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ENTERPRISE DEVELOPMENT AND MARKET COMPETITIVENESS (EDMC)

COMPETITIVENESS OF ARMENIA'S AIR TRANSPORT SECTOR

January 19, 2012

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ENTERPRISE DEVELOPMENT AND MARKET COMPETITIVENESS PROJECT

QUALITATIVE AND QUANTITATIVE ANALYSIS IN THE
SELECTION OF VALUE CHAINS FOR THE EDMC PROJECT
FINAL REPORT

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Acronyms, Abbreviations and Codes

ASA	Air Service Agreement/s
ATC	Air Traffic Control
CAGR	Compound Annual Growth Rate
CUTE	Common User Terminal Equipment
EUR	Euro
EVN	Zvartnots International Airport
GDCA	General Department of Civil Aviation of Armenia
IATA	International Air Transport Association
LWN	Shirak International Airport
MTOW	Maximum Take-Off Weight
OAG	Official Airline Guide
PAX	Passenger
PFC	Passenger Facility Charge
PRM	Passengers with Reduced Mobility
SARPs	Standards and Recommended Practices
TBS	Tbilisi International Airport
USD	United States Dollar
WEF	World Economic Forum
VKO	Moscow Vnukovo Airport

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Executive Summary

Background and Institutional Framework

Sponsored by USAID, a competitiveness study of Armenia's air transport sector was developed in 2008 amid concerns of the airline industry regarding the high costs of operating in Armenia and its effect in the competitiveness of the sector. The study included an analysis of the institutional framework, a comparison of the infrastructure costs and an outlook of the air transport market in light of the prevalent aviation policy.

The present study is an updated review of the 2008 report, with the core objective to measure the current level of competitiveness of the country in terms of air travel. In addition to an updated review of the institutional framework, a market outlook analysis and an assessment of the cost for infrastructure, this report now incorporates a comparative analysis of the cost of travelling to Armenia as opposed to comparative routes. This in turn provides a clear indication of the competitiveness impact of the current aviation policy framework. The examination concludes with a concise review of the Georgian case as a relevant aviation sector liberalization example, and we look briefly as well at some recent evidence on the impact of air transport liberalization on tourism inflows in the Caribbean. This is followed by general conclusions/recommendations.

The institutional framework of the air transport sector is still characterized by a high degree of concentration of functions by the General Department of Civil Aviation (GDCA). The GDCA has direct responsibilities for policy making, technical regulation, and accidents investigation functions. In addition it has some indirect influence on the operation of local airlines through informal links with Armavia and Atlantis European Airways.

The different roles should be performed by separate bodies, while the concentration of functions in the GDCA creates conflicts of interest, which undermine the wellbeing of the sector.

Policy Setting and Technical Regulation: the effective performance of the institutional framework is often compromised when the functions of policy-making and technical regulation are performed by a single body. For example, it is essential for the technical regulator to be absolutely objective when carrying out safety oversights on local carriers, regardless of any policy that may encourage the protection of the local airlines. Another potential problem that may arise from the combination of these functions is the manipulation of technicalities to implement policy. Considering that the air service agreements that govern air transport are very complex and time consuming to negotiate, it is important that policies be stated in a clear and transparent way.

Technical Regulation and Operations: if the regulator is in some way related to the operation of airlines (even through informal influence), it may pose a conflict of interest since it may be regulating itself. The conflict is such that regulation could become absolutely ineffective, seriously compromising the level of safety of the sector in general.

Accidents Investigation and Technical Regulation: based on a Government Decree¹, the lack of separation between the investigator and the technical regulator creates a conflict of interest when the proper execution of the regulation could have played a role in an accident. If the GDCA regulates and investigates, it becomes "judge and party" at the same time.

The concentration of most functions of the institutional framework in a single body (the GDCA in this case), coupled with the protectionist policies that shield the local airlines from foreign competition, is contrary to international best practices and results in an environment that prevents

¹ Government Decree of 11.12.2003 N 1777-N

the healthy development of the civil aviation sector.

Through the development of trade and tourism, aviation has significant long-term economic benefits and is an engine of development. The shortcomings of Armenia's institutional framework might affect the progress of the sector and the economy of the country through reduced connectivity and higher prices.

The institutional framework should be reformed so that there is a proper separation of functions and to ensure the absence of conflicts of interests. The policy setting functions should be assigned to the Ministry of Transport and Communications. The GDCA could remain as the technical regulator, and proper measures should be taken to ensure its complete independence from the entities/companies performing the other functions. Lastly, the accident investigation functions should be transferred to an independent body that reports directly to the President or the Parliament to guarantee unbiased results.

Benchmarking of Aeronautical Charges

The benchmarking of infrastructure charges assessed the aeronautical charges at EVN by comparing them to 18 airports from 15 countries in Eastern and Western Europe, the Middle East, and Asia. The goal of the benchmarking analysis is to assess the level of charges faced by airlines and passengers at EVN.

The analysis covered infrastructure charges, such as landing fees (and night surcharges), aircraft parking fees, boarding bridge fees, ATC (overflight and approach), and passenger charges, and commercial charges for ramp handling, fuel, and CUTE. The comparisons were made for two aircraft types operating at EVN, the Airbus A320 and the Bombardier CRJ900.

Exhibit E1 presents the total charges for an Airbus A320 and its passengers, summarizes the results of the benchmarking.

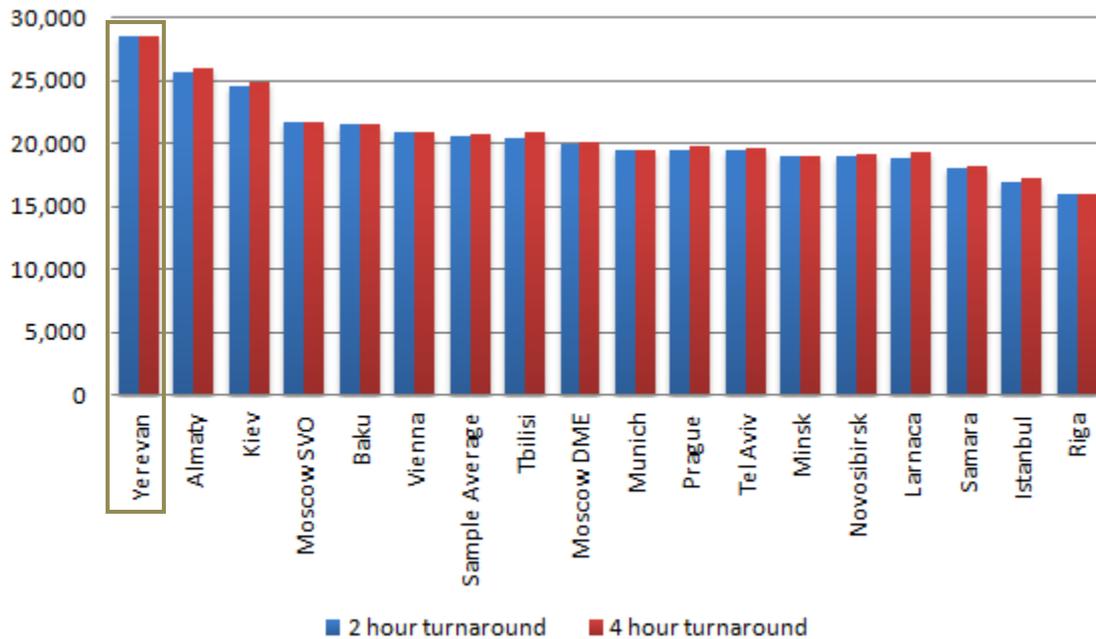
For the sample used for analysis, total charges for an Airbus A320 (on a two hour turnaround) range from USD 15,960 in Riga, to USD 28,490 in EVN, which is the most expensive airport in the sample and exceeds the sample average by 38.5%.

At USD 23,319, EVN has the second most expensive turnaround charges for airlines when considering a 2-hour turnaround, and is only surpassed by Almaty albeit by a small margin. EVN is 29.1% more expensive than the USD 18,058 sample average.

Thanks to the USD 26.2 State Air Exit Duty, EVN (USD 5,171) has the highest turnaround charges on passengers, and is more than double than the sample average (USD 2,480). If Armenia's State Air Exit Duty was removed, turnaround charges on passengers at EVN would be USD 2,578, only 10.4% above than the sample average.

Exhibit E.1 –Turnaround Cost for an Airbus A320

Includes ATC (approach and overflight), daytime landing fees, parking, boarding bridge, passenger charges and duties, and fuel



Source: prepared by consultant, based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Note: Passenger charges and duties were calculated assuming a 60% load factor

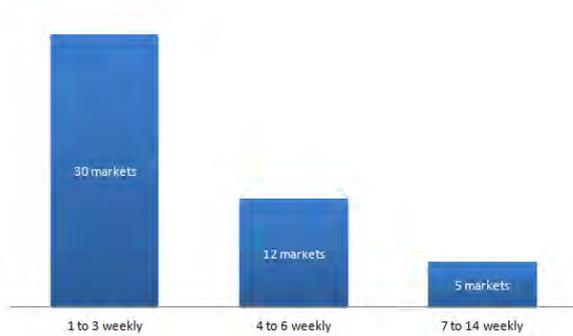
Market Outlook

The objective of the market outlook analysis is to assess Armenia's connectivity. This is done by measuring available options for travelling in terms of choices of airlines and frequencies, on a route by route basis. Even though there are two international airports in Armenia, Yerevan's Zvartnots International Airport (EVN) and Gyumri Shirak International Airport (LWN), over 95% of the international traffic is concentrated at EVN. Therefore, the analysis has been focused on Yerevan Airport.

Yerevan is served by 27 carriers offering non-stop services to 48 markets in 22 countries. Most of the markets served from EVN are located in Eastern and Western Europe, which together account for 88% of the seat capacity.

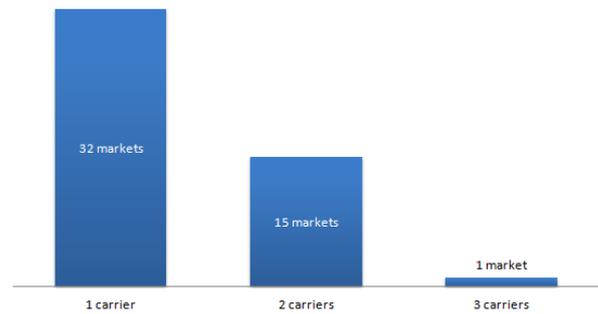
Despite the large number of markets operated from EVN, most of them are served rather poorly in terms of frequency of service and competition levels. Moscow is the sole exception, being served with an average of over 7 daily flights operated by 3 airlines to the city's three airports (Armavia operates to Domodedovo and Vnukovo, Aeroflot flies to Sheremetyevo, and S7 Airlines serves Domodedovo). From the remaining 47 markets, 30 are operated with 1 to 3 weekly flights, and another twelve are served with 4 to 6 flights per week. Only six of the 48 markets linked from EVN are served with one daily flight or more – Moscow being one of them (Exhibit E.2).

Exhibit E.2 - Number of International Markets from EVN, by Frequency of Service



Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules
 Note: there are 47 markets since Moscow is excluded

Exhibit E.3 - Option of Carriers per Market



Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules

It is important to note that business traffic, which is the most profitable segment for the airlines, is extremely difficult to develop on routes with low frequencies. Business travelers demand a level of scheduling flexibility that is difficult to satisfy in the majority of the routes from EVN, which are operated with weekly flights or less.

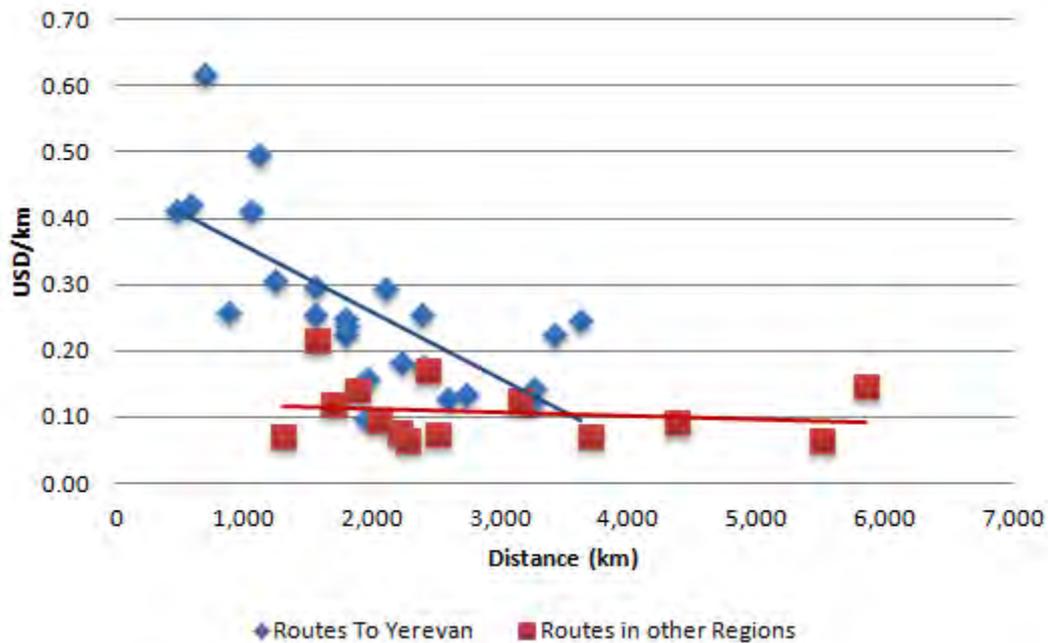
In terms of the choice of airlines that operate same markets, Moscow is the only route served by three different carriers (Exhibit E.3). There are fifteen markets with services from two different airlines, and 32 that are just operated by one carrier.

For most of the routes, competition is almost inexistent. Routes served by two airlines are often operated on a code-share basis, where both carriers agree to sell jointly a combined capacity and prices are set by mutual agreement. In fact, in twelve of the fifteen markets that are served by 2 different airlines, frequencies of both carriers are coordinated at different days of the week. At many of the 15 markets served by two airlines, given the low capacity offered in terms of frequencies, customers remain with little choices. Considering routes with over five frequencies a week, it could be said that competition is present at just four out of the 48 markets served from EVN.

The study included a review of the cost of travel to Armenia in terms of air fares (Exhibit E.4). The analysis was based on a comparison of the prices per kilometer, on similar routes around the world, with routes from the major markets to which Armenia is connected. The comparison shows that fares for travel to Armenia are consistently higher than fares in Europe, Latin America, and the United States. The cost for most routes in other regions is between 0.07 USD/km and 0.17 USD/km, while for Armenia most routes are over 0.20 USD/km (with many routes above 0.40 USD/km).

Exhibit E.4 – Comparison of Cost of Travel to Yerevan versus Other Similar Routes in other Regions - High Season

Includes base fare, fuel surcharge, and ticket service charge. Excludes airport charges and other taxes



Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, Iberia, Turkish Airlines, Aeroflot, Air Baltic, Royal Brunei, Alitalia, Aerolineas Argentinas, TAM, Avianca, LAN, American Airlines, Alaska Airlines, US Airways - Air fares for travel between October 3 and October 9, 2012 (adjacent dates were used for routes that are not operated on those days).
 Note: The solid lines represent the regression function that best describes the distance/cost per km relationship for each of the data sets (EVN is in blue and other regions is in red)

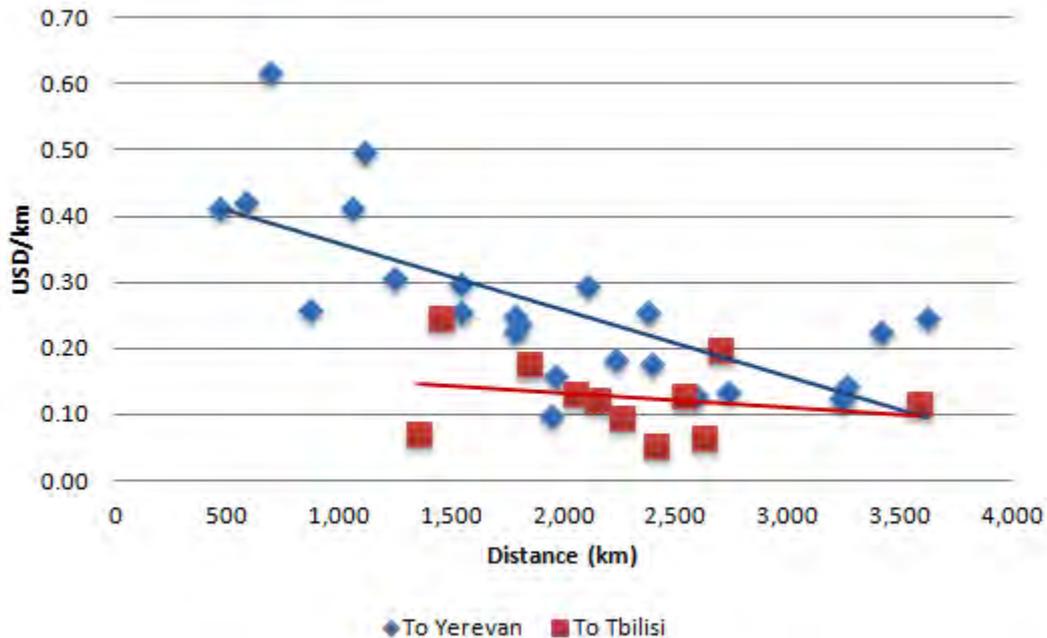
The blue trendline² representing the average unit of distance, for the case of routes to Yerevan, is clearly higher than the red line, which represents costs of travelling in other regions.

A case study of Georgia, a country with comparable traffic patterns and a fully liberalized air transport policy, provides a clear example of the benefits of a liberalized environment. Passenger traffic in Georgia has more than doubled in the 2005-2011 period, since liberalization was announced, experiencing a compound annual growth rate (CAGR) of 12.8% in those six years. During the same period, EVN's growth rate was 6.3%, or less than half than the CAGR of the Georgian market. The comparison of the cost to travel to Georgia as opposed to Armenia was also compared in the study (Exhibit E.5).

² fitted using the least squares approach

Exhibit E.5 – Comparison of Lowest Available Fares to Yerevan and Tbilisi - High Season

Includes base fare, fuel surcharge, and ticket service charge. Excludes airport charges and other taxes



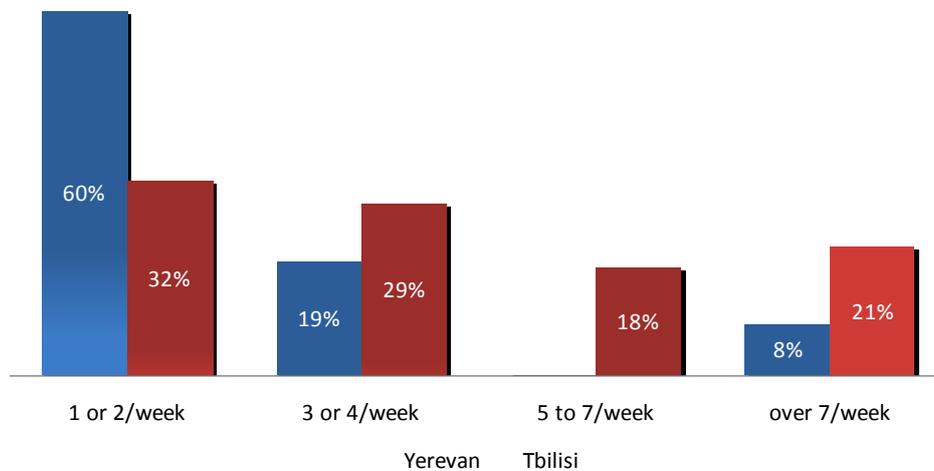
Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, AirBaltic, Aerosvit, Estonian Airlines, Pegasus Airlines, Lufthansa, AirAstana, FlyDubai. Air fares for travel between October 3 and October 9, 2012 (adjacent dates were used for routes that are not operated on those days).

Note: The solid lines represent the regression function that best describes the distance/cost per km relationship for each of the data sets (EVN is in blue and Tbilisi is in red)

The comparison showed that flying to Tbilisi is consistently less expensive for almost all the routes. Air fares are closer, although still higher, for routes above 2,200 kilometers. Also by comparing the trendlines, fares to Yerevan are consistently more expensive than to Tbilisi.

These lower air fares into Tbilisi are consistent with a higher offering of connections and services than in Yerevan. In total, 39% of the markets are served over 5 times a week out of Tbilisi, in comparison with Yerevan, only 21% of the flights (Exhibit E.6).

**Exhibit E.6 – Percentage of International Markets served by Frequency of Service
Tbilisi vs Yerevan**



Source: prepared by the consultant with information from OAG (September 2011 to August 2012) and airlines schedules
For interpretation: For example, Tbilisi offers 21% of its markets by over 7 frequencies a week, as opposed to Yerevan, 8%

The abundant option of frequencies, particularly over 5 per week, present at 11 markets, provides the level of competition that result in a lower cost of travelling, measured in USD/km, for routes of different ranges.

Armenia’s connectivity should be enhanced by the adoption of a liberal air transport policy, allowing foreign and local carriers to operate freely, with no restrictions of capacity, number of carriers, entry points or fares, ruled. An unrestricted air transport policy will foster international services to existing and new destinations, and will reduce air fares by its effect on competition and increased availability of choice for passengers.

Conclusions and Recommendations

Armenia’s poor competitiveness is the direct consequence of the absence of a clear policy with respect to the role of the government in relation to the operation of the aviation infrastructure system. This lack of definition is in fact a consequence of a severely inadequate institutional framework, where the separation of functions is blurred and conflicts of interest prevent proper regulation and oversight of the provision of critical services.

The lack of transparency with respect to the conditions characterizing the concession contract with the airport operator, as well as the commercial agreement between Armavia and the Government, and the relationship between the Government and Atlantis European Airways, calls for a clear definition of the roles of the Government and the private sector. The current institutional arrangement should be reformed in a manner which ensures that the different bodies function at arm’s length from one another. The policy making functions should be assigned to the Ministry of Transport and Communications. The GDCA could remain as the technical regulator, and proper measures should be taken to ensure its complete independence from the operators of the infrastructure. The accident investigation functions should be transferred to an independent body that reports directly to the President or the Parliament to guarantee unbiased results.

Protection of the local carriers should be lifted in accordance with a gradual liberalization game-plan and with clear timeframes. The well being of the local carriers should be reviewed in the context of the lack of competitiveness of the locally based airlines as opposed to foreign airlines. Analysis which is undertaken in this area should focus on delineating the non-controllable costs that affect locally- based carriers as opposed to foreign carriers. This should include review of the regulatory framework with respect to the provision of transportation services, taxes and the duty regime (e.g. import duties for equipment and spares, fuel, assets, VAT, etc); labor issues (work and rest regimes, special union provisions, training and refreshment beyond international requirements, etc.), local technical regulations (certification and licensing of crew and maintenance personnel) and infrastructure costs. In light of such a review, specific measures will need to be developed to improve the capability of the local carriers to compete within a liberalized policy environment.

Basic infrastructure costs in Armenia are high both for passengers and for airlines. Given that the impact of the State Air Exit Duty is so significant in this regard, it should be reviewed and reconsidered. It is imperative to have a transparent and efficient system of economic regulation with respect to all fees and charges for services provided by the airport; as well as for other ancillary services (namely ramp handling, passenger services, fuelling, in-flight catering, etc.). In addition, the cost for the provision of ATC services - particularly approach services - should be revised; in light of the fact that it has been clearly demonstrated to represent the second highest charge among a comparable set of airports.

The costs of traveling to and from Armenia are consistently higher than comparable routes in other regions. The same conclusions can be drawn from the analysis of airfares on comparable routes to and from Tbilisi, where a complete liberalized environment has fostered connectivity and significantly reduced costs. All of these results should provide the required incentive to carry out the needed reforms to improve connectivity. The continuation of a policy of protecting the local airlines is hampering the development of inbound tourism by increasing artificially the cost of travel, and is simultaneously restricting the capacity of Armenians to travel abroad, promote trade, and bring fresh ideas and knowledge back to Armenia.

Similar results were demonstrated for a study carried out on the development of traffic as a consequence of air liberalization in tourism-driven economies. The analysis of three Caribbean destinations demonstrated how in-bound tourism has prospered dramatically with increased connectivity. In the particular case of the Dominican Republic, tourism has flourished robustly subsequent to a major air transport liberalization agreement with the US, massively increasing the number of travelers.

It is thus advisable for Armenia to formulate a best practices-consistent national aviation policy framework (through a White Paper) where all regulations and approaches of the government are clearly stated and expressed. In this regard a National Aviation Policy (White Paper) should be developed and finalized over the next 3 months which effectively addresses the following issues:

- a. Domestic airline policy
- b. International airline policy
- c. Airport policy
- d. Safety policy
- e. Air Traffic Control (ATC)
- f. Institutional staffing and Human resources capacity building
- g. Relationship with International Civil Aviation Organization (ICAO)
- h. Security policy
- i. Consumer protection
- j. Environmental policy

1.0 Background

Under the sponsorship of USAID, in 2008, a study of the competitiveness of Armenia's air transport was carried out following a request from the airline industry about the high costs of operating in the country. The study included an analysis of the prevalent institutional arrangement, a benchmarking study of airport infrastructure costs and a market analysis in terms of the existing competitive environment resulting from the aviation policy.

