

WTO-plus commitments and emerging implications for China's large civil aircraft manufacturing

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Abstract: China's accession to the WTO in 2001 is widely accepted as a landmark event for the multilateral trade system and for the country. The large-scale WTO-plus commitments have nevertheless received unceasing criticism and discussion. This article is concerned with the resulting policy implications for the Chinese initiative to become a global producer of large civil aircraft at the next stage of development. A real-life case study is expected to provide robust evidence for inquiring whether China and emerging economies alike can smoothly advance up the global value chain while honouring their WTO obligations in good faith. The article confirms the widespread opinion that there are vast legal uncertainties ahead for China throughout this journey, and for that reason, a rigorous market-orientation effort is needed to strengthen its ability to compete in the commercial aviation sector.

1. Introduction

The year 2011 witnessed the tenth anniversary of China's membership of the World Trade Organization (WTO), as the country joined the most important supranational trade institution of its kind on 11 December 2001. There has been much to celebrate about the role of 'stabilizer and accelerator' served by China's WTO membership in its economic take-off.¹ In return, China's contribution is widely acknowledged to the evident growth of world trade in the past decade, and in recent years to the build-up of confidence in the revival of

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1 Pascal Lamy, 'A new chapter in China's reform and opening up to the world', 11 December 2011, at http://www.wto.org/english/news_e/sppl_e/sppl211_e.htm.

the world economy.² As of the time of this writing, the country has become the second largest economy in GDP terms following the United States, the largest commodity exporter, the second largest commodity importer, and the second most attractive destination to absorb foreign direct investment.³ The senior Chinese leaders have explicitly recognized the accession to the WTO as ‘the beginning of a new historical stage’ in China’s reform and opening up. They have vowed to take full advantage of the country’s trade rights and obligations to usher it into a new era of prosperity.⁴

In spite of the progress that China has made economically and politically, deep-seated problems remain in its domestic industrial structure that must be resolved effectively. The Chinese economy has long been over-dependent on low-end manufacturing, assembly production, and processing trade.⁵ The production structure and the composition of trade have been struggling against challenges commonly found in the developing world, including, among others, weakness in technological and industrial innovation, a lack of resources for research and development, outdated infrastructure, and a shortage of investment in cutting-edge manufacturing sectors.⁶ The government is aware of these handicaps and has pledged to foster the development of modern industries which will feature more optimal structures, advanced technology, clean and safe production, high-value products, and the capability to boost employment. These policy efforts are aimed at ultimately enhancing the international competitiveness of the national economy by transforming it into a knowledge-based and innovative economy.⁷

A key effort towards moving up the global value chain has been launched by the Chinese initiative to become a competitive Asian supplier of large civil aircraft (LCA). Beginning with the 11th National Five-Year Plan (2006–2010), among a set of seven major national high-tech programmes, China’s top lawmakers determined to concentrate nationwide efforts on building an indigenous LCA industry.⁸ The construction of home-made LCA was given further priority in the Outline of National Medium- and Longer-Term Programme for Science and Technology

2 ‘China’s economy slows, confidence holds up’, *Xinhua News*, 12 September 2012, at http://news.xinhuanet.com/english/indepth/2012-09/12/c_123702821.htm.

3 World Bank, ‘China overview’, at <http://www.worldbank.org/en/country/china/overview>; WTO, ‘Trade profile of China’, at <http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=CN>; UNCTAD (2011), at 4.

4 ‘China commemorates 10th anniversary of WTO entry, vows to open further’, *Xinhua News*, 11 December 2011, at http://news.xinhuanet.com/english/china/2011-12/11/c_131299549.htm.

5 Ibid.

6 Das (1998), at xi.

7 ‘China commemorates 10th anniversary’, supra n. 4.

8 Fourth Session of the Tenth National People’s Congress of the People’s Republic of China (PRC), ‘Outline of the Eleventh Five-Year Plan for National Economic and Social Development of the PRC (2006–2010)’, approved 14 March 2006, Section 3, English profile at http://en.ndrc.gov.cn/hot/t20060529_71334.htm. The other six major hi-tech programmes are integrated circuit and software, new generation network, advanced computation, biopharmaceutics, satellite applications, and new materials.

