

# AIRLINE ECONOMICS IN ASIA

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ADVANCES IN AIRLINE ECONOMICS VOLUME 7

# AIRLINE ECONOMICS IN ASIA

EDITED BY

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# CHAPTER 1

## INTRODUCTION AND OVERVIEW

Xiaowen Fu and James Peoples

**Keywords:** Regulatory reform; airline competition; passenger satisfaction; airline performance; airport performance; airport–airline interdependence

**JEL classification:** L93; L98

Air transport service has become an indispensable source of long-distance transport for businesses and leisure travelers and for high-value, low-volume products. The significance of this transport service as a driver of economic growth is made abundantly apparent when examining the interdependence of business and air transport growth in Asia. Business activity in Asia ranks as the highest worldwide with Asia-Pacific attaining a 40 percent share of the global exports (APTIR, 2016). While loosening of restrictions on international investment and ratification of the WTO Trade Facilitation Agreement by many of the region's economies have contributed to their trade dominance, access to affordable air transport service has also played a vital role in the region's economic development. Indeed, just for the month of July in 2017 Asian air carriers transported 20 million tons of cargo, representing two-fifths of world air cargo traffic (Association of Asia-Pacific Airlines (AAPA, 2017).

The significance of Asia as a source of potential passengers is obvious when noting the residents in Asia account for 60 percent of the world's population as nearly 4.5 billion people live and work in this region (World Population Review, 2017). Furthermore, a growing share of this population is entering the middle class, which is a prime demographic group that air companies serve as tourist as well as business travelers. Airlines in this region have taken advantage of their proximity to this large population of regional customers and have also taken competitive steps to meet the growing demand from foreign tourists. In July

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2017, carriers in the Asia-Pacific transported 1,214 million passengers which accounted for one-third of the world's passenger traffic (AAPA, 2017).

The Asian market also has some distinctive features in terms of infrastructure availability, competition from other transport mode, passenger income and purpose composition, regulatory framework, and airlines' business strategy. For example, compared to the aviation market in Europe and North American, a smaller number of cities have secondary airports; high-speed rail (HSR) networks are much more extensive in China and Japan, which put significant competitive pressure to airlines on routes of short-medium distances; in some emerging economies, aviation is still consumed by a small percentage of the population with business travel accounting for a significant share of the aviation market; some mega-carriers, notably those in China, remain majority state owned; the airline-in-airline strategy, which failed repeatedly in North America and Europe, has been adopted by an increasing number of airlines throughout Asia (Adler, Fu, Oum, & Yu, 2014; Fu, Lei, Wang, & Yan, 2015; Fu, Oum, & Yan, 2014; Homsombat, Lei, & Fu, 2014; Li, & Shen, 2016; Wang, Xia, & Zhang, 2017; Zhang, Yang, & Wang, 2017; Zhang, 2010).

Given the key role this region plays as a contributor to growth in the global airline transport service sector and the distinctive features of the aviation market observed, it is important to understand the economics of this sector in Asia. This volume contributes to the understanding of air transport services in Asia by presenting new research in the following four key areas in airline economics: competition and regulatory change, passenger demand and satisfaction, industry performance, and the interdependence of airlines companies and airports. The remainder of this chapter presents a brief overview of this volume's chapter contributions.

## 1. COMPETITION AND REGULATORY CHANGE

In concert with global aviation policy trends, many Asian governments have relaxed regulation on market entry restrictions both domestically and internationally. This shift in policy is intended to promote a competitive business environment that facilitates airline companies charging lower fares and expanding their operations; thus, that the affordability and accessibility of aviation services can be enhanced. The entry of low-cost carriers (LCCs) following the enactment of regulatory reform has been key to achieving these consumer welfare enhancing outcomes. The first chapter by Shinya Hanaoka contributes to the analysis of industry development and consumer welfare by examining the influence of LCCs and HSR services in Japan. His analysis includes an overview of open skies policies in this nation as well as focusing on the market influence of "genuine" LCCs, such as Peach Aviation and Jetstar Japan, which began their operations in 2012. His findings reveal passenger volumes quickly returning to pre-2007 recession levels following the entry of these "genuine" LCCs. This group of carriers' share of passengers increased markedly from 2012 to 2016, indicating full-service carriers (FSCs) faced increased competition from these low-fare carriers. Hanaoka's findings also reveal that competition was not limited to LCCs



as HSR carriers increased their share of domestic passenger service for the years from 2012 to 2016 on the large island of Kyushu. He concludes by observing that findings from these early stages of enhanced competition from “genuine” LCCs and HSR present the potential for continued consumer welfare gains for domestic and international travelers in the Japanese market.

