

บริษัท การบินกรุงเทพ จำกัด (มหาชน)

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เอกสารแนบ 6

รายงานสถานะอุตสาหกรรมทางการบิน



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## Summary of Results

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### Report of the Aviation Consultant Bangkok Airways Public Company Limited

prepared for

**Credit Suisse  
Singapore**

**Bangkok Airways Public Company Limited  
Bangkok**

prepared by

**The S-A-P Group  
San Francisco**

**26 May 2014**



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## ABBREVIATIONS AND DEFINITIONS

ACI	Airports Council International
AOT	Airports of Thailand Public Company Limited
ASEAN	Association of Southeast Asian Nations
ASK	Available seat kilometer(s) (equals one passenger seat flown one kilometer)
CAGR	compound annual growth rate
CASK	cost per available seat kilometer
DCA	Thai Department of Civil Aviation
FSC	full-service carrier
FY	Fiscal Year
GDP	Gross Domestic Product
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMF	International Monetary Fund
km	kilometer(s)
LCC	low-cost carrier
n.a.	not available or not applicable
RASK	revenue per available seat kilometer
RPK	revenue passenger kilometer(s) (one revenue passenger flown one kilometer)
S-A-P	The S-A-P Group LLC
Southeast Asia	Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, and Vietnam
UNWTO	United Nations World Tourism Organization



## IMPORTANT NOTES

The S-A-P Group LLC was asked by Bangkok Airways Public Company Limited to prepare this Report of the Aviation Consultant on Bangkok Airways and air travel in Southeast Asia. This independent expert report was prepared to be included in documentation (including, but not limited to any prospectus or offering circular) to support the Initial Public Offering of Bangkok Airways/majority shareholder, to occur in 2014.

The S-A-P Group (S-A-P) is an aviation consulting firm that specializes in the preparation of aviation activity forecasts and strategic business plans. Over the past 19 years, staff of The S-A-P Group have prepared forecasts of aviation activity in Australia (Sydney, Perth, Adelaide, Darwin, Sunshine Coast/Maroochydore), Bhutan (4 airports), Indonesia (Jakarta and Bintan), Malaysia, New Zealand (Auckland and Wellington), South Korea (Seoul), Thailand (Bangkok, Phuket, Chiang Mai, Chiang Rai, and Had Yai) and the United States (numerous).

This report includes forecasts and other forward-looking estimates. These forward-looking statements are necessarily based on various assumptions and estimates that are inherently subject to various risks and uncertainties relating to possible invalidity of the underlying assumptions and estimates and possible changes or development of social, economic, business, industry, market, legal, government, and regulatory circumstances and conditions and actions taken or omitted to be taken by others.

Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic and competitive market conditions and future government and business decisions, all of which are difficult or impossible to predict accurately. This report contains information supplied by and analysis based on public and private sources. To the extent such sources have been cited herein, we hereby confirm that The S-A-P Group is allowed to reference such sources. While we believe that the information is correct, we cannot guarantee its validity. Some amounts in this report are rounded. Financial and operating data for some air carrier groups may include cargo and other activities.

We are not obligated to update this report after today's date. However, if we become aware of material changes affecting the items documented in this report, either (a) between the date of the report and the issue of the prospectus, or (b) after the issue of the prospectus and before the issue of the securities, then we agree to notify Bangkok Airways.

THE S-A-P GROUP LLC

Date of report: 26 May 2014

Bill A. Matz  
President



## REPORT OF THE AVIATION CONSULTANT

### Bangkok Airways Public Company Limited

26 May 2014

## 1 AVIATION INDUSTRY OVERVIEW

### 1.1 Background

#### 1.1.1 Aviation in the Asia-Pacific Region

According to IATA (the International Air Transport Association), the Asia-Pacific region became the airline industry's largest market in 2009. Strong growth in air traffic has continued in the region since that time. It is estimated that currently over a quarter of the world's travelers journeyed to, from, or within the Asia-Pacific region on commercial flights. The Asia-Pacific region's growth rates are forecast to remain robust over the next 20 years. If the number of people in Asia flew at the same rates per annum as their counterparts in the United States, the global aviation industry would triple in size.

The strong historical and projected future growth rates for the Asia-Pacific aviation industry are the result of several factors, including:

- Strong economic growth in most countries, leading to increased demand for domestic and international passenger services and for inbound transport of goods.
- Strong economic growth across the region and other parts of the world, leading to strong inbound international passenger services and demand for outbound cargo services.
- Market liberalization efforts, which have allowed for the introduction of new entrant low-cost carriers (LCCs) and increased competition, leading to reduced airfares and the introduction of new services and markets.

#### 1.1.2 Aviation in the South East Asia Region

Aviation growth has been particularly strong growth in the South East Asia region due to several factors, including:

- Strong growth in LCC development with the launch of three new LCC airlines in 2012 in the region and an LCC share of over 50% of total aviation capacity in the region<sup>1</sup>
- Rapid economic development and a growing middle class increasingly able to afford air travel
- Strong tourism growth trends

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<sup>1</sup> According to data published by the Center for Aviation, 2013.



### 1.1.3 Aviation in Thailand

Aviation activity in Thailand has grown significantly over the past few decades, in part due to the same market liberalization and economic growth factors affecting Asia and Southeast Asia. Some of the general trends in Asia have been even more pronounced in Thailand, in particular the trend toward LCC carrier service. Open skies agreements have also increased the availability of travel options to and from Thailand. These factors have resulted in average annual growth in passenger movements of 8.5% from 2005 to 2013, despite several interruptions in growth during that time due to political turmoil, natural disasters, and economic crises.

Aviation demand to, from, and within Thailand is driven by inbound tourism, as well as business-related travel and outbound tourism. Thailand's tourism infrastructure is particularly well-developed and attractive to tourists from around the world. Attractions in Thailand include beach resorts, cultural landmarks, and medical tourism.

More than half of the aviation activity at the primary airports in Thailand is carried by the four largest Thailand-based airlines: Bangkok Airways, Thai AirAsia, Nok Air, and Thai Airways International.

Bangkok Airways began scheduled services in 1986 after several years operating air taxi services (since 1968). Bangkok Airways is Thailand's first privately-owned domestic airline. The airline is 92% owned by the Prasarttong-Osoth family. In a unique capital investment for an airline, Bangkok Airways in 1989 built its own airport on the island resort of Koh Samui, Thailand. The airline later developed airports in Sukhothai and Trat. From its base at Suvarnabhumi International Airport, the carrier operates 25 aircraft, including eight ATR 72-500s, ten Airbus A-319s and seven Airbus A-320s.

Thai AirAsia is an associate company of the AirAsia group of airlines, which includes Indonesia AirAsia, AirAsia Philippines, AirAsia Japan, and AirAsia X. AirAsia was founded in 2001 in Malaysia with a focus on low cost service. Thai AirAsia launched domestic operations in Thailand on February 2004 and serves domestic and regional destinations from its base of operations at Don Mueang International Airport. The carrier serves destinations in Thailand and other countries using a fleet of 37 Airbus A-320 aircraft<sup>2</sup> in a single-class configuration of 180 seats. Thai AirAsia is 55% owned by Asia Aviation PCL and 45% owned by AirAsia Berhad.

Affiliate Thai AirAsia X, which intends to serve destinations between four and nine hours flying distance from Bangkok, commenced charter operations in April 2014 and is planning to start commercial operations in June 2014 using 377-seat A-330 aircraft.

Nok Air is a Thailand-based LCC that serves domestic and international routes. The carrier is partially owned by Thai Airways International. Since its inception, Nok Air has operated largely independently from its parent company. Nok Air operates a fleet of 16 aircraft comprised of 14 Boeing B-737-800 and two ATR 72-500 aircraft. The carrier's primary base of operations is Don Mueang International Airport.<sup>3</sup>

NokScoot is a joint-venture, Bangkok-based LCC being established by Nok Air and Singapore-based Scoot. NokScoot plans to operate medium-haul services from Don Mueang International Airport to China, Japan, and South Korea using two~three Boeing 777-200ERs starting in the second half of 2014.

Thai Airways International is the national carrier of the Kingdom of Thailand and largest airline in the country. It operates full service domestic, regional and international flights in a hub and spoke system from its base in Bangkok to destinations around the world and within Thailand. Thai Airways International was founded in 1960 as a joint venture between Thailand's domestic carrier, Thai Airways Company and Scandinavian Airlines System. The Thai government took full ownership of the carrier in 1977 and listed shares on the Thai Stock Exchange in 1991. Thai Airways also operates Thai Smile, a subsidiary carrier that serves domestic and international routes using Airbus A-320 aircraft configured for 174 passengers. Thai Smile plans to operate 20 aircraft by the end of 2015<sup>4</sup>.

<sup>2</sup> As of 31 March 2014. Source: AirAsia Berhad, May 2014.

<sup>3</sup> Source: Nok Airlines PCL, 31 December 2013.

<sup>4</sup> Thai Smile Airways Company Limited, May 2014.



### 1.1.4 Bangkok Airways

Bangkok Airways has positioned itself as a "boutique airline," serving niche routes and providing unique services to its customers such as airport lounges open to all customers, and operating airports developed to increase passenger access to unique cultural and leisure destinations.

The carrier's brand identity and selection of routes promotes exotic destinations in Southeast Asia. With this strategy, the carrier typically avoids highly-competitive routes where possible, preferring instead to operate routes not previously served. Bangkok Airways is the only carrier operating on many of the routes it serves, thereby helping to minimize fare wars and other price competition. In addition, the carrier promotes the full-service offering, including the availability of services and amenities not offered on other full-service carriers. The availability of complimentary hot meals, even on short flight segments, and the carrier's branded airport lounges for economy class passengers are two examples of its product differentiation strategy.

## 2 AVIATION ACTIVITY IN THAILAND

### 2.1 Historical Air Passenger Movements

As shown in Table 1, below, air passenger activity at commercial airports in Thailand grew at a compound annual growth rate of 8.5% from 2005 to 2013. During the period, the number of domestic passengers grew at a CAGR of 9.2% while the number of international passengers grew at a CAGR of 7.9%.

Growth has been strong during several of the years in this period, but has varied significantly due to natural disasters and political disruptions in the country. Despite the disruptions, Thailand still experienced high growth rates over the past several years, including growth in total passengers of 18.8% from 2010 to 2011, 10.6% from 2011 to 2012, and 17.4% from 2012 to 2013.

Table 1  
**HISTORICAL AIR PASSENGER MOVEMENTS**  
**Thailand**  
**2005-2013**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR 2005-2013
<b>Domestic passengers</b>										
DCA airports	4,426,568	4,823,692	5,376,415	4,296,139	5,092,804	5,653,579	6,531,360	7,842,511	10,325,193	11.2%
AOT airports	17,102,635	19,772,586	20,727,678	20,021,472	21,109,118	21,549,308	27,765,695	28,437,557	33,063,538	8.6%
Subtotal	21,529,203	24,596,278	26,104,093	24,317,611	26,201,922	27,202,887	34,297,055	36,280,068	43,388,731	9.2%
<b>International passengers (a)</b>	<u>29,999,039</u>	<u>34,256,445</u>	<u>35,433,805</u>	<u>33,683,888</u>	<u>32,828,075</u>	<u>36,690,283</u>	<u>41,605,432</u>	<u>47,694,714</u>	<u>55,227,292</u>	7.9%
<b>Total</b>	51,528,242	58,852,723	61,537,898	58,001,499	59,029,997	63,893,170	75,902,487	83,974,782	98,616,023	8.5%
<b>Growth</b>										
Domestic passengers		14.2%	6.1%	-6.8%	7.7%	3.8%	26.1%	5.8%	19.6%	
International passengers (a)		14.2%	3.4%	-4.9%	-2.5%	11.8%	13.4%	14.6%	15.8%	
Total growth		14.2%	4.6%	-5.7%	1.8%	8.2%	18.8%	10.6%	17.4%	

Sources: AOT and DCA, May 2014. Some DCA airports estimated for 2013.

(a) AOT airports.



As shown in Table 2, below, the largest share of passenger traffic at AOT airports in Thailand was carried by Thai Airways International in 2012, the most current year for which this AOT data is available. Bangkok Airways carried the third largest share of passenger traffic in 2012. Traffic carried by Bangkok Airways increased at a CAGR of 6.2% from 2006 to 2012.

