Civil Aviation Regulatory Commission of Jordan
Economic Impact Assessment of a Single Sky Agreement

Report R01:
Demand forecasts and high-level economic impact assessment

- Final -

Amman, July 01, 2009

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Table of Contents **Page**

List of Figures **Page**

List of Tables

Page

Executive Summary

This report dealt with developing an estimate of the effect an open skies agreement between Jordan and the European Union can be expected to have on the Jordanian economy.

We have taken a three-stage approach to answer this question: in Stage 1 we have taken a look at Jordan, in particular its geography, population and economy, how they have developed in the past and what the prospects for the coming years are.

In Stage 2 we have then provided a brief overview of the Jordanian aviation sector in as far as airports and airlines are concerned, before developing a 10-year status quo forecast for passenger and cargo/mail demand at the three airports Queen Alia International, Amman Marka and King Hussein International. This status quo scenario describes the likely development of demand at these airports under the assumption that the existing system of bilateral traffic agreements will continue to exist.
We then supplemented this base scenario with a high and low scenario for the case of open skies with the EU. The quantification of the effect of such an agreement was by observation of what had happened in other countries where open skies agreements were put into effect.

Finally, in Stage 3 we used the forecast results and translated the differential between the high and low open skies scenarios into revenues to the country.

Forecast scenarios

The forecasts produced by IATA Consulting suggests that in the base case, passenger volumes at the three airports will grow by between 3.9% and 0.9% annually over the forecast period. Growth will be strongest at AMM and weakest at AQJ. Demand at all three airports will follow the worldwide downward trend until 2010 before growth will again set in. Over the longer term, the development of passenger numbers will return to and continue the linear growth trend which has already existed in the past. Since passenger demand at AQJ is very much dependent on incoming tourism which itself is very sensibe to the economic downturn, the drop in passenger numbers will be more pronounced there than at the other two airports. Since the recovery of the lost passengers will also take a little longer than at AMM and ADJ, the overall growth over the forecast period is low at AQJ.

Our benchmark analysis of the open skies effect on the number of seats supplied showed that there is a large variation between countries, ranging from no effect to an increase by 100%. For Jordan we expect the actual effect will range between +10% and +60%, measured against the base scenario three years after passenger growth sets in again. This translates into higher growth rates of passenger demand at AMM and ADJ than in the base scenario. Since AQJ has been awarded open skies status in 2003 we expect no effect of open skies at this airport. Annual passenger volumes at AMM in 2019 will be some 6.9

million in the high, 6.3 million in the low and 6.2 million in the base scenario. The relevant figures for ADJ are 109,000, 99,000 and 97,000. Annual passenger volumes at AQJ will reach 154,000 in 2019.

Cargo/mail volumes at AMM will grow to 93,400 tonnes by 2019 in the base scenario. The impact of open skies on cargo demand will be restricted to a higher supply of belly capacity only since otherwise open skies are already in place in Jordan. In the high and low scenarios cargo/mail volumes will be 10% and 2% higher, respectively, than in the base scenario. ADJ is likely to handle about 4,700 tonnes in 2019. Open skies will generate only insignificant additional cargo/mail volumes there, and at AQJ about 1,200 tonnes will be handled at the forecast horizon with no impact by open skies.

Aircraft movements will increase very much in parallel with passenger volumes. Through slightly increasing load factors and average aircraft seating capacities they will generally grow at a slightly slower rate than passenger volumes.

Economic impact assessment

The analysis IATA Consulting conducted into the economic effects shows that a significant benefit of open skies for the economy of Jordan will be generated through the expenditures of additional foreign visitors. From 2013 on will be generated additional tourist revenues in the order of 130 million JD per year in the high scenario and of 21 million in the low scenario. The net balance of newly generated cargo/mail exports and imports relative to GDP will be negligible since the additional cargo volumes will be small and the individual effects of imports and exports on the economy will largely neutralize each other. The economic effect of airline revenues generated through additional cargo will also be negligible.

Overall, the boost that tourism could experience through open skies could have an economic effect as high as 0.7% of Jordanian GDP in 2008. However, in view of a number of factors that we will analyze in detail in Phase 2 of the project, we expect the effect that will actually materialize will be smaller, closer to the lower boundary of 0.11% of the range defined.

In summary we conclude that this first analysis has shown that the biggest benefits resulting for Jordan through an open skies agreement will to materialize through additional visitors attracted to the country.

Outlook to Phase 2 of the study

The two scenarios defined in this report still span a wide range of possible outcomes and require further analysis. Therefore, in Phase 2 of the project we will

- analyze the existing bilateral agreements between Jordan and the EU member countries to identify possibly existing capacity bottlenecks or unused capacities;
- conduct an analysis of O&D passenger flows to be better able to make an assessment of the effect of liberalization on
  - passenger volumes handled at Jordanian airports and
  - on the business of the home and of other carriers. Particular focus will be placed on Royal Jordanian's connections from Jordan into the big European gateways such as London, Paris and Frankfurt.
- look at the competitive situation between AMM, ADJ and AQJ with other airports in the region; and
- add further detail to the assessment of the economic impact, such as the quantification of the revenues accruing to Jordan from the international transport of the additional passengers, from overflight charges and from airport revenues. Also will be quantified employment effects.

Phase 2 of the study will be mainly building on traffic information from IATA's in-house data sources such as PaxIS and SRS Analyzer which permit conducting analysis at the Origin-to-Destination (O&D) level not possible with CARC's official statistics. Only through an analysis at the O&D level can the opportunities and threats to the airports and airlines be identified and properly assessed. The analysis conducted will enter into the definition of a most likely open skies scenario and of the relevant economic impact.

1. Introduction

Air transport is one of the most dynamic, competitive and technology-led industries, providing local and global economies with means for increased trade, tourism and growth. Passenger and cargo volumes have increased over the years, but changing market conditions with higher competition, increasing fuel prices and new regulations for safety and security keep challenging its continued strong development. It is no different for Jordan, where between the years 1996 and 2007 passenger demand has nearly doubled.

But what does the future look like for the Jordanian air transport market? Which are the factors that will give shape to its further development and which role will an open skies agreement with the European Union (EU) play in this? In which way will the country as a whole be affected by such an agreement?

To obtain an understanding of the breadth and depth of the answers to these questions, the Civil Aviation Regulatory Commission (CARC, formerly CAA) has engaged IATA Consulting, a division of the International Air Transport Association, to conduct an analysis into the economic impact of an open skies agreement on air transport in Jordan and on the economy of the country. This analysis will be split into two phases, the results of each of which will be documented in a report. Phase 1, the results of which are summarized in this report, looks at

- the country and its economic structure and development,
- the structure and past history of passenger and air cargo demand at the country's three airports,
- develops status quo passenger and air cargo forecasts for these airports,
- a high and low passenger and cargo forecast for open skies, and
- performs a high-level impact assessment of an open skies agreement on the local economy.

The results obtained in the first phase of the analysis will then be deepened in Phase 2 where additional analysis will be conducted to more precisely define the impact of open skies on passenger and air cargo volumes and on the economy. The insight gained will enter into a most likely forecast scenario for the case of an implementation of the open skies agreement and a more detailed quantification of the likely effects on the economy of Jordan, including an assessment of the impact on employment.

IATA Consulting is pleased to present this report R01 to CARC as partial fulfillment of the project. This report is the culmination of the analysis conducted into the air transport environment in Jordan, the forecast of air demand for the country and an assessment of the economic impact of an open skies agreement. The work which flowed into this report has been conducted during the month of April 2009; it lays the groundwork for Stage 2.

2. Methodology

As shown above, the objective of this report is to provide an overview of Jordan as an air transport market, develop status quo forecasts and a high and low open skies scenario for the three airports in the country, and arrive at a high-level assessment of the potential economic impact of an open skies agreement on the country. To achieve this purpose and to cover the areas as outlined above, IATA Consulting proceeded with desk research efforts using external sources of information such as the annual traffic statistics issued by CARC, economic information about Jordan available through the national Government, the Central Bank of Jordan, the Economist Intelligence Unit (EIU), the International Monetary Fund (IMF) and others. We also tapped into IATA in-house databases which are the most reliable, consistent and sometimes only sources of information, covering the large majority of scheduled air transport in the World. Examples are:

- IATA passenger and freight forecasts;
- IATA Passenger Intelligence Services (PaxIS); and
- SRS Analyzer.

While the present work is primarily based on statistics from CARC with some supplementation through the above listed IATA in-house information, the latter will be the main source of information during Phase 2 of the project when passenger flows will be analyzed on an Origin-to-Destination (O&D) basis for a more reliable assessment of the effect of open skies in Jordan.

2.1 Limitations of this Study

The analysis performed for this study has been developed in a manner consistent with industry practices for similar work. IATA Consulting believes the approach and assumptions utilized are reasonable; however, certain assumptions regarding future trends and forecasts may not materialize and therefore could affect actual and future demand levels.

IATA relied on various publicly available economic and aviation specific statistics, forecasts and information as well as data provided through CARC. We consider these sources reliable. However, our opinion could vary materially should some of these sources or information prove to be inaccurate or should additional information become available.

3. Jordan – A Country Profile

In this chapter, we will focus on the ground that Jordan provides for air transport to develop. It describes the conditions the development of Jordanian air transport is subject to and prepares the basis for the forecasts which will be developed in chapter 5.

To understand this report and its objective, it is important to understand what transport per se means and what it represents. Transport in general is a service facilitating the activities that people carry out. As such, the demand for transport services depends on and is driven by these activities. More specifically, the level of demand for the transport of passengers and of cargo is largely determined by

1. the number of people served,
2. the economic activities these people pursue; and
3. their leisure activities.

These three factors represent the demand side and are specific to the place where the demand manifests itself. At a macro-level, this place may be considered the country of origin and/or destination of a trip undertaken, at the micro-level the individual point of origin or destination where a trip starts or ends inside a country. Therefore, to later arrive at meaningful forecasts, we must take a look at the present and likely future situation of Jordan as a whole.

The demand side addressed above is counterbalanced through the supply side which allows demand to be satisfied. The two main supply elements are infrastructure and services, represented through the relevant providers. What must not be neglected, though, is the regulatory system which provides the framework within which air transport takes place. In this report, we are considering the socio-economic, regulatory and industry-specific framework for air transport.

3.1 Geographic Location and Major Cities

The *Hashemite Kingdom of Jordan* (Jordan) is located in the center of the Middle East, sharing its land boundaries of some 1,635 km with Syria in the north, Iraq in the north-east, Saudia Arabia in the south and Israel and the Palestinian National Authority in the west (see Figure 1). The country covers a total area of about 89,300 km^2 of which some 540 km^2 are water (Dead Sea and Gulf of Aqaba). The coastline on the Gulf of Aqaba measures 26 km.

Jordan is divided into 12 administrative regions called governorates (Figure 2). Amman, the country's capital within the governorate of the same name is a city with a population of some 2.5 million; it is also the country's business center. It is estimated that 700,000 of today's population of Amman are Iraqi nationals who have left their country.
Further important cities are Irbid in the north, Az-Zarqa, located to the north-east of Amman

and Aqaba on the Red Sea coast with populations of some 270,000, 470,000 and 95,000, respectively. Amman thus is the by far largest Jordanian city.

Figure 1: Jordan; Location and Major Cities

Source: CIA Country Factbook

Figure 2: Governorates of Jordan

Source: www.wapedia.mobi

3.3 History and Politics

Following World War I and the dissolution of the Ottoman Empire, the United Kingdom (UK) received a mandate to govern much of the Middle East. It separated out a semi-autonomous region of Transjordan from Palestine in the early 1920s, and the area gained its independence in 1946; it adopted the name of Jordan in 1950.

The country's long-time ruler was King Hussein (1953-99). A pragmatic leader, he successfully navigated competing pressures from the major powers (US, USSR, and UK), various Arab states, Israel, and a large internal Palestinian population. Jordan lost the West Bank to Israel in the 1967 war and managed to defeat Palestinian rebels who threatened to overthrow the monarchy in 1970. King Hussein in 1988 permanetly relinquished Jordanian claims to the West Bank. In 1989, he reinstituted parliamentary elections and initiated a gradual political liberalization; political parties were legalized in 1992. In 1994, he signed a peace treaty with Israel.

King Abdallah II, the son of King Hussein, assumed the throne following his father's death in 1999. Since then, he has consolidated his power and undertaken an aggressive economic reform program. Jordan acceded to the World Trade Organization in 2000, and began to participate in the European Free Trade Association in 2001. In 2003, Jordan supported the

ousting of Saddam Hussein in Iraq. Following the outbreak of insurgent violence in Iraq, it absorbed thousands of displaced Iraqis.

Municipal elections were held in July 2007 under a system in which 20% of seats in all municipal councils were reserved by quota for women. Parliamentary elections were held in November 2007 and saw independent pro-government candidates win the vast majority of seats. In November 2007, King Abdallah instructed his new prime minister to focus on socioeconomic reform, developing a healthcare and housing network for civilians and military personnel, and improving the educational system.

3.4 Geography and Climate

Being a comparatively small country by surface, Jordan is the world's 111th largest country, about the size of and ranked just behind Portugal.
Jordan spans the southern part of the Syrian Desert down to the Gulf of Aqaba. The terrain is roughly structured into three main geographical zones: the Jordan Rift Valley in the west separates the east from the west banks of the Jordan river. To the east of the Rift Valley follow highlands of arable land and Mediterranean evergreen forestry, whereas the eastern part of the country is dominated by an arid desert plateau, irrigated by oasis and seasonal water streams.
Jordan's highest point is Jabal Umm al Dami with an elevation of 1,854 m above sea level, while the lowest is the Dead Sea at -420 m.

Climate

Jordan's climate is mostly arid with a rainy season in the western part of the country from November until April. Average temperatures are in the mid 30°C in summer and around -1.3 °C in winter.

The major characteristic of the climate is the contrast between a very rainy season from November to March and semi dry weather for the rest of the year. The rainy season in the Western part of the country lasts from November until April. Amman and the western heights experience snowfall. Practically all of the precipitation occurs in winter. Summers are therefore hot and dry. The farther inland from the Mediterranean Sea a given part of the country lies the more the contrasts between seasonal temperatures increase and annual rainfall decreases.

3.5 Population

The latest population census of Jordan dates back to the year 2004. At that time, the population of the entire country was approximately 5.1 million. It is estimated that about 190,000 people were not counted for various reasons (e.g. for absence from the country at the time of the census or failure to submit the forms). It is estimated that by 2009 the population has increased to some 6 million.

3.5.1 Age Structure

At the time of the last census in 2004, some 37% of the nation's population were 14 years of age or younger, almost 59% between 15 and 64 years old, and little over 3% 65 years or older. The average life expectancy has over the years been increasing; in 2006 it was about 72 years.

3.5.2 Geographic Population Distribution

Jordan is an overall thinly populated country. Based on population figures of 2007 the average population density in the same year was some 64 persons per square kilometer (km^2) (Table 1). The population distribution is heterogeneous with the Amman and Irbid governorates representing some 56% of the total population, but only about 10% of the land surface. Since the governorates of Ajlun, Jarash, Al Balqa' and Madaba are also located in the same region, 71% of Jordan's population are centered in the north-western part of the country. The governorates of Ma' an and Al Mafraq, on the other hand, together make up some two thirds of the country's land area, but not even 7% of the population. The population densities span from 3 in the Ma 'an to 648 in the Irbid governorate.

Table 1: Population by governorate, area and density

Governorate	Population [thousands]	% of total	Area [km^2]	Pop. Density [Residents per km^2]
Irbid	1,018.7	17.8%	1,572	648
Jarash	171.7	3.0%	410	419
Al Balqa'	383.4	6.7%	1,119	343
Ajlun	131.6	2.3%	420	313
Amman	2,216.0	38.7%	7,579	292
Az Zarqa	852.7	14.9%	4,761	179
Madaba	143.1	2.5%	940	152
Al Karak	223.2	3.9%	3,495	64
At Tafilah	80.1	1.4%	2,209	36
Al Aqabah	124.7	2.2%	6,900	18
Al Mafraq	269.0	4.7%	26,541	10
Ma 'an	108.8	1.9%	32,832	3
Total/Average	5,723.0	100.0%	88,778	64

Population status: 2007

Source: Jordan in Figures 2007, wikipedia.org

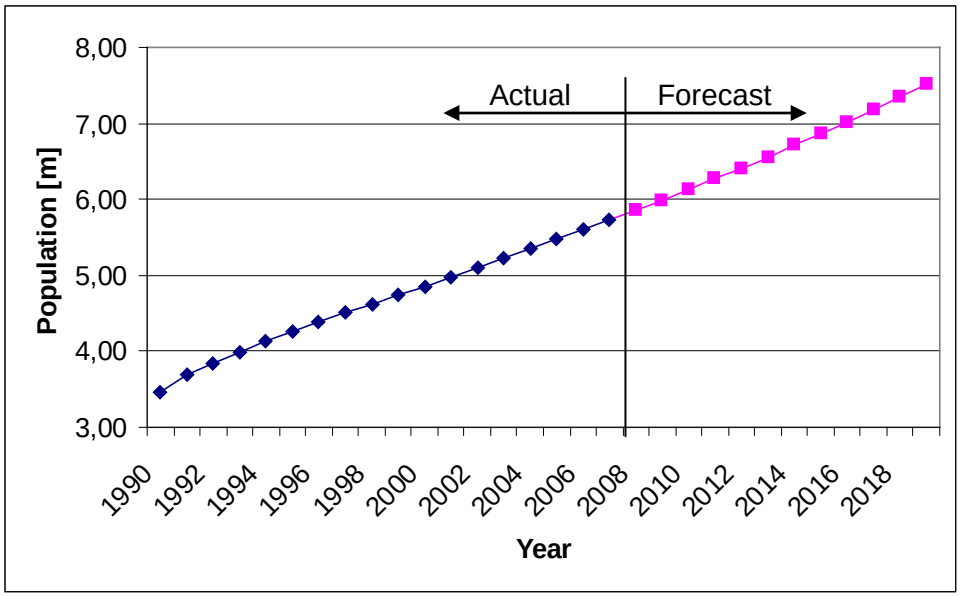
3.5.3 Past and Future Population Development

Jordan's population has grown from 3.47 million in 1990 to 5.72 million in 2007. This corresponds to an average annual rate of growth of 3% over this period. According to estimates of the IMF it will increase to 6.56 million by 2013.

No official population forecasts beyond 2013 are available. Therefore, we prepared our own population forecast based on the 2.3% growth rate applied by the IMF for the years 2008-2013. According to these new forecasts, the population of Jordan will grow to some 7.5 million by 2019. This means a total increase of some 25% over 2009 levels.

The historical and projected future population developments are graphed in Figure 3. They show that the future development will be a largely linear continuation of the trend experienced between 1990 and 2007.

Figure 3: Population development 1990-2019



Source: IMF, IATA

3.6 Economy

Jordan is a country suffering under insufficient supplies of water, oil, and other natural resources. The Jordanian economy is additionally impacted by the political crises in the region.

Poverty, unemployment, and inflation are fundamental problems, but King Abdallah II, since assuming the throne in 1999, has undertaken some broad economic reforms in a long-term effort to improve living standards.

The Government has taken the initiative for the phased elimination of fuel subsidies, passed legislation targeting corruption, and has begun tax reform. It has also worked to liberalize trade, joining the World Trade Organization (WTO) in 2000, signing the first bilateral free trade agreement (FTA) between the U.S. and an Arab country in 2001 and an Association Agreement with the European Union (EU) in 2002. The U.S.-Jordan FTA will phase out duties on nearly all goods and services by January 2010. Jordan can already today export its products to the EU without duties and charges and will in turn remove its duties and charges over the coming years. The agreement with the US also provides for more open markets in communications, construction, finance, health, transportation, and services, as well as strict application of international standards for the protection of intellectual property. In 1996, the U.S. Congress created Qualifying Industrial Zones (QIZ) to support the peace process. QIZ

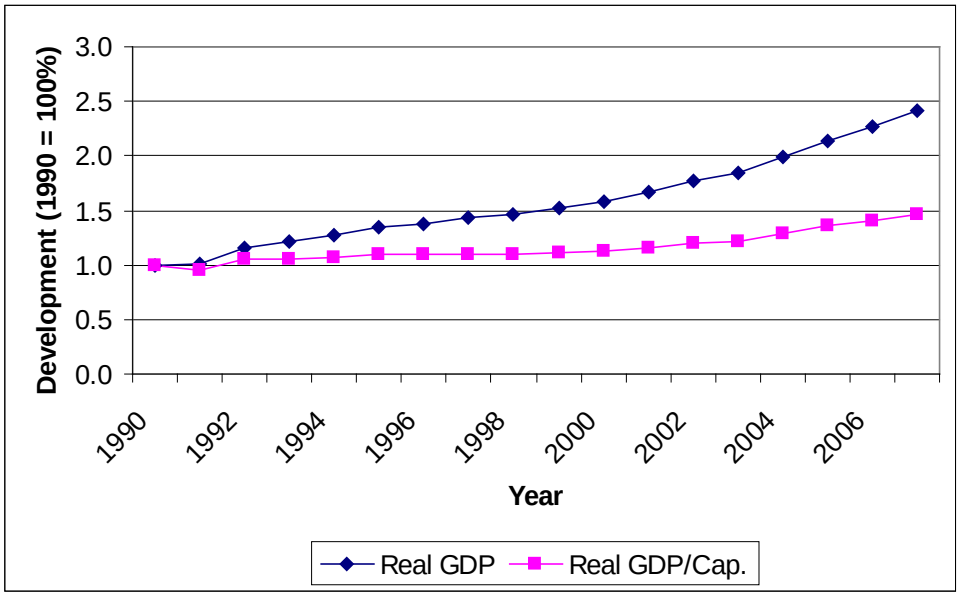
goods, which must contain a certain percentage of Israeli input and enter the United States tariff- and quota-free, have also driven economic growth, particularly in the export of light manufactured products such as garments.

All of these measures have contributed to an acceleration of economic development. As shows Figure 4, growth of GDP and of GDP per Capita has accelerated since the year 2000, While in the period 1993-2000 GDP had been growing at 3.9% per year, annual growth between 2000 and 2007 averaged 6.2%. The corresponding figures for GDP per Capita were 1.0% and 3.7%, respectively.

In 2006 and 2008, Jordan used privatization proceeds to significantly reduce its debt-to-GDP ratio. These measures have helped improve productivity and have made Jordan more attractive for foreign investment. The government ended subsidies for petroleum and other consumer goods in 2008 in an effort to control the budget. The main challenges facing Jordan are reducing dependence on foreign grants, reducing the growing budget deficit, attracting investments, and creating jobs. The country is currently exploring nuclear power generation to forestall energy shortfalls.

Jordan's conservative banking sector has been largely protected from the worldwide financial crisis, but many businesses, particularly in the tourism and real estate sector, are predicting a slow-down in 2009.

Figure 4: Development of Jordan's real GDP and Real GDP per capita, 1990-2007



Source: IMF

3.6.1 Structure of the Economy

Jordan's economy is mostly service-based. The service sector accounts for 77.6% of GDP (2007) and employs some three out of four of the workforce. Tourism is an important sub-sector of services, contributing some 10% to GDP and the second most important generator of foreign exchange.

