



INDUSTRY OVERVIEW

CHINA'S AVIATION INDUSTRY

This report outlines opportunities and challenges facing the fastest growing aviation market in the world. China's general aviation industry is set to explode over the next decade due to a rapidly growing middle class, increasing disposable income, and heavy government support. Understanding the conditions and constraints enables companies to strategically place themselves to capitalize on the widening gaps between what between China's aviation industry's current capacity and growing demand.

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Executive Summary

This report provides an initial analysis of the trends, government regulations, challenges, and opportunities present in the General Aviation (GA) market in China today. The findings of this report demonstrate there is vast opportunities for companies supporting the General Aviation industry which is fueled by rapid growth. The growth this industry has experienced over the past three decades, particularly in the past five years, will continue but is frequently interrupted by a shortage in supply of critical elements of the industry. Increased passenger travel means China will overtake the United States as the number one aviation market by 2022. The Chinese government has committed substantial resources and policies that support this rapid development, such as doubling the number of GA airports to 300 by 2020. One of the key challenges to international companies entering the Chinese aviation market is the Chinese government push to shore up gaps in pilot shortages and aircraft production domestically.

Methodology: This report was compiled utilizing a combination of over 20 detailed report reviews, open-source research, Chinese language verification of original source documents, and guidance from interviews with industry experts.

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Contact us: For Questions about the Chinese Aviation Industry or interested to have a tailored report completed for your organization, please contact us at DC@FAOGLOBAL.com or at [202-854-9264](tel:202-854-9264).

FACTS

China will increase General Aviation airports to 300 by 2020.

By 2022, China will be the largest Aviation Market in the world.

China's current flight training capacity for pilots 1,600 per year. Far below the current and expected demands of 5,000 pilots per year over the next 20 years.

2,400 new flight routes opened up in September 2017.

78% of Chinese airlines send pilots to train abroad averaging \$100,000 per.

By 2035, the Asia-Pacific will employ 248,000 new pilots.

More than 50% of air travelers are Chinese.

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Overview

China's General Aviation (GA) market is growing exponentially, presenting a wide array of challenges and opportunities for companies and organizations planning to enter the general aviation market. A boom in demand for civil aviation over the past decade, specifically, has far outpaced the growth in supply. With this, China is even expected to overtake the United States as the number one aviation market by 2022, a full two years earlier than previously predicted.ⁱ The Chinese government has made a series of substantial efforts to increase the country's ability to keep up with demand. For example, the Chinese State Council plans to open a total of 300 GA airports by 2020, nearly doubling their current capacity.ⁱⁱ Nevertheless, growing pains will still occur in the industry.

This growth is fueled by factors ranging from increased wealth of all classes in China to the government's increased openness to global interaction over the past several decades. First, the increased wealth of China and its citizens

has increased the need and desire for air travel, both for business and for pleasure. Before China's economic reforms started opening trade in 1979, domestic air travel industry was virtually non-existent. The country's rapid economic growth over the past four decades has transformed the industry into one that accommodates 487 million Chinese passengers each year (2016).ⁱⁱⁱ

According to Dr. Zheng Lei, Founder and President of the Institute for Aviation Research, "... six or seven years ago, around 70 percent to 80 percent of passengers in the market were American. Now more than 50 percent of travelers are Chinese."^{iv} The rapid growth of China's middle class has allowed for the recent boom, adding tens of millions of new passengers who can now afford domestic and international air travel. Shen Pingping, a young entrepreneur in Shanghai stated that, "Before, traveling by air was a luxury. If you were traveling by air you were successful. Now average people travel at least once a year."^v International travel interests are growing increasingly popular among Chinese tourist,

even though train travel is still the preferred domestic mode of transportation. Additionally, the opening of China's economy has prompted increased business air travel domestically and internationally. This creates immense opportunities for development of China's GA sectors.

Considering OBOR

China's growing influence in global economic initiatives is evident in China's 'going out' policy rolled out under President Xi Jinping. This includes the One Belt One Road Initiative (OBOR), which has directly impacted the expansion of Chinese airlines. According to the Galleon Corporation, 36 Chinese airlines have added a total of 202 new local air routes to countries such as Russia, Central Asia, Southeast Asia, South Asia and the South Pacific. Additionally, regional airlines have added 35 new routes, 34 of which link OBOR countries and China.^{vi} This expansion of trade routes will be bolstered by increased access to the dispersed locations through GA expansion. It is likely that many of these projects will benefit from the addition of GA airports nearby.