Table 2

**HISTORICAL AIR PASSENGER MOVEMENTS, BY AIRLINE**  
**AOT Airports in Thailand**  
**2006-2012**

Airline	Year							CAAGR
	2006	2007	2008	2009	2010	2011	2012	2006-2012
Thai Airways International	22,463,733	23,308,495	22,342,145	22,517,047	21,637,221	21,644,398	18,582,337	-3.1%
Thai Air Asia	4,251,827	4,762,073	5,773,827	6,728,445	7,418,362	8,725,383	7,542,037	10.0%
Bangkok Airways	2,499,257	2,515,311	2,466,657	2,875,734	3,141,726	3,753,765	3,585,029	6.2%
Nok Air	2,537,281	3,354,441	2,624,959	1,819,988	2,975,343	4,239,135	2,388,489	-1.0%
Orient Thai Airlines	2,741,923	2,084,766	1,184,326	753,151	1,406,138	2,130,001	1,817,879	-6.6%
Cathay Pacific Airways	1,442,158	1,337,343	1,314,490	1,401,463	1,392,701	1,515,482	1,718,672	
Emirates	926,827	996,814	918,992	1,001,111	1,220,538	1,363,056	1,434,284	7.5%
Korean Air	742,850	762,028	734,030	654,932	769,554	912,649	1,027,212	5.6%
Tiger Airways	492,265	476,539	146,270	187,508	255,673	703,433	903,405	10.6%
Singapore Airlines	1,315,323	1,206,930	1,104,283	814,221	671,320	674,627	858,638	-6.9%
China Airlines	1,267,394	1,164,394	1,136,886	1,001,783	783,804	801,523	801,719	-7.3%
AirAsia	580,111	583,362	297,512	329,197	413,618	918,696	730,616	3.9%
Eva Air	701,845	669,745	669,338	614,978	534,491	601,393	561,335	-3.7%
Silk Air	338,238	281,080	374,077	339,250	335,661	370,996	387,701	2.3%
Indonesia Air Asia	-	14,293	59,882	96,543	92,464	182,845	82,167	-
All others	<u>11,727,999</u>	<u>12,643,869</u>	<u>12,557,686</u>	<u>12,801,842</u>	<u>15,190,977</u>	<u>20,833,745</u>	<u>33,710,751</u>	19.2%
Total	54,029,031	56,161,483	53,705,360	53,937,193	58,239,591	69,371,127	76,132,271	5.9%

Source: AOT, May 2014.



Table 3, below, documents the airline market shares for passengers (domestic and international) at AOT airports<sup>5</sup> from 2006 to 2012 for full-service carriers (FSC) and low-cost carriers (LCC).

From 2006 to 2012, the share of passengers served by Bangkok Airways at AOT airports increased from 4.6% to 4.7% of total passengers. Bangkok Airways increased its share of passenger traffic at AOT airports from the fifth largest share in 2006 to the third largest share in 2012.

Table 3  
**HISTORICAL AIR PASSENGER MOVEMENTS, BY AIRLINE MARKET SHARE**  
**AOT Airports in Thailand**  
2006-2012

Airline	Type	Year						
		2006	2007	2008	2009	2010	2011	2012
Thai Airways International	FSC	41.6%	41.5%	41.6%	41.7%	37.2%	31.2%	24.4%
Thai Air Asia	LCC	7.9%	8.5%	10.8%	12.5%	12.7%	12.6%	9.9%
Bangkok Airways	FSC	4.6%	4.5%	4.6%	5.3%	5.4%	5.4%	4.7%
Nok Air	LCC	4.7%	6.0%	4.9%	3.4%	5.1%	6.1%	3.1%
Orient Thai Airlines	FSC	5.1%	3.7%	2.2%	1.4%	2.4%	3.1%	2.4%
Cathay Pacific Airways	FSC	2.7%	2.4%	2.4%	2.6%	2.4%	2.2%	2.3%
Emirates	FSC	1.7%	1.8%	1.7%	1.9%	2.1%	2.0%	1.9%
Korean Air	FSC	1.4%	1.4%	1.4%	1.2%	1.3%	1.3%	1.3%
Tiger Airways	LCC	0.9%	0.8%	0.3%	0.3%	0.4%	1.0%	1.2%
Singapore Airlines	FSC	2.4%	2.1%	2.1%	1.5%	1.2%	1.0%	1.1%
China Airlines	FSC	2.3%	2.1%	2.1%	1.9%	1.3%	1.2%	1.1%
AirAsia	LCC	1.1%	1.0%	0.6%	0.6%	0.7%	1.3%	1.0%
Eva Air	FSC	1.3%	1.2%	1.2%	1.1%	0.9%	0.9%	0.7%
Silk Air	FSC	0.6%	0.5%	0.7%	0.6%	0.6%	0.5%	0.5%
Indonesia Air Asia	LCC	0.0%	0.0%	0.1%	0.2%	0.2%	0.3%	0.1%
Other	n.a.	21.7%	22.5%	23.4%	23.7%	26.1%	30.0%	44.3%
Total FSC (excluding other)		63.7%	61.1%	60.0%	59.3%	54.8%	48.7%	40.4%
Total LCC (excluding other)		14.6%	16.4%	16.6%	17.0%	19.2%	21.3%	15.3%
Other		<u>21.7%</u>	<u>22.5%</u>	<u>23.4%</u>	<u>23.7%</u>	<u>26.1%</u>	<u>30.0%</u>	<u>44.3%</u>
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: AOT, May 2014.

<sup>5</sup> Source: AOT, May 2014. Airline-specific data from AOT is only available for years up to 2012. AOT operates Suvarnabhumi and Don Mueang international airports in Bangkok and the international airports in Chiang Mai, Chiang Rai, Phuket, and Hatyai. Data by airline for other commercial airports is not available. AOT airport data represents approximately 90% of total traffic in Thailand and nearly all of the country's international traffic.



### **3 FORECASTS OF AVIATION ACTIVITY**

Historical and forecast passenger growth rates for select air markets are provided in the sections that follow. The forecasts are based on industry publications that rely on econometric analysis of socioeconomic growth factors, global surveys of origins and destinations and infrastructure development, and other factors and analysis.

As with most aviation activity forecasts, significant levels of judgment are employed and actual results may be significantly different than the forecasts.

#### **3.1 Historical and Forecast Global Air Travel Growth Rates**

As shown in Table 4, which follows, global passenger air travel, as measured in revenue passenger kilometers (RPKs), grew at a compound annual growth rate of 4.8% from 1985 to 2012.

According to both The Boeing Company and Airbus Industries, the largest aircraft manufacturers, passenger air travel in the Asia-Pacific region—as measured in RPKs—grew at one of the highest rates in the world compared to other regions during this period and is expected to experience continued strong growth rates in the coming years.

Air travel within the Asia-Pacific region—as measured in RPKs—is projected by Boeing to grow at a CAGR of 6.5% from 2012 to 2032, driven by strong economic and population growth projections as well as progressive trade agreements and low cost carrier growth. Air travel within the Southeast Asia sub-region—as measured in RPKs—is projected by Boeing to grow at a CAGR of 7.5% during this 20-year period.

Historical and forecast growth rates for passenger activity within select world regions for 1985 to 2032 are shown in Table 4, below.



Table 4

**HISTORICAL AND FORECAST ANNUAL PASSENGER GROWTH RATES**  
**Activity (in RPKs) Within Select Regions of the World**  
1985 to 2032

	CAGR						Forecast 2012-2032
	Historical					1985-2012	
	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010		
Global	6.8%	3.3%	5.6%	3.6%	3.9%	4.8%	5.0%
<b>Within regions</b>							
within China	16.7%	25.4%	4.7%	18.2%	15.4%	15.4%	6.9%
within Europe	8.7%	3.5%	7.5%	5.0%	2.6%	5.4%	3.6%
within Middle East	1.9%	1.3%	6.1%	11.8%	9.8%	5.7%	5.7%
within North America	4.6%	2.6%	5.1%	2.5%	-1.0%	2.7%	2.3%
within Northeast Asia	9.2%	6.1%	3.1%	-2.3%	0.9%	4.2%	2.5%
within Oceania	7.1%	10.2%	2.9%	5.8%	3.7%	6.2%	4.5%
within South America	2.8%	3.2%	5.1%	4.7%	12.6%	5.8%	7.4%
within South Asia	2.1%	5.6%	1.0%	9.5%	14.5%	6.7%	9.6%
within Southeast Asia	11.1%	12.5%	-0.1%	12.2%	6.2%	8.3%	7.5%

Source: The Boeing Company, Current Market Outlook reports, 2001 through 2013.

Northeast Asia: Japan, North Korea and South Korea.

South Asia: India, Pakistan, and Afghanistan.

Southeast Asia: Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Taiwan, Thailand, and Vietnam.

Oceania: Australia, New Zealand, Melanesia, Micronesia and Polynesia.



### 3.2 Historical and Forecast Air Travel Growth Rates in Southeast Asia

Southeast Asia is one of the world's most dynamic regions for air travel. Passenger air travel within Southeast Asia—as measured in RPKs—grew at a CAGR of 8.3% from 1985 to 2012. Although growth rates in the Southeast Asia region slowed somewhat during the recent global economic downturn, passenger travel by air within the region is projected to grow at a CAGR of 7.5% from 2012 to 2032. By comparison, passenger travel within the Asia-Pacific region is forecast to grow at a CAGR of 6.5% during the same period and passenger travel globally is forecast to grow at a CAGR of 5.0%, according to Boeing.

Historical and forecast growth rates for passenger activity within the Southeast Asia region and between the Southeast Asia region and select world regions are shown in Table 5, below.

Table 5  
**HISTORICAL AND FORECAST ANNUAL PASSENGER GROWTH RATES**  
Activity (in RPKs) Within and Between Southeast Asia and Select Regions of the World  
1985 to 2032

	CAGR						
	Historical					Forecast	
	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010	1985-2012	2012-2032
Within Southeast Asia	11.1%	12.5%	-0.1%	12.2%	6.2%	8.3%	7.5%
<u>Between Southeast Asia and:</u>							
China	12.4%	9.7%	5.0%	10.4%	2.6%	8.5%	7.5%
Oceania	14.7%	6.4%	6.9%	3.4%	2.3%	6.6%	5.1%
Middle East	-6.2%	13.4%	3.1%	4.2%	13.8%	5.5%	6.6%
North America	13.8%	11.1%	4.4%	-18.2%	-2.6%	1.0%	6.5%
Northeast Asia	15.2%	6.4%	1.8%	9.0%	1.3%	7.1%	4.9%
Europe	11.8%	7.3%	7.8%	0.5%	-0.2%	5.0%	5.0%
South Asia	0.5%	6.9%	6.2%	13.3%	6.9%	6.6%	8.4%

Source: The Boeing Company, Current Market Outlook reports, 2001 through 2013.

Northeast Asia: Japan, North Korea and South Korea.

South Asia: India, Pakistan, and Afghanistan.

Southeast Asia: Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Taiwan, Thailand, and Vietnam.

Oceania: Australia, New Zealand, Melanesia, Micronesia and Polynesia.



Forecast growth rates for passenger activity within and between world regions are shown in Table 6, below.

Table 6

**FORECAST ANNUAL PASSENGER GROWTH RATES**  
**Activity (in RPKs) Within and Between Regions of the World**  
2012 to 2032

Region	Forecast CAGR (2012-2032)					
	Latin			North		
	Africa	America	Middle East	Europe	America	Asia-Pacific
Asia-Pacific	7.1%	5.7%	7.3%	5.5%	4.5%	6.5%
North America	5.8%	5.0%	6.4%	3.5%	2.3%	
Europe	4.8%	4.7%	5.0%	3.6%		
Middle East	7.5%	-	5.7%			
Latin America	8.7%	6.9%				
Africa	6.3%					
Total global/regional	5.7%	8.6%	6.3%	4.2%	2.7%	6.3%

Source: The Boeing Company, Current Market Outlook 2013.

### 3.3 Forecast Aviation Capacity

Aircraft manufacturers such as Boeing and Airbus forecast continued growth in demand for new aircraft and continue to make investments to meet this demand. Airbus forecasts 29,226 new aircraft will be needed from 2013 to 2032. Boeing forecasts demand for 35,280 new aircraft for the same period.

The primary difference between the two forecasts is different opinions about average aircraft size. Both manufacturers forecast a high growth in demand for aircraft in Asia Pacific. Boeing forecasts that airlines in Asia Pacific will need 12,820 new aircraft over the next 20 years, resulting in a near tripling of the number of aircraft in the total Asia-Pacific fleet.

Aircraft supply and demand in the airline industry can be balanced with fleet adjustments by airlines and production shifts by manufacturers. Therefore, although supply and demand may not balance in the short term, in the medium to long term, aircraft capacity is managed through aircraft retirements, sales, returns to lessors, and other fleet management actions, and aircraft and production shifts by manufacturers as long-term orders change.