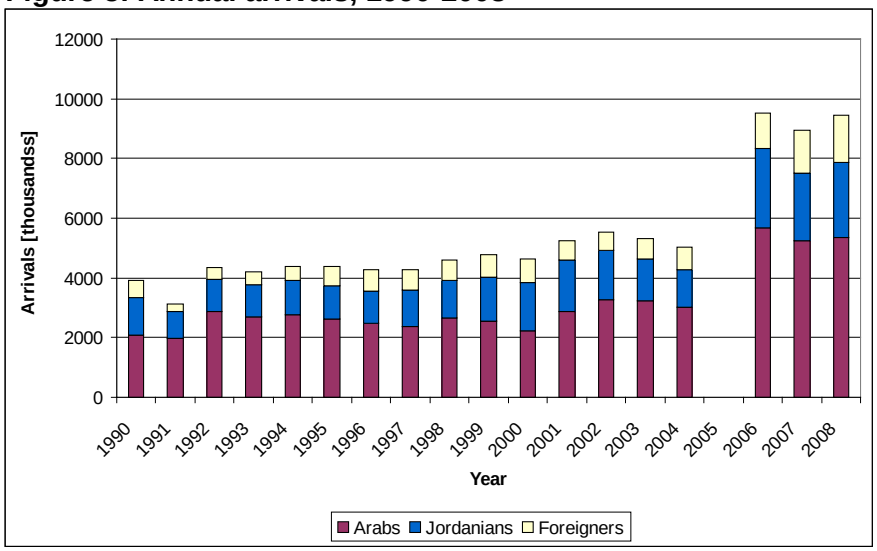
The industrial sector represents 19.6% of GDP (2007) and is characterized by small and medium enterprises. Products are clothing, fertilizers, pharmaceuticals, petroleum refining, cement, inorganic chemicals and light manufacturing.
The most important industrial branch is phosphate mining. Other mining products are copper, oil shale and potash. Two large plants process the phosphates into fertilizers. Both of these plants are international joint ventures with Jordanian participation.
Further industrial activities comprise an oil refinery, cement plants and chemical industry.

Agriculture contributes only the small proportion of 2.8% to GDP (2007) and employs some 4% of the workforce. This small proportion is attributable to the fact that only some 10% of the land is arable and only half of this is cultivated. The growing of grain, fruit and vegetables requires irrigation, and water is generally a scarce resource in Jordan.
Agricultural products are citrus, tomatoes, cucumbers, olives, sheep, poultry, stone fruits, strawberries, melons and dairy.

3.6.2 Tourism

In 2008 there were some 7.87 million arrivals counted in Jordan. As shows Figure 5, the largest sub-group of these arrivals were Arabs with approximately 5.7 million (57%), followed by 2.5 million (26%) Jordanians and 1.6 million (17%) Foreigners.
While Foreigners represented the smallest group, they have displayed the fastest growth. Between 1990 and 2008 their numbers have increased by an annualized 6.3%. This compares with 5.7% for Arabs and 4.1% for Jordanians.
The major proportion of the increase has occurred over the past four years; from 2004 to 2008 the number of total arrivals has grown by 88%.

Figure 5: Annual arrivals, 1990-2008



Note: Figures for 2006 missing

Data source: Ministry of Tourism and Antiquities

Above figures relate to total arrivals; this means they include Jordanian residents. However, tourism is rather associated with overnight visitors and particularly with those from America, Asia and Europe. As shows Table 2, from 2002 until 2008 the number of tourist overnight visitors has increased from 2.38 million to 3.73 million, an average of 7.7% per year.

It is interesting to note that the total, but also the number of overnight visitors for each regional group reached a temporary peak in 2006, the year of the Israeli-Lebanese war. From 2005 to 2006 the total figure surged by 19% and dropped by 3% thereafter. This increase in visitor numbers may be explained through a shift of visitors from Israel and Lebanon, which were then perceived as unsafe, to Jordan. This is indicative for a “safe haven” image of Jordan.

Table 2: Development of tourist overnight visitors

	Africa	America	Asia	Europe	Arab	U.N	Jordanians Residing Abroad	Total
Number of tourist overnight visitors								
2002	4,304	51,908	80,432	312,711	1,513,236	8,295	413,588	2,384,474
2003	3,503	64,545	71,817	313,956	1,478,946	7,357	412,963	2,353,088
2004	5,324	93,478	98,007	374,431	1,795,369	6,516	479,683	2,852,807
2005	7,823	111,976	107,181	391,847	1,851,099	4,746	511,915	2,986,586
2006	12,664	167,843	178,122	414,647	1,872,373	4,643	896,697	3,546,990
2007	12,253	177,783	190,964	570,861	1,731,990	2,907	744,202	3,430,959
2008	13,797	200,371	219,600	657,627	1,813,181	5,124	819,025	3,728,725
CAGR '02-'08	21.4%	25.2%	18.2%	13.2%	3.1%	-7.7%	12.1%	7.7%
Share of total								
2002	0.2%	2.2%	3.4%	13.1%	63.5%	0.3%	17.3%	100.0%
2008	0.4%	5.4%	5.9%	17.6%	48.6%	0.1%	22.0%	100.0%

Data source: Ministry of Tourism and Antiquities

Not all regional groups of visitors have grown at the same pace since 2002. The number of tourist overnight visitors from Africa and America have increased at a rate of more than 20% per year, thus more than doubling their share over the course of the six years. The number of visitors from Arab countries has grown at a comparatively slow rate which effected a drop of the relevant share from 63.5% to 48.6%.

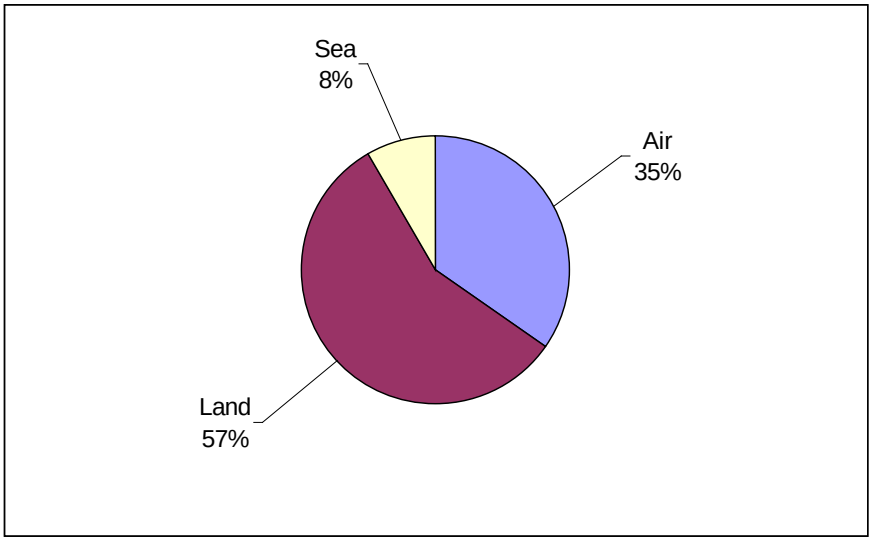
3.6.2.1 Arrivals by Mode of Transport

The dominant mode of arrival to Jordan is by road. In 2008, 75% of all arrivals were by means of road transport, another 18% by air and a comparatively small fraction of 7% by sea to the port of Aqaba. Since Arab visitors and Jordanians who traveled to and from neighboring countries are included in these figures, the large share of road transport does not surprise.

The picture changes somewhat when only non-Arab foreigners (Africans, Americans, Asians, Europeans) are considered. As would be expected, for this group the use of air transport plays a significantly more important role for travel to Jordan. In 2008, 35%, nearly twice the proportion as for the total, arrived by air. For 87% of the air arrivals the point of entry was Queen Alia International Airport in Amman (AMM), 9% entered the country through King Hussein International Airport (AQJ) in Aqaba, and 4% through Amman Marka Airport (ADJ).

Despite the higher importance of the air mode, the majority of these travelers entered Jordan by road. Sea transport still played a minor role only; however, through the increased activity of cruise ships in the port of Aqaba, it has over the past years been increasing, partly to the expense of air arrivals.

Figure 6: Arrivals of non-Arab foreigners by mode of transport, 2008

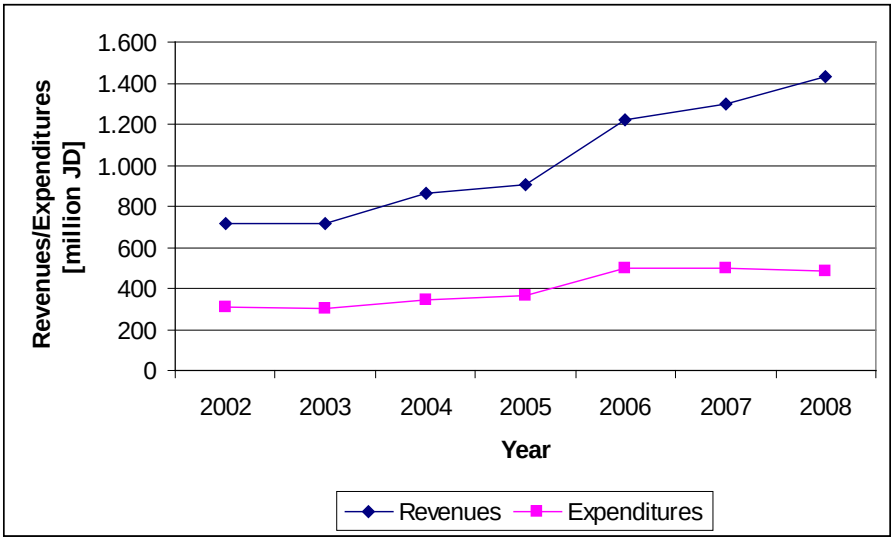


Source: Ministry of Tourism and Antiquities

3.6.2.2 Tourism revenues and expenditures

The visitors who came to Jordan in 2008 generated revenues of 2,089 million JD (1,430 m constant JD). This income is an important factor to the economy; as mentioned in section 3.6.1, it contributes some 10% to the national GDP. Expenses incurred, on the other hand, had been 710 million JD (486 m constant JD). As shows Figure 6, since 2002 the gap between revenues and expenses has widened, indicating that profits generated by the segment have been growing. Assuming that 80% of the receipts from tourism were mainly generated through overnight visitors, the average spend per arrival of an overnight visitor in 2008 was approximately 450 JD (current).

Figure 7: Tourism revenues and expenditures, 2002-2008 (constant 2000 JD)



Source: Ministry of Tourism and Antiquities

3.6.2.3 Visitor Attractions

Jordan is a country with history. It therefore offers a large number activities to attract visitors near and far.

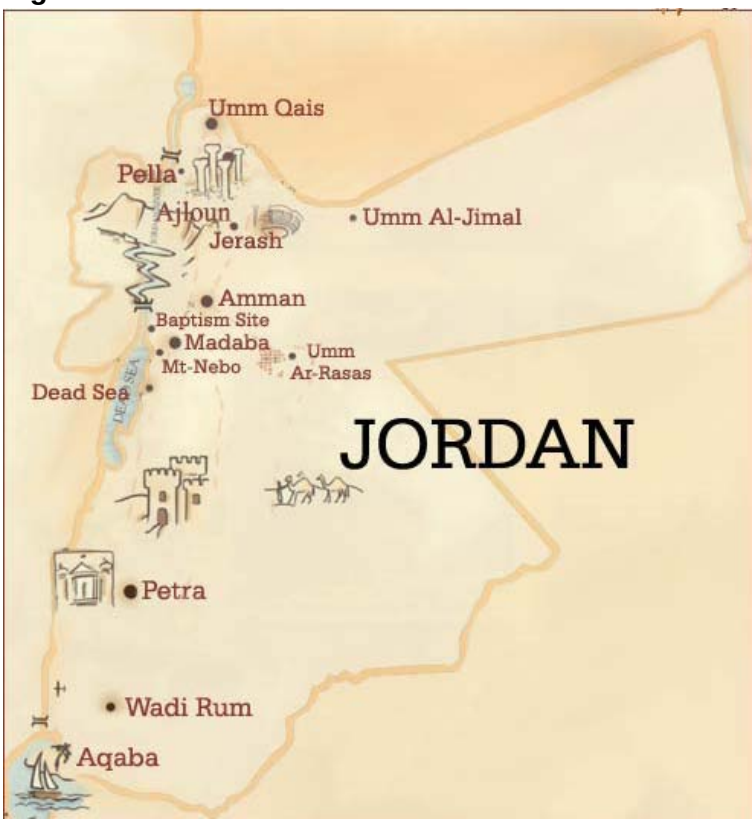
The major tourist activities include numerous ancient places, unique desert castles, unspoiled natural locations and cultural and religious sites. The best known attractions include

- Ajlun, famous for the Al-Rabad Castle,
- Amman contains the Roman theater, in addition to several museums, where one may find remains of the Dead Sea Scrolls,
- Aqaba on the shore of the Gulf of Aqaba with access to water sports,
- the Dead Sea, lowest point on earth,
- Jerash, famous for its ancient Roman architecture,
- Karak with an important castle from the times of Salah al-Din, known as Al-Karak Castle,
- Madaba, well known for its mosaics, as well as important religious sites such as the Madaba Map,
- Mount Nebo, where Moses was said to have gone to get a view of the Promised Land before he died,
- Petra, a complete city carved in a mountain,
- the River Jordan,
- Umm Qais, a town located on the site of the ruined Hellenistic-Roman city of Gadara, and

- Wadi Rum, a desert full of mountains and hills located in the south of the country,

As shows Figure 8, many of these attractions are located in the north-eastern part of the country which is also the population center and within a short reach from Amman.

Figure 8: Tourism sites in Jordan



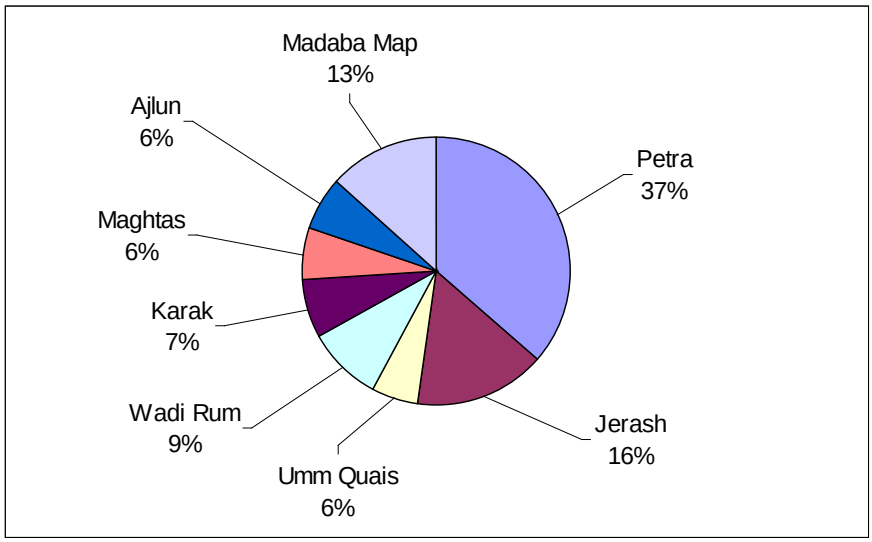
Source: http://www.tourism.jo/INSIDE/MAP.ASP

Altogether, there were some 2.2 million visitors counted at the major tourist attractions in 2008[1]. As shows Figure 9, Petra was the most visited site, followed by Jerash and Madaba. Europeans were the group that expressed the most interest in these sites; they represented some 1.5 million visits or 69% of total visits (Figure 10). Jordanians were the second largest group, representing 12%. Americans, Asians and Arabs were strongly underrepresented at

[1] since some visitors may have visited several attractions, these numbers may not be directly compared with the number of visitor arrivals

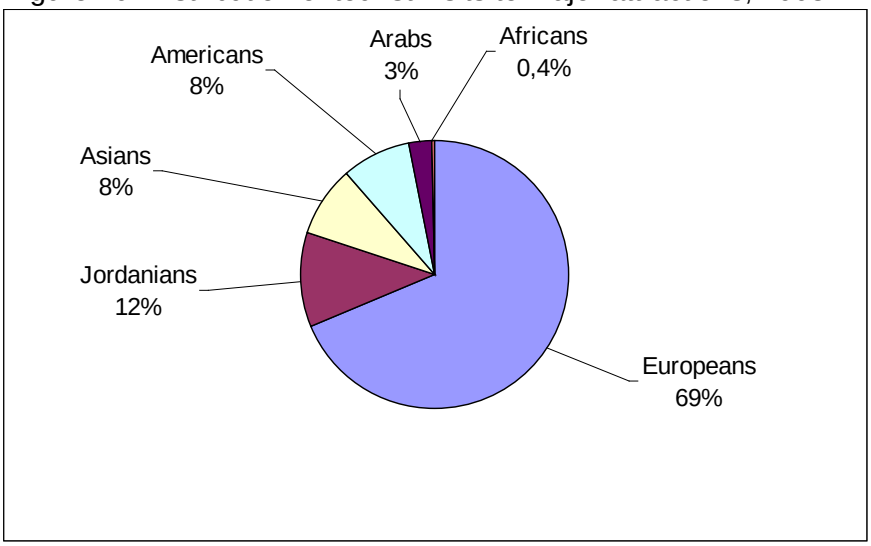
the sites. This suggests that visitors from these regions place their interest on different activities and/or are visiting Jordan mainly for business purposes.
The fact that only few of the Arab visitors to Jordan visit these sites can be explained through the likelihood of a large proportion of repeat visitors and a potentially low percentage of leisure tourists among them.

Figure 9: Distribution of tourist visits to major attractions, 2008.



Source: Ministry of Tourism and Antiquities

Figure 10: Distribution of tourist visits to major attractions, 2008.



Source: Ministry of Tourism and Antiquities

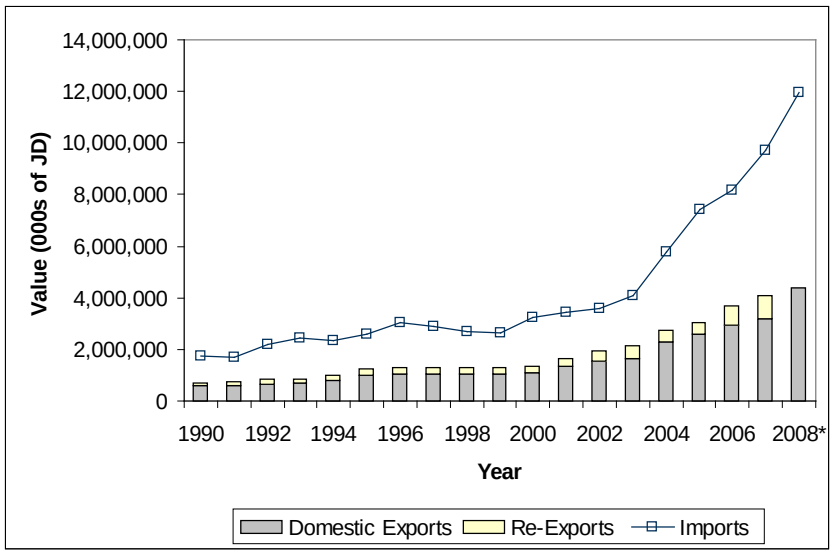
3.6.3 Income Development and Income Distribution

As shows Figure 4, Jordan's GDP per capita has been increasing at an accelerated rate since 2000. In the absence of up-to-date time series data on personal income, and due to the typically close relationship between GDP per capita and personal income, we conclude that, over these years, the average income has also been growing in a commensurate way. In 2007 the Gini Index[2], a measure for income distribution, stood at 38.8, thus slightly below the world average of 40.8. This means that incomes in Jordan are more equally distributed than in the world as a whole, and puts Jordan into the group of countries like Israel (39.2), Portugal (38.5) and Trinidad and Tobago (38.9).

3.6.4 External trade

Jordan has traditionally been a net importer (Figure 11). In terms of value, imports have increased 4.5-fold between 1990 and 2008 and have outpaced exports. As a result, the trade deficit increased to the about 6.5-fold within this period and reached 5.6 billion JD in 2007, the 2.4-fold of exports. Re-exports have over the years been fluctuating around 20% of total exports and thus correlate with the level of domestic exports.

Figure 11: External trade statistics, 1977-2007



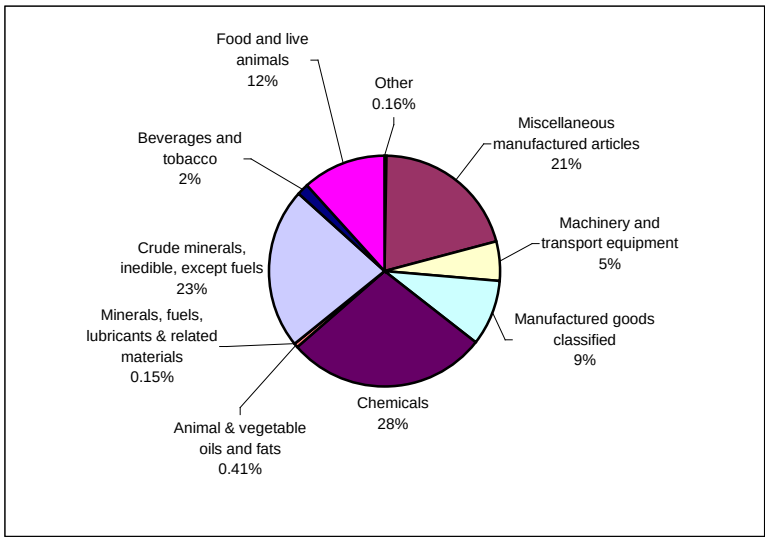
* Estimate
Note: Figure for re-exports in 2008 missing.

Source: Central Bank of Jordan

[2] The Gini Index ranges between 0 and 100, with 0 meaning perfect equality and 100 meaning perfect inequality. In 2007, the weighted average stood at 40.5 with the extremes marked by Denmark, which had a score of 23.2 and Namibia, which had a score of 70.7.

As mentioned earlier, the Jordanian economy is very much characterized by the mining and chemical industry (fertilizers). This is reflected by exports as shown in Figure 12. Chemicals and crude minerals exports are the two largest groups of export commodities and together represented about 52% of domestic exports in 2008.

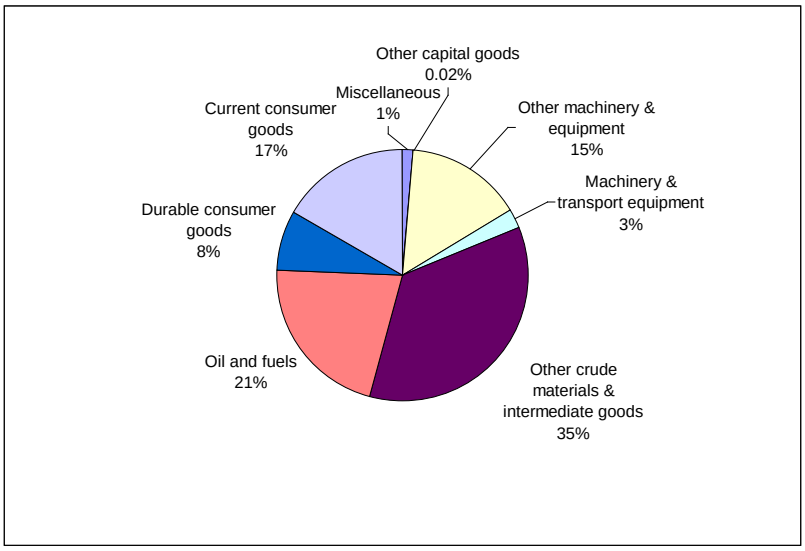
Figure 12: Structure of domestic exports by value, 2008 (preliminary)



Source: Central Bank of Jordan

The import side of Jordan's trade is dominated by the two groups of crude materials and intermediate goods and oils and fuels. In 2008 they together accounted for some 56% of all imports by value (Figure 13).