Regulatory reform that encourages competitive entry requires incumbent FSCs to adapt to this new business environment or face the possibility of market share erosion. In the succeeding chapter, Terence Fan examines the response of the FSC Singapore Airlines to the competitive threat arising from the dramatic growth of Emirates, Etihad, and Qatar Airways in the Middle East (collectively referred to as “ME3”). Fan observes that the entry of the ME3 has contributed to a significant loss of market share for FSCs operating in Europe and Asia. He attributes part of the ascent of the ME3 to improved service quality and rapid capacity expansion. In response to the competitive entry of these three carriers, Fan reveals that Singapore Airlines stayed true to its niche as a premium carrier and refrained from tit-for-tat type competition. He reveals that while this decision allowed Singapore Airlines the latitude to command high prices in selective markets, the carrier’s growth in passenger volume remained stagnant over the last decade and a half. The analysis of this chapter offers valuable lessons for other FSCs facing enhanced competition from foreign carriers.

The potential gains to passengers arising from liberalization policies have been well documented in the previous two chapters. Despite such evidence, several governments in Asia, especially those in developing countries, have maintained legislation regulating air transport services. The next chapter by Achim Czerny, Xiaowen Fu, Guowei Hua, Zheng Lei, and Kun Wang examines the performance and development of air transport services in Central Asian countries that continue to impose restrictive regulations on operations in this service sector. This chapter focuses on the five countries in Central Asia, namely Uzbekistan, Kazakhstan, Turkmenistan, Tajikistan, and Kyrgyzstan, which are landlocked and therefore rely critically on air transport services for passenger travel and express cargo logistics. Air fare and consumer demand estimations suggest passenger demand in this region is highly price-elastic, indicating that enhanced competition and fare reduction have the potential to promote significant market growth in this sector. The authors also observe that international air transport routes in this region have been significantly influenced by noneconomic determinants such as political, cultural, and historical associations among countries. For instance, routes connecting Central Asia and Russia developed faster than routes to other regions with weaker political cultural and historical ties. This observation reveals the importance of considering sociopolitical factors when examining specific markets and when designing industrial policy for the transport services sector. The authors conclude that while there has been notable market growth in this region when serving routes to selected countries such as Turkey and the UAE, further liberalization is needed for the region to achieve better connectivity with major trade partners and aviation markets.

The final two chapters in this section examine intermodal competition among airline companies and HSR in China, the Asian region’s most heavily populated

country. The following chapter by Hangjun Yang, Qiong Zhang, and Qiang Wang reviews market development in China's air transport sector with emphasis on regulatory reform and government investment in HSR, which often serves as a substitute service for long-distance domestic transport. The authors reveal that after 20 years of airline deregulation and privatization, China's airline transport industry has experienced significant liberalization. They show Chinese airline companies are able to set fares freely with minimal restrictions. Restrictions on route entry have also eased. Excluding the 15 busiest domestic air routes and routes connecting the eight busiest airports in China, carriers are allowed to enter and exit markets without prior approval from the Civil Aviation Administration of China. The authors also reveal that procompetitive policy in this sector is not limited to entry from other air carriers, and the Chinese government has invested heavily in the developing of HSR. The promotion of this alternative transport service has served to suppress airfares as well as constrain demand for transport by air carrier in China. The authors argue that Chinese air carriers should improve operating efficiency and lower costs to support lower fares in this more competitive domestic market. They also suggest avoidance of direct competition with HSR and instead focusing on niche markets that cannot be served by HSR. They additionally prescribe the three major Chinese air carriers marshal their resources to compete more aggressively on international routes.

Chapter 6 contributes to further analysis on the interaction of airline transport service and HSR in China by examining three critical interactions between air transport and HSR in China, namely the interaction between LCCs and HSR, HSR speed change's effect on airlines, and air-HSR integration. In this review chapter, Wenyi Xia, Kun Wang, and Anming Zhang report that compared to FSCs, LCCs face more intense competition from HSR. They also observe that a reduction in HSR speed contributes to greater demand for long-distance domestic air transport services. In contrast, slower HSR speed contributes to lower air transport demand due to an improved perception on HSR safety. HSR service, however, doesn't have to depict a source of competition to air carriers as the authors of this chapter report that air-HSR integration can be implemented through cooperation between airlines and HSR operators and through co-location of airports and HSR stations. These cooperative strategies have the potential to enhance consumer welfare by improving the overall quality of transport service and reducing transport fare for long-distance commutes in China.