Development (2006–2020).⁹ The birth of China-made LCA was plagued by various policy and technological problems in the 1970s.¹⁰ This time the central government conceived a precise timetable to attain its construction goal. It was estimated that large transportation planes with a carrying capacity exceeding 100 tons would be available for civil and military purposes by the year 2015. After five more years of development, home-made trunk liners with more than 150 seats would enter into civilian service by 2020.¹¹ A major milestone along this path was the debut of a mock-up of China's LCA, the C919, at the 49th Paris Air Show in June 2011. The C919 airplane was expected to launch its maiden flight in 2014 and obtain airworthiness certification to enter the commercial market before 2016.¹²

The Chinese LCA project represents an apparent ambition of diversifying into one of the world's most technically advanced industrial areas. Like all other Members, China commits itself to a wide array of treaty obligations supervising free and fair trade conduct, including in the commercial aircraft sector. More critically, the protocol of accession imposes on China extensive and ad hoc obligations, known as 'WTO-plus' commitments, which have significantly elaborated upon, expanded on, or even modified the benchmarks in the WTO's standard agreements.¹³ The sheer volume of WTO-plus commitments thus provides a critical legal test for the government of China when it discharges its responsibility for the production and trade potential of LCA. While the declared timetable may be feasible, utmost caution must be exercised to fulfil its multilateral obligations in good faith. The US Department of Commerce, among others, is also closely monitoring China's regulatory involvement in the enhancement of local aviation capabilities. It requested China to provide detailed information concerning any supporting policies through the 2009 Transitional Review Mechanism, and again through the 2010 Trade Policy Review Mechanism within the structure of the WTO.¹⁴ Hence, probing into the immense legal uncertainties is likely to provide empirical evidence for a fresh review of the WTO-plus commitments for China now that it has been with the WTO for more than a decade. This article suggests that such uncertainties are vast and diverse, especially when the country must fully

9 State Council of the PRC, 'Outline of National Medium- and Longer-Term Programme for Science and Technology Development (2006–2020)', approved 9 February 2006, Section 4, English version at <http://www.cstec.org.cn/service/detail.aspx?Id=1887&cid=33&cs=0>.

10 Goldstein (2006), at 260; Andersen (2008), at 7.

11 'China's large aircraft dream to come true by 2015: NPC Deputy', *People's Daily*, 11 March 2006, at http://english.peopledaily.com.cn/200603/10/eng20060310_249535.html.

12 'China's C919 passenger plane makes overseas debut at Paris Air Show', *Xinhua News*, 20 June 2011, at http://news.xinhuanet.com/english2010/china/2011-06/20/c_13940100.htm.

13 Qin (2003), at 483.

14 Mary H. Saunders, 'Statement before the US–China Economic and Security Review Commission, Hearing on "China's emergent military aerospace and commercial aviation capabilities"', 20 May 2012, at http://www.uscc.gov/hearings/2010hearings/written_testimonies/10_05_20_wrt/10_05_20_saunders_statement.pdf, at 8.

implement WTO-plus commitments. It is because of that inevitable challenge that more rigorous effort is needed to modernize the Chinese LCA enterprise and to push it into fair global competition in the foreseeable future.

The article is organized in the following way. Section 2 takes an overview of the history and support policies used by the Chinese authorities to establish an indigenous LCA company. The next three sections enter into discussions of the pertinent WTO-plus obligations, which are explained *vis-à-vis* generally applicable trade rules, by examining their policy implications for the Chinese LCA initiative. The sections cover three principal sets of policy instruments which broadly include tariff issues and investment regulations, technical regulations and aviation standards, and subsidies and intellectual property right (IPR) rules set out in the amended Chinese patent law. A brief conclusion is drawn in the final section.