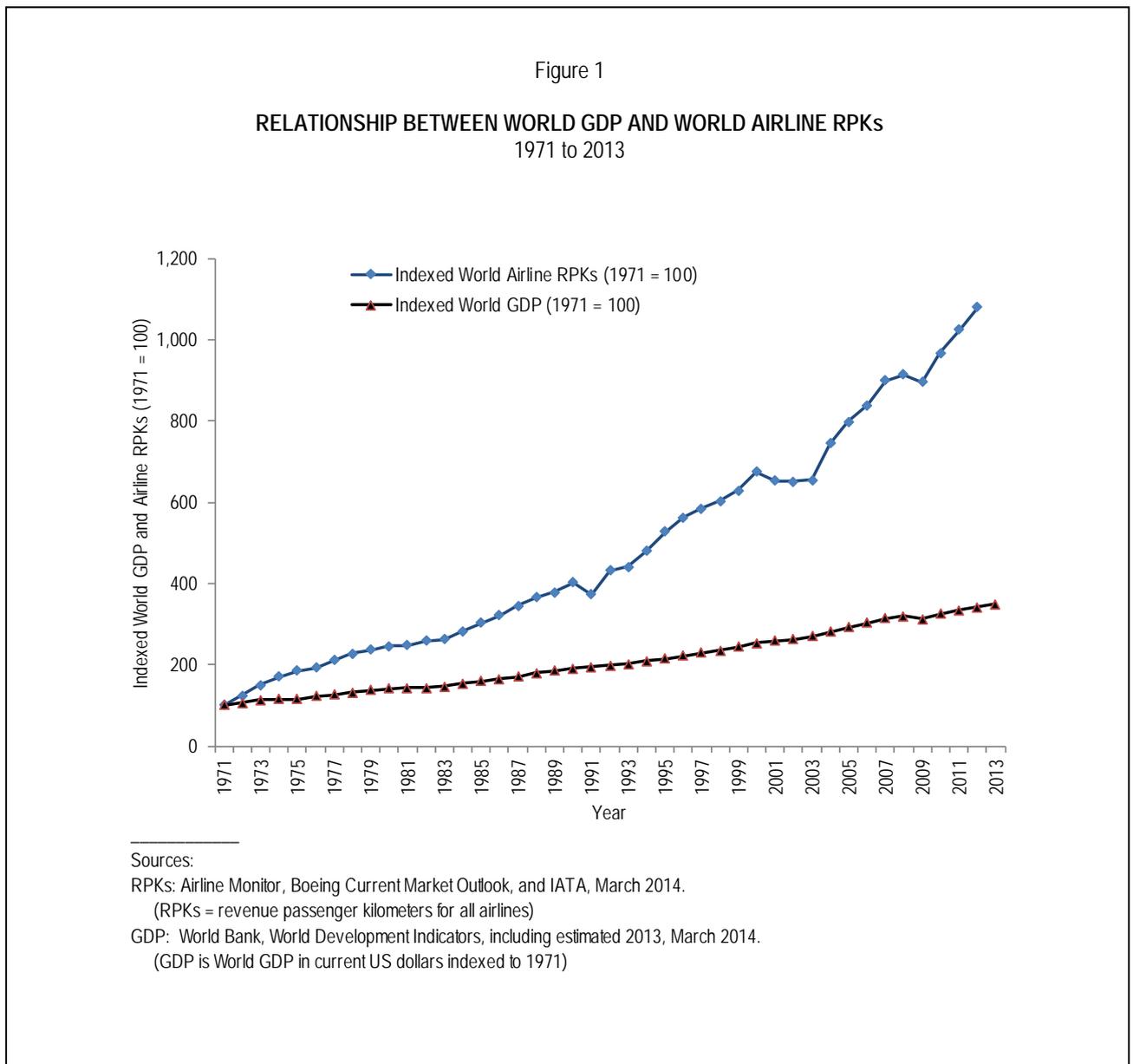
## 4 GROWTH FACTORS AND RELATIONSHIPS TO AIR TRAVEL

### 4.1 Gross Domestic Product

#### 4.1.1 World GDP and Air Travel Activity

Historically, air travel activity has shown a strong relationship to overall economic activity, as measured by gross domestic product (GDP). Over the last four decades, world airline activity has grown at average rates per annum approximately double those of world GDP.

Figure 1, below, illustrates the historical relationship between GDP levels and airline activity. From 1971 to 2013, world GDP grew at a CAGR of 3.0%, while world airline RPKs grew at a CAGR of 6.0%.





#### 4.1.2 Per Capita GDP and Air Travel Activity

Per capita income growth results from growth in gross domestic product (GDP) levels and employment. Increased disposable income results from growth in the middle class in countries that are experiencing increased per capita and household income levels.

In most areas of the world, per capita levels of GDP correlate with per capita air travel levels. Countries with high per capita levels of GDP tend to have high levels of air travel, while countries with low GDP per capita levels tend to have lower than average levels of air travel. Countries surrounded by water or with limited competing substitutes for transport tend to have higher-than-average travel levels than other countries do.

Figure 2, which follows, highlights this relationship for sixteen countries in the Asia-Pacific region. The propensity to travel in Thailand relative to the country's per capita income levels is high relative to other countries at similar levels of GDP per capita. This is attributable, in part, to the country's strong inbound tourism levels. The data indicate that as GDP per capita grows, as is expected to occur, travel demand should grow and continue to be high relative to other countries with similar levels of GDP per capita. (Note: the air travel revenue passenger kilometer (RPK) amounts include travel by both local residents and foreign visitors.)

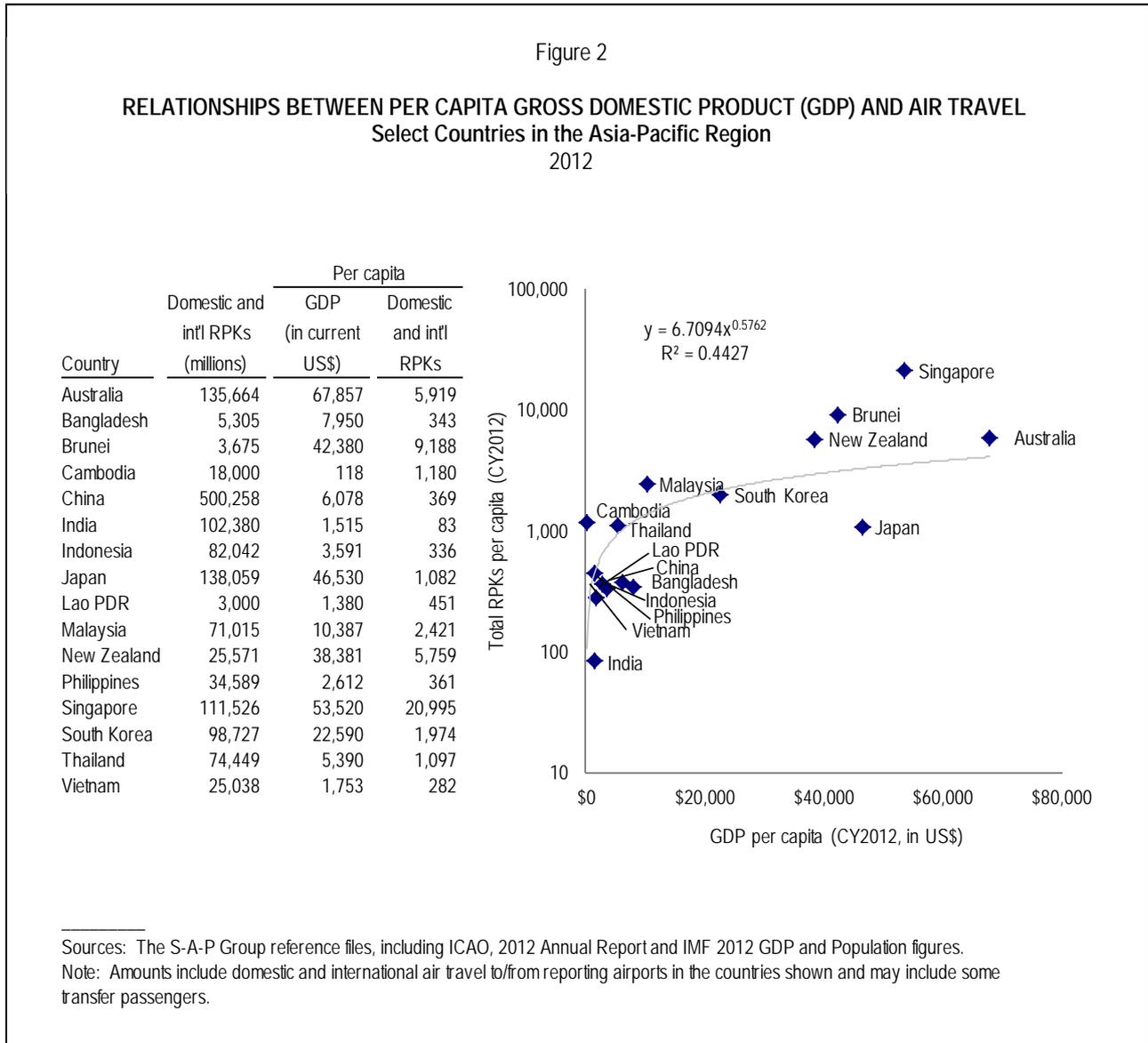
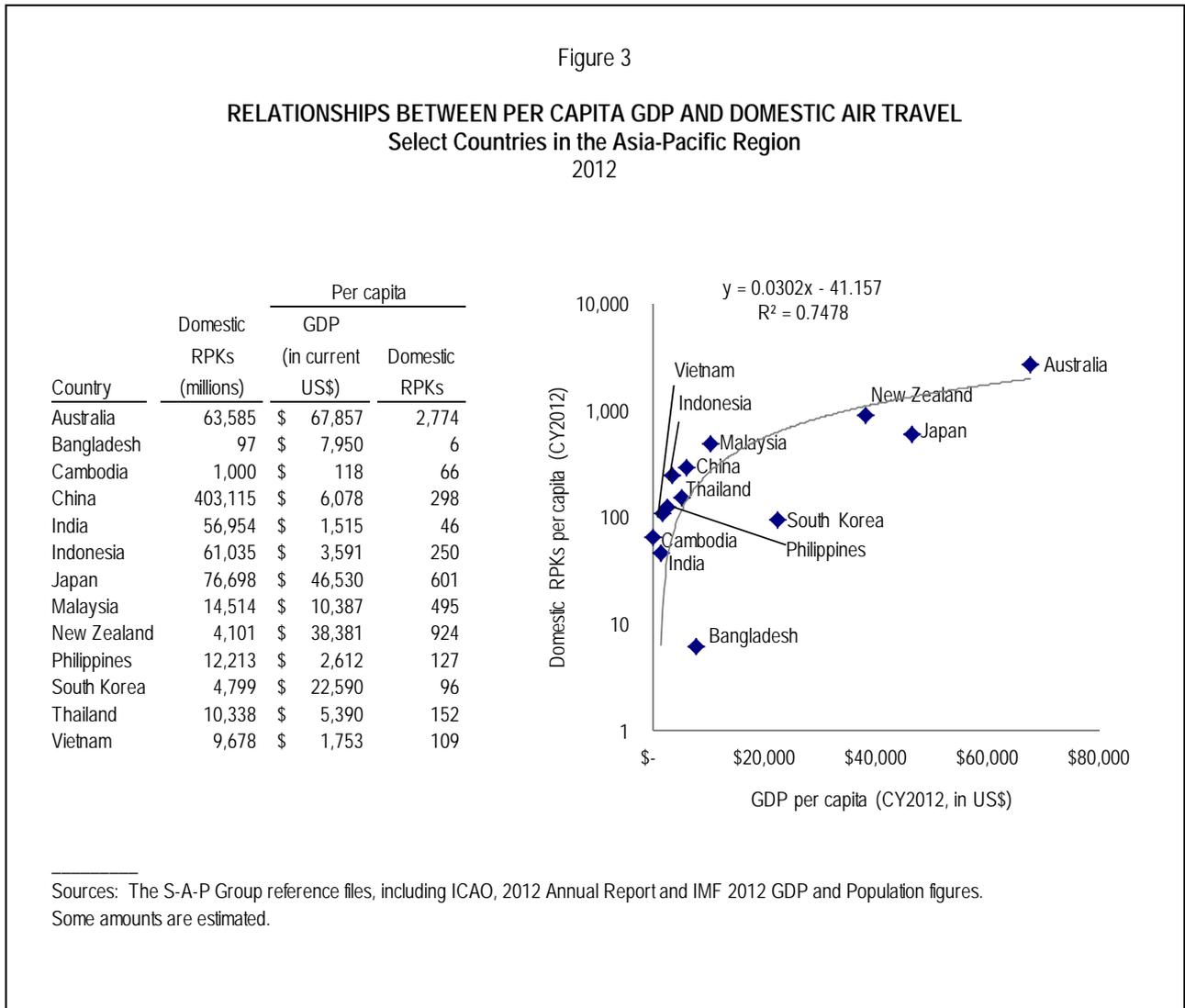




Figure 3, below, illustrates the per capita relationships between GDP and domestic air travel for thirteen countries in the Asia-Pacific region. Countries such as South Korea and Japan, which have competitive ground-based transportation systems, have lower-than-typical domestic air travel levels per capita.





