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Trends in the Development of China's Aviation Industry

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Summary

The Chinese leadership has identified the aviation industry as a strategic priority. This policy brief assesses progress in China's aviation industry, with a focus on 2009–2010. A review of major developments in China's civilian and military aircraft programs reveals a trend in China's approach to advancing its aviation industry: dependence on foreign partnerships alongside investment in indigenous research and development. It remains to be seen if this hybrid techno-globalist and techno-nationalist approach will help or hinder China as it works to implement civil–military integration (CMI) in its aviation industry.

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ANALYTICAL FRAMEWORK

A Chinese news report described the approach of the Aviation Industry Corporation of China (AVIC) Commercial Aircraft Engine Company—the entity working to develop an engine for the C919—as “simultaneous independent development and international cooperation” (*zizhu yanzhi yu guoji hezuo bingju*). We find that this approach most closely fits what is known in the literature on science and technology development as the techno-hybridist model, characterized by the combination of a focus on international exchange (techno-globalism) and strong state support of domestic technological development (techno-nationalism).

We apply the techno-hybrid model to a review of major developments in China’s aviation industry and find that a spectrum exists between the techno-globalist and techno-nationalist approaches. We find evidence of this in several aspects of the industry.

AVIC STRATEGY AND ORGANIZATIONAL STRUCTURE

The consolidation of AVIC in November 2008 and its new development strategy of “Two Merges, Three News, Five Changes, and One Trillion” are significant indicators of the leadership’s vision for the development of the aviation industry.

While these changes appear to strengthen self-reliance and indigenous capabilities in a way that is consistent with techno-nationalism, there are also indications of a shift towards techno-globalism, as AVIC and its subsidiaries move away from dependence on state funding and strive to adopt market-based structures to raise their own capital. In fact, AVIC intends to list 80 percent of its total assets on capital markets by 2012.

The establishment of AVIC Defense, one of six new general divisions set up under the consolidated AVIC, indicates a further shift toward techno-globalism in its focus on expanding China’s military export sales in international markets and reducing dependence on state funding.

DEVELOPMENTS IN CIVILIAN AND MILITARY TECHNOLOGIES

Civilian Aircraft Programs

The creation of the Commercial Aircraft Corporation of China to oversee the development of the C919 large-scale commercial passenger jet, one of the “Mega-Projects” identified by the Ministry of Science and Technology and of the AVIC Commercial Aircraft Engine Company to develop the first Chinese-made engine for such applications appears consistent with techno-nationalism. China may be hoping to strengthen self-reliance and build its domestic innovation capabilities through these programs.

There are indications that the government may use subsidies as incentives for domestic buyers of the C919. Such subsidies are already in place for the ARJ-21. In addition, in selecting suppliers for components of the C919, companies that enter into partnerships with Chinese companies have been prioritized, an arrangement that favors technology transfer.

Despite such efforts to encourage indigenous development, China’s dependence on foreign partnerships for these and other civilian programs most closely reflects a techno-globalist approach.

Military Aircraft Programs

Case studies in various military technologies also demonstrate China’s reliance on global linkages, despite stated goals of independence. The development of and search for customers for the J10, L15, J-XX, and the yet-unnamed 200-ton military airlifter illustrate both efforts at indigenous development and dependence on foreign technologies and markets.

EFFORTS TO IMPLEMENT CIVIL–MILITARY INTEGRATION

In addition to working with international partners, China may also be seeking to build up its indigenous aviation capabilities by implementing

spin-on CMI. China's increasing focus on CMI is evident in:

- Chinese views of the military potential of the C919's planned SF-A engine, which Chinese media sources indicate might be a suitable engine for the 200-ton military airlifter that is currently in development.
- The growth of eight state-level high-tech aviation bases or parks as "cluster" sites of civilian and military projects.

While there is an abundance of rhetoric at the policy level, it appears that hurdles remain in China's ability to implement CMI in its aviation industry, but additional research is required in order to assess this.

AREAS REQUIRING ADDITIONAL RESEARCH

Additional research is required in order to assess a number of aspects of the Chinese aviation industry.

Technological development: Platforms and technologies such as the C919, the J-XX, the SF-A engine, and the 200-ton-class military airlifter are still in development, and thus it is not possible to assess the extent to which these technologies are innovative or represent a step forward in terms of CMI. As more information about these technologies becomes available, this should be included in future assessments.

Aviation park "clusters": It is not possible to assess the extent to which the aviation park clusters actually promote CMI based solely on the co-location of various institutions. Additional in-depth research is required on the activities of and relationships among these institutions.

Other aspects of CMI: It is not clear to what extent there exist organizational frameworks promoting

CMI in the aviation industry, such as functional departments devoted to CMI, joint civilian–military management structures, and so on. Further research is required in order to assess any such institutions that do exist as well as their success in promoting CMI.

Foreign partnerships and technology transfer:

Although it appears that China may be selecting foreign suppliers for the C919 based on their willingness to transfer technology, the extent to which such transfers are actually occurring and the nature of those transfers are not clear. Further research is needed in order to assess the relationships between Chinese and foreign aviation firms and clarify the technological gains to China.

KEY FINDINGS

- Indigenous development currently is aspirational. The Chinese aviation industry benefits greatly from its relationships with major international players, and its reliance on both foreign technologies and know-how will prevent truly independent development of the C919 and other aircraft programs in the near term.
- Even after independent development has been achieved, the lack of brand name recognition, the strength of foreign technologies, and other factors may leave the Chinese aviation industry competing more in the domestic market than on the international stage.

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