Growing Pains

This growth is not without problems. Similar to challenges facing U.S. airline companies, China's need for pilots is outpacing its ability to produce quality pilots. At an estimated \$100,000 per pilot, training signifies a lifetime investment for a company and often requires a similar lifetime contract for aspiring pilots.^{vii} China's twelve primary flight schools, on average, produce only 1,500 to 1,650 new pilots each year well short of the 5,000 per year expectation needed to maintain growth.^{viii} This gap is likely to create significant hardship for an increasingly competitive market. Due to the time it takes to train pilots experienced enough to serve as a pilot for a major airline, the supply of pilots will lag behind the demand for years to

come. Similarly, the country's relatively small number of airports and overall lack of adequate airspace leads to severe congestion in and between airports and frequent delays for travelers. The industry has made considerable progress compared to 30 years ago. However, various domestic and international actors ranging from the Chinese government, to airlines, to individual tourists would like this growth to be even faster.

Industry Trends

The general aviation market is one of China's fastest growing markets. By 2036, China is expected to add 921 million new passengers to commercial air travel.^{ix} Further, 487 million journeys were made in or through China in 2016, a 12 percent increase from 2015.^x This trend fuels skyrocketing demand for nearly all components of the airline industry – airline employees, aircrafts, airports, and infrastructure.

Piloting Trends

The growing commercial airline industry in the region has increased the demand for qualified and experienced pilots. By 2035, the Asia Pacific region is projected to employ over 248,000 new pilots.^{xi} According to a 2016 report by Boeing, while regional markets have previously recruited many of their pilots from abroad, companies are increasingly looking to train and employ local pilots.^{xii}

International Recruiting

To alleviate the growing pilot shortage Chinese airlines have looked internationally over the past 5 years, drawing pilots from Eastern Europe and even Russia.^{xiii} Western pilots have also been recruited with the promise of significantly higher salaries with fewer flight

hours per month. For example, Jeff Graham, a former pilot for a cargo airline Southern Air in Texas, and now a pilot who based in Shenzhen, China, said, "Before I was flying anywhere from 80-100 hours a month. Here, I only fly 50 for pretty much three times the pay."^{xiv} Chengdu airlines advertises that it pays qualified candidates from countries like the U.S. \$25,800 each month with a \$36,000 signing bonus.^{xv} Highly qualified candidates from outside of China have been the answer to Chinese airlines' problems for the past several years, yet supply has yet to keep up with demand for commercial pilots. US airlines are also anticipating pilot shortages which will create a spike in demand for flight training programs and available trainees.

Domestic Recruiting

More recently, Chinese airlines have shifted back towards hiring domestically. This shift is bolstered by easing of requirements for Chinese applicants, as well as Chinese airlines' willingness to pay for training of its future pilots internationally. For example, according to a report by AIN, "(Chinese) cadets are now required to complete a minimum 100 hours of aviation English in China before they commence their course in a foreign country. The previous requirement was for 80 hours."^{xvi} Additionally, medical requirements such as those pertaining to heights and eyesight have recently been relaxed. Due to the eased requirements, a larger percentage of the domestic applicant pool will be able to meet the basic requirements, thus creating a new need for training of these applicants.

As of 2016, approximately 78 percent of Chinese airlines send their prospective pilots abroad for flight training, to Europe, Australia, and the U.S.^{xvii} Due to the lower cost of aviation fuel in that U.S. versus in Europe and the natural English immersion during training, the U.S. has become one of the most attractive

places for training of future Chinese pilots.^{xviii} China does have several well-regarded flight schools. However, the top twelve primary flight schools, on average, produce only 1,500 to 1,650 new pilots each year.^{xix} [See Appendix A for examples.] Many flight schools in the U.S. have created new programs specifically tailored to aspiring Chinese pilots, who are already sponsored by top Chinese airlines. [See Appendix B for examples.]

