The role of government on Chinese state-owned airlines' competitiveness

A study on government policies in the Chinese airline industry

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1. Introduction

Until the 1980s, many airlines in Europe and North America operated as state-owned enterprises (SOE's) and enjoyed competitive benefits resulted from regulations that were aimed to protect each country's airline from each other. Because airlines were considered of such importance, they were protected to ensure connectivity to their home countries, similar to the importance of providing basic facilities such as water and electricity (Stan et al. 2013, 481). However, as part of other neoliberalist measures in Western economies, most SOE's in the airline industry were privatised. The state-owned airlines that still existed were mostly concerned with providing essential connections to their home country without strong international presence and like most SOE's in general, these airlines were not considered as competitive on the international market as its privately-owned counterparts (Doganis 2010, 252). However, recently there has been a new development in the airline industry in which state-owned airlines are becoming more relevant again in the airline industry. The well-known examples of these are the 'gulf carriers' in the Middle East: Emirates, Etihad Airways and Qatar Airways, which have been one of the fastest-growing airlines since the 2000s (O'Connell 2011, 339). However, this paper will focus on another similar recent development in Asia, where Chinese state-owned airlines are also gaining market share in favour of established privately-owned airlines. Because both developments in China and Middle East show that their state-owned airlines in particular have become more competitive recently, it indicates that the governments are likely to have played a role in the developments of its airlines. Therefore, this research will examine why Chinese state-owned airlines are able to perform more competitive than privately-owned airlines through their relationship with the government.

Current literature on the airline industry in China mostly discusses the aftermath of the airline reform in China. This reform, which mainly consisted of the consolidations of state-owned airlines, has been significant in shaping the industry. Currently, the Chinese airline

industry is dominated by three state-owned airlines: Air China, China Southern Airlines and China Eastern Airlines, also known as the 'Big Three'. The next chapters will argue that the government provided these airlines with policies that were mostly aimed at reducing both domestic and international competition in the Chinese airline industry. This way, the Chinese state-owned airlines were given better opportunities to develop without having to suffer from strong competition as this was the case in the Indian airline industry. Through its control on the airline industry through the Civil Aviation Administration of China (CAAC) as both operator and regulator, the Chinese government managed to effectively enforce its policies to shape the airline industry and to benefit its airlines. The following chapter will first discuss the background of this topic, mainly about the increasing competitiveness of Chinese state-owned airlines. Then, the analytical framework will argue what factors can contribute to the competitiveness of airlines after which the main results will show how the Chinese government has contributed to these factors. A comparison will then be made with the Indian airline industry to check the relevance of the main findings. This paper will conclude that the strong government involvement in airline competition has been a major contributing factor to the development of the competitiveness of Chinese state-owned airlines.

2. Background: Increasing Competitiveness of Chinese State-owned Airlines

In order to argue why the Big Three airlines are able to perform more competitively, it is necessary to first show that they are indeed more competitive, which can be done by comparing them to its Asian counterparts. In Table 1, the Big Three airlines are listed together with a sample of other major Asian full-service airlines. The list includes the changes in available seat kilometre (ASK), which is the outcome of the number of seats multiplied by the number of kilometres flown, thus similar to the total capacity that an airline provides. It also includes the changes in revenue passenger kilometre (RPK) which is the outcome of the number of passengers carried multiplied by the distance they are carried, which can be perceived as total passenger demand. At last, the Table 1 also shows the load factor, which is the average percentage of occupied seats out of all seats available per year with the changes compared to last year shown between brackets. The purpose of the this is to compare the changes in supply and demand per airline in order to give an indication of its growth rates.

Table 1: Capacity Changes of Asian Full-service Airlines in 2016-17

Full-service airlines	**ASK change**	**RPK change**	**Load factor (change)**
Air China (2016) *	+16.04%	+16.56%	77.8% (+0.4%)
All Nippon Airways (2016-17) *	+9.9%	+12.2%	75.8% (+1.5%)
Asiana Airlines (2016)	+3.7%	+6.9%	82.5% (+2.5%)
Cathay Pacific (2016)	+2.4%	+0.8%	84.5 (-1.2%)
China Eastern Airlines (2016) *	+28.8%	+29.6%	79.8% (+0.5%)
China Southern Airlines (2016) *	+22.8%	+22.7%	80.5% (+/- 0%)
Emirates (2016-17)	+10.3%	+8.4%	75.1% (-1.4%)
Garuda Indonesia (2016)	+13.3%	+8.3%	73.8% (-3.4%)
Singapore Airlines (2016-17)	-0.6%	-1.4%	79% (-0.6%)
Thai Airways (2016)	+1.9%	+2.5%	73.4% (+0.5%)

* = International flights only

(Air China 2017, 6-7; All Nippon Airways 2017, 92; Asiana Airlines 2017, 6; Cathay Pacific 2017, 6; China Eastern Airlines 2017, 8-9; China Southern Airlines 2017, 18-20; Emirates 2017, 92; Garuda Indonesia 2017, 11; Singapore Airlines 2017, 5; Thai Airways 2017, 125).

The most interesting aspects of Table 1 are the strong growth rates of the Big Three compared to its Asian counterparts. The capacity growth of other Asian airlines lies between -0.6% and 13.3%, while the Big Three, especially China Eastern Airlines and China Southern Airlines, show significant capacity growth. This shows that these airlines are expanding in a fast pace by adding more capacity. However, capacity growth is only one aspect of airline growth as the added seats also need to be filled in order for the airline to actually grow. The data on the RPK shows that while the Big Three are able to add significant supply in capacity, they are also able to create demand for the additional capacity. In addition to this, Table 1 also shows that the load factors of the Chinese state-owned airlines are comparable to its Asian competitors, which indicate that they operate with similar efficiencies as their competitors. If the percentage of occupied seats would be much lower, it indicates that these airlines operate inefficiently as a lot of seats would be wasted by being unoccupied by passengers despite the growth in supply and demand. Table 1 shows this is not the case for either the Big Three or the other Asian airlines. So, because the Big Three airlines are able to expand their flight operations successfully and faster than other Asian airlines, it shows that they can be considered more competitive in the airline industry.

In addition to Table 1, other sources about the airline industry also acknowledge the successful growth of Chinese state-owned airlines. Between 2010 and 2017, the passenger numbers of the Big Three grew with 70%, which resulted in the Big Three being the largest airlines in the Asia-Pacific region (Matt MacDonald 2017, 62; The Economist 2018). Furthermore, in 2015, the Big Three airlines topped the list of highest operating profits by Asian airlines as they were able to make more than 2 billion USD in operating profit that year (Mott MacDonald 2017, 93). So, in addition to their successful supply and demand growth in Asia as seen in Table 1, the Big Three airlines also have been able to be financially competitive in the region than its international competitors, while enjoying strong passenger growth.

3. Methodology

3.1. Analytical Framework: Airline Successfulness

There are different factors that can contribute to the successfulness of airlines, because airlines could serve different interests and therefore can have different goals in order to be considered successful, which can be explained through two perspectives. An airline could be established to serve the national and public interest by providing necessary transportation connections within or to/from a country, similar to the need of public transportation. As these routes are based on what the government requires and not what the market demands, these routes are usually not considered as profitable and losses need to be covered by the government (Doganis 2010, 252). In this case, the goal of the airline is to provide necessary transportations that are considered more important than profitable. On the other hand, there are also airlines that are more focused on making profits than especially operating state-directed routes. They are more business-oriented and aim to operate flights that are profitable as they cannot rely on government support (Babic & Kalic 2018, 42; Doganis 2010, 252). So, the two main types of airlines can be described as either serving government interests or serving its own business-related interests while operating flights.

However, regardless of the two types mentioned, both airlines have the main goal to transport passengers. To determine what makes an airline successful, it is necessary to define success in the core business of airlines, transporting passengers. In order to transport passengers, airlines need to attract passengers to their flights, creating passenger demand. In addition to this, airlines need the means to transport them, which can be described as supply. In this case, it means that it is necessary for an airline to create passenger demand and to have a proper network structure to transport people on. Related to both passenger demand and network structure, airlines also rely on the airport to provide the infrastructure and other facilities needed to operate flights. This means that airlines are also dependent on a good airport management

in order to be successful. So, a successful airline can be achieved when considering the following main aspects: passenger demand, network structure and airport management. In the following part, these main factors will be examined as to why and how they are able to contribute to the success of airlines.

3.1.1. Passenger Demand

For an airline to gain revenues, it is necessary to have a strategy on how to create the demand for its products and services. Therefore, it is important to consider the factors that contribute to the passenger's choice of airline in an environment with different competitors.

The choice of the passenger for airlines is usually dependent on price and quality. In an ideal world, airlines would offer direct flights between any two points in the world for non-stop services. In this case, the availability of direct flights contributes to the quality as the flight times are shorter than with stop-overs. However, this would not be possible in real life as airlines have to balance the interests of the passenger and the economic interests of the airline. There are different ways for an airline to improve flight quality while considering the economic interests such as better departure/arrival times and better transfer times/options (Babic & Kalic 2018, 42). Also, research has shown that an increase in on-time performance by airlines is usually followed by a decrease in filed complaints, which indicates that this aspect is valued by passengers (Chow 2015, 46). Another valued aspect is the quality of the airline personnel as better personnel will usually lead to a better customer satisfaction (Farooq et al. 2018, 177). So, through the use of these methods, airlines are able to improve flight quality without significant extra investments.