Figure 13: Structure of Imports by value, 2008 (preliminary)

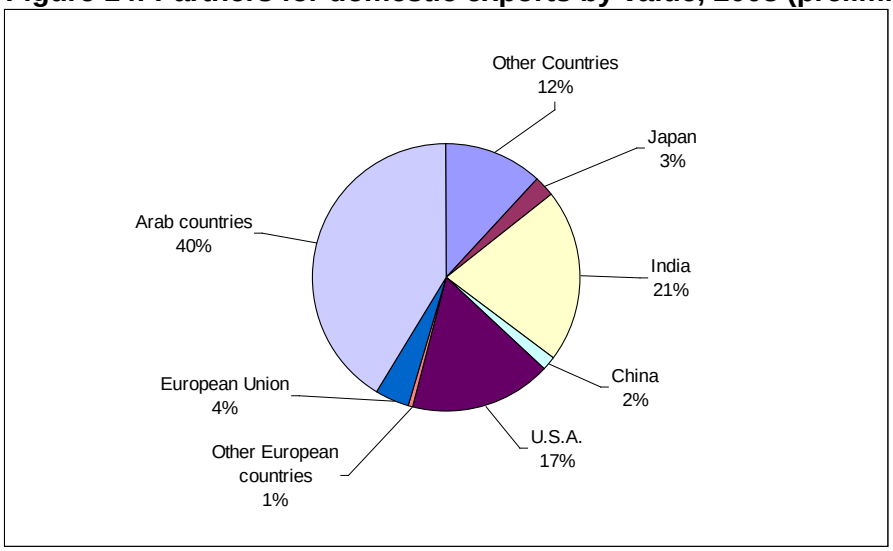


Source: Central Bank of Jordan

Jordan's main trading partner for domestic exports is the block of Arab countries (40%), followed by India (21%) and the US (17%) (Figure 14). Jordan's exports to the US have greatly increased since the signing of the Free Trade Agreement. While prior to 2000 exports to the US represented only some 1% of domestic exports by value, they have greatly increased their share thereafter. This has been mainly to the expense of the share of the group of "other" countries.

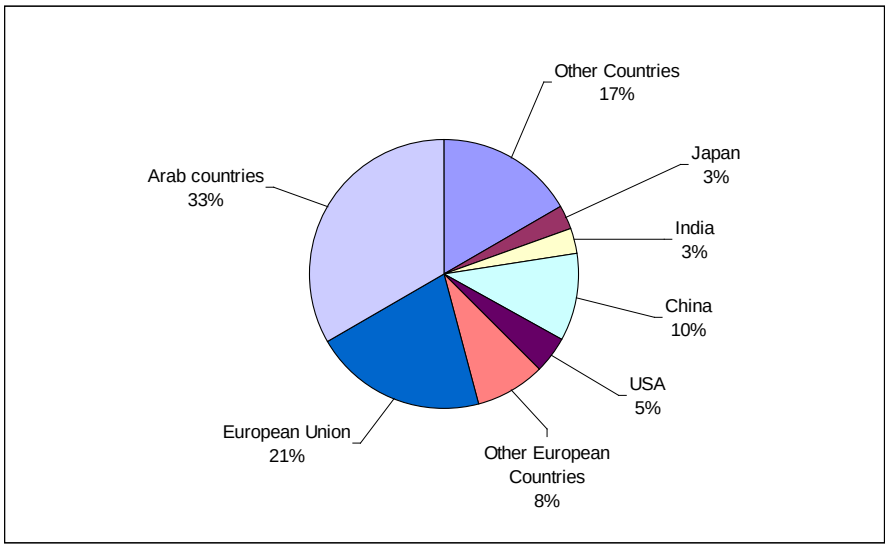
The picture is slightly different for imports, where also the block of Arab countries is the main trading partner with 33%. Second largest supplier of imports is the European Union with an import share of 21%; together with other European countries Europe constitutes 29% of imports to Jordan. India and the US, important export partners, play with 3% and 5%, respectively, only a minor importance for imports. While India and China have been increasing their share over the past years, the US and the European Union have been losing.

Figure 14: Partners for domestic exports by value, 2008 (preliminary)



Source: Central Bank of Jordan

Figure 15: Partners for domestic imports by value, 2008 (preliminary)



Source: Central Bank of Jordan

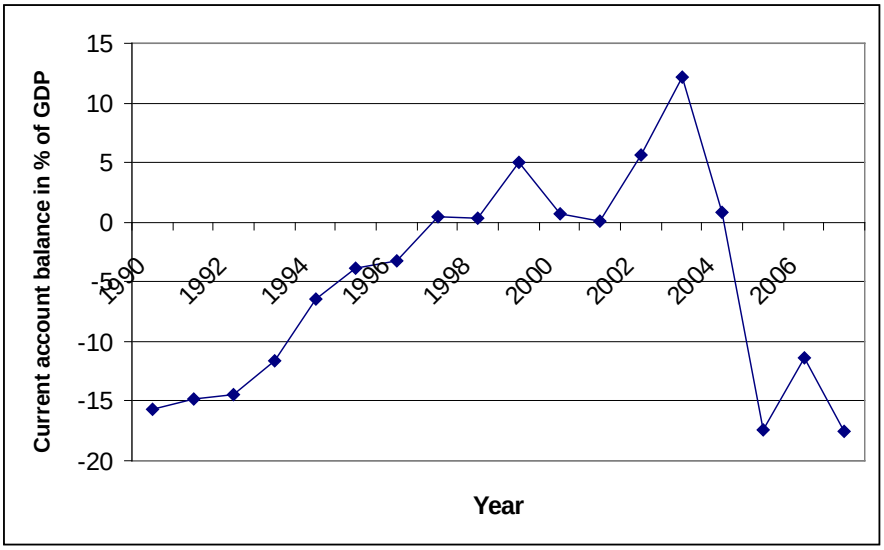
3.6.5 Current Account Balance, Total External Debt and CPI

With external trade producing a growing deficit, it is no surprise that the current account balance is equally negative. As shows Figure 16, the current account balance had been positive from 1997 until in 2003; it steeply dropped thereafter.

At least part of this drop is explained through Jordan's dependence on external energy supply. Since Jordan has no significant resources of its own, it must import oil for all of its needs. Prior to the March 2003 invasion of Iraq, Jordan had received crude oil from Iraq; half was free of charge and half at prices significantly below market levels. The country also received around 20,000 bbl/d of refined petroleum products from Iraq.

In the wake of the war, Jordan has had to seek alternative sources of supply, both Kuwait and Saudi Arabia emerging as Jordan's main oil suppliers since 2003. Press reports indicated that at least some of this oil was sold at discounted prices through the end of 2004, and that Jordan has been paying the full market prices in 2005.

Figure 16: Historical development of current account balance



Source: IMF

3.6.6 Foreign Direct Investment (FDI)

According to figures released by the United Nations Conference on Trade and Development, Jordan attracted over $3bn in foreign direct investment in 2006, an increase of over 100 per cent. However, its total was far below Saudi Arabia which attracted $18.3bn, Egypt, $10bn, and the UAE with $8.4bn.

Investment so far has included a special economic zone in Aqaba. With over 80 free zones already established and operating in the Middle East and Gulf regions, Jordan's desire to implement a similar economic drive must be very focused, leveraging the potential that currently sets it apart from other neighbouring countries.

Recognising that it needs to do more to attract investment to the country, Jordan recently announced that it will be developing a national investment strategy in an effort to attract an extra $3bn in FDI a year. This strategy will focus on industries that produce goods and services for export.

3.6.7 Medium-Term and Long-Term Outlook

The following is a reproduction from the Economist Intelligence Unit's (EIU) Newswire and represents their views and expectations in regard of the near and longer term outlook for Jordan. Given the current state of the world economy we consider these assumptions reasonable.

3.6.7.1 Near term (2009/10)

Over the outlook period, Jordan is set to record its worst consecutive years of real GDP growth in over a decade, as the prospects for the services sector, including tourism, continue to worsen. In addition, having surged in recent years (as the Gulf Arab states have channeled their oil wealth into the country), inward foreign direct investment will almost certainly decline as many Arab states seek to repatriate their capital in the wake of falling oil prices and of tightening liquidity conditions. The worsening global economic situation is also likely to depress consumer confidence, as is the petering out of the country's building boom. Nonetheless, more positively, the sharp falls in global commodity prices, as well as a relatively expansionary fiscal policy, should help to support consumer demand. Exports will be restrained by the prolonged economic slowdown in the US, but this should be partly offset by fast-rising import demand in neighboring Iraq. Meanwhile, the gradual softening of domestic demand will cause a commensurate slowdown in import growth. Overall, we expect the economy to slow sharply, with real GDP growth forecast to dip from an estimated 5.8% in 2008 to 3.5% in 2009. With the sharp downturn in the EU and the US likely to take time to feed through into Jordanian investment spending and consumer demand deteriorating, we expect the rate of expansion to slow further in 2010, to 3%.

Jordan's current-account deficit is expected to narrow sharply over the outlook period, on the back of falling prices for international commodities, in particular oil. With discounted crude supplies also commencing from Iraq in late 2008, we project that the import bill will contract by 20% in 2009, before rising by 5% in 2010. Exports will be held back by weakness in the US, Jordan's main export market, and falling commodity prices (which will hit the value of Jordan's potash and phosphates exports), although increased re-export trade with Iraq

should partly offset this. Consequently, we expect the trade deficit to narrow over the outlook period, from an estimated US$9bn in 2008, or 45% of GDP, to an average of US$6.6bn in 2009-10.

3.6.7.2 Long term (10 years)

Demographic trends are largely favorable to Jordan's growth prospects, with the working-age population set to continue to increase more rapidly than the overall population over the bulk of the forecast period. Rising education levels and later marriage are contributing to a steady decline in the birth rate. The population has continued to grow strongly, however, despite declining fertility numbers, largely as a result of immigration, particularly from Iraq. An estimated 700,000 Iraqis now live in Jordan, predominantly in the capital, Amman. Although the immigrant population is making a positive contribution to growth, it is also starting to place strains on existing infrastructure and the welfare system. However, should the situation stabilize in Iraq, many Iraqis may eventually return, although such an outcome would require a sustained improvement in security beyond present levels.

Jordan's substantial trade deficit will continue to be a challenge for the economy. The country is dependent on imports for almost all its oil needs, a growing percentage of its food needs and many consumption items. Its domestic resource base is limited, which means expanded local production and exports also draw in more imports of raw materials, intermediate products and industrial equipment. Jordan has taken a number of steps to boost its export industry, notably by joining the World Trade Organisation, encouraging tax- and customs-free zones and bilateral free-trade agreements. The deal with the US has brought exporters the strongest benefits over the past five years, but there has been less success with exports to the EU. Jordan is co-operating with the EU on a number of projects to help local manufacturers to build their capacity, and this should help to boost exports to some extent. Exports to the GCC states should rise as their economies continue their rapid expansion, although Jordanian products will face strong competition from regional producers such as Syria and Turkey, which have a lower cost base. The best prospects could be in higher-value areas such as pharmaceuticals, where Jordan has already established a good reputation for cheap, but high-quality, production. In addition, rapid growth in Asia should ensure a ready market for Jordan's mineral exports.

Jordan, in common with all the countries in the region, faces an insecure political environment. The two major ongoing regional conflicts, between Israel and the Palestinians and in Iraq (as well as, potentially, Iran), have the potential to flare up, harming prospects for tourism and undermining investor confidence, as well as bringing the risk of violent militant attacks within Jordan.

Although the population will remain relatively low, reaching an estimated 6.8m by 2012, income per head is forecast to rise steadily and a higher percentage of the population will come from the 18-30 age group. Jordan's education levels are improving, allowing more young school and university graduates to qualify for skilled jobs and a higher percentage of women in that age group to enter the workforce. Most unmarried middle-income Jordanians who are working are not required to contribute to household expenses and thus have relatively high levels of disposable income. As a result, the Jordanian market should grow steadily over the forecast period.

Jordanians are widely exposed to both international and regional trends in private consumption. However, there continue to be large variations in income and consumption patterns, both between the capital, Amman, and the rest of Jordan and between low-income east and middle-income west Amman. A majority of Jordanians will continue to spend the bulk of their income on basic household goods, but a growing middle class will be able to afford consumption goods. The government's "Decent Homes for Decent Living" programme, which, if successful, will see some 100,000 low-cost homes built over the next five years, is also likely to stimulate a commensurate increase in demand for furniture and white goods.

Although they are not counted in official population figures, the estimated 700,000 Iraqis currently resident in Jordan have contributed substantially to rising consumption levels and can be expected to remain in Jordan over the forecast period (although some of the less well-off may choose to depart once their savings are run down).

The southern port of Aqaba should be a growth area as its tax- and duty-free status contributes to an accelerated rate of economic development, with an associated rise in job opportunities that will attract people from the rest of the country. Aqaba is also positioning itself as a major tourist destination and entry point to key tourist attractions in the south of Jordan, which should bring in added custom for its retail facilities.

For a variety of reasons Jordan has never developed a substantial industrial base. Its domestic market is limited by low purchasing power, and neither the domestic investment climate nor the regional political situation has been conducive to long-term risk. Private investors have mainly engaged in light industrial activity, such as food-processing, textiles, consumer goods and construction materials, with the local and Iraqi markets as a major focus. Local industry has suffered from competition from cheap imports, following the progressive reduction of import duties as part of government restructuring efforts. Heavy industries such as phosphates and cement continue to provide the backbone of the manufacturing economy. Pharmaceuticals are one of the success stories of Jordanian industry, earning US$298m in export revenue in 2006, up from US$281m in 2005. One of the most successful and ambitious companies is Hikma Pharmaceuticals, which posted a preliminary after-tax profit of US$62.6m in 2007, up from US$54.5m in 2006, and is now listed on the London Stock Exchange. The company began operation in Jordan but now has

production facilities in the US and Portugal and a joint venture in Tunisia. It is building new plants in Portugal, Jordan and Italy, and in 2007 it bought established plants in Egypt and Germany.

3.6.8 GDP forecast

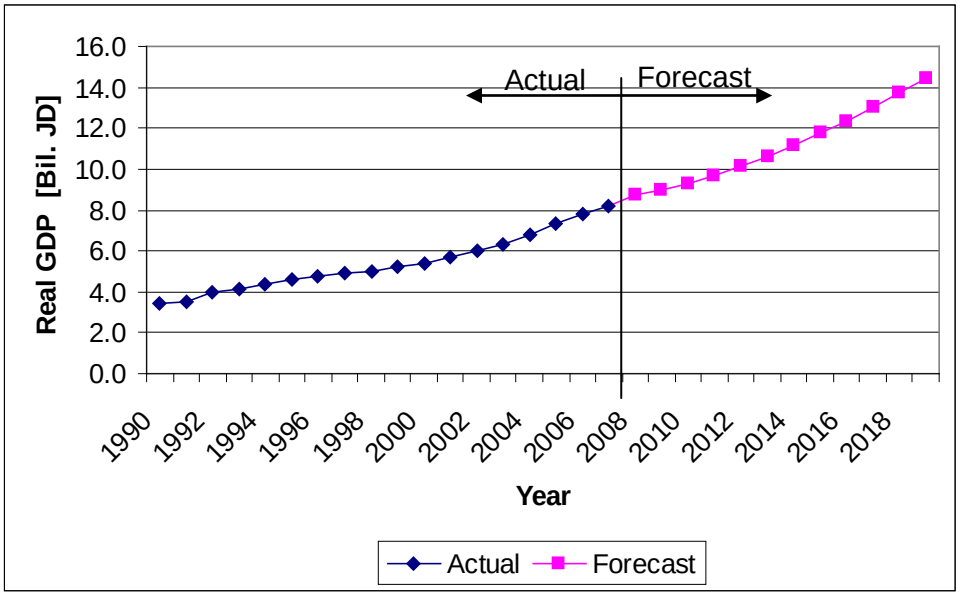
In view of the above the EIU estimates growth of real GDP over the five-year period to span from 3.0% in 2010 to 4.3% in 2013 (Table 3). For the years after 2013 we apply the compounded average growth rate of the period 1990-2007. Figure 17 shows graphically the resulting forecast.

Table 3: Growth rates of real GDP, 2009-2019

Year	Real GDP growth rate
2009	3,5%
2010	3,0%
2011	4,3%
2012	4,7%
2013	4,5%
2014-2019	5,3%

Source: EIU, IATA

Figure 17: Forecast of real GDP to 2019



Source: IMF, EIU, IATA

4. Structure and Present State of the Jordanian Aviation Sector

The information presented in Chapter 3 covers the demand side of air transport demand. The counterpart to the demand side is the supply side which allows demand to be satisfied. In the following paragraphs we present an overview of the airport infrastructure and of the airlines which are two of the main elements of air transport supply. A third element, the regulatory aspects and there the traffic agreements in particular, will be presented in the Phase 2 report which will take a closer look at the impact of an open skies agreement between Jordan and the European Union.

4.1 Airports

There are three commercial civil airports through which Jordan passenger and air cargo are handled: Queen Alia International Airport in Amman (AMM), King Hussein International Airport (AQJ) in Aqaba and Amman Civil (Marka) International Airport (ADJ), also in Amman.

Queen Alia International Airport, located at some 25 km from Amman city center, is the main airport of the country, serving only commercial flights. It provides two parallel runways that can operate independently, two passenger terminals and one cargo terminal. In 2007 a concession for AMM has been awarded to a consortium with participation of Aéroports de Paris which has taken over the operation of the airport and will construct a new passenger terminal.

Amman Marka airport, which served as the main airport until AMM was opened in 1983, continues being the alternate in case AMM is closed (usually due to fog). It is equipped with a single runway 3,275 m in length and a small passenger terminal. The main function of Amman Marka airport today is to serve domestic flights to Aqaba and to other destinations in the region, as for example Baghdad (BGW). It is also handling all General Aviation (GA) activities for Amman and is a basis for flights of the red cross and the United nations (UN). Amman Marka airport is a civil/military joint use airport and also serves military flights with transport aircraft and helicopters.
Airlines operating from Amman Marka airport are Royal Wings, Jordan Aviation and Arab Wings.

King Hussein International Airport (KHIA) in Aqaba handles passenger and cargo flights through two respective terminals and a 3,000 m long runway. The airport serves domestic flights as well as scheduled and non-scheduled international flights to regional and European destinations. As a pilot test case for the entire country the airport was awarded open skies status in 2003.

Table 4 summarizes the main parameters for the three airports. From a runway length perspective, AMM, AQJ and ADJ are all able to accommodate long-distance flights with widebody equipment.

Table 4: Main airport infrastructure of Jordan

Airport Name	IATA Code	Number, length and width of runways	Total Commercial Pax (dom. + int., 2007)	Total Commercial Cargo and Mail [t] (dom. + int., 2007)
Queen Alia International	AMM	2 x 3,660x61 m	3,900,755	89,974
King Hussein International	AQJ	1 x 3,000x45 m	139,218	815
Amman Civil (Marka)	ADJ	1 x 3,275x45 m	71,730	4,216

Source: CARC, IATA

4.1.1 Queen Alia International Airport (AMM)

This airport serves the nation's political and commercial capital and offers the largest network of international flights in all of Jordan. In 2007 the international destination generating the largest passenger volume out of AMM, about 347,000, was Dubai (DXB). This corresponds to a destination share of some 9% of total international passengers (Table 5). It must be pointed out here that these figures represent passengers by route segment. DXB being a large hub, it is likely that a proportion of passengers traveling on this route made connections in DXB to onward destinations. Analysis into the true Origin-to-Destination (O&D) passenger flows will be conducted in Phase 2 of the study.

The route generating the second-largest international passenger demand in 2007 was to Cairo (CAI), with approximately 283,000 passengers (7.3%). The next four destinations, Kuwait (KWI), Beyrouth (BEY), Doha (DOH) and Jeddah (JED) held market shares of between 4.6% and 4.1%. The six top destinations thus lie all in the Middle East and generate one third of the international passenger demand at AMM.

Figure 18 shows that airlines connect AMM through nonstop flights with most of Western Europe's major airports. Gaps still exist in Eastern Europe such as Poland, the Czech Republik and Slovakia that are reached through transfer connections. Long-distance services are operated to North America and South Asia (Figure 19). The network of regional flights covers destinations in Egypt, Syria, Lebanon, Iraq, along the coast of the Persian Gulf, in Saudia Arabia, Yemen and Sudan. Most of the foreign destinations are the relevant carriers' main hubs. Overall, the focus of connections lies on regional destinations and on Europe. Domestic connections from AMM exist only to Aqaba

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Figure 18: AMM network of nonstop routes to Europe, December 2008

Source: SRS Analyzer

Figure 19: AMM network of nonstop routes excluding Europe, December 2008

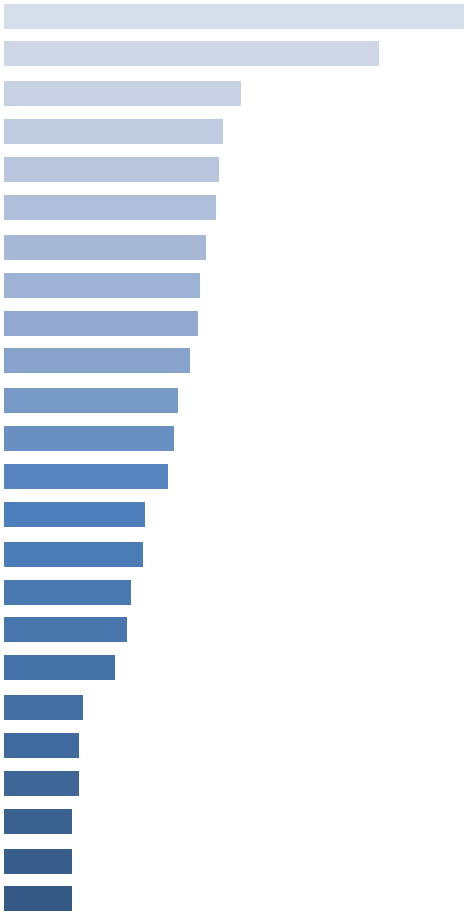
Source: SRS Analyzer

Paris Charles de Gaulle (CDG) airport was the largest European destination with a share of just below 4%, followed by Abu Dhabi (AUH) (3.8%), London Heathrow (LHR) (3.8%) and Frankfurt (FRA) (3.7%). Since all of these airports are hubs for the respective home carriers, these flights will also have carried transfer passengers.

As would be expected, the long distance flights carried a comparatively small number of passengers. The destination shares of Chicago O'Hare (ORD), Bangkok and New York are in the order of 2.5%, just above the 2.2% for Tel Aviv (TLV).

Table 5: Market share in international traffic by city-pair, AMM 2007

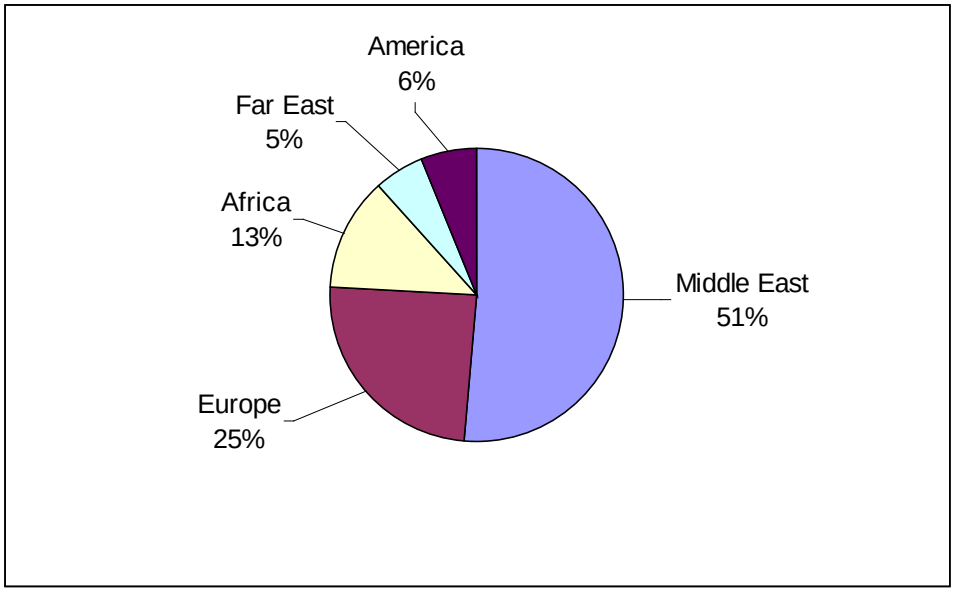
Destination	Total pax	Market share
DXB	346.937	8,99%
CAI	282.848	7,33%
KWI	178.156	4,62%
BEY	164.704	4,27%
DOH	162.956	4,22%
JED	159.529	4,14%
CDG	151.582	3,93%
AUH	148.170	3,84%
LHR	145.591	3,77%
FRA	140.612	3,65%
BGW	131.736	3,42%
IST	128.067	3,32%
BAH	123.272	3,20%
RUH	105.137	2,73%
ORD	104.449	2,71%
BKK	94.748	2,46%
JFK	92.304	2,39%
TLV	83.576	2,17%
SHJ	59.349	1,54%
DAM	57.176	1,48%
TIP	55.957	1,45%
DEL	51.197	1,33%
SSH	50.275	1,30%
SAH	49.979	1,30%
Other	789.234	20,46%
Total	3.857.541	



Source: Civil Aviation Regulatory Commission of Jordan

As the destination shares already suggest, the Middle East is the leading region in terms of passengers by flight segment. For about 51% of all passengers boarding a flight in AMM the next stop is in the Middle East. Europe is the second most important region with a 25% share, followed by Africa with 13%. Together, the regions of the nonstop long-range destinations (Far East, America) represent 11% of all international passengers at AMM.

