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General Aviation
in China
*Seizing Growth
Opportunities*



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EXECUTIVE SUMMARY

China's general aviation (GA) industry is underdeveloped. However, recognizing GA's social and economic benefits, Chinese policymakers are instituting reforms that will create a more favorable operating environment and catalyze growth, which is forecast to reach an annual rate of 20 percent. Changes to China's regulatory environment, market economics, and competitive landscape will create growth opportunities across the GA value chain. To seize these opportunities, GA industry players must develop a market strategy that is clear, logical, and practical.

This Perspective reviews China's general aviation industry from its origins in the 1950s to the regulatory and competitive changes shaping the industry today. It examines current growth constraints and opportunities, and concludes with specific recommendations for companies planning to enter this market.

REVIVING AN ESTABLISHED INDUSTRY

General aviation (GA) is not new to China, but it is one of the few sectors that have not experienced strong growth over the past three decades.

The roots of China's modern GA industry can be traced to 1951, when the General Administration of Civil Aviation of China (CAAC) used Curtiss-Wright C-46 aircraft to conduct pest-control missions in Guangzhou. GA grew until the Cultural Revolution began in the mid 1960s.

GA returned to growth in the mid-1970s and has since expanded

to involve dozens of departments and industries and a wide range of applications, including agriculture, forestry, cartography, and electric power. However, expansion was hampered by a lack of supporting policies and limited awareness of GA's economic and social benefits. As a result, only 30,743 GA flight hours were logged in 1994, a 37 percent drop from the peak in 1991.

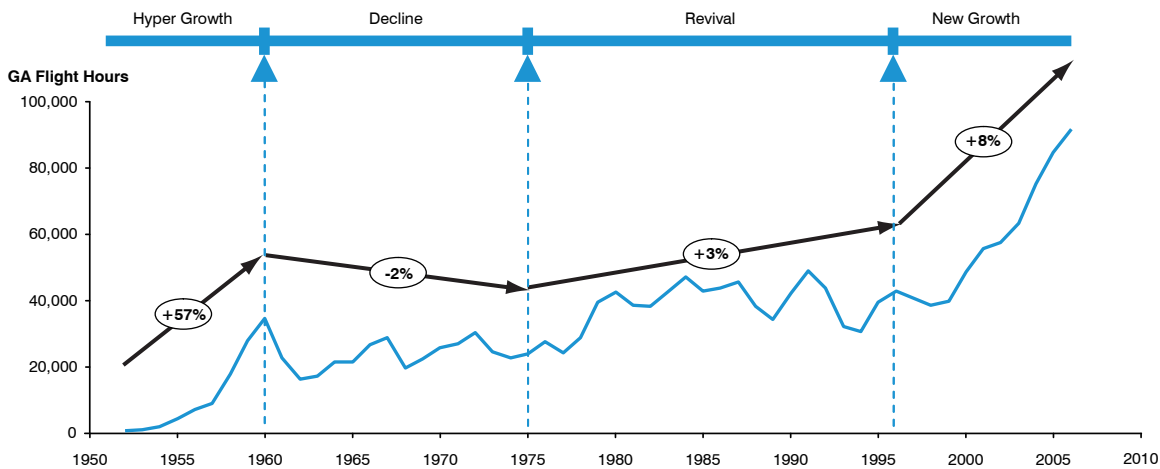
The industry reached a turning point in 1996 when the CAAC promulgated "The Decision by the CAAC on Issues Regarding the Development of General Aviation." This legislation emphasized the need for coordinated development of the national economy, society, and civil aviation; recognized the importance of GA; and outlined specific policies and measures to promote GA. It also marked the start of a new phase in the industry's development (see Exhibit 1).

Today, China's GA industry comprises three main segments: public service, economic development, and consumer aviation. The latter category includes transportation, which is the major source of GA's economic and social benefits. However, there remains a lack of awareness of the functions and roles of GA in China as compared with scheduled commercial aviation.

At a recent conference in Zhuhai, the deputy administrator of the CAAC, Li Jian, recognized GA's growth potential, noting, "The current development level of general aviation is unable to keep pace with China's social and economic development needs. GA has tremendous development potential and the outlook is bright. GA can make a significant economic contribution and generate sizable employment for China."