In 2011, the USAID funded Enterprise Development and Market Competitiveness (EDMC) Project in Armenia was requested to review the 2008 report with the aim to identify the necessary policy actions needed to develop the air transport sector, as a key factor of economic development of the country.

The study included a benchmarking of fees and charges in order to identify EVN's level of competitiveness, as well as an aviation market outlook analysis for Armenia with the purpose to identify the level of connectivity resulting from the aviation policy environment, which affects the development of the air transport sector.

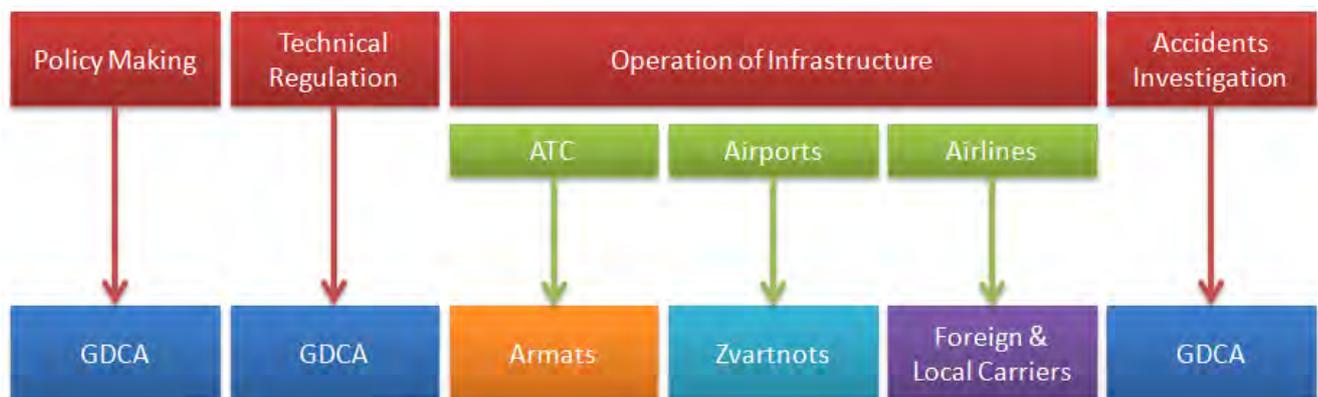
This review also includes a benchmarking analysis of air fares on routes into and out of Armenia, compared to routes of similar characteristics in other parts of the world. It concludes with a comparative view of the market situation in Georgia, from the point of view of connectivity, up to the cost of travelling to and from Tbilisi as opposed to flying to and from Yerevan.

2.0 Analysis of the Institutional Framework

2.1 Distribution of Functions

The institutional framework of the air transport sector is still characterized by a high degree of concentration of functions in Armenia's General Department of Civil Aviation (GDCA). The following graph (Exhibit 2.1) shows the institutional arrangement in Armenia.

Exhibit 2.1 – Institutional Framework of the Air Transport Sector



Source: prepared by consultant

The situation has not changed from the one identified in 2008. The GDCA still concentrates responsibilities for policy making, technical regulation, and accidents investigation functions. In addition, the GDCA has some indirect influence on the operation of local airlines through informal links with Armavia and Atlantis European Airways.

Policy Making

The GDCA is the body formally designated to carry out the policy making functions. Primarily this includes the definition of market access rules (entry of airlines into the domestic and international markets, including the negotiation of air service agreements – ASAs – with other countries) and national civil aviation policies with respect to safety, security and environmental issues, among others.

Typically, market access rules include the definition of entry points in each country³ (eventually, including the possibility to serve other countries with traffic rights), the number of designated carriers allowed to operate the route, the capacity (in terms of frequencies, and/or type of aircraft, or number of seats) to be offered by each side - in principle on reciprocal terms - and the level of control (or total freedom) in setting air fares⁴.

With respect to the economic regulation of charges for the use of infrastructure, this function is formally performed by the GDCA, but there is no formal mechanism for the definition and adjustment of prices for airport services. This is valid both for all airport fees and charges, as well as for competition policies with respect to service providers at the airport.

Technical Regulation

The GDCA is also the technical regulator, and as such possesses monitoring and supervision authority with respect to all safety issues pertaining to civil aviation, according to the international standards and recommended practices (SARPs) set forth by the Chicago Convention of 1944 and its Annexes⁵. This means that, among other responsibilities, the GDCA is the responsible authority for the certification of crews (flight and cabin crews), maintenance facilities and personnel, aircraft airworthiness, airports certification, air traffic control (ATC) procedures and personnel licensing, and all other aspects of operational safety and security (prevention of acts of unlawful interference).

Operation of Infrastructure

Air Traffic Control: ARMATS, a closed joint stock company with 100% of its shares belonging to the State, provides navigation and communication services over Armenian airspace. The services it provides include Area and Approach Control in all airports, Communication, Surveillance and Aeronautical Information.

The company was founded in 1997 after splitting from the corresponding services of “Zvartnots” International Airport. In 2003, the corresponding services of Gyumri and Stepanavan airports were included in the structure of “ARMATS”. The joint stock company operates completely independent

³ Defined in what is called the “Routes Chart”

⁴ Air fares could be (from the most restrictive to the less): “double-approval pricing” or “double-disapproval pricing”

⁵ The 18 Annexes to the Chicago Convention of the International Civil Aviation Organization (ICAO), of which The Bahamas is a signatory state

from the national budget and was able to carry out a comprehensive technological update of its facilities.

Airports: Armenia's airport system is comprised of seven airports, of which two receive international scheduled services (Zvartnots International in Yerevan and Shirak International in Gyumri). Both airports are operated by Armenia International Airports CJSC, property of the Argentine company Corporación America, under a 30 year agreement (with options for successive extensions) for the management, operation and commercial development of the Airport.

Airlines: There are two local airlines operating in Armenia: Armavia and Atlantis European Airways. In addition, 26 foreign carriers operate scheduled regular services to Armenia. Armavia is the most important local airline in terms of destinations served and market share.

Armavia was founded in 1996 and became the national flag carrier after a process of subsequent acquisition of routes. In 2003, the company was licensed to service routes that formerly belonged to "Armenian Airlines" and in 2005, it obtained those from "International Armenian Airlines" Air Company. The company returned to local ownership in June 2005, when "Mika Armenia Trading" Ltd reacquired the 68% equity from Russian shareholder "Sibir" Airlines (S7). Armavia Airlines is believed to enjoy the protection of the GDCA, based on a special agreement signed between the government and the airline. The conditions of the agreement are not available for public review.

In July 2004, Atlantis European Airways (AEA) was established as a second local airline. The company operates as a "virtual airline", since it operates exclusively as a commercialization agent of flights operated by partner carriers. The company has no aircraft and no operational personnel, other than commercialization agents. Under special codeshare agreements, Atlantis European Airways owns rights to sell, at no cost, a certain number of seats on all flights operated by Austrian Airlines and by CSA. The number of allocated seats to AEA accounts for about 10% to 12% of the capacity in economy class, and up to 20% of the available business class seats. AEA commercializes these seats through its own distribution channels or sells them back to the respective airlines at a face value. With respect to ownership, the company's shareholder composition was not available from the various sources consulted and no reference is provided at the company's own website.

Both local airlines, Armavia and Atlantis European Airways, do not compete on the same routes, probably as a result of a de-facto non-competition agreement. Since AEA operates flights to Vienna and Prague (under the codeshare agreement), Armavia does not serve those routes. In a similar fashion, AEA does not seek to enter into markets where Armavia operates.

Accident Investigation

Legal issues related to the procedure for investigation of aviation accidents and incidents are covered in detail by the RA Government Decree N 1777-N of 11.12.2003 *"On defining the procedure for investigation, classification and recording of aviation related accidents and incidents in the Republic of Armenia"*.

The same Decree stipulates that *Investigation of accidents/incidents is conducted by the Commission appointed by the RA Government or General Department of Civil Aviation (GDCA)*. In addition, it states that *According to the RA law "On aviation" GDCA is a competent state authority regulating activities in the civil aviation area, including activities pertaining to investigation of accidents/incidents*. Finally, Chapter II of the procedure (point 10) states that *GDCA may also conduct investigation of accidents or major incidents occurred with RA airplanes or those occurred with foreign airplanes on RA territory*.

Therefore, GDCA is the body responsible for carrying out all accident investigations, according to what is internationally stipulated by ICAO's Annex 13 (Aircraft Accident and Incident Investigation), in addition to any locally-specific legislation.

2.2 Implications of the Current Framework

The current degree of concentration of functions in the GDCA has potential implications that could prevent the healthy development of the civil aviation sector in the country.

Policy Setting and Technical Regulation

The effective performance of the institutional framework may be compromised if the functions of policy-making and technical regulation are performed by a single body. It is important to assign these functions to independent entities to avoid any interference in the conduct of these quite distinct functions/responsibilities. For example, it is essential for the technical regulator to be absolutely objective when carrying out safety oversights on local carriers, regardless of any policy that may encourage the protection of the local airlines.

Another potential problem that may arise from the combination of these functions is the manipulation of technicalities to implement policy. Considering that bilateral trade agreements that govern air services are very complex and time consuming to negotiate, it is important that policies be stated in a clear and transparent way. The goal achieved by the separation of the economical and technical regulation functions is that the latter will not be influenced in order to apply to any particular "un-stated" policy.

Technical Regulation and Operations

It is essential to ensure the complete independence of the technical regulator from the operation of the infrastructure (air traffic control, airports or airlines) in order to guarantee correct implementation of ICAO's SARPs. If the regulator is somehow related to the operation of infrastructure (even through informal influence), it ends up regulating itself. The conflict of interest is such that regulation could become absolutely ineffective, seriously compromising the level of safety of the sector in general.

Accidents Investigation and Technical Regulation

It is common practice for modern institutional frameworks to assure complete independence of the accident investigation body, by placing it within an independent board reporting to either the president or the parliament, bypassing any other ministry or public body. This is the only effective way to guarantee the impartial opinion of the investigators, independent from any decision that could affect another body within the government apparatus.

The lack of separation between the investigator (GDCA) and the technical regulator (again GDCA) creates a conflict of interest when the proper execution of the regulation could have played a role in an accident. An accident could be the result of different forms of negligence from the technical side, such as lack of appropriate monitoring, slack controls, failure to implement international standards or aircraft manufacturer's recommendations, improper certification of crews, aircraft or maintenance facilities, approving faulty procedures, among others. If GDCA regulates and investigates, it becomes "judge and party" at the same time.

Lack of an Economic Regulatory Body

The current framework does not accommodate a defined body responsible for the economic regulation of service providers within the sector. This is relevant particularly with respect to services provided by monopolistic operators, such as the airport and the air traffic control provider, namely Zvartnots International Airport and ARMATS, respectively.

Under the current arrangement, there is no mechanism for price setting or price adjustments, creating uncertainty among users and providers.

The aeronautical charges (landing, aircraft parking, boarding bridges, and passenger boarding fees) are assumed to be regulated by the concession contract. However, there is no known method for the adjustment of those fees and charges, leaving both operator and users in a state of uncertainty with respect to what they may be in future.

Monopolistic Consequences of the Vertical Integration of Infrastructure Services

The extension of the provision of services, by the airport operator, of ancillary services, constitutes a vertical integration of infrastructure services into a consolidated scope of services.

While there is nothing wrong with the integration of services, without the existence of a choice to passengers this effectively constitutes an extension of the natural monopoly situation. If the monopoly is not controlled within the context of a clear economic regulatory framework, users will continue to be effectively unprotected against increases in any of the monopolistic fees, and/or the implementation of new charges.

Particularly with respect to ancillary services, ramp handling, passenger services, fuelling and in-flight catering are not clearly defined in terms of number of allowable providers, the freedom of self-provision for the airlines, and whether or not any access charges can be collected by the airport. It is common practice around the world to either allow free competition for the provision of these services, or to make providers compete for the market, bidding for the access charges to be paid to the airport operator. The mechanisms in place in Armenia are either not known or appear to be altogether non-existent.

2.3 Conclusions on the Institutional Framework

The concentration of most functions of the institutional framework in a single body (the GDCA in this case), coupled with the protectionist policies that shield the local airlines from foreign competition, results in an environment that prevents the healthy development of the civil aviation sector.

Restrictions apply to the number of designated carriers allowed to enter the market, as well as the capacity to be offered by the incumbent airlines. The GDCA adopts a “mono-designation” policy with respect to the number of airlines from each side, and for Armenia this is either Armavia or Atlantis European Airways.

Capacity is often restricted to prevent any market erosion of the local operator (Armavia), or of the code share partner of AEA. In fact, as part of the current policy, and eventually under the terms of the operational agreement with Armavia (which has not been made available to the consultant),

GDCA assumes a protectionist role for the airline by granting the right of approval of any review of new air service agreements signed with any other trading partner country⁶.

Instead of letting all airlines offer the capacity that they consider appropriate according to the market conditions, the number of frequencies that can be operated by foreign carriers is limited to the level which the local airlines feel comfortable competing with. These artificial limitations on supply result in reduced options for the traveling public (in terms of destinations, frequencies, and carriers), as well as in higher prices.

The price regulation mechanisms of services rendered under monopolistic conditions (airport charges and ancillary services such as fuel, handling, etc.) are unknown. This situation leaves the users unprotected as they are not able to analyze and challenge price increases, and thus opens the door for the existence of unjustified elevated charges.

Through the development of trade and tourism, aviation has significant long-term economic benefits and is an engine of development. The shortcomings of Armenia's institutional framework may affect the progress of the sector and the economic development of the country through reduced connectivity and higher prices.

The institutional framework should be reformed so that there is a proper separation of functions and to ensure the absence of conflicts of interests. The policy setting functions should be assigned to the Ministry of Transport and Communications. The GDCA could remain as the technical regulator, and proper measures should be taken to ensure its complete independence from the entities/companies performing the other functions. Lastly, the accident investigation functions should be transferred to an independent body that reports directly to the President or the Parliament to guarantee unbiased results.

⁶ Representatives of Armavia are often present at the negotiation table of any new Memorandum of Understanding of air service agreements.

3.0 Benchmarking Analysis for Infrastructure Costs

3.1 Methodology

The benchmarking of infrastructure charges assessed the aeronautical charges at EVN by comparing them to other airports. The selected sample includes airports in neighboring countries, as well as airports that have direct services to/from Armenia.

The airport sample used for comparison includes 18 airports from 15 countries, shown in the following table (Exhibit 3.1).

Exhibit 3.1 – Airport Sample Used for the Benchmarking Analysis

	Country	City / Airport Name
1	Armenia	Yerevan – Zvartnots International
2	Austria	Vienna International
3	Azerbaijan	Baku – Heydar Aliyev International
4	Belarus	Minsk International
5	Cyprus	Larnaca International
6	Czech Republic	Prague – Ruzyně International Airport
7	Georgia	Tbilisi International
8	Germany	Munich – Franz Josef Strauss International
9	Israel	Tel Aviv – Ben Gurion International
10	Kazakhstan	Almaty International
11	Latvia	Riga International
12	Poland	Warsaw – Chopin International
13	Russian Federation	Moscow – Domodedovo
14		Moscow – Sheremetievo
15		Novosibirsk – Tolmachevo
16		Samara – Kurumoch International
17	Turkey	Istanbul – Atatürk International
18	Ukraine	Kiev – Boryspil International

Source: prepared by consultant

The following charges are covered in the analysis:

- Regulated charges
 - Landing fees and night surcharge
 - Aircraft parking fees
 - Boarding bridge fees
 - ATC charges (approach and overflight)

- Passenger charges (including: passenger facility charges, security and duties⁷)
- Unregulated charges
 - Ramp handling
 - CUTE
 - Fuel

Charges were compared independently and then on an aggregated basis at the end of the section. Time-based charges, such as aircraft parking and boarding bridges, were compared for periods of 2 and 4 hours, which are the most common turnaround times for traffic at EVN. Aircraft-based charges, such as landing fees for example, were compared for two aircraft types that are relevant for EVN: the Airbus A320 and the Bombardier CRJ900. The main parameters of the selected aircraft are shown in the table below (Exhibit 3.2).

Since the relative differences between airports with respect to charges for both aircraft types are very similar (or even identical), the comparisons of individual charges only include the Airbus A320. The Bombardier CRJ900 is included at the end of the section, for the calculation of the overall turnaround costs. The CRJ900 is also employed for the comparison between the 2008 and the 2011 reports, since it is the only aircraft that was common to both analyses.

Exhibit 3.2 – Key parameters of the aircraft used for the analysis

Aircraft	Airbus A320	Bombardier CRJ900
Fuselage	narrow-body	regional jet
Maximum Take-off Weight	77 tons	36.5 tons
Seating Capacity	164 seats	90 seats
Assumed Load Factor ⁸	60%	60%

Source: prepared by consultant with information from Airbus S.A.S. and Bombardier Aerospace

Some airports set different charges for domestic and international operations. Since the study covers international flights only, “international flight” charges were selected at those airports that charge different rates according to the flight type.

The information for the study was obtained directly from the airports when available, and from the International Air Transport Association’s (IATA) Airport & Air Navigation Charges Manual (July 2011 edition) for the airports whose charges were not available from other sources. IATA’s manual includes up-to-date information on aeronautical charges for more than 300 airports worldwide.

All values in this report were converted to and are shown in US Dollars, with exchange rates valid as of December 20, 2011.

⁷ Although, strictly, duties are not “aeronautical charges”

⁸ Percentage of the seats of aircraft that are occupied by passengers

3.2 Charges Paid by Airlines

3.2.1 Landing Charges and Lighting Surcharges

Landing fees are based on the aircraft Maximum Take-Off Weight (MTOW), with rates ranging from USD 2.67 to USD 17.42 per ton. Even though every airport uses the MTOW as the basis for the calculation of landing fees, the formula used to calculate the total charge can vary significantly from one airport to another. At some airports the charge is fully variable (rate x MTOW), other airports also have a fixed amount, some include a minimum charge, and some others employ weight bands to determine the rate that applies to a given aircraft.

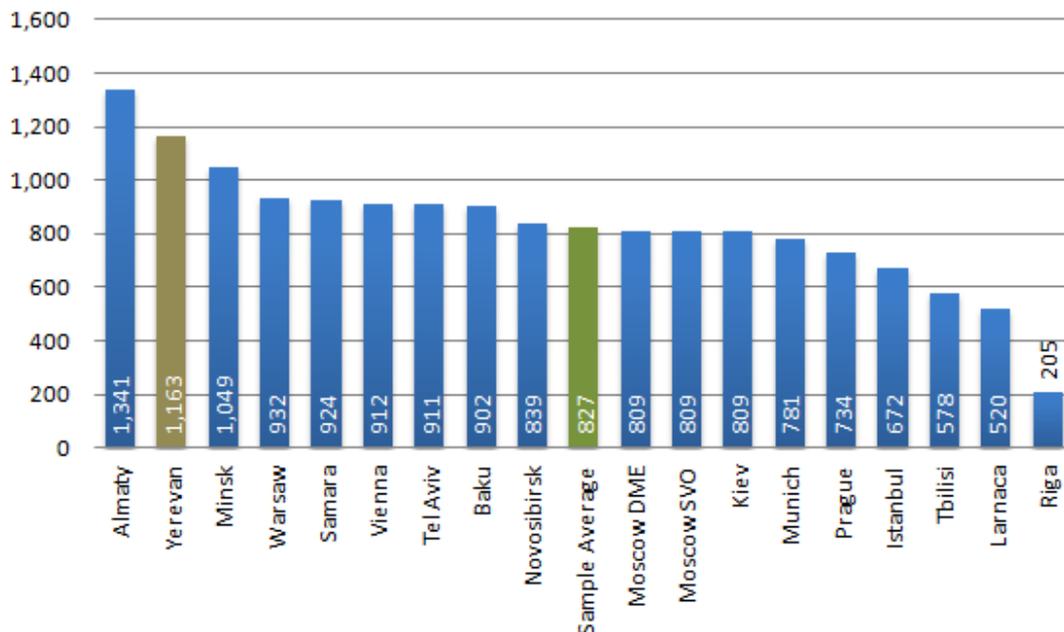
Some airports, especially those in Western Europe, levy a noise charge that varies according to the aircraft noise category (which is usually defined by the airport). Since these charges were created to either avoid (through the operation of quieter aircraft) or penalize the generation of noise during landing and take-off, they were included in the landing fees calculation.

Ten airports in the sample also feature a night surcharge for operations during night hours, which can be variable (as a % of the daytime fees) or a fixed amount.

The assessment of landing charges compares the amount due by an airline for landing an aircraft of the same characteristics at every airport. Comparing the rate structure at the airports is not practical given the varying approaches to the calculation of landing fees.

The following graphs (Exhibit 3.3 and Exhibit 3.4) show landing fees on daytime and night operations.

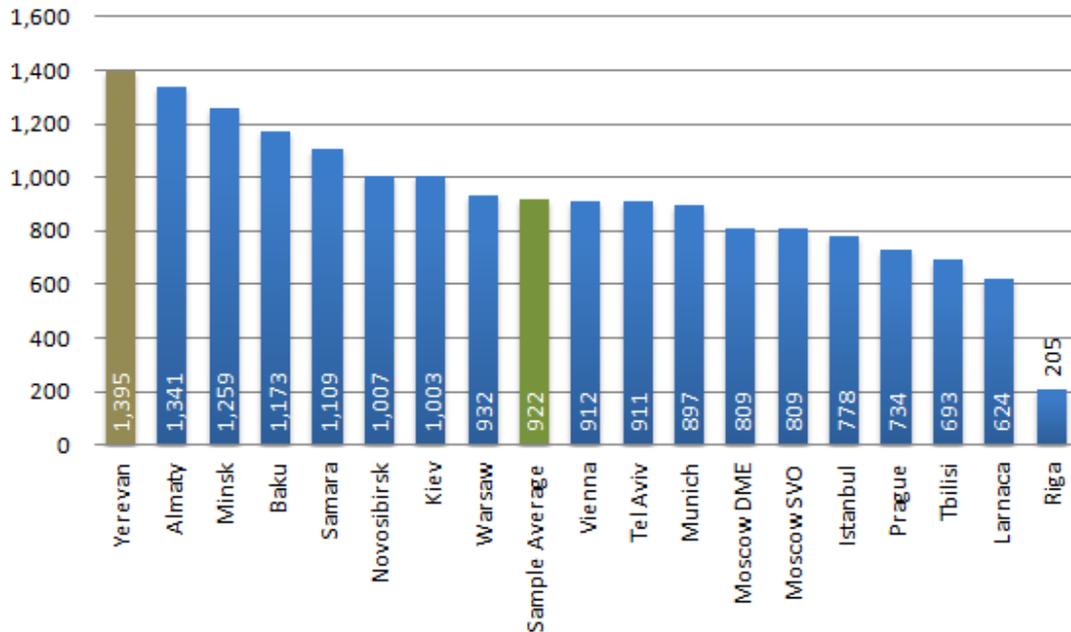
Exhibit 3.3 – Landing Fees for an Airbus A320 (daytime operation)
in USD



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Landing fees for an Airbus A320 on a daytime operation range from USD 205 in Riga to USD 1,341 in Almaty. With charges of USD 1,163 EVN is the second most expensive airport in the sample, and is 40.6% higher than the sample average.

Exhibit 3.4 – Landing Fees for an Airbus A320 (night operation)
in USD



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

EVN surpasses Almaty as the most expensive airport for night operations, since the former has a 20% night surcharge and the latter has the same price for day and night operations. Charges at EVN are USD 1,395, and the least expensive airport is still Riga, at USD 205. The difference between EVN and the sample average (now USD 922) is now 51.3%.

The following table (Exhibit 3.5) details the components of the landing fees.