Figure 20: Regional split of segment passengers, international traffic



Source: Civil Aviation Regulatory Commission of Jordan, IATA

4.1.1.1 Airlines

Since Jordan to date still maintains a system of bilateral Air Service Agreements (ASA), the mix of airlines serving AMM reflects the route network; i.e. the relevant destination countries. As shows Table 6, with nearly 60% of all passengers carried, RJ is clearly dominating the passenger business at AMM. All other airlines achieve significantly lower market shares with Emirates (EK) holding a share of 5.3%, thus being the strongest foreign airline.

None of the non-Arab foreign airlines is among those that together represent 80% of total passenger volumes at AMM. In some cases they must compete against RJ, which means they have to share the market with another airline.

An effect which the accession of RJ to the oneworld alliance has had is that British Airways (BA) does no longer operate services between LHR and AMM. It stopped its services on Oct. 26, 2007, and RJ is now operating this route for the alliance and thus also for BA. British Midland (BD) stepped in to fill the place of BA and started its LHR-AMM services on Oct. 27, 2007 and is now competing with RJ on this route.

Table 6: Market share in international traffic by airline, AMM 2007

Airline	Total pax	Market share
RJ	2,297,289	59.55%
EK	205,364	5.32%
MS	134,571	3.49%
QR	132,679	3.44%
SV	109,932	2.85%
GF	104,164	2.70%
EY	97,811	2.54%
Other	775,831	20.11%
Total	3,857,641	

Source: Civil Aviation Regulatory Commission of Jordan, IATA

4.1.1.2 Historic Development of Passenger Demand

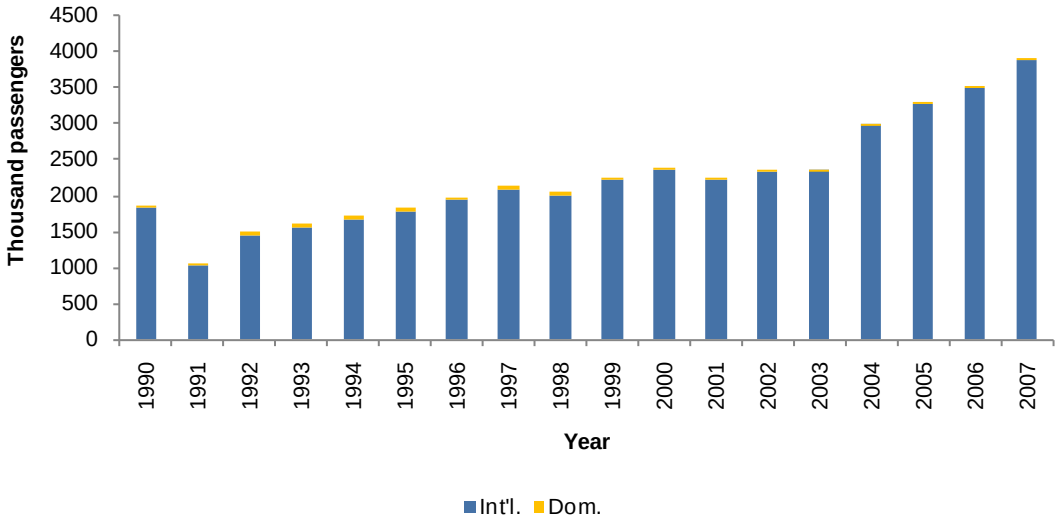
Total passenger demand at AMM has roughly doubled from 1.85 million in 1990 to 3.9 million in 2007 (Figure 21). This translates into an Average Compounded Growth Rate (CAGR) of 4.4%, a figure which is in line with long-term worldwide passenger demand. Due to the Gulf War in 1991, passenger volumes dropped 43% between 1990 and 1991, but recovered in 1992. Still, they did not reach again the level of 1990 until in 1995.

Unlike in other parts of the world did traffic only suffer a comparatively mild setback after the events of 9/11 in the US. Passenger volumes in 2001 were 6.4% below the level of 2000. They continued to grow sluggishly in the two years thereafter, but made a leap of nearly 27% in 2004, and thereafter continued to grow at an accelerated rate through 2007. The leap in 2004 may be related to increased travel activities in relation with Iraq for which AMM serves as a platform.

Since there is only one domestic destination, AQJ, to which commercial flights are operated from AMM, it follows that international passenger volumes represent the larger proportion of passengers traveling to and from AMM. Whereas there had been some 3.86 million international passengers passing through AMM in 2007, there were only counted about 43,000 domestic passengers, or 1.1% of total passengers. Domestic traffic thus plays a marginal role only.

Not only that domestic demand is small, it has also been growing very slowly. The compounded average growth rate between 1990 and 2007 has been a meager 0.7%. Accounting for the large fluctuations domestic passenger numbers have shown in the years in between – they reached a maximum of 59,400 in 1995 and a minimum of 4,400 in 2003 –, domestic demand has been essentially stagnating over this period.

Figure 21: Domestic and international passengers at AMM, 1990-2008



Data source: Civil Aviation Regulatory Commission of Jordan

Nearly all passengers at AMM travel on scheduled flights; in 2007 only some 30,000 or 0.8% of total passengers used non-scheduled services. Even though this proportion has been subject to large variations over the past three years - from a low of 0.5% in 2006 and a high of 1.3% in 2005 -, the relevant figures have not been significant.

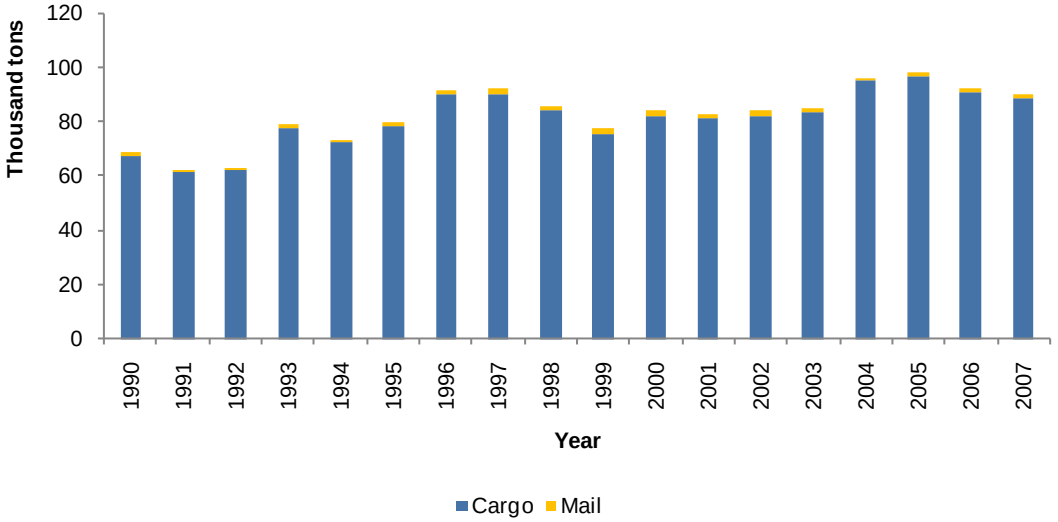
As mentioned earlier, the official statistics used for this Phase 1 analysis do not differentiate between O&D, transit and transfer passengers. However, it is certain that there are passengers who only transit AMM or make connections between flights there on their way to other destinations. We assume that particularly with the accession of RJ to the oneworld alliance the volumes of transfer passengers has increased. The analysis of the composition of traffic into O&D and transfer/transit passengers will be performed in Phase 2 of the project in which we will perform an O&D analysis.

4.1.1.3 Air Cargo and Mail

As Figure 22 shows, the annual volumes of air cargo/mail have displayed only sluggish growth from 67,500 tonnes in 1990 to 90,300 tonnes in 2007. This corresponds with a CAGR of 1.6% over the period. A major setback was experienced between 1997 and 1999 when volumes dropped by nearly 16%. Neither the Gulf War in 1991 nor the ripple effects following from the events of September 11, 2001 in the U.S made themselves as much felt in cargo volumes as in the passenger business. However, as for passenger numbers, we interpret the 13%-increase between 2003 and 2004 to be related to the reconstruction efforts in Iraq rather than an effect of the open skies for cargo that has been in effect since 2004.

Air cargo/air mail at AMM is practically an international business. A mere 45 tonnes out of the total of 90,300 tonnes handled in 2007 were domestic cargo/mail. A nominal volume of 2.3 tonnes was carried on non-scheduled flights.

Figure 22: Cargo and mail at AMM, 1990-2007



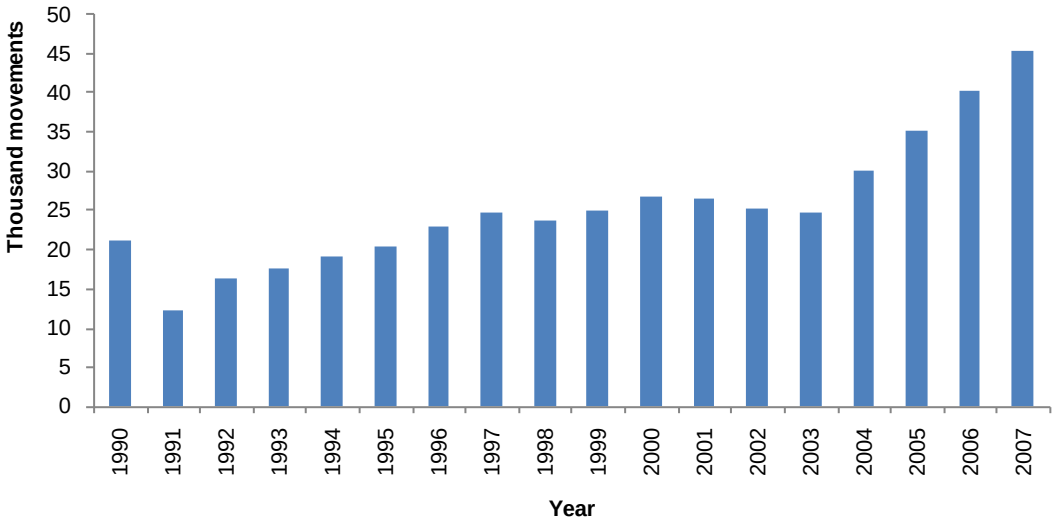
Data source: Civil Aviation Regulatory Commission of Jordan

4.1.1.4 Aircraft Movements

In 2007, AMM handled approximately 44,000 commercial aircraft movements. The largest proportion of this, 96%, was related to international flights, whereas the remainder was represented by domestic flights. Apart from RJ's cargo unit which operates all-cargo flights, only 227 dedicated cargo operations by other airlines were recorded, 188 of which by Cargolux. No specific statistics are available for the all-cargo flights by RJ cargo which operates two A310 all-cargo aircraft. The relevant aircraft movements are included in the some 27,200 movements by RJ. We estimate these two aircraft contribute some 1,500 all-cargo movements per year.

Overall aircraft movements have increased by 4.6% per year (CAGR) since 1990 and thus only little faster than passenger volumes. The aircraft movement growth pattern mirrors that of passenger volumes. Like for passenger volumes, aircraft movements have experienced accelerated growth since 2004. However, the 14.6% average growth rate of aircraft movements over these three years surpasses the corresponding 9.3% of passenger volumes. This indicates a trend towards smaller aircraft which is reflective of RJ's Levant strategy which is directed at increasing its presence in the region.

Figure 23: Aircraft movements at AMM, 1990-2007



4.1.2 King Hussein International Airport (AQJ)

AQJ is the second largest airport in Jordan, yet much smaller than AMM in terms of passenger volumes. Consequently, its route network is considerably smaller. As shows Figure 24, in December 2008 scheduled flights were operated to Marsa Alam International Airport (RMF) in Egypt, CDG and Brussels (BRU). Domestic scheduled services connect AQJ with AMM.

As per the official statistics of CARC, there were no scheduled services offered in 2007. Therefore, a number of non-scheduled services connected AQJ with destinations in the Middle East and Europe, but also in North Africa and the Far East. Many of the non-scheduled flights are at low frequency and it is therefore to be assumed they mainly serve the tourist industry on the Gulf of Aqaba and have a seasonal character.

Even though regional flights to Sharm-el-Sheikh (SSH) and CAI carry nearly 47% of total international passengers, the European destinations Moscow (MOW), London (LON), Mackhachkala (MCX), Barcelona (BCN) and Bergamo (BGY) unite a share of about 38% of international demand upon themselves (Table 7). The fact that these European destinations are served with non-scheduled flights underscores the importance of the tourist demand for AQJ.

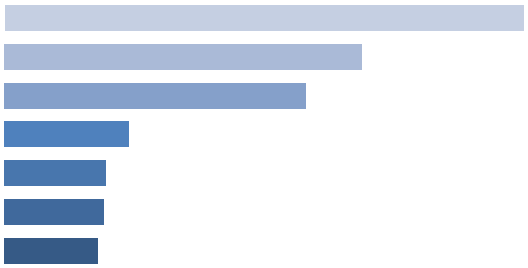
Figure 24: AQJ network of nonstop routes, December 2008

Source: SRS Analyzer

As per the official statistics, in 2007 there were 45,501 passengers traveling between Aqaba and the two Amman airports. The destination Amman thus generated 33% of total commercial passengers at AQJ and is the main destination.

Table 7: Market share in international traffic by city-pair, AQJ 2007

Destination	Total pax	Market share
SSH	25,931	27.67%
CAI	17,814	19.01%
MOW	15,050	16.06%
LON	6,215	6.63%
MCX	4,998	5.33%
BCN	4,954	5.29%
BGY	4,665	4.98%
Other	14,090	15.03%
Total	93,717	



Note: Figures include General Aviation flights.

Source: Civil Aviation Regulatory Commission of Jordan

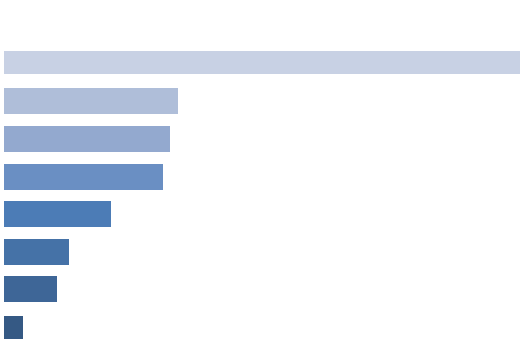
4.1.2.1 Airlines

As already the smaller route network suggests, AQJ is served by significantly fewer airlines than AMM. Unlike at AMM, it is not the local carriers which carry most of the passengers, but foreign, mostly European non-scheduled airlines. In 2007 Petroleum Air Service (PS), an Egyptian charter airline, carried about 29,000 passengers, equivalent to 31% of international demand. Other important airlines in the international passenger traffic at AQJ were Alexandria Airlines (XH) with a market share of 10.45%, Dagestan Airlines (N2) with 9.9% and Eurofly (GJ) with 9.5%. Austrian Airlines (OS) is the only network carrier in the list of those airlines that constitute about 75% of international passenger demand.

The domestic demand to Amman distributes itself onto flights to AMM and to ADJ. Only the small proportion of 2% of them used ADJ, the remainder AMM. In the absence of relevant information we assume the passengers traveling between AQJ and ADJ used the services of Jordan Aviation. The majority of passengers traveling to AMM likely used RJ flights. Therefore, despite the strong market presence of PS in the international business, RJ held an overall larger market share of nearly 32%, alone on the grounds of its domestic services to AMM.

Table 8: Market share in international traffic by Airline, AQJ 2007

Airline	Total pax	Market share
PS	29,070	31.02%
XH	9,793	10.45%
N2	9,244	9.86%
GJ	8,940	9.54%
GT	6,007	6.41%
R5	3,686	3.93%
OS	2,894	3.09%
S7	1,003	1.07%
Other	23,080	24.63%
Total	93,717	



Note: Figures include General Aviation flights.

Source: Civil Aviation Regulatory Commission of Jordan

4.1.2.2 Historic Development of Passenger Demand

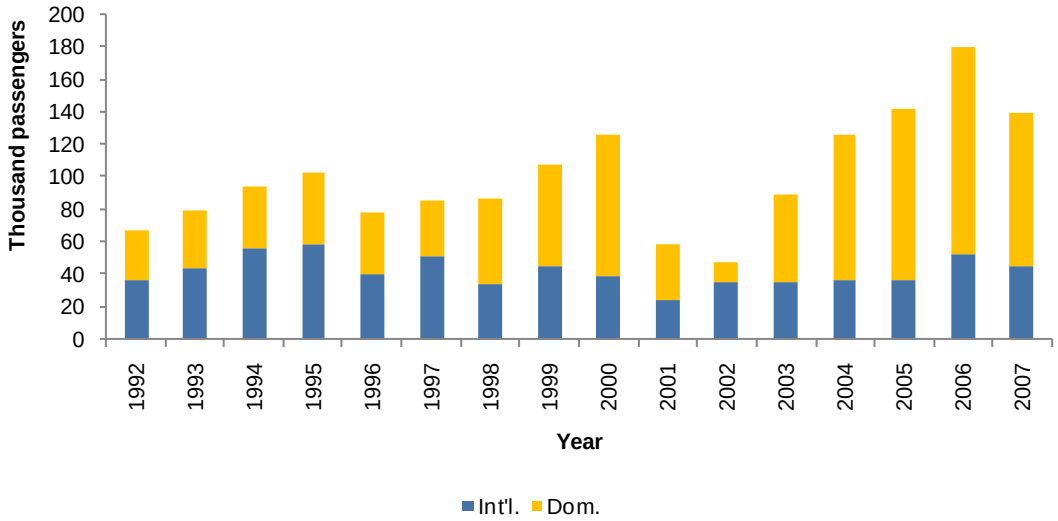
As shows Figure 25, passenger demand has grown strongly, albeit not continuously, between 1990 and 2007. Fairly stable growth from 1991 onward to 2000 was followed by a deep plunge by nearly 54% and 18% in the years 2001 and 2002[3]. These figures exemplify the strong dependence of demand on the tourist business which collapsed after the events of 9/11 in the US. Recovery was strong, however, and after two years of exceptional growth the demand level of 2000 had been reached again in 2004. Demand for commercial flights continued to grow strongly until 2006 when it reached a peak of 180,000 passengers before dropping by 22% to 139,000 in 2007. Overall, over the period 1990-2007 passenger volumes have been growing at an average of 8%, thus clearly outpacing AMM. Growth was strongest between 2003 and 2006 at an annual rate of 39%. Since this period coincided with the recovery after 9/11 and the awarding of open skies status to Aqaba airport in 2003, both factors must be seen to have contributed to this extraordinary development.

While in the early 1990s ADJ was an airport handling almost only domestic traffic, this has changed. The proportion of domestic passengers has over the years decreased and, after having reached a low of 26% in 2005, has again slightly increased to 33% in 2007. This may be taken as an indication that domestic demand in terms of percentage of overall commercial demand has stabilized. The driver for this shift is certainly also to be found in the growing tourism industry and the preference of tourists for nonstop connections to their vacation destination.

It readily follows from the airline market shares that the international segment is dominated by nonscheduled flights. In fact, since the statistics show no scheduled flights for 2007 and 2006, the international market was entirely a charter market. In 2005 only a marginal number of scheduled international passengers (<1%) was recorded. However, this dominance of non-scheduled demand will certainly have been weakened through the introduction of scheduled international services in 2008 (Figure 24). Already in 2000 the market share of scheduled services for international passengers had been as high as 29%.

[3] It deserves mention here that in the figures underlying this graph are included passengers traveling on GA flights. In 2007 their proportion was 0.8% and in 2006 1.3% of total passengers, whereas in 2005 and 2000 no GA passengers were recorded. It is unknown to us what the relevant proportion was in all other years but we assume it was not significant and therefore does not invalidate the statements made. Wherever figures for the years 2005, 2006 or 2007 are referred to, the relevant figures relate to commercial traffic only.

Figure 25: Domestic and international passengers at AQJ, 1990-2007



Source: Civil Aviation Regulatory Commission of Jordan

4.1.2.3 Air Cargo and Mail

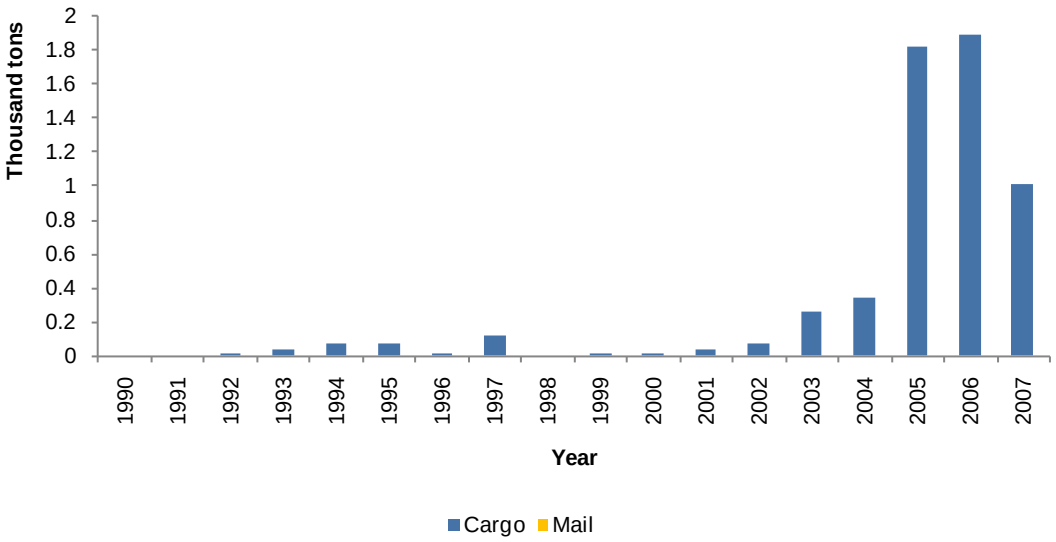
As shows Figure 26, significant volumes of cargo and mail have been building up only since 2003. This coincides with the introduction of open skies for ADJ. Another factor for the surge in cargo volumes since then is the newly built cargo facility through which the handling of mentionable amounts of cargo has become possible.

The bars in Figure 26 need to be put into perspective. Like the figures for passengers, those for cargo include the volumes transported on GA aircraft. Unlike for passengers, these volumes are significant for cargo, having been 19% in 2007, 13% in 2006, but zero in 2005. Table 9 shows the figures for cargo transported on commercial flights for the years 2005-2007. As can be seen, international commercial cargo/mail had dropped to 775 tonnes in 2007 from 1,606 tonnes in the preceding year. This drop by 51% is explained through a significant reduction of cargo in relation with BGW which was only partly offset through an increase of cargo to/from Europe.