#### 4.1.3 GDP Growth in Select Countries in Asia

As shown in Table 7, below, which document key economic indicators for select countries in the Asia-Pacific region, several countries in the region had high rates of growth from 2000 to 2012 for GDP (in current US Dollars). The International Monetary Fund (IMF) projects that total current GDP for the Asian countries shown below will experience strong growth through 2018.

According to the IMF, GDP increased from 2000 to 2012 at a CAGR of 9.5% in Thailand<sup>6</sup>.

Table 7  
**KEY ECONOMIC INDICATORS**  
**Select Countries in Asia**  
2000–2018

Country	GDP (current US\$ millions)						Historical	Projected
	Historical amounts				Estimated		CAGR	CAGR
	2000	2005	2010	2012	2013E	2018E	CY2000- CY2012	CY2013- CY2018
Indonesia	\$ 165,021	\$ 285,773	\$ 709,342	\$ 877,801	\$ 870,275	\$ 1,156,329	14.9%	5.8%
Thailand	\$ 122,725	\$ 176,352	\$ 318,908	\$ 365,966	\$ 387,156	\$ 464,320	9.5%	3.7%
Malaysia	\$ 93,789	\$ 143,540	\$ 247,539	\$ 304,726	\$ 312,433	\$ 490,961	10.3%	9.5%
Singapore	\$ 94,308	\$ 125,429	\$ 233,292	\$ 284,299	\$ 295,744	\$ 361,232	9.6%	4.1%
Philippines	\$ 81,023	\$ 103,074	\$ 199,591	\$ 250,182	\$ 272,018	\$ 466,469	9.9%	11.4%
Vietnam	\$ 31,176	\$ 57,648	\$ 112,771	\$ 155,565	\$ 170,565	\$ 249,184	14.3%	7.9%
Myanmar	\$ 10,277	\$ 13,833	\$ 49,628	\$ 55,759	\$ 56,408	\$ 87,131	15.1%	9.1%
Cambodia	\$ 589	\$ 1,090	\$ 1,667	\$ 1,795	\$ 1,920	\$ 2,751	9.7%	7.5%
Brunei	\$ 6,001	\$ 9,531	\$ 12,371	\$ 16,952	\$ 16,214	\$ 18,274	9.0%	2.4%
Lao PDR	\$ 1,640	\$ 2,726	\$ 6,855	\$ 9,169	\$ 10,002	\$ 16,749	15.4%	10.9%
East Timor	\$ 428	\$ 1,801	\$ 4,216	\$ 6,312	\$ 6,147	\$ 6,009	25.1%	-0.5%
Subtotal	\$ 606,977	\$ 920,797	\$ 1,896,180	\$ 2,328,526	\$ 2,398,882	\$ 3,319,409	11.9%	6.7%
China	\$ 1,198,477	\$ 2,256,919	\$ 5,930,393	\$ 8,229,381	\$ 9,181,377	\$ 11,878,659	17.4%	5.3%
India	\$ 476,636	\$ 834,218	\$ 1,708,541	\$ 1,858,748	\$ 1,870,651	\$ 2,369,907	12.0%	4.8%
Australia	\$ 399,473	\$ 733,042	\$ 1,249,253	\$ 1,555,287	\$ 1,505,277	\$ 1,537,920	12.0%	0.4%

Source: IMF World Economic Outlook Database, April 2014.

Some amounts are estimated.

Note: Gross Domestic Product, current prices (U.S. dollars). Values are based upon GDP in national currency and the exchange rate projections provided by country economists for the group of other emerging market and developing countries. Exchange rates for advanced economies are established in the WEO assumptions for each WEO exercise.

<sup>6</sup> In current US\$.



As shown in Table 8, Thailand's GDP per capita (in current US Dollars) is projected to grow 1.7% per annum from 2013 to 2018.

Table 8  
**KEY ECONOMIC INDICATORS**  
**Select Countries in Asia**  
2000-2018

Country	GDP per Capita (current US\$)						Historical	Projected
	Historical amounts				Estimated		CAGR	CAGR
	2000	2005	2010	2012	2013E	2018E	CY2000- CY2012	CY2013- CY2018
Indonesia	\$ 800	\$ 1,291	\$ 2,985	\$ 3,591	\$ 3,510	\$ 4,345	13.3%	4.4%
Thailand	\$ 2,448	\$ 3,184	\$ 5,212	\$ 5,748	\$ 5,962	\$ 6,477	7.4%	1.7%
Malaysia	\$ 3,992	\$ 5,421	\$ 8,762	\$ 10,494	\$ 10,548	\$ 15,235	8.4%	7.6%
Singapore	\$ 22,791	\$ 28,500	\$ 45,002	\$ 52,982	\$ 54,778	\$ 63,452	7.3%	3.0%
Philippines	\$ 1,055	\$ 1,209	\$ 2,123	\$ 2,560	\$ 2,790	\$ 4,334	7.7%	9.2%
Vietnam	\$ 402	\$ 694	\$ 1,278	\$ 1,721	\$ 1,902	\$ 2,637	12.9%	6.8%
Myanmar	\$ 166	\$ 222	\$ 777	\$ 865	\$ 827	\$ 1,250	14.7%	8.6%
Cambodia	\$ 46	\$ 79	\$ 111	\$ 118	\$ 125	\$ 170	8.1%	6.4%
Brunei	\$ 18,465	\$ 25,759	\$ 29,882	\$ 39,060	\$ 39,936	\$ 41,626	6.4%	0.8%
Lao PDR	\$ 308	\$ 474	\$ 1,105	\$ 1,438	\$ 1,477	\$ 2,251	13.7%	8.8%
East Timor	\$ 523	\$ 1,904	\$ 3,951	\$ 5,641	\$ 5,179	\$ 4,367	21.9%	-3.4%
China	\$ 946	\$ 1,726	\$ 4,423	\$ 6,079	\$ 6,747	\$ 8,516	16.8%	4.8%
India	\$ 465	\$ 752	\$ 1,435	\$ 1,520	\$ 1,505	\$ 1,786	10.4%	3.5%
Australia	\$ 20,727	\$ 35,682	\$ 56,316	\$ 68,566	\$ 64,863	\$ 62,370	10.5%	-0.8%

Source: IMF World Economic Outlook Database, April 2014.  
Some amounts are estimated.



## 4.2 Effects of Economic Growth on Air Travel in Asia

Rising wages and broadening distribution of wealth in rapidly developing countries in Asia will likely result in an increasing share of the population with the ability to travel by air.

### 4.2.1 Thailand

Thailand experienced good growth in GDP from 2010 to 2012. As Thailand and its neighbors have continued growing—notwithstanding economic and other crises—and as other Asian countries have recovered and are expecting future growth, Thai- and foreign-based carriers have the opportunity to benefit from the air travel demand spurred by regional economic growth.

Currently, only a small share of the Thai population travels by air. S-A-P anticipates that as the economy develops and the middle class grows and becomes a larger share of the population, air travel demand will increase. S-A-P also anticipates that as the middle class grows in Thailand's secondary cities, demand for service from these cities to new domestic and international destinations will increase. This service can be supported by the increased use of turboprop aircraft and regional jets.

Continued strong growth of GDP and per capita income, declining poverty rates and increasing disposable income are anticipated by S-A-P to generate strong demand for airline services in Asia and Thailand.

### 4.2.2 China

According to the IMF, China's GDP (in national currency units) grew at a CAGR of 16.7% from 2000 to 2012. Although growth slowed somewhat during the recent economic downturn, growth was still high relative to most other countries in the world, and China's real GDP is estimated to grow 7.5%<sup>8</sup> during 2014. The Civil Aviation Administration of China reported an expectation for the number of airline passengers in China to more than double between 2010 and 2020 as economic growth in the country stimulates air travel demand.

Aviation activity to, from, and within China rose from 2.3 million passengers in 1978 to 564.3 million in 2010. Total domestic airline passenger traffic in China is now the world's second largest, following that of the United States. As the country's growth continues, China serves as a large and growing regional neighbor with opportunities for trade, cooperation, travel, and tourism with Thailand. China is currently the largest country of origin for tourism to Thailand.

### 4.2.3 India

India is the second most populous country in the world and is separated from Thailand by the country of Myanmar and the Bay of Bengal. Ties between the two countries have been strong with airlines providing service between several markets in each country. Bilateral trade between Thailand and India has grown from US\$4.7 billion in 2007 to US\$8.3 billion in 2012. A proposed free trade agreement between the countries is expected to assist in bilateral trade between the countries reaching US\$16 billion in the next three years according to Thai Government officials.<sup>9</sup>

With a growing middle class that increasingly able to afford air travel, India is expected to experience high growth in airline traffic in the future.

<sup>8</sup> IMF, World Economic Outlook (WEO), April 2014.

<sup>9</sup> As quoted by Chanchai Charanvatnakit, Consul General, Royal Thai Consulate-General the India Times, March 2013.



### 4.3 Population Growth and Urbanization

Population growth rates have particularly large impacts on the large populous countries in Asia as even small percentage growth rates result in large increases in total population numbers. Population growth in large countries such as China that are also experiencing strong economic growth will result in increased demand for air travel.

Urbanization rates can serve as an indicator of propensity to travel by air because urban dwellers have higher-than-average income levels and are located in closer proximity to airports than are non-urban dwellers. The development of existing and new urban centers is expected to create new destinations for regional travel in Asia.

Population and urbanization shares (the share of a country's population living in urban areas) for countries in the Asia-Pacific region are expected to grow from 2010 to 2020, as shown in Table 9, below.

Table 9

**POPULATION INDICATORS**  
**Select Countries in Asia and the Pacific**  
Multiple Years

Country	Population		Urbanization (share of total population living in urban areas)		Cities of 1 million persons or greater	
	Estimated	CAGR	Actual	Forecast	Number of cities (a)	Share of urban population in cities of 1 million or greater
	2013	2013-2018	2010	2020	Actual 2010	Actual 2010
Indonesia	247,954,000	1.4%	44.3%	48.1%	7	20.2%
Philippines	97,484,000	2.0%	48.9%	52.6%	2	28.7%
Vietnam	89,691,000	1.0%	30.4%	37.0%	2	33.6%
Thailand	68,229,000	0.4%	34.0%	38.9%	2	42.9%
Myanmar	64,932,000	2.0%	33.7%	40.7%	3	31.2%
Malaysia	29,620,000	1.7%	72.2%	78.5%	3	17.9%
Cambodia	15,407,000	1.0%	21.1%	23.8%	1	47.8%
Laos	6,772,000	1.9%	33.2%	44.2%	--	--
Singapore	5,399,000	1.1%	100.0%	100.0%	1	100.0%
East Timor	1,187,000	3.0%	100.0%	100.0%	--	--
Brunei	406,000	1.6%	100.0%	100.0%	--	--
Countries shown above	627,081,000	1.4%	42.0%	(b)	21	27.5%
China	1,360,763,000	0.5%	47.0%	55.0%	94	43.2%
India	1,243,337,000	1.3%	30.0%	33.9%	43	40.0%
Japan	127,341,000	-0.3%	90.5%	95.3%	8	55.1%
South Korea	50,220,000	0.4%	82.9%	85.4%	8	56.3%
Australia	23,207,000	1.2%	88.9%	93.8%	5	69.1%
New Zealand	4,479,000	0.8%	86.2%	86.8%	1	36.4%
World Total	7,035,173,000	1.1%	50.4%	54.4%	449	38.9%

Sources: IMF World Economic Outlook Database, April 2014 and UN World Urbanization Prospects: 2011 revision.

(a) Cities or agglomerations with populations of greater than 1 million persons.

(b) Average urbanization share not available because the IMF does not publish 2020 population forecasts.