## **2. PASSENGER DEMAND AND SATISFACTION**

The preceding chapter reveals the potential gains to carriers associated with providing safer transport service. The significance of providing high-quality and affordable service as an approach for increasing passenger demand is critical to airlines' survival in an increasingly competitive business environment. In the initial chapters of this section, Colin C.H. Law, Yahua Zhang, and Anming Zhang review the history of regulation and deregulation in international air transport

and present the benefits associated with the policy implementation of deregulation and open skies on tourism in the Asia-Pacific region. Their analysis focuses on the Hong Kong–Bangkok market. Such market focus allows for examining the potential consumer welfare gains derived from granting the right of air carriers to transport passengers (or cargo) to countries other than that carriers' home country as long as the service starts or ends in its home country. Such freedom allows carriers to compete on international routes without transporting all passengers to or from the carrier's home country. The authors report that granting fifth freedom rights on the Hong Kong–Bangkok route has enhanced air transport service to these cities and that additional route competition has contributed to increased tourism for both locations.

In Chapter 8, Tay Koo, David Tan, and David Timothy Duval examine the interrelationships between air transport service and Asian inbound tourism demand to Australia. The authors justified this investigation by observing the reliance of Australia on foreign airlift to maintain adequate seat capacity for the growing number of tourists visiting this country. Using a generalized method of moments (GMM) approach, this chapter accounts for the endogenous relationship between the levels of international air service availability and tourism demand. The empirical findings suggest a positive but relatively small causal influence of air transport service on inbound tourism demand emanating from Asia to Australia. The authors interpret these results to suggest that the lack of airlift supply is probably not a hindrance to the continual growth of Asian inbound tourism to Australia.

The following chapter co-authored by Clement Chow and Michael Fung contributes further to this volume's analysis on tourist demand for air transport services in Asia by examining the significance of service quality and its influence on the financial performances of Chinese airlines. This empirical analysis is conducted in three stages. Initially, the authors estimate the expectation of service quality, which was included as a determinant in a customer complaint equation in the subsequent stage. In the final stage, the fitted values derived from estimating the customer complaint equation are included in the specification of a carrier revenue and two carrier profit equations. Their findings reveal that an increase in actual on-time performance by carriers is associated with reduced customer complaints. In contrast, and somewhat surprisingly, an increase in expected on-time performance is associated with increasing customer complaints. The authors explain that if customers have a high expectation of the service quality of carriers, a slight reduction in actual service quality that not meeting customer expectation may contribute to more customer complaints. Carrier performance findings reveal that an increase in customer complaints reduces yield, does not have a measurable effect on operating margins and has a relatively weak and negative effect on pretax margins. These findings support the authors' hypothesis on customer satisfaction and carrier profitability. The authors suggest that carriers invest resources to improve service quality as a management approach to improve their financial performance.

### 3. INDUSTRY PERFORMANCE

While maintaining high customer satisfaction is critical to generating revenue, airlines and airports in Asia must also maintain efficient operations to avoid high costs that erode profitability. The two chapters in the following section contribute to our understanding of industry performance by empirically examining the efficiency of airlines and airports in Asia. In Chapter 10, Muhammad Asraf Abdullah and NurulHuda Satar use a nonparametric empirical technique to examine productivity growth and relative technical efficiency of airlines operating in the Asia-Pacific region. Their findings suggest downward trends of both technical efficiency and productivity for the 2003 to 2011 sample period. While they observe that these trends are largely associated with the global economic crises starting in 2007, such findings motivate the question asking how airline management in this region can mitigate the lack of a significant performance gain. In response to this question, these authors test whether outsourcing is a viable management decision for enhancing productivity gains and technical efficiency. Their findings suggest that outsourcing is not associated with enhanced technical efficiency or productivity growth for airlines with a home base in the Asia-Pacific. They argue, based on these findings, that carriers in this region should take advantage of low-wage labor in their region to enhance productivity gains and attain higher levels of technical efficiency.