The cargo business at ADJ is mainly international. In 2007 there were handled about 40 tonnes of domestic cargo/mail only, about 5% of total cargo/mail[4].

[4] This assumes all domestic cargo is commercial. The statistics do not differentiate between commercial and GA for domestic services.

Figure 26: Cargo and mail at AQJ, 1990-2007



Note: Figures include General Aviation flights.

Source: Civil Aviation Regulatory Commission of Jordan

Table 9: Cargo/mail on international commercial flights at AQJ, 2005-2007

	Scheduled [t]	Non-scheduled [t]	Total [t]	Share, scheduled
2005	2	1,805	1,807	0,1%
2006	1,288	318	1,606	71,3%
2007	751	24	775	41,5%

Note: no mail handled in 2005-2007

Source: Civil Aviation Regulatory Commission of Jordan

4.1.2.4 Aircraft Movements

The historical development of aircraft movements shown in Figure 27 very much resembles that of passenger demand. This shows that over the years cargo has largely been impacted by the same factors as the passenger business.

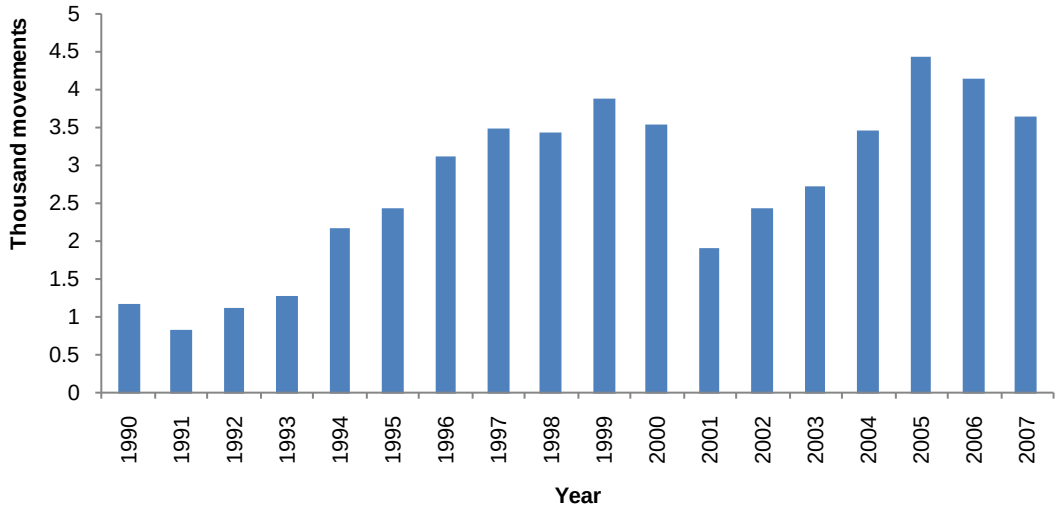
It is to be noted again that the time series figures underlying this graph include GA movements. In 2007 these represented 7% of total movements, in 2006 4% and in 2005 less than 2%. The statistics for 2000 do not show any GA movements. The graph can therefore be considered as by and large representative of the overall development, even though the

reader should be aware that the figures for some years may be overstating commercial movements.

In 2007, AQJ handled 3,357 commercial aircraft movements. Under the assumption that in 1990 there was only an insignificant number of GA flights taking place at AQJ[5], we obtain an average annual growth over this period of 6.3%. This is a lower rate than for passengers and indicates a trend towards larger aircraft. Since in 1990 there was no international traffic recorded at AQJ, yet, this is plausible since the aircraft employed on the longer-haul international routes today are on average larger than the small aircraft operated on the short domestic routes to AMM and ADJ. Therefore, today's average seating capacity is larger than it was in 1990.

Of the 1,619 international commercial movements were 1,539 non-scheduled. The difference of 80 movements were scheduled all-cargo flights. About 52% of all commercial movements in 2007 were domestic.

Figure 27: Aircraft movements at AQJ, 1990-2007



Data source: Civil Aviation Regulatory Commission of Jordan

[5] The time series data available for this analysis do not contain information about the split between commercial and GA movements.

4.1.3 Amman/Marka Civil Airport (ADJ)

There were no scheduled flights operated from and to ADJ in 2007, whereas as per the CARC statistics there were scheduled connections to Tripoli (TIP), Asmara (ASM) and Abidjan (ABJ) in 2006.
The network of non-scheduled flights in 2007 comprised regional, medium-haul destinations in Europe and Africa, and as the single long-haul destination Karachi (KHI).

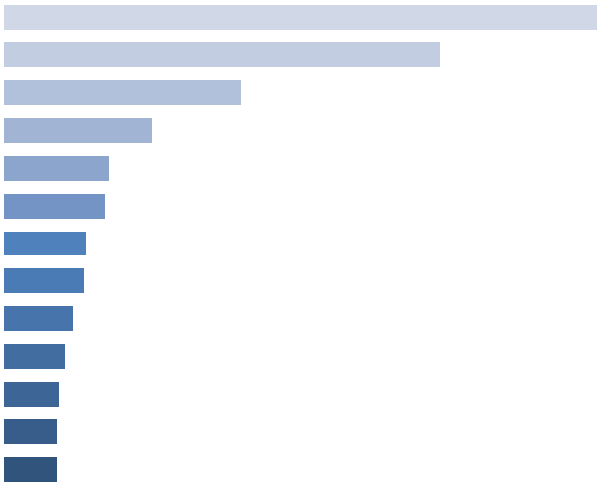
As in the case of AQJ above, the biggest generators of international demand for ADJ in 2007 were two routes, in this case BGW and SSH with market shares of some 23% and 17%, respectively. Thus, these two destinations together made up 40% of the flow of international passengers.

Notably, the destinations in Turkey; i.e. Istanbul Gökcen (SAW), Dalaman (DLM), Antalya (AYT) and Bodrum (BJV), but also Varna (VAR) in Bulgaria are predominantly destinations for outgoing tourism. These destinations together generated approximately 20% of international passenger demand.

As per the official statistics, there were 943 passengers traveling between Amman Marka and Aqaba airport. Domestic traffic thus plays a marginal role only.

Table 10: Market share by city-pair, ADJ 2007

Destination	Total pax	Market share
BGW	16,219	22.91%
SSH	11,932	16.86%
SAW	6,500	9.18%
TIP	4,052	5.72%
MAD	2,844	4.02%
DLM	2,734	3.86%
ASM	2,230	3.15%
ABJ	2,175	3.07%
AYT	1,878	2.65%
SMA	1,686	2.38%
VAR	1,527	2.16%
KHI	1,469	2.08%
BJV	1,444	2.04%
Other	14,097	19.91%
Total	70,787	



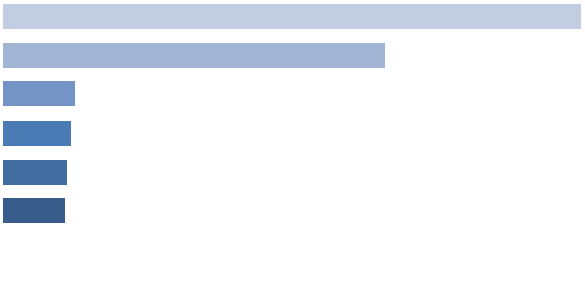
Source: Civil Aviation Regulatory Commission of Jordan

4.1.3.1 Airlines

Similarly as for Aqaba airport, two airlines are dominating the market of international demand. RJ and Jordanian Airlines (R5) divide 62% of the market between themselves with RJ taking the bigger proportion of 37%. The remaining airlines play significantly less important roles with Jordan International Air Cargo (J4), Royal Falcon (RZ), Egypt Air (MS) and Spanair (JK) capturing between 4% and 4.6% of the market.

Table 11: Market share by Airline, ADJ 2007

Airline	Total pax	Market share
RJ	26,458	37.38%
R5	17,510	24.74%
J4	3,286	4.64%
RZ	3,148	4.45%
MS	2,892	4.09%
JK	2,869	4.05%
Other	14,624	20.66%
Total	70,787	

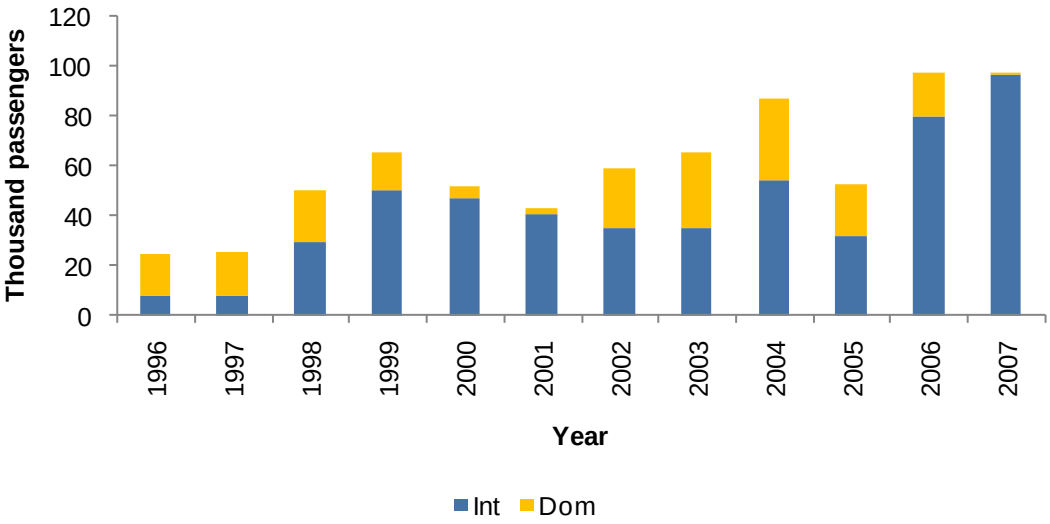


Source: Civil Aviation Regulatory Commission of Jordan

4.1.3.2 Historic Development of Passenger Demand

The time series of passenger development displayed in Figure 28 must be taken as indicative only. Similarly to the data for AQJ, GA passengers and passengers on state flights are included in the underlying figures. Since at ADJ the volume of these passengers is significant (26% in 2007), the true development of commercial passenger volumes is diluted. The graph shows, however, that over time demand has been increasing.
For our further discussion we refer to the statistics on commercial traffic which is summarized in Table 12.

Figure 28: Domestic and international passengers at ADJ, 1990-2007



Data source: Civil Aviation Regulatory Commission of Jordan

Total commercial passenger demand has from 2000 until 2007 grown from 52,000 to 71,700, an accumulated 38%, or annualized 4.7% per year. This rate compares well with growth at AMM in the 17 years from 1990 to 2007. While international commercial passenger numbers did grow by an annualized 6.2%, overall growth was slowed down through a loss of domestic demand[6].

Within the international (commercial) passenger segment there has been a shift away from scheduled to non-scheduled services. While there was an about even split between scheduled and non-scheduled passengers in 2000, scheduled traffic had vanished by 2007. This is explained through a reorientation of RJ towards AMM where it is now able to offer onward connections to AQJ to incoming passengers.

[6] Since over the same period domestic demand at AMM has been growing from to 34,500 to 43,100 passengers, there appears to have occurred a shift of services from ADJ to AMM.

Table 12: Statistics 2000 and 2005-2007 for ADJ

	Passengers	Cargo+Mail [t]	Aircraft movements
2000			
Int. scheduled	24,464	38.8	947
Int. non-scheduled	22,114	0.0	721
Total int. commercial	46,578	38.8	1,668
Domestic	5,388	0.5	543
Total commercial	51,966	39.4	2,211
2005			
Int. scheduled	7,696	0.0	317
Int. non-scheduled	24,445	6,033.4	3,694
Total int. commercial	32,141	6,033.4	4,011
Domestic	20,489	1.7	1,573
Total commercial	52,630	6,035.1	5,584
2006			
Int. scheduled	4,653	5,036.1	809
Int. non-scheduled	62,252	3.2	3,132
Total int. commercial	66,905	5,039.3	3,941
Domestic	17,249	30.4	671
Total commercial	84,154	5,069.7	4,612
2007			
Int. scheduled	0	4.137.1	517
Int. non-scheduled	70,787	0.0	2,687
Total int. commercial	70,787	4.137.1	3,204
Domestic	943	78.6	283
Total commercial	71,730	4.215.6	3,487

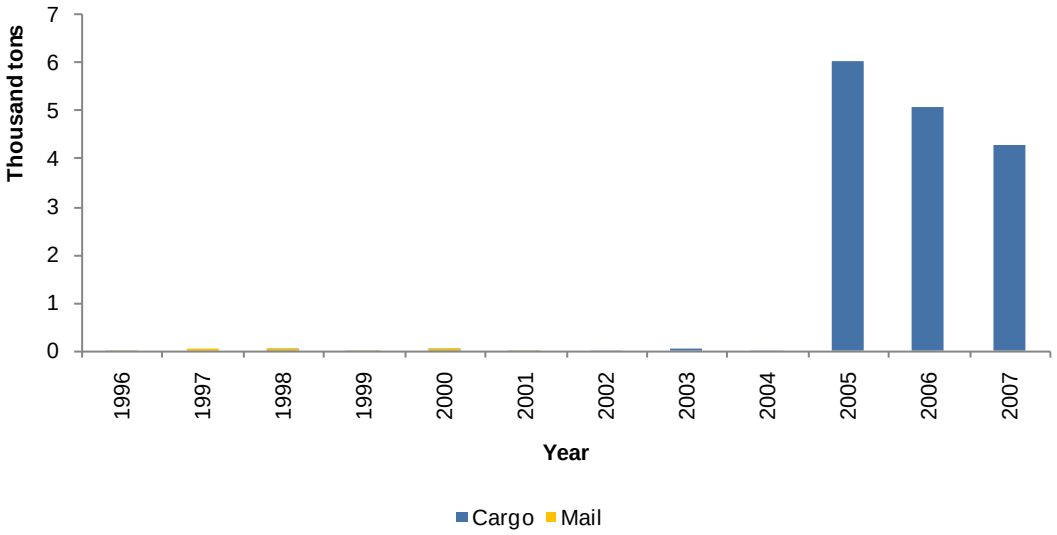
Data Source: Civil Aviation Regulatory Commission of Jordan

4.1.3.3 Air Cargo and Mail

Significant air cargo volumes have been handled at ADJ since 2005 only (Figure 29). While before 2005 total annual cargo volumes had been in the single and low double-digit range, they surged to some 6,000 tonnes in 2005 and have decreased to about 4,300 tonnes in 2007 (Table 12). The relevant volumes are mainly generated by Jordan International Air Cargo' scheduled cargo flights to/from BGW. Although domestic cargo has been increasing slowly to 79 tonnes in 2007, it has remained insignificant. We assume that in these 79 tonnes of domestic cargo/mail at ADJ is included cargo/mail transported with other flights such as the international organizations or the Jordanian military using the airport.

International cargo/mail volumes are thus very much dependent on the developments in Iraq. As road transport into Iraq will become safer again, the demand for cargo flights may sink and the airport will have to open other markets to expand this business in competition with AMM.

Figure 29: Cargo and mail at ADJ, 1990-2007

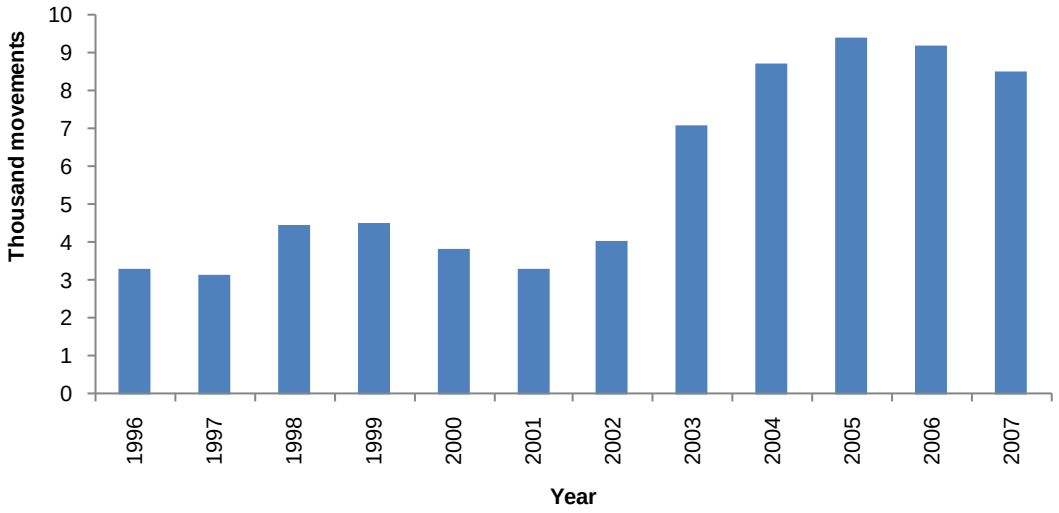


Data source: Civil Aviation Regulatory Commission of Jordan

4.1.3.4 Aircraft Movements

As for cargo, the time series data for aircraft movements is diluted through the inclusion of GA movements. However, as shows Figure 30, the development of aircraft movements nevertheless closely correlates with passenger numbers.

Figure 30: Aircraft movements at ADJ, 1990-2007



Data source: Civil Aviation Regulatory Commission of Jordan

The figures for commercial aircraft movements in Table 12 show that this strong increase in total aircraft movements between 2000 and 2005 is equally reflected by commercial movements which have grown from 2,200 to 5,600, a factor of 2.5. The additional traffic was mainly generated through additional flights to destinations in the Middle East and through a strong temporary increase of domestic flights. While international movements have largely maintained their level since (2007: 3,200 movements), domestic movements have in the meantime dropped to 52% of their level in 2000. This, in combination with the destination share of Table 10 shows that ADJ has over the past years been growing into a charter airport with a focus on connections to vacation destinations and to Iraq.

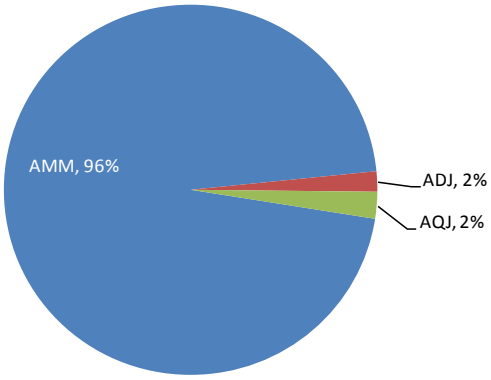
4.1.4 Airport Market Shares

As has become clear from the figures discussed above, traffic is not distributed uniformly among the three Jordanian airports. In 2007, AMM handled 95% of the commercial passengers at the three airports, followed by AQJ (3%) and ADJ (2%) (Figure 31).

The picture is slightly different for cargo/mail (Figure 33), where AMM also handles 95% of the country's demand, but ADJ, due to its current cargo flights to BGW, generates 4%. Thus, there remains only 1% of the pie for AQJ where cargo demand has grown strongly since 2004, but is still at a comparatively low level.

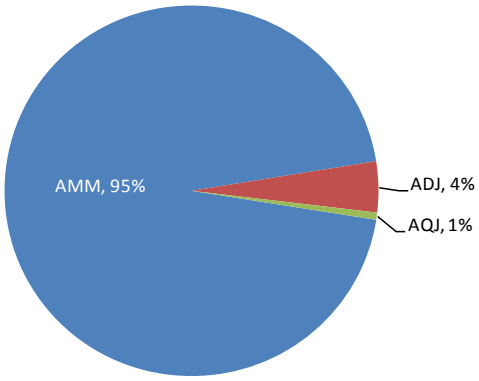
Since AMM has a more far-flung flight network with a larger proportion of medium and long-haul flights than the other two airports, the average aircraft size there is larger than at the two smaller airports. It is for this reason that the aircraft movement share is lower than for passengers and cargo. In 2007 it was 87% and the share for AQJ and ADJ therefore somewhat larger at 6% and 7%, respectively (Figure 33).

Figure 31: Distribution of passengers among the three airports, 2007



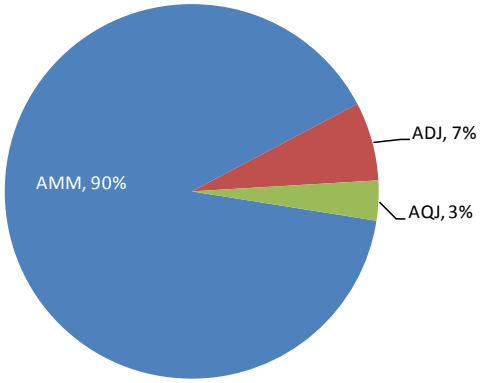
Source: Civil Aviation Regulatory Commission of Jordan

Figure 32: Distribution of cargo and mail among the three airports, 2007



Source: Civil Aviation Regulatory Commission of Jordan

Figure 33: Distribution of aircraft movements among the three airports, 2007



Source: Civil Aviation Regulatory Commission of Jordan

4.1.5 Seasonal Patterns

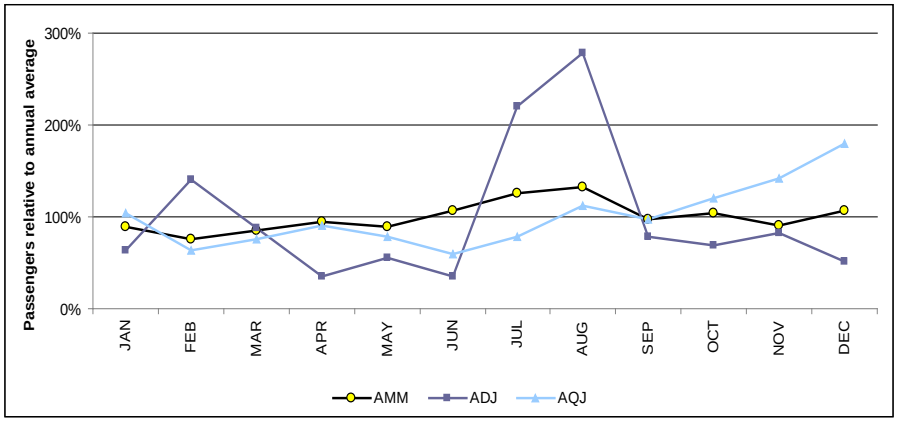
As at any other airport, demand is not uniformly distributed across the year. In Figure 34 the monthly flows of passengers in 2007 are graphed for all three airports. As can be observed, monthly passenger volumes are subject to the largest fluctuations at ADJ, where they range from about 50% to 280% of the average. The most even distribution across the year is found at AMM, the largest of the three airports in terms of annual passengers and which handles scheduled traffic.

The patterns for AMM and ADJ form a peak in the months of July and August, the main travel period for incoming and outgoing vacation traffic. While in 2007 the maximum at AMM reached 133% of the average, it went to 279% at ADJ. This demonstrates the impact that charter traffic has on demand patterns and, in the consequence, on airport infrastructure.

ADJ displays a demand low from April until June when demand drops to nearly one third of the average and another one at the end of the year, whereas the low for AMM occurs somewhat earlier in February when in 2007 demand dropped to 76% of the average. This low coincides with the rainy season.

The demand profile for AQJ shows little similarity with AMM and ADJ. This is explained through its different passenger structure. A large proportion of air passengers at AQJ are incoming tourists, mainly from Europe. Since Aqaba is a year-round destination, the demand does not display peaks and troughs as pronounced as at ADJ. There is a major peak in December (179% in 2007) when tourists come in from Europe over the Christmas season. Demand then drops until February (64% in 2007) before it grows to a small peak in March/April which coincides with the Easter travel period in Europe. After reaching an overall low in June (60% in 2007), monthly passenger volumes increase continuously until year end.

Figure 34: Monthly profile of commercial passenger volumes, 2007



Source: Civil Aviation Regulatory Commission of Jordan

For a numerical table please refer to Annex 9.1.