On the other hand, through investments an airline can also increase passenger demand. Airlines can increase the publicity of their brand through sponsorships for example. With promotion, an airline can extend its visibility to other countries and therefore also strengthen

their brand outside of its home country (O'Connell 2011, 345). Other investments to increase demand includes improving the quality of aircrafts and terminals, which also contributes to the customer satisfaction (Farooq et al. 2018, 177). So, investing in publicity and quality can make an airline more attractive which can lead to a higher passenger demand.

Besides these airline-related factors, the passenger demand is also dependent on the economic situation in a country. In less developed countries, people generally have less to spend on expensive products such as flight tickets and therefore passenger demand is usually lower than in developed countries. However, economic development in a country can generate a significant growth in demand for flights (Fu et al. 2012, 13). In the case of a developed country, the presence of a strong economy is able to attract foreign passengers and therefore is beneficial for the success of an airline (Homsombat et al. 2011, 589-590). So, besides the efforts of airlines to increase passenger demand, it is also dependent on the economic situation in the market they operate in.

The previous mentioned aspects of creating passenger demand have mostly dealt with the quality of services that an airline can provide, however, another important factor that influences the passenger's choice of airline is the price of the products. The rise of low-cost airlines has been aided by the growing demand for lower ticket prices (Lu 2017, 215). These airlines can lower their fares through the unbundling of fares and to earn revenues with ancillary products (Bachwich & Wittman 2017, 163). This means that they lower their quality and substitute complimentary services with paid options to offer low basic flight fares. So, the rise of low-cost carriers shows that ticket prices are also strong factors, in addition to airline quality, in determining the choice of airline.

3.1.2. Network Structure

In addition to creating demand, an airline also needs a network of destinations to carry passengers on. A suitable network structure and pricing policy is essential for an airline to gain profits and keep market share (Babic & Kalic 2018, 42). Therefore, it is an important aspect of an airline to match supply to demand to maximise revenues.

One of the two major network structures that is generally used, is the hub-and-spoke network (HS network). The network of an airline provides the destinations for passengers, so it is necessary to match these with the preferences of passengers. In a HS network, flights to different destinations are operated from one hub airport. By concentrating the flights on one airport, it provides many possible destinations for passenger with one transfer at a hub airport (O'Connell 2011, 342). However, the HS network usually has longer travel times due to stopovers and not flying the direct route between origin and destination. The other major network structure often used is the point-to-point network (PP network), in which airlines aim to carry passengers only from origin to destination on one flight without connecting services. In this case, passengers benefit from direct flights and therefore shorter travel times (Babic & Kalic 2018, 51). So, while the HS network is able to provide more destinations through connecting passengers than the PP network, the latter has shorter travel times.

In addition to transferring passengers to own flights in HS networks, airlines can also have a partnership with one or more airlines to expand its number of destinations. By joining global alliances and participating in codeshare agreements, airlines can expand their network by utilising other networks and vice versa. However, it is then important that airlines need to manage their routes effectively to offer quick connecting flights with other airlines (Casanueva et al. 2014, 95; Castiglioni et al. 2018, 143). The idea of these partnerships is to increase the number of destinations and therefore attract more potential passengers and earn more revenue. For example, research has shown that there is a positive correlation between the number of

code-sharing partners and the operating margin of the airline, which indicates that increased cooperation could be linked to better operational results (Zou & Chen 2016, 56). Therefore, a cost-efficient way for airlines to expand their network is to cooperate with partners in sharing routes.

3.1.3. Airport Management

Besides creating supply and demand, airlines also need facilities provided by the airport management to operate flights. The importance of airports is related to the previous mentioned research on customer satisfaction which stated that the quality of the terminal is important in contributing to this factor (Farooq et al. 2018, 177). This is especially the case for premium class passengers, like first and business class, who value premium features at an airport such as lounges and fast-track security lanes (Chen & Lei 2017, 510). Furthermore, airlines are also reliant on basic features such as fuel and sufficient capacity provided by the airport to operate flights and potentially grow (Homsombat et al. 2011, 589). Without enough capacity at the airport, the airline could suffer from congestion at their hub which negatively affects the on-time performance of its flights (Babic & Kalic 2018, 51). Therefore, as airports are part of the flight experience, the quality of facilities and services is a contributing factor to the overall passenger experience.

Another aspect that is relevant for airlines is the access of airports as restrictions or allowances will determine the number of competitors at airports. If an airline is a major user of an airport, it could likely withstand increased competition, as it then can be considered to have airport dominance because it is responsible for most of the flights and passengers travelling through that airport. This aspect could have different benefits for airlines such as having influence on the decision-making of the airport such as restricting new entrants. This is relevant because any new airline that starts operations from a certain airport will indirectly become a new competitor of the dominant airline on many routes due to transfer flights (Bilotkach &

Lakew 2014, 303). Other dominance benefits include the ability of airlines to charge higher fares to business and first-class passengers as they are reliant on the major user of the airport to have the flexibility of flights and the quality of service they prefer. However, due to the price sensitiveness of economy/leisure passengers, this feature of airport dominance would not occur in lower classes, such as economy class (Chen & Lei 2017, 521; Ciliberto & Williams 2010, 490; Doganis 2010, 188). So, by becoming a major user of an airport, airlines can influence airport competition and to benefit from their status as main airline.

Another way for airlines to gain this airport dominance is through the previous mentioned partnerships, but also through mergers or takeovers. Through code-sharing and alliance participation, airlines are able to increase their presence at airports through the networks of partner airlines without significant investments. In addition to this, through mergers, airlines can also gain market share and competitive advantage through airport dominance (Borenstein 1990, 404). If mergers are possible, airlines can expand their presence at airports significantly in a relatively short period. Therefore, in addition to partnerships, airlines can also gain the benefits of airport dominance by taking over other airlines.

In short, this framework has shown how passenger demand is the main contributor to the success of airlines. Creating passenger demand in a competitive environment is done through improving the quality of airlines and effective pricing strategy to attract passengers. Furthermore, a good network structure of airlines provides numerous travel opportunities and efficient travel times. As travellers pass through airports, the successfulness of airlines will depend on the quality of services, market share and capacity at the airport. Complying to these features will contribute to the number of passengers transported and therefore also the successfulness of airlines.

3.2. Research Design

This research is structured to focus on the three main points raised in the analytical framework: passenger demand, network structure and airport management. In the following sections, these three elements will be studied in a case study on the Chinese state-owned airlines and a short robustness check on Indian state-owned airlines.

The case study on the airline industry in China is selected, based on two main motivations which are its competitiveness and economic system. As mentioned in as basic assumption, the Chinese airline industry has seen a significant growth in the past years and is expected to continue this trend in the future. Especially the Chinese state-owned airlines are performing competitive against foreign airlines, which is notable considering the existing literature on the inefficiencies and weak competitiveness of SOE's. Often in state capitalist countries, the government participates to a large extent in its economy through SOE's. In the case of China for example, 80% of the stock market capital are represented by SOE's (Stan et al. 2013, 474). However, SOE's are usually founded because they need to serve the needs of the government, which means that the SOE's must balance between operating its business, while also taking into account the interference by politics and bureaucracy. As a result, their efficiency is often lower than that of privately-owned enterprises (POE's), which usually have economic performance as their top priority (Stan et al. 2013, 481). Because of this, the case of Chinese state-owned airlines is interesting as this shows a development which is not usually expected from SOE's, which is being competitive. This research will mainly focus on the current Big Three airlines, which resulted from the reforms in the Chinese airline industry since the 1980s and therefore will examine the period since then until present day.

The hypothesis for this research is based on the comments mentioned above and argues that the competitiveness of Chinese state-owned airlines originates from its relationship with the government. Being both regulator and operator in the Chinese airline industry the

government holds, through the CAAC, significant power over the industry. So, this research will focus on this topic not by examining what the state-owned airlines itself have done to improve their competitiveness, but by examining the role of the government as they hold more power than the airlines in the airline industry. Therefore, it can enforce policies that could benefit its airlines, such as creating passenger demand, effectively structuring the network and to provide the infrastructural needs at airports.

This research will mostly collect data from primary sources and secondary literature on the Chinese airline industry. This paper is designed as a qualitative research and therefore makes use of mostly literature on the topic instead of statistics. The secondary literature provides the academic framework for this paper as well as information on the development of the Chinese airline industry since the reforms. However, as this research also deals with recent developments, such as from 2017 and 2018, it will also use primary sources such as news articles to cover these topics. The information derived from these articles will be placed into perspective using academic literature. Furthermore, this research makes use of flight ticket data found on an internet flight search engine, which will be used in a short analysis of flight frequencies and ticket prices. The results of this research aim to show the pervasiveness of the Chinese government in its airline industry by examining its dual role as both operator and regulator.

4. Main Results: Government Influence on Airline Industry

As mentioned in the analytical framework, in order for an airline to be successful it has to match three aspects: be able to compete in order to create passenger demand, have a solid network structure and to enjoy a good airport management. In the following sections, I will examine what the Chinese government has done for its state-owned airlines to support these factors and how its involvement can be compared to its Indian counterpart.