2. Overview of the Chinese LCA support scheme

On 26 February 2007, the former Chinese Premier Wen Jiabao presided over a State Council Executive Committee meeting to evaluate the feasibility report regarding the new jumbo plane programme. The Committee approved the proposal and urged all concerned parties to start work as soon as possible.¹⁵ A Shanghai-based state-owned corporation, that is, the Commercial Aircraft Corporation of China, Ltd. (COMAC), was quickly formed on 11 May 2008. It functions as the main vehicle in operational activities, including aircraft research and development, key parts production, final assembly, marketing, customer services, airworthiness certification, and financial leasing.¹⁶ The central government has declared that having an independent ability to produce large airplanes is of great significance to the nation and its people in terms of politics, national defence, technology, and economic development.¹⁷ First, the achievement of a key goal of innovation will reflect the strength of the economy and inspire nationalist sentiment in the same way as the development of atomic bombs, hydrogen bombs, satellites, and space aircraft. Second, as LCA is produced for both military and civil purposes, accomplishment of the project will further the ability of the country to defend its national security. Third, functioning at the top of many industrial chains, the construction of LCA is expected to exert enormous pulling effects on the supplying industries, including but not limited to machinery, electronics,

¹⁵ 'State Council gives go-ahead to develop large passenger jets', *China Daily*, 18 March 2007, at http://www.chinadaily.com.cn/china/2007-03/18/content_830489.htm.

¹⁶ The Commercial Aircraft Corporation of China, Ltd. is formed by the approval of the State Council and jointly invested in by the State-Owned Assets Supervision and Administration Commission of the State Council, Shanghai Guosheng (Group) Co. Ltd., Aviation Industry Corporation of China, China Aluminum Corporation, Baosteel Group and Sinochem Group. See more details at <http://english.comac.cc/aboutus/introduction/index.shtml>.

¹⁷ 'Large airplane of great significance', *People's Daily*, 21 March 2007, at http://english.peopledaily.com.cn/200703/21/eng20070321_359747.html.

metallurgy, chemicals, materials, energy, and information technology. The success of the project is bound to contribute significantly to nationwide technological progress. Fourth, arguably the most important driving force derives from the fact that China has a huge potential market for LCA. According to a projection by Boeing, the country will be able to absorb 5,260 new commercial airplanes over the twenty years following 2012. Of these, 2,710 will be in the C919's category of 90–175 single-aisle aircrafts, thus ranking China as the third largest LCA market after North America and Europe.¹⁸ The Chinese LCA industry can expect to get valuable learning experience by testing the water in the domestic market before it sells and competes in the global arena.

The construction of first-class large airplanes is a complex and challenging task for any kind of economy. Success depends on a set of internal and external factors, including aircraft design, safety, affordable pricing, after-sales service, entrenched competitors, and global aviation standards. Shortage of any specialized input can constitute a severe bottleneck problem for the programme. Confronted with these formidable obstacles, the Shanghai-based aircraft company has received substantial and consistent support from multi-tier governments and agencies to help it prepare the development ground. Effective support policies are considered by the Chinese authorities to be a vital component in the process of mobilizing adequate financial, technological, infrastructural, and human resources from local as well as international sources. At the top level of governance, the State Council promulgated in 2006 a coordinated set of Supporting Policies for the Outline of National Medium- and Longer-Term Programme for Science and Technology Development (2006–2020). The mandate broadly covers ten regimes of regulatory efforts that central and provincial governments and relevant departments are required to undertake to promote the construction of LCA:¹⁹

- (1) Scientific and technological investment.
- (2) Tax incentives.
- (3) Financial support.
- (4) Government procurement.
- (5) Technology import, adaptation, absorption and innovation.
- (6) Creation and protection of intellectual property rights.
- (7) Talent building.
- (8) Education and popularization of science.
- (9) Scientific innovative infrastructure and platforms.
- (10) Consolidated overall coordination.

¹⁸ Boeing, 'Current market outlook 2012–2031', at http://active.boeing.com/commercial/forecast_data/index.cfm.