Exhibit 3.5 – Landing Fees (in USD, includes noise surcharges)

Airport	fixed charge	per ton	minimum	night surcharge	remarks
Yerevan	-	15.10	97.63	20%	
Vienna	333.60	7.51	-	-	Airbus A320
	333.60	-	-	-	CRJ-900
Baku	-	11.72	-	30%	
Minsk	-	13.63	-	20%	
Larnaca	-	6.76	39.63	20%	Airbus A320
	-	6.05	39.63	20%	CRJ900
Prague	490.39	9.01	-	-	Airbus A320, variable charge from ton #50
	271.35	9.42	-	-	CRJ900, variable charge from ton #25

Airport	fixed charge	per ton	minimum	night surcharge	remarks
Tbilisi	-	7.50	-	20%	
Munich	320.32	5.99	-	15%	A320
	238.63	5.99	-	15%	CRJ900
Tel Aviv	17.72	11.83	-	-	variable charge from ton #1.5
Almaty	-	17.42	-	-	
Riga	-	2.67	-	-	
Warsaw	462.88	13.02	-	-	variable charge from ton #41
Moscow – DME	-	10.50	-	-	
Moscow – SVO	-	10.50	-	-	
Novosibirsk	-	10.90	-	20%	
Samara	-	12.20	-	20%	
Istanbul	-	8.72	-	107	
Kiev	-	10.50	-	24%	assumes up to 300 flights per month

Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

3.2.2 Aircraft Parking Charges

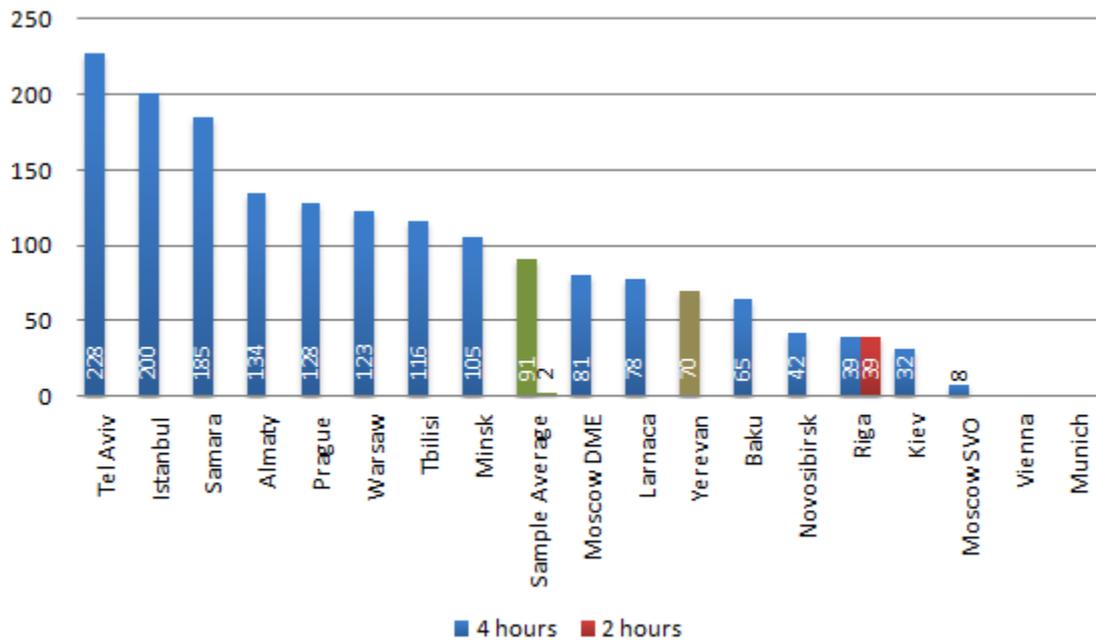
Aircraft parking fees are both weight-based and time-based, which means that they increase with the aircraft MTOW and the amount of time that it remains on the ground. As with landing fees, the calculation method can vary significantly from airport to airport. All the airports in the sample include a grace (free time) period that varies from one to three hours from engine shut down.

The following graph (Exhibit 3.6) depicts parking charges for an Airbus A320, for 2- and 4-hour periods. Zero values indicate that the period falls within the grace period and no charges are levied.

With a grace period of only 60 minutes, Riga is the only airport that charges parking fees for aircraft parked during two hours (USD 39). The grace period at the other airports is equal or higher than two hours, hence no charges apply.

Aircraft remaining parked during four hours pay parking fees at all airports except Vienna and Munich (these airports have grace periods of six and four hours respectively). The charges for four hours parking range from USD 8 in Moscow Sheremetyevo to USD 228 in Tel Aviv, with an average for the sample of USD 91. Charges at EVN are USD 70, or 23.1% below the sample average.

**Exhibit 3.6 – Parking Charges for an Airbus A320
in USD**



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Note: zero values indicate that the turnaround duration is below the free time period, hence no charges apply

Parking charges are detailed in the following table (Exhibit 3.7).

Exhibit 3.7 – Aircraft Parking Charges (in USD)

Airport	first period		thereafter		remarks
	minutes	price	minutes	price	
Yerevan	150	-	60	0.46/ton	assumes charge for non-based carrier
Vienna	360	-	1440	136.80	Airbus A320
	360	-	1440	50.04	CRJ900
Baku	180	-	60	65.09	
Minsk	180	-	1440	104.95	Airbus A320
	180	-	1440	50.43	CRJ900
Larnaca	120	-	720	78.04	
	120	-	720	33.60	
Prague	120	-	60	0.83/ton	
Tbilisi	180	-	60	1.50/ton	
Munich	240	-	1440	3.51/ton	minimum charge of 12.50
Tel Aviv	180	-	1440	227.72	Airbus A320
	180	-	1440	109.42	CRJ900

Airport	first period		thereafter		remarks
	minutes	price	minutes	price	
Almaty	180	-	1440	1.74/ton	
Riga	60	-	1440	0.18/ton	
Warsaw	180	-	1440	1.59/ton	
Moscow – DME	180	-	1440	80.85	Airbus A320
	180	-	1440	38.85	CRJ900
Moscow – SVO	180	-	60	8.09	Airbus A320
	180	-	60	3.89	CRJ900
Novosibirsk	180	-	1440	41.97	Airbus A320
	180	-	1440	20.17	CRJ900
Samara	180	-	1440	2.40/ton	
Istanbul	120	-	1440	2.60/ton	
Kiev	180	-	60	0.41/ton	

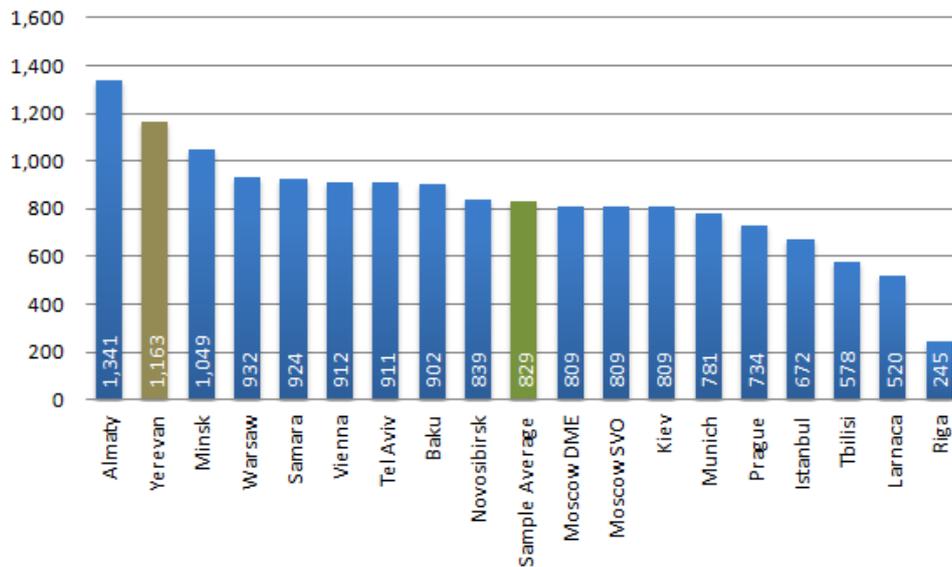
Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

3.2.3 Landing and Parking Charges

As has been demonstrated above, almost none of the airports charge separately for aircraft parking in addition to the landing fees for two hour turnarounds. At most of the airports, the fee paid for landing already includes some time on the ground. Therefore, in order to compare fairly the cost of landing fees, this has to be aggregated with the cost for parking, in order to facilitate a more accurate and comparable analysis.

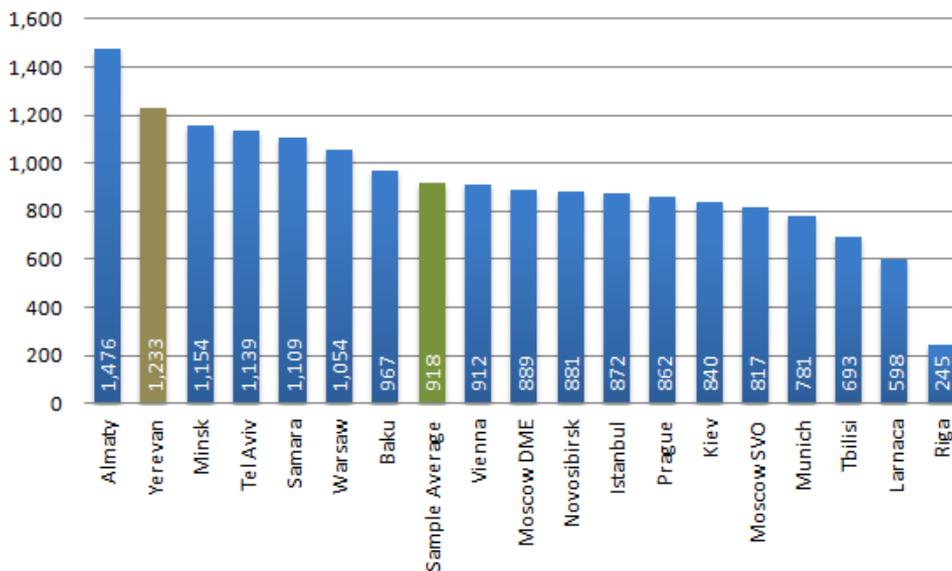
In the following graphs (Exhibit 3.8 and Exhibit 3.9), the consolidated cost of landing and parking is presented for the same sample of airports.

Exhibit 3.8 – Landing and Parking Charges for an Airbus A320
in USD, daytime parking, 2 hour turnaround



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Exhibit 3.9 – Landing and Parking Charges for an Airbus A320
(in USD, daytime parking, 4 hour turnaround)



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Landing and parking charges for an Airbus A320 on a daytime operation and two-hour turnaround range from USD 245 in Riga to USD 1,341 in Almaty. EVN is the second most expensive airport in the sample with total charges of USD 1,163, or 40.3% higher than the USD 829 sample average.

Landing and parking charges for a daytime operation and a four hour turnaround are somewhat higher, with Riga (USD 205) and Almaty (USD 1,476) still representing the least and most expensive airports respectively. Charges at EVN are now USD 1,233, or 34.3% higher than the USD 918 sample average.

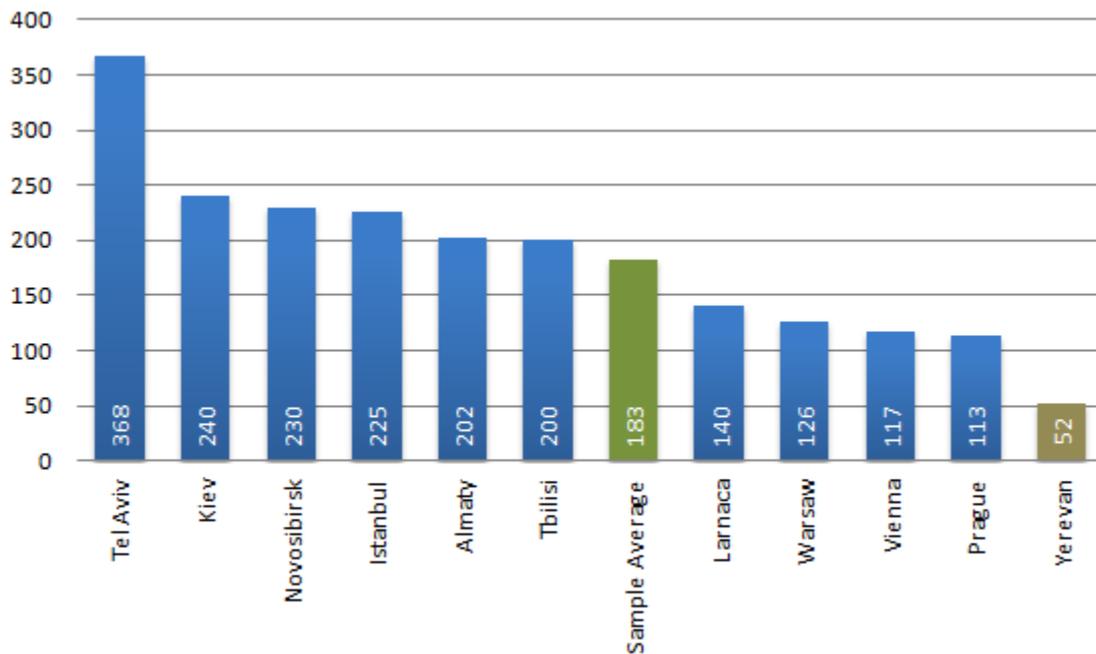
3.2.4 Boarding Bridge Charges

Boarding bridge charges at different airports are set as a flat fee per connection or as a variable amount depending on the time that the aircraft remains connected to the bridge. Some airports, regardless of whether they have a flat fee or a variable time-based amount, also consider the aircraft type, with higher charges for larger aircraft, whereas others set their fees regardless of the aircraft size.

The following graphs (Exhibit 3.10 and Exhibit 3.11) show boarding bridge charges for an Airbus A320 for 2- and 4-hour periods.

It must be noted that some airports do not publish their boarding bridge charges, so the graphs only include those airports where the information could be obtained.

Exhibit 3.10 – Boarding Bridge Charges for an Airbus A320⁹
in USD, for a 2 hours period

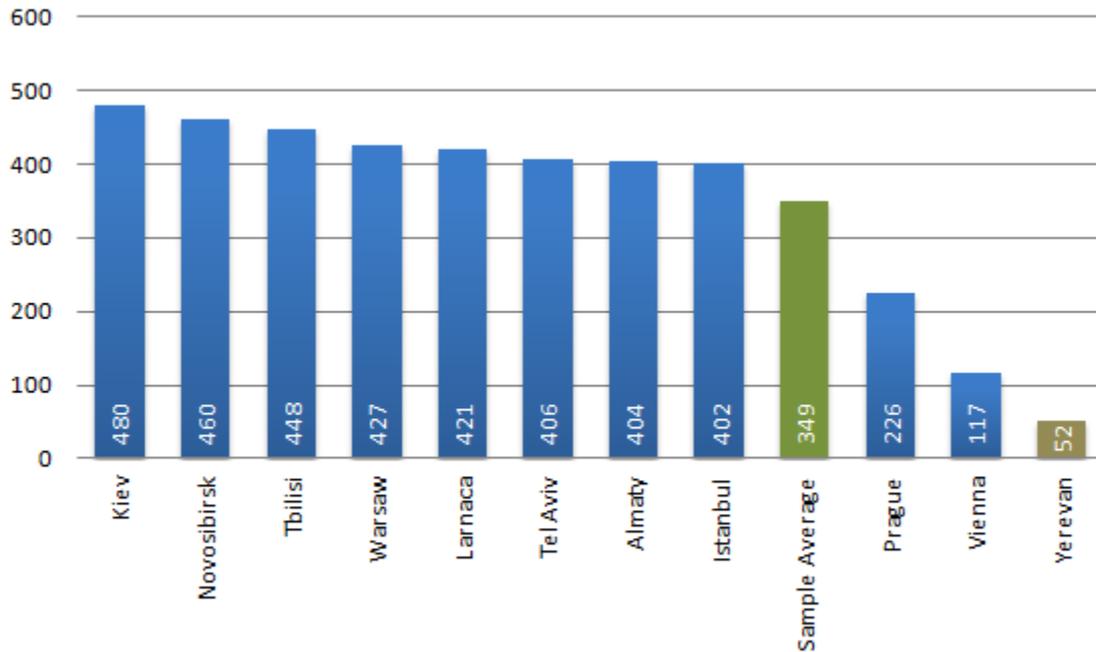


Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Boarding bridge charges for an Airbus A320 during two hours range from USD 52 in EVN to USD 368 in Tel Aviv. The average for the sample is USD 183, and EVN is 71.6% below that.

⁹ Only airports where boarding bridge charges are specified are shown on graph

Exhibit 3.11 – Boarding Bridge Charges for an Airbus A320¹⁰
in USD, for a 4 hours period



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

For 4-hour periods EVN still has the lowest charges in the sample, and becomes even cheaper in relation to other airports as a result of having a flat fee per connection while other airports charge per hour. Most airports in the sample charge over USD 400 for 4-hour periods, and the sample average increases significantly from USD 183 (2 hours) to USD 349.

3.2.5 ATC Charges

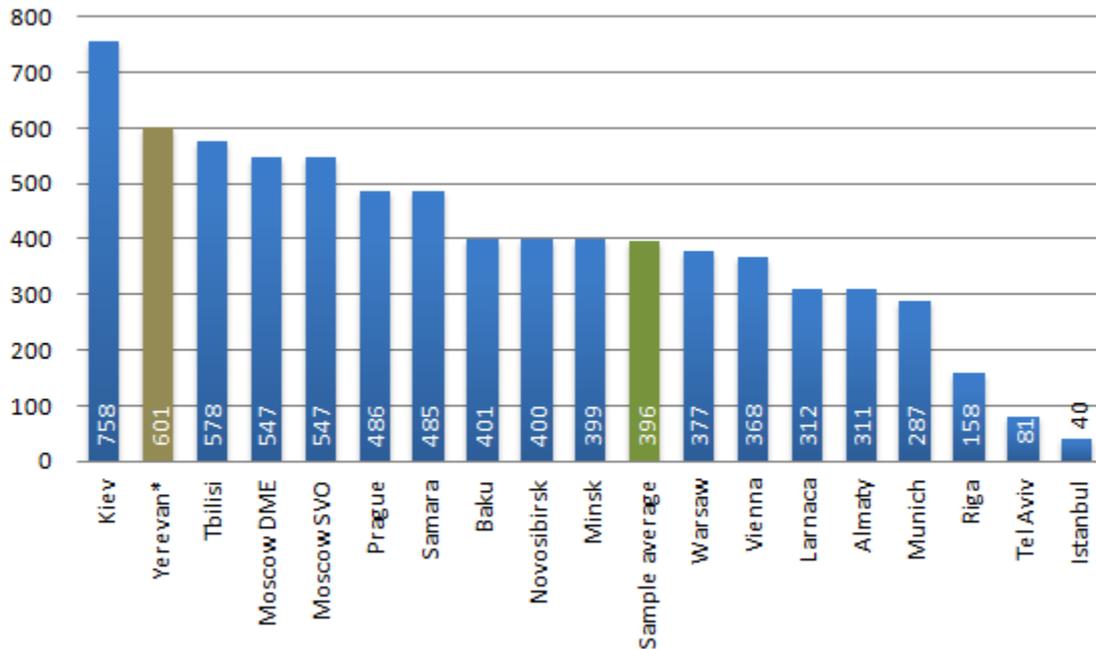
Air Traffic Control (ATC) charges have two components, approach and overflight. In Armenia the services are provided by ARMATS. Approach charges are commonly calculated based on the aircraft weight. Among the airports¹¹ used for comparison, Istanbul is an exception where there is a fixed price per landing. At some airports the charge increases linearly with the aircraft's MTOW, while at others the increase is less than proportional. Three of the airports in the sample –Baku, Novosibirsk, and Tbilisi- feature a night surcharge for operations.

The following graphs (Exhibit 3.12 and Exhibit 3.13) compare approach charges for the airports in the sample.

¹⁰ Only airports where boarding bridge charges are specified are shown on graph

¹¹ In reality, the ATC charges are not necessarily related to an airport, but to a Flight Information Region (FIR) or the airspace above the sovereign territory of the country.

Exhibit 3.12 – Approach Charges for an Airbus A320
in USD, for a daytime operation

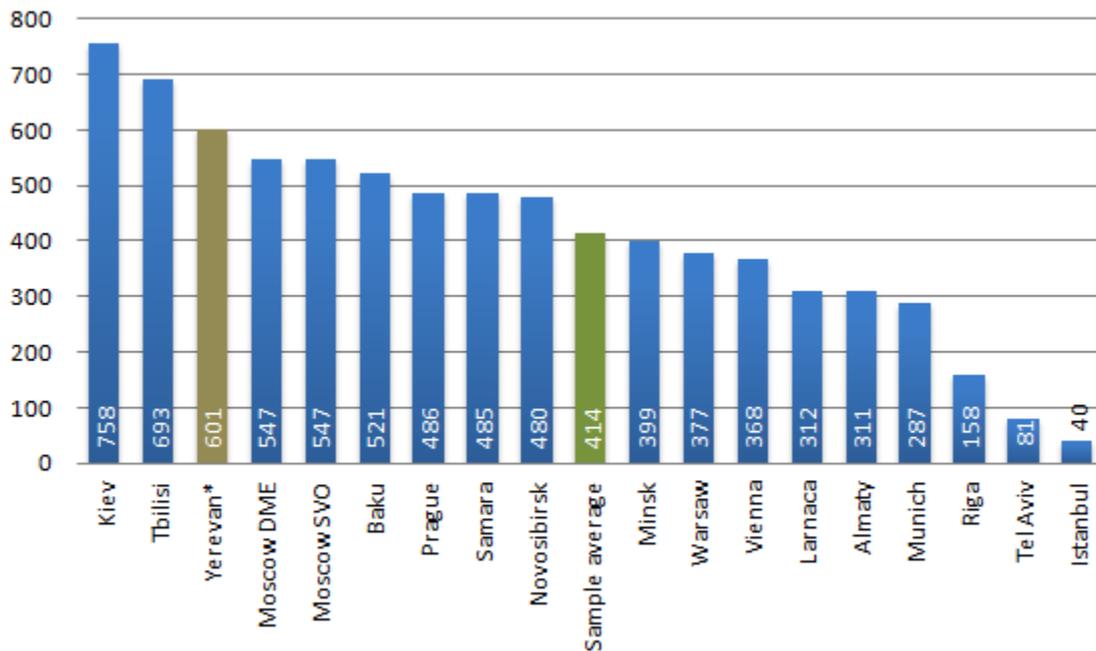


Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

* Charges decrease with the number of flights per month. It is assumed here up to 50 flights/month.

Approach charges for an Airbus A320 operating during day hours range from USD 40 in Istanbul to 758 in Kiev. EVN is the second most expensive airport in the sample with charges of USD 601, 51.8% higher than the USD 396 sample average. It must be noted that the prices at EVN vary according to the number of flights operated by the airline in a given month; the lower the number of flights the higher the charges. The 50 flights/month price was selected because it is the price bracket that most foreign airlines fall within. There are other price brackets (50 to 100 flights per month and more than 100 flights per month) which predominantly benefit the local carriers.

Exhibit 3.13 – Approach Charges for an Airbus A320
in USD, for a night operation



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

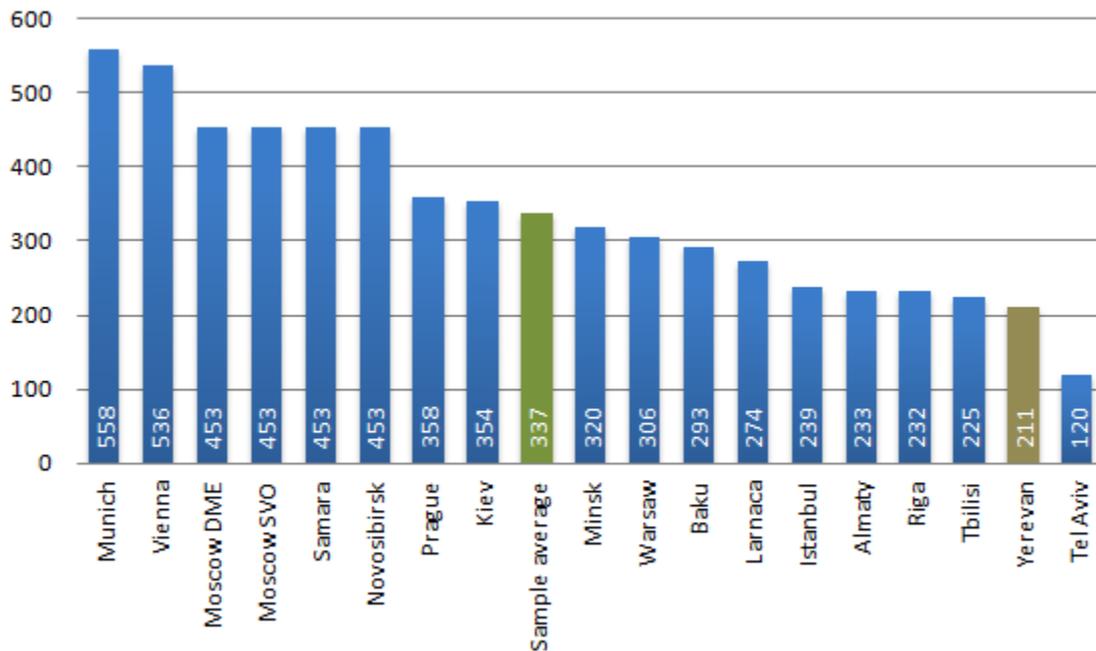
* Assumes up to 50 flights per month. The price decreases if more flights are operated.