The power of the central government on the airline industry is enforced by the CAAC, which is part of the Ministry of Transport and holds power over both the airlines and regulations in China (Heicks 2009, 74). While the state-owned airlines are not directly controlled anymore by the CAAC, it still remains the main shareholder of the airlines and the foremost objectives of these state-owned airlines are to serve and execute government policies rather than making profits and operating efficiently (Chow & Tsui 2017, 115; Reuters "China ease investment" 2018). In addition to its role as operator, the CAAC also acts as regulator for the Chinese aviation industry and it holds responsibilities such as issuing route permissions, determining airport charges and control of schedules, prices and market access (Heicks 2009, 74). Because of the dual role of the CAAC, it has significant control over the Chinese airline industry and as part of the government, this power lies indirectly with the government which can influence and support the industry according to their policies.

The extent to which these Chinese government policies have influence on the state-owned airlines will be shown by comparing this with a similar case in India. The choice for India is made based on similarities in both airline industries. In general, the airline industry of the Asia-Pacific region has great prospects as it is expected to become the largest market by 2032, overtaking other world regions (Banerji & Goenka 2016, 21). The two main drivers of this growth are the Chinese and Indian airline industry. The latter, in particular, has much growth potential as Indian airlines are expected to need twice the 2016 number of aircrafts by

2020, while it will also likely become the largest aviation market in 2030 (Banerji & Goenka 2016, 21). Furthermore, it is expected that both China and India will likely become the largest consumer markets within 15 years, indicating the growing purchasing power in both countries (O'Connell & Williams 2006, 358). So, when examining the growth prospects, India and China are to great extent comparable. In addition to the similar current developments, both countries also have significant populations, large domestic markets and have experienced economic reforms in the past 40 years, in which liberalisation took place in both economies, albeit to different extents (O'Connell et al. 2013, 160; Zhang & Chen 2003, 31). Therefore, because of these economic and airline industry similarities, this paper will provide a robustness check on the case of China by examining the role of the Indian government in its airline industry. The following parts will first discuss the cases in China, after which the comparison with India will be made. The results will be discussed to establish the effectiveness of policies by Chinese government on the airline industry.

4.1. Passenger Demand in China

The Chinese government was able to support the passenger demand of the Big Three airlines by limiting access to the Chinese market for foreign airlines. Creating passenger demand can take different forms such as improving quality/price rates to offer the best products that suits passengers. However, in this case, passenger demand for the Big Three was created by reducing competition, both domestically and internationally, and therefore limiting the supply of flights. Until the late 1980s, the Chinese government was very conservative in allowing foreign access of airlines to China (Wang et al. 2016, 14). It has used bilateral agreements to negotiate on the number of flights and capacity. Usually, this meant that one Chinese and one foreign airline could operate a certain route within the limits of number of flights and capacity in order to reduce competition. China often tried to include beneficial provisions for itself in these bilateral agreements such as the equal sharing of revenues between

Chinese and foreign airlines according to the number of flights operated by each side. The benefits for China from such agreements can be noticed in the case of flights operating to South Korea during the 1980s and 1990s. During this period, Korean airlines often had to pay Chinese airlines because most travellers were Korean and tend to fly more on Korean airlines, which created an imbalance in passenger demand for which the Chinese airlines had to be compensated for. China also insisted on additional provisions such as a 2-1 division in flights, in which for every two Chinese flights, the foreign carrier could operate one flight (Zhang & Chen 2003, 36-37). So, before the airline market liberalisation in the 2000s, the Chinese government had been focused on policies to reduce foreign airline access and to support domestic airlines through beneficial bilateral agreements.

In addition to beneficial policies, the Chinese government also allowed price-fixing by the state-owned airlines to increase revenues. In the case of the Big Three airlines, they share the same owner, the CAAC, which is controlled by the government. Sharing the same owner could create the opportunity for the Big Three airlines to collude prices as a result of close partnerships or connections between airlines. In this case, it has been known that price-fixing by airlines was allowed by the CAAC (Wang et al. 2018, 87). Furthermore, the airlines have also been open about this practice as in 2006, the Big Three airlines in China admitted that price collusion took place. For example, they stated that they had held meetings to prevent the flight tickets from dropping to levels similar to train tickets (Zhang & Round 2011, 361). Furthermore, the CAAC itself also controlled domestic flight ticket prices. Especially the busy and profitable routes were under control of the CAAC, which set a maximum ticket price to prevent ticket prices from rising too much (Business Times 2018). So, indirectly the government allowed price-fixing for its state-owned airlines in order to prevent prices from dropping too low but also imposed price caps to prevent prices from rising too high.

Currently the Chinese government plans to allow ticket prices to fluctuate depending on market forces as part of a larger plan to liberalise the market but to also increase revenues of Chinese airlines. In 2018, the Chinese government announced that it would lift price controls on certain domestic flights. In this measure, the criteria were that the prices of domestic routes operated by at least five airlines were allowed to be raised by 10%, though it only applies to a maximum of 15% of an airline's network. Previously in 2016, the government had already allowed market-based prices on domestic routes that were shorter than 800 kilometres (He "Airlines shares surge" 2018). It can be noticed that in the past years the government has been lifting more controls on the airline industry and it aims to apply such system of market-based ticket prices on the whole Chinese airline industry in 2020 (Yang 2018). In addition to this, by providing the opportunity for Chinese airlines to raise their ticket prices, it is expected that the revenues of the airlines will increase with 10 to 15% during 2018 (He "Airlines shares surge" 2018). For example, when the lift of the price cap was announced, the share values of the Big Three airlines rose over 10% (Business Times 2018). This indicates that these measures by the government are perceived as beneficial for airlines. So, while ticket prices had been strictly controlled by the CAAC, recent developments indicate that price controls are gradually being lifted.

Despite this, examining the flight routes between the three main hubs of the Big Three airlines shows that prices are still much the same even after the price loosening, which indicates that price collusion could still take place. The announcement that ticket price caps would be lifted was made in January 2018 and was effective immediately (Woodhouse 2018). Because it only applied to routes with 5 or more competitors, the following analysis will mostly focus on the busy routes between the three main cities in China: Beijing, Guangzhou and Shanghai. Analysing the data collected in April 2018 for flights in June and December shows that the prices of the Big Three airlines are exactly similar. In Table 2, the ticket prices are listed for

one-way flights for the routes listed at the top. On the left, the airlines that operate one or more of these routes are listed. This examination of two separate full weeks is done in order to minimise the effects of daily and seasonal capacity changes.

Table 2: Ticket Prices of Chinese Airlines on flights between Beijing, Guangzhou and Shanghai in 2018

Ticket Prices: June 1-7, 2018/ December 1-7, 2018.[1]	**Beijing – Guangzhou**	**Beijing – Shanghai**	**Guangzhou – Shanghai**
Air China	1.960 CNY (** Shenzhen Airlines)	1.290 CNY (** Shenzhen Airlines)	1.400 CNY (** Shenzhen Airlines)
China Eastern Airlines	1.960 CNY	1.290 CNY (** China Southern Airlines)	1.400 CNY (** China Southern Airlines)
China Southern Airlines	1.960 CNY	1.290 CNY (** Xiamen Airlines)	1.400 CNY
China United Airlines	-	*	-
Hainan Airlines	2.160 CNY	1.420 CNY	1.540 CNY
Juneyao Airlines	-	1.290 CNY (** Air China)	1.400 CNY (** Air China, Shenzhen Airlines)
Shanghai Airlines	-	1.290 CNY	1.400 CNY
Spring Airlines	-	-	*
Xiamen Airlines	-	1.290 CNY (** China Southern Airlines)	-

* = price unavailable **= These airlines also sell tickets for the respective flights as code-share partner
(Source: Compiled from Google Flights 2018).

[1] This data is derived from the Google Flights search engine. 3 separate searches were done for one-way economy tickets for the routes: Beijing (all airports) – Guangzhou (CAN), Beijing (all airports) – Shanghai (all airports and Guangzhou (CAN) – Shanghai (all airports) for the days June 1-7, 2018 and December 1-7, 2018. Data accessed on April 24, 2018.

The results shown in Table 2 shows two distinct features, the ticket prices of the Big Three and their subsidiaries are identical for all the flights operated in both of the examined weeks and the only airline that sells at different prices is the privately-owned Hainan Airlines with more expensive flight tickets than those sold by the Big Three. Other airlines listed include China United Airlines and Spring Airlines which also operate flights on some of these routes but their ticket prices were not available at the time of data collection. Privately-owned Juneyao Airlines also sells its flight tickets at the same prices as the Big Three, which could be the result of its code-sharing partnership with Air China, which allows the latter to sell own flight tickets on the flights operated by Juneyao Airlines (China Aviation Daily 2016). In addition to that, the Big Three subsidiaries Shanghai Airlines, part of China Eastern Airlines, and Xiamen Airlines, owned by China Southern Airlines, also sells its flights for the same prices (CAPA 2018; Shen & Ullatil 2009). Because the Big Three airlines have a history of colluding prices, the results from Table 2 indicate a continuation of this practice nowadays. By pricing it at the same level as other state-owned airlines and its affiliated airlines, they could prevent price drops resulting from outcompeting each other. In addition to this, the fact that the privately-owned Hainan Airlines sells its tickets above the Big Three prices does not suggest that the Big Three airlines are colluding to keep its prices artificially high. Therefore, the similarities between the ticket prices of the Big Three and its affiliated airlines can be explained by their history of contacts to discuss ticket prices to prevent the prices from dropping too low.