¹⁹ State Council of the PRC, 'Supporting policies for the outline of national medium- and longer-term programme for science and technology development (2006–2020)', approved 7 February 2006, at <http://www.gov.cn/ztl/kjzgh/>, Sections 1 to 10.

In the years since the basic framework was established, concrete implementation plans have been rolled out step-by-step to achieve demonstrable effects in those areas. Specific problem-solving initiatives are being promulgated in the following sequence:²⁰

- (1) Interim rules on the management of national science and technology major projects.²¹
- (2) Interim rules on the financial management of national science and technology major projects for civilian service.²²
- (3) Interim rules on the management of intellectual property rights of national science and technology major projects.²³
- (4) Interim rules on the import duty policies of national science and technology major projects.²⁴

The government by-laws above are entitled ‘interim rules’ and thus given a preliminary regulatory capacity. They can be subject to modification as the LCA project progresses. Looked at more closely, their concrete provisions are fundamentally embedded in the existing Chinese laws and regulations. For instance, it is explicitly prescribed in the interim rules on the management of IPRs that leading guidance is taken from the legal principles codified in the current IPR-related statutes. These include the Scientific and Technological Progress Law, the Promotion of Transformation of Scientific and Technological Achievements Law, and the Patent Law of China.²⁵ Therefore, to ascertain the precise policy environment in which the young LCA industry grows, the special measures must be read in the broader context of the Chinese legal system and its actual operation. The following sections then move on to in-depth analyses of whether China, having embarked on firm endeavours to become an LCA competitor, is able to fulfil its

20 See the updated regulatory measures affecting the national major high-tech projects at <http://www.nmp.gov.cn/zcwj/>.

21 Ministry of Science and Technology, National Development and Reform Commission, Ministry of Finance of the PRC, ‘Interim rules on the management of national science and technology major projects’, effective as of 6 August 2008, at http://www.nmp.gov.cn/zcwj/200912/t20091216_1805.htm.

22 Ministry of Finance, Ministry of Science and Technology, National Development and Reform Commission of the PRC, ‘Interim rules on the financial management of national science and technology major projects for civilian service’, effective as of 2 September 2009, at http://jsz.mof.gov.cn/lanmudaohang/zhengcefagui/200911/t20091124_236399.html.

23 Ministry of Science and Technology, National Development and Reform Commission, Ministry of Finance, State Intellectual Property Office of the PRC, ‘Interim rules on the management of intellectual property rights of national science and technology major projects’, effective as of 1 August 2010, at http://www.gov.cn/gongbao/content/2010/content_1754120.htm.

24 Ministry of Finance, Ministry of Science and Technology, National Development and Reform Commission, General Administration of Customs, State Administration of Taxation of the PRC, ‘Interim rules on the import duty policies of national science and technology major projects’, effective as of 15 July 2010, at http://www.gov.cn/gzdt/2010-08/03/content_1670733.htm.

25 *Ibid.*, Article 1.

WTO commitments, including those additional to or distinct from standard multilateral obligations.

3. Civil aircraft tariffs and investment laws

The WTO's disapproval of import-substituting policies, predominantly tariff protection and quantitative restrictions, has given an external impetus to China to profoundly restructure its high-tech development strategy. Whether coincidentally or not, China joined the WTO in the year of 2001 when the Doha Round negotiations were formally launched. Trade concessions surpassing what existing WTO Members were committed to would ensure that, even if the Doha Round eventually failed, China would still undertake substantial reform of its domestic trade and economic policies. With all the commitments implemented, China's simple average bound tariff is reduced to 10% ad valorem, with 9.2% applied to all non-agricultural goods. Translated in trade-weighted terms, the figures are 4.6% and 4.2% respectively.²⁶ The nation is one of the few developing countries to maintain minimal 'water' between bound and actually applied tariff rates in their goods schedule. By applying the Swiss formula provisionally agreed in the Doha Round, China would be required to undertake an approximate reduction ranging from 27% to 32% of its average industrial tariffs, almost equal to the possible concessions provided by the EC or the US.²⁷ The diminished role of tariff protection in China's industrial development strategy is also evident in the current LCA project. From the year 2001 and on, China's customs duties on civil aircraft and aircraft production materials are bound at very low levels. Jumbo airplanes are classified under the Harmonized Commodity Description and Coding System (HS) as those with an unladen weight exceeding 45,000 kilograms. The Chinese government was committed to applying the relevant tariff at a most-favoured-nation (MFN) level of 1% ad valorem. Meanwhile, the imports of aircraft engines were subject to a levy of 2% ad valorem. For a residual category of aircraft parts and components, the average level of import duties was bound below a cap of 1% ad valorem. Import charges of any other type were not permitted to detract from the value of tariff concessions.²⁸ Furthermore, China agreed in a special commitment to eliminating all non-tariff measures, including quotas and import and export licences, for all civil