Approach charges for night operations also range from USD 40 to 758, and EVN is also among the most expensive airports in the sample (USD 601), 45.2% higher than the USD 414 average.

Overflight charges are based on the aircraft weight and on the distance flown (except in Tel Aviv, which has a fixed price regardless of the distance). For the purpose of the comparison it was assumed that the distance flown by the aircraft is 500 km, and that the aircraft lands in the respective country (in most places the price is slightly reduced if the aircraft lands in an airport of the country charging for the service).

The following graph (Exhibit 3.14) compares overflight charges for an Airbus A320.

Exhibit 3.14 – Overflight Charges for an Airbus A320
in USD, for a 500 km. segment



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Overflight charges at EVN are among the least expensive in the sample, and well below the sample average. This contrasts with Navaid charges, where EVN is the second most expensive airport of the sample for daytime operations.

3.2.6 Ramp Handling

Ramp handling services include a wide range of activities that take place while the aircraft is on the ground between flights, and include the following services:

- Pushback, towing, repositioning and marshalling (involving parking related services)
- Passenger transportation on apron (and provision of passenger stairs)
- Loading and unloading of baggage (including transportation to/from terminal)
- Aircraft cleaning, toilet/water
- Aircraft de-icing
- Load control, communications, flight operations, dispatch
- Provision of ground power unit
- Line maintenance
- Supervision

Ramp handling service providers usually offer packages that include most of the services listed in the bullets above, but they can also include other supplementary services.

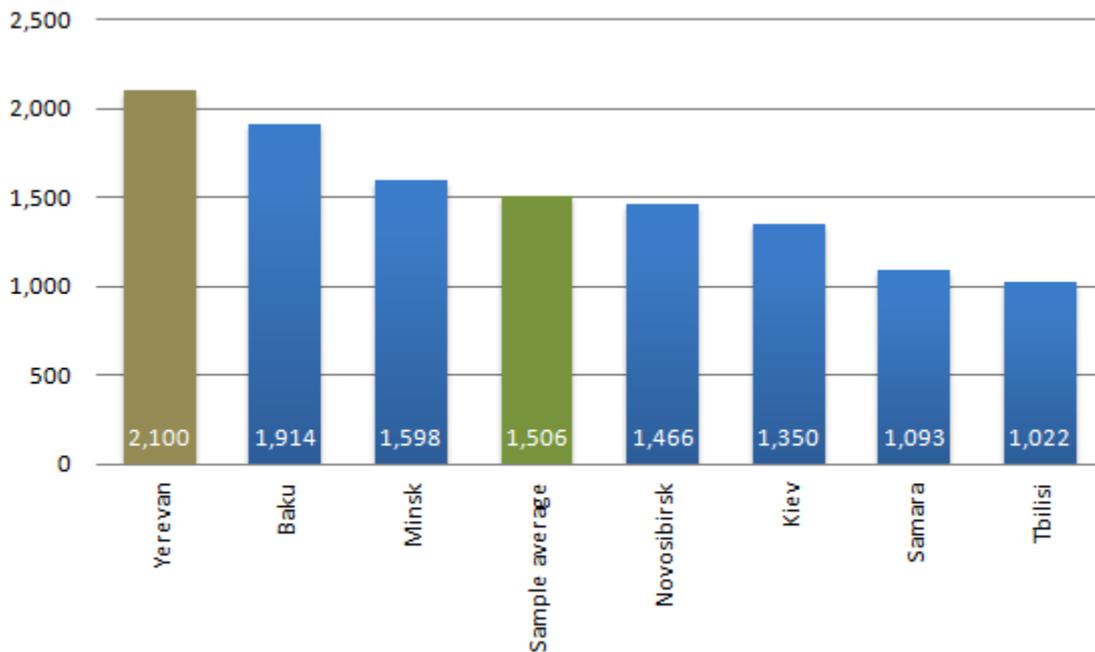
Prices for ramp handling services may be subject to competition among providers, or regulated in the case when there are no choice of providers (a monopolistic provider). When non regulated (and subject to competition), prices for ramp handling services are difficult to obtain as they are usually negotiated between the airlines and the providers and kept confidential as part of the agreements reached by both parties. In some cases, the negotiations between the airline and the service provider take place at the headquarter level, and apply for all the airports that the airline

operates to, so the local staff might not even be aware of the negotiated prices. Global service providers (such as Servisair, Swissport, Menzies, etc.) often have global deals with airlines, applicable at a worldwide level.

The comparison of ramp handling charges (Exhibit 3.15) includes only those airports for which the prices were made available. It must be noted that the prices shown are the amounts paid by the airlines to the service providers (the access charge paid by the service providers to the airport operators are out of the scope of the analysis).

Exhibit 3.15 –Ramp handling charge for an Airbus A320

at airports without a single ramp handling price, includes pushback and towing, loading and unloading of baggage, aircraft and toilet cleaning, provision of fresh water, and ground power unit



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

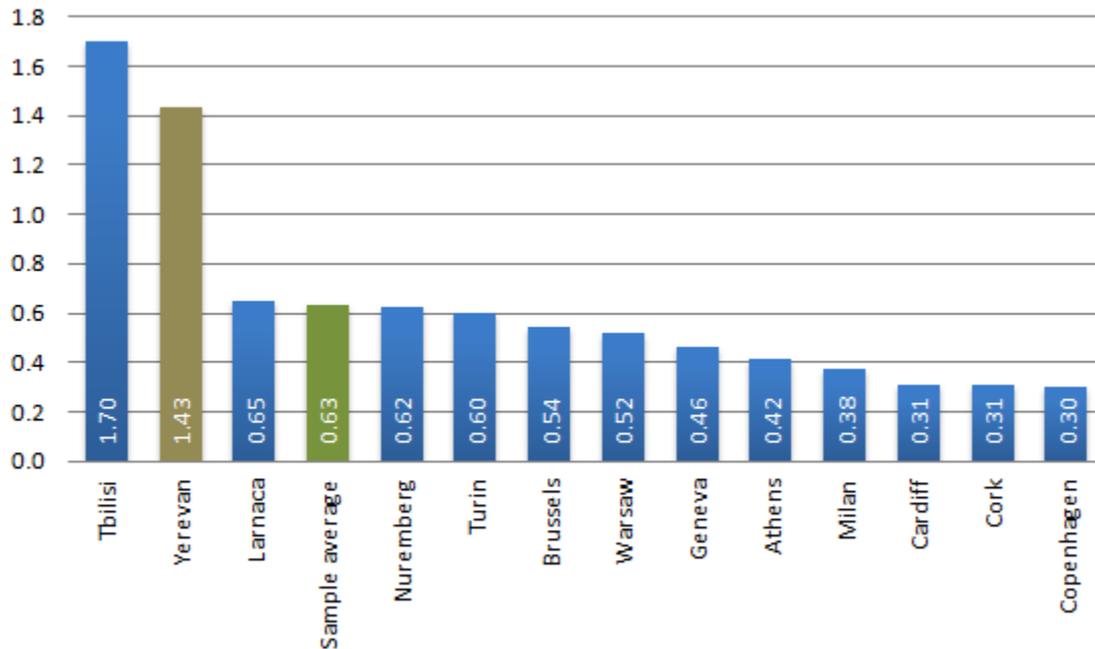
Ramp handling charges range from USD 1,022 to 2,100, and EVN is the most expensive airport in the sample (the average is USD 1,506).

3.2.7 CUTE System

The Common Use Terminal Equipment (CUTE) system consists of computer workstations and printers on the check-in and gate counters, which can be used by any airline or passenger handling agent, irrespective of the computer reservations system used by the company. Airports normally pay the upfront installation costs and the maintenance expenses of the system and charge airlines a per-passenger fee.

The following graph (Exhibit 3.16) compares CUTE charges for a different sample of airports than those used in the aeronautical charges comparison. Only a limited number of the airports in the aeronautical charges comparison publish CUTE charges, so the sample was supplemented with other European airports.

Exhibit 3.16 –CUTE Charges
per departing passenger



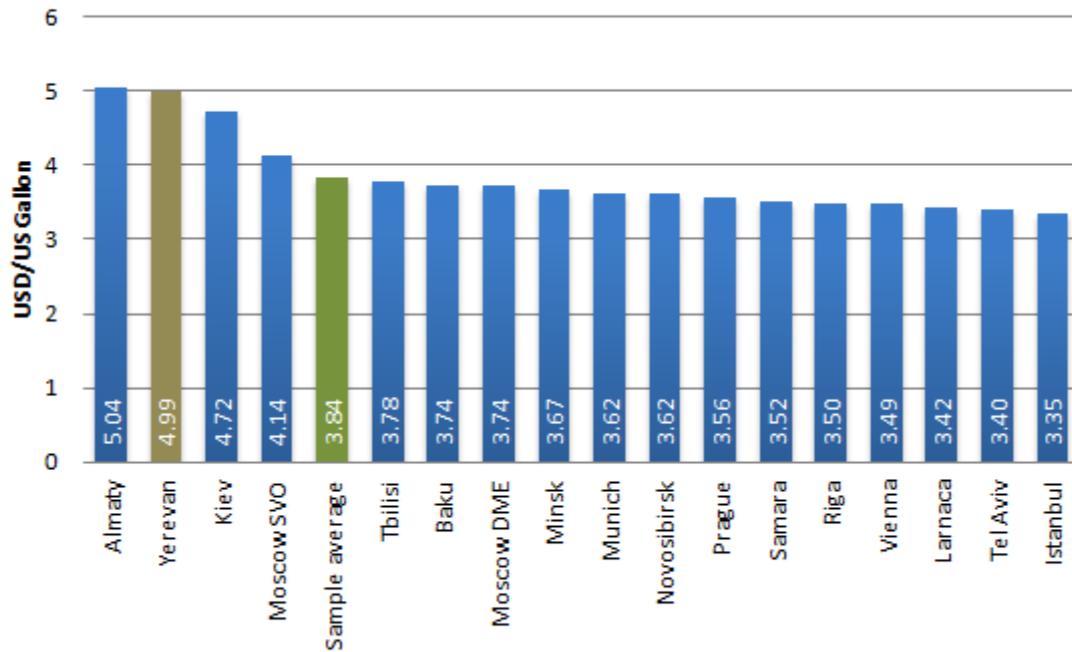
Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

CUTE charges range from USD 0.3 per departing passenger in Copenhagen to 1.7 in Tbilisi. EVN is the second most expensive airport in the sample at USD 1.43 (actually set as EUR 1.0 per pax), and is more than double than the sample average.

3.2.8 Fuel

Fuel prices were obtained for the airport sample used in the aeronautical charges benchmarking, and are valid for the month of January 2012. The following graph (Exhibit 3.17) presents the fuel costs in USD per gallon. Warsaw is not included as the price for that airport could not be obtained.

Exhibit 3.17 –Fuel cost



Source: prepared by consultant with information obtained from fuel suppliers

At USD 4.99 per gallon, the cost of fuel in EVN is significantly higher than at most airports in the sample, whose average is USD 3.84 per gallon. Prices at most airports range between USD 3.35 and 3.78, with only a few airports surpassing the USD 4.0 per gallon mark.

3.2.9 Total Charges Paid by Airlines

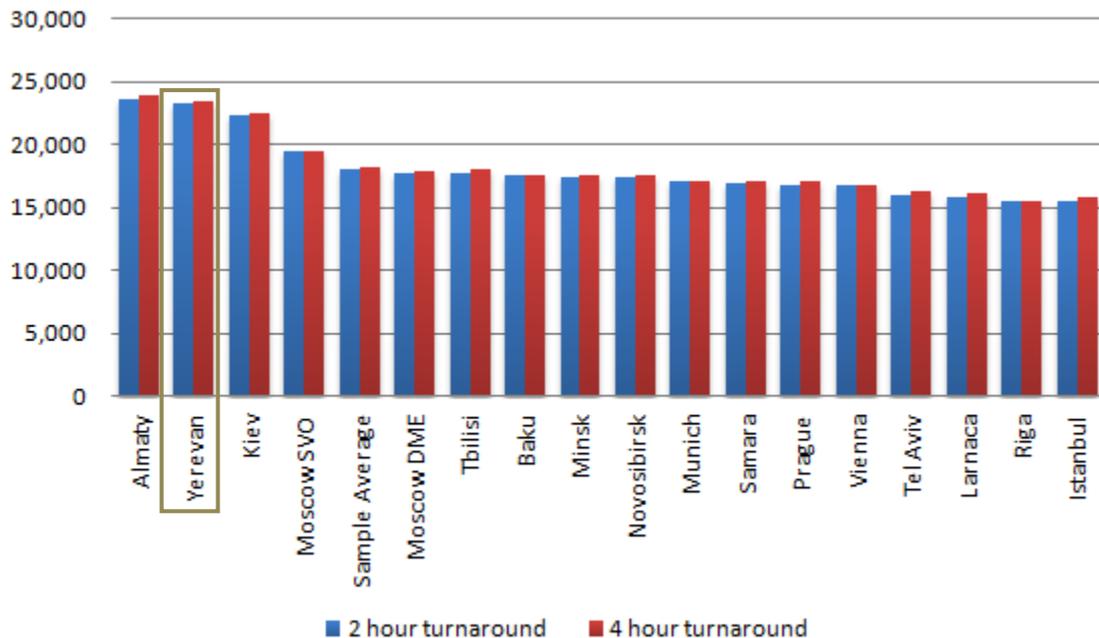
The following graph (Exhibit 3.18) compares the total charges paid by airlines operating an Airbus A320, for a 2-hour and a 4-hour turnaround.

The graph includes landing fees (daytime), aircraft parking, boarding bridges, navaid, overflight, and fuel (assuming an uplift of 4,267 gallons, which is two thirds of the fuel capacity of the Airbus A320).

Ramp handling charges and cude fees are not included because they were not available for all the airports in the sample.

Exhibit 3.18 –Turnaround Charges Levied on Airlines - Airbus A320

Includes overflight, navaid, daytime landing fees, parking, boarding bridge, fuel



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

At USD 23,319, EVN has the second most expensive turnaround charges for airlines for a 2-hour turnaround, and is only surpassed by Almaty (albeit by a small margin). Istanbul is the least expensive airport with total charges of USD 15,471; and the sample average is 18,058 (EVN is 29.1% more expensive than the average).

For 4-hour turnarounds EVN is also the second most expensive airport behind Almaty. Charges at EVN total USD 23,389, and are 28.3% more expensive than the USD 18,234 sample average.

3.3 Charges Paid by Passengers

Passenger charges include all charges and fees that are levied on a per-passenger basis, such as the passenger facility charge (or boarding fee), security charges, and other items such as infrastructure charges, passengers with reduced mobility charges, tourist taxes, etc.

These charges can be collected through various means (they could be included with the ticket price, or could be collected upon check-in at dedicated counters in the airport), but they are ultimately passed on to the passengers.

The passenger charges category also includes taxes imposed by the national government (such as a tourist tax or exit duty, for example). While these charges might be totally unrelated to the airport infrastructure and the airport operator may not collect or receive those funds, they are nevertheless considered by passengers as part of the total travel cost, and might impact their decisions to select a certain destination depending on the respective elasticity of travel demand in relation to total cost.

The assessment of passenger charges comprises two evaluative comparisons. The first one (Exhibit 3.19) includes only those charges that are levied by the airport, such as the passenger

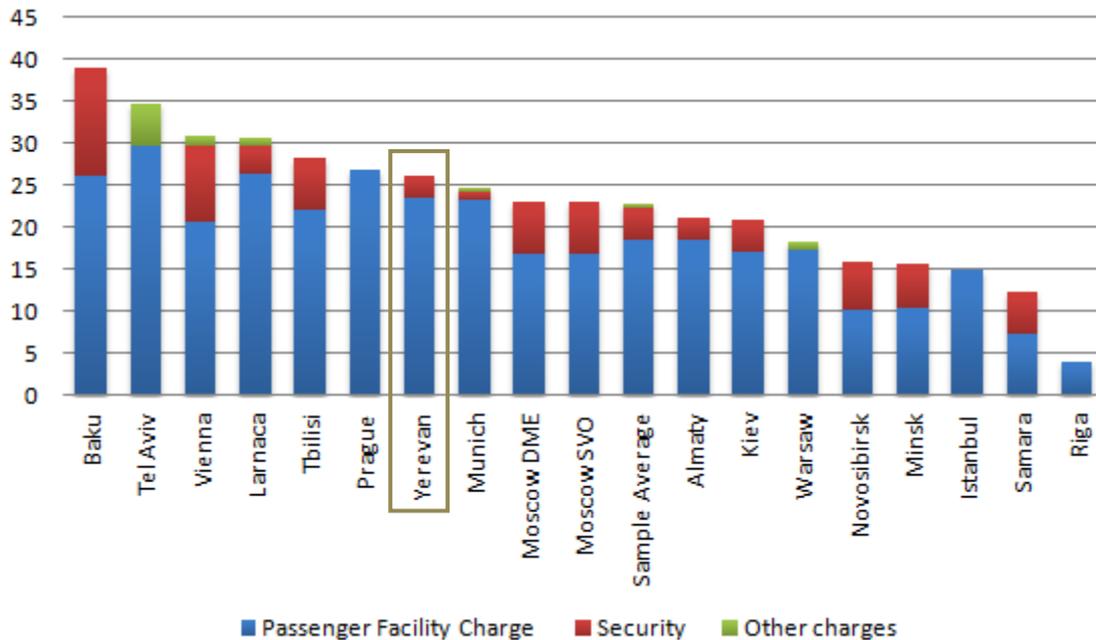
facility charge, security fees, baggage handling fees, etc. The second one (Exhibit 3.20) includes all charges and taxes levied on passengers¹².

It must be noted that security fees are usually levied by the airport, but in some instances the service is provided and paid for by other entities without a separate fee for passengers. With regards to security charges, it must also be noted that some airports in Georgia, Kazakhstan and the Russian Federation have a security fee levied on the aircraft instead of the passengers. In those cases the security charge was prorated on the number of passengers according to the assumed load factor (60%). In particular cases, such as Tel Aviv, all security costs are covered by the Ministry of Defense and are not charged to the passengers.

All passenger charges are per departing international passenger. For airports charging individually for arriving and departing passengers, both charges were considered.

Charges other than the passenger facility charge (PFC) were labeled as “other” since each airport/country names them differently, even when they might be collected at the same end.

Exhibit 3.19 – Passenger Charges Levied by the Airport
USD per passenger



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (June 2011 Revision) and airports' published charges

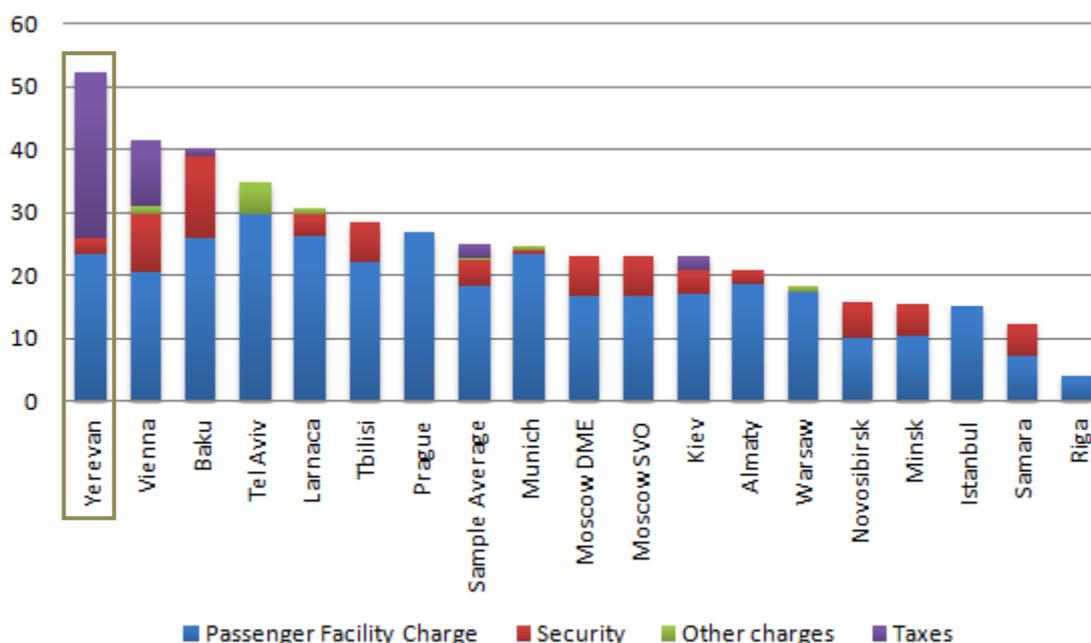
Note: Tel Aviv does not include security charges, which are covered by government and are not levied on passengers – “Other charges” do not include the Armenian Exit Duty

Passenger charges levied by the airport range from USD 4.10 in Riga to USD 40.40 in Baku. Charges at EVN are USD 26 (EUR 18 passenger facility charge plus EUR 2 security fee), or 14.0% above the sample average.

The following graph presents a comparison of all charges and taxes levied on passengers.

¹² Visa costs are not considered for the purpose of this study

Exhibit 3.20 – All Charges, including Taxes, Levied on Passengers
 USD per passenger – includes states exit duties



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges
 Note: includes all charges and taxes levied on passengers.

When considering all charges and taxes levied on passengers, EVN becomes the most expensive airport in the sample and by a significant margin. A passenger travelling through EVN should pay USD 52.20 in airport fees and government taxes, more than double than the sample average. The increase in the total cost is due to Armenia's 10,000 Dram (USD 26.20) *State Air Exit Duty* levied by the Federal Government on all passengers embarking for destinations abroad.

The following table (Exhibit 3.21) details all passenger charges and taxes.

Exhibit 3.21 – Passenger Charges and Taxes (in USD, per Departing Passenger)

Airport	Passenger Facility Charge		Security	Other charges/taxes	
	Value	Remarks	Value	Value	Remarks
Yerevan	23.4		2.6	26.2	State Air Exit Duty
Vienna	20.7		9.0	0.9 + 0.4 + 10.4	Infrastructure charge + PRM + Air Transportation Tax (int'l short range)
Baku	26.0		13.0	1.3	Civil Aviation Tax
Minsk	10.5		5.1		
Larnaca	26.4		3.4	0.2 + 0.7	Baggage charge + PRM
Prague	26.9				
Tbilisi	22.0		6.3(**)		
Munich	23.3	International to non-EU destination	0.8	0.7	PRM(*)
Tel Aviv	29.8	Includes USD 4.90 departing tax paid by airlines		5.0	Baggage handling

Airport	Passenger Facility Charge		Security	Other charges/taxes	
	Value	Remarks		Value	Remarks
Almaty	18.6		2.4*		
Riga	4.1				
Warsaw	17.4			0.7 + 0.2	Baggage charge + PRM
Moscow – DME	16.8		6.3		
Moscow – SVO	16.8		6.3		
Novosibirsk	10.2		5.7*		
Samara	7.3		5.1*		
Istanbul	15.0				
Kiev	17.0		4.0	2.0	Government tax

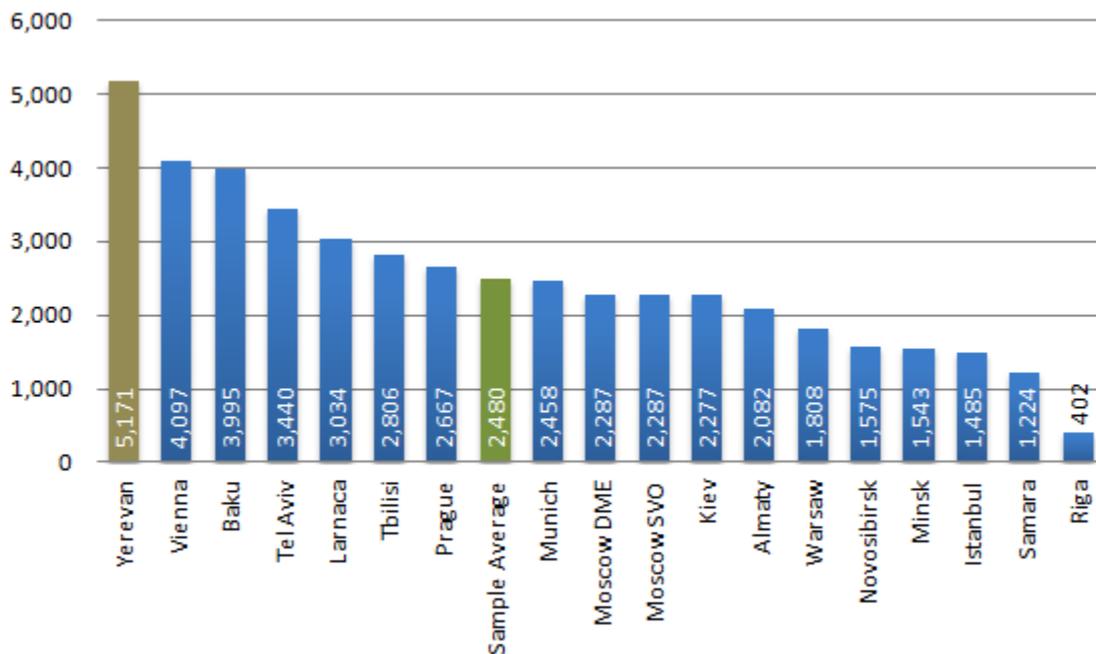
Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Note: (*) PRM: Passengers with Reduced Mobility

(**) Security charge levied on the aircraft (prorated by the number of passengers according to assumed load factor)

The following graph (Exhibit 3.22) presents the total charges paid by passengers for an Airbus A320 with a 60% load factor.

