis et al. (2011) from http://documents1.worldbank.org/curated/en/859151468161649899/pdf/WPS5722.pdf. (Accessed 10 August 2020).

increases connectivity with other states and markets (Arvis et al., 2011, p.24). It also facilitates the development of the tourism sector and sets up and maintains business and trade relationships between markets that are essential for developing and remote economies (ATAG, 2018, p.16). Furthermore, around 50 percent of all air cargo is carried by passenger flights rather than by cargo planes (Bowen, 2020).

The major objective of this article is to measure the impact of air service liberalization on air passenger traffic in Kyrgyzstan. To fulfill the above-mentioned objective, the degree of air service liberalization of a country will be measured to examine how liberalization reflects on passenger flow. In this context, since the regimes of market access are reflected in air service agreements, this study, first, will examine how Kyrgyzstan's BASAs are structured.

Significance of this study lies in the hypothesis of applicability of theory of Piermartini et al. (2008) to small landlocked economies in the CIS. Particularly, they observed more than 2000 BASAs of 184 states and estimated that the liberalization of agreements from 25th to 75th percentile between states linked by direct air service leads to air-passenger traffic growth by around 30 percent (Piermartini et al., 2008, p.5). In this context, the author argues that the theoretical model of Piermartini et al. (2008) can also be valid for Kyrgyzstan and small landlocked economies in the CIS.

To pursue the objective of study, in this article the quantitative method of research is applied. This methodology includes two approaches. First, the Quantitative Air Services Agreements Review (QUASAR) proposed by the WTO Secretariat (WTO, 2006a) to measure the degree of air service liberalization is implemented. Second, the Gravity Model is employed to examine whether the results of the theoretical model of Priermartini et al. (2008) can be applied to Kyrgyzstan and similarly to small landlocked economies in the CIS. This analysis is made in the fourth section as Modeling Impact of Air Service Liberalization to Passenger Traffic Flow.

The rest of this article is structured as following: the second section contains the explanation of bilateral regulation structure; the third section is about air service liberalization in Kyrgyzstan and its degree of liberalization; the fourth section describes the impact of liberalization to passenger traffic flow in Kyrgyzstan. The final part of this article provides conclusion remarks on this

research.

II. Air Service Regulation Structure

Today, air transport is one of the most regulated industries worldwide (OECD-ITF, 2019, p.11). Although air travel began in the 1920s, the debate over whether civil aviation should be regulated arose in the mid-1940s. Created in 1944 by the Chicago Convention on International Civil Aviation (here and after as the Chicago Convention), under the UN's auspices, the International Civil Aviation Organization (ICAO) develops standards and recommended practices in the field of civil aviation. ICAO's main objectives, referred to in Article 44 of the Chicago Convention, are to ensure the orderly and efficient operation of the air industry around the world to meet the needs of the population for safe, regular international air transport (ICAO, 1944). Today, 193 states are registered as ICAO Member States (ICAO, 2019), and the central fundamental principle of the Chicago Convention is the recognition of contracting states, where each state has full sovereignty over its air space (including water). Therefore, to harmonize air service regulation and perform international flights safely worldwide, the ICAO has created the basis for air service regulation (OECD-ITF, 2014, p.13).

The fact is that ICAO does not control and supervise the negotiations and consultations between states. It only recommends the states draft the air service agreements' texts following the ICAO Template Air Services Agreements. It calls all member-states to register with ICAO all signed air service agreements and amendments to that (ICAO, 2018, p.II-3-4). Indeed, this ICAO Template framework is the comprehensive text of air service agreements, which provides traditional, transitional, and full liberalization approaches, optionally. Therefore, each state is responsible for deciding what content and conditions to include in the agreements.

The agreements usually contain the requirements, the framework, and air service performed between the countries, including the air transport market access. In this context, the air transport market refers to the actual and potential volume of passengers and goods carried by air on the routes between a pair of cities, markets [airports] of pair states, pair of regions, or global market (ICAO, 2018, p.IV-2-1). In other words, air transport market access means the

character and set of fundamental rights that are granted to air carriers by the authorized bodies of states. In this sense, the level of market access is defined by how the states give or limit air carriers with the rights to access the market.

So, the right of access to the market includes a combination of the following key rights: Right for creation (the ability to create carriers on the territory of the states by foreign individuals or legal entities); Route right (the right to fly on the certain order of a party, agreed geographical described routes); Operational right (the right to perform certain types of transportations by a certain airline or airlines to the territory of another state, by certain types or capacities of aircraft); Overflight right (the right that grants air carriers of one state to overfly without landing over the territory of another state, or 1st freedom of air); Technical stop right (means the right granted to a carrier of one state to land with non-commercial purposes in another country's territory, or 2nd freedom rights); and Traffic right (the right which includes a combination of ownership to the route and operation, including the right to transport the agreed products and passengers, 3rd-9th freedom rights) (ICAO, 2018, pp.IV-2-1 - IV-2-19).

In fact, each state negotiates with the other government(s) over air service agreement contents. Indeed, in international air transport, a set of market access rights is the subject of bilateral consultations between the states, which is more common. In contrast, a multilateral structure of agreements (between three or more countries) is rarer than bilateral regulation, but usually more liberal (OECD-ITF, 2019, p.21). In this sense, states frequently use the structure of bilateral or multilateral agreements, which include the process of consultations for exchange of the preferences and benefits of relevant sets of rights mentioned above.

As mentioned in the previous section, there are three types of approaches in the signing of the air service agreement described in ICAO Manual on the Regulation of International Air Transport: one is traditional, and the others are transitional and full liberalization (ICAO, 2018, p.II-3-2). Unfortunately, air transport remains protectionist worldwide. As of 2015, among 2260 registered air service agreements of the 173 states contained in the ICAO World Air Services Agreements (WASA) database, there were 2190 traditional agreements (82%), 320 - transitional agreements (12%), and 147 full liberalization agreements

(6%) (ICAO, 2015).

However, the numbers of such liberalized agreements and amendments have continued to increase. As a matter of fact, ICAO indicates the increasing numbers of clauses regarding air carriers' fair competition to operate air services and refers preventative practices of unfair competition in air service agreements and amendments (ICAO, 2015), and calls the states:

> *to the extent feasible liberalize international air transport market access, air carrier access to international capital and air carrier freedom to conduct commercial activities.* (ICAO, 2017, p.2-19).

The following sections will analyze if the argument that air service liberalization policies conceivably may open access to markets, increasing economic growth opportunities is valid in the case of Kyrgyzstan.

III. The Analysis of Bilateral Regulation and Degree of Air Service Liberalization in Kyrgyzstan

3.1. Background of the Kyrgyz Republic

Kyrgyzstan is a relatively new state which faces economic challenges. It gained independence from the USSR on August 31, 1991. Kyrgyzstan is one of the smallest countries in the region, with a population of 6.5 million (WB, 2019). Today, the country is listed among the lower-middle-income countries; its GDP reached USD 8.455 billion (GDP per capita USD 1309.4) in 2019 which increased by 76 percent compared to 2010 (WB, 2019). It is the second-lowest income state among former USSR states (WB, 2019).