²⁶ WTO, '2012 tariff profile of China', at <http://stat.wto.org/TariffProfile/WSDBTariffPFView.aspx?Language=E&Country=CN>.

²⁷ The projections are based on using the Swiss formula with coefficients provided to developing countries (20, 22, and 25) and the one (8) for developed countries. China as a recently new-acceding Member cannot exempt itself from tariff cuts beyond the level of accession commitments. See WTO (2008), Doha Negotiating Group on Market Access, paras. 5 and 20.

²⁸ WTO, Schedule CLII—People's Republic of China, Part I Most-Favoured-Nation Tariff, Section II Other Products, Tariff Lines 88024010, 88024020, 84071010, 84071020, and 8803, at http://www.wto.org/english/thewto_e/countries_e/china_e.htm.

aviation products.²⁹ These trade commitments took effect as soon as it became a WTO Member. In the trade in civil aircraft, a comparable developing economy is Brazil, which in 1995 bound its aircraft and related component import duties at an average rate of 29.5% ad valorem, from a minimum of 2% ad valorem to a maximum of 35% ad valorem.³⁰ It was after 15 years of development that Brazil as an established regional jet supplier took the initiative to eliminate all those tariffs from 5 August 2010.³¹

The minimal tariff leeway accepted by China to enhance high-tech industrial competitiveness does not necessarily bring more harm than good. Consider the following two important facts. First, like the great majority of countries in the world, China's dependence on the importation of Boeing or Airbus LCA is unlikely to slow in the medium term. The national aviation authorities confirmed to the press as early as 2006 that China had contracted to buy more than 100 foreign civil airplanes each year, irrespective of its own aviation construction plan.³² Because of the growing internal and transnational demand for air transport, it could be problematic for the government to increase import duties simply to afford some protection to local manufacturers. It will surely take a significant period of time, at least 20 years as in the case of Airbus, before any viable producer can emerge to supply the home market. Another piece of evidence against tariff protection in China is that COMAC has been entering into purchasing agreements with international component suppliers, including Honeywell, Rockwell Collins, GE Aviation, and Eaton, to ensure that the quality of Chinese aircraft is not inferior to Western LCA.³³ Second, China has also become a crucial accessory supplier for Boeing and Airbus through a progressive and long-term cooperative relationship. To date, around 6,000 Boeing airplanes flying globally have involved Chinese manufactures to guarantee the completion of the 737, 747, 767, 777, and 787 series. Among them, 35 Chinese companies are direct component suppliers and hundreds more Chinese subcontractors engaged in different stages of building and assembly. Boeing has also registered several subsidiary companies in China, including a composite material producer in Tianjin.³⁴ Similarly, in addition to large-scale local sourcing, Airbus expanded its corporate footprint in China by opening the first final assembly line outside of Europe, located in Tianjin, on 28 September 2008. A joint venture was set up and the production site had been successful in

29 WTO (2001b), para. 122.

30 Bound tariffs at HS 6-digit subheading level of Brazil, tariff line 880240, at http://www.wto.org/english/thewto_e/countries_e/brazil_e.htm.

31 'Brazil: tariff reduction for the aircraft sector', *Global Trade Alert*, 5 August 2010, at <http://www.globaltradealert.org/measure/brazil-tariff-reduction-aircraft-sector>.