The consistency of the ticket prices sold by the Big Three airlines could also indicate that there is still a kind of price cap or control in place as they are selling their flight tickets for the same price. However, as mentioned before, this price cap has been relinquished in January 2018 which means that prices would fluctuate from then. One explanation for the absence of price fluctuations in Table 2 could be that the Big Three airlines, and also their partners, do not want to drive up prices as they operate as state-owned airlines for the country and not just for

profits. Furthermore, privately-owned Hainan Airlines might have increased revenues as they do not enjoy same benefits as the state-owned airlines. It can be noticed that the ticket prices of Hainan Airlines are approximately 10% higher than the rest of the Chinese airlines, which is the similar to the maximum of 10% that airlines were allowed to add to their flight tickets (He "Airlines shares surge" 2018). Because of this, the results in the Table 2 seem to show the reluctance of the Chinese state-owned airlines to raise prices when given the opportunity, while it could have been necessary for privately-owned Hainan Airlines to make use of this to increase revenues.

Also, as part of the airline market liberalisation, the Chinese government has tried to partly liberalise its airline market to allow more foreign access of airlines through open-skies policies. However, the actual implementation has been limited due to the small number of partner countries. China has open-skies policies with countries like South Korea and Australia, however, this excludes large markets like the US or Europe, which traffic rights are still negotiated on bilateral agreements (Fu et al. 2012, 24). Furthermore, in the case of Australia, Chinese airlines already dominate the market between the two countries with 90% market share (CAPA 2016). Because of this dominance of Chinese airlines, it is likely that the unrestricted access to Australia would likely benefit them more than Australian airlines as they could further sustain their market domination. In addition to this, some of these open-skies policies include extra provisions such as with South Korea, which includes unrestricted access only to the Shandong province (Fu et al. 2012, 23-24). So, while China has done some effort in liberalising the airline industry, its actions still show that China is reluctant to allow free competition by foreign airlines, which is likely aimed to protect its own state-owned airlines.

In the domestic market, state-owned airlines also enjoy protection from foreign airlines through government policies related to foreign investments. For example, foreign airlines can only enter the Chinese domestic market through joint-ventures with local airlines and when

they do, the airlines often face issues related to understanding the Chinese market and their relation with the Chinese provincial and central governments (Heicks 2009, 73). Because of this, it is difficult for foreign airlines to start businesses in the growing Chinese domestic market which is dominated by the Big Three. Data from 2012 showed that 55.9% of the Chinese domestic routes were monopolies and 31.9% of the Chinese domestic routes were monopolies of one of the Big Three (Wang et al. 2016, 17). This shows that the domestic routes are mostly dominated by one airline and then often by one of the Big Three. So, while the access to the Chinese market has been limited by policies related to access by foreign airlines, the market itself is also difficult to operate in because of the dominance by the Big Three airlines and the difficult relations between the government and foreign airlines.

As the growing Chinese domestic market is limited for foreign airlines, they strongly rely on partnerships to benefit from passengers flying to/from China. These partnerships may come in the form of shareholding, which has been allowed by the Chinese government to a certain percentage (Reuters "China ease investment" 2018). For example, in 2015 Delta Air Lines bought a 3.55% stake in China Eastern Airlines while in 2017 American Airlines acquired 2.68% of China Southern Airlines (Toh 2017). In addition to this, in 2018, the CAAC announced that the possibilities for private and state enterprises to invest in Chinese airlines will be extended (Yang 2018). So, in line with other policies to lift restrictions, the government is gradually increasing the possibilities for foreign airlines to invest in Chinese state-owned airlines.

Such investments are intended to benefit airlines from both countries as passenger numbers will increase and efficiency will improve through code-sharing. The partnerships as seen with Delta Air Lines – China Eastern Airlines and American Airlines – China Southern Airlines include cooperation through code-sharing. Code-sharing means that one airline can place its flight number on a flight operated by a partner airline in order to sell tickets for that

flight as if it was a flight operated by itself. Through the use of another airline's network, airlines can increase the number of destinations it has to offer. For example, as the Chinese domestic airline network is relatively closed for foreign airlines, they can use partnerships with Chinese airlines to offer flights to more destinations in China and vice versa. By also transporting passengers from US airlines to their own network, passenger numbers will increase at Chinese airlines. Furthermore, efficiency gains are also likely part of the partnerships as Chinese airlines can benefit from the expertise brought from US airlines with more experience in international operations (Carey 2017). So, instead of allowing more direct access of foreign airlines, the Chinese government allowed small shareholdings by foreign airlines to benefit from increased passenger numbers and to gain more expertise in the international airline industry.

In addition to this, the Chinese airlines also benefit from being preferred over foreign airlines. In history, Chinese airlines have not been as competitive as its foreign competitors. The poor competitiveness of Chinese airlines has been caused by factors such as "low income level and its restrictive travel policy" in China, weak marketing and sales and poor service quality compared to foreign airlines, mostly because of recurring delays and poor customer service (Zhang & Chen 2003, 37). Despite this, Chinese passengers still prefer Chinese airlines because they are considered "loyal and patriotic" and will therefore likely prefer domestic airlines over foreign ones (Chen "China's second-tier cities" 2017; Heicks 2009, 73). In this case, even when foreign airlines could gain significant access to China, they would still have to gain market share over preferred domestic airlines.

4.2. Network Structure in China

Besides protecting the state-owned airlines from foreign competition, the Chinese government also supports routes and plays a strong role in structuring the networks of both the state-owned and foreign airlines. Supporting flight routes is often done through financial

incentives. In recent years, there had been a rise in flights from Chinese 'second-tier' cities, which are large cities in China such as Chengdu, Hangzhou and Shenyang only with less significance than the 'first-tier' cities: Beijing, Guangzhou and Shanghai (Chen "China's second-tier cities" 2017). In 2016, these local governments in China have awarded around 1.3 billion USD in subsidies to airlines in order to operate international flights out of the region (Bloomberg News 2017). An indication of the effects of these subsidies can be noticed as numerous foreign airlines that operated to these second-tier cities had to cease routes because of unprofitability in contrast to Chinese airlines (Chen "China′s second-tier cities" 2017). In addition to subsidies, an alternative explanation for this development could be the Chinese preference for Chinese airlines as mentioned before. By allocating subsidies, the local governments aim to maintain the, at first, unprofitable routes to create a market for travellers to China (Bloomberg News 2017). Later, when the airline and region become more well-known it should then be able to operate more independent either with less or no subsidies. This case shows that the local governments in China also play a significant role in developing their local airline industry, while the central government focusses on the Big Three airlines operating from the main first-tier Chinese cities.

This focus on the Big Three airlines by the central government can be perceived in the government policies which have been aimed to support it but also to structure the networks of it to prevent too much competition taking place. Already during the consolidations of Chinese airlines in the 2000s, the government separated the airlines into geographically divided entities to minimise the direct competition (Shaw et al. 2009, 305). For example, Air China mainly operates from Beijing, China Eastern Airlines from Shanghai and China Southern Airlines from Guangzhou. In the case of domestic flights, this means that direct competition is limited and airlines enjoy to some extent monopolies on certain regional routes. Furthermore, the Ministry

of Transport also helps reducing competition by reserving the most profitable routes for the three main state-owned airlines, which are mostly flights to/from the first-tier cities (Heicks 2009, 73) In the case of international flights, the direct competition between Chinese airlines is almost non-existent as each airline mostly operates from their own hubs and because the rights to international flights are controlled by the CAAC. Currently, the CAAC limits the number of Chinese airlines allowed to fly international routes from China to major foreign destinations. For example, only Air China is currently allowed to operate major routes like Beijing to Los Angeles (Rong & Shiqing 2017). This way, the Chinese government is able to prevent domestic competition between own state-owned airlines, while focussing on competition with foreign airlines.

However, the route separation between airlines is currently fading away as the competition between state-owned airlines is increasing. In 2013 and 2014, the 20 busiest domestic routes in China had an average of 7.2 airlines active on each route compared to the US with 4.2 airlines on average (Chen "Declining yields 2017). This shows that the airline competition in the Chinese airline industry is relatively strong compared to another large airline domestic industry (Wang et al. 2018, 80). For example, the data from Table 2 shows that there are 8 airlines operating between Beijing and Shanghai, which shows the heavy competition between Chinese airlines on busy domestic routes (Whitley 2018). The presence of Air China and China Eastern Airlines in this list is not surprising as the former is mainly based at Beijing and the latter at Shanghai. However, what is peculiar about this list of airlines is the inclusion of China Southern Airlines as state-owned airline, which was supposed to be mainly based at its home city, Guangzhou. Likewise, Table 2 shows that China Eastern Airlines also flies between Beijing and Guangzhou, while Air China operates flights between Guangzhou and Shanghai. So, currently each Big Three airline is also active outside of their hubs on busy main routes.

In Table 3, the daily return flights operated by each Big Three airline between their three main hubs are shown. The Big Three airlines are listed on the left, while the routes are listed at the top. In each section the number of return flights per day are listed. Again, this examination of two separate full weeks is done in order to reduce the effects of daily and seasonal capacity changes.

Table 3: Number of flights operated by the Big Three airlines between Beijing, Guangzhou and Shanghai

Big Three hub connections Daily return flights (June 1-7, 2018/ December 1-7, 2018)[2]	**Beijing – Guangzhou**	**Beijing – Shanghai**	**Guangzhou – Shanghai**
Air China	9/9	15/15	3/3
China Eastern Airlines	1/1	23/22	9/8
China Southern Airlines	14/14	1/2	15/14

(Source: Compiled from Google Flights 2018).