4.2 The airline market

Being a country with a small domestic market, Jordanian airlines are operating domestic and international services. The four main Jordanian commercial airlines are

- Royal Jordanian Airlines (RJ)
- Royal Wings,
- Jordan Aviation and
- Jordan International Air Cargo.

The following paragraphs provide a brief background about each of these airlines. Details about the operations of these airlines at the three airports are included in section 4.1.

4.2.1 Royal Jordanian (RJ)

In terms of overall passenger and cargo volumes, Royal Jordanian Airlines is the biggest airline in the country and holds the image of the national carrier. Its home base is Queen Alia International Airport, from where it serves 54 destinations on four continents.
At the end of 2007 RJ employed a workforce of 4,161 (excluding the staff of Royal Wings). As of November 2008 the fleet comprised a total of 30 aircraft from the A310 down to the Embraer 175. One of these aircraft, an A320-200, is operated by Royal Wings (see below) and an A340-600 is operated for the Government. Two A310-300F are operated by Royal Jordanian Cargo, RJ's cargo division which also operates the cargo terminal at AMM.

On April 01, 2007, RJ joined the oneworld alliance as an elite member and as the first Arab and regional air carrier to join one of the three global airline alliances (oneworld, SkyTeam and Star Alliance). In the same year the airline was part-privatized through an IPO. Both events have had a positive effect on passenger numbers and on the airline's economic performance.

In addition to its cooperation with other oneworld member airlines, RJ is code-sharing with airlines such as Air Canada, Gulf Air Company, Yemen Airways, Syrian Arab Airlines,Thai Airways, Tarom, US Airways and Ukrainian Mediterranean Airlines.

4.2.2 Royal Wings

Royal Wings is the wholly-owned charter subsidiary of Royal Jordanian; its operational base is Amman Marka airport where it has also been put in charge of ground handling services through CARC.
As of the end of 2007 the company employed a staff of 96. The fleet of aircraft ranges from the long-range widebody A340-200, the A310-300, A321-200 and A320-200/212 to the Embraer 195. Through its affiliation with its mother company, Royal Wings has access to the entire fleet of RJ.

4.2.3 Royal Falcon

Royal Falcon was established in 2006 and is therefore a comparatively young airline. It is a sister company of Jordan International Air Cargo (see below), providing non-scheduled services to and from Jordan. Royal Falcon is thus mainly catering to the country's tourism sector. The airline differentiates itself from other carriers through focusing on the specific needs of this particular market segment. Another field of business is the provision of passenger transport to corporations, NGO's and government agencies.

Royal Falcon's operational base is located at Amman Marka Airport, but offices are also maintained at King Hussein Airport in Aqaba and King Hussein Base in Mafraq. The fleet of aircraft currently comprises of one B737-400, one B767 and two MD-83 aircraft which in 2008 transported some 53,000 passengers.

4.2.4 Jordan Aviation

Based in Amman, this airline started operations in October 2000. From its operational bases at Amman Marka airport and Aqaba airport, it offers flights to the Near and Far East as well as to Europe and Africa and provides wetlease services to other airlines seeking additional capacity.

As of March 2007 Jordan Aviation employed a staff of 410. On 27 January 2009 its fleet comprised a total of 11 aircraft of which five are operated for other airlines or the United Nations (UN). Types range from the A310 and B767, A320, B727 and B737 down to the Gulfstream.

4.2.5 Jordan International Air Cargo

Jordan International Air Cargo a cargo airline with its home base at Amman Marka airport. As of November 2008 it operates one Ilyushin Il-76 aircraft.

4.2.6 Air Taxi Services

There are also providers of air taxi services such operating inside and out of Jordan. These services are of an on-demand mainly short-haul nature. As such they will not be a major factor for the Jordan-EU air traffic.

5. Passenger and Cargo Forecast

Our forecasts for the main demand segments — passengers and cargo/mail — will be developed in three phases:

- Phase I will derive models which map past development of passenger and the combined cargo/mail demand;
- In Phase II we will prepare forecasts of the predictor variables;
- In Phase III the predictor variables will be applied to the models to compute the relevant future air transport demand (passengers, cargo/mail). Where necessary and appropriate, our own judgment in respect of the impact of external influences on future development will enter into the forecasts through assumptions;
- In a final step, we will use the results of the passenger and cargo and mail forecasts for an aircraft movement forecast.

In the following sections, we will provide details about the considerations made in each of the individual phases and the results obtained.

5.1 Phase I: Forecast Models

The forecast models follow the availability of adequate data. We generally give statistical models preference over other models. They are developed in two steps. Step one focuses on identifying explanatory, or independent variables that correlate well with the predicted, or dependent variables, passenger and cargo/mail in this case.

We select these explanatory variables with the help of two criteria: one is that there must be an intuitive link between the independent and dependent variables, and the second is that the dependent and independent variables display a high level of correlation with each other. Independent variables must not correlate with each other to be meaningful. Only if all criteria hold can a variable be used for modeling. For example, we may presume that the level of air cargo is closely linked with trade. However, if the two variables do not correlate well with each other, then the trade variable is not suitable for modeling. The method used for this selection is correlation analysis. In a second step, the statistical models are estimated by means of linear regression analysis.

5.1.1 Data sources

Any statistical forecast model implicitly builds on the assumption that relationships exist between predictor and predicted variables that have existed in the past and that these relationships will continue to exist in the same way in the future.

In order to be able to put confidence into the estimation and forecast results, it is desirable to have a time series covering a sufficiently long period of past years. Ideally, the time series of

past data would cover a period as long as the forecast will extend into the future. In the present case, where we will prepare 10-year forecasts, we will be working with a time series of CARC's official air traffic statistics covering the years 1997-2007.

The statistical data representing demand used in this analysis comprised passenger, cargo and mail. Since the mail volumes have in the past been consistently low as compared with cargo, we combined both into one variable, cargo/mail. For each of these demand segments, the statistics allow differentiating between domestic and international and scheduled and non-scheduled traffic.

Aircraft movement statistics were not used for statistical analysis. Besides a differentiation into international and domestic, an additional 'all-cargo' category was defined which allowed identifying the volume of dedicated cargo aircraft movements.

For the set of independent variables we have selected the following for the correlation analysis:

- Population;
- National GDP in real terms;
- GDP per Capita in real terms;
- Number of arrivals of total visitors and of foreign visitors;
- Domestic and total Exports as a percentage of GDP;
- Imports as a percentage of GDP; and
- World GDP in real terms (index);

Main sources for the data were the Department of Statistics, the Central Bank of Jordan and the IMF.

5.1.2 External Factors Analysis and Forecast Models

Since the time series data for ADJ included a significant number of GA passengers and cargo, no meaningful statistical models can be developed for this airport. Therefore, this airport was not included in the correlation analysis.

The correlation analysis showed that a number of explanatory variables were not as useful as initially expected. We defined a minimum correlation factor of 0.8 for a variable to be useful for a statistical model[7]. Application of this minimum correlation factor left usable independent variables only for a model of international passenger demand at AMM. The highest level of correlation of 0.98 exists for real GDP per Capita. Due to a high level of correlation among the independent variables, no model formulation which uses two independent variables could be identified.

[7] A correlation factor of 0.8 will result in an r^2 of 0.64 in a model with one independent variable.

The model for international passenger demand at AMM thus reads:

$$D_y = -3{,}332{,}886 + 4{,}925 \cdot x_y$$

where

D_y = Number of international passengers in year *y*;

x_y = real GDP/Capita in year *y*.

The model fit, expressed in terms of R^2, is 0.96 and indicates that real GDP/Capita very well explains the behavior of international passenger demand at AMM. All model parameters are significant at the 5% level.

The forecasts for all remaining demand segments and airports are built on other models and assumptions. Since international passenger demand at ADJ correlates well with real GDP/Capita (factor: 0.71), we use the elasticity of demand with respect to real GDP/Capita for the respective forecast. We selected the same approach for international demand at ADJ. All elasticities are computed with passenger statistics for 2000 and 2007, using commercial passengers only.

No useful correlation between domestic passengers and any of the socio-economic indicators could be established for any of the three airports. Since, under the assumption that there are no commercial passengers traveling between AMM and ADJ, domestic demand at AQJ necessarily is the sum of domestic passengers at AMM and ADJ, we therefore performed a simple trend extrapolation of domestic passengers at AQJ and then split the result to arrive at individual forecasts for AMM and ADJ. The assumption employed is that the share of ADJ out of total domestic passengers flying to/from AQJ will increase from some 2% today to 5% in 2019.

Correlation analysis showed that of all socio-economic indicators, international air cargo/mail at AMM correlates best with the ratio of imports versus GDP (r=0.75). Therefore we forecast future international cargo/mail volumes at AMM on the basis of the elasticity of demand with respect to this ratio.

As shown in sections 4.1.2.3 and 4.1.3.3, international cargo/mail at AQJ and ADJ has made big leaps in the past few years which are not related to the socio-economic indicators. At AQJ the surge in air cargo/mail demand followed the declaration of open skies for the airport and the construction of a new cargo facility. The steep increase of cargo/mail volumes at ADJ is mainly driven by cargo flights to Iraq. It is therefore not possible to establish a reliable link between cargo/mail demand and the socio-economic indicators for these two airports. The relevant forecasts are therefore judgmental.

As seen in section 4.1, domestic cargo/mail plays a subordinate role at all three airports. As for domestic passengers, we assume there is no commercial cargo flown between the two

Amman airports. Thus, we forecast cargo/mail demand for AMM and AQJ through trend extrapolations and computed the demand for ADJ through the difference.

In Table 13 are summarized the relevant parameters for the forecasts.

Table 13: Summary of model parameters and quality indicators

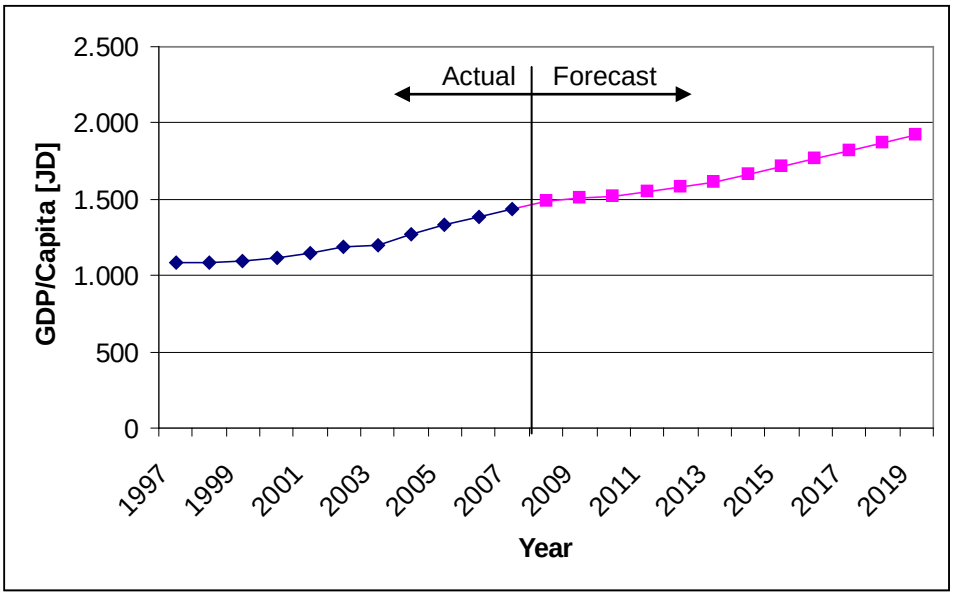
Airport	Forecast method	Predictor	Parameters
		International passengers	
AMM	Linear statistical model	Real GDP/Capita	Constant: -3,332,886 Indep. Variable: 4,925
AQJ	Demand elasticity	real GDP/Capita	ε = 0.55
ADJ	Demand elasticity	real GDP/Capita	ε = 1.00
		Domestic passengers	
AQJ	Linear extrapolation	Year	Constant: -414,012 Indep. Variable: 226.6
AMM	Share of AQJ	N/A	98% in 2007 95% in 2019
ADJ	Difference between AQJ and AMM		
		International Cargo/Mail	
AMM	Demand elasticity	Imports/GDP	0.13
AQJ, ADJ	Judgmental		
		Domestic Cargo/Mail	
AMM	Linear extrapolation	Year	Constant: -5355 Indep. Variable: 2.68
AQJ	Linear extrapolation	Year	Constant: -7,766 Indep. Variable: 3.88
ADJ	Difference between AQJ and AMM		

Source: IATA

5.2 Phase II: Forecasts of Predictor Variables

Our forecasts to the year 2019 for the real GDP per capita are based on the linear extrapolation of the population as per Figure 3 and of the real GDP as per Figure 17. The latter is based on the EIU's forecast of growth rates of real GDP until 2013. For the years thereafter we have used the rate of 5.3%, corresponding to the average growth rate over the period from 1990 until 2007. The resulting forecast of real GDP/Capita is shown in Figure 35.

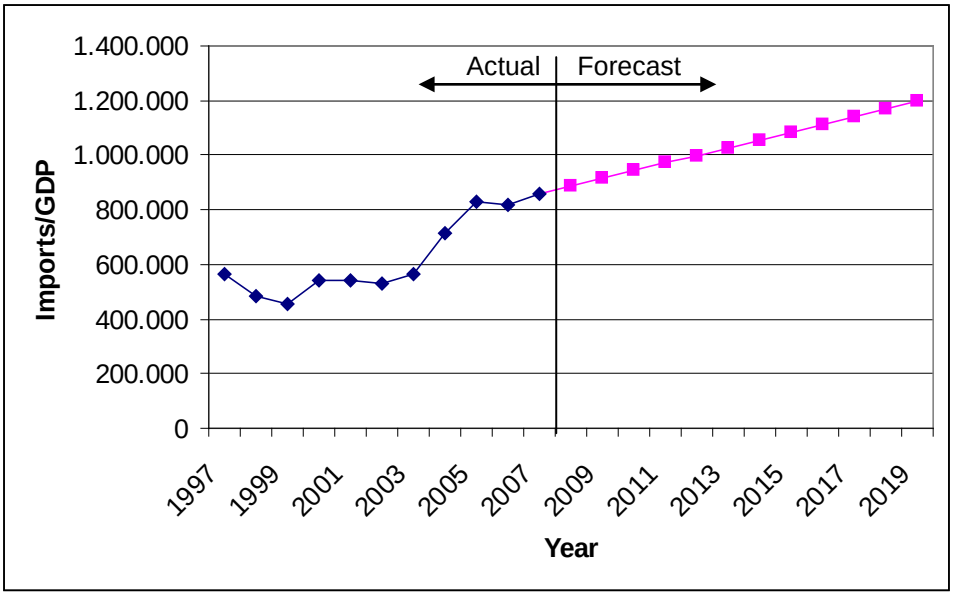
Figure 35: Forecast of real GDP/Capita



Source: IATA

The forecast of Imports vs. GDP was obtained through a linear extrapolation of the trend of this ratio between 1997 and 2007 (Figure 36).

Figure 36: Forecast Imports vs. GDP

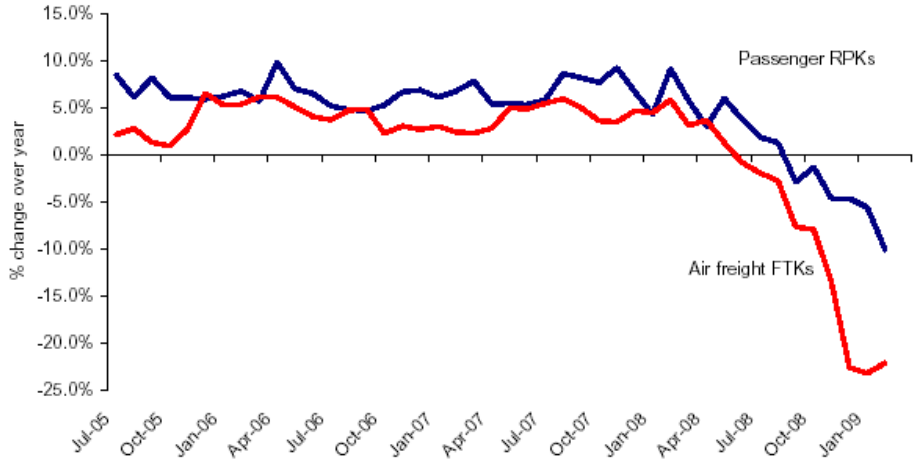


Source: IATA

5.3 Impact of the global financial/economic crisis

Since fall of 2008 air transport has been suffering severe losses in passenger and cargo demand worldwide. As shows Figure 37, by the end of February 2009 these losses appear to have reached a bottom at between -20% and -25% for air cargo, while losses in the passenger segment amounted to about -10% without sign of a bottoming out. It is therefore likely that over the coming months passenger volumes will continue to drop.

Figure 37: International passenger and freight tonne kilometers



Source: IATA

The impact thus far has not made itself felt in the same way across the different world regions. The biggest losses in Revenue Passenger Kilometers (RPK) and Freight Tonne Kilometers (RTK) have been recorded in Africa, Asia, Europe, and North America, while the Middle East region still experienced positive growth (Table 14). It thus appears that the Middle East is the region the least impacted by the global financial/economic crisis. This is also reflected by the Economist's estimates of GDP growth for Jordan which is 3.5% and 3.0% for 2009 and 2010, respectively, before growth rates again begin to increase in 2011. This compares with GDP growth rates of around 6% in 2007 and 2008.

Table 14: International passenger and freight markets in February 2009

	Feb 2009 vs. Feb 2008					YTD 2009 vs. YTD 2008				
	RPK Growth	*ASK Growth*	*PLF*	*FTK Growth*	*ATK Growth*	*RPK Growth*	*ASK Growth*	*PLF*	*FTK Growth*	*ATK Growth*
Africa	-13.7%	-11.8%	66.9	-30.7	-13.6	-9.2%	-6.9%	68.8	-25.8%	-8.5%
Asia/Pacific	-12.8%	-7.8%	70.2	-24.7	-11.6	-10.8%	-5.6%	71.4	-26.7%	-10.9%
Europe	-10.1%	-7.6%	70.2	-23.1	-8.5	-7.7%	-5.5%	70.9	-23.1%	-6.7%
Latin America	-3.8%	-2.4%	72.1	-22.8	-4.0	-2.5%	-0.9%	73.6	-20.0%	-2.0%
Middle East	0.4%	7.3%	68.1	-4.8	5.4	1.7%	9.1%	70.0	-5.3%	6.4%
North America	-12.0%	-7.1%	69.8	-21.8	-7.1	-8.9%	-4.7%	72.2	-21.6%	-4.9%
Industry	-10.1%	-5.9%	69.9	-22.1	-7.9	-7.8%	-3.8%	71.3	-23.0%	-6.4%

Source: IATA

Since the forecasts for international passenger demand at all three airports are based on real GDP/Capita, the current economic situation is taken into account. However, we expect there will be additional effects which will have an additional dampening effect on demand. Foremost, a slowing down of economic growth has an immediate effect on international travel not accounted for through GDP alone. For example, business trips can be substituted through phone calls/phone conferences and video conferencing without negative effect on GDP but on passenger demand. The number of foreign and also domestic tourists is also certain to drop as individuals and families are cutting back on spending. We therefore expect that international passenger demand at AMM will drop by 5% and 3% in 2009 and 2010, respectively, before it starts growing again and rejoins the model forecast in 2013.

Passenger demand at AQJ is much more dependent on tourism than at AMM. With booking rates in popular European tourist destinations such as Greece and Spain down by as much as 30% this year so far, a similar situation is to be expected for Aqaba which is attracting tourists interested in water sports and other activities. We therefore expect that the numbers of international passengers at AQJ will drop by 15% in 2009 and 10% in 2010. This is more than at AMM but less than in other tourist destinations around the Mediterranean. Growth will again set in from 2011 on and development will follow the model forecast starting in 2015.

The situation for ADJ is somewhat different than for AQJ. ADJ serves mainly outgoing charter demand; i.e. Jordanians who travel abroad for their vacation. Since the economic crisis is not expected to affect the Jordanian economy as severely as other world regions, we expect that the effect on outgoing tourist traffic will also be less severe than at AQJ. We assume international passenger demand at ADJ will drop by 5% in 2009 and 2010 and rejoin the model forecast in 2013.

The slowdown of the Jordanian economy will have a similar effect on domestic demand as it will have on international demand. We expect domestic demand at AMM and AQJ to drop by

5% in 2009 and 2010. Demand at ADJ is defined through the difference in demand between the other two airports.

Demand for international cargo/mail at AMM is forecast with an extrapolation of the ratio of imports vs. GDP. While we hold it plausible that this ratio may decrease somewhat during the economic crisis, we expect that demand for international cargo/mail at AMM will drop by more. As shows Table 14, RTK in the Middle East had dropped by 5.3% YTD by the end of February 2009. We expect total losses to increase to 7% in 2009 and the same once again in 2010, such that overall, demand in 2010 will lie 12.7% below its level of 2007. This is comparable to the 12.5% drop experienced between 2000 and 2002.
For AQJ and ADJ the effects of the economic crisis on international cargo/mail demand are factored into the judgmental forecast. At both airports it is cargo flights to Iraq that represent the major proportion of international cargo demand. We do not foresee these flights and volumes will be affected by the economic crisis to a great deal. Similarly, we do not foresee a significant impact on the small volumes of domestic cargo/mail demand at any of the three airports.

5.4 Effect of open skies policy on seats offered in other countries

The above defines the base scenario which assumes a continuation of the status quo in terms of traffic agreements. But what will be the likely effect of open skies? It is hoped the open skies status will generate generate additional demand through the release of restrictions on flight frequencies, seats offered and destinations served in all countries covered by the agreement. In Jordan, where unrestricted open skies for passengers already exist at AQJ and at all of the country's airports for cargo, the main effects will make themselves felt in the passenger sector at AMM and ADJ.

There is no strict analytical approach to quantifying the effects of an opening up of the sector. We therefore refer to experience made in other countries and compare the number of seats provided before and after introduction of open skies.

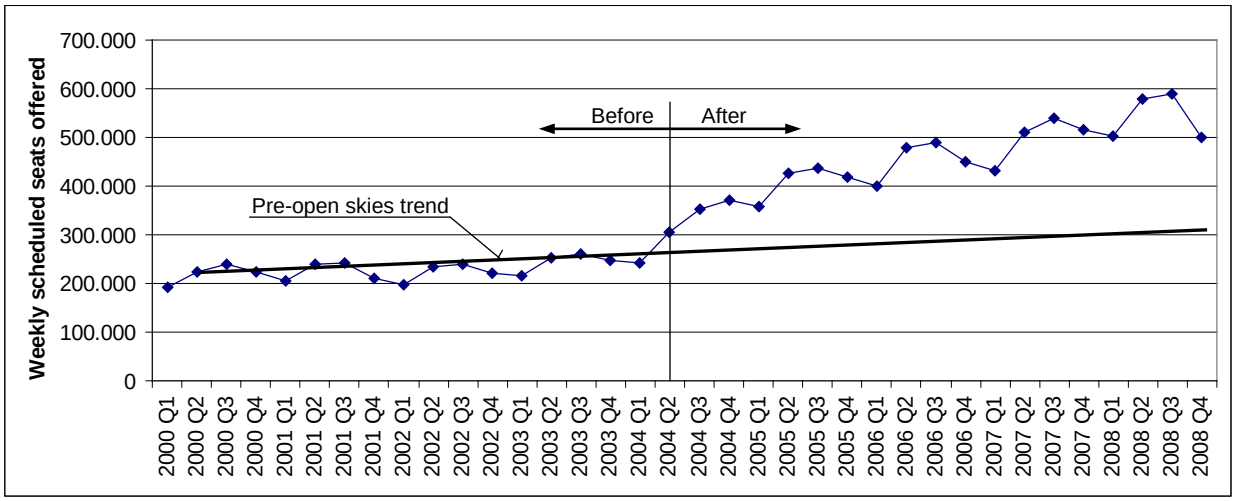
An adequate reference for such a comparison is the case of the accession of the ten new member countries to the EU in May 2004. When these countries became members of the EU they also became members of the internal European open skies market which replaced the system of bilateral agreements that existed until then. At the same time fell also barriers to trade such as customs regulations. The latter is an important aspect for comparison with Jordan which is in the process of removing export and import taxes in its trade with the EU.