Exhibit 1
The Growth of China's GA Industry

In 1996, China's GA industry entered a new era of growth with the promulgation of "The Decision by the CAAC on Issues Regarding the Development of General Aviation."



Source: CAAC; Booz & Company analysis

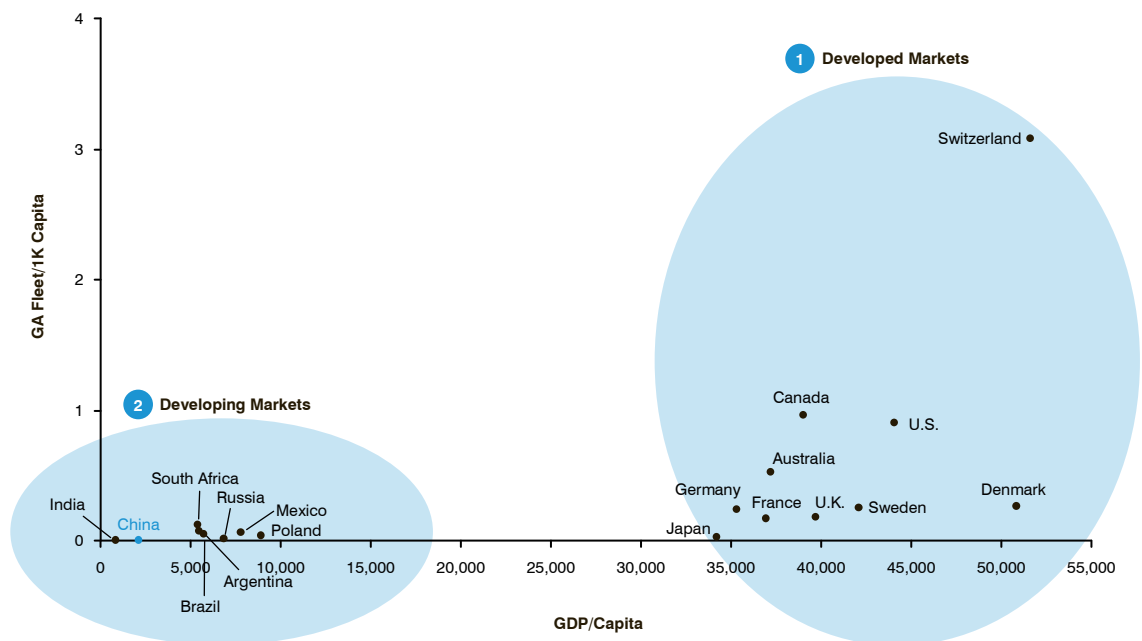
THE NEXT WAVE OF GROWTH

Although GA in China has experienced double-digit growth since 2000, it is still at an embryonic stage (see Exhibit 2). While the number of GA aircraft is small and increasing rapidly, usage remains limited to public service and industrial applications.

Booz & Company recently examined the dynamics and outlook for China's GA sector in a report commissioned by the U.S.-China Aviation Cooperation Program (ACP). The study identified several factors constraining the growth of GA in China, including a restrictive

Exhibit 2
Global GA Development

China's GA industry has significant growth potential, even in comparison with other developing markets.