32 'Orders for new airplanes in line with demand: official', *China Daily*, 16 February 2006, at <http://www.china.org.cn/english/travel/158220.htm>.

33 See the complete list at http://www.airframer.com/aircraft_detail.html?model=C919.

34 Boeing, 'Boeing in China', at <http://www.boeing.cn/boeinginchina/introduction/>.

delivering a total of 100 A320 Family jetliners as of 25 September 2012.³⁵ Given that China has grown into a key player in the global aviation supply chain, trade-restrictive barriers maintained by it and its trade partners may become a recipe for disaster for both sides involved.

It is noteworthy that in 2011 the US Department of Commerce expressed its trade concerns that tariff protection maintained in countries such as India, Russia, China, and Brazil remained among market impediments to the export of US civil aircraft and aircraft accessories.³⁶ So far, thirty-one WTO Members, including the US, have subscribed to the plurilateral Agreement on Trade in Civil Aircraft and thereby eliminated customs duties and import charges on a broad range of civil aviation commodities.³⁷ Many other nations, including China, Brazil, and Russia, only obtained observer status to the code.³⁸ When acceding to the WTO, the Chinese delegation declared that the country was not in a position to join the agreement in the short run.³⁹ Nonetheless, the country's very low-level tariff rates demonstrated above should have drawn some positive comments. Should China be urged to become a member of the plurilateral agreement in the future, the obligation of tariff elimination alone cannot be seen to overburden the government's effort to graduate from tariff protection in the building of national LCA.⁴⁰

If trade protection is at odds with China's economic reforms, what are the difficult situations the government must face as a result of its special and more exacting WTO accession promises? In this regard, what is often at the centre of debate is China's non-discrimination obligation, which far exceeds the boundaries of national treatment or MFN provisions in the General Agreement on Tariffs and Trade (GATT) 1994:

Except as otherwise provided for in this Protocol, foreign individuals and enterprises and foreign-funded enterprises shall be accorded treatment no

35 Airbus, 'Airbus delivers the 100th A320 Family aircraft assembled in China', 25 September 2012, at <http://www.airbus.com/newsevents/news-events-single/detail/airbus-delivers-the-100th-a320-family-aircraft-assembled-in-china/>.

36 US Office of Transportation and Machinery, International Trade Administration, US Department of Commerce, 'Flight Plan 2011: analysis of the US aerospace industry', March 2011, at http://trade.gov/wcm/groups/internet/@trade/@mas/@man/@aai/documents/web_content/aero_rpt_flight_plan_2011.pdf, at 10.

37 The product coverage is extensively defined and ranges from complete civil airplanes to aircraft engines, sub-assemblies, ground flight simulators, and many essential parts and components. See Agreement on Trade in Civil Aircraft, at http://www.wto.org/english/tratop_e/civair_e/civair_map_e.htm, Articles 1.1 and 2.1.

38 WTO, 'Map of signatories to the Agreement on Trade in Civil Aircraft', *supra* note 37.

39 WTO (2001b), para. 239.

40 More generally, according to the estimate of the US Department of Commerce in 2001, the final tariff rates for major civil aircraft categories where it had trade concerns would average 2.7% when all reductions were completed by China. See <http://www.mac.doc.gov/China/Docs/industryfactsheets/civair.htm#civair>.

less favourable than that accorded to other individuals and enterprises in respect of:

- (a) the procurement of inputs and goods and services necessary for production and the conditions under which their goods are produced, marketed or sold, in the domestic market and for export; and
- (b) the prices and availability of goods and services supplied by national and sub-national authorities and public or state enterprises, in areas including transportation, energy, basic telecommunications, other utilities and factors of production.⁴¹