## 4.4 Trade and Tourism

### 4.4.1 Global Trade and Air Travel

Increased intra-regional business and reduced trade barriers between countries generate cross-border travel demand. High levels of trade and other commercial activities lead to increased demand for travel, including travel by air for business and tourism. Countries with competitive aviation industries and strong pricing competition generate increased levels of aviation activity per capita. Most countries in Asia have been moving toward increased business relationships, reduced trade barriers, increased trade and tourism, and increased air travel levels.

### 4.4.2 Tourism and Air Travel in Southeast Asia

International travel and tourism rates for countries in Southeast Asia have, as shown in Table 10, below, increased at strong rates from 2011 to 2012. For 2012, Thailand reported the second highest total number of arrivals, the fourth highest growth rate, and the largest total increase in tourism arrivals for the Southeast Asia countries listed. As tourists from China and other Asia countries continue to travel within the region, air travel in the region can be expected to continue to experience strong growth.

Table 10

**INTERNATIONAL TOURIST ARRIVALS**  
**Arrivals at Southeast Asia Countries**  
2011-2012

	Arrivals		Growth
	2011	2012	2011-2012
Malaysia	24,714,000	25,033,000	1.3%
Thailand	19,098,000	22,354,000	17.0%
Singapore	10,390,000	11,067,459	6.5%
Indonesia	7,650,000	8,044,000	5.2%
Vietnam	6,014,000	6,848,000	13.9%
Philippines	3,917,000	4,273,000	9.1%
Cambodia	2,882,000	3,584,000	24.4%
Burma/Myanmar	391,000	593,000	51.7%
Brunei	242,000	209,000	-13.6%
Laos	1,786	2,226	24.6%

Source: World Tourism Organization (UNWTO), Tourism Highlights, 2013 edition.

Note: some amounts estimated.

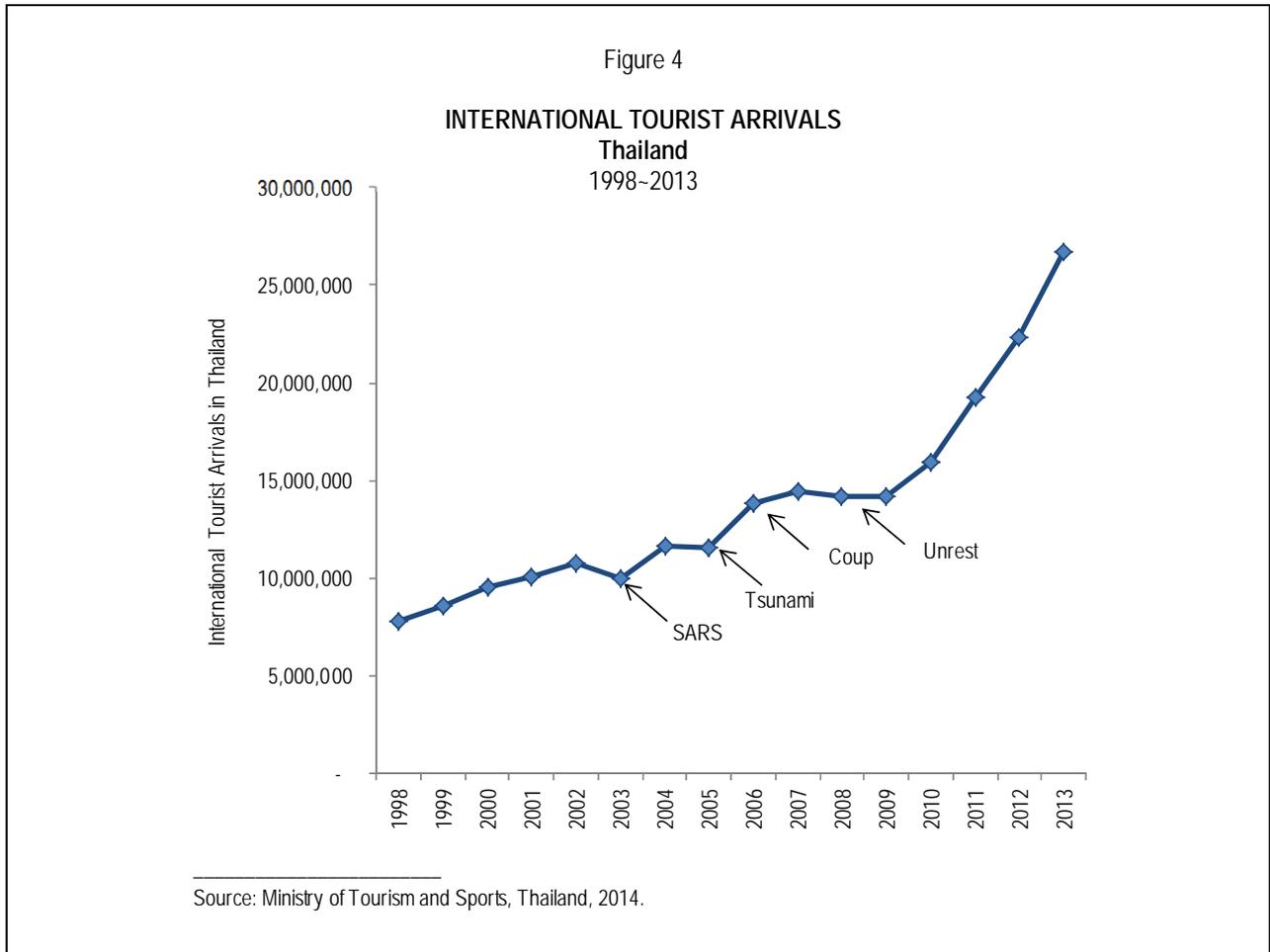


#### 4.4.3 *Historical Foreign Visitor Arrivals in Thailand*

As shown in Figure 4, below, tourist arrivals in Thailand have grown over the past decade despite significant disruptions due to various causes:

- In late 2002, the first case of SARS (Severe Acute Respiratory Syndrome) appeared in Asia and spread rapidly to other areas during 2003. Tourism in Thailand and throughout Asia declined significantly due to public fears about the disease and official travel restrictions designed to identify and reduce the spread of infected travelers.
- The tsunami resulting from the 2004 Indian Ocean earthquake killed an estimated 230,000 people in the region. Thailand was one of the four most affected countries and tourism declined significantly after the tsunami. Although much of the tourism infrastructure was not extensively damaged, the psychological effects on potential tourism resulted in declines in tourism even to beach areas that were not impacted from the tsunami.
- In September 2006, the Royal Thai Army staged a coup d'état against the government of Prime Minister Thaksin Shinawatra.
- In 2008, ongoing political change and unrest in Thailand resulted in an escalation of protests and violence, including protests that closed Suvarnabhumi and Don Mueang international airports during late 2008, causing disruptions to immediate tourist activity and ongoing tourism during 2008 and 2009.
- In May 2014 the Royal Thai Army staged another coup d'état against the caretaker government following several months of protests, the dissolution of the house of representatives in December 2013, and the removal of the prime minister and other senior ministers by the Constitutional Court in May 2014.

Between 2009 (the year of the most recent major disruption in Thailand), and 2013, international tourist arrivals grew at a CAGR of 17.2%. Tourism is estimated to account for more than 6% of Thailand's GDP, the largest proportion of any nation in Asia. As shown in Figure 4, below, over 26 million foreign visitors entered the country in 2013.



#### 4.4.4 Mode of Transport for International Arrivals at Thailand

As shown in Table 11, below, air service was the most frequently employed mode for entry to Thailand in 2012, the most current year for which data is available.

Table 11  
**MODE OF TRANSPORT**  
International Arrivals at Thailand  
2012

	<u>Tourist Arrivals</u>	<u>Share</u>
Air	17,803,421	79.6%
Land	3,987,931	17.8%
Sea	562,551	2.5%
Total	22,353,903	100.0%

Source: Thailand Bureau of Statistics, 2013 Statistical Yearbook.



#### 4.4.5 Visitor Arrivals in Thailand by Country of Residence

Table 12, below, provides a summary of the foreign visitor arrivals, by country of residence, in Thailand during 2012 and 2013. In 2013, the largest share of visitors to Thailand came from China. From 2012 to 2013, the number of Chinese visitors to Thailand grew 66.4%.

Table 12  
**INTERNATIONAL TOURIST ARRIVALS**  
**Thailand**  
2012-2013

Nationality	2012		2013		Change
	Number	Share	Number	Share	2012-2013
Malaysia	2,554,397	11.4%	3,041,097	11.5%	19.1%
Laos	975,999	4.4%	976,639	3.7%	0.1%
Singapore	831,215	3.7%	955,468	3.6%	14.9%
Vietnam	618,670	2.8%	725,057	2.7%	17.2%
Indonesia	447,820	2.0%	594,251	2.2%	32.7%
Cambodia	423,642	1.9%	481,595	1.8%	13.7%
Philippines	289,566	1.3%	321,571	1.2%	11.1%
Myanmar	129,385	0.6%	172,383	0.6%	33.2%
Brunei	10,459	0.0%	14,205	0.1%	35.8%
Subtotal: ASEAN	6,281,153	28.1%	7,282,266	27.4%	15.9%
China	2,786,860	12.5%	4,637,335	17.5%	66.4%
Japan	1,373,716	6.1%	1,536,425	5.8%	11.8%
Korea	1,163,619	5.2%	1,295,342	4.9%	11.3%
Hong Kong	473,666	2.1%	588,335	2.2%	24.2%
Taiwan	394,225	1.8%	502,176	1.9%	27.4%
Others	51,975	0.2%	69,496	0.3%	33.7%
Subtotal: Other Asia	6,244,061	27.9%	8,629,109	32.5%	38.2%
Europe	5,650,619	25.3%	6,305,945	23.8%	11.6%
South Asia	1,286,861	5.8%	1,347,585	5.1%	4.7%
The Americas	1,083,433	4.8%	1,166,633	4.4%	7.7%
Oceania	1,046,755	4.7%	1,021,936	3.8%	-2.4%
Middle East	605,477	2.7%	630,243	2.4%	4.1%
Africa	155,544	0.7%	163,008	0.6%	4.8%
Subtotal: Other	9,828,689	44.0%	10,635,350	40.1%	8.2%
Total	22,353,903	100.0%	26,546,725	100.0%	18.8%

Source: Ministry of Tourism and Sports, Thailand 2014.



#### 4.4.6 Medical Tourism in Thailand

Thailand has become a top destination for medical tourism with an international reputation for quality affordable medical care. Although statistics vary by source, medical tourism arrivals in Thailand have grown at strong rates. From 2007 to 2012, the number of medical tourism visitors to Thailand grew by a CAGR of 13%, while medical tourism spending in the country grew at a CAGR of 26.1%.

Table 13, below, documents the number of visitors to Thailand that traveled for purposes of medical tourism. Also shown are the amounts spent on medical tourism in the country for 2007~2012.

Table 13

**MEDICAL TOURISM ARRIVALS AND INCOME**  
**Thailand**  
2007-2012

Year	Medical Tourists	
	Visitors (millions)	Amount spent (Baht; billions)
2007	1.4	41.0
2008	1.4	50.9
2009	1.4	63.3
2010	2.0	78.7
2011	2.2	97.8
2012	2.5	130.8

Source: Department of Health Service Support Thailand, 2014.

According to Thailand's Department of Health Service Support, the top regions of origin for medical tourism visitors to Thailand are:

- Japan
- USA
- UK
- Middle East
- Australia

Medical tourism visitors are attracted to Thailand due to several factors, including the following:

- Cost savings
- Accredited medical facilities
- Qualified medical professionals
- Minimal waiting lists for services
- Good customer service



The cost savings associated with medical tourism in Thailand can be seen with the example of a heart bypass operation, which can cost approximately US\$130,000 in the United States. The same procedure can be performed in Thailand for approximately US\$11,000, according to Tourism Authority Thailand. Knee replacements in the US cost approximately US\$40,000 compared with costs of approximately US\$10,000 in Thailand.

Thailand was the first country in Asia to achieve JCI accreditation in 2002 and 23 hospitals are now accredited. In 2012, the Thailand Board of Investment announced plans to help promote Thailand as the medical hub of Asia. Other initiatives have been launched to leverage Thailand's growing reputation as a medical tourism destination. In 2013, Qatar Airways cited surging traffic related to medical tourism in Bangkok as a reason for adding additional flights to Bangkok.

Thailand draws more medical tourists than any other country in ASEAN. However, Thailand draws fewer medical tourists from within ASEAN than do Singapore and Malaysia. The ASEAN Economic Community (AEC) is expected to bring changes to this as foreign investment restrictions in hospitals are reduced and investment in the successful medical tourism industry in Thailand is expected to increase. Health care is one of the four AEC priority service sectors for which the foreign ownership cap for investors of ASEAN nationality will be raised to 70%. Hospitals in Thailand have reported only 15% foreign equity participation on average.