From Table 3, two main features can be discussed in relation to the network structure of the Big Three airlines. First, it shows that the two main operators of a route have their hubs based at one of the two cities served. This is not uncommon as airlines usually operate most of their flights from their hubs. However, Table 3 also shows that the airlines with the fewest flights do not have their hubs based on the route. Being active on other routes in China shows that the initial aim of the government to separate the flights of the state-owned airlines is not met and that direct competition between the Big Three is increased by this. However, these airlines without a hub on the route only operate a limited number of flights which vary from 1 to 3 daily return flights compared to the maximums between 14 and 23 daily return flights operated by those with hubs on the route. This shows that despite the flights between non-hub

[2] This data is derived from the Google Flights search engine. 3 separate searches were done for one-way economy tickets for the routes Beijing (all airports) – Guangzhou (CAN), Beijing (all airports) – Shanghai (all airports and Guangzhou (CAN) – Shanghai (all airports) for the days on June 1-7, 2018 and December 1-7, 2018. Code-shared flights operated by other airlines are excluded. Data accessed on April 24, 2018.

cities, these airlines do not pose a significant competitive threat because of their limited capacity. So, while the Big Three airlines are not truly separated anymore on busy routes, the direct competition between them on routes out of their hubs is still minimal on busy routes, which indicates that these airlines are still much focused on their own region without interfering much on routes between other state-owned airlines.

4.3. Airport Management in China

In addition to the interference in structuring the network of its airlines, the Chinese government also supports its airlines through its preference for state-owned airlines at airports. As mentioned before, the CAAC controls the access of airlines into airports and major routes. This is done to protect the Big Three airlines and to allow moderate international competition to the main cities, without Chinese airlines heavily competing against each other. Meanwhile, other smaller Chinese airlines are encouraged to operate flights on thinner routes to smaller destinations (Wang et al. 2016, 22). The Big Three also enjoy further benefits from the government in the form of time slots as they enjoyed preferential treatment in the time slot allocation at Chinese airports. This means that the Big Three airlines receive better and more suitable departure and arrival times from the CAAC than their competitors. However, recently the CAAC announced that it would try another slot allocation system in order for private airlines to have a fair opportunity to compete for slots, such measures included drawing lots or biddings (Reuters "China reforming slot-assignment" 2015). However, as this has only been a trial run, it does not indicate that a change in the slot allocation system will take eventually place. Though it would certainly improve competition at Chinese airports if airlines get an equal chance to acquire time slots. So, while the CAAC has favoured the slot allocations of Big Three airlines in the past, its current effort to improve fair slot allocation does not yet indicate a major change will take place that will improve equal treatment of airlines at Chinese airports.

Other efforts by the CAAC to support the Big Three included the mergers of airlines to gain significant market shares at airports. Reducing the airline competition within China was already the aim of the consolidations in the 2000s, in which smaller state-owned airlines were merged in to the Big Three to improve efficiency (Zhang & Chen 2003, 33). However, during the financial crisis of 2009, the Chinese government again encouraged the three major state-owned airlines to acquire smaller airlines because of the declining air traffic demand and poor business results of privately-owned airlines which have been allowed since 2004. Because of these acquisitions, the three major Chinese airlines were able to quickly gain market share at the expense of privately-owned airlines, which could only be set up again from 2013 (Chow & Tsui 2017, 110-111). An example of this is the acquisition of Shanghai Airlines by China Eastern Airlines which resulted in China Eastern Airlines controlling more than half of the flights from Shanghai Pudong Airport (Shen & Ullatil 2009). Another example is the acquisition of Shenzhen Airlines by Air China, which increased the market share of Air China in Shenzhen to 40% compared to 10% before (Chiu & Shaw 2010). So, when it was necessary, the Chinese government encouraged its Big Three airlines to acquire smaller and privately-owned airlines, however, this also led to the result that state-owned airlines gained dominant market shares at certain airports.

However, this growth of Chinese airlines has created constraints on the capacity of airports which are in need of infrastructural expansions to handle the passengers and aircrafts. The growth of the Chinese airline industry can be noticed in the number of new developments of airports. In 2004, the central government transferred the airport ownership and management to local governments in order to create an incentive for them to invest in new developments and improve their regional airports, however, new airport developments are still directed by the CAAC on national level (Heicks 2009, 74; Wang et al. 2014, 153). As a result of this, the number of airports in China has increased rapidly since 1990, from 94 civil airports to an

expected 244 in 2020 with most of them are being built in the northern and western parts of China, which are generally less developed than the eastern regions (Fu et al. 2012, 21). Furthermore, in 2015, it was reported that China would invest around 80 billion USD in airport projects only that year (Reuters "China's Aviation Boom" 2015). In 2017, China announced 74 projects in the development of new airports and current ones (Wang 2017). These developments include new terminals or the expansion of current ones as well as the increase in runway capacities (He "Guangzhou airport" 2018). So, both on regional and national level there is the need and support for airport development, which is necessary due to the current capacity constraints. Chinese airports currently suffer from poor terminal infrastructure, strong passenger growth, and frequent delays caused by limited availability of Chinese airspace due to the dominance of the military aviation (Wang 2017). Furthermore, there are runway capacity shortages at most major Chinese airports with even more congestions and delays as result (Fu et al. 2012, 22). Thus, by investing and improving constraint airports, the Chinese government can support the growth of its state-owned airlines by providing them with adequate infrastructure to operate flights.

The Chinese government can also support the state-owned airlines at airports by selling aircraft fuel at price lower than the international average. In China, the state-owned China National Aviation Fuel Group (CNAF) is almost the sole supplier of aircraft fuel at Chinese airports (Aizhu & Miller 2018). They have strong control over the airlines as aircraft fuel is one of the major cost elements of airlines while fluctuations in fuel prices can have significant effect on the profits of airlines (O'Connell et al. 2013, 164). In the case of the CNAF, the fuel prices are based on the international market prices for crude oil, which means that it can fluctuate. This has caused some concerns at Chinese airlines, as they do not have the opportunity to hedge fuel at CNAF in order to benefit from constant low fuel prices. Despite this, aircraft fuel prices in China have been lower than the international average, which

indicates that the government does not intend to profit heavily from fuel sales but rather focuses on providing its airlines with the basic means to operate flights (CAPA "China jet fuel" 2005). So, by also controlling the provision of aircraft fuel at airports, the Chinese government is able to control and manage competitive fuel prices for its state-owned airlines, though changes in crude oil prices can create uncertainties in the price of aircraft fuel in China.

4.4. Comparison with Indian Airline Policies

4.4.1. Passenger Demand in India

Unlike in China, Indian state-owned airlines could not benefit from competition policies to help creating passenger demand, rather the Indian government supported fair competition between state-owned and privately-owned airlines which eventually benefitted the privately-owned competitors more than the state-owned airlines, such as Air India, which currently suffers from repeated yearly losses.

Already since the 1990s, the poor performance by state-owned airlines in India was recognized by the government, after which a commission was set up to analyse the issues. One of the solutions proposed was privatisation, however, this was opposed by trade unions. As a result of this, the government performed an airline consolidation similar to China in which the two main state-owned airlines, Air India and Indian Airlines merged into Air India (Wang et al. 2018, 82). However, Air India still suffers from financial losses each year since 2007, which adds up to the mounting debt of 5 billion USD (BBC News "Air India" 2018; O'Connell et al. 2013, 162). These factors pose a problem for the current new plan of the Indian government to privatise the airline which aims to help Air India to turn profits again instead of relying on the taxpayer's money to cover its losses.

Unlike in India, the consolidations in China took place without much attention for fair competition unlike in India and as a result of this, Air India was not able to establish a dominant

position compared to its privately-owned competitors. In China, the government encouraged state-owned airlines to merge with each other without any further conditions to maintain fair competition and to prevent monopolies such as giving up slots to prevent airport dominance. In addition to this, price-fixing by airlines was allowed by the CAAC, in contrast to India (Wang et al. 2018, 87-88). The merged state-owned airline Air India had to compete with private airlines on a fair basis while in China, as a result of these price collusions and geographic separation of airlines, competition between state-owned airlines has been reduced.

Furthermore, the access of privately-owned airlines already took place in the 1990s in India, while in China they did not enter the industry until the mid-2000s. Because of this, nowadays privately-owned airlines in China only have a market share of around 10%, while in India such airlines control between 60% and 70% of the industry (Wang et al. 2018, 83). However, Air India does enjoy preferable policies to a certain extent by the government such as preference in traffic rights and financial support, similar to China (Saranga & Nagpal 2016, 167). It should be noted that receiving financial support is beneficial for Air India as it is then able to operate with lower flight ticket prices, but with government support to cover its lower revenues. However, as privately-owned airlines do not enjoy this, they could have difficulties competing with Air India, especially in the case of smaller airlines (Banerji & Goenka 2016, 24). So, because the Indian government did not have strong policies as China to limit the competition in the Indian airline industry, Air India had difficulties to develop which resulted in its current state of losing money and mounting up debts.

The Indian government did try to protect its domestic airlines by restricting access of foreign airlines, though to a lesser extent than in China. As mentioned in the previous part, in the context of airline competition, the Chinese state supports its airlines through policies such as restrictive bilateral agreements to reduce access of foreign airlines and by allowing only a limited amount of foreign shareholding for partnerships. Similar to China, the Indian

government is also reluctant in the access of foreign airlines to India as the majority of the airline market from/to India is under restrictions on capacity and number of destinations. Though India does have an open-skies policy with the United States, which is one of the five major destination countries from India, as opposed to China (O'Connell et al. 2013, 163). While foreign competition is limited, most of the airline competition can be found within India with privately-owned airlines such as Jet Airways or IndiGo. Nowadays, these privately-owned airlines are part of the three largest airlines in India together with SpiceJet and with Air India listed as fourth largest (O'Connell et al. 2013, 167). Especially the cost-competitive low-cost airlines like IndiGo and SpiceJet with low ticket prices have become dominant in the Indian airline industry with a total market share of 65% (Jain & Natarajan 2015, 285; O'Connell et al. 2013, 80-82). So, while the Indian government has done some effort in reducing foreign competition, the real threats for its state-owned Air India are the privately-owned Indian airlines and especially the low-cost competitors.