Due to Kyrgyzstan's geographic remoteness, it has fewer economic opportunities than non-landlocked states due to higher trade and transport costs and a limited integration degree into well-developed global markets. Vast and high mountains dominate a landlocked Kyrgyzstan's terrain; around 94 percent of its territory is mountains. Significantly, landlocked countries' transport costs are higher, on average 50% compared to non-landlocked developing states. Consequently, landlocked states' export potential is lower, and on average, accounts for 60% of the average country's trade volume that has access to open sea (WB-UN, 2014, p.2). The tourism industry which facilitates

the economy is less competitive due to higher transportation costs, as well.

　Thus, since Kyrgyzstan has no direct access to the sea and has an undeveloped railway system, air transport is a crucial element for its transportation system and economy, since it is facilitating the flow of people, goods, and investment. Today, the air transport and tourists arriving by air support around 36000 jobs. Also, in total, around USD 198 million, which is 2.4 percent of Kyrgyzstan's GDP, is supported by air transport and tourists arriving in Kyrgyzstan by air transport (IATA, 2020).

Table 1. Low and Lower Middle-Income Landlocked Economies of Former USSR

1	2	3	4	5	6	7	8	9	10
State	Population, million	GDP per capita, USD (2018)	Income group	ACI ranking	International tourism arrivals, million	TTCI score 2019	TTCI ranking	International visitor impact, USD million (2019)	Contribution of travel and tourism to GDP, %
Kyrgyzstan	6.45	1,309.4	Lower-middle income	127	0.423	3.2	110	515.1	8.3
Moldova	2.65	4,498.5	Lower-middle income	36	0.16	3.3	103	458.7	7.3
Tajikistan	9.32	8,70.8	Low-income	118	1.035	3.3	104	165.3	6.3
Uzbekistan	33.58	1,724.8	Lower-middle income	120	5.346	n/a	n/a	1,550.9	4.5

Source: The author, based on the following data:
Compiled by the author, based on the following data:
1）"Population, total - Kyrgyz Republic, Moldova, Tajikistan, Uzbekistan," the World Bank Data, 2019 from https://data.worldbank.org/indicator/SP.POP.TOTL?+locations=KG-MD-UZ-TJ&locations=KG-MD-TJ-UZ. (Accessed 10 August 2020).
2）"GDP per capita (current US$) - Kyrgyz Republic, Moldova, Uzbekistan, Tajikistan," the World Bank Data, 2019 from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=KG-MD-TJ-UZ. (Accessed 10 August 2020).
3）"Low-Income Economies [29]," "Lower-Middle Income Economies [50]," the World Bank, 2019 from https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups. (Accessed 10 August 2020).
4）"The Air Connectivity Index (ACI) 2007," Arvis et al. (2011, p.43) from http://documents1.worldbank.org/curated/en/859151468161649899/pdf/WPS5722.pdf, (Accessed 10 August 2020).
5）"International tourism, number of arrivals - Kyrgyz Republic, Moldova, Tajikistan, Uzbekistan," the World Bank Data, 2018 from https://data.worldbank.org/indicator/ST.INT.ARVL?locations=KG-MD-TJ-UZ. (Accessed 10 August 2020).
6）"The Travel & Tourism Competitiveness Report 2019," WEF (2019, p.viii) from http://www3.weforum.org/docs/WEF_TTCR_2019.pdf. (Accessed 10 August 2020).
7）"Economic Impact Report," (2020 Annual research: Key highlights - for Kyrgyzstan, Moldova, Tajikistan, and Uzbekistan), the World Travel&Tourism Concil, 2020 from https://wttc.org/Research/Economic-Impact. (Accessed 10 August 2020).

Indeed, as a landlocked economy, the country has been faced with challenges of air connectivity. According to research by Arvis et al. (2011), the Kyrgyz Republic was ranked as 127th (Table 1, column 5) among 200 countries and territories in terms of Air Connectivity Index (ACI). For instance, other landlocked low and lower-middle-income former USSR economies were ranked as following: Moldova - 36th, Tajikistan - 118th, and Uzbekistan - 120th (Arvis et al., 2011, p.43). Notably, the ACI indicates the connectivity of the country to the rest of the world. Thus, the position [score] of the ranking is smaller if the country is better connected by air service to many other countries worldwide and the international air transportation costs are relatively low. Among the CIS states with small economies, Kyrgyzstan has fewer individual nodes in their air transport network. Thus, it has a lower ACI index, as shown in Figure 1.

The other issue related to economic growth in developing countries is tourism competitiveness. As shown in Table 1, Kyrgyzstan has the worst Travel and Tourism Competitiveness Index (TTCI) compared to similar states, meaning that the country is less competitive than other low and lower-middle-income economies in the region. As shown in Table 1 (columns 7 and 8), Kyrgyzstan ranks as 110th in terms of TTCI (WEF, 2019, p.viii). Covering 140 countries, the World Economic Forum evaluates countries' tourism environments with the TTCI index that reflects sustainable development of the travel and tourism sector, which facilitates economic growth (WEF, 2019). Unfortunately, Uzbekistan is not ranked with TTCI due to the lack of data for WEF analysis. However, the World Travel & Tourism Council (WTTC) estimates the global tourist impact to Uzbekistan's economy to around USD 1.5 billion, which is three times more than the tourist impact to Kyrgyzstan (Table 1, column 9) (WTTC, 2020). Moldova and Tajikistan ranked as 103rd and 104th, accordingly (WEF, 2019, p.viii). Among these states, the economy of Kyrgyzstan heavily relies its income on the tourism sector, which contributes 8.3% of the GDP (Table 1, column 9, and 10). Surprisingly, Tajikistan has two times the international arrivals of Kyrgyzstan, but the tourist impact is three times less than in its neighboring country (Table 1, column 6, and 9).

As indicated above, the location is a significant factor in transportation, trade, and tourism sectors, which reflect the economic and social opportunities and benefits. Map 1 illustrates the location of small landlocked economies of the former USSR. Among indicated countries, Moldova is more integrated with a

well-developed EU market, since it is geographically a part of Europe. This location suggests that Moldova, having better connectivity and better tourism competitiveness (Table 1, column 5, and 8) has more opportunities in trade and tourism, compared to other considered countries. Both Tajikistan and Uzbekistan also have more favorable conditions that enable them to develop their business and tourism more effectively than Kyrgyzstan, since these countries are better connected to markets. Furthermore, Tajikistan and Uzbekistan have larger populations and numbers of international arrivals (Table 1, column 2, and 6), which are potential air passengers.

There is a strong linkage between the degree of air service liberalization and the level of air connectivity (Piermartini et al., 2008; Zhang et al., 2014; InterVISTAS, 2015; ICAO 2016; OECD-ITF, 2019, p.19). ICAO and many other scholars suggest that to increase air connectivity, market access (e.g. liberalization) should be improved (ICAO, 2020).

Moreover, if one uses the data filed in the ICAO and WTO documents, a comparative analysis is possible among countries with similar characteristics. Therefore, [this article assumes the hypothesis that] the theoretical model of Piermartini et al. (2008) could be applicable not only for Kyrgyzstan but also for other landlocked transitional economies, such as Moldova, Tajikistan, and Uzbekistan which share a geographical and economic background in common. Kyrgyzstan and other small landlocked economies in the CIS could also increase air passenger traffic growth and improve air connectivity by liberalizing their

Map 1. Location of Kyrgyzstan, Moldova, Tajikistan, and Uzbekistan

Source: The author, based on the Google Maps from https://www.google.com/maps. (Accessed 10 August 2020).

air services. Even Moldova, Tajikistan, and Uzbekistan could have a more significant liberalization effect than Kyrgyzstan for several reasons. First, Kyrgyzstan has the record for the worst connected state to the international air transport market (Arvis et al., 2011). Second, the country is the second-lowest state in GDP (WB, 2019). Third, Moldova, Tajikistan, and Uzbekistan have better tourism performances and tourism potential. Finally, Kyrgyzstan's fleet is less competitive, since the European Union (EU) banned all Kyrgyzstan's airlines from landing in EU countries due to their low safety standards (EU, 2020).