As current trends continue and additional focus is placed on medical tourism in Thailand, this sector is expected to be a growing driver of air traffic growth in Thailand.

#### **4.5 Airline Service and Fares**

##### *4.5.1 Medium-Haul and Long-Haul Opportunities*

The introduction of larger aircraft as well as smaller aircraft that can fly further is projected by S-A-P to help to increase opportunities for international service to and from Thailand and other parts of the world.

##### *4.5.2 Airfares and Low Cost Carriers*

Over the last decade, price competition has increased as LCCs have grown in market share and airlines struggling with financial challenges and competition have improved efficiency and lowered travel costs. S-A-P anticipates that downward pressure on fares will continue, resulting in increasing demand.

#### **4.6 Other Aviation Growth Factors**

##### *4.6.1 Geographical Characteristics*

Countries with widely distributed population centers or with large surrounding bodies of water or mountains tend to have higher-than-average aviation activity levels. The combination of Asia's large geographic size, the separation of many parts of Asia by bodies of water, and the general lack of competitive sea or land transport alternatives provide an ideal market for air travel.

Unlike in the US and Europe, where extensive road and rail networks provide a competitive substitute for air transport, modal competition is less common in Southeast Asia. The introduction of widely available low air fares in the Asia-Pacific region has greatly reduced the cost barrier to air travel and created a competitive transport substitute for ground travel for many people.



#### 4.6.2 *Liberalization of Air Travel*

S-A-P anticipates that Asia-Pacific nations, especially those in Southeast and North Asia, will continue to remove regulatory restrictions on air services, leading to increased competition and lower airfares and cargo pricing. As open skies agreements are implemented, the typical result is that competition increases, capacity increases, fares decline, and air traffic increases.

#### 4.6.3 *Transportation Infrastructure*

S-A-P anticipates that governments and the private sector will continue to make the necessary investments in airport capacity, air traffic control systems, and aircraft to foster tourism and other economic development. Airport capacity and airline capacity changes mutually support growth in one another. The rapid growth of air passenger demand in Asia has encouraged some governments and airport operators to develop new airport capacity to accommodate the increased demand.

Countries with limited forms of competitive ground transport options, such as road or rail, often have above average levels of aviation activity per capita. Just as cellular phone networks in developing countries that utilize the airways for communication can be less resource-intensive to develop than landline infrastructure can be, air carrier networks can similarly enable airlines to bypass roadway and railway infrastructure requirements to facilitate long distance travel more quickly and efficiently than land-based options can.

As a result of investments in terminal and airfield capacity and increased aviation activity demand, airports in the Asia-Pacific region have experienced strong growth rates over the past decade. According to Airports Council International, Suvarnabhumi International Airport was, in terms of passenger movements in 2013, the 17th busiest airport in the world and the seventh busiest airport in Asia.<sup>10</sup>

Within Thailand, airport infrastructure is not expected to be a constraint in Bangkok due to the remaining capacity still available at the new Suvarnabhumi International Airport as well as the excess capacity at Bangkok's first international airport, Don Mueang, which served 16.5 million passengers in 2013, while at its peak in 2005~2006, it served over 30 million.

Samui International Airport faces potential growth constraints due to restrictions to operations of small jet aircraft and turboprop aircraft. Currently the airport is only served by ATR-700 turboprops and A319 and 737-400 jet aircraft due to operational constraints related to the size of the airport. All of these aircraft are in the 100-seat size range. Samui International Airport also faces airspace constraints due to surrounding residential areas near the airport. Discussions have occurred about building a second airport to increase airport capacity on the island to serve growing tourism demand. However, given the relatively small size of the island and residential and other existing constraints on other parts of the island, there are obstacles to building a second airport on the island.

#### 4.6.4 *Oil and Aircraft Fuel Supply and Demand*

Fuel price changes affect aviation traffic as airline cost structures are sensitive to changes in aircraft fuel. Political turmoil, terrorism, war and other events affecting major suppliers of oil have led to large fluctuations in fuel prices since 1980, ranging from 60% increases to 47% decreases in inflation-adjusted costs per barrel year over year.<sup>11</sup>

The resulting airline cost structure changes have resulted in changes in airline service, fares, and traffic. Fares typically increase after fuel prices increase. However, because the full effects of fuel price increases typically cannot be passed on to customers, airline profits typically decrease.

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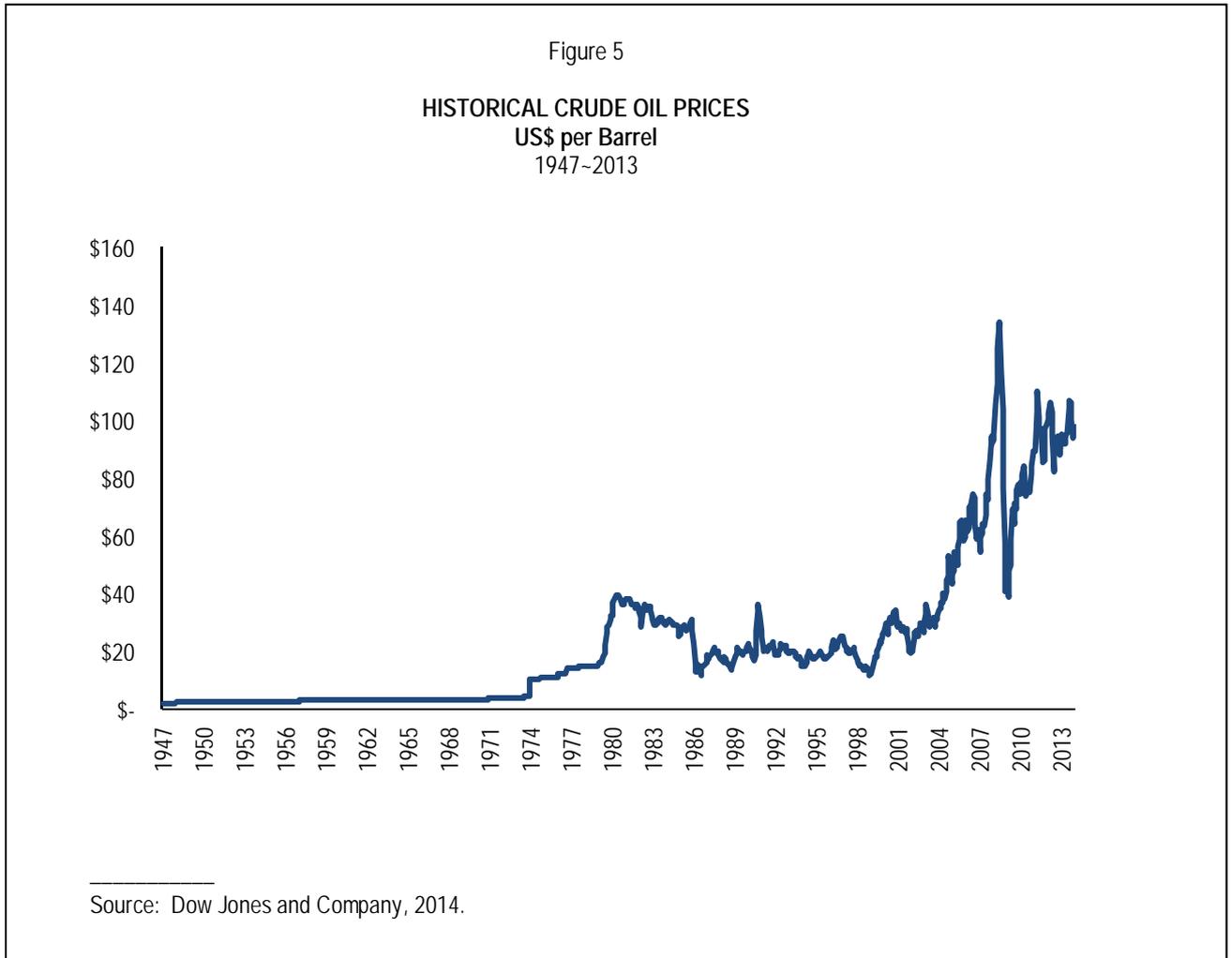
<sup>10</sup> ACI, March 2014.

<sup>11</sup> Based on historical data provided by IOGA and WTRG Economics, [http://inflationdata.com/inflation/inflation\\_Rate/Historical\\_Oil\\_Prices\\_Table.asp](http://inflationdata.com/inflation/inflation_Rate/Historical_Oil_Prices_Table.asp).



Fuel price changes have been a particularly significant issue since 2011 as turmoil in the Middle East has resulted in sharp increases in fuel prices. Fuel prices decreased during the global financial crisis, but have increased again recently as economic growth has improved and political turmoil has occurred in the Middle East.

Figure 5, below, illustrates how crude oil prices have increased from 1947 to 2013.





## 5 COMPETITIVE LANDSCAPE

Potential business constraints to the future growth of Bangkok Airways include the competitive strength of large, well-established Asian carriers, as well as continued strong competition from LCCs and other airlines.

### 5.1 Key Financial and Operating Performance for Select Carriers

Table 14, which follows, provides key performance data for major full-service and low-cost carriers in the Asia-Pacific region.

Table 14

#### KEY FINANCIAL AND OPERATING PERFORMANCE Select Full-Service and Low-Cost Carriers in Asia-Pacific FY ending in 2013 and 2014

	US\$ millions		%	US cents			Passenger Operations				US\$ millions		FY ending
	Operating revenue	Operating profit	Operating margin	RASK (a)	CASK (b)	RASK-CASK spread	RPKs (millions)	ASKs (millions)	Passenger load factor	Passengers (millions)	Aircraft in Fleet	Operating Revenues per Aircraft	
<b>Low-Cost Carriers</b>													
1 Jetstar/Jetstar Asia	\$ 3,079	\$ 129	4.2%	7.04	6.74	0.30	34,570	43,730	79.1%	20.4	86	\$ 35.8	Jun-13
2 AirAsia	\$ 1,605	\$ 316	19.7%	5.18	4.16	1.02	25,333	31,582	80.2%	21.9	72	\$ 22.3	Dec-13
3 SpiceJet	\$ 949	\$ (20)	-2.1%	5.81	5.93	(0.12)	12,171	16,338	74.5%	12.7	55	\$ 17.3	Mar-13
4 Cebu Pacific Air	\$ 936	\$ 55	5.9%	5.78	5.44	0.34	12,927	16,207	79.8%	14.4	48	\$ 19.5	Dec-13
5 Thai AirAsia	\$ 722	\$ 70	9.7%	5.88	5.31	0.57	10,829	12,951	83.0%	10.5	35	\$ 20.6	Dec-13
6 AirAsia X	\$ 714	\$ 11	1.6%	3.83	3.80	0.03	15,857	19,309	82.1%	3.2	19	\$ 37.6	Dec-13
7 Tiger Airways	\$ 587	\$ (42)	-7.1%	3.72	3.98	(0.26)	12,239	15,779	77.6%	7.1	49	\$ 12.0	Mar-14
8 Indonesia AirAsia	\$ 510	\$ (11)	-2.2%	4.54	4.64	(0.10)	9,293	12,136	76.0%	7.9	30	\$ 17.0	Dec-13
<b>Average (carriers shown)</b>			<b>3.7%</b>	<b>5.22</b>	<b>5.00</b>	<b>0.22</b>			<b>79.0%</b>			<b>\$ 22.8</b>	
<b>Full-Service Carriers</b>													
1 China Southern Airlines Group	\$ 15,810	\$ 242	1.5%	8.46	8.44	0.02	148,416	186,800	79.5%	91.8	561	\$ 28.2	Dec-13
2 ANA Group	\$ 15,780	\$ 650	4.1%	15.40	12.85	2.55	68,475	102,498	66.8%	49.0	226	\$ 69.8	Mar-14
3 Air China	\$ 15,751	\$ 661	4.2%	8.97	8.66	0.30	141,968	175,677	80.8%	77.7	316	\$ 49.8	Dec-13
4 Qantas Group (excl. Jetstar)	\$ 14,889	\$ 191	1.3%	10.64	10.51	0.14	110,905	139,909	79.3%	48.3	312	\$ 47.7	Jun-13
5 China Eastern Airlines	\$ 14,157	\$ 283	2.0%	9.31	9.43	(0.12)	120,461	152,075	79.2%	79.1	478	\$ 29.6	Dec-13
6 Japan Airlines Group	\$ 12,905	\$ 1,644	12.7%	15.49	13.52	1.97	59,136	83,319	70.3%	38.9	222	\$ 58.1	Mar-14
7 Cathay Pacific Group	\$ 12,882	\$ 482	3.7%	10.13	9.81	0.32	104,571	127,215	82.2%	29.9	192	\$ 67.1	Dec-13
8 Singapore Airlines Group	\$ 12,188	\$ 207	1.7%	9.49	9.33	0.16	100,580	128,430	74.3%	22.0	103	\$ 118.3	Mar-14
9 Korean Air	\$ 11,572	\$ (18)	-0.2%	12.99	13.01	(0.02)	68,360	89,111	72.9%	24.3	147	\$ 78.7	Dec-13
10 Thai Airways International	\$ 6,509	\$ (44)	-0.7%	7.60	7.65	(0.05)	63,479	85,655	74.1%	21.5	100	\$ 65.1	Dec-13
<b>Average (carriers shown)</b>			<b>3.0%</b>	<b>10.85</b>	<b>10.32</b>	<b>0.53</b>			<b>75.9%</b>			<b>\$ 61.3</b>	
Bangkok Airways	\$ 637	\$ 77	12.1%	15.69	13.79	1.89	2,759	4,063	67.9%	4.2	25	\$ 25.5	Dec-13

Source: Annual reports and other industry sources for the carriers shown.