So, having showed both competition limiting measures in both China and India, the question remains if these measures are indeed effective. Both countries limit foreign competition and in addition to China, India also limits foreign investments in Indian state-owned airlines (Mishra 2018). Limiting foreign competition cannot benefit only one country as the bilateral agreements usually have to allow a fair number of flights for airlines from both countries. This means that the government can limit competition, but at the same time also limits its own airlines from operating flights. Furthermore, both China and India limit the maximum share of foreign ownership in their airlines, which would help against foreign take-overs that could threaten the role of the national airline which is to serve the need of the country instead of focussing on making profits. Both these mentioned factors however, are not uncommon as bilateral agreements for example have been negotiated worldwide between countries since the 1940s, while foreign ownership is also restricted in regions like the US and

the EU (Doganis 2010, 30; O'Connell et al. 2013, 162). What is more relevant in this part on competition is the fact that in China, the state-owned airlines were able to collude with each other and form one alliance of state-owned airlines, while its Indian counterpart had to face stronger competition from private competitors.

The earlier access of privately-owned airlines to the Indian airline industry and the focus on fair competition have been one of the main factors that hindered the development of Indian state-owned airlines, while in China the collusion between state-owned airlines supported their developments. As mentioned earlier, privately-owned airlines have been active in India since the 1990s while this only happened more than a decade later in China. Which is an airline industry dominated by state-owned airlines controlled by one institution, the CAAC, and therefore it strongly suggests that a monopoly takes place. This is further strengthened by the evidence of price collusions between these airlines. Even though this price-fixing can be considered harmful for passengers, it is beneficial for the Big Three as ticket revenues increase. As this was allowed by the regulator of the industry, also the CAAC, the efforts of opposing against such practices by other airlines would not likely be effective. Furthermore, in the case of India it should be noted that other factors besides strong competition such as good airline management and other external factors also could have played a role in the worse performances of state-owned airlines. Therefore, while the Chinese state-owned airlines enjoyed a monopoly and preferential treatment in their airline industry, the Indian state-owned airlines did not and have made it more difficult to develop successfully.

4.4.2. Network Structure in India

As mentioned previously, the Chinese government supports the network structure of its state-owned airlines by preventing direct competition between its state-owned airlines through the separation of its state-owned airlines into geographically divided entities which can also be seen in the case of India. Until the 2000s, the Indian airline industry was dominated by the

state-owned airlines, Indian Airlines and Air India. The operations of these two airlines were separated by the government though the division of routes as Indian Airlines served mostly domestic routes and Air India international routes (Jain & Natarajan 2015, 285). However, in 2007, the two airlines were consolidated because of financial difficulties (O'Connell 2013, 161). Since then, Air India has become the national state-owned airline competing against privately-owned airlines.

Unlike in China, the Indian government did not subsidise routes until recently, despite making it mandatory for airlines to fly these routes. When the Indian government opened up the domestic airline industry for privately-owned airlines, quickly there were dozens of new start-ups that wanted to fly routes within India. However, because of regulations, these airlines were also required to allocate part of its capacity to certain unprofitable routes such as in the less-developed north-eastern region of India. As a result of this, only few airlines, like Jet Airways for example, managed to overcome operating these unprofitable routes (O'Connell & Williams 2006, 359). Not only privately-owned airlines had to operate these routes as Indian Airlines, and later Air India, also had to comply to this rule. Especially as state-owned airline, it has the responsibility to maintain connectivity of less-developed areas, despite it being unprofitable. However, while the government required the airline to serve these routes, it also did not provide extra financial support to them (O'Connell & Williams 2006, 360). So, while the government had the ambition to connect certain regions, it did not provide the airlines with the means to operate them. Therefore, recently the Indian government has issued a Regional Connectivity Scheme (RCS) to improve flight connections to more remote cities in India, such as in the north-eastern region. A major element of the RCS is the inclusion of subsidies for airlines that fly to remote areas (Kotoky 2018). By providing this, airlines will be able to serve government interests in flying unprofitable routes with financial compensation, similar to China.

The previous parts have shown that both the Chinese and Indian government were able to support their state-owned airlines through separating them and minimise direct competition. The separation of airline operations could produce different outcomes. One of them would be that these airlines will develop and grow quickly because of the lack of competition they face. However, the absence of competition could also cause airline inefficiency and uncompetitiveness as because of the lack of incentive to innovate. In the case of China, the separation of state-owned airlines seemed to have worked as they prevented direct competition between airlines that share the same owner. And the results have also shown that nowadays this separation is largely still in place which means that strong competition is still absent. As a result, the Big Three could then focus on their role as state-owned airlines which is to serve government interests.

However, in the case of India, the government did separate its state-owned airlines, though this was made undone in the 2000s with Air India becoming the sole state-owned airline. During the period when the airlines were separated, the main difference with China was that the Indian state-owned domestic airline faced more private competition in contrast to Chinese state-owned airlines which mostly had each other as competition. Without strong direct competition, the Big Three could essentially form one bloc of state-owned airlines dominating the Chinese domestic airline industry while in India, the networks of state-owned airlines were separated in an international and a domestic airline, of which both could not capture a significant market in their regions due to strong private competition. When these airlines were merged into Air India, the new airline was already uncompetitive, due to the strong presence of privately-owned airlines in the Indian airline industry.

4.4.3. Airport Management in India

Despite the weak performance of state-owned Air India, the Indian airline industry in general benefits from strong growth which requires new airport developments to handle the passenger growth. In 2018, the Indian government will spend around 94 million USD on airport projects which will mostly include developments at current airports of main cities, but also new developments at currently unserved airports at remote areas (Kotoky 2018). Despite the smaller value of airport investments by India compared to China, it still shows that the government is putting efforts to accommodate the expected growth in its airline industry.

However, this growth of airlines could still be obstructed at airports as the Indian government heavily taxes the aircraft fuel that hurts both state-owned airlines and privately-owned airlines. For both the national and state government, taxing the airline industry is considered to be more profitable and reliable than taxing individuals, which is hindered by many tax evaders (Banerji & Goenka 2016, 24). By taxing the major cost elements of airlines, the government damages the competitiveness of its domestic airlines as they suffer from higher operating costs (O'Connell et al. 2013, 164). This can be noticed as the Indian aviation industry suffers from low profits margins which harms the growth of Indian airlines and its competitiveness with foreign airlines (Banerji & Goenka 2016, 23-24; Jain & Natarajan 2015, 285; O'Connell et al. 2013, 165). So, the heavy taxation on aircraft fuel not only harms the competitiveness of Indian state-owned airlines but also its privately-owned counterparts while excluding foreign airlines.

Despite this, state-owned Air India still enjoys some benefits as seen in China such as preferential slot allocations. In the case of China, the Big Three airlines benefit from preferential treatment over foreign airlines by the CAAC. Despite similar preferential treatment in India, the slot allocation at Indian airports is still considered more fair and transparent compared to Chinese airports, where corruption and briberies play a significant role (Wang et

al. 2018, 88). Therefore, even though Air India enjoys similar preferential treatment like the Big Three in China in relation to slot allocation, this practice is still considered to be fairer and more oriented towards free competition than in China.

In the case of airport management, two main differences between China and India can be noticed in time slot allocation and fuel prices. The fairer time slot allocation in India further strengthens the argument made earlier that fair competition has been considered the norm in the Indian airline industry, whereas in China the favouring of the Big Three airlines in time slot allocation shows that state-owned airlines have a clear preferable status in their industry. However, the recent developments in time slot allocation in China show that the Chinese government seems to take small steps towards liberalisation like with other policies such as more market-based ticket prices. Furthermore, these airlines are supported by the competitive fuel prices in China, whereas in India the government actively imposed high taxes to gain more tax earnings. So, the extensive support by the Chinese government seem to show the relative importance of its airline industry in contrast to India.

Why does the airline industry seem of more importance in China than India? An explanation of this is related to the economic growth. As mentioned before, flight routes provide essential connections to/from a country to keep it accessible for economic growth. Since the 1980s, the GDP per capita in China has grown much faster than in India which shows the relative faster economic growth that has taken place (World Bank 2018). It could then be argued that the strong economic growth required, but also provided the means for, growth in flights connecting Chinese cities. Furthermore, the higher GDP per capita also indicates that the Chinese people are able to spend more on flight tickets as the average income per person is higher than in India. In addition to this, the airline industry in China is tightly regulated, which means that government policies on the industry are well coordinated to prevent individual regions from enforcing their own policies to their benefit as seen in India (Banerji & Goenka

2016, 24; Chow & Tsui 2017, 109). Therefore, because of the stronger economic growth and more centralised government policies, the airline industry has been given more priority in China than in the case of India.