A competitive aviation sector in Asia is also dependent on the performance of airports located in this region. In the succeeding chapter, the analysis of carrier performance is expanded to include the examination of efficiency for airports operating in the Association of Southeast Asian Nations (ASEAN). Consistent with the empirical approach used in the previous chapter, Jin-Li Hu, Yang Li, Hsin-Jing Tung, and Jui-Ting Feng apply the DEA method to compare operating efficiencies of airports located in Singapore and six other ASEAN countries. The six non-Singapore countries have a mix of regional and international airports. Making this distinction is significant, as the authors observe regional airports are usually less busy and hence have a lower utilization rate compared to international airports. Hence, Singapore's international airport is likely to record a higher efficiency score compared to those of other ASEAN countries where a mix of regional and international airports operates. Their findings also reveal that international airports located in the seven ASEAN countries under analysis attain significantly better output efficiency for passenger and aircraft movement than regional airports. In contrast, cargo efficiency performance of regional airports mirrors that of international airports among these ASEAN countries, even though international airports have much more resources, facilities, and capacity compared to regional airports. Based on this finding, the authors suggest that international airports in this region should focus on finding ways to more effectively use their resources to enhance efficient cargo operations.

#### **4. INTERDEPENDENCE OF AIRPORTS AND AIRLINES**

The analysis of airport operations is continued in the final set of chapters presented in this volume. In Chapter 12, Kan Tsui and Isaac Levi Henderson examine the role of New Zealand's airport system in promoting the growth of tourism, which is a key sector in New Zealand's economy. The authors observe that New Zealand's airport system has significantly contributed to the country's tourism sector, due in large part to the fact that the system is well developed and allows for easy accessibility for passengers and freight shippers. The authors underscore the significance of investing in an extensive network of airports that provides tourists access to geographically disperse destinations by noting that tourism is the largest contributor to New Zealand's economy. The economic benefits of such an extensive system, however, is not limited to tourism as Tsui and Henderson report that 22.2 percent of exports and 15.5 percent of imports by value were transported by air transport service in 2016. The authors point to their findings as justification for enhanced investment in airport infrastructure and capacity to meet the tourism industry's goal of increasing international revenue at an annual rate of 6 percent.

While airports are critical to the development of local economies as well as playing an important role promoting passenger demand for airline services, both airlines and airports face economic risks associated with economic downturns and stepped-up competition from LLCs. In the final chapter of this volume, Katsuya Hihara and Naoki Makimoto observe that given the rise in economic uncertainty in the aviation sector in Asia, a significant number of airports and airlines have negotiated risk-sharing arrangements to mitigate the effects of such uncertainty. The authors construct a two-stage game with the objective of deriving condition under which airports and airlines negotiate an agreement that enhances both entities' satisfaction with risk protection. The findings show that the two parties can negotiate greater risk protection without making the other party worse off. This is achieved through bargaining a simple linear risk-sharing contract based on the equilibrium effort levels of the two parties. These findings are significant in part because they show how risk-sharing arrangements between airlines and airports in Asia can be mutually beneficial to both parties.

#### **5. CONCLUDING COMMENTS**

The rising global economic influence of Asian countries highlights the significance of their aviation industry's ability to efficiently transport goods and services as well as to meet the demands of a growing number of passengers in the region. In lockstep with this industry's significance to economies in this region, policy-makers in Asia have in general enacted policies that encourage international and domestic competition in their airline transport industry. Findings from the chapters in this volume reveal how passengers and shippers have benefited from procompetitive policies and enhanced investments in aviation infrastructure and capacity. Compared to the past, individuals using air transport service in Asia enjoy greater access to more locations in this region and

worldwide. Competition in this sector has placed a premium on the quality of air transport service and has presented users a greater choice of airline company types such as full-service or LLCs, which provide differentiated services (Fu, Dresner, & Oum, 2011; Murakaimi, Amano, & Asahi, 2015). Competition between intramodal (LCC versus FSC) and intermodal (airlines versus HSR) has also placed a premium on efficiency, as chapters in this volume identify efficiency gains by airlines and airports in this region. However, authors of these chapters argue that there is still significant room for greater efficiency gain. These same authors present policy prescriptions to achieve such gains. Making needed adjustments to efficiently satisfy the growing demand for air transport is vital for a region where a significant percentage of the world's population resides and where a nontrivial share of world trade occurs.

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