Above-mentioned challenges of the country considered, Kyrgyzstan introduced the concept of liberalization policy in 2002. The government published a policy document entitled "The Concept of Development of Civil Aviation of Kyrgyz Republic for the period 2002-2010." The document contained various goals and objectives aiming at the development of air transport and emphasized the need of regional and bilateral cooperation within the framework of an "open skies" policy (MOJ, 2002). Unfortunately, this policy was not implemented at all until 2012 when the discussion started again by the initiative of the Ministry of Economy.

Since then, a debate started between supporters and opponents of liberalization policy among policymakers, practitioners, and the business community. While the Ministry of Economy generally supported the liberalization policy, it expressed concern that infrastructure building was necessary for aviation safety, and that there was a challenge to implement the policy. On the other hand, the Ministry of Transportation argued that the national airline industry was not competitive enough to international ones and thus liberalization might be harmful.

Nevertheless, Kyrgyzstan's officials and business community today hope that liberalization can stimulate the air travel market, increasing air passenger traffic and making international air travel more accessible for tourists and citizens (MOE & GIZ, 2013, pp. 34, 41, 10; Times of CA 2019; RAI, 2019). Then, Kyrgyzstan's government unitarily declared the introduction of the 5th freedom rights regime in the country in early 2019 (MOJ, 2019). This liberalization measure means that foreign carriers can land in Kyrgyzstan, pick up passengers and cargo, and fly to another third country, thus enlarging the air service network and connectivity.

Unfortunately, the granted right [5th freedom] is the only regime accepted by

the government as a policy to liberalize air service. As a consequence, there are no new transit passenger services set-up through Kyrgyzstan since the declaration of the 5th freedom, except a few scheduled cargo flights (Kyrgyzaeronavigatsia, 2019). However, it is inevitable for the government to consider other regimes of market access in order to create a competitive environment in the air transport market. Yet, the government has not paid attention to other regimes. The regimes are the air service capacity clause, air service pricing, airline's withholding or ownership, designation of air carriers, exchange of statistics, and cooperation agreements among airlines, which are emphasized by the WTO as the related indicators of accessibility to the air transport market (Piermartini et al., 2008, p.5).

How has Kyrgyzstan implemented the liberalization policy so far? The next section will first discuss the structure of air service agreements.

3.2. Kyrgyzstan's Bilateral Structure of Air Service Agreements

As discussed in the previous section, the Chicago Convention from over 75 years ago harmonizes and establishes a general framework and rules for international civil aviation, including the main approaches for regulating air service agreements and market access between countries. Today, Kyrgyzstan is an independent state which became a full-fledged member of ICAO by ratifying the Chicago Convention in 1992 (MOJ, 1992).

Membership in ICAO allowed the country to perform the first international flights in its history, and thus the country began to take the first steps toward
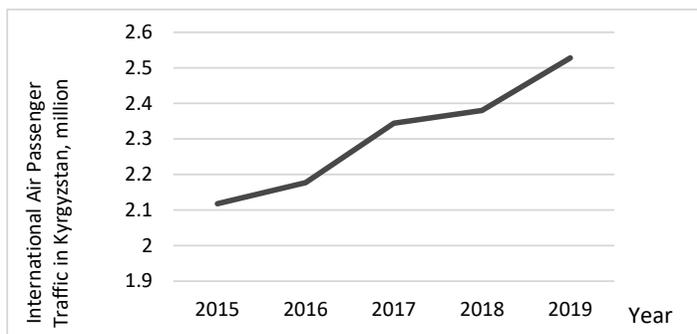

Figure 2. International Passenger Traffic in Kyrgyzstan for 2015-2019

Source: The author, based on the data on international passenger traffic in Manas, Osh, and Issyk-Kul airports from http://www.airport.kg/about/indicators. (Accessed 4 August 2020).

its linkage to the international air transport market. The first international flight was operated from Osh Airport (the second largest airport in the country) by the Osh Squadron on the Osh-Urumqi-Osh route on a Tu-154 aircraft in November 1992. Later, the first international flight was performed from Manas

Table 2. Data on Air Transport Market of Kyrgyzstan

1	2	3	4	5	6	7	8	9
Signatory state	Income group	KGZ's Traffic 2015	KGZ's Traffic 2019	5Y traffic change KGZ	Annual traffic average KGZ	City pairs	Carriers operate the services	Flag of carrier
UAE	High	41033	119361	+191%	+38%	2	2	2-UAE
UK	High	-	-	-	-	-	-	-
Qatar	High							
Kuwait	High	-	3759	+100%	+20%	1	1	1-KWT
Switzerland	High	-	-	-	-	-	-	-
Germany	High	-	-	-	-	-	-	-
Turkmenistan	Upper-middle	-	-	-	-	-	-	-
Malaysia	Upper-middle	-	-	-	-	-	-	-
Saudi Arabia	High	-	-	-	-	-	-	-
Turkey	Upper-middle	301296	365934	+21,5%	+4,3%	2	3	1-KGZ, 2-TUR
Czech Republic	High	-	-	-	-	-	-	-
Hong Kong	High	-	-	-	-	-	-	-
Greece	High	-	-	-	-	-	-	-
Tajikistan	Low	23288	9607	- 58%	- 11.6%	1	2	1-KGZ, 1-TJK
Indonesia	Upper-middle	-	-	-	-	-	-	-
Thailand	Upper-middle	-	-	-	-	-	-	-
Uzbekistan	Lower-middle	30816	48885	+59%	+11.8%	1	1	1-UZB
Austria	High	-	-	-	-	-	-	-
Armenia	Upper-middle	-	-	-	-	-	-	-
India	Lower-middle	14029	7324	- 48%	- 9.6%	1	1	1-KGZ
Kazakhstan	Upper-middle	63255	110186	+73%	+14.6%	2	4	1-KGZ, 3-KAZ
Mongolia	Lower-middle	5992	4529	- 24%	- 4,8%	1	1	TUR
Russia	Upper-middle	1481756	1736443	+17%	+3.4%	22	5	1-KGZ, 4-RUS
Ukraine	Lower-middle	-	-	-	-	-	-	-
Georgia	Upper-middle	-	-	-	-	-	-	-
China	Upper-middle	85294	57091	- 33%	- 8.25%	1	1	1-CHN
South Korea	High	-	-	-	-	-	-	-
Belarus	Upper-middle	-	-	-	-	-	-	-
Iran	Upper-middle	-	-	-	-	-	-	-
Pakistan	Lower-middle	-	-	-	-	-	-	-

Source: Compiled by author, based on the following data:

1) "World Bank Country and Lending Groups," the World Bank, 2019 from https://datahelpdesk. worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups. (Accessed 10 August 2020).

2) "Dynamics of passenger traffic at Manas, Osh and Issyk-Kul airports by destination for 2015- 2019," Civil Aviation Authority of Kyrgyz Republic, 2019.