5. Conclusion

In conclusion, the Chinese state-owned airlines were able to perform more competitively through their connection with the government as this provided them with policies aimed at reducing competition and favouring the state owned-airlines over privately-owned and foreign airlines. The Chinese government has actively used its power as both operator and regulator to shape the airline industry. First, it consolidated different state-owned airlines into the Big Three, each of which have an area on which they focus their flights to prevent strong direct competition between them. Then, the government prevented a large inflow of foreign airlines through restrictions on international flights aimed at reducing competition to generate more passenger demand for its own airlines. The government also tried to actively shape the network through subsidising routes and reserving the most profitable routes to/from the first-tier cities for the Big Three. Furthermore, by allowing airlines to merge and collude without much restrictions, the government also helped creating the dominant positions of airlines both at airports and in the airline indusry as prices were coordinated between the state-owned airlines. Other support included competitive fuel prices, airport time slot preferences and the prevention of major foreign shareholding in order to benefit from foreign expertise without compromising on airline ownership. So, the growth of the Chinese state-owned airlines mainly comes from its policies to reduce competition, while supported by other policies to benefit the network structures and airport managements.

This paper has tried to show the relevance of government policies for the successful development of state-owned airlines. As seen in the results, the policies enforced by the Chinese government such as limiting competition and favouring its airlines over foreign airlines have contributed to the current success of its airlines. By providing the protected environment for its airlines to grow, the government ensured that its airlines would not suffer from competition that would hinder their developments. As mentioned previously, this was the case in India, in which the state-owned airlines, and later just one state-owned airline, had difficulties competing with privately-owned airlines. Especially as Indian state-owned airlines did not enjoy as much preferential treatment as its counterparts in China. However, it should also be noted that government support itself does not guarantee success as different privately-owned airlines have also been able to grow without such support. While government support does provide an environment protected from strong competition, the eventual development of airlines is also dependent on its own management and external factors such as financial crises which can jeopardise or support the growth.

Government support itself also has downsides as there is the risk that airlines become too inefficient due to the lack of motivation to innovate or operate efficiently. In this case, airlines will not be able to be competitive on the international market with privately-owned competitors. The main results have shown certain developments in China to reduce these effects, such as the efforts to support airline competition such as fairer time slot allocations and more market-based ticket prices. Furthermore, the recent partnerships of Big Three airlines with US airlines also indicate that the state-owned airlines are opening up to foreign airlines and their expertise. By gradually liberalising the Chinese airline industry, the government seems to prevent that its airlines would suffer from strong competition if it would suddenly open up the Chinese airline industry.

Future research could focus on the possible effects of this development by raising questions on the operational efficiencies of Chinese state-owned airlines compared to international competitors or the effects of open-skies policies on the state-owned airlines and their networks. In addition to the role of the government, the contribution of airline management and external factors on the competitiveness of state-owned airlines could also be examined. So, while this research has shown that the Chinese government has enforced many policies aimed at protecting its state-owned airlines from competition, the results also show that recent policies seem to suggest that the government is moving away from protectionist policies and towards more free competition in the Chinese airline industry.

6. Bibliography

- Air China. “2016 Annual Report.” 2017. Accessed April 11, 2018. http://www.airchina.com.cn/en/investor_relations/images/financial_info_and_roadshow/2017/04/25/F554ED4E11C792B421F419738143B8E2.pdf
- Aizhu, Chen & Matthew Miller. “China's HNA Group clears $475 million fuel bill.” *Reuters*. March 22, 2018. Accessed April 24, 2018. https://www.reuters.com/article/uk-hnagroup-debt-fuel/chinas-hna-group-clears-475-million-fuel-bill-sources-idUKKBN1GY10G
- All Nippon Airways. “Annual Report 2017.” 2017. Accessed April 11, 2018. https://www.ana.co.jp/group/en/investors/irdata/annual/pdf/17/17_E_00.pdf
- Asiana Airlines. “2016. 4Q Performance.” February 2017. Accessed April 11, 2018. https://kr.flyasiana.com/C/en/boardContents.do?menuId=005003001000000&menuType=BOARD&boardCode=BOARD_MANAGE&searchText=&searchType=all&irSeq=1292&boardCmd=VIEW.
- Babić, Danica and Milica Kalić. "Modeling the Selection of Airline Network Structure in a Competitive Environment." *Journal of Air Transport Management* 66 (2018): 42-52.
- Bachwich, Alexander R. and Michael D. Wittman. "The Emergence and Effects of the Ultra-low Cost Carrier (ULCC) Business Model in the U.S. Airline Industry." *Journal of Air Transport Management* 62 (2017): 155-64.
- Banerji, Joyita and Yash Goenka. "Aviation Sector in India: A Cross Boundary Comparison Priority on Air India." *International Journal of Engineering Research and Applications* 6, no. 8 (2016): 18-25.
- “Air India sale: Who'll buy the debt-laden carrier?” BBC News. March 29, 2018. Accessed April 16, 2018. http://www.bbc.com/news/business-43581529.
- Bilotkach, Volodymyr, and Paulos Ashebir Lakew. "On Sources of Market Power in the Airline Industry: Panel Data Evidence from the US Airports." *Transportation Research Part A: Policy and Practice* 59 (2014): 288-305
- “China's Airlines Fly the World Riding on $1.3 Billion Subsidies.” *Bloomberg News*. December 21, 2017. Accessed April 4, 2018. https://www.bloomberg.com/news/articles/2017-12-21/china-s-airlines-fly-the-world-riding-on-1-3-billion-subsidies.
- Borenstein, Severin. "Airline Merger, Airport Dominance, and Market Power. (Deregulated Airline Markets)." *American Economic Review* 80, no. 2 (1990): 400-04.
- *Britannica Academic*, s.v. "Liberalism," accessed April 29, 2018, https://academic-eb-com.ezproxy.leidenuniv.nl:2443/levels/collegiate/article/liberalism/117288.
- “Chinese Airline shares jump after state rules on fares eased.” *The Business Times*. January 8, 2018. Accessed April 24, 2018. http://www.businesstimes.com.sg/transport/chinese-airline-shares-jump-after-state-rules-on-fares-eased.

- “China and Australia remove airline growth restrictions as China cautiously embraces open skies.” *CAPA*. December 21, 2016. Accessed April 5, 2018. https://centreforaviation.com/insights/analysis/china-and-australia-remove-airline-growth-restrictions-as-china-cautiously-embraces-open-skies-319894.
- “Reform of China jet fuel pricing may not ease costs.” *CAPA*. September 21, 2005. Accessed April 24, 2018. https://centreforaviation.com/insights/analysis/reform-of-china-jet-fuel-pricing-may-not-ease-airline-costs-240
- “Xiamen Airlines.” *CAPA*. Accessed April 24, 2018. https://centreforaviation.com/data/profiles/airlines/xiamen-airlines-mf.
- Carey, Susan. “American Airlines to Invest $200 Million in China Southern Airlines.” *The Wall Street Journal*. March 28, 2017. Accessed April 24, 2018. https://www.wsj.com/articles/american-airlines-china-southern-airlines-in-cooperation-talks-1490629815.
- Casanueva, Cristobal, Angeles Gallego, Ignacio Castro and Maria Sancho. "Airline Alliances: Mobilizing Network Resources." *Tourism Management* 44 (2014): 88-98
- Castiglioni, Marco & Ángeles Gallego, and José Luis Galán. "The Virtualization of the Airline Industry: A Strategic Process." *Journal of Air Transport Management* 67 (2018): 134-45.
- Cathay Pacific. “Annual Report 2016.” April 7, 2017. Accessed April 11, 2018. https://www.cathaypacific.com/content/dam/cx/about-us/investor-relations/interim-annual-reports/en/CX16_Final_en.pdf.
- “China's Private Airlines Gain on State Carriers.” *China Aviation Daily*. April 1, 2016. Accessed April 23, 2018. http://www.chinaaviationdaily.com/news/51/51676.html.
- Chen, Celia. “China’s airlines held back by declining yields despite dominant positions.” *South China Morning Post*. June 13, 2018. Accessed April 23, 2018. http://www.scmp.com/business/companies/article/2098000/chinas-airlines-held-back-declining-yields-despite-dominant
- Chen, Celia. “European carriers struggle to profit from flying to China’s second-tier cities.” *South China Morning Post*. August 11, 2017. Accessed April 4, 2018. http://www.scmp.com/business/companies/article/2106448/european-carriers-struggle-profit-flying-chinas-second-tier.
- Chen, Ruowei and Zheng Lei. "Airport Dominance and Airline Pricing Power: An Investigation of Hub Premiums in the Chinese Domestic Market." *Transportation Research Part A* 103 (2017): 509-24.
- China Eastern Airlines. “Annual Report 2016.” July 3, 2017. Accessed April 11, 2018. http://en.ceair.com/upload/2017/5/2617211152.pdf
- China Southern Airlines. “Annual Report 2016.” March 30, 2017. Accessed April 11, 2018. https://www.csair.com/en/about/investor/yejibaogao/2017/resource/2b330bd44bb25c033bdf27927779a7dd.pdf