Due to the absence of prior decisions, it is hard to predict how panels or the Appellate Body would apply the benchmark ‘other individuals and enterprises’ beyond the ‘likeness’ criterion under GATT Articles I and III. Should ‘like’ LCA producers, for example Boeing’s composite material subsidiary in Tianjin, the Airbus Tianjin joint venture, and COMAC in Shanghai, be granted essentially the same treatment in terms of sourcing local supplies and availing themselves of basic social utilities? Will their divergent commercial establishments or different end products take some weight in the non-discrimination judgement? What may also be noted is that the above requirement stretches to conditions affecting the ‘production’ of goods in China, which is far broader than the concept of conditions affecting the marketing and sales of like imports. This broad-ranged commitment can effectively ensure that foreign aviation producers, regardless of their investment or registration in the territory of China, can receive almost full equal treatment. Except for subsidies subject to discussion below, no discrimination shall be imposed on them regarding either pre-competitive or all-round competitive activities. What may even provoke argument is whether foreign constructors, engineers, executives, and other service providers can claim for national treatment, as long as their contributions affect the conditions of ‘production’ and hence the competitiveness of foreign aviation products. Note in this respect that it is accepted practice for WTO Members to include in their service schedules a set of qualifications, work experience, or residential limitations for such service suppliers.

The challenge of China’s compliance with broader and stricter non-discrimination obligations is also evident in the trade-related investment sphere. The protocol of accession reaffirms in Section 7(3) the country’s wholesale non-discrimination commitment under the Agreement on Trade-Related Investment Measures (TRIMs). In the meantime, it deprives China of entitlement to the five-year transition period as a developing country. Again, a special undertaking is set forth for the sole case of China:

Without prejudice to the relevant provisions of this Protocol, China shall ensure that the distribution of import licences, quotas, tariff-rate quotas, or any other

41 WTO (2001a), Section 3.

means of approval for importation, the right of importation or investment by national and sub-national authorities, is not conditioned on: whether competing domestic suppliers of such products exist; or performance requirements of any kind, such as local content, offsets, the transfer of technology, export performance or the conduct of research and development in China.⁴²

The benchmark ‘whether competing domestic suppliers of such products exist’ implies that no foreign investment measure shall be employed to protect local import-substituting firms in China. It is again an all-encompassing obligation that extends over the ‘likeness’ criterion. Couched in broad language, the section actually inhibits the Chinese government from deploying ‘performance requirements of any kind’ as part of its industrial escalation plan. To recall, the illustrative list annexed to TRIMs simply and explicitly proscribes four types of foreign investment measure: local content requirements, trade balancing requirements, foreign exchange balancing requirements, and export restrictions.⁴³ Whether other types of investment regulations betray a Member’s non-discriminatory obligation is subject to panel and Appellate Body decisions on a restrictive and ad hoc basis.

The degree of technical sophistication of the Chinese aerospace industry is presently immature, so the components produced tend to be simpler and the ability for autonomous innovation is weaker than long-established Boeing or Airbus suppliers, such as Japan.⁴⁴ It surely takes a long period for the indigenous craftspeople to make the advances in knowledge and techniques which are essential to the production of highly sophisticated components, such as aircraft engines and airframes. The industrialization strategy successfully applied in previous years, for example ‘offering a market in exchange for technology’, has to come into line with the nation’s extensive non-discrimination obligations. The government is not allowed to impose any performance requirement or to conclude an offset agreement with any foreign investors. It may at best use tremendous domestic market strength to encourage greater investment in local aviation manufacturing. The prerequisite that foreign investors transfer or pass on core technological know-how to local personnel is strictly prohibited. Nor can they be coerced to conduct research and development in Chinese subsidiaries unless doing so accords with their own commercial interests. As illustrated above, both Boeing and Airbus have in recent decades invested intensively in China to purchase jet parts, assemblies, and services from cheap local sources. Although foreign establishments present potential learning resources, it is evident that the technology transferred from Western LCA manufacturers, if any, has not led the indigenous aerospace industry to become globally competitive.⁴⁵ It is openly recognized by the United States that