Aircraft Supply Trends

C919

In terms of equipment, Western-produced aircrafts such as the Boeing 737 and the Airbus have continued to dominate the skies of China. However, China is increasingly looking towards domestically produced airframes to drive its domestic growth. This drive is supported by government initiatives promoting Chinese made products. The most notable step in this direction is the development of China's first domestic passenger jet, the C919, which made its first flight in May 2017. The completion of the C919 marks a major milestone on China's journey towards becoming a contender in aerospace technologies. However, it is still significantly more expensive to produce and maintain than aircrafts made by Boeing and Airbus. Further, many of the C919's parts, such as the cockpit and engines, are still made by American companies like General Electric and Honeywell.^{xx}

Domestic Market

Considering that China's aviation industry was virtually nonexistent less than 40 years ago, the creation of the C919 is still an impressive feat, one that the Chinese government and companies intend to build on at a rapid pace. COMAC (Commercial Aircraft Corporation of China, Ltd), the manufacturer of the C919 claims that it has over 570 orders

from 23 buyers as of May 2017. These customers are primarily Chinese companies, the exception being 20 planes ordered by General Electric Capital Aviation Services.^{xxi} The use of Chinese produced airframes will further aid in the refinement and advancement of Chinese manufactures in the civil and general aviation airspace.

Infrastructure Trends

To address the issue of a lack of aviation infrastructure, the Chinese government is working hard to increase the number and quality of airports in the country. In 2016, China added eight new airports, bringing the country's total to 218 airports. In comparison, the U.S. has over 5,000 airports, for a population a fraction of the size of that in China. Currently, the country's airport system is severely concentrated, leading to congestion at the largest airports. Over 26 percent of all passenger traffic in China goes through Beijing, Shanghai, and Guangzhou, and the top 28 percent of Chinese airports handle 79.1 percent of traffic in the country.^{xxii} According to local industry reports, approximately one-fourth of China's airports have already reached capacity. On October 16, the Chinese government announced the creation of Beijing's second airport, which will cost approximately \$12 billion USD and is poised to become one of the largest in the world. It is set to open in October 2019, and is part of President Xi Jinping's push to improve domestic infrastructure. The new facility will have 5 km of gates and is expected to eventually accommodate 100 million passengers per year. While this is the biggest effort in terms of both scale and cost, CAAC (General Administration of Civil Aviation of China) plans to open a total of 300 GA airports by 2020, nearly doubling their current capacity.^{xxiii}

Government Regulations

The primary governing authority on aviation in China is the General Administration of Civil Aviation of China (CAAC), which is run directly under the State Council. Its mission is to "enforce the unified supervision and regulation on the civil aviation activities of the whole country, and in accordance with laws and State Council's decisions, to issue regulations and decisions concerning civil aviation activities within its jurisdiction."^{xxiv} CAAC oversees seven regional administrations, which have 26 CAAC Safety Supervision Offices (SSMO) in total. These offices supervise safety and market regulations of airlines and airports within their respective regions.^{xxv}

De-Regulation

A leading constraint airlines face imposed by regulation is the lack of airspace for all airlines in the market. Airlines such as China Airlines Ltd (CAL, 中華航空) have raised concerns that the limited slots available for new and even established, yet expanding airlines will stifle the growth of the industry. In response to these concerns, CAAC has recently made several policy changes to allow for more air traffic. The deregulation process of airspace in the country was prompted by the opening of airspace below 3,000 meters to civilian aircrafts in 2010. As that still has not allowed enough room for the industry to match the growth of demand, CAAC has continued its efforts to deregulate airspace in the country. In September, CAAC opened up 2,000 kilometers of airspace corridors between Shanghai and Lanzhou, capital of Gansu Province in the Northwest. This provided more airspace for 48 airports, 14 airlines, and over 2,400 flight routes.^{xxvi} This change in airspace regulation is expected to improve the punctuality of the flights taking place between these regions. Additionally, more airspace will likely lead to an

increase in air traffic from companies and individuals taking advantage of deregulation.

Pilot Licensing

The civil aviation authority reduced physical examination requirements for pilots, in an effort to recruit more pilots domestically. In its announcement, CAAC stated that several standards in its 2006 medical requirements were outdated because of technological developments. The primary change was the easing of eyesight requirements, which previously disallowed any citizen who was shortsighted from obtaining a pilot's license. Considering nearly half of China's population is shortsighted, this rule has reduced the pool of potential pilots. Other changes include the deletion of height and leg-length requirements.^{xxvii} Altogether, these eased requirements will allow that pool of qualified candidates to grow from 28 percent to 84 percent of all applicants.^{xxviii}

Other requirements to obtain a pilot's license have been relaxed as well although some still remain Chinese pilot English training is up 20 hours, from 80 hours previously.^{xxix} Major airlines, such as China Airlines and all others in the International Civil Aviation Organization require pilots to achieve English proficiency at a level 4, which is roughly equivalent to advanced-intermediate fluency in an aviation context (for breakdown, see: http://www.maycoll.co.uk/aviation-english/icao_level4_background.htm). While decreased requirements make a greater portion of the Chinese population eligible, continued steps to increase pilot numbers by eliminating requirements are unlikely. CAAC and Chinese airlines still desire to maintain international aviation standards, especially those on safety.