3) The author's calculation of Five year and Annual passenger traffic change in Kyrgyzstan based on data in column 3, and 4.

4) "Central schedule of regular flights of KR," Kyrgyzaeronavigatsia SE, 2020 from http://kan. kg/en/flight_schedule. (Assessed 10 August 2020).

Airport (the country's largest airport) and went through the route between Bishkek and Istanbul in October 1994.

Today, the international airports of Kyrgyzstan are served by regular flights of 16 airlines (3 national and 13 foreign), which connect Kyrgyzstan with dozens of cities (Kyrgyzaeronavigatsia, 2019; MIA, 2019). The scheduled air transportation routes cover the countries of the CIS, Asia, and the Middle East. Meanwhile, the air traffic flow in Kyrgyzstan annually demonstrates positive dynamics, however, the number of international air passengers increased only by 20 percent over the past five years, as shown in Figure 2 (CAA, 2019a; CAA, 2019b; CAA, 2019c; MIA, 2020).

In the framework of international air service, the air transport market of the Kyrgyz Republic is based on the bilateral structure of air service agreements. Today, since the independence of Kyrgyzstan, the government has signed BASAs on air services with thirty states (CAA, 2020). However, only one third of the states with which Kyrgyzstan has BASAs have scheduled air services to Kyrgyzstan as shown in Table 2 (Kyrgyzaeronavigatsia, 2019).

3.3. Degree of Air Service Liberalization in Kyrgyzstan

As mentioned in previous sections, in order to examine the objective of this article, in particular how liberalization affects air passenger growth, first, the level of air service liberalization achieved by a country should be defined. Following the QUASAR methodology, the analysis of Kyrgyzstan's BASAs was conducted in this section in order to assess the degree of air service liberalization. QUASAR is a quantitative methodology which measures, on a universal scale, the degree of air service liberalization in the air transport market.

The QUASAR methodology was created by the WTO Secretariat with the aim of projecting comprehensive evaluations of market access regimes that are contained in air service agreements. Following the QUASAR methodology, Piermartini et al. (2008) analyzed more than 2000 BASAs of 184 states that are available in the ICAO World Air Service Agreements (WASA) database. They categorized agreements by different provisions and compiled an Air Liberalization Index (ALI) scoring table (Piermartini et al., 2008, p.25), where Kyrgyzstan was ranked as the 30th country in air service liberalization with the average score of ALI=5.93 [as for 2006].

ALI is an expert-based informed index that was constructed to assess seven major regimes of air service agreements that are related indicators to accessibility of air transport markets. Namely it addresses grant of rights, designation, withholding, capacity, tariff approval, statistics, and cooperative arrangement (WTO, 2006a, pp. I.12, II.649-II.668).[4]

Table 3 provides the QUASAR ALI Weighting System which measures each of the seven features of BASAs indicated above in four different variants of the ALI schemes, namely standard (ALI_st) and other alternative indexes, such as 5th freedom (ALI_5th), withholding or ownership (ALI_own), and designation

Table 3. ALI Weighting System (QUASAR)

Provision/Regime		ALI points			
		ALI_st	ALI_5th	ALI_own	ALI_des
Grant of rights	3rd, 4th	0	0	0	0
	5th freedom	6	12	5	5.5
	7th freedom	6	5	5	5.5
	Cabotage	6	5	5	5.5
Capacity	Predomination	0	0	0	0
	"Other restrictive"	2	1.5	1.5	1.5
	Bermuda I	4	3.5	3.5	3.5
	"Other liberal"	6	5	5	5.5
	Free determination	8	7	7	7.5
Tariffs	Dual approval	0	0	0	0
	Economy of Origin	3	2.5	2.5	2.5
	Dual disapproval	6	5	5	5.5
	Zone pricing	4 or 7	3.5 or 6	3.5 or 6	3.5 or 6.5
	Free pricing	8	7	7	7.5
Withholding	Substantial ownership and effective control	0	0	0	0
	Community of interest	4	3.5	7	3.5
	Principal place of business	8	7	14	7.5
Designation	Single designation	0	0	0	0
	Multiple designation	4	3.5	3.5	7.5
Statistic	Exchange of statistic	0	0	0	0
	No exchange of statistic	1	1	1	1
Cooperative arrangements	Not allowed	0	0	0	0
	Allowed	3	2.5	2.5	2.5
TOTAL		50	50	50	50

Source: QUASAR, the WTO (2006b, pp. I.9, II.649-II.661) from https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/S/W00.pdf&Open=True. (Accessed 10 August 2020).

Table 4. Air Liberalization Index for Kyrgyzstan's air service agreements

1	2	3	4	5	6
Signatory state	Date of signing	ALI_st	ALI_5th	ALI_own	ALI_des
*Transitional, semi-liberal BASAs (ALI_st 15-40)***					
United Arab Emirates	Dec 03, 2014	28	31.0	24.0	29.5
United Kingdom*	Dec 08,1994	20	24.0	17.0	22.0
Qatar	Jan 21, 2018	18	15.5	15.5	20.5
Kuwait	Dec 13, 2015	17	21.5	21.5	19.5
Switzerland	Oct 25, 2002	16	14.0	14.0	18.5
*Traditional BASAs (ALI_st 0-15)***					
Germany*	May 13, 1997	11	9.5	13.0	13.5
Turkmenistan*	Dec 24, 1993	11	9.5	9.5	14.0
Malaysia*	Nov 17, 2000	10	15.5	8.5	13.0
Saudi Arabia	Dec 02,2014	10	8.5	8.5	13.0
Turkey	Oct 14, 1994 (amended in Sep 01, 2018)	10	8.5	8.5	13.0
Czech Republic	Apr 29, 2004	8	7.0	7.0	11.0
Hong Kong* (China)	July 15, 1999	8	7.0	14.0	7.5
Greece	Nov 01, 2004	7	6.0	6.0	10.0
Tajikistan	May 26, 2004	7	6.0	6.0	10.0
Indonesia*	July 18, 1995	6	12.0	5.0	5.5
Thailand	Jan 15, 2003	5	4.5	4.5	8.5
Uzbekistan	Sept 04, 1996	5	4.5	4.5	8.5
Austria*	Mar 17, 1998	4	3.5	3.5	7.5
Armenia	Apr 04, 2002	4	3.5	3.5	7.5
India*	Sept 08, 1993	4	3.5	3.5	7.5
Kazakhstan	Feb 18, 1994	4	3.5	3.5	7.5
Mongolia	Dec 04, 1999	4	3.5	3.5	7.5
Russia	Mar 28, 1996	4	3.5	3.5	7.5
Ukraine	Feb 23, 1993	4	3.5	3.5	7.5
1	2	3	4	5	6
Georgia*	April 22, 1997	4	3.5	3.5	7.5
China	July 04, 1996 (amended in Sep 22, 1999)	4	3.5	3.5	7.5
South Korea	July 11, 2006	4	3.5	3.5	7.5
Belarus	Feb 02, 2000	0	0.0	0	0.0
Iran*	June 22, 1993	0	0.0	0	0.0
Pakistan*	Oct 14, 1993	0	0.0	0	0.0
	ALI_st average	7.9	7.58	7.4	10.41

*ALI calculated by WTO (QUASAR database on S/C/W/270/Add.1, 2006, p.II-10);
**Distribution of ALI indexes by WTO (WTO, 2006a, p.I.39)..