Source: Booz & Company analysis

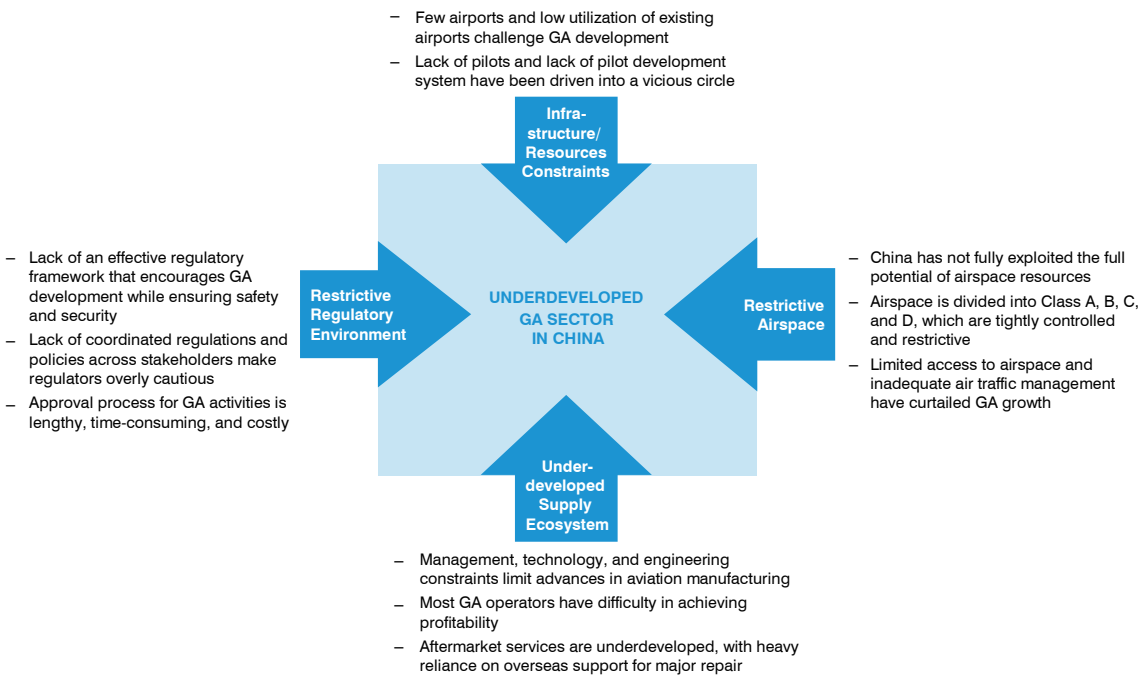
regulatory environment, airspace access, and an underdeveloped infrastructure and supply ecosystem (see Exhibit 3). Growth has also been limited by import duties and value added taxes, which are higher for GA aircraft than for trunk aircraft.

Government and industry stakeholders are aware of these constraints and the social and economic benefits that GA has delivered in other countries. For example, the General Aviation Manufacturers Association estimates

that GA contributed at least US\$150 billion to the U.S. economy in 2005. GA also fills transportation needs that cannot otherwise be met. For communities without scheduled air service, GA is the only option for moving people and cargo by air.

Exhibit 3
Growth Constraints for GA in China

Stakeholders are actively addressing infrastructure, airspace, supply, and regulatory constraints.



Source: CAAC; Booz & Company analysis

GA also provides specialized services, such as air ambulances, to communities that have scheduled air service. In 2008, the snowstorms that blanketed southern China and the earthquake that devastated Sichuan underscored China's need for GA in disaster relief and search and rescue roles.

China has an opportunity to learn from the successes and failures that GA has encountered elsewhere. The challenge for China's GA industry is to replicate in 15 years what other countries have built over the last century.

Drawing on the experience of countries with mature GA industries, the CAAC is using policy levers to drive the next wave of growth in China. They include the following:

- Implementing a pilot program of reforms in northeast China and exploring the program's expansion into other parts of the country

- Fostering closer international exchanges and cooperation (e.g., the ACP)
- Encouraging contributions from industry associations
- Developing the GA industry's value chain
- Formulating and refining GA regulations and policies
- Simplifying the process for establishing a GA operating company
- Promulgating CCAR 91 and 135, which facilitate flight operation and certification for commercial operators using small aircraft

Several measures have been or are being taken by other stakeholders in China:

- GA has been included as a key development area in China's five-year plans

- China Aviation Industry Corporation I and II (AVIC I and II) were merged, and AVIC General Aviation Company and AVIC Helicopter Company were established to improve the economics of the supply-side ecosystem and better serve GA customers in domestic and international markets
- Reviews designed to lower operating costs (e.g., takeoff, landing, and handling fees) for GA operating companies and reduce import duties and value added taxes on GA aircraft and parts are ongoing

With the right development catalysts, the GA sector is expected to grow at approximately 20 percent annually, generate RMB 7 billion (US\$1.03 billion) of annual output, and create 43,000 jobs and a range of indirect benefits.