Exhibit 3.22 – Turnaround Charges on Passengers - for an Airbus A320
Includes all charges and taxes levied on passengers



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

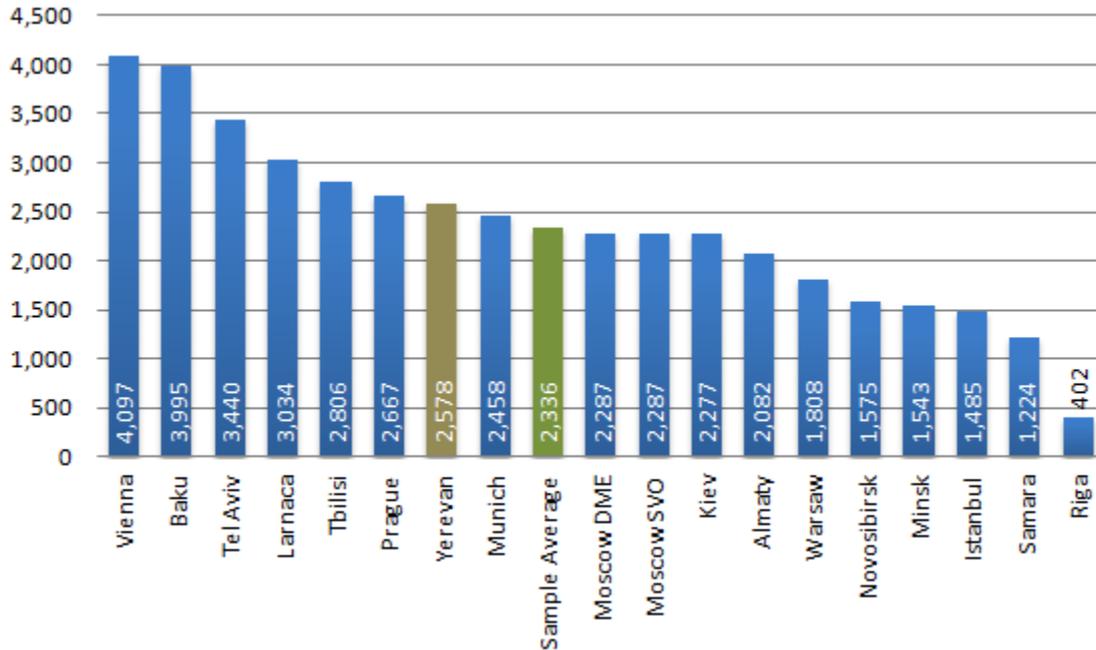
Note: Passenger charges and duties were calculated assuming a 60% load factor

Thanks to the USD 26.2 State Air Exit Duty, EVN (USD 5,171) has the highest turnaround charges on passengers, and is more than double than the sample average (USD 2,480).

Excluding the State Air Exit Duty, turnaround charges on passengers at EVN decline to a more reasonable level (Exhibit 3.23).

Exhibit 3.23 –Turnaround Charges on Passengers Excluding the State Air Exit Duty in Armenia - for an Airbus A320

Includes all charges and taxes levied on passengers



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Note: Passenger charges and duties were calculated assuming a 60% load factor

If Armenia's State Air Exit Duty was removed, turnaround charges on passengers at EVN would be USD 2,578, only 10.4% higher than the sample average.

3.4 Total Turnaround Cost – Conclusion on the Benchmarking Analysis

Considering that some charges are aircraft-based and others are passenger-based, the evaluation of overall infrastructure charges requires the addition of all charges to determine the cost of the turnaround. A turnaround refers to all the activities that take place on the ground between the aircraft's arrival and its subsequent departure, and for the purpose of this section it includes the following charges:

- Charges paid by airlines
 - Overflight
 - Approach
 - Landing fees
 - Aircraft parking fees
 - Boarding bridge fees
 - Fuel (two thirds of fuel capacity)
- Charges paid by passengers
 - Passenger facility charge
 - Security

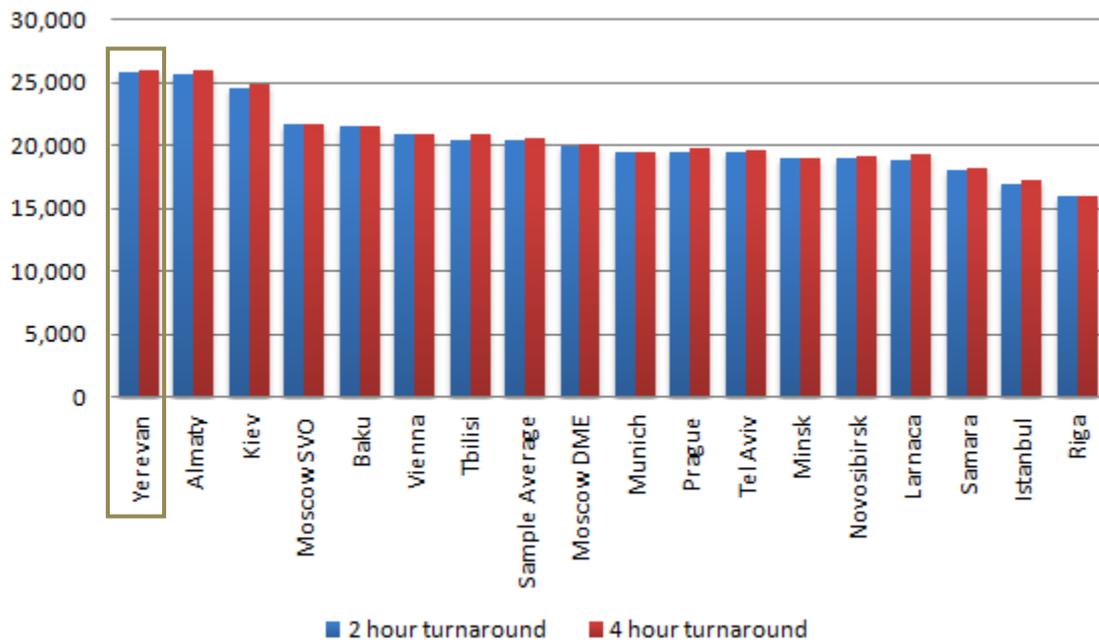
- Other fees/taxes

Ramp handling charges and CUTE fees are not included because they were not available for all the airports in the sample. Warsaw is not shown since the fuel price at the airport was not available.

The calculation of the turnaround costs is presented for the Airbus A320 (Exhibit 3.24) and the Bombardier CRJ900 (Exhibit 3.25), assuming a 60% load factor and excluding Armenia's State Air Exit Duty.

Exhibit 3.24 –Turnaround Cost for an Airbus A320 excluding Armenia's State Air Exit Duty

Includes all charges paid by airlines (including fuel) and by passengers



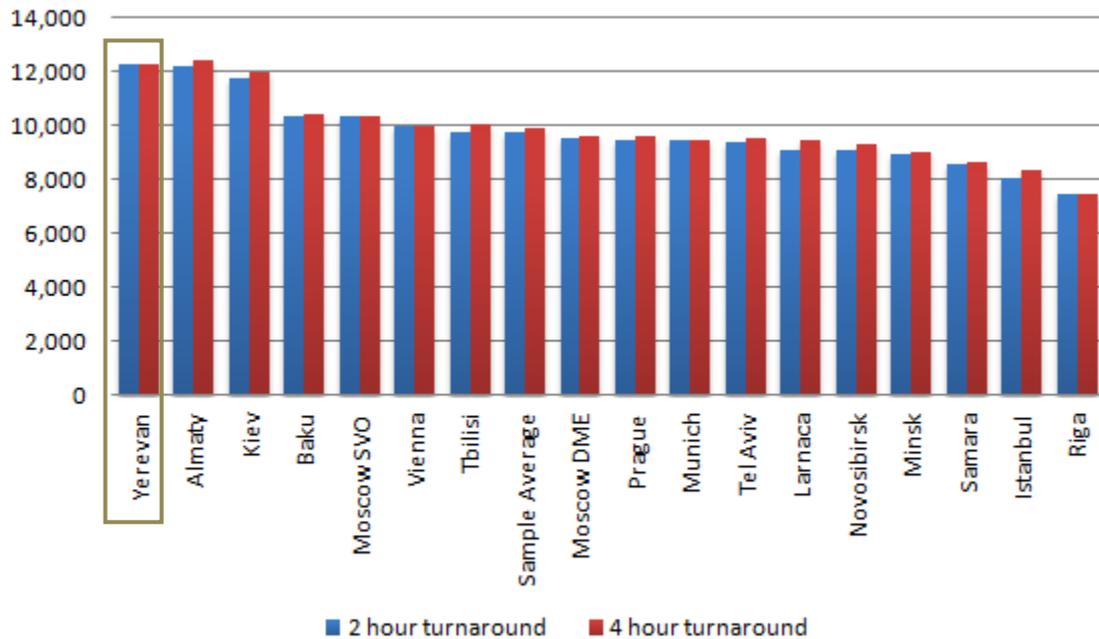
Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Note: Passenger charges and duties were calculated assuming a 60% load factor

Total charges for an Airbus A320 on a two-hour turnaround range from USD 15,960 in Riga to USD 25,896 in Yerevan, which is the most expensive airport in the sample, and is 26.8% higher than the USD 20,424 sample average. The total cost for a 4-hour turnaround ranges from USD 15,960 in Riga to 25,966 in EVN, which is 26.0%% higher than the USD 20,601 average. The cost difference among airports is largely explained by charges levied on passengers.

Exhibit 3.25 –Turnaround Cost for a Bombardier CRJ900 excluding Armenia’s State Air Exit Duty

Includes all charges paid by airlines (including fuel) and by passengers



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges

Note: Passenger charges and duties were calculated assuming a 60% load factor

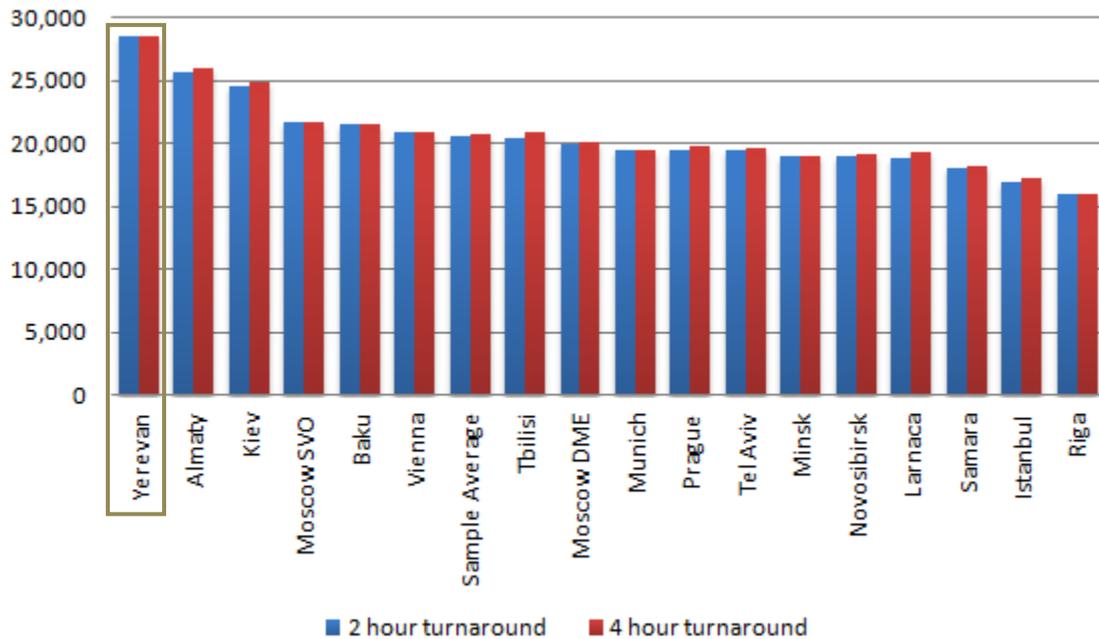
EVN is also the most expensive airport in the sample for a Bombardier CRJ900. Charges at EVN total USD 12,249, and are 25.5% above the sample average of USD 9,759 on a 2-hour turnaround. Riga is the least expensive airport in the sample with total charges of USD 7,479.

If a 4-hour turnaround is considered the total costs range from USD 7,479 in Riga to 12,445 in Almaty. EVN is the second most expensive airport in the sample with charges of USD 12,282, and is 25.9% more expensive than the USD 9,886 sample average.

If Armenia’s State Air Exit Duty is considered, EVN becomes the more expensive than the other airports in the sample by a significant margin (Exhibit 3.26 and Exhibit 3.27)

Exhibit 3.26 –Turnaround Cost for an Airbus A320

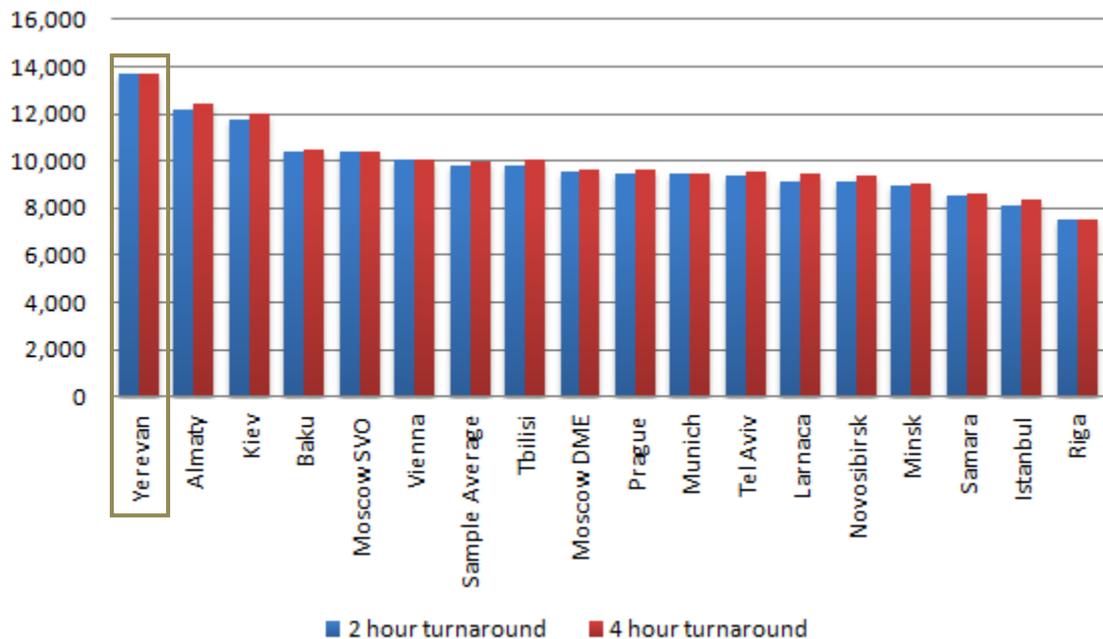
Includes all charges paid by airlines (including fuel) and by passengers (including Exit Duty)



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges
 Note: Passenger charges and duties were calculated assuming a 60% load factor

Exhibit 3.27 –Turnaround Cost for a Bombardier CRJ900

Includes all charges paid by airlines (including fuel) and by passengers (including Exit Duty)



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (July 2011 Revision) and airports' published charges
 Note: Passenger charges and duties were calculated assuming a 60% load factor

If Armenia's State Air Exit Duty is included, total charges at EVN for an Airbus A320 on a 2-hour turnaround are 28,490, 38.5% higher than the sample average.

In the case of a Bombardier CRJ900, total charges at EVN are USD 13,663, 38.8% higher than the sample average.

Depending on the aircraft type, total charges at EVN are about 38% higher than the average for the sample of airports considered in the analysis.

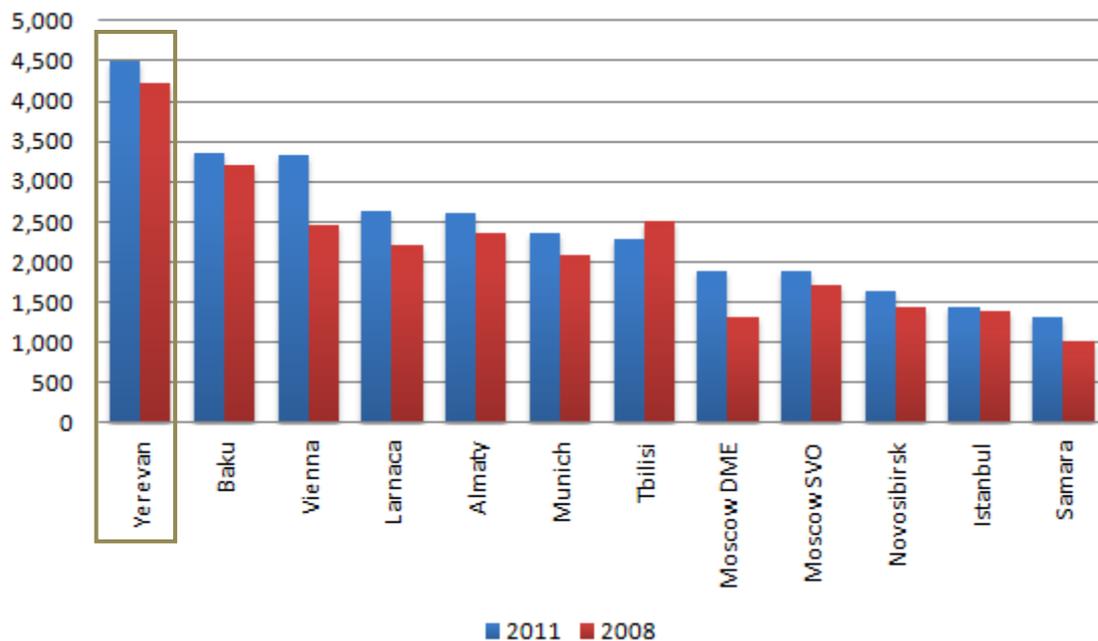
Charges paid by airlines (overflight, approach, landing fees, aircraft parking fees, boarding bridge fees, and fuel) are about 29% higher than the sample average, and charges paid by passengers are more than twice as high than the sample average.

The values above consider all charges and taxes levied on passengers. If the State Air Exit Duty was not considered, EVN would still be higher than the average, albeit by not as large of a margin.

As mentioned above, ramp handling and CUTE are not included in the comparison because the information could not be obtained for all the airports in the sample, but EVN has the most expensive ramp handling charges and second most expensive CUTE charges among the airports with which these services were compared.

The following graph (Exhibit 3.28) compares the total turnaround charges for a CRJ900 in 2008 and in 2011.

Exhibit 3.28 – Turnaround Cost for a Bombardier CRJ900
includes daytime landing fees, parking, boarding bridge, ATC, passenger charges (including Exit Duty)



Source: prepared by consultant based on IATA's Airport & Air Navigation Charges Manual (2008 and 2011 editions) and airports' published charges
Note: 2011 charges were calculated with the 2008 exchange rates to isolate the effect of the exchange rates fluctuations from the comparison

Turnaround charges at EVN were USD 4,236 in 2008, over 300% higher than Samara. In 2011 the difference between the most and least expensive airports (again, EVN and Samara) was reduced to almost 250%, which although smaller than the difference in 2008, is nevertheless substantial.

In summary, the cost of travel to Armenia is high for both passengers and airlines. A number of measures should be adopted to make travel more affordable and competitive, including the elimination of the State Air Exit Duty, and the application of an effective economic regulatory framework at the airports, to ensure that ancillary services (ramp handling, fuel, in-flight catering, etc.) are provided under competitive conditions.

4.0 Market Outlook

4.1 Measuring Connectivity

4.1.1 Methodology

The market outlook is based on the airline schedules rather than on actual passenger traffic. Origin-destination passenger traffic statistics are treated as confidential by the airlines and hence are difficult to obtain. Available capacity on the other hand can be derived from the schedules published by the airlines or obtained through commercial databases.

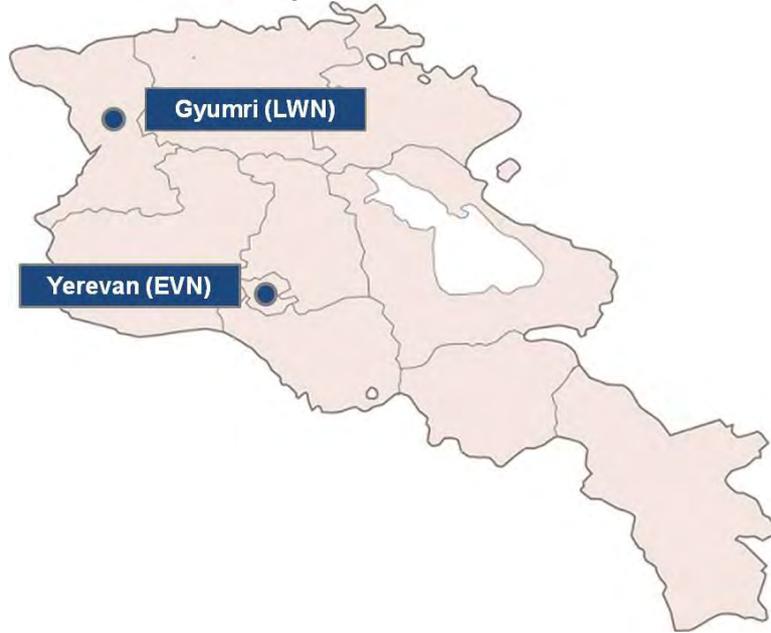
The information for the analysis was obtained from the Official Airline Guide (OAG), a database with the schedules of all commercial airlines worldwide. A query to the database was used to obtain the schedules of all the international flights departing from Armenia, including departing airport, destination (airport, city, country and region), annual frequencies and total number of seats available.

Since the frequencies obtained from OAG were in some cases inaccurate, they were replaced with the frequency information published by the airlines in their schedules. Airline schedules can vary according to the period of the year, depending on the nature of traffic that is carried on specific routes. For example, frequencies to holiday destinations which are seasonal by nature can be reduced in off-peak seasons because of the lower traffic volumes. In most cases the schedules available for download were only valid for the summer season (April to October), but since the analysis required the available capacity for one whole year, it was assumed that the current schedules are valid for one year forward.

4.1.2 Findings

Armenia has two international airports, Zvartnots International (EVN) serving Yerevan, and Shirak International (LWN), serving the city of Gyumri, about 120 km from the capital city of the country (Exhibit 4.1).

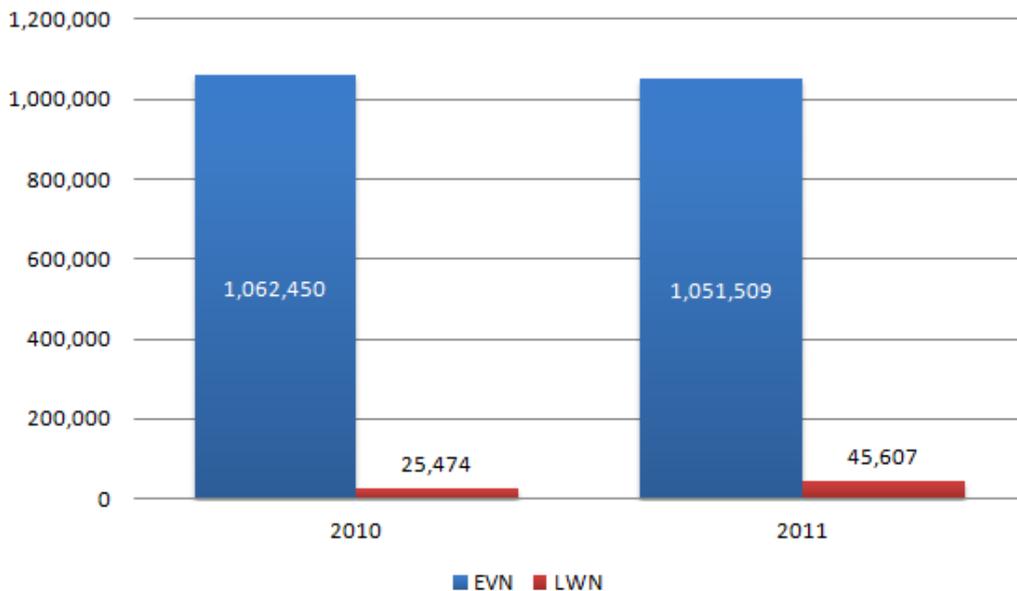
Exhibit 4.1 – International Airports in Armenia



Source: prepared by consultant

The market outlook focuses on EVN, which is by far the most important airport in the country, covering more than 95% of the total passenger traffic (Exhibit 4.2).