Note: There is no any amendment to agreements calculated by WTO after 2008, except Turkey.
Source: The author's calculation of ALI of BASAs, based on the analysis of Kyrgyzstan's BASAs on Centralized data bank of legal information of the Kyrgyz Republic (MOJ, 2020) from http://cbd.minjust.gov.kg/ru-ru/mds/Search (Accessed 10 August 2020).

(ALI_des). Each alternative index, ALI_5th, ALI_own, and ALI_des, emphasizes one related specific feature of BASAs that is linked to geographical and economical specific factors. For instance, those countries that faced difficulties to provide direct air service to demanded markets should focus on ALI_5[th], in order to secure 5th freedom rights for national air carriers, since this regime could provide alternative air traffic via a third state. However, this section focuses on ALI_st, since this index indicates the overall degree of air liberalization (WTO, 2006a, pp.II.649-II.668). The value of ALI ranges between 0 to 50, as shown in Table 3, where 0 is the most restrictive air service agreement, and 50 is the most liberal. Indeed, the WTO generally evaluates the overall degree of each state's liberalization by the average ALI score. Depending on the location of the average ALI_st, the WTO identifies each state's regime as traditional, semi-liberal (i.e. transitional), or full liberalization.[5]

Table 4 above is the result of the application of the QUASAR methodology that was shown in Table 3. Table 4 summarizes the results of analysis conducted for all Kyrgyzstan's BASAs, where related information on regimes (i.e. features) of specific agreements was extracted from the Centralized Data Bank of Legal Information of Kyrgyz Republic (MOJ, 2020). Table 4 demonstrates individual ALI indexes for specific BASAs, where ALI_st score ranges from low 0 to high 28 for Kyrgyzstan.

Table 4 illustrates that restrictive regimes are the most frequent in Kyrgyzstan's BASAs; among 30 BASAs, there are 25 traditional agreements (85%), 5 semi-liberal (15%), and no full liberalization agreements (0%). As shown in Table 4, Kyrgyzstan's calculated average air liberalization index score is assessed as ALI_st=7.9, which is much lower than the score of ALI_st=15. This average score suggests that Kyrgyzstan's air service regulation remains restrictive.

In order to clarify the allocation of ALI's indexes for the overall picture of Kyrgyzstan's agreements with all the countries in Table 4, Histogram A (Figure 3) below was formulated. Histogram A illustrates that 85% of Kyrgyzstan's BASAs are concentrated among traditional agreements, while around 74% (Histogram B) of air service agreements worldwide are traditional. These results are similar with the theory that restrictive regimes of air service liberalization are the most frequent worldwide (Piermartini et al., 2008, p.9; ICAO 2015).
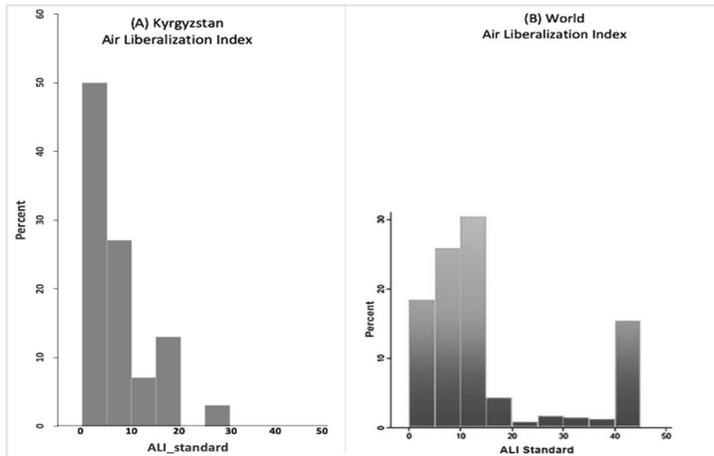
Figure 3. Histograms for Liberalization Degree of Kyrgyzstan's Air Transport Market and the World

Note: Histograms provide percentage of BASAs' number by ALI regimes.

Source:

1）Histogram A: the author, based on the data in column 3 of Table 4 of this article.

2）Histogram B: "Liberalization of Air Transport Services and Passenger Traffic," Piermartini et al. (2008, p.10) from https://www.wto.org/english/res_e/reser_e/ersd200806_e.pdf (Accessed 10 August 2020).

Obviously, policy implementation is not a one-time measure, but a long-term ongoing process which could take from a few months to decades (InterVISTAS-ga, 2006, p.62; Schlumberger et al., 2014, p.171). To shed a light on this, the liberalization index progress is also analyzed in this section by using data in Table 4, column 1, 2, and 3.

Table 5 below illustrates air liberalization index changes over time. Table 5 shows that during the first five years of Kyrgyzstan's independence, it became party to very restrictive BASAs. Although Kyrgyzstan is not in a permanent state of air transport market stagnation, there are very few changes in market access. The ALI score increased only by 2.6 points over the last three decades, from ALI_st=5.3 in 1991-1996 to ALI_st=7.9 in 2020. As stated previously, Kyrgyzstan's score for air service liberalization, namely 7.9 during the period of 2015-20, falls within the traditional domain.

In conclusion, this section provided evidence that the air transport market of Kyrgyzstan remains traditional. This means that Kyrgyzstan so far could not make much progress regarding liberalization. To analyze the reasons for this

Table 5. ALI Progress for Kyrgyzstan 1991-2020

Regime	1991-1996 (12 BASAs)	1997-2002 (22 BASAs)	2003-2008 (26 BASAs)	2009-2014 (28 BASAs)	2015-2020 (30 BASAs)
ALI_st, average	5.3	5.8	5.9	6.8	7.9

Source: The author, based on data in column 1, 2, and 3 of Table 4.

goes beyond the scope of this article and should be analyzed in a future study.

The next section examines the objective of this article and illustrates how traditional air service regimes impact passenger traffic, and projects the opportunity for Kyrgyzstan to attain further liberalization of international air service.

IV. Modeling the Impact of Air Service Liberalization to Passenger Traffic Flow

Kyrgyzstan has developed its air transport and integrated it into global air transport for almost three decades. However, as seen from the previous section, the government has not implemented policies to significantly bring progress in a context of relaxing the air transport market. Therefore, the question is what potential Kyrgyzstan has for better connectivity if air service liberalization is implemented more in the future. This section develops a quantitative model to examine the current and projected impact of air service regimes to air passenger traffic. This will show that the theory, developed by Priermartini et al. (2008), is also applicable to small-sized landlocked economies.

Specifically, to estimate the correlation between the air service liberalization index and air traffic change, the Gravity Model equation proposed by Airport Council International (ACI) is applied in this analysis (ACI, 2016, p.11). The ACI in the Guide to World Airport Traffic Forecasts emphasizes this method as an alternative tool of analyzing medium- or long-term traffic trends. Also, this technique, being a classic tool for analyzing and forecasting a trend, can be performed automatically by using Microsoft Excel software (Crymble, 2019). The formula for a simple logarithmic regression is:

$$(1)\ \ln(PassengerGrowth) = a \times \ln(ALI\_st) + b$$

<div align="right">(ACI, 2016, p.12; Crymble, 2019)</div>

where *PassengerGrowth* is the passenger traffic change between BASA signatories, *a* is constant slope/coefficient of regression, and b is a constant chosen to minimize selection errors.