(a) RASK is calculated as Operating revenue divided by ASK.

(b) CASK is calculated as Operating expenses (incl. D&A, cost of operating leases and excl. fuel hedging effects, foreign exchange effects and net financial charges) divided by ASK.



## 5.2 Development of Low Cost Carriers

Historically, much of the focus of the global airline industry has been on creating opportunities to increase revenues. The success of LCCs around the world, however, has led many traditional passenger carriers to increase their focus on increasing operating efficiencies, start their own LCC subsidiaries, and compete against the many new LCCs that have initiated operations.

Although the introduction of significant levels of LCC activity occurred later in Asia than in the US and Europe, LCC activity in Asia has grown rapidly over the past decade and continues to grow rapidly. Southeast Asia has seen the launch of a high share of Asia-based LCC operators, the result of relaxed aviation policies in the region. The introduction of widely available low fares in the Asia-Pacific region has greatly reduced the cost barrier to air travel and created a competitive transport substitute for many people.

### 5.2.1 Effects of LCC on the Asian Aviation Industry

The introduction and growth of LCCs have had several effects on the Asian aviation industry:

- LCC competition has encouraged established carriers to operate more efficiently, thereby driving down average fares and stimulating demand across the entire market. Established carriers may choose to launch strong competitive responses to LCCs, including significant decreases in fares, increases in seat capacity and flight frequency, and the start of new point-to-point flights, among others. Several Asian network carriers have introduced, or are planning to introduce their own LCCs.
- Some airport operators in the region are providing aeronautical charge discounts for new routes and for efficient use of airport facilities, such as quick aircraft turnarounds.
- The rapid growth in air travel that LCCs generate is encouraging some governments and airport operators to liberalize bilateral aviation agreements and to develop new airport capacity to accommodate the increased demand.

## 5.3 Full Service and Niche Airline Development

While the growth in LCC development has been substantial, particularly in Asia, many airlines continue to focus on full service operations and niche markets that cater to time sensitive travelers, business travelers, and niche market travelers. These markets have traditionally operated at higher yields than the LCC and leisure-focused segments of the market.

Bangkok Airways caters to customers traveling to niche markets and who pay for premium product and service offerings provided by the airline. Bangkok Airways niche routes typically are unique routes that enable the company to earn higher yields than those earned on routes served by multiple airlines with multiple frequencies. As shown in the preceding table, Bangkok Airways reported an operating margin of 12.1% for FY2013. This margin is significantly higher than the average margin reported by the top ten full-service carriers and the top eight LCCs shown in Table 14.

Bangkok Airways also focuses on higher yield operations by promoting itself as a “boutique airline” that not only travels to unique destinations but also offers unique services, such as complimentary meal service on flights and airport lounge access open to all passengers traveling with the airline. The airline also promotes its young fleet as a unique asset that adds value to the brand.

Bangkok Airways has developed proprietary airports that it operates. This unique strategy for an airline has enabled the company to enter new niche routes and earn airport revenues in addition to the airline revenue from operating the routes. This also further establishes its brand as a unique “boutique” airline.



## 5.4 Airline Infrastructure

Many airlines in Asia have plans for significant changes to their aircraft fleets. As new, higher-efficiency aircraft are integrated into an airline's operations, long-term operating costs typically are reduced and, depending on the financial structure of the implementation, lower overall costs per passenger can result, leading to decreased average airfares and associated increases in demand.

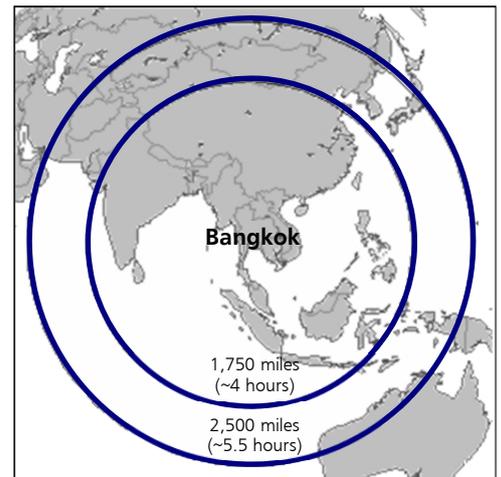
Fleet modernization programs can provide airlines with reduced fuel and other operating costs, including lower aircraft maintenance expenses. Operating a limited number of aircraft types can lead to reduced aircraft training and spare part costs.

The size of new aircraft on some large routes in Asia has grown significantly as traffic has increased and new large aircraft have been introduced into fleets, particularly the Airbus A-380. Other markets have seen added service by narrowbody and turboprop aircraft where the absence of airport constraints allows for increased service frequencies with smaller aircraft. Turboprop aircraft are used on several routes in Thailand and Asia in general where operating constraints require their use or market demand characteristics match the size and operating advantages of these aircraft.

## 5.5 Asian Aviation Industry Growth Prospects

We believe that Southeast Asia's domestic and international markets will enjoy strong long-term growth rates for several reasons:

- Proximity to major populations. Approximately 50% of the world's population lives within a 2,500 nautical mile radius from Bangkok, indicating the potential size of the regional aviation market. However, as a result of low GDP per capita throughout most of the region and other factors, a large proportion of the population has, historically, been unable to afford air transportation. As mentioned previously, we expect the affordability of air travel to grow with increases in GDP per capita, which should result in higher population penetration.
- Location on major trade routes. Southeast Asia is well positioned between Europe and the Pacific region, as well as between North Asia and South Asia.
- Proximity to China. With its strong economic growth and increasingly relaxed restrictions on travel to foreign destinations, travelers from the world's most populous country will create significant demand for leisure and business travel to Southeast Asian countries.
- Proximity to Australia. Australia has one of the most mature economies in the region, with a high GDP per capita, high levels of disposable income, higher propensity to travel per capita, and strong tourism connections with Thailand and other regions in Asia.
- Location between South Asia and China. The region's role as a destination for visitors from China (the world's most populous country) and South Asia, which includes India (the world's second most populous country), Pakistan (sixth), and Bangladesh (seventh) will grow in prominence as the people of these countries increase the frequency of their travel.
- Transport substitution. As income levels increase and air transport costs decrease, we expect air transport will substitute for land and sea-based transport modes such as rail, buses, and ferries. As shown in a previous figure, Thailand has a low per capita income compared to other countries in South East Asia, but a relatively higher propensity to travel than other countries with similar income levels. Therefore, we expect that as incomes increase in Thailand, residents will be able to make use of low-cost air carriers for their travels. As a result, we anticipate that air travel will increase at strong rates.





- Liberalization of aviation agreements. Southeast Asian countries have become more liberal with their aviation agreements, both within ASEAN and with other countries.
- Tourist infrastructure. The region's well-developed tourist infrastructure will continue to attract leisure travelers.
- Urbanization. The share of the population in Southeast Asian countries living in cities is generally expected to continue to increase.

## 5.6 Potential Constraints to Asia Aviation Industry Growth

The opportunities for industry-wide aviation activity growth could be offset by:

- Increased fuel prices and/or unfavorable currency exchange levels could constrain aviation demand if air and other travel costs increase and travelers' disposable income levels decrease.
- Regional conflicts or scares. Civil unrest, terrorist events, or other events could constrain future activity levels.
- Travel restrictions. Government restrictions on travel, by limiting the number of entry/exit visas issued or by imposing high visa costs, could limit future aviation growth.
- Insufficient airport or airspace capacity. Socioeconomic or other constraints could result in delays or changes in plans by governments regarding planned infrastructure expansion.
- Environmental factors. Natural and man-made environmental events, such as haze, volcanic ash, and natural disasters, could impact future activity levels.
- Infrastructure constraints at regional airports. Potential constraints to airline travel growth could arise due to limited growth of infrastructure at regional airports outside of Thailand.

## 5.7 Air Cargo Industry Growth Prospects

### 5.7.1 Global Air Cargo Prospects

Global air cargo growth has been historically strong over the past several decades, growing at an average annual rate of 6.7% from 1981 to 2004. However, growth slowed significantly during the recent global financial crisis, decreasing 3.2% in 2008 and a further 9.6% in 2009. The market rebounded strongly in 2010, growing 18.5% compared to 2009 levels. In 2011, growth slowed again, declining 1%, but this was relative to the very strong year in 2010. According to IATA, air cargo volumes decreased 1.5% during 2012 and grew 1.4% during 2013.

Despite the high volatility in growth rates over the past several years, most industry experts expect strong average annual growth in air cargo volumes over the next two decades. The recent slowdowns are attributed to an abnormally long and sharp global recession, combined with rising fuel rates for airlines, natural disasters, and political unrest in the Middle East. Recently, air cargo capacity (supply) has grown, while demand has stalled, putting pressure on air cargo yields and the profitability in the global air cargo industry. Lower yields could eventually lead to increased volumes as lower prices have the potential to stimulate higher demand.

The supply of air cargo capacity is a function of the available capacity of dedicated air cargo aircraft as well as the capacity available in commercial passenger aircraft belly space. With half of global cargo travelling in passenger aircraft belly space, managing supply to demand for dedicated cargo carriers can be challenging. As passenger airlines recover from the recession and begin to add capacity, capacity is automatically added to the air cargo industry total capacity, despite slowing in the cargo-specific sector.



Economic factors continue to put pressure on demand for air cargo. The European debt crisis has resulted in slow economic growth in Europe and has contributed to uncertainty in other areas of the world. Economic growth in China has been relatively moderate recently. In the US, the economic recovery continues, but has been sluggish compared to previous recoveries from recession, contributing to the declines and slow recovery in the air cargo industry.

Air freight growth is more volatile than ocean freight growth because economic downturns result in tight budgets and reductions in demand for faster, more expensive delivery options. As global economic growth continues to recover, air cargo growth is expected to be strong in the future, although with potential continued volatility.

Air cargo growth has a strong historical correlation with economic output, as measured in GDP. As economic growth improves around the world, air cargo growth is expected to again increase and experience strong long-term growth rates. Most economists expect the major global economic markets to continue steps toward recovery and stronger growth over the long term, although near-term growth may continue to be slow and volatile. Quantitative easing in the US and Japan, efforts at debt restructuring in Europe, and other measures are expected to help the recoveries in those regions regain and maintain momentum, but will take time to have their full effect. In the near term there could be continued slow or negative growth, with expectations for recovery and strengthening in the long term. The Boeing Company forecasts average annual air global cargo growth to be 5.2% from 2012 to 2031.

#### *5.7.2 Asian Air Cargo Prospects*

Asia has experienced some of the highest growth rates over the past two decades compared to other regions of the world, due to the rapid development of the region during this time period. Asia has also been susceptible to growth trend changes due to the high growth in demand and supply.

According to the International Air Transport Association (IATA), 40% of global air cargo volumes are shipped to/from Asia. IATA reports that Asia air cargo traffic decreased 1.0% in 2013, while capacity was grew 0.8%. However, IATA reports that Asia-Pacific cargo volumes grew 6.9% in the first quarter of 2014 compared to the first quarter of 2013.



According to the Boeing Company, Asia will—over the long term—continue to be at the forefront of the air cargo industry. Routes associated with Asia will continue to experience the world’s highest growth rates over the next 20 years. According to Boeing forecasts, intra-Asia markets are expected to expand 6.9% per annum from 2012 to 2031, as shown in Table 15, which follows.