OPPORTUNITIES ACROSS THE VALUE CHAIN

With China's GA sector poised for growth, we envision opportunities for many industry players, in particular:

- Aircraft manufacturers
- Flight schools
- Fixed base operators (FBOs)
- Maintenance, repair, and overhaul (MRO) service providers.

Aircraft Manufacturers

In 2006, there were 653 GA aircraft in China, compared with some

224,000 in the U.S. in 2005. Booz & Company estimates the total number of GA aircraft in China will grow at an annual rate of 10 to 20 percent, with more than 2,500 aircraft required by 2015. This represents an attractive opportunity for aircraft manufacturers and distributors.

Foreign-made aircraft constituted 56 percent of the 653 GA aircraft in 2006 (see Exhibit 4). Due to high taxes and duties, demand for imported aircraft has not been fully satisfied.

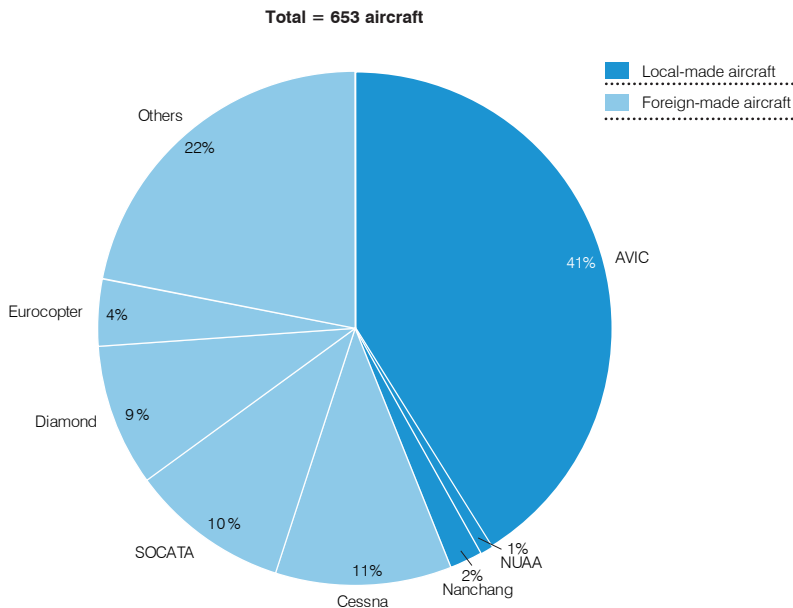
However, the competitive landscape is changing quickly. The two most established GA aircraft manufacturers, AVIC I and II, were recently consolidated and several new companies have been formed. Three of these companies will have a significant impact on China's GA industry:

- AVIC Helicopter Company unites China's rotary-wing plants, notably those in the cities of Harbin, Changhe, and Jingdezhen.
- AVIC General Aviation Company, which now owns facilities in Guizhou and Shijiazhuang, is considering the introduction of a business jet with 15 to 20 seats.
- Aviation Systems Company, which is China's answer to Rockwell Collins Inc., Thales, Honeywell International Inc., and Goodrich Corporation. About 40 factories and research institutes have been combined to form this company, including major facilities in Shanghai, Xi'an, and Nanjing.

Chinese companies are preparing to compete more effectively in both the domestic and international markets and the main AVIC companies have

Exhibit 4
The Growth of China's GA Industry

In 2006, foreign-made aircraft constituted only 56% of China's GA aircraft.



Source: CAAC; Booz & Company analysis

established joint ventures with key Western aerospace firms. For example, AVIC II and Embraer S.A. formed a joint venture to build ERJ regional aircraft, while the Cessna Aircraft Company and Shenyang Aircraft Corporation joined forces to manufacture the 162 SkyCatcher in China.

Chinese manufacturers are using joint ventures to improve their technical and management skills and strengthen their international presence. Harbin Aircraft Manufacturing Corporation's Y-12 is a domestically developed and manufactured GA aircraft that has been exported to 21 countries.