The effect of open skies on air passenger demand is not distributed uniformly across all countries. What can be observed in all cases, though, is that the effect usually sets in a short time before the date that open skies take effect. This may be interpreted as an anticipatory effect when airlines position themselves. Within two to three years after open skies have

taken effect, the seat supply increases and then continues to grow in parallel to the previous growth trend.

Figure 38 shows this ramp-up effect on the example of the combined EU10 accession countries without Poland. What can be observed is that in the months leading up to the accession of these countries to the EU the seat supply had increased already. In the quarters thereafter it continued to grow above the pre-open skies trend line and by the 2rd Quarter of 2007 had reached a level of about 40% above the trend line.

Figure 38: Open skies effect in the EU10 without Poland



Source: SRS Analyzer, IATA

As mentioned above, the effect is not distributed uniformly across countries. In the case of the EU accession countries, it ranged from zero Percent in Malta and Cyprus to 100% in the Baltic countries and Hungary. Notably, there was no effect in Malta and Cyprus, countries where a large proportion of air transport is related to tourism. Apart from the fact that many of the tourists travel on charter flights not included in these figures, we consider it fair to assume that in the interest of promoting local tourism there were no or only insignificant barriers to air services to these countries before the accession to the EU.
The Baltic countries and Hungary mark the upper end of the scale. The Baltic countries certainly gained through the removal of regulatory obstructions since, being located at the fringe of the EU, they benefit most from a liberalized environment. The strong increase in Hungary will certainly also be due to airlines viewing Budapest airport (BUD) as a hub which it has eventually become through Malév's accession to the oneworld alliance in 2007. Also, a number of West European low-cost airlines such as easyJet and Ryanair opened services to BUD and Budapest-based Wizzair started operations in May 2004.

Table 15: Open skies effect in different countries

Country	Open Skies effect (~)
EU	
Malta	0%
Cyprus	0%
Czech Rep.	+20%
Bulgaria	+30%
EU10 wo Poland	+40%
Romania	+60%
EU10	+80%
Poland	+100%
Baltic countries	+100%
Non-EU	
Morocco	+30%

Source: SRS Analyzer, IATA

Which effect may we expect open skies to have on Jordan? For this Phase 1 of the study we will settle with defining a range within which we foresee passenger numbers to step up. Considering various factors such as the importance of tourism, the fact that AMM is the home base for the country's major airline as is Prague (PRG) for the Czech Republic, that AMM, like BUD, takes the role of a hub already, and that AQJ already operates under open skies, we hold a range of +10% to +60% for the whole of Jordan as plausible.

When will this effect set in? In view of the current contraction of worldwide demand which we also foresee in a somewhat moderated form for Jordan, we do not expect the effect to manifest itself before the bottom has been reached. Therefore, the ramp-up effect of open skies will set in once demand starts increasing again. As per the forecast, this will be in 2011.

Our assumptions made in preparing the high and low open skies scenarios are summarized in Table 16.

Table 16: Summary of assumptions made for open skies scenarios

General assumptions	High scenario	Low scenario
Ramp-up effect	+60%	+10%
Time period for ramp-up	3 yrs.	3 yrs.
	Passenger	Cargo
AMM		
Share of international pax on domestic flights	50%	30%
Belly share for international cargo/mail	70%	
Impact on domestic cargo/mail	None	None
ADJ		
Share of international pax on domestic flights	20%	15%
Belly share for international cargo/mail	10%	
Impact on domestic cargo/mail	None	None

Source: IATA

5.5 Phase III: Forecast Scenarios

For this first Phase 1 of the study, one most likely status quo scenario was developed and a high and low scenario for open skies. These open skies scenarios apply to AMM and ADJ only since AQJ has been operating under open skies since 2003. Since cargo operations have been liberalized in 2004, we expect only a limited effect on cargo/mail at AMM and ADJ. This effect will come through an increased supply of belly cargo capacity. In Phase 2 of the study we will conduct further analysis to define a most likely open skies scenario.

The three forecast scenarios are built on the basis of the models derived above. The open skies scenarios are defined through the status quo scenario to which the ramp-up effect is applied that reflects the impact of the liberalization of air services.

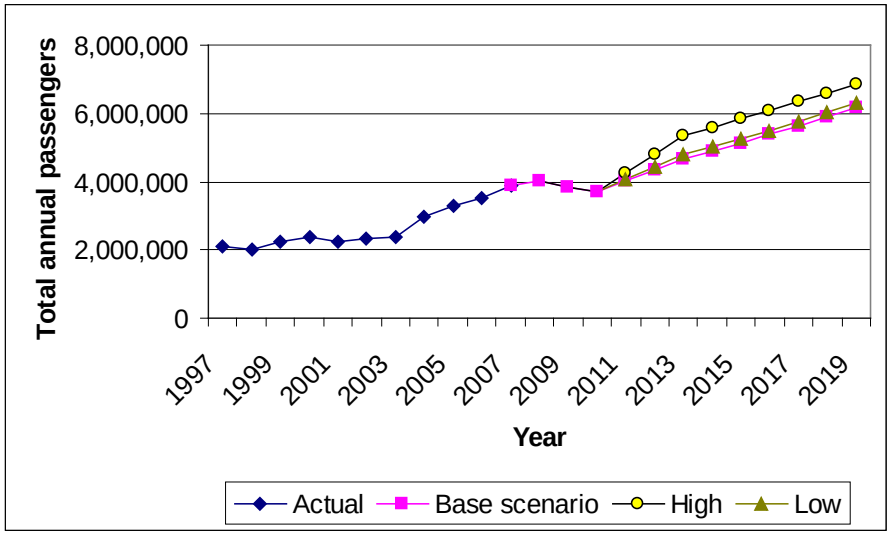
5.5.1 Queen Alia International Airport (AMM)

The passenger forecast scenarios obtained with the forecast of national GDP and the further assumptions are shown in Figure 39. It shows that, except for the dip caused by the current financial/economic crisis, the base scenario is a largely linear continuation of the 1997-2007 trend, characterized by an average annual growth rate of 3.9% over the period 2007 to 2019. This compares with an average growth rate of 6.3% between 1997 and 2007. The average slow growth is caused by the contraction and ensuing recovery.

According to the base forecast the volume of annual passengers at AMM will reach the level of about 6.2 million passengers in 2019, some 60% above the level of 2007. In 2019, as today, domestic passengers will play only a subordinate role. Since AQJ, the second largest airport in the country, is also accessible internationally, domestic flights will continue to serve mainly local demand.

The high and low open skies scenarios diverge by +11% and +2%, respectively, from the base scenario. In absolute terms, this corresponds to 696,000 and 116,000 passengers. The annualised growth rates are 4.8% for the high and 4.1% for the low scenario.

Figure 39: AMM passenger forecast scenarios



Source: IATA

Direct Transit/Transfer Passengers

The official CARC statistics received for this analysis do not give an indication of the number of transfer or transit passengers. However, transfer/transit passengers are included in the statistics and thus in the forecast. In the absence of relevant information we assume for this Phase 1 of the entire study that the share of these passengers amounts to about one third of total international passengers. This figure will be more closely defined in Stage 2 when we will analyze the passenger flows on an O&D basis which allows separating O&D from transfer passengers.

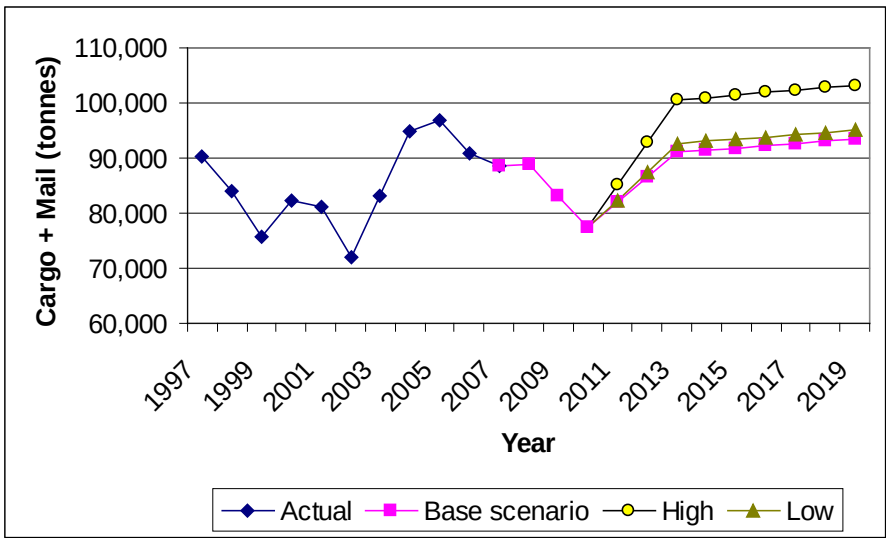
Cargo and Mail Forecast

The base cargo/mail forecast displays an increase in the annual tonnage handled from some 88,600 tonnes in 2007 to 93,400 tonnes in 2019, corresponding to an average annual growth of 0.4% (Figure 40). Even though this growth is insignificant, it compares well with a rate of -0.2% per year between 1997 and 2007.

With 103,200 and 95,000 tonnes in 2019, the high and low open skies scenarios come out somewhat higher at the end of the forecast period. This is due to the assumption that, as passenger volumes increase, so will also passenger aircraft movements and belly cargo capacities along with it. However, the effect is limited since only part of total air cargo/mail is destined to Europe. The corresponding average annual growth rates are 1.3% and 0.6% per year for the high and low scenario, respectively.

It remains to be added here that while an expansion of cargo belly capacity is factored into the scenarios, the scenarios assume that cargo transported on all-cargo aircraft remains unaffected by open skies.

Figure 40: AMM cargo and mail forecast scenarios



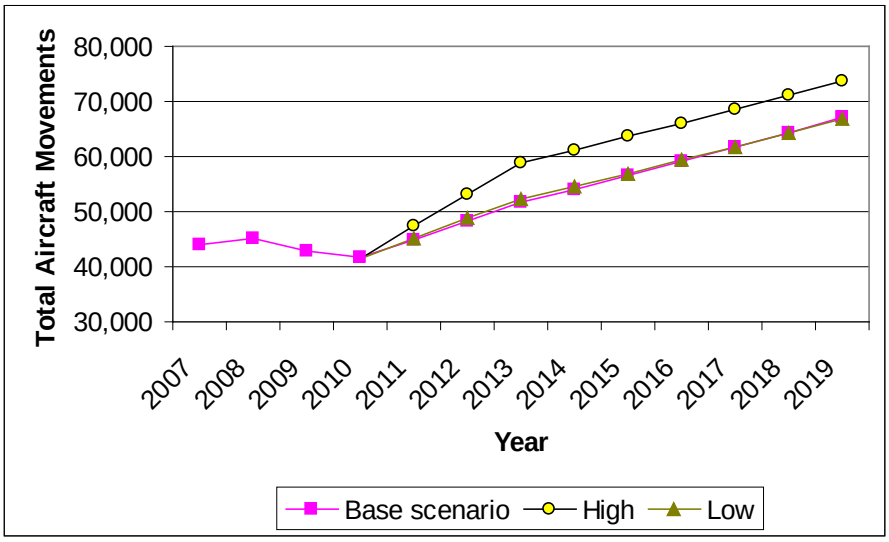
Source: IATA

Aircraft Movement Forecast

The average number of passengers per aircraft movement will change only little over the forecast period. Overall, the number of passengers will increase slightly with the effect that in the base scenario total aircraft movements will grow from 44,000 in 2007 to 67,000 in 2019 (Figure 41). This amounts to an average annual growth rate of 3.6% which, due to the slightly higher number of passengers per movement, is somewhat lower than the corresponding rate for passenger numbers.

Relative to the base forecast, the high and low open skies scenarios behave in a similar way as the corresponding passenger scenarios. In the high scenario, movements will grow to 73,800 in 2019, in the low scenario to 670,000. In either case the annualized growth rates are between 0.4% and 0.5% lower than for the corresponding passenger numbers.

Figure 41: AMM aircraft movement forecast scenarios



Source: IATA

Please refer to Annex 9.2 for numerical tables of this forecast

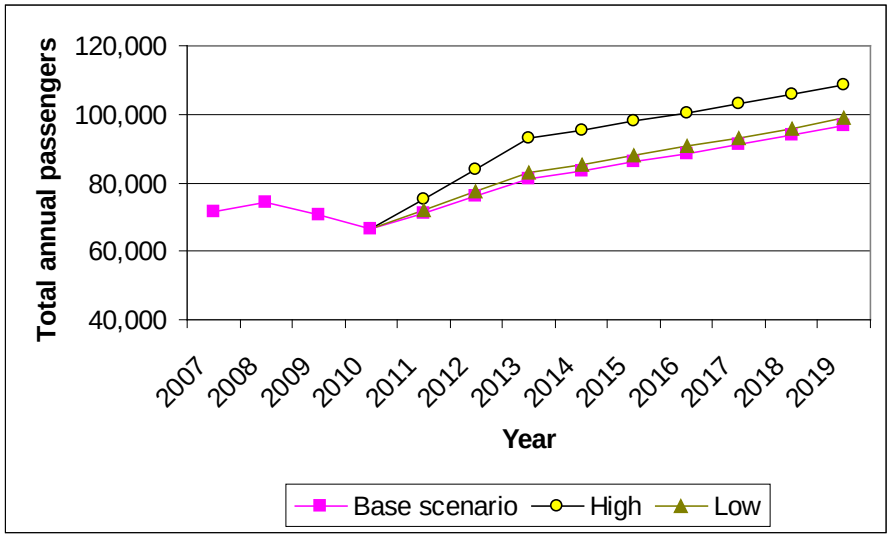
5.5.2 Amman/Marka Civil Airport (ADJ)

The forecast results are displayed in Figure 42. They much resemble those for AMM except that passenger numbers are significantly lower. The base scenario is equally marked by a dip between 2008 and 2012 which reduces overall growth over the forecast period. The annual growth averages 2.5% over the 12-year period from 2007 until 2019 and results in 96,800 passengers at the end of the forecast period. This is a cumulative 35% above the level of 2007.

We estimate that throughout the forecast period, domestic passengers will play a marginal role, even though they will more than double from some 900 today to about 2,200.

At the forecast horizon the high and low scenarios will diverge from the base scenario by +12% and +2%, respectively. The relevant average annual growth rates are 3.5% and 2.7%. Generally, we believe that the airport will remain handling mainly leisure traffic. It is likely, though that, as open skies will take effect, some of the charter traffic will be replaced by low-cost scheduled traffic. Royal Wings, based at ADJ, intends converting itself into a low-cost airline and appears to be in a good position of taking the lead in such a development.

Figure 42: ADJ passenger forecast scenarios



Source: IATA

Direct Transit/Transfer Passengers

ADJ does currently not offer connectivity which would make the airport attractive for mentionable numbers of transfer passengers which go beyond occasional transfers between international and domestic flights. We do not foresee the situation will greatly change in this respect over the forecast period.

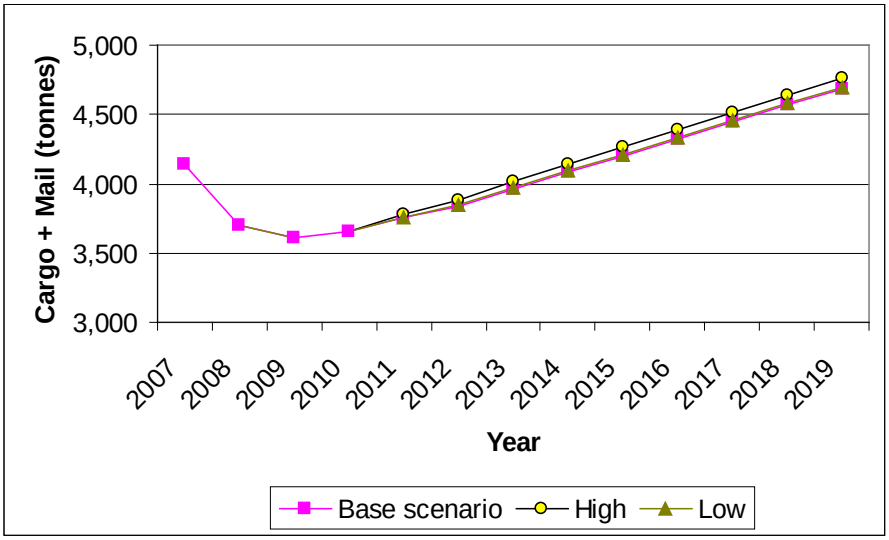
Cargo and Mail Forecast

As mentioned previously, no adequate statistical forecast models could be derived for cargo/mail. The forecast shown in Figure 43 is therefore judgmental. Future development of the cargo/mail business at ADJ will essentially depend on the cargo operations of Jordan International Air Cargo to Iraq which is afflicted with a large degree of uncertainty. The forecast reflects our expectation that these cargo flows can be sustained throughout the forecast period, supplemented with growth generated through other destinations. However, should the ADJ-BGW cargo services be suspended or greatly reduced at some time, then cargo/mail volumes are likely to collapse to similarly low levels as in the years before 2005.

According to our base forecast, volumes will grow to about 4,700 tonnes in 2019, up from 4,100 tonnes in 2007. This is a cumulated growth of 13%, or 1.0% per year on average. The drop between 2007 and 2009 is equally 13% and greatly diminishes the average growth rate.

ADJ handes virtually no cargo to Europe currently. In our open skies scenario we assume that some flights will connect ADJ with Europe and carry small volumes. Therefore, the opens skies high and low scenarios diverge only insignificantly. As mentioned above, also in the future the fate of the cargo business at ADJ will depend on the link to Iraq which is unaffected by the open skies agreement with Europe.

Figure 43: ADJ cargo and mail forecast scenarios



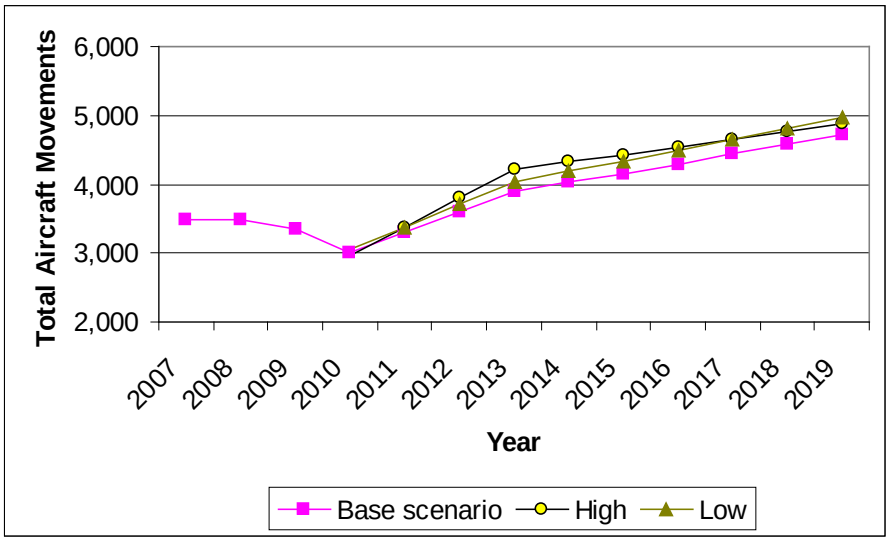
Source: IATA

Aircraft Movement Forecast

The development of the number of annual aircraft movements at ADJ will in the base scenario be commensurate with the development of passenger demand and increase to 4,700 in 2019, up from 3,500 in 2007 (Figure 44).

In the high scenario the average growth rate will be 2.8% and thus some 0.7% slower than passenger growth. This is due to a somewhat stronger growth of the average number of passengers per aircraft, reflecting occasional flights to Europe. Growth in the low scenario is again in line with passenger development.

Figure 44: ADJ aircraft movement forecast scenarios



Source: IATA

Please refer to Annex 9.3 for numerical tables of this forecast

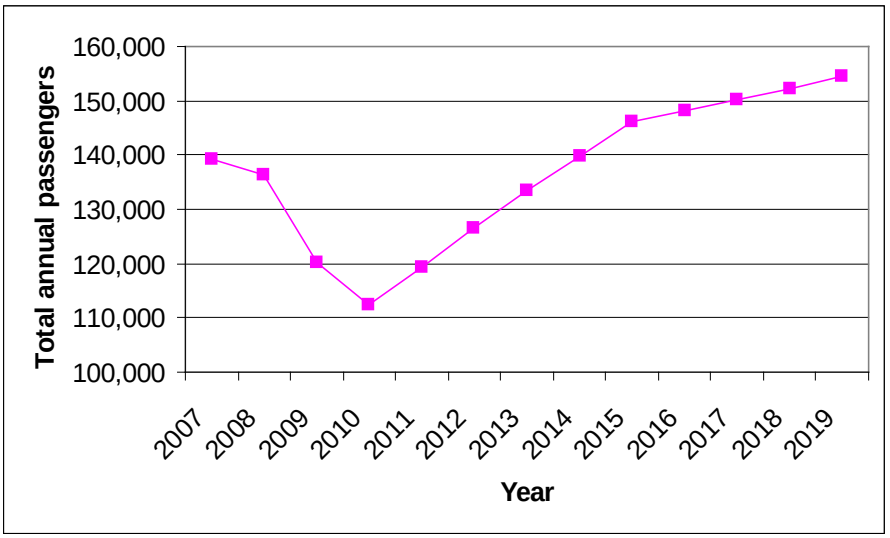
5.5.3 King Hussein International Airport (AQJ)

Our forecast for AQJ is limited to the base scenario since this airport has been operating under open skies for several years. For this reason we do not expect an additional effect once passenger services at the remaining two airports will also be liberalized.

For the development of passenger demand we are more pessimistic for AQJ than for AMM in the near term. We foresee passenger figures dropping to about 112,000 in 2010, 19% below its 2007 level. Reason for this expectation is that AQJ depends on incoming tourist traffic which behaves more sensibly to an economic downturn than does business travel.

After bottoming out demand will grow to 154,400 in 2019. The average annual growth over the forecast period averages 0.9% and is commensurate with historic development which has displayed large swings.

Figure 45: AQJ passenger forecast scenarios



Source: IATA

Direct Transit/Transfer Passengers

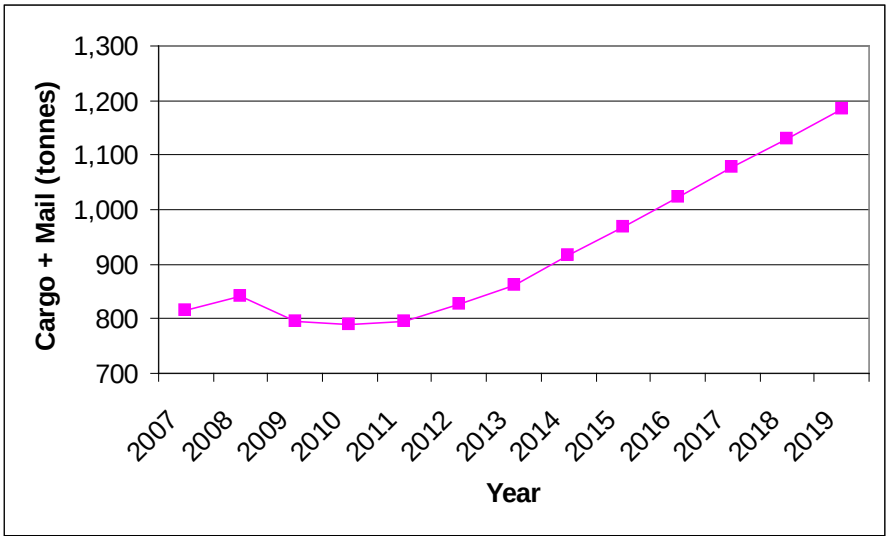
AQJ, like ADJ, does currently not offer connectivity but is rather to be considered a terminal point in airlines' networks. We therefore do not foresee the development of mentionable transfer passenger numbers over the course of the forecast period.