Table 15  
**FORECAST AIR CARGO GROWTH**  
Revenue Tonne Kilometers  
2012-2031

	<u>per annum growth</u>
Domestic China	8.0%
Intra Asia	6.9%
North America-Asia	5.8%
Europe-South Asia	5.8%
Europe-Asia	5.7%
Europe-Middle East	5.7%
North America-Latin America	5.6%
Europe-Latin America	5.3%
Europe-Africa	4.8%
North America-Europe	3.5%
Intra Europe	2.4%
North America	2.3%

Source: Boeing Company, 2012.

### 5.7.3 Thailand Air Cargo Prospects

Air cargo prospects in Thailand are driven by several factors, including:

- Its membership in ASEAN
- Trade agreements with other countries outside ASEAN
- Relatively low labor costs and a labor force increasing in education and skills
- Proximity to China and other large and growing economies.
- Established airline industry



## **6 KOH SAMUI, THAILAND**

Koh Samui, Thailand has served as a key driver of the Bangkok Airways business for many years. Prior to 1989—when Bangkok Airways developed and subsequently opened the island’s commercial airport—backpackers and other travellers relied on fishing vessels and ferries to reach the island, with access points on the Thai mainland in the Surat Thani province.

With a combined area of 229 square kilometers and almost one million tourists arriving each year, Koh Samui is the third largest island in Thailand after Phuket and Koh Chang. As of December 2011, the island had 17,204 rooms in 448 hotels, with several hotels opening in 2012 and after. The island now features hotels operated under most global hotel brands, including Conrad, Le Meridien, Banyan Tree, Intercontinental, and Starwood and is considered a global tourist destination. Approximately 50,000 locals live on the island, most of whom work in the tourism industry.

Bangkok Airways’ development of Samui International Airport, and the carrier’s subsequent promotion of the island as a tourist destination, has helped to generate demand for its Koh Samui flights. This promotion has led to the expansion of hotel capacity, which subsequently has generated increased demand for air services, the majority of which are operated by Bangkok Airways. The carrier now operates flights on eight routes that serve Samui International Airport, including services on 5 domestic routes and international flights to/from Kuala Lumpur, Singapore, and Hong Kong.

The Bangkok to Samui route is served by the carrier with 16 flights<sup>12</sup>.

## **7 REGULATORY ENVIRONMENT**

### **7.1 Domestic Airline Regulation Structure in Thailand**

Aviation in Thailand is regulated by the Department of Civil Aviation. The Department is in charge of “promoting, developing and regulating civil aviation affairs of Thailand to meet international standards and form extensive civil aviation network and services that will satisfy market demand, promote tourism as well as national economic growth and make Thailand a hub of aviation in South-East Asia”. Air service operations are approved and regulated by the department for domestic airlines operating in Thailand and international airlines serving Thailand.

The responsibilities of the Department include the following:

1. To implement the Air Navigation Act, Act on Certain Offences against Air Navigation and other civil aviation laws relating to licensing of pilot, aircraft mechanic and air traffic controller, aircraft registration, licensing of aerodrome and temporary landing area, authorization for setting up airlines, to monitor and inspect civil aviation activities to comply with the required standard and regulations, to prevent the sabotage of aircraft and airport as well as aircraft hijacking and to investigate aircraft accident.
2. To promote and develop national civil aviation infrastructure in order to build up nationwide air transport network and boost national aviation industry.
3. To systematize the civil aviation in accordance with regulations and universal standard to fully safeguard the rights of consumers and operators.
4. To set up and run affiliated airports to provide the public with quality services and to ensure safety of aircrafts, passengers and other activities pertaining to transport of goods, luggage and postal items by air.
5. To cooperate with domestic and international organizations or agencies concerning civil aviation, to deal with international conventions and agreements such as bilateral and

<sup>12</sup> Based on carrier’s flight schedule for 1~8 June 2014. 15 daily flights for the Samui to Bangkok route.



multilateral negotiations and signing of agreements on air traffic rights and aircraft standards and to act as a search and rescue centre for aircraft and vessel in distress.

The administration of most domestic airports is the responsibility of the Director of the Airports of the Department of Civil Aviation. Samui, Sukhothai, and Trat airports are administered by Bangkok Airways Company Limited. Suvarnabhumi, Don Mueang, Chiang Mai, Mae Fah Luang-Chiang Rai, Hat Yai and Phuket international airports are operated by AOT. U-Tapao Pattaya International Airport is the responsibility of the Royal Thai Navy.

## **7.2 Samui International Airport**

Samui International Airport was developed by Bangkok Airways and opened in 1989. Developed at an estimated cost of THB 800 million, the airport was officially opened on 25 April 1989 with a 1,800 meter runway. The airport served domestic flights, primarily to and from Bangkok.

In 1997, the airport was upgraded to allow for international flights, with the development of customs and immigration facilities, as well as new passenger terminals, which allowed for the operation of new routes to the airport, including services to international destinations.

For many years, Bangkok Airlines was the only airline that served the airport. The airport's runway could accommodate only small aircraft, such as the ATR turboprops, and few other carriers in the region operated these aircraft. The runway length provided the carrier with a strategic advantage, as little competition existed to the airport, enabling the carrier to charge airfares that exceeded the fares typically charged on other domestic services in the country.

In 2004, the airport began a THB 500 million expansion program that provided for six new terminals—four domestic and two international. In addition, the program provided for extension of the runway, to 2,100 meters. The development program was completed in 2007, providing airport capacity for 16,000 passengers a day. The program increased annual passenger capacity from 1.3 million to 6 million. In 2013, the airport handled 2.0 million passengers and 21,891 aircraft operations<sup>13</sup>.

The growth in the airport has coincided and facilitated the growth in popularity of Samui as a tourist destination with visitors now arriving at Samui from all over the world. What began as a relatively unknown backpackers destination has developed into a very popular destination for Europeans, Asians, and others.

With the 2,100 meter runway, Bangkok Airways was able to increase the size of the aircraft it operated to the airport. The carrier currently operates a mix of A319s and ATR-72s at the airport. In addition, the runway allowed for the introduction of a second scheduled passenger carrier at the airport. Thai Airways International currently operates twice-daily services to Suvarnabhumi Airport using B737-400 aircraft.

Samui International Airport has won several awards for its design and architecture, including an environmental impact assessment award for the use of locally produced palm leaves and a natural, open-air cooling system for the terminal buildings.

The airport also features an extensive commercial precinct. Samui Park Avenue lies between the departures and arrivals terminals in an area of 6,400m<sup>2</sup> and features a 20-unit shopping mall. The complex features shops, spas, and restaurants. Many hotels are also present at the complex.

## **7.3 International Regulations**

International flight into, from or over Thailand territory are subject to the current Thailand regulations relating to civil aviation. These regulations correspond in all essentials to the standards and Recommended Practices contained in Annex 9 to the Convention on International Civil Aviation. To fly over or take-off or

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<sup>13</sup> Source: DCA, May 2014.



land in the territory of Thailand, foreign aircraft/airline is required to obtain prior permission. Application for such permission shall be made to the Director of Air Transport Control Division as address in designated Authorities. No aircraft entering or leaving the Kingdom shall land before or depart except at or from a Customs Airport.

Scheduled international air services may be operated by a foreign airline into or in transit across Thailand in pursuance the International Air Services Transit Agreement, provided that the states in which the airline is registered is a contracting party to this agreement, or to an agreement between Thailand and the States in which the airline is registered.

#### **7.4 Liberalization of the Aviation Industry**

Studies have shown that the liberalization of air services can lead to new and better air services, thereby increasing trade in airlines services, gains in consumer welfare and economic growth. Liberal aviation agreements allow for increased competition on routes and lower airfares, thereby stimulating additional activity.

Traffic growth subsequent to liberalization of air services agreements between countries typically averaged between 12% and 35%, significantly greater than during years preceding liberalization. In a number of situations, growth exceeded 50%, and in some cases reached almost 100% of the pre-liberalization rates. The creation of the Single European Aviation Market in 1993 led to an average annual growth rate in traffic between 1995 and 2004 that was almost double the rate of growth in the years 1990 to 1994.

Countries across the Asia-Pacific region and in particular, Southeast Asia, are liberalizing broadly the international bilateral agreements that can, in their extreme, regulate items such as the precise number and type of carriers that can operate, the number of total seats that can be provided, and the levels of airfares that can be charged.

The December 2008 lifting of restrictions on the Kuala Lumpur-Singapore route offers a good example of the impact that the easing of aviation market restrictions can have. Capacity (as measured by weekly flight frequencies, according to OAG) on this route for the month of September 2009 increased 72.5% as compared to September 2008 levels.

#### **7.5 ASEAN Member States and Open Skies**

The trend of deregulation and liberalization in Asia is expected to continue, particularly amongst countries that are part of ASEAN.

ASEAN was established in 1967 with initially five member countries: Indonesia, Malaysia, Philippines, Singapore and Thailand. Its membership increased over time with Brunei joining in 1984, followed by Vietnam in 1995, Laos and Myanmar in 1997 and Cambodia in 1999. ASEAN was formed to promote regional peace, prosperity and stability.

ASEAN countries have taken significant steps toward current and future liberalization of the airline industry in the region.

##### *7.5.1 Within ASEAN*

Subsequent to an aviation liberalization roadmap adopted by ASEAN member states in 2004, in November 2010, the member states reaffirmed their collective commitment to building an ASEAN Single Aviation Market by 2015. The potential for ASEAN "open skies" in 2015 may lead to significant opportunities for growth by carriers.

The November 2010 ASEAN Multilateral Agreement on the Full Liberalisation of Passenger Air Services (MAFLPAS) and its two Protocols provides for further expansion of the scope of the ASEAN Multilateral Agreement on Air Services (MAAS) to include other ASEAN cities. The agreement and its protocols provides



for designated airlines of a Member State to provide air services from any city with international airport in its territory to any city with international airport in the territory of the other Member States and vice-versa with full third, fourth, and fifth freedom traffic rights.

Aviation traffic freedoms are defined as follows:

- First Freedom: the right to fly over a foreign country without landing there. Also known as the Technical Freedom, it is nearly universal, although some countries maintain restrictions and fees and designated routes may apply.
- Second Freedom: the right to stop in another country solely for the purpose of refueling or carrying out maintenance in a foreign country on the way to another country. Because of longer range of modern airliners, second freedom rights are comparatively rarely exercised by passenger carriers today, but they are widely used by air cargo carriers, and are more or less universal between countries
- Third Freedom: the right to fly and carry passengers from one's own country to another. This is known as the "first commercial freedom" and is the first right that requires more in-depth negotiation.
- Fourth Freedom: the right to fly from another country to one's own. Third and fourth freedom rights are almost always granted simultaneously in bilateral agreements between countries.
- Fifth Freedom: the right to fly between two foreign countries during flights while the flight originates or ends in one's own country. Known as "beyond rights", it covers for example, a Thai airline flying from Bangkok to Sydney Australia, then on to Auckland New Zealand.
- Sixth Freedom: the right to fly from a foreign country to another one while stopping in one's own country for non-technical reasons. Airlines in Asia use sixth-freedom rights extensively to fly passengers between Europe and Australasia (also known as the Kangaroo Route).
- Seventh Freedom: the right to fly between two foreign countries while not offering flights to one's own country.
- Eighth Freedom: the right to fly between two or more airports in a foreign country while continuing service to one's own country, for example, a Thai airline flying from Beijing to Shanghai to Bangkok.
- Ninth Freedom: the right to fly inside a foreign country without continuing service to one's own country, for example, a Thai airline flying from Beijing to Shanghai.

#### 7.5.2 *Outside of ASEAN*

Chinese government aviation officials have signed an agreement with ASEAN to build a more liberal air service framework between China and the ASEAN countries. Other developments contributing to the eventual achievement of open skies are potential similar agreements forthcoming between ASEAN and India as well as ASEAN and Korea.

China, Japan, and South Korea have indicated an interest in developing a unified aviation market comprising the ten ASEAN members plus China, Japan, India and South Korea, which could lead to the creation of an East Asian-plus-India Common Market. In addition, South Korea, China, and Japan have been working on a "North Asia Triangle" Open Skies agreement.



## **7.6 Open Skies Agreements with Thailand**

Open skies agreements in effect in Thailand include agreements with the following countries:

- Bahrain
- Brunei
- Cambodia (ASEAN Agreement 2010)
- China (through ASEAN agreement with China)
- Indonesia (ASEAN Agreement 2010)
- Kuwait
  
- Laos (ASEAN Agreement 2010)
- Malaysia (ASEAN Agreement 2010)
- Myanmar (ASEAN Agreement 2010)
- Pakistan (MOU with limited open skies for cargo)
- Philippines (ASEAN Agreement 2010)
- Singapore
  
- South Korea
- Sri Lanka
- Switzerland
- United States of America
- Vietnam