Flight Schools

Demand for flight schools will soar as China resolves a long-term pilot shortage. In 2006, China had 1,768 GA pilots. By 2010, the CAAC forecasts 3,091 GA pilots will be needed.

The pilot deficit is expected to worsen, as the CAAC estimates that passenger traffic will grow 11.4 percent annually between 2008 and 2020. The shortage will be exacerbated by the limited number

of available military veterans and the lack of flight schools. China has about 10 GA flight schools, with an average annual output of 50 pilots. Unlike the U.S., where Federal Aviation Administration-accredited schools are abundant, accessible, and have ready access to airports and airspace, China's flight schools are often isolated. The high cost of flying in relation to China's lower per capita income levels has further deterred the flight schools' expansion.

Pilot awareness and promotion initiatives—like the “Young Eagle Program,” the Aircraft Owners and Pilots Association's “Project Pilot,” and “Be a Pilot” in the U.S.—should encourage growth in demand for flight schools.

Fixed Base Operators

In countries with a developed private and business aviation segment, FBOs provide fuel, hangar space, and air taxi and flight training services. There are approximately 5,245 FBOs in the U.S., many of which are franchisees or members of chains such as SheltAir Aviation Services, Signature Flight Support, or Million Air.

Due to the low level of GA activity, fixed base operators are rare in China and few foreign companies have ventured into China's FBO market. Switzerland's Jet Aviation AG, which has a joint venture with Beijing-based Deer Air Company, is one example.

Maintenance, Repair, and Overhaul

There is a shortage of MRO services for private jets and other GA aircraft in China. The country's first “4S” (sale, spare parts, service, and survey) facility for GA aircraft opened in June 2007. Located in Hangzhou, the shop is a joint venture between the Xi'an Yanliang National Aviation Hi-Tech Industrial Base and China Guangsha Group. MRO facilities for engine repairs and aircraft refitting are also lacking in China, with most work being performed in Hong Kong or overseas.

AeroStrategy estimates that global spending on fixed-wing business aviation MRO exceeded US\$6 billion in 2006, with North America representing 70 percent and Asia Pacific 3 percent of the total.

As China's private aircraft and business aviation segments are expected to be among the fastest growing in the world, the market for GA MRO is set to increase substantially.

SEIZING GROWTH OPPORTUNITIES

The challenges to success in China's general aviation market are significant. But the potential is greater still, particularly for companies seeking long-term growth.

To successfully seize these opportunities, CEOs must ask a series of questions about market share, profitability, positional advantage, resources, organization structure, and operation model. The answers to these questions will have a direct impact on the resources the company will need and the competitive risks it will face.

In our experience,¹ the following steps will be critical for companies targeting China's GA sector.

1. Develop deep knowledge of China and its GA industry:

- Understand the regulatory environment and how it may change over time.
- Anticipate contextual changes that may shape the market's structure and dynamics, as well as the way participants compete.
- Assess current and expected discontinuities in supply and demand, and the ways in which they will affect your strategy.

- Build institutional mechanisms to capture and analyze market, competitive, and regulatory information.

2. Ensure your GA strategy is clear, logical, and practical:

- What market segments or niches will you pursue?
- What are the key levers for growth?
- What practical aspects of China's GA must you consider?

3. Identify the resources needed to generate growth:

- What capabilities can and should you deploy?
- How can you leverage local and foreign resources through joint ventures, alliances, mergers, and/or acquisitions?
- How can you complement and fill gaps in your capabilities?

4. Achieve operational excellence:

- Focus on disciplined cost management.
- Create efficient, reliable supply chains.
- Develop operational strengths organically or through acquisitions.
- Build mutually beneficial relationships with local and foreign partners.

1. See “Developing a China Strategy That Delivers Results” by Dr. Edward Tse and Ronald Haddock at http://www.booz.com/media/uploads/Developing_a_China_Strategy_that_Delivers_Results.pdf

About the Authors

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Booz & Company's managing partner for Greater China, specializing in definition and implementation of business strategies, organizational effectiveness, and corporate transformation. He has assisted several hundred companies—headquartered both within and outside China—on all aspects of business related to China and its integration with the rest of the world.

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