Exhibit 4.2 – Passenger Traffic at Armenia’s Airports January to August



Source: GDCA

Passenger traffic at EVN declined by about 1%, from 1.06 million passengers in the first eight months of 2010, to 1.05 million passengers in the same period of 2011. In the same period passenger traffic at LWN almost doubled, from around 25,000 passengers in January-August 2010, to over 45,000 in the same period of 2011.

Despite the slight decline in traffic in 2011, EVN is still Armenia's major international gateway, and will remain as such in the foreseeable future.

EVN is served by 27 carriers offering non-stop services to 48 markets in 22 countries (Exhibit 4.3).

Exhibit 4.3 – International Markets Served from EVN

	Region	Country	Market	Carrier
1	Africa	Egypt	Cairo	Smart Aviation Company
2	Asia	Kazakhstan	Aktau	Air Company Scat
3	Eastern Europe	Belarus	Minsk	Belavia
4		Czech Republic	Prague	Czech Airlines
5		Georgia	Tbilisi	Armavia
6		Poland	Warsaw	LOT
7		Russian Federation	Anapa	Izhavia
8		Russian Federation	Astrakhan	Armavia
9	(Asia)	Russian Federation	Chelyabinsk	S7 Airlines
10		Russian Federation	Kazan	Tatarstan Airlines
11		Russian Federation	Krasnodar	Armavia, Airlines of Kuban
12		Russian Federation	Mineralnye Vody	Armavia, Kavminvodyavia
13		Russian Federation	Moscow ¹	Aeroflot, Armavia, S7 Airlines
14		Russian Federation	Nizhny Novgorod	Armavia
15	(Asia)	Russian Federation	Novosibirsk	Armavia, S7 Airlines
16		Russian Federation	Perm	Izhavia
17		Russian Federation	Rostov	Armavia, Donavia
18		Russian Federation	Samara	Armavia, Ural Airlines
19		Russian Federation	Saratov	Saratov Airlines
20		Russian Federation	Sochi	Armavia, Donavia
21		Russian Federation	St Petersburg	Armavia, Rossiya
22		Russian Federation	Stavropol	Armavia, RusLine
23	(Asia)	Russian Federation	Tyumen	Yamal Airlines
24		Russian Federation	Ufa	Armavia
25		Russian Federation	Volgograd	RusLine
26		Russian Federation	Voronezh	Airmavia, Air Company Polet
27	(Asia)	Russian Federation	Yekaterinburg	Ural Airlines
28		Ukraine	Donetsk	Armavia
29		Ukraine	Kharkiv	Armavia
30		Ukraine	Kiev	Armavia, Aerosvit Airlines
31		Ukraine	Odessa	Armavia
32		Ukraine	Simferopol	Armavia
33	Middle East	Iran	Tehran	Armavia, Caspian Airlines
34		Israel	Tel Aviv	Armavia
35		Lebanon	Beirut	Armavia

Region	Country	Market	Carrier	
36	Syria	Aleppo	Armavia, Syrian Arab Airlines	
37	United Arab Emirates	Dubai	Armavia, FlyDubai	
38	Western Europe	Austria	Vienna	Austrian Airlines
39	Cyprus	Larnaca	Armavia	
40	France	Marseille	Armavia	
41	France	Paris	Air France, Armavia	
42	Germany	Berlin	Armavia	
43	Greece	Athens	Armavia	
44	Italy	Rome	Air Italy, Armavia	
45	Italy	Venice	Armavia	
46	Netherlands	Amsterdam	Armavia	
47	Turkey	Istanbul	Armavia	
48	United Kingdom	London	BMI	

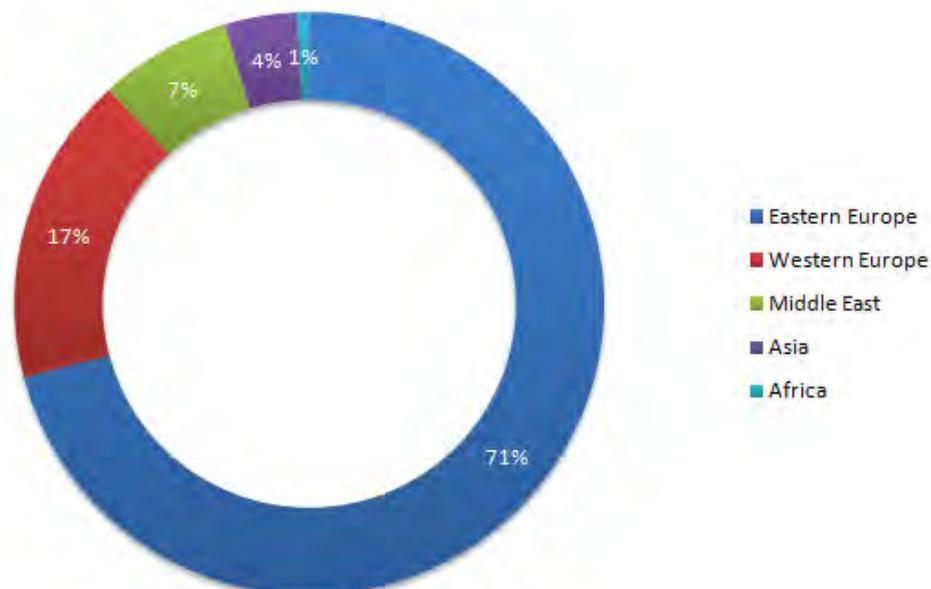
Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules

¹ Includes Domodedovo, Sheremetyevo and Vnukovo

Note: Chelyabinsk, Novosibirsk, Tyumen, and Yekaterinburg are located in Asia, but were placed in the Eastern Europe section as that is where most of the Russian Federation markets belong to. The following graphs in the document that present regional distribution of capacity have these 4 markets allocated to the Asia region.

Most of the markets served from EVN are located north and west of Armenia, in Eastern and Western Europe. In fact, only eleven out of 48 markets are in Asia, Africa, or the Middle East. The relevance of the European continent to Armenia's air traffic is evidenced in the following graph (Exhibit 4.4), which presents the available seats from EVN by arrival region.

Exhibit 4.4 – International Seat Capacity from EVN, by Arrival Region

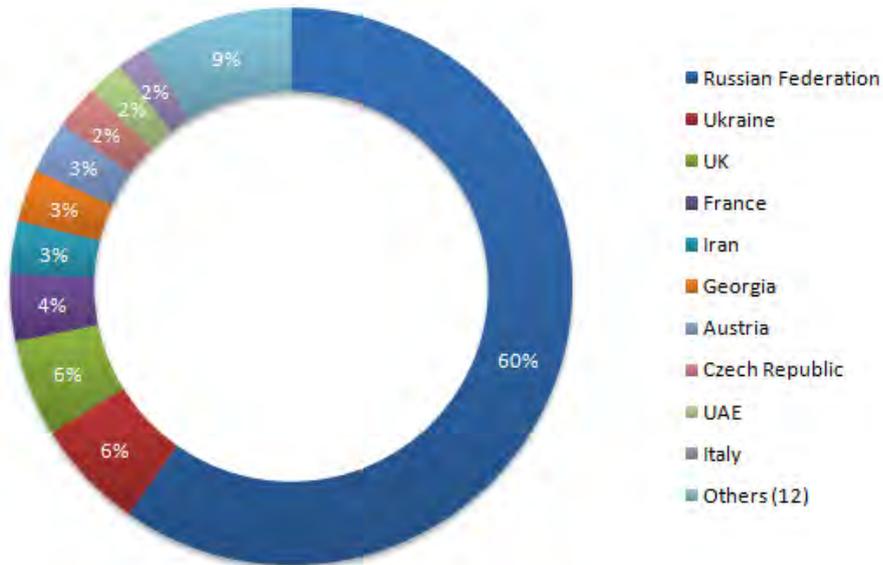


Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules

Eastern Europe accounts for 71% of the seat capacity and Western Europe holds another 17%, leaving the European continent with 88% of the available seats from EVN. The remaining 12% is divided between the Middle East (7%), Asia (4%), and Africa (1%).

With twenty out of 48 international markets served from EVN, seat capacity from EVN is heavily concentrated in the Russian Federation (Exhibit 4.5).

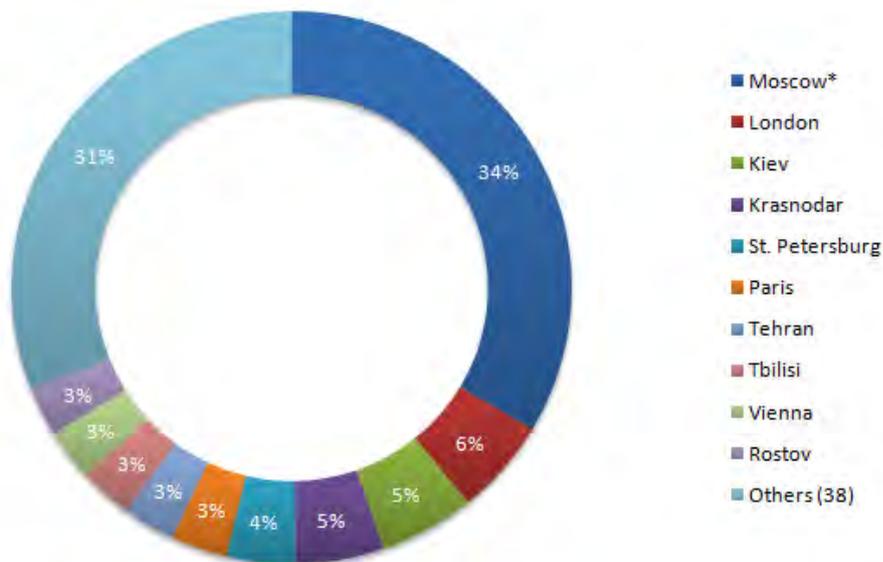
Exhibit 4.5 – International Seat Capacity from EVN, by Arrival Country



Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airline schedules

The Russian Federation accounts for 60% of the international seats from EVN, while the second and third countries in the ranking (Ukraine and the United Kingdom) hold 6% each. The remaining nineteen countries each account for less than 5% of the international available seats.

Exhibit 4.6 – International Seat Capacity from EVN, by Market



Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules

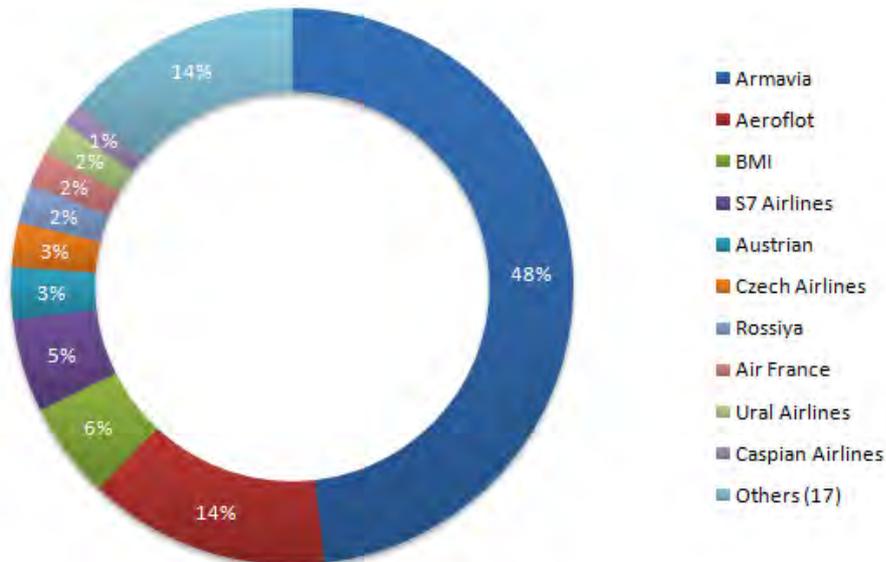
* includes Domodedovo, Sheremetyevo, and Vnukovo

Including its three airports (Domodedovo, Sheremetyevo and Vnukovo), Moscow is the largest market within the Russian Federation, and also the single largest market out of EVN (Exhibit 4.6).

Moscow concentrates more than one third of the total seat capacity from EVN. Russia’s capital is the only market from EVN which is served by 3 different airlines and with an average of more than seven daily flights. The remaining 47 markets’ capacity share ranges between 6% (London, the second single largest market from EVN) to less than 0.5% each.

There are 27 carriers that offer scheduled international flights from EVN - the local Armavia plus 26 foreign airlines (Exhibit 4.7).

Exhibit 4.7 – International Seat Capacity from EVN, by Airline

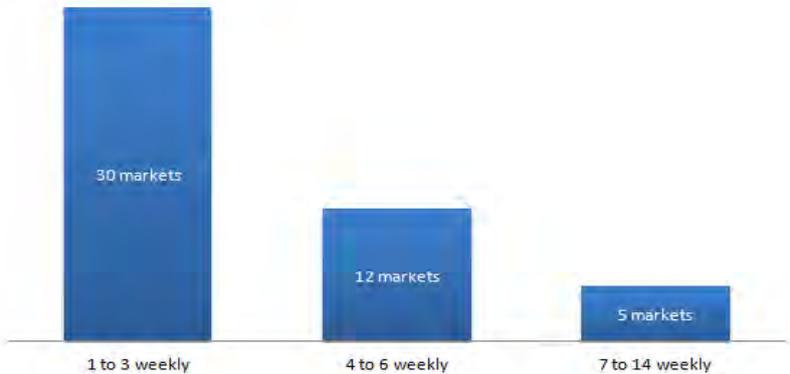


Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules

Armavia accounts for almost half of the seat capacity from EVN. Aeroflot is the second largest airline with a 14% capacity share, followed by UK’s BMI and Russia’s S7 Airlines with 6% and 5%, respectively. The remaining carriers each hold 3% of the available seats or less.

Despite the large number of markets operated from EVN, most of them are served rather poorly in terms of frequency of service and competition levels (Exhibit 4.8 and Exhibit 4.9). Moscow is served with an average of over 7 daily flights operated by 3 airlines to the city’s three airports (Armavia operates to Domodedovo and Vnukovo, Aeroflot flies to Sheremetyevo, and S7 Airlines serves Domodedovo), but it is the only market from EVN that is provided with such an intensive level of service. For the remaining 47 markets, 30 are served with 1 to 3 weekly flights, and another twelve are served with 4 to 6 flights per week. Only six of the markets from EVN (Moscow plus other 5) are operated with at least one daily flight.

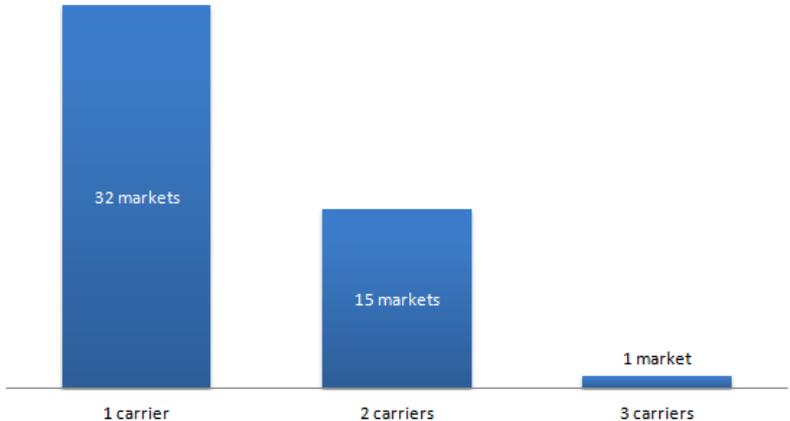
Exhibit 4.8 – Number of International Markets from EVN, by Frequency of Service
excludes Moscow



Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules
Note: excludes Moscow

It is important to note that business traffic, which is the most profitable segment for the airlines, is extremely difficult to develop on routes with low frequencies. Business travelers demand a level of scheduling flexibility that is difficult to satisfy in the majority of the routes from EVN, which are operated with weekly flights or less.

Exhibit 4.9 – Option of Carriers per Market



Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules

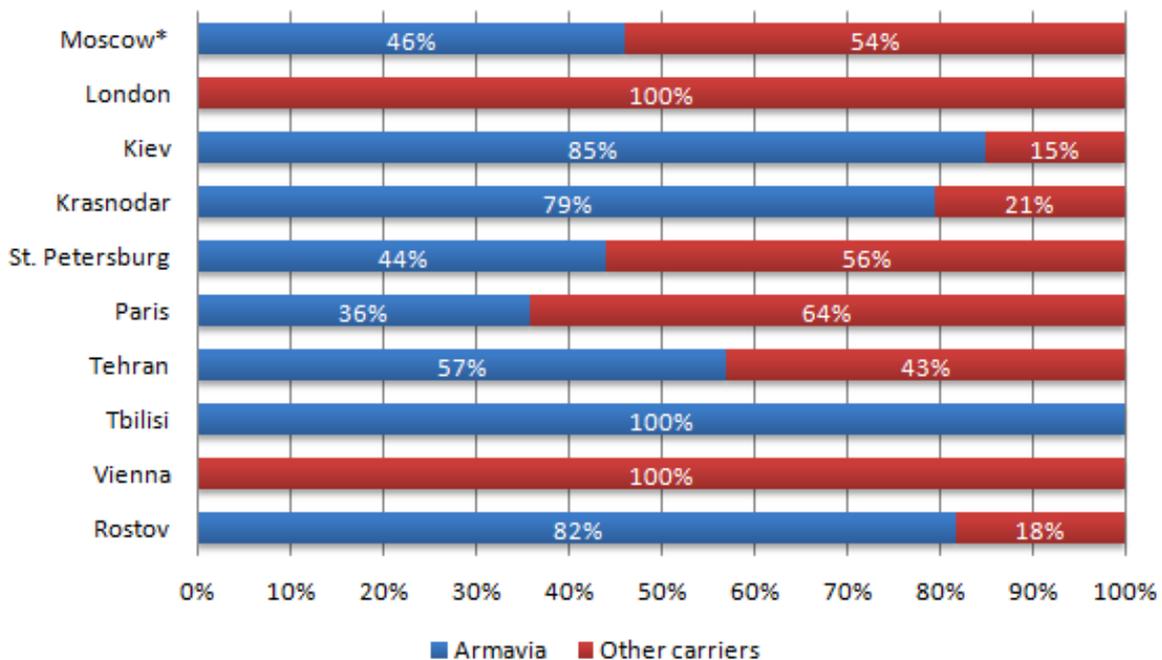
As mentioned above, Moscow is the only market with service from three different carriers. There are fifteen markets with service from two different airlines, and 32 that are just operated by one carrier.

In practice, competition levels might be even lower than indicated above. Considering that twelve of the fifteen markets that are served by 2 different airlines are operated with a combined 5 or fewer weekly frequencies, passengers that need to travel on a certain day of the week do not have significant choice in terms of airlines. In summary, meaningful competition is only present for four of the 48 markets served from EVN.

The relatively low level of frequencies and competition on most routes could be related to the protective measures towards Armavia that the Government of Armenia has reportedly employed in the past. It has been traditional Government policy to grant traffic rights to foreign carriers up to the point where the local carrier felt comfortable competing, and to place capacity restrictions on routes that Armavia was not able or willing to operate. This resulted in a less competitive environment; with many instances of foreign carriers operating fewer flights than they wanted to, and market shares split by bilateral air service agreements negotiations between government officials of two countries, rather than proactively competed for by the airlines in the marketplace.

Analyzing the capacity share of Armavia in the top ten markets from EVN (Exhibit 4.10), it is unclear whether or not the aforementioned restrictions are still in place.

Exhibit 4.10 – Capacity Share – Armavia vs. Other Carriers, for the Top 10 Markets out of Yerevan, measured in available seats



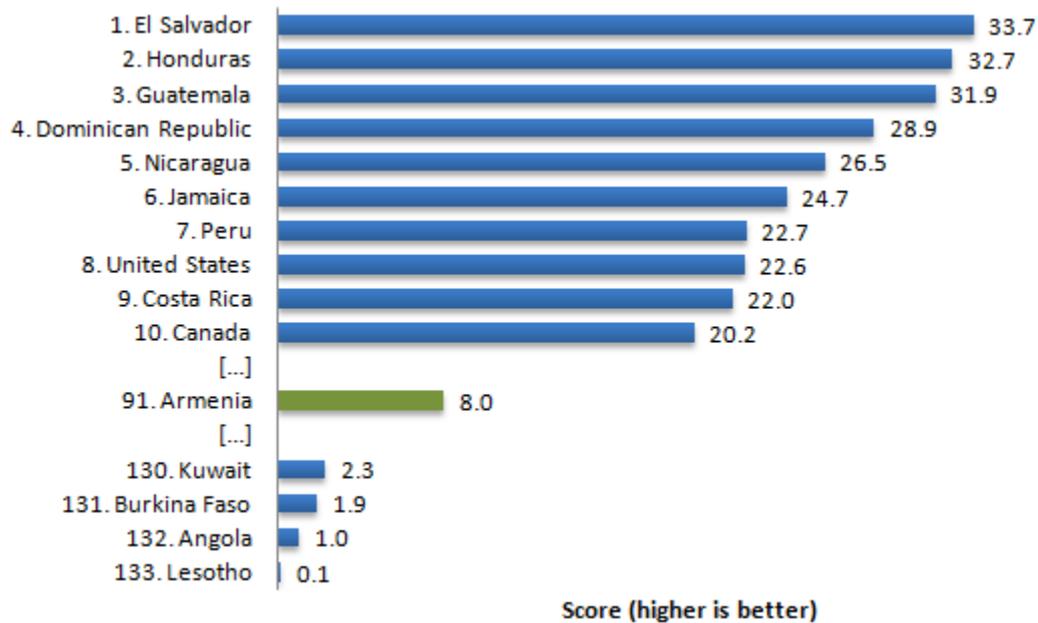
Source: prepared by consultant with information from OAG (October 2011 to September 2012) and airlines schedules

Note: For several of the routes operated by two carriers, code share agreements exist with “soft block”, where the number of seats to be sold by the code share partner are either not defined but based on the anticipated demand level, or “free sale” (or free flow), where both airlines share the total inventory of seats offered jointly.

Armavia has close to 50% capacity share in three of the top ten markets, and dominates four of the top ten markets. However, in most of these markets, Armavia enjoys a codeshare agreement with the other party’s airline, commercializing jointly a consolidated inventory of seats at an agreed airfare. Given Armavia’s dominance in some routes, and the agreements in place in most of the others, the level of effective competition is quite low.

The World Economic Forum (WEF), in its Travel and Tourism Competitiveness Report 2011, publishes the Openness of Bilateral Air Service Agreement Index. The relative position of Armenia’s air service agreements was among the most restrictive (Exhibit 4.11)¹³.

Exhibit 4.11 – WEF¹⁴ Openness Index



Source: World Economic Forum – The Travel & Tourism Competitiveness Report 2011
 Note: number to the left of the country name is the position in the ranking, based on an analysis of Air Service Agreements, with 2005 information

Although based on information obtained from air service agreements going as far back as 2005, the WEF index for Travel & Tourism Competitiveness still ranks Armenia far back in 91st position, out of a total of 132 countries. This means that the access conditions laid out air service agreements are not in fact facilitating effective competition in international air connectivity.

4.2 Demand for Air Travel

Passenger traffic at EVN declined during the 1997-2000 period, but from 2001-10 it increased consistently (with the exception of 2009, which saw a small drop), and experienced an 11.7% CAGR.

Passenger traffic at EVN was projected for a 20 year period using two simple methods¹⁵. The first method employed linear regression to project future traffic based on historical observations (trend line). The second method was also based on regression analysis, but used the GDP of countries representing the source of traffic as an independent variable for the projections. The projection by GDP was calculated for a base scenario, and also for an optimistic and a pessimistic scenario.