The calculation is based on data taken for countries which have point-to-point flights with Kyrgyzstan, namely the UAE, Kuwait, Turkey, Tajikistan, Uzbekistan, India, Kazakhstan, Mongolia, Russia, and China. The data on air passenger traffic used for the analysis is indicated in Table 2 (column 6), and Table 4 (column 3). The average annual data on passenger traffic changes for each operational air service and the corresponding specific ALI indexes are applied in the Gravity Model (1) to create a trend of market direction. The period of 2015-2019 is selected for this study, due to the fact that most liberal BASAs were introduced during this period, and this period is more relevant to the current economic trends of Kyrgyzstan.

Figure 4 shows the results of analysis of the Gravity Model (1), where the passenger traffic trendline in the graph determines the current and projected direction in the market based on the estimation of air passenger statistics and related ALIs for a specific BASA. In particular, the traffic trendline of Figure 4 demonstrates a positive effect of air service liberalization in passenger traffic growth in Kyrgyzstan, meaning that further liberalization brings an increase of annual passenger growth. The coefficient of determination, or R^2, of Figure 4 equals 0.54, which indicates a moderate positive relationship between ALI and traffic growth (i.e. 54% of the variabilities follow the trend).

Particularly, the trendline shows that liberalization of Kyrgyzstan's BASAs to ALI_st=34 could bring an increase of passenger flow by about 32.4 percent
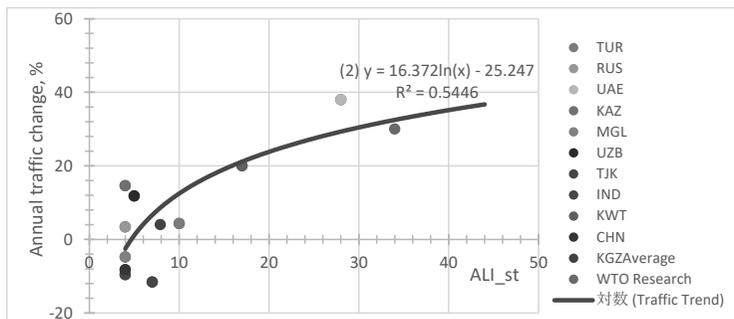

Figure 4. Correlation Between Air Liberalization and Traffic Growth in Kyrgyzstan
Source: The author, based on data in Table 2 (column 6), and Table 4 (column 3) of this article.

[32.4=16.372*In(34) - 25.247].[6] Thus, the result of this analysis confirms that the estimation of Priermartini et al. (2008), is also valid for Kyrgyzstan. Meanwhile, the result suggests that the current average value of ALI_st = 7.9 for Kyrgyzstan correlates with the annual passenger traffic growth of about 8 percent.

The results of this study (Figure 4) suggest that Kyrgyzstan has significant room for greater passenger traffic growth throughout further air service liberalization. In other words, if Kyrgyzstan creates a semi-liberal air transport market with an average ALI_st=28 (as with UAE), it could expect annual passenger growth by 29 percent. In that case, if Kyrgyzstan successfully implemented a full liberalization regime with a score of ALI=40, it could expect annual passenger growth by 35 percent.

V. Conclusion

International air passenger transport is a vital mode of transportation that facilitates development of tourism, creates jobs, and sets up and maintains businesses and trade relationships between markets that are essential for developing and landlocked economies which face connectivity challenges, as with Kyrgyzstan and other small landlocked economies in the CIS (ATAG, 2018, p.16). Indeed, liberalization of air service makes a notable contribution in the process of economic development and integration into well-developed markets (ICAO, 2016).

This study reviewed the current degree of air service liberalization in Kyrgyzstan to define the impact of liberalization on air passenger traffic flow. The results of this study suggest that the government of Kyrgyzstan has not made significant policy changes to liberalize the regulatory structure of air services. Moreover, this study provides robust evidence that despite slight steady passenger traffic growth, the air transport market has not been liberalized in Kyrgyzstan, and in general it remains restrictive; the air liberalization index for Kyrgyzstan is ALI_st=7.9.

The other finding of this study suggests that Kyrgyzstan is not realizing its full potential of air transportation. By having a restrictive air service regime, the volume of air passenger traffic in Kyrgyzstan rises only 8 percent annually. However, the Gravity analysis provides evidence that further liberalization of

air service could bring a greater positive effect to passenger traffic flow, and for the country's air connectivity, too. Particularly, successfully implementing a semi-liberal regime could bring passenger growth by 29 percent and a full liberalization regime by 35 percent.

The importance of this study is that the theoretical model of Piermartini et al. (2008) could also be applicable in landlocked transitional economies, such as Moldova, Tajikistan, and Uzbekistan. Even those countries could experience a much better effect of liberalization than Kyrgyzstan due to the obvious advantages they have. To sum up, this article emphasizes the importance of air service liberalization as a policy tool for developing landlocked states, and liberalization could facilitate air connectivity, tourism and trade, and substantial economic growth.

Bibliography

ACI (2016). *ACI Guide to World Airport Traffic Forecasts*. Montreal: ACI World.

Airbus (2019). *Cities, Airports & Aircraft. Global Market Forecast 2019-2038*. France: Airbus S.A.S.

Arvis, J-F. and Shepherd, B. (2011). "The Air Connectivity Index: Measuring Integration in the Global Air Transport Network." *The WB Working Paper 5722*. http:// documents1.worldbank.org/curated/en/859151468161649899/pdf/ WPS5722.pdf, accessed 17 July 2020.

ATAG (2018). *Aviation: Benefits Beyond Borders*. Geneva: Air Transport Action Group. https://aviationbenefits.org/media/166711/abbb18_full-report_web.pdf, accessed 10 August 2020.

Bowen, J., and Rodrigue, J-P. (2020). "Air Transport." *The Geography of Transport Systems*. https://transportgeography.org/?page_id=1765, accessed 10 August 2020.

CAA of Kyrgyz Republic (CAA) (2019a). *Dynamics of air passenger traffic at Manas International Airport, by destinations for 2015-2019*. Bishkek: CAA, Airport Certification and Air Transportation Regulation Division.

——— (2019b). *Dynamics of air passenger traffic at Osh International Airport, by destinations for 2015-2019*. Bishkek; CAA, Airport Certification and Air Transportation Regulation Division.

——— (2019c). *Dynamics of air passenger traffic at Issyk-Kul International Airport, by destination for 2017-2019*. Bishkek: CAA, Airport Certification and Air Transportation Regulation Division.

——— (2020). *List of air services agreements signed by the Kyrgyz Republic. International Activity*. http://caa.kg/ru/deyatelnost/mejdunarodnaya-deyatelnost/, accessed 10 August 2020.

Crymble, A. (2019). "Introduction to Gravity Models of Migration & Trade." *The Programing Historian*. https://programminghistorian.org/en/lessons/gravity-model, assessed 10 August 2020.

European Union (EU) (2020). "Aviation Safety: European Commission adopts new EU Air Safety List." *Mobility and Transport*. https://ec.europa.eu/transport/modes/air/ news/2020-06-02-commission-updates-eu-air-safety-list_en, accessed 10 August 2020.

IATA (2020). *The importance of air transport to Kyrgyzstan*. IATA https://www.iata.org/ en/iata-repository/publications/economic-reports/Kyrgyzstan-value-of-aviation/, accessed 7 September 2020.

ICAO (1944). *Convention on International Civil Aviation*. Chicago. https://www.icao.int/ publications/Documents/7300_orig.pdf, accessed 10 August 2020.