Opportunities & Challenges

The growing demand in the aviation industry in China is already presenting an enormous amount of opportunities for downstream suppliers, service providers, training schools, and personnel. Since the birth of the Chinese aviation industry in the early 1980's, foreign-made products and foreign pilots have been used as a stop gap. Within the past few years there has been a shift towards domestic sourcing. Amongst the push for domestically sustainable aviation practices there will continue to be a large gap in what the Chinese market needs and what is available.

The Chinese industry is increasingly looking to use domestically sources products and employees. However, this gap is still filled by foreign made products and services that support this rapid expansion. Parts supplier, training schools, and aircraft manufacturers can all capitalize on the current and future growth while the Chinese industries catch up. Entering the Chinese market however likely means partnering with a local company during the developmental stages and creating long term service contracts. Any products or services which allow the industry's growth to occur more quickly and smoothly will likely be welcome within the marketplace.

Infrastructure

Consequences of Rapid Growth

Domestic aviation infrastructure has not been able to keep pace with demand. Further proof that China's aviation industry still has a way to go is that one-third of all flights in the country were delayed in 2015, according to the International Air Transport Association.^{xxx} Improved infrastructure will improve these numbers over time. Frequent delays present challenges to operators in China's aviation

industry, because they detract from the industry's reputation of being reliable and timely. For domestic business trips, many customers prefer train travel, as there are relatively few delays.^{xxxix} These delays impact not only domestic, but international travel, as delays carry over and also push back international flights operated by international carriers.

Government Response

This challenge, faced by a variety of aviation companies, is being addressed by the government. The Chinese government is working hard to increase the number and quality of airports in the country. In 2016, it added eight new airports, bringing the country's total to 218 airports.^{xxxix} In comparison, the U.S. has over 5,000 airports, for a population a fraction of the size of that in China.^{xxxix} On October 16, the Chinese government announced the creation of Beijing's second commercial airport, which will cost approximately \$12 billion USD and is poised to become one of the largest in the world. It is set to open in October 2019, and is part of President Xi Jinping's push to improve domestic infrastructure.^{xxxix} The new facility will have 5 kilometers of gates and is expected to eventually accommodate 100 million passengers per year.^{xxxix}

Another challenge for new airlines entering a market is the available flight slots and congested airspace. Continued deregulation of airspace and rapid creation of new airports in China will allow for greater opportunity for airlines to expand. However, it will remain a competitive arena for airlines. Congestion, import regulations, intellectual property concerns, delays, and an overarching lack of infrastructure pose challenges and risks for those looking to enter the market. The Chinese government has shown interest in

improving these conditions through funding new airports and through deregulation of airspace.

Pilots

Commercial pilot recruiting agencies outside of China are common in luring foreign pilots throughout the industry's expansion to mainland companies. However, more recent shifts back to domestically trained pilots also outsource their programs to non-Chinese flight centers. Many international students are now trained in the U.S. due to the use of English language instructors and access to GA aircraft necessary for basic flight training.^{xxxix} This presents a rapidly growing market opportunity for English language flight simulators, aviation language trainers, and Certified Flight Instructors to work in China.

Global Risks

Recent increases in protectionist policies between the U.S. and China more threaten to derail many of these opportunities. According to Alexandre de Juniac, Director General and CEO of IATA, "we see governments raising barriers to trade rather than making it easier. If this continues in the long-term, it will mean slower growth and the world will be poorer for it. For aviation, the protectionist scenario could see growth slowing to as low as 2.5% annually. Not only will that mean fewer new aviation jobs, it will mean that instead of 7.2 billion travelers in 2035, we will have 5.8 billion." Globalization has largely fueled the growth of the aviation industry in the Asia-Pacific, but domestic and bilateral politics of the U.S. and China raise concern for those in the aviation industry.^{xxxix}

Conclusion

The general aviation industry in China can be characterized by rapid growth with immense opportunity but faces challenges in disrupted supply of critical components, bottlenecks in pilot training, and limits of current infrastructure. The Chinese government has proven to be supportive building this industry and has

taken steps to improve the regulatory structure and fund the expansion. Even with strong government support, however, supply will lag behind demand in the general aviation industry for up to another decade. Innovations which allow for a more rapid increase in supply of missing elements, such as qualified pilots, will be welcomed.

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