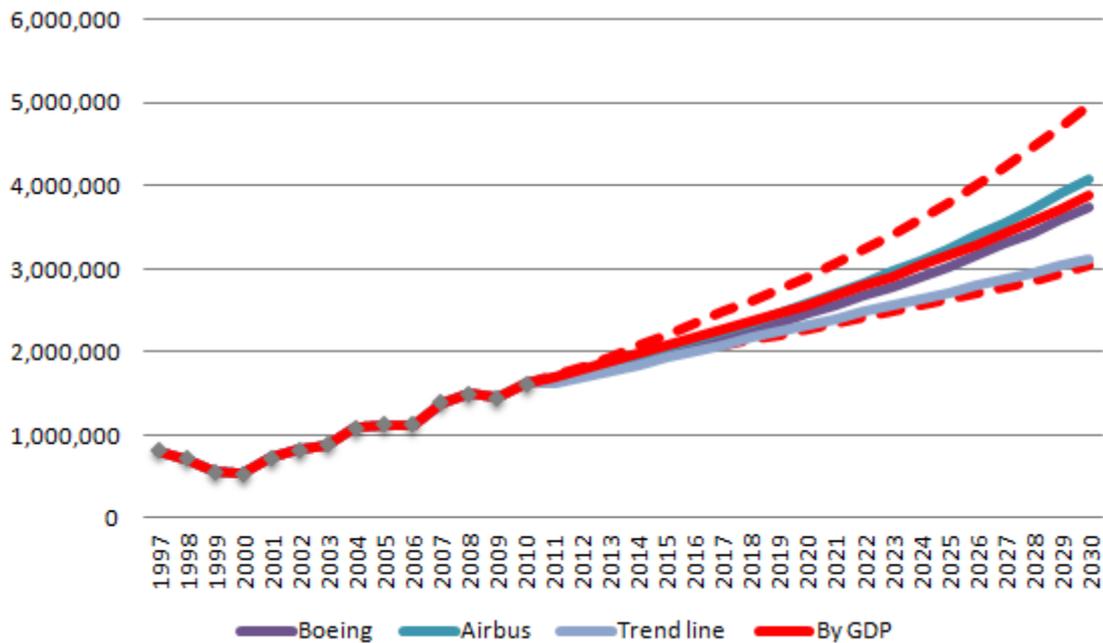
¹³ It should be noted though, that the WEF calculates the index using information from 2005

¹⁴ World Economic Forum

¹⁵ It should be noted that these traffic projections are simple estimations using linear trend and GDP regression analysis. No sophisticated analysis for traffic forecast was carried out as part of the present study.

The projections were compared with forecasts by aircraft manufacturers Boeing and Airbus. The following graph (Exhibit 4.12) presents the traffic forecast for the 2011-2030 period.

Exhibit 4.12 – Basic passenger traffic projection



Source: prepared by consultant with historical information obtained from GDCA. Forecast prepared based on GDP projections by IMF and Boeing.

The base scenario of the projection by GDP yields roughly the same results as the forecasts by Airbus and Boeing, with around 3.9 million passengers in 2030. The projection by trend line is lower than the other projections, with about 3.1 million passengers in the last year.

4.3 Conclusions on Market Outlook

EVN is connected with non-stop services to 48 markets in Eastern and Western Europe, the Middle East, Africa, and Asia. However, connectivity could still be improved as only six of the markets are connected with daily (or more) services. There are twelve markets that are served with four to six weekly flights, and thirty that are only served by one to three flights per week.

Competition is also scarce, as a result of restrictive policies that place limits on the capacity that can be offered by foreign carriers. Only one out of 48 markets is served by three different carriers and another fifteen are operated by two carriers; while the remaining 32 markets are served by just one airline. It must be noted that some of the markets operated by two airlines are served with a relatively low level of frequency, so that there is only one carrier option on any given day. In addition, most of the routes operated by two airlines (one designated carrier per party) act jointly through a code share agreement that involves air fare coordination and non-compete clauses.

Armenia’s connectivity will be enhanced by adopting a liberal air transport policy, allowing foreign and local carriers to operate to and from any points in the country, and to set capacity (frequencies, aircraft type) according to commercial considerations. An unrestricted air transport policy would foster international services to new and existing destinations, and would likely result in significantly reduced fares.

An open air transport environment will have a positive effect on travel to the country; as this will allow a greater influx of foreign travelers, business travelers, and most particularly tourists, who are very sensitive to availability and price. At the same time, Armenian nationals will be able to more easily access foreign countries for tourism, trade, industry fairs and conventions, allowing for greater sharing and effective transfer of technology and knowledge.

5.0 The Cost of Air Travel into and out of Armenia

A comparison of airfares was conducted with the goal of establishing if traveling to Armenia is more costly than traveling to other comparable markets. The analysis compared fares on 39 international non-stop routes to and from Yerevan and between other regions in the world (25 to the former and 14 to the latter).

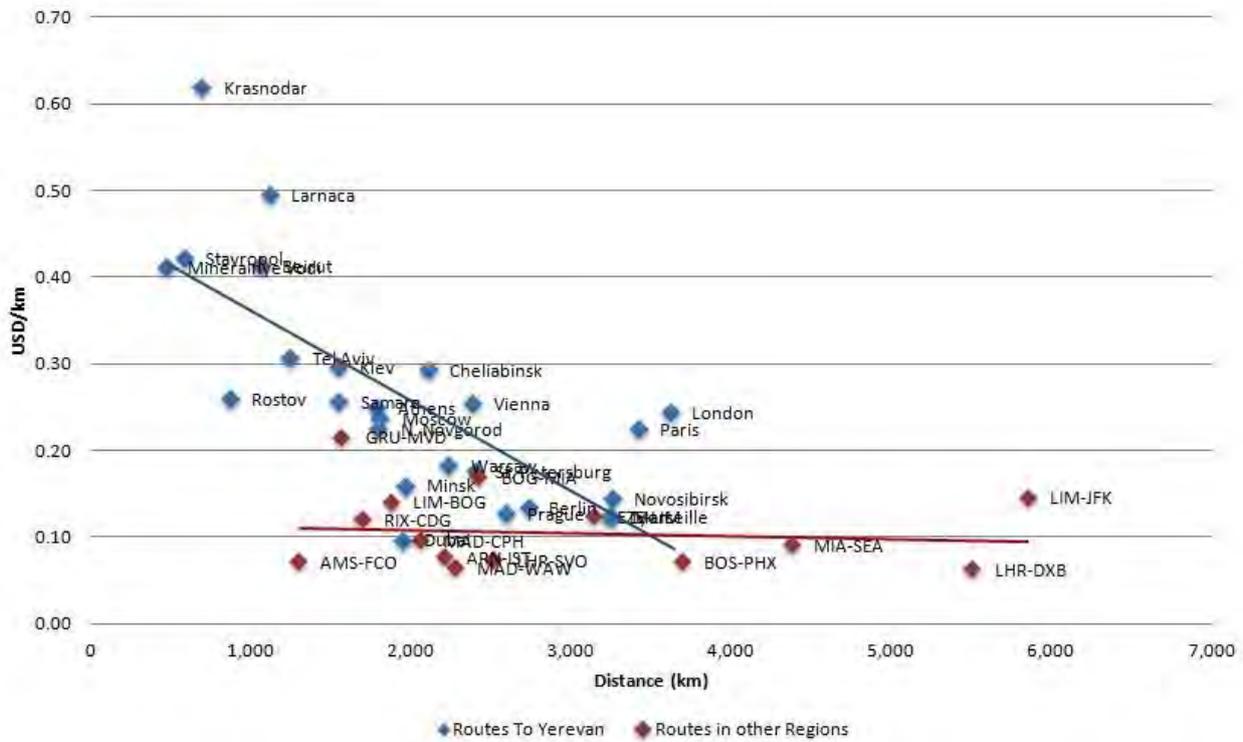
The fares used in the analysis were obtained from the respective airlines' websites, and are the lowest round-trip fares with seat availability for travel on selected weeks, on in high season (October 3 to October 9 2012), and one in mid-season (May 2 to May 8 2012). Alternative dates, just a few days away, were used on certain routes when there were no operations on those exact dates. Comparisons were made for travel originating in Armenia (outbound) and for travel originated abroad (inbound).

The following graphs (Exhibit 5.1 and Exhibit 5.2) present a comparison of the lowest available fares to and from Yerevan and between other regions in the high season, expressed as USD cents per kilometer.

Fares were arranged in a scatter graph with the route distance in the horizontal axis and the cost per kilometer in the vertical axis. Each point represents a single route to/from Yerevan and in other regions. The solid lines represent the regression function that best describes the distance/cost per km relationship for each of the data sets (EVN is in blue and other regions is in red), and were calculated based on least squares regression methodology, or minimum sum of squares.

Exhibit 5.1 – Comparison of Inbound Fares to Yerevan and from Similar Segments in Other Regions: High Season

Lowest available fares - include base fare, fuel surcharge, and ticket service charge. Excludes airport charges and taxes



Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, Iberia, Turkish Airlines, Aeroflot, Air Baltic, Royal Brunei, Alitalia, Aerolineas Argentinas, TAM, Avianca, LAN, American Airlines, Alaska Airlines, US Airways
 Air fares for travel between October 3 and October 9, 2012 (adjacent dates were used for routes that are not operated on those days).

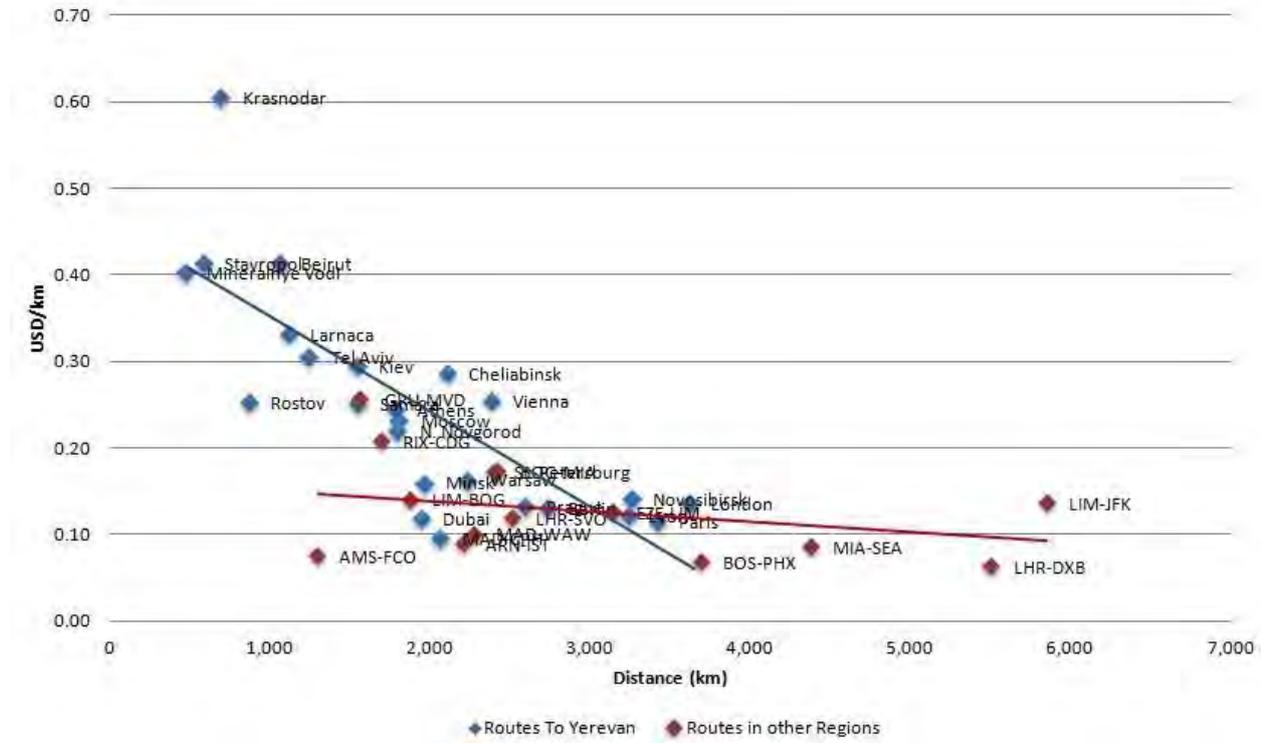
Since, for some markets, unit ticket prices tend to decline as the travel distance increases, fares should be compared with others for a similar distance.

Fares for travel to Armenia are consistently higher than fares in Europe, Latin America, and the United States. The cost per kilometer for most routes in other regions hovers between 0.07 USD/km and 0.17 USD/km, compared to a cost per km. of over 0.20 USD/km for most inbound routes to Yerevan (with many routes above 0.40 USD/km).

The line that represents the function of the distance/cost of travel relationship in other regions (red line) is below EVN's blue line for all the routes with comparable distances.

Exhibit 5.3 – Comparison of Inbound Fares to Yerevan and from Similar Segments in Other Regions: Mid-Season

Lowest available fares, include base fare, fuel surcharge, and ticket service charge. Excludes airport charges and taxes



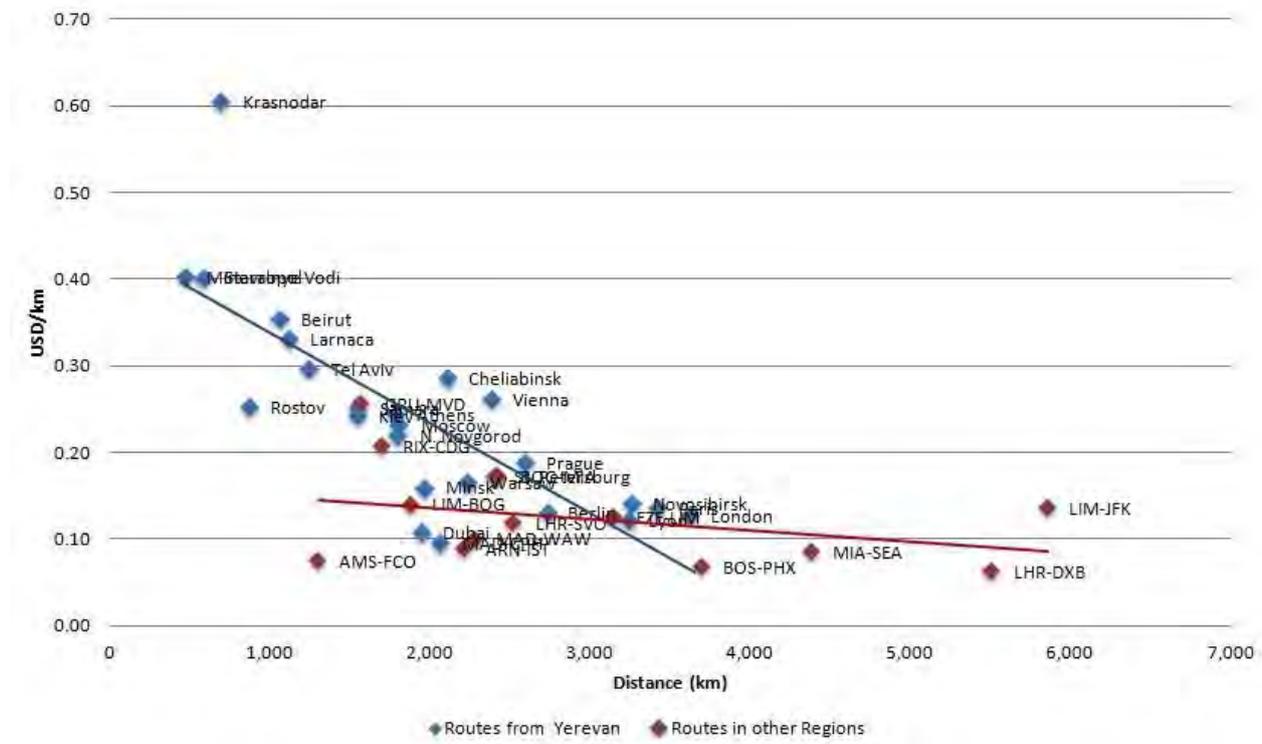
Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, Iberia, Turkish Airlines, Aeroflot, Air Baltic, Royal Brunei, Alitalia, Aerolineas Argentinas, TAM, Avianca, LAN, American Airlines, Alaska Airlines, US Airways
 Air fares for travel between May 2 and May 10, 2012 (adjacent dates were used for routes that are not operated on those days).

Fares in mid-season are somewhat lower than high season fares – the average fare to EVN declines from USD 431 in October to 388 in May - but traveling to EVN is still more expensive than travel in other regions. The blue line (EVN) is consistently higher than the red line (other regions) in the 1,000 km to 3,000 km range.

For distances above 3,000 km fares in other regions appear to be higher, but there are hardly any routes to EVN on those distances. There is a single route over 3,000 km in other regions of a comparable distance to routes in EVN (BOS-PHX), and the cost per km of that route is clearly lower than for routes in Armenia.

Exhibit 5.4 – Comparison of Outbound Fares from Yerevan and from Similar Segments in Other Regions: Mid-Season

Lowest available fares, include base fare, fuel surcharge, and ticket service charge. Excludes airport charges and taxes



Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, Iberia, Turkish Airlines, Aeroflot, Air Baltic, Royal Brunei, Alitalia, Aerolineas Argentinas, TAM, Avianca, LAN, American Airlines, Alaska Airlines, US Airways
 Air fares for travel between May 2 and May 10, 2012 (adjacent dates were used for routes that are not operated on those days).

Fares for travel to and from EVN during the mid season are very similar. This is in contrast to the high season, during which fares in some routes are notably higher for travel originating abroad than for travel originating in EVN. The relationship between fares outbound from EVN and in other regions is almost identical to the previous case, that compared inbound fares to EVN.

Consistently, the costs of traveling into and out of Armenia are higher than traveling on comparable routes in other regions. This is a direct consequence of the limited competition for most routes, as demonstrated in the market outlook analysis.

These results provide a very clear incentive to carry out the necessary fundamental reforms in aviation policy. By protecting local airlines, the cost to access Armenia is overpriced, hampering the development of inbound tourism; as well as curtailing the opportunities for Armenians to travel abroad to promote trade/foreign investment and expand access to innovative ideas and technologies.

6.0 Aviation Policy Case Study: Georgia

The Georgian air transport market is an ideal case study because Georgia and Armenia are neighboring countries with similar markets characteristics and comparable traffic patterns. Moreover, since Georgia has an open air transport policy, the comparison of the two markets should effectively illustrate the contrasting effects of applying a restrictive aviation policy framework versus a liberalized one.

Georgia has implemented the liberalization of the air transport market to a level beyond what most countries with avowedly “open” aviation policy frameworks have actually adopted. The Georgian government grants unrestricted market access to foreign carriers (there are no capacity restrictions whatsoever), allowing an unlimited number of airlines from any given country to fly to any point in the country and set their fares according to market conditions.

In addition to allowing foreign carriers to operate any number of international services to/from Georgia, the Georgian government has also given rights to foreign airlines to operate flights within Georgia (also known as Eighth Freedom, or “cabotage” rights).

The policies adopted by the Georgian government with respect to the air transport market demonstrate its commitment to the development of aviation in the country and its recognition of the critical importance of this mode of transport for the country’s economic competitiveness.

Supported by these best practice-consistent policies, and reinforced as well by the overall economic growth experienced during the period, passenger traffic in Georgia during 2005 and 2011 has grown significantly, and at a faster rate than at EVN (Exhibit 6.1).

The graph above shows total passenger traffic at Georgian Airports (Tbilisi and Batumi) and at EVN. Individual traffic statistics for Tbilisi were not available, but since the airport accounts for about 90% of total passenger traffic in the country, the total traffic figures displayed are representative of the evolution of traffic flows at the airport.

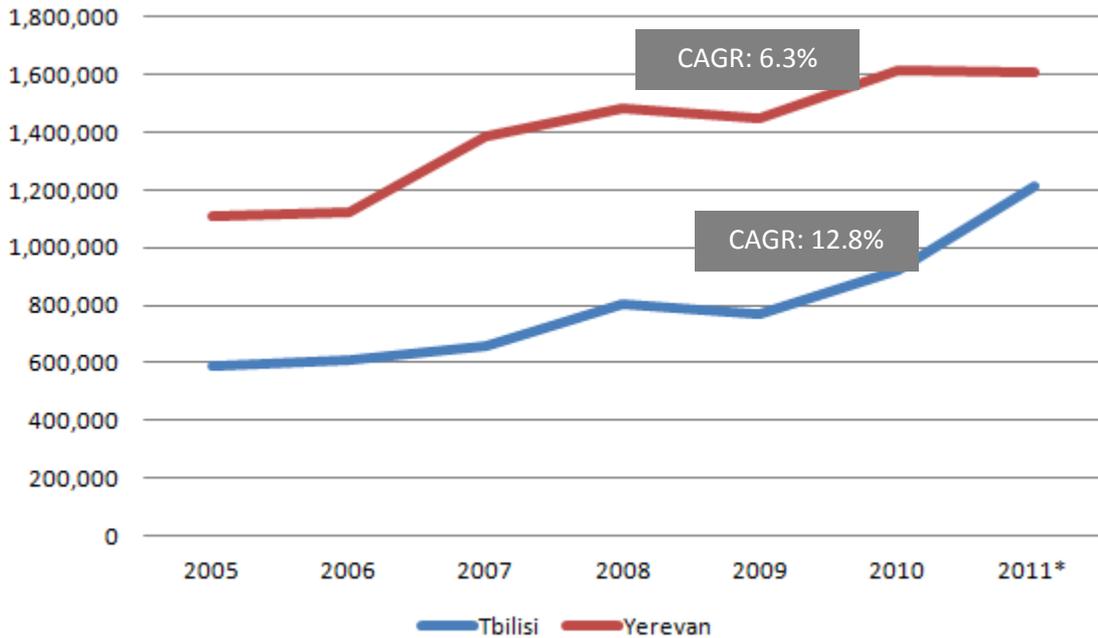
Liberalization in Georgia was announced in 2005, although its real effects began to be experienced from one to two years after that. In fact, although a significant increase was experienced in 2007, it was after 2009 in particular that the traffic soared. Passenger traffic in Georgia has more than doubled in the 2005-2011 period, from 589,000 to over 1,213,000 passengers, with a compound annual growth rate (CAGR) of 12.8% in those six years. Armenia’s air transport market is larger, as evidenced by the traffic volumes in EVN, which increased from about 1,111,000 to over 1,604,000 passengers in the same period. Despite its larger volume, EVN’s growth rate during the same period was 6.3%, less than half of the CAGR of the Georgian market.

The case of Georgia thus amply illustrates the impressive results of the application of a liberal air transport policy, which rapidly translated into elevated traffic growth as a result of increased competition (and thus supply of services) and lower fares for the traveling public.

Traffic grew in terms of number of passengers per destination, but also by increasing the number of markets served. Market like Istanbul and Kiev are served with triple-daily services, while Moscow is operated twice daily. Other destinations, such as Baku, Minsk and Munich are operated on average between 8 and 12 flights per week.

There are other five markets (Yerevan, Tel Aviv, Antalya, Prague, and Tehran) served with between 5 and 7 weekly flights, and another eight markets that receive 3 or 4 weekly services. Only nine of the 28 markets are operated with 2 flights per week or less.

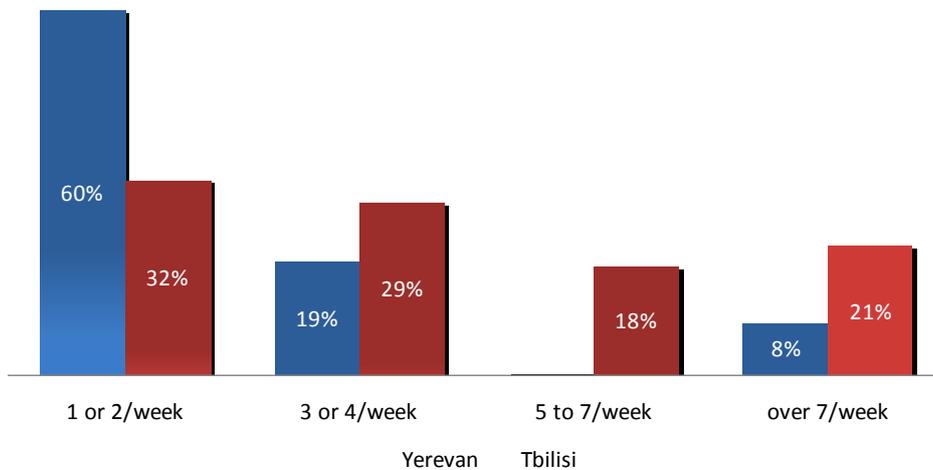
Exhibit 6.1 – Passenger Traffic Evolution – Yerevan and Tbilisi



Source: Georgia Civil Aviation Authority, GDCA Armenia, PanArmenian.net
 Note: Georgia’s overall traffic is used as a proxy for Tbilisi, which accounts for about 90% of total traffic
 * 2011 is estimated

Such offering of services represent a significant better connectivity than Yerevan. Comparatively, 39% of the markets served from Tbilisi are linked over 5 times, while in Yerevan, only 21% of the flights are connected with as many as 5 frequencies a week (Exhibit 6.2).