——— (2015). *Air Transport Regulation Panel (ATRP) Thirteenth Meeting. Competition Provisions of Existing Air Services Agreements in Global or Regional Frameworks*. Montreal: ICAO Secretariat, 1-4 September 2015. https://www.icao.int/Meetings/ iats2016/Documents/IP2.pdf, accessed 10 August 2020.

——— (2016). *Overview of regulatory and industry developments in international air transport*. ICAO Secretariat, September 2016. https://www.icao.int/Meetings/a39/ Documents/Overview_of_Regulatory_and_Industry_Developments_in_International_ Air_Transport.pdf, accessed 10 August 2020.

——— (2017). *Policy and Guidance Material on the Economic Regulation of International Air Transport*. Doc 9587, Fourth edition. Montreal: ICAO.

——— (2018). *Manual on the Regulation of International Air Transport. Doc 9626, Third*

Edition. Montreal: ICAO.

―――― (2019). *ICAO Member States*. https://www.icao.int/MemberStates/Member%20 States.English.pdf, accessed 17 July 2020.

―――― (2020). "Connectivity." *Economic Development*. https://www.icao.int/sustainability/ Pages/Connectivity.aspx, accessed 10 August 2020.

InterVISTAS (2009). *The Impact of International Air Service Liberalisation on Brazil*. London: InterVISTAS-EU Consulting Inc. https://www.iata.org/en/iata-repository/ publications/economic-reports/brazil-benefits-from-further-liberalization/, accessed 17 July 2020.

―――― (2015). *The Economic Impacts of Air Service Liberalization*. Washington, DC: InterVistas Consulting Inc. http://www.intervistas.com/wp-content/uploads/2015/07/ The_Economic_Impacts_of_Air_Liberalization_2015.pdf, accessed 17 July 2020.

InterVISTAS-ga (2006). *The Economic Impact of Air Service Liberalization*. Washington, DC: Inter*VISTAS*-ga^2 Consulting, Inc. http://www.intervistas.com/downloads/ Economic_Impact_of_Air_Service_Liberalization_Final_Report.pdf, accessed 17 July 2020.

InterVISTAS-EU (2009a). *The Impact of International Air Service Liberalisation on Chile*. London: InterVISTAS-EU Consulting Inc. https://www.iata.org/en/iata-repository/ publications/economic-reports/chile-benefits-from-further-liberalization/, accessed 17 July 2020.

InterVISTAS-EU (2009b). *The Impact of International Air Service Liberalisation on the Unitedd Arab Emirates*. London: InterVISTAS-EU Consulting Inc. https://www.iata. org/en/iata-repository/publications/economic-reports/uae-benefits-from-further-liberalization/, accessed 17 July 2020.

Russian Aviation Insider (RAI) (2019). "Insight: Kyrgyzstan adopts controversial opens-skies policy." Russian Aviation Insider. http://www.rusaviainsider.com/insight-kyrgyzstan-adopts-controversial-opens-skies-policy/, accessed 16 November 2020.

Kyrgyzaeronavigatsia SE (2019). "Central schedule of regular flights of KR, 2019-2020." *Flight Schedule*. http://kan.kg/en/flight_schedule, accessed 10 August 2020.

Manas International Airport OJSC (MIA) (2020). "Производственные показатели ОАО «М АМ»." [Performance indicators of MIA OJSC]. http://www.airport.kg/about/indicators, accessed 10 August 2020.

―――― (2019). "Сезонное Расписание." [Seasonal schedule 2019-2020]. http://www.airport. kg/schedule, accessed 10 August 2020.

Ministry of Economics of Kyrgyz Republic with the assistance of the Die Deutsche Gesellschaft für Internationale Zusammenarbeit (MOE & GIZ) (2013). *Implementation Practicability for Open Skies Project in Civil Aviation Sector of the Kyrgyz Republic*. Bishkek: MOE & GIZ.

Ministry of Justice of Kyrgyz Republic (MOJ) (1992). "Постановление Верховного Совета Республики Кыргызстан №1117-XII от 18 декабря 1992 года "О ратификации К онвенции о международной гражданской авиации."" [Resolution of the Supreme Council of the Kyrgyz Republic № 1117-XII 18 December 1992 " O n the ratification of the Convention on International civil aviation."]. *Centralized data bank of legal information of the Kyrgyz Republic*. http://cbd.minjust.gov.kg/act/view/ru-ru/17485?cl=ru-ru, accessed 17 July 2020.

―――― (2002). "Концепция развития гражданской авиации Кыргызской Республики." [The Concept of Development of Civil Aviation of Kyrgyz Republic]. *Centralized data bank of legal information of the Kyrgyz Republic*. http://cbd.minjust.gov.kg/act/view/

ru-ru/53537?cl=ru-ru, accessed 17 July 2020.

———— (2019). "Закон Кыргызской Республики №3 от 11 января 2019 года "О внесени и изменений в Воздушный Кодекс Кыргызской Республики."" [Kyrgyz Law №3, 11 January 2019 "On amendments to Air code of Kyrgyz Republic."]. *Centralized data bank of legal information of the Kyrgyz Republic*. http://cbd.minjust.gov.kg/act/view/ru-ru/111858, accessed 17 July 2020.

———— (2020). *Централизованный Банк Данных Правовой Информации Кыргызской Республики* [Centralized Data Bank of Legal Information of The Kyrgyz Republic]. http://cbd.minjust.gov.kg, accessed 17 July 2020.

OECD-ITF (2014). *Air Service Agreement Liberalization and Airline Alliances*. Paris: ITF. 2020. https://www.itf-oecd.org/sites/default/files/docs/14airserviceagreements.pdf, accessed 17 July 2020.

———— (2019). *Liberalisation of Air Transport*. Paris: ITF. https://www.itf-oecd.org/sites/default/files/docs/liberalisation_air_transport_1.pdf, accessed 10 August 2020.

Piermartini, R., and Rousova, L. (2008). "Liberalisation of air transport services and passenger traffic." *WTO Staff Working Paper ERSD-2008-06*. https://www.wto.org/english/res_e/reser_e/ersd200806_e.pdf, accessed 10 August 2020.

Schober, P., Boer, C., and Schwarte. L.A. (2018). "Correlation Coefficients: Appropriate Use and Interpretation." *Anesthesia & Analgesia 126 (5):1*. https://www.researchgate.net/publication/323388613_Correlation_ Coefficients_Appropriate_Use_and_Interpretation, accessed 10 August 2020.

Schlumberger, C.E. and Weisskopf, N. (2014). *Ready for Takeoff? The Potential for Low-Cost Carriers in Developing Countries*. Washington, DC: The World Bank.

The Industry High Level Group (IHLG) (2019). *Aviation Benefits Report*. ACI, CANSO, IATA, ICAO, and ICCAIA. https://www.icao.int/sustainability/Documents/AVIATION-BENEFITS-2019-web.pdf, accessed 17 July 2020.

The Times of Central Asia (2019). "To attract foreign investment, Central Asia countries introduce open skies policy." *The Times of Central Asia*. https://www.timesca.com/index.php/news/26-opinion-head/20742-to-attract-foreign-investment-central-asia-countries-introduce-open-skies-policy, accessed 16 November 2020.

The World Bank (WB) 2020. "Air transport, passengers carried." *The World Bank Data*. https://data.worldbank.org/indicator/IS.AIR.PSGR?end=2018&start=1970&view=chart, accessed 10 August 2020.