Cargo and Mail Forecast

Like for ADJ, no adequate statistical forecast model could be derived for cargo/mail at AQJ. The forecast shown in Figure 46 is therefore judgmental. Equally as for ADJ, the future development of the cargo/mail business at AQJ is crucially dependent on the activities of Jordan International Air Cargo, and particularly on their services to Iraq. As mentioned above, these services are afflicted with a large degree of uncertainty arising from Iraq's further political development. As in the forecast for ADJ, this forecast for AQJ reflects our expectation that these cargo flows can be sustained throughout the forecast period and that new destinations will be added which reduce the dependence on the Iraq flights.

According to our base forecast, volumes will grow to about 1,200 tonnes in 2019, up from 800 tonnes in 2007. This is a cumulated growth of 45%, or 3.2% per year on average.

Figure 46: AQJ cargo and mail forecast scenarios

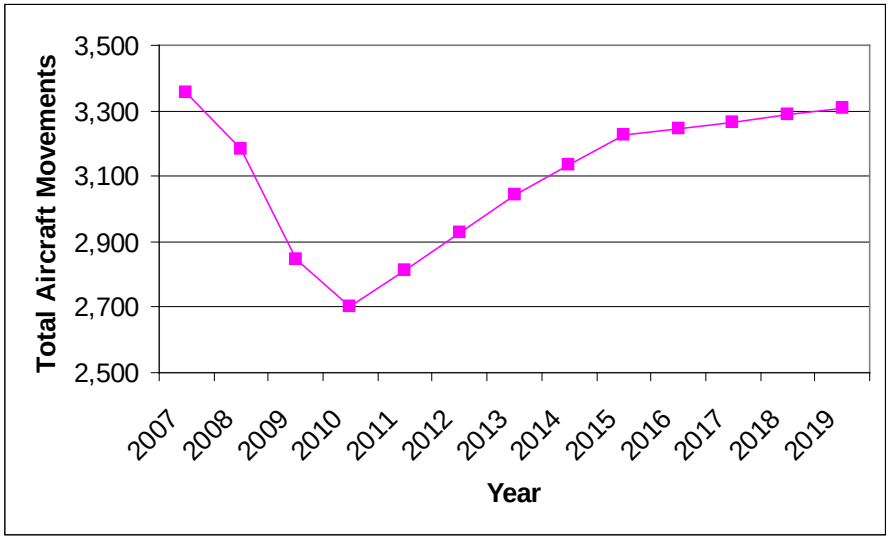


Source: IATA

Aircraft Movement Forecast

Through a moderate increase of aircraft size the number of passengers will increase over the forecast period. This, in combination with the slow growth of passenger numbers, results in a stagnation of total aircraft movements between 2007 and 2019 (Figure 47).

Figure 47: AQJ aircraft movement forecast scenarios



Source: IATA

Please refer to Annex 9.4 for numerical tables of this forecast

6. Economic Impact

With our estimate of the effect of open skies on the different demand sectors now in place, we can turn to the question of what this means for the economy of Jordan. In this Phase 1 of the study we will perform a rough estimate of two economic effects the open skies agreement will have on the Jordanian economy:

- expenditures of foreign visitors and
- revenues through additional cargo volumes.

Our estimates will be on the basis of current 2008 JD. In Phase 2 of the study we will add to and further refine these estimates.

6.1 Expenditures of foreign visitors

According to the figures discussed in section 3.6.2 it follows that of the 6.9 million non-Jordanians entering the country in 2008, 2.6 million or 38% were overnight visitors who, according to our estimate in section 3.6.2.2, spent 450 JD on average.

In translating the additional passengers generated into additional revenues for the country we made the following assumptions:

- two thirds of the additional passengers generated through the open skies agreement at AMM will stay in Jordan while the other remaining third are transfer passengers (see section 5.5.1),
- 60% of the originating/terminating passengers are foreigners and 40% are Jordanians, and
- all of the additional passengers at ADJ are local passengers (i.e. no transfer passengers).

Applying these assumptions to the forecast figures yields the newly generated revenues over the forecast period listed in Table 17. It shows that after 2012 the additional revenues accruing to the country will likely range between 21 million and 129 million JD per year, an increment of between 1.0% and 6.2% of the total tourist revenues in 2008.
If we further assume that the services sold to visitors are produced with a 25% input of imported goods, then the net benefit to the economy amounts to between 16 and 96 million JD. This corresponds to an additional 0.11% and 0.67% of Jordan's GDP of 14,249 billion JD in 2008.

Table 17: Revenues generated by additional passengers

Year	High			Low		
	Add'l tourist expenditure (million JD)	% of 2008 tourist expenditure	Net economic effect (million JD)	Add'l tourist expenditure (million JD)	% of 2008 tourist expenditure	Net economic effect (million JD)
2008	0	0%	0	0	0%	0
2009	0	0%	0	0	0%	0
2010	0	0%	0	0	0%	0
2011	43	2%	32	7	0%	5
2012	86	4%	64	14	1%	11
2013	129	6%	96	21	1%	16
2014	129	6%	96	21	1%	16
2015	129	6%	96	21	1%	16
2016	129	6%	96	21	1%	16
2017	129	6%	96	21	1%	16
2018	129	6%	96	21	1%	16
2019	129	6%	96	21	1%	16

Source: IATA

6.2 Revenues through additional air cargo/mail

When quantifying the effect of additional cargo/mail carried on the local economy, we need to take a differentiated look. While higher imports mean higher costs to the local economy, higher exports are a benefit.

Goods that lend themselves to air freighting typically have a high density value which makes the high transportation costs worth while. A pre-feasibility study for an air cargo hub at AMM found that in 2004 the value density of imports at AMM was 42,600 and for exports 23,400 JD/tonne. Inflated to 2008 levels these would correspond to about 50,000 and 49,000 JD/tonne, respectively. Due to the high producer price inflation in Jordan the gap between import and export values will thus have narrowed. If we account for the fact tat taxes on exports from Jordan to Europe have already been removed and that taxes for imports will be removed in the coming years, then we can assume the difference in value density will largely vanish over the coming years. Since there is also about an even balance between air imports and exports, the effect on the Jordanian economy is thus negligible.

Airline cargo revenues

Not all of the cargo/mail recorded in the statistics are imports or exports to/from Jordan. The larger part, about 60% (on a loaded/unloaded basis), is transfer or transit cargo. Thus, the main economic benefit of newly generated higher cargo/mail volumes will be found in the revenues generated by the airlines. Since in 2007 RJ held a 62.7% market share in the cargo segment at AMM, the larger proportion of the revenues generated through the air freight will go to the benefit of the national airline.

Assuming a rate of 1,000 JD per tonne of cargo/mail[8], we obtain the additionally generated cargo/mail revenues as per Table 18. These figures are low when compared with the revenues generated through expenditures by additional tourists. They are this only marginal. Considering that the production of the cargo transport product requires a significant amount of imported input, the net effect to the economy will be much smaller, yet. Overall, the net economic contribution of imports and exports will thus be insignificant.

Table 18: Revenues generated through additional cargo/mail volumes

Year	High		Low		2008 revenues (million JD)
	Add'l revenues (million JD)	% of 2008 revenues	Add'l revenues (million JD)	% of 2008 revenues	
2008	0.00	0%	0.00	0%	42.95
2009	0.00	0%	0.00	0%	40.27
2010	0.00	0%	0.00	0%	37.76
2011	1.42	4%	0.24	1%	39.87
2012	2.85	7%	0.48	1%	41.96
2013	4.27	10%	0.71	2%	44.09
2014	4.29	10%	0.72	2%	44.39
2015	4.31	10%	0.72	2%	44.69
2016	4.33	10%	0.72	2%	44.99
2017	4.35	10%	0.73	2%	45.29
2018	4.37	10%	0.73	2%	45.59
2019	4.39	10%	0.73	2%	45.88

Source: IATA

[8] We count here the volumes of transfer cargo only once.

The above analysis shows that a significant benefit of open skies for the economy of Jordan will be generated through the expenditures of additional foreign visitors. The net balance of newly generated cargo/mail exports and imports relative to GDP will be negligible since the additional cargo volumes will be small (open skies for air cargo are already in effect since 2004) and the individual economic effects of imports and exports will largely neutralize each other. The economic effect of airline revenues generated through additional cargo will also be small.

Overall, the boost that tourism could experience through open skies could have an economic effect as high as 0.67% of Jordanian GDP in 2008. However, in view of a number of factors that we will analyze in detail in Phase 2 of the project, we expect the effect that will actually materialize will be smaller, closer to the lower level of the range defined than to the upper.

7. Summary and Conclusion

This report has been dealing with developing an estimate of the effect an open skies agreement between Jordan and the European Union can be expected to have on the Jordanian economy.

The forecasts we have produced suggest that in the base case, passenger volumes at the three airports will grow by between 3.9% and 0.9% annually over the forecast period. Growth will be strongest at AMM and weakest at AQJ. Demand at all three airports will follow the worldwide downward trend until 2010 before growth will again set in. Over the longer term, the development of passenger numbers will return to and continue the linear growth trend which has already existed in the past. Since passenger demand at AQJ is very much dependent on incoming tourism which itself is very sensibe to the economic downturn, the drop in passenger numbers will be more pronounced there than at the other two airports. Since the recovery of the lost passengers will also take a little longer than at AMM and ADJ, the overall growth over the forecast period is low at AQJ.

Our benchmark analysis of the open skies effect on the number of seats supplied showed that there is a large variation between countries, ranging from no effect to an increase by 100%. For Jordan we expect the actual effect will range between +10% and +60%, measured against the base scenario three years after passenger growth sets in again. This translates into higher growth rates of passenger demand at AMM and ADJ than in the base scenario. Since AQJ has been awarded open skies status in 2003 we expect no effect of open skies at this airport. Annual passenger volumes at AMM in 2019 will be some 6.9 million in the high, 6.3 million in the low and 6.2 million in the base scenario. The corresponding figures for ADJ are 109,000, 99,000 and 97,000. Annual passenger volumes at AQJ will reach 154,000 in 2019.

Cargo/mail volumes at AMM will grow to 93,400 tonnes by 2019 in the base scenario. The impact of open skies on cargo demand will be restricted to a higher supply of belly capacity only since otherwise open skies are already in place in Jordan. In the high and low scenarios cargo/mail volumes will be 10% and 2% higher, respectively, than in the base scenario. ADJ is likely to handle about 4,700 tonnes in 2019. Open skies will generate only insignificant additional cargo/mail volumes there, and at AQJ about 1,200 tonnes will be handled at the forecast horizon with no impact by open skies.

Aircraft movements will increase very much in parallel with passenger volumes. Through slightly increasing load factors and average aircraft seating capacities they will generally grow at a slightly slower rate than passenger volumes.

The analysis into the economic effects shows that a significant benefit of open skies for the economy of Jordan will be generated through the expenditures of additional foreign visitors. From 2013 on will be generated additional tourist revenues in the order of 130 million JD per year in the high scenario and of 21 million in the low scenario.
The net balance of newly generated cargo/mail exports and imports relative to GDP will be negligible since the additional cargo volumes will be small and the individual effects of imports and exports on the economy will largely neutralize each other. The economic effect of airline revenues generated through additional cargo will also be negligible.

Overall, the boost that tourism could experience through open skies could have an economic effect as high as 0.7% of Jordanian GDP in 2008. However, in view of a number of factors that we will analyze in detail in Phase 2 of the project, we expect the effect that will actually materialize will be smaller, closer to the lower boundary of 0.11% of the range defined.

In summary we conclude that this first analysis has shown that the biggest benefits resulting for Jordan through an open skies agreement will to materialize through additional visitors attracted to the country.

The two scenarios defined in this report still span a wide range of possible outcomes and require further analysis. Therefore, in Phase 2 of the project we will

- conduct an analysis of O&D passenger flows to be better able to make an assessment of the effect of liberalization on passenger volumes handled at Jordanian airports;
- analyze the existing bilateral agreements between Jordan and the EU member countries to identify possibly existing capacity bottlenecks or unused capacities;
- look at the competitive situation between AMM, ADJ and AQJ with other airports in the region; and
- add further detail to the assessment of the economic impact, such as the quantification of the revenues accruing to Jordan from the international transport of the additional passengers, from overflight charges and from airport revenues. Also will be quantified employment effects.

The analysis conducted will enter into the definition of a most likely open skies scenario and of the relevant economic impact.

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9. Annexes

9.1 Monthly profile of commercial passenger volumes

Month	AMM		ADJ		AQJ	
	Comm. Passengers	Percent of monthly average	Comm. Passengers	Percent of monthly average	Comm. Passengers	Percent of monthly average
JAN	291.489	90%	4.248	63%	12.148	105%
FEB	246.571	76%	9.473	140%	7.419	64%
MAR	277.718	85%	5.910	88%	8.777	76%
APR	308.997	95%	2.399	36%	10.458	90%
MAY	290.842	89%	3.783	56%	9.082	78%
JUN	346.189	106%	2.413	36%	6.942	60%
JUL	410.303	126%	14.905	221%	9.035	78%
AUG	432.606	133%	18.819	279%	12.942	112%
SEP	316.457	97%	5.312	79%	11.309	97%
OCT	337.718	104%	4.687	69%	13.904	120%
NOV	295.126	91%	5.584	83%	16.409	141%
DEC	346.733	107%	3.488	52%	20.793	179%
TOTAL	3.900.749	N/A	81.021	N/A	139.218	N/A

9.2 Forecast tables for AMM

Passenger forecast

Year	Base forecast		Open Skies High		Open Skies Low	
	Int.	Dom	Int.	Dom	Int.	Dom
2008	3,993,216	40,081	3,993,216	40,081	3,993,216	40,081
2009	3,793,555	38,188	3,793,555	38,188	3,793,555	38,188
2010	3,679,749	39,104	3,679,749	39,104	3,679,749	39,104
2011	3,994,108	39,620	4,225,250	40,636	4,032,632	39,722
2012	4,308,468	40,136	4,770,751	42,169	4,385,515	40,340
2013	4,622,827	40,653	5,316,252	43,702	4,738,398	40,958
2014	4,856,133	40,764	5,549,557	43,813	4,971,704	41,069
2015	5,096,280	40,874	5,789,704	43,923	5,211,851	41,178
2016	5,343,470	40,982	6,036,894	44,031	5,459,040	41,287
2017	5,597,908	41,090	6,291,332	44,139	5,713,479	41,395
2018	5,859,808	41,196	6,553,233	44,245	5,975,379	41,501
2019	6,129,389	41,301	6,822,813	44,350	6,244,960	41,606

Cargo/mail forecast

Year	Base forecast		Open Skies High		Open Skies Low	
	Int.	Dom.	Int.	Dom.	Int.	Dom.
2008	88,961	37	88,961	37	88,961	37
2009	83,105	40	83,105	40	83,105	40
2010	77,288	43	77,288	43	77,288	43
2011	81,843	45	85,027	45	82,374	45
2012	86,399	48	92,766	48	87,461	48
2013	90,955	51	100,506	51	92,547	51
2014	91,354	54	100,946	54	92,953	54
2015	91,753	56	101,387	56	93,359	56
2016	92,152	59	101,828	59	93,764	59
2017	92,551	62	102,268	62	94,170	62
2018	92,949	64	102,709	64	94,576	64
2019	93,348	67	103,150	67	94,982	67

Aircraft movement forecast

Year	Base scenario			Open Skies High		
	Int.	Dom.	Cargo	Int.	Dom.	Cargo
2008	42,046	1,515	1,725	42,009	1,515	1,725
2009	39,904	1,431	1,607	39,834	1,431	1,607
2010	38,669	1,453	1,491	38,568	1,453	1,491
2011	41,931	1,459	1,575	44,203	1,497	1,636
2012	45,187	1,466	1,658	49,818	1,540	1,781
2013	48,437	1,472	1,741	55,412	1,583	1,924
2014	50,832	1,464	1,745	57,738	1,574	1,928
2015	53,293	1,456	1,748	60,126	1,565	1,932
2016	55,824	1,448	1,751	62,578	1,556	1,935
2017	58,425	1,440	1,755	65,096	1,547	1,939
2018	61,099	1,432	1,758	67,682	1,538	1,943
2019	63,848	1,424	1,761	70,338	1,529	1,946

Year	Open Skies Low		
	Int.	Dom.	Cargo
2008	41,972	1,515	1,725
2009	39,765	1,431	1,607
2010	38,467	1,453	1,491
2011	42,042	1,463	1,585
2012	45,597	1,473	1,679
2013	49,133	1,483	1,772
2014	51,414	1,475	1,775
2015	53,753	1,467	1,779
2016	56,151	1,459	1,782
2017	58,612	1,451	1,785
2018	61,135	1,443	1,789
2019	63,724	1,435	1,792

9.3 Forecast tables for ADJ

Passenger forecast

Year	Base forecast		Open Skies High		Open Skies Low	
	Int.	Dom	Int.	Dom	Int.	Dom
2008	73,223	902	73,223	902	73,223	902
2009	69,562	961	69,562	961	69,562	961
2010	66,084	260	66,084	260	66,084	260
2011	70,565	661	74,541	676	71,227	663
2012	75,045	1,062	82,998	1,091	76,371	1,065
2013	79,526	1,463	91,455	1,506	81,514	1,468
2014	81,861	1,578	93,790	1,622	83,850	1,584
2015	84,265	1,695	96,194	1,739	86,254	1,700
2016	86,740	1,813	98,669	1,857	88,728	1,818
2017	89,287	1,932	101,216	1,976	91,275	1,938
2018	91,909	2,052	103,838	2,096	93,897	2,058
2019	94,607	2,174	106,536	2,218	96,595	2,179

Cargo/mail forecast

Year	Base forecast		Open Skies High		Open Skies Low	
	Int.	Dom.	Int.	Dom.	Int.	Dom.
2008	3,700	5	3,700	5	3,700	5
2009	3,600	6	3,600	6	3,600	6
2010	3,650	7	3,650	7	3,650	7
2011	3,750	8	3,770	8	3,753	8
2012	3,830	10	3,870	10	3,837	10
2013	3,950	11	4,009	11	3,960	11
2014	4,070	12	4,131	12	4,080	12
2015	4,190	13	4,253	13	4,200	13
2016	4,310	15	4,375	15	4,321	15
2017	4,430	16	4,496	16	4,441	16
2018	4,550	17	4,618	17	4,561	17
2019	4,670	18	4,740	18	4,682	18

Aircraft movement forecast

Year	Base scenario			Open Skies High		
	Int.	Dom.	Cargo	Int.	Dom.	Cargo
2008	2,705	288	517	2,688	273	514
2009	2,562	308	501	2,531	293	495
2010	2,426	84	506	2,382	80	497
2011	2,582	214	517	2,663	210	508
2012	2,738	344	526	2,939	342	517
2013	2,893	476	540	3,210	476	530
2014	2,968	516	554	3,263	517	541
2015	3,046	556	568	3,318	559	552
2016	3,126	597	582	3,374	602	562
2017	3,208	639	596	3,431	647	573
2018	3,292	681	609	3,490	692	583
2019	3,379	725	623	3,551	739	593

Year	Open Skies Low		
	Int.	Dom.	Cargo
2008	2,713	273	520
2009	2,577	293	507
2010	2,448	80	515
2011	2,639	206	530
2012	2,829	334	543
2013	3,020	464	561
2014	3,106	505	579
2015	3,195	547	597
2016	3,287	590	615
2017	3,381	634	633
2018	3,478	680	651
2019	3,578	726	669

9.4 Forecast tables for AQJ

Passenger forecast

Year	Base scenario		
	Int.	Dom.	Total
2008	95,481	40,982	136,463
2009	81,159	39,149	120,307
2010	73,043	39,364	112,407
2011	79,129	40,281	119,410
2012	85,215	41,198	126,413
2013	91,302	42,115	133,417
2014	97,388	42,342	139,730
2015	103,474	42,569	146,043
2016	105,265	42,795	148,061
2017	107,109	43,022	150,131
2018	109,007	43,248	152,255
2019	110,961	43,475	154,436

Cargo/mail forecast

Year	Base scenario		
	Int.	Dom.	Total
2008	800	42	842
2009	750	46	796
2010	740	50	790
2011	740	54	794
2012	770	58	828
2013	800	62	862
2014	850	66	916
2015	900	69	969
2016	950	73	1,023
2017	1,000	77	1,077
2018	1,050	81	1,131
2019	1,100	85	1,185

Aircraft movement forecast

Year	Base scenario			
	Int.	Dom.	Cargo	Total
2008	1,582	1,551	49	3,182
2009	1,342	1,469	38	2,849
2010	1,204	1,464	32	2,701
2011	1,302	1,485	28	2,815
2012	1,398	1,506	26	2,930
2013	1,494	1,526	24	3,045
2014	1,590	1,522	23	3,135
2015	1,685	1,517	23	3,225
2016	1,710	1,512	22	3,245
2017	1,736	1,508	22	3,266
2018	1,762	1,504	21	3,287
2019	1,790	1,499	21	3,310

9.5 Forecast Summary

Passenger forecast

Year	Total, Jordan			Difference w.r.t Base	
	Base	High	Low	High	Low
2008	4,243,885	4,243,885	4,243,885	0	0
2009	4,022,573	4,022,573	4,022,573	0	0
2010	3,897,603	3,897,603	3,897,603	0	0
2011	4,224,364	4,460,513	4,263,654	236,149	39,290
2012	4,551,125	5,023,422	4,629,704	472,297	78,579
2013	4,877,886	5,586,332	4,995,755	708,446	117,869
2014	5,120,066	5,828,512	5,237,935	708,446	117,869
2015	5,369,157	6,077,603	5,487,026	708,446	117,869
2016	5,621,065	6,329,511	5,738,935	708,446	117,869
2017	5,880,348	6,588,794	5,998,217	708,446	117,869
2018	6,147,221	6,855,667	6,265,090	708,446	117,869
2019	6,421,907	7,130,353	6,539,776	708,446	117,869

Cargo/mail forecast

Year	Total, Jordan			Difference w.r.t Base	
	Base	High	Low	High	Low
2008	93,546	93,546	93,546	0	0
2009	87,547	87,547	87,547	0	0
2010	81,778	81,778	81,778	0	0
2011	86,441	89,645	86,975	3,203	534
2012	91,115	97,522	92,183	6,407	1,068
2013	95,829	105,438	97,430	9,610	1,602
2014	96,405	106,059	98,014	9,653	1,609
2015	96,982	106,679	98,598	9,697	1,616
2016	97,558	107,299	99,182	9,741	1,623
2017	98,135	107,919	99,766	9,784	1,631
2018	98,712	108,540	100,350	9,828	1,638
2019	99,288	109,160	100,934	9,872	1,645

Aircraft movement forecast

Year	Total, Jordan			Difference w.r.t Base	
	Base	High	Low	High	Low
2008	51,962	51,906	51,900	-56	-62
2009	49,146	49,040	49,029	-107	-118
2010	47,325	47,171	47,154	-154	-171
2011	51,085	53,532	51,279	2,447	194
2012	54,838	59,866	55,385	5,028	546
2013	58,591	66,180	59,478	7,589	887
2014	61,201	68,695	61,989	7,494	787
2015	63,882	71,275	64,561	7,393	680
2016	66,564	73,852	67,128	7,288	564
2017	69,321	76,498	69,761	7,177	439
2018	72,156	79,215	72,462	7,060	306
2019	75,069	82,006	75,233	6,937	164