- Chiu, Joanne & Joy C. Shaw. “Air China to Take Control of Shenzhen Airlines.” *The Wall Street Journal*. April 7, 2010. Accessed April 24, 2018. https://www.wsj.com/articles/SB10001424052748704117304575137131905179978.
- Chow, Clement Kong Wing and Wai Hong Kan Tsui. "Organizational Learning, Operating Costs and Airline Consolidation Policy in the Chinese Airline Industry." *Journal of Air Transport Management* 63 (2017): 108-18.
- Chow, Clement Kong Wing. "On-time Performance, Passenger Expectations and Satisfaction in the Chinese Airline Industry." *Journal of Air Transport Management* 47 (2015): 39-47.
- Ciliberto, Federico, and Jonathan W. Williams. "Limited Access to Airport Facilities and Market Power in the Airline Industry." *The Journal of Law & Economics* 53, no. 3 (2010): 467-95.
- Doganis, Rigas. *Flying off Course*. 4th ed. London; Routledge, 2010.
- “Chinese carriers are the new disrupters in air travel.” *The Economist*. April 5, 2018. Accessed April 11, 2018. https://www.economist.com/news/business/21740010-they-are-not-invincible-chinese-carriers-are-new-disrupters-air-travel.
- Emirates. “Annual Report 2016-17.” May 4, 2017. Accessed April 11, 2018. https://cdn.ek.aero/downloads/ek/pdfs/report/annual_report_2017.pdf
- Farooq, Salam, Fayolle, Jaafar, and Ayupp. "Impact of Service Quality on Customer Satisfaction in Malaysia Airlines: A PLS-SEM Approach." *Journal of Air Transport Management* 67 (2018): 169-80.
- Fu, Xiao-wen, Anming Zhang, and Zheng Lei. "Will China’s Airline Industry Survive the Entry of High-speed Rail?" *Research in Transportation Economics* 35, no. 1 (2012): 13-25.
- Garuda Indonesia. “2016 Annual Report.” 2017. Accessed April 11, 2018. https://www.garuda-indonesia.com/files/pdf/investor-relations/report/2016_.pdf
- He, Huifeng. “Guangzhou airport’s new terminal steps up rivalry with Hong Kong.” *South China Morning Post*. February 28, 2018. Accessed April 24, 2018. http://www.scmp.com/news/china/economy/article/2135007/guangzhou-airports-new-terminal-steps-rivalry-hong-kong
- He, Laura. “Airline shares surge in Hong Kong and Shanghai after China loosens fare controls and yuan strengthens.” *South China Morning Post*. January 8, 2018. Accessed April 23, 2018. http://www.scmp.com/business/companies/article/2127279/airline-shares-surge-hong-kong-and-shanghai-after-china-loosens.
- Heicks, Hendrik. "Scenario Planning: China's Airline Industry in 2019." *Tourism and Hospitality Research* 10, no. 1 (2010): 71-77.
- Homsombat, Winai, Zheng Lei, and Xiaowen Fu. "Development status and Prospects for Aviation Hubs – A Comparative Study of the major Airports in South-east Asia." *The Singapore Economic Review* 56, no. 04 (2011): 573-91.
- Jain, Ravi Kumar and Ramachandran Natarajan. "A DEA Study of Airlines in India." *Asia Pacific Management Review* 20, no. 4 (2015): 285-92.

- Kotoky, Anurag. “India Plans to Expand Airport Capacity Fivefold as Traffic Rises.” *Bloomberg Markets*. February 1, 2018. Accessed April 10, 2018. https://www.bloomberg.com/news/articles/2018-04-09/china-is-said-to-study-yuan-devaluation-as-a-tool-in-trade-spat
- Lu, Jin-Long. "Segmentation of Passengers Using Full-service and Low-cost Carriers – Evidence from Taiwan." *Journal of Air Transport Management* 62 (2017): 204-16.
- “Annual Analyses related to the EU Air Transport Market 2016.” *Mott MacDonald*. March 2017. Accessed April 11, 2018. https://ec.europa.eu/transport/sites/transport/files/2016_eu_air_transport_industry_analyses_report.pdf.
- Mishra, Mihir. “Cabinet approves 49% foreign investment in Air India under approval route.” The Economic Times. January 10, 2018. Accessed April 16, 2018. https://economictimes.indiatimes.com/industry/transportation/airlines-/-aviation/cabinet-approves-49-foreign-investment-in-air-india-under-approval-route/articleshow/62442264.cms.
- O’Connell, John F. “The rise of the Arabian Gulf carriers: An insight into the business model of Emirates Airline.” *Journal of Air Transport Management* 17 (2011): 339-46
- O’Connell, John F. and George Williams. "Transformation of India's Domestic Airlines: A Case Study of Indian Airlines, Jet Airways, Air Sahara and Air Deccan." *Journal of Air Transport Management* 12, no. 6 (2006): 358-74.
- O'Connell, John F., Krishnamurthy, Pukezhenthi, Warnock-Smith, David, Lei, Zheng, and Miyoshi, Chika. "An Investigation into the Core Underlying Problems of India's Airlines." *Transport Policy* 29 (2013): 160-169.
- “China's aviation boom drives airport building frenzy.” *Reuters*. June 26, 2015. Accessed April 5, 2018. https://www.reuters.com/article/us-china-aviation/chinas-aviation-boom-drives-airport-building-frenzy-idUSKBN0P60F220150626.
- “China reforming slot-assignment process at some major airports.” *Reuters*. December 7, 2015. Accessed April 5, 2018. https://www.reuters.com/article/china-airlines-slots/china-reforming-slot-assignment-process-at-some-major-airports-idUSL3N13W1P720151207.
- “China to ease investment access to aviation industry.” *Reuters*. January 12, 2018. Accessed April 8, 2018. https://www.reuters.com/article/china-aviation/china-to-ease-investment-access-to-aviation-industry-idUSL8N1P70C6.
- Rong, Huang and Song Shiqing. “China Regulator Considers Allowing More Airlines to Fly International Routes.” *Caixin Global.* August 24, 2017. Accessed April 5, 2018. https://www.caixinglobal.com/2017-08-24/101135130.html.
- Saranga, Haritha and Rajiv Nagpal. "Drivers of Operational Efficiency and Its Impact on Market Performance in the Indian Airline Industry." *Journal of Air Transport Management* 53 (2016): 165-76.
- Shaw, Lu, Chen, and Zhou. "China’s Airline Consolidation and Its Effects on Domestic Airline Networks and Competition." *Journal of Transport Geography* 17, no. 4 (2009): 293-305.

- Shen, Samuel & Parvathy Ullatil. “China Eastern buys Shanghai Airlines, shares soar.” *Reuters*. July 13, 2009. Accessed April 8, 2018. https://www.reuters.com/article/us-chinaeastern/china-eastern-buys-shanghai-airlines-shares-soar-idUSTRE56C1AK20090713.
- Singapore Airlines. “Annual Report 2016-17.” June 30, 2017. Accessed April 11, 2018. https://www.singaporeair.com/saar5/pdf/Investor-Relations/Annual-Report/annualreport1617.pdf
- Stan, Ciprian, V. Peng, and Mike Bruton. "Slack and the Performance of State-owned Enterprises." *Asia Pacific Journal of Management* 31, no. 2 (2014): 473-95.
- Thai Airways. “Annual Report 2016.” April 14, 2017. Accessed April 11, 2018. http://thai.listedcompany.com/misc/ar/20170410-thai-ar2016-en.pdf
- Toh, Mavis. “China Southern eyes further collaboration with American Airlines.” *FlightGlobal*. November 27, 2017. Accessed April 8, 2018. https://www.flightglobal.com/news/articles/china-southern-eyes-further-collaboration-with-ameri-443637/.
- Wang, Jiaoe, Bonilla, David and David Banister. "Air Deregulation in China and Its Impact on Airline Competition 1994–2012." *Journal of Transport Geography* 50 (2016): 12-23.
- Wang, Jiaoe, Mo, Huihui, and Wang, Fahui. "Evolution of Air Transport Network of China 1930–2012." *Journal of Transport Geography* 40 (2014): 145-58.
- Wang, Kun, Zhang, Anming, and Zhang, Yahua. "Key Determinants of Airline Pricing and Air Travel Demand in China and India: Policy, Ownership, and LCC Competition." *Transport Policy* 63 (2018): 80-89.
- Wang, Xiangwei. “China’s Airports Lead The World – So Why The Delays?” *South China Morning Post*. June 24, 2017. Accessed April 5, 2018. http://www.scmp.com/week-asia/opinion/article/2099540/chinas-airports-lead-world-so-why-delays.
- Whitley, Angus. “These Are the Busiest Air Routes in the World.” *Bloomberg Markets*. January 8, 2018. Accessed April 23, 2018. https://www.bloomberg.com/news/articles/2018-04-22/china-is-bolstering-lenders-before-new-assault-on-shadow-banking.
- Woodhouse, Alice. “Chinese airlines jump after regulator liberalises fares.” *Financial Times*. January 8, 2018. Accessed April 24, 2018. https://www.ft.com/content/f760063c-94f9-3c9d-9a32-019546a942b7
- “GDP Growth: China, India.” *World Bank*. Accessed May 9, 2018. https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=IN-CN
- Yang, Yang. “China's aviation sector to fly higher in 2018.” *China Daily*. January 22, 2018. Accessed April 23, 2018. http://www.chinadaily.com.cn/a/201801/22/WS5a658950a3106e7dcc135c50.html.
- Zhang, Anming, and Hongmin Chen. "Evolution of China's Air Transport Development and Policy towards International Liberalization." *Transportation Journal* 42, no. 3 (2003): 31-49.

- Zhang, Yahua and David K. Round. "Price Wars and Price Collusion in China's Airline Markets." *International Journal of Industrial Organization* 29, no. 4 (2011): 361-72.
- Zou, Li and Xueqian Chen. "The Effect of Code-sharing Alliances on Airline Profitability." *Journal of Air Transport Management* 58 (2017): 50-57.