———— (2019). "The World Bank Data, Kyrgyz Republic." *The World Bank Data*. https://data.worldbank.org/country/kyrgyz-republic?view=chart, accessed 17 July 2020.

The World Bank, and United Nations (WB-UN) 2014. "World Bank-United Nations report in preparation for the 2nd United Nations Conference on Landlocked Developing Countries (LLDCs)." *A Ten-Year Review. World Bank-United Nations report in preparation for the 2nd United Nations Conference on Landlocked Developing Countries (LLDCs)* .

WEF (2019). *The Travel & Tourism Competitiveness Report 2019*. Insight Report, Geneva: The World Economic Forum. http://www3.weforum.org/docs/WEF_TTCR_2019.pdf, accessed 10 August 2020.

WTO (2006a). *Second Review of the Air Transport Annex Developments in the Air Transport Sector (Part Two). Quantitative Air Services Agreements Review (QUASAR)* . WTO Council for Trade in Services. https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/S/W00.pdf&Open=True, accessed 10 August 2020.

WTO (2006b). *"S/C/W/270/Add.1." Part D Methodological Notes and Possible Refinements*.

WTO Council for Trade in Services. https://www.wto.org/english/tratop_e/serv_e/transport_e/quasar_partd_e.pdf, accessed 18 July 2020.

WTTC (2020). "*Economic Impact Reports.* " WTTC Research. https://wttc.org/Research/Economic-Impact, accessed 17 July 2020.

Zhang, Y., and Findlay, C. (2014). "Air transport policy and its impacts on passenger traffic and tourist flows." *Journal of Air Transport Management* 42-48.

Endnotes

1   The traditional approach refers to restrictive regimes of air service regulation regimes: the transitional one includes semi-liberal provisions. A full liberalization approach refers to entire market access regimes of air service agreements (ICAO, 2018, pp.A1-2 - A1-118).

2   An open skies air service agreement creates a very liberal market between the two signatory nations. It allows any number of airlines from either government unlimited rights to fly between any city-pair involving the two countries without significant restrictions on capacity, frequency, or price. It generally also includes the right to operate 5th and 6th freedom. (InterVISTAS-EU, 2009a, p.viii)

3   1st freedom - the right of a carrier from one state to fly across another state without landing; 2nd freedom - the right of a carrier from one state to land in another state without picking-up or dropping off traffic; 3rd freedom - the right of a carrier to carry traffic from its home state to another state; 4th freedom - the right of a carrier to carry traffic to its home state from another state; 5th freedom - the right of a carrier from one state to operate a flight to or from two other states and pick-up or drop -off traffic between those last two states; 6th freedom - the right of a carrier to carry traffic between two foreign states via its home state; 7th freedom - the right of a carrier from one state to carry traffic between two other states on a flight that has no point in the carrier's home state; 8th freedom - the right of a carrier from one state to carry traffic between two points in another state on a flight between both states; 9th freedom - the right of a carrier from one state to carry traffic between two points in another state on a flight taking place entirely in that State; Cabotage - the right by a carrier from one country to carry passenger and/or freight traffic exclusively between two points in another country. (OECD-ITF, 2019, pp.40, 214).

4   Grant of rights defines the rights to provide air service between two states. Indeed, the WTO highlights the 5th and 7th freedom and cabotage. Basically, traditional agreements include the rights of 3rd and 4th freedom of air. More liberal agreements also include 5th freedom rights. Few agreements contain 7th freedom and cabotage, which belong to the high level of liberalization approach; Capacity clause defines the approach to determine the capacity (volume of traffic, frequency of service and/or aircraft type(s) of an agreed service. The most restrictive agreements include predetermination of capacity, which requires that capacity is agreed prior to the service commencement. Bermuda-I is a semi-liberal regime which gives limited rights to set capacities to the carriers without a prior approval by governments. Finally, free determination excludes capacity determination from regulatory control; Tariff approval refers to the air services pricing regime. Dual approval of air service tariffs is the most restrictive approach, where both BASA signatories must approve the tariff before it can be applied. Free pricing regime is the most liberal regime, when tariffs are not obligatory to the approval parties. The three types of semi-liberal regimes, which are country of origin disapproval (tariffs may be disapproved only by the country of origin), dual disapproval (tariffs have to be disapproved by both countries to make them ineffective), and zone pricing (signatories agree to approve tariffs that falling within a specific range and meeting certain characteristics may); Withholding or ownership defines the conditions required for the designated air carrier of the other state to operate in the home country. Restrictive agreements require that designated carrier must be substantially owned and effectively controlled by nationals, where designated carrier is the "flag carrier" of a

signatory state. More liberal agreements include the regimes of community of interests and principal place of business, meaning that the foreign carrier can be also designated by the foreign country; Designation defines the rights to designate one (single designation), which is a restrictive regime or more liberal approach that allows for the designation of more than one (multiple designation) carriers to operate an air service between two signatory countries; Statistics defines the rules which regulate exchange of carriers' performance statistics between countries or their carriers. Restrictive regime requires statistics exchange, and a more liberal approach excludes exchange of carriers' statistics; Cooperative arrangements define the rights for the designated carriers to enter into code sharing agreements or alliances. Restrictive agreements do not allow this type of agreement. In contrast, cooperative arrangements are allowed in more liberal agreements (Piermartini et al., 2008, p.5).

5　The ranging scale proposed by WTO: ALI_st in the range 0-15 refers to traditional BASAs, ALI_st in range 15-40 belongs to semi-liberal, and ALI_st between 40-45 introduces full liberalization BASAs (Piermartini et al., 2008, p.9; WTO, 2006a, p.I.39).

6　Formula (2) in Figure 4.

Abstract

The Analysis of Air Service Liberalization in Kyrgyzstan: Measuring the Degree of Liberalization and Impact to Passenger Traffic Flow

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Many scholars have pointed out that air service liberalization policy improves air connectivity and contributes in the process of economic development and integration into the well-developed markets (Arvis et al., 2011). Therefore, air service liberalization has become extremely important for developing landlocked economies, which faced the challenges with low air connectivity, such as Kyrgyzstan and other small-sized economies in CIS. On the other hand, Piermartini et al. (2008) estimated that liberalization leads to notable air passenger traffic growth. Thus, in theory, Kyrgyzstan could also receive benefits of liberalization, that leading to liberalized air transport market and improved connectivity. In Kyrgyzstan's case, this study attempts to test the hypothesis that semi-liberal air service regime leads to air passenger traffic by around 30 percent. The air service liberalization refers to the process of deregulation the air service agreements in terms of air market access between contracting states.

The author employs a quantitative analysis of Kyrgyzstan's bilateral air service agreements and statistics of passenger flow. In this study author applied two approaches. First, the QUASAR methodology to measure the degree of liberalization of air service agreements. Second, the Gravity Model is employed to examine the impact of liberalization to air passenger traffic flow. This study also investigates whether the model of Priermartini et al. (2008) could also be applied to other small landlocked economies in CIS.

One of the findings showed the air transport market has not liberalized in Kyrgyzstan, and in general it remains restrictive. However, this study found that Kyrgyzstan is not realizing its full potential of air transportation, in

particular, a semi-liberal regime could bring passenger growth by 29 percent and a full liberalization regime by 35 percent. Other findings also suggest that other small landlocked economies in CIS could have much better effect of liberalization than Kyrgyzstan.