Exhibit 6.2 – Percentage of International Markets served by Frequency of Service Tbilisi vs Yerevan



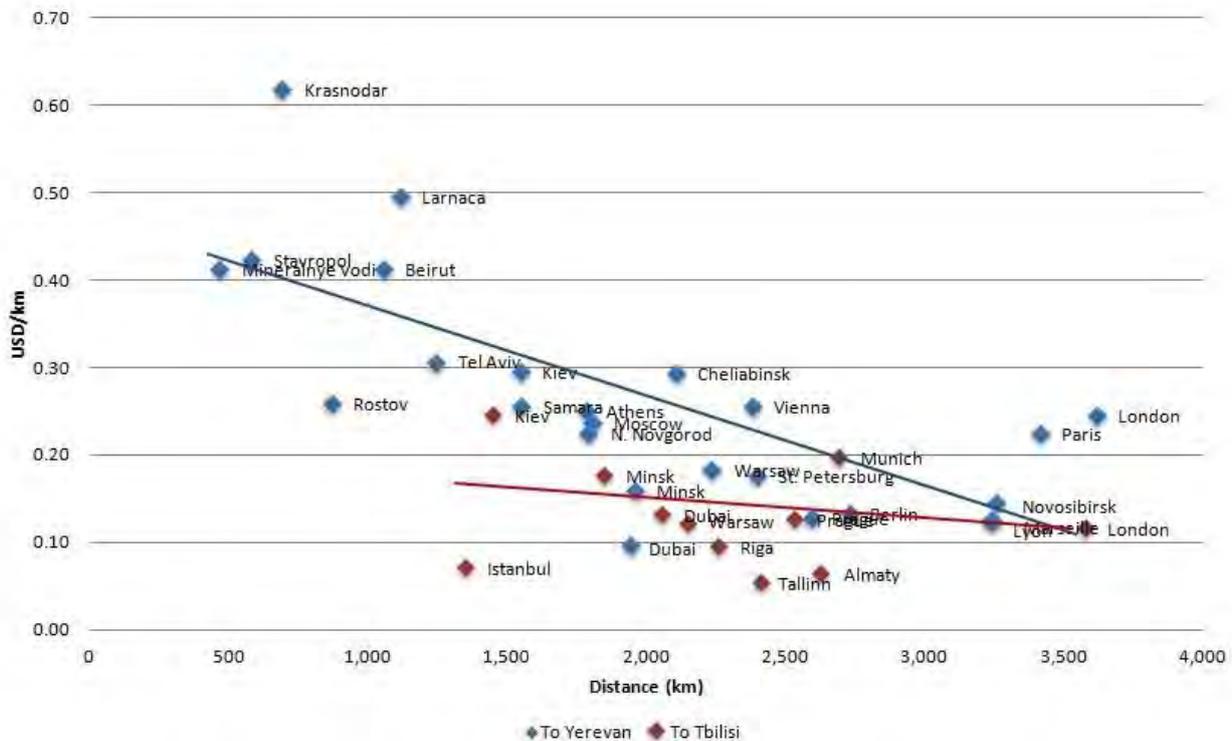
Source: prepared by the consultant with information from OAG (September 2011 to August 2012) and airlines schedules
 For interpretation: For example, Tbilisi offers 21% of its markets by over 7 frequencies a week, as opposed to Yerevan, 8%

Fares to/from Yerevan were also compared with fares to/from Tbilisi (TBS). Comparing the cost of travel of a seemingly restrictive market such as Armenia with an open market such as Georgia underscores the link between restrictive policies and their effect on travel cost.

The comparisons of fares at Yerevan and Tbilisi for the high season (Exhibit 6.3 and Exhibit 6.4) and the mid-season (Exhibit 6.5 and Exhibit 6.6) yield equally conclusive results. As seen in the graphs, fares to/from Tbilisi are generally lower than fares to/from Yerevan, assuming similar distances.

Fares were arranged in a scatter graph solid lines representing the regression function of the distance/cost per km relationship for EVN (blue) and Tbilisi (red).

Exhibit 6.3 – Comparison of Inbound Available Fares to Yerevan and Tbilisi - High Season
 Lowest available fares, include base fare, fuel surcharge and ticket service charge. Excludes airport charges and taxes

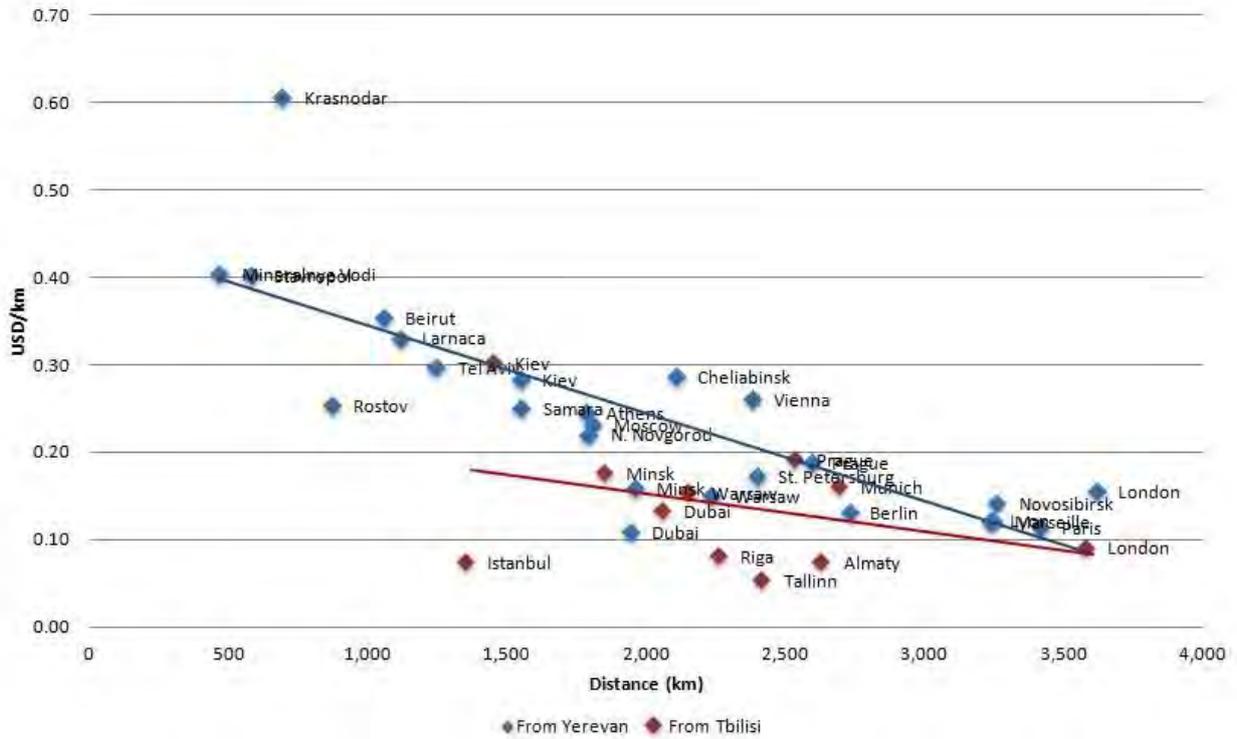


Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, AirBaltic, Aerosvit, Estonian Airlines, Pegasus Airlines, Lufthansa, AirAstana, FlyDubai. Air fares for travel between October 3 and October 9, 2012 (adjacent dates were used for routes not operated on those days).

As seen in the graph, the red line that represents fares to Tbilisi is consistently below the blue line that represents fares to EVN.

Exhibit 6.4 – Comparison of Lowest Available Fares from Yerevan and Tbilisi for Armenia’s High Season

Includes base fare, fuel surcharge and ticket service charge. Excludes airport charges and taxes

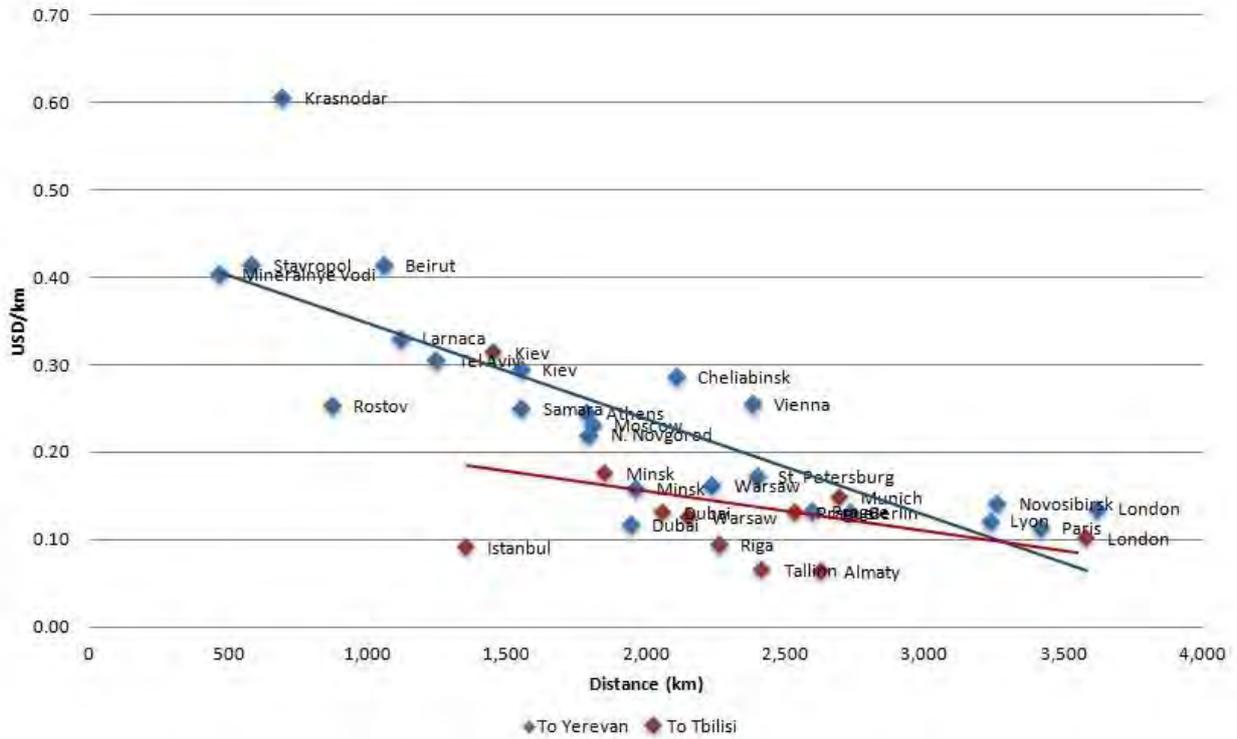


Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, AirBaltic, Aerosvit, Estonian Airlines, Pegasus Airlines, Lufthansa, AirAstana, FlyDubai.
 Air fares for travel between October 3 and October 9, 2012 (adjacent dates were used for routes that are not operated on those days).

Outbound fares from Tbilisi (red line) are also consistently below outbound fares from EVN (blue line).

Exhibit 6.5 – Comparison of Lowest Available Fares to Yerevan and Tbilisi for Armenia’s Mid-Season

Includes base fare, fuel surcharge and ticket service charge. Excludes airport charges and taxes

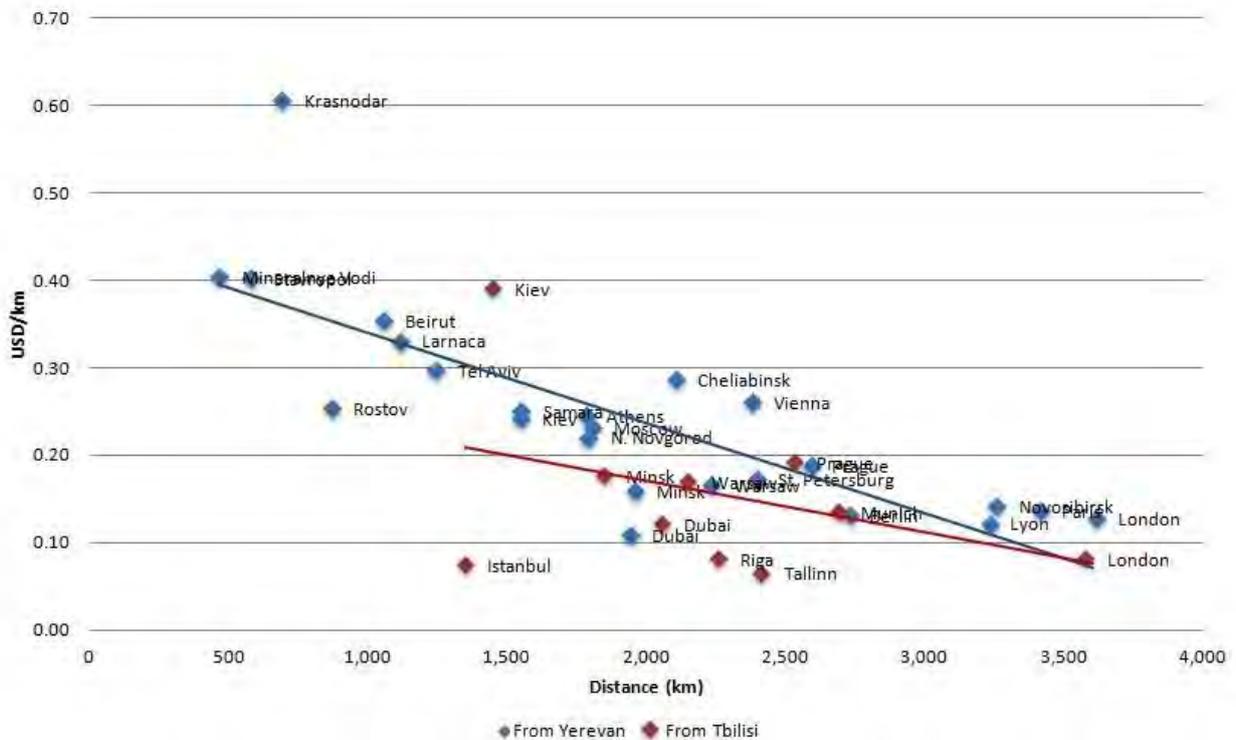


Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, AirBaltic, Aerosvit, Estonian Airlines, Pegasus Airlines, Lufthansa, AirAstana, FlyDubai. Air fares for travel between May 2 and May 8, 2012 (adjacent dates were used for routes that are not operated on those days).

The findings based on the comparison of fares to EVN and to Tbilisi during the high season are also valid for mid-season flights, as Tbilisi’s red line is again below EVN’s blue line.

Exhibit 6.6 – Comparison of Lowest Available Fares from Yerevan and Tbilisi in Armenia’s Mid Season

Includes base fare, fuel surcharge and ticket service charge. Excludes airport charges and taxes



Source: Armavia, Austrian Airlines, Air France, S7 Airlines, Rossiya, Belavia, BMI, Czech Airlines, LOT, AirBaltic, Aerosvit, Estonian Airlines, Pegasus Airlines, Lufthansa, AirAstana, FlyDubai. Air fares for travel between May 2 and May 8, 2012 (adjacent dates were used for routes that are not operated on those days).

Outbound fares from Tbilisi are also consistently lower than fares from EVN for mid-season flights.

The following table (Exhibit 6.6) compares the fares to Yerevan and to Tbilisi during the high season from certain points with non-stop flights to both cities.

Exhibit 6.6 – Comparison of Lowest Available Fares to Yerevan and to Tbilisi: High Season
 In USD - Includes base fare, fuel surcharge and ticket service charge. Excludes airport charges and other taxes

From	To Yerevan (EVN)		To Tbilisi (TBS)		EVN vs. TBS
	Fare	Carrier	Fare	Carrier	
Dubai	188	Armavia	270	FlyDubai	-30%
Kiev	458	Armavia	356	Aerosvit	+29%
London	886	BMI	413	BMI	+115%
Minsk	313	Belavia	326	Belavia	-4%
Prague	330	CSA	322	CSA	+2%
Warsaw	409	LOT	261	LOT	+57%

Source: Armavia, Aerosvit, Belavia, BMI, CSA, FlyDubai, LOT

Air fares for travel between October 3 and October 9, 2012 (adjacent dates were used for routes that are not operated on those days).

The airfares from Kiev, Warsaw or London to EVN are 29%, 57%, and 115% more expensive, respectively, than are the airfares from those destinations to TBS. Flying from Minsk and Prague costs roughly the same to EVN and to TBS, and Dubai is the only place from which flying to EVN is less expensive than to TBS.

7.0 The Impact of Liberalization in Tourism Traffic

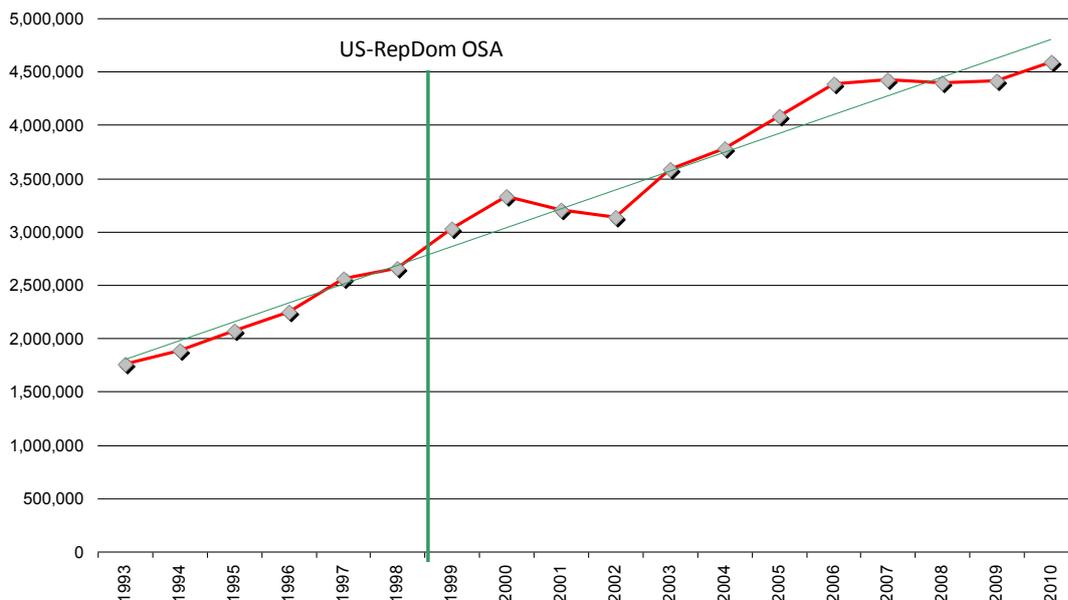
The Open Skies Agreement signed between the Dominican Republic and USA, in 1999 led to a progressive increase in the air transport capacity offered between the two countries, followed by an increase in the level of traffic.

Exhibit 7.1 shows the increase of traffic between the two countries following the 1999 Open Skies Agreement, with 13.9% and 10% growth rates in the following two years. The trend was then affected by the 9-11 effect and the following slowdown of the US economy in 2002, with a high recuperation after 2003, of 14.5%.

A recent examination of the impact of air transport liberalization and traffic growth in tourism-dependent economies - A case-history of some US-Caribbean markets (Warnock-Smith, Morrell, 2008) - demonstrated that liberalization has enhanced competition and thus increased traffic levels; via the relationship between bilateral air policy reform and entry and traffic/capacity growth.

Through an analysis of three US-Northern Caribbean markets, it demonstrated a positive statistical relationship between air policy reform and traffic/capacity growth; with enhanced flexibility with respect to carrier entry leading to greater output and competition levels. The number of effective competitors and LCC entry has also been greater in those markets with lower entry barriers. The inverse was also observed for the US-Jamaica market between 1995 and 2003, where limited designation reform coincided with more modest entry and traffic. Of the three markets, the US-Jamaica market also had the lowest air policy coefficient and average liberalization index over the observed twelve year period. Overall the study found that if a major policy of Caribbean states is to look for ways to induce significant tourism growth, then the study's findings on recent traffic gains in reformed Caribbean markets tend to challenge the current restrictive practices in place in much of the region¹⁶.

Exhibit 7.1 – Evolution of the number of US arrivals by air into the Dominican Republic
Trendline from 19993 through 2010 – Open Skies Agreement (OSA) signed in 1999



Source: Ricover – World Bank 2010, with information from the Central Bank of the Dominican Republic

¹⁶ Air transport liberalisation and traffic growth in tourism-dependent economies: A case-history of some US-Caribbean markets David Warnock-Smith, Peter Morrell – Journal of Air Transport Management, 2008

8.0 General Conclusions and Recommendations

As a result of an opaque institutional arrangement, without clear definition of the role of the public sector with respect to service providers, and a pervasive lack of separation of functions between different stake holders, the country suffers from poor competitiveness, with limited travel options and high costs for air fares and for infrastructure services.

The un-known conditions of the concession contract with the airport operator, as well as the special arrangement between Armavia and the Government - including the blurred relationship between the Government and Atlantis European Airways - serve to underscore the informal nature of the policy/regulatory framework currently in place for the aviation sector. This in turn may not represent an efficient institutional system for safeguarding the interests of the majority aviation sector customers in Armenia, and for promoting the country's ambitious trade integration and economic growth agenda.

The institutional framework concentrates too many functions in the GDCA, creating conflicts of interest that may compromise safety, while also restricting growth and sector development. The institutional arrangement should be reformed assuring that the different bodies function at arm's length from one another. The policy-making functions should be assigned to the Ministry of Transport and Communications. The GDCA could remain as the technical regulator, and proper measures should be taken to ensure its complete independence from the operators of the infrastructure. The accident investigation functions should be transferred to an independent body that reports directly to the President or the Parliament to guarantee unbiased results.

Protection of the local carriers should be eliminated over time in accordance with a gradual liberalization game-plan and with clear timeframes. The well-being of local carriers should be reviewed/addressed within the context of objectively assessing the competitiveness of locally based airlines, as opposed to artificially supporting them by restricting competition from foreign airlines. Analysis which is undertaken in this area should focus on delineating the network of non-controllable costs that affect locally-based carriers, as opposed to foreign carriers. This should include review of the regulatory framework with respect to the provision of transportation services, taxes and the duty regime (eg. import duties for equipment and spares, fuel, assets, VAT, etc); labor issues (work and rest regimes, special union provisions, training and refreshment beyond international requirements, etc.), local technical regulations (certification and licensing of crew and maintenance personnel) and infrastructure costs. In light of such a review, specific measures will need to be developed to improve the capability of the local carriers to compete within a liberalized policy environment.

Both passengers and airlines have to pay higher infrastructure costs in Armenia than in virtually all of the other countries studied here. The single most important cost is the State Air Exit Duty, which should be reconsidered. However, other core infrastructure costs are significantly higher than in the rest of the comparable airports, and their reduction should be considered as well. In that regard, it is imperative to establish a transparent and efficient economic regulatory framework with respect to all fees and charges for services provided by the airport, as well as for other ancillary services (namely ramp handling, passenger services, fuelling, in-flight catering, etc.). In addition, the cost for the provision of ATC services, particularly approach services, should be revised; as this has been effectively demonstrated to represent the second highest charge among a comparable set of airports.

The market outlook and benchmarking of infrastructure charges show that Armenia's air connectivity is still weak, with most markets served with low frequencies and by just one carrier. As a consequence, the costs of traveling to and from Armenia are consistently higher than

comparable routes in other regions. The same conclusions can be drawn from the analysis of airfares on comparable routes to and from Tbilisi, where a complete liberalized environment has fostered connectivity and significantly reduced costs. All of these results should provide the required incentive to carry out the needed reforms to improve connectivity. The continuation of a policy of protecting the local airlines is hampering the development of inbound tourism by increasing artificially the cost of travel, and is simultaneously restricting the capacity of Armenians to travel abroad, promote trade, and bring fresh ideas and knowledge back to Armenia.

Similar results were demonstrated for a study carried out on the development of traffic as a consequence of air liberalization in tourism-driven economies. The analysis of three Caribbean destinations demonstrated how in-bound tourism has prospered dramatically with increased connectivity. In the particular case of the Dominican Republic, tourism has flourished robustly subsequent to a major air transport liberalization agreement with the United States, massively increasing the number of travelers.

It is thus advisable for Armenia to formulate a best practices-consistent national aviation policy framework (through a White Paper) where all regulations and approaches of the government are clearly stated and expressed. In this regard a National Aviation Policy (White Paper) should be developed and finalized over the next 3 months which effectively addresses the following issues:

- a. Domestic airline policy covering critical issues including:
 - Need for sector-specific economic regulations, taking effectively into account the existing national competition law-related policy framework
 - Subsidy policy for any service shortfalls
- b. International airline policy covering issues such as:
 - Government approach to negotiating airline entry (bilaterally and multilaterally)
 - Implementation of national rights under ASAs, e.g. airline designation
- c. Airports policy including
 - Airport responsibilities and functions, including airport ATC
 - Airport pricing and investment framework
 - Non-infrastructure service provision policy within airports (e.g. ground handling)
 - Competition policy
 - Equal treatment, e.g. fueling
 - Private sector participation
- d. Safety policy
 - Allocation of policy and regulatory responsibility (oversight and enforcement)
 - Governance arrangements for safety regulator
 - Funding of the safety regulator
 - Licensing certification and registration
 - Monitoring compliance and inspection
 - Over-sight of airport and ATC safety
- e. ATC
 - ATC functions and objectives
 - ATC governance and accountability
 - ATC funding (including the right to charge airlines to recover ATC costs)
 - Options for contracting out services
- f. Relationship with International Civil Aviation Organization (ICAO):
 - Funding
 - Staffing and training

➤ Compliance with ICAO recommendations

g. Security policy

h. Consumer protection

i. Environmental policy.