42 Ibid., Section 7(3).

43 TRIMs, Annex ‘Illustrative list’, Articles 1 and 2.

44 Bowen (2007), at 326.

45 Andersen (2008), at 15.

for national security reasons it is unwilling to significantly advance China's aircraft technologies to state-of-the-art levels, fearing that such technologies would be applied directly to China's military aircraft development.⁴⁶ So far, Boeing's involvement with China's LCA industry has primarily focused on logistics, repair, training programmes, and procurement of numerous auxiliary components, such as interior panels, emergency exit doors, and secondary composite structures.⁴⁷ In a similar vein, Airbus is determined to protect its knowledge to avoid training future Chinese competitors,⁴⁸ although it was initially expected that the Tianjin joint venture would have positive spill-over on China's own construction plan. In view of China's unqualified obligation not to use any performance requirements, the government may even come to reconsider the priority traditionally given to foreign suppliers which form local joint ventures or conduct a significant amount of local production.⁴⁹

4. Technical regulations and aviation standards

Technical barriers originate from technical regulations enacted by a country to prescribe common standards for product qualities. The legitimate objective is usually to protect the health and safety of local citizens as well as the environment they live in.⁵⁰ Over-restrictive or discriminatory standards can end up being a hidden means of protectionism. The Agreement on Technical Barriers to Trade (TBT) establishes the principle that to ensure the safety, credibility, and trustworthiness of civil aircraft products, regulations at an export destination should lead to the least possible trade restriction on market access.⁵¹ China promised to bring all its national and sub-national technical regulations into conformity with the TBT Agreement. No transition period is available for domestic standardization authorities to adapt to the range of first-class oversight responsibilities.⁵² WTO Members also sought an explicit commitment from China not to deviate from international standards that were not suited to a developing country's financial and trade status, despite China's protest that some developed nations had indeed done so.⁵³ The Chinese delegation at the time of accession declared that since the 1980s, the government's use of international standards as a basis for domestic technical regulations had increased from 12% to

46 Saunders, 'Statement before the US-China Economic and Security Review Commission', at 3, *supra* n. 14.

47 Bowen (2007), at 16–17.

48 'Airbus chief says Chinese bet paying off', *Agence France-Presse*, 10 March 2010, at http://www.google.com/hostednews/afp/article/ALeqM5j_J3ITCe-9RrTJavM97IMc3cZG2w.

49 US Office of Transportation and Machinery *et al.*, 'Flight Plan 2011', at 48, *supra* n. 36.

50 TBT, Article 2.2.

51 TBT, preamble, recital 5.

52 WTO (2001a), Section 7(2).

53 Araki (2003), at 210.

40%, and was bound to increase further by 10% in the following five years after joining the WTO.⁵⁴ Before obtaining its WTO membership, China was already a formal participant in the International Civil Aviation Organization, which is a technical agency of the United Nations.⁵⁵

In the field of civil aviation, the US and the EC are undeniably the pioneers in breaking new ground together and giving strong leadership in directing aviation standards towards the goals of credibility, reliability, and safety. The US Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) currently provide the regulatory model and aviation standards adopted by most nations in the world for regulating aircraft, airports, and air transport management systems. Pending progress in addressing their differences in a comprehensive pact, the two agencies accept each other's airworthiness certification based on bilateral airworthiness agreements signed between the US and individual European countries.⁵⁶ In addition, in 1992 the FAA established the programme of International Aviation Safety Assessments to examine a foreign country's ability to adhere to international standards and recommended practices for aircraft operations and maintenance. The international guidelines are established by the International Civil Aviation Organization mainly on the basis of the FAA aviation rules. As a consequence, a country's civil aviation authority needs to be assessed by FAA inspectors in order to identify if it meets the minimum global safety oversight standards. States which lack the capacity to meet the recognized regulatory levels cannot sell their aircraft and transport services into the territory of the US and most other countries in the world.⁵⁷

To date, COMAC has received orders to build a total of 380 C919 airplanes for domestic airline companies and one overseas purchaser, i.e. General Electric Capital Aviation Services, which is supplying engines and avionics for the C919.⁵⁸ COMAC is targeting an annual production of 150 of the C919 planes by 2020.⁵⁹ The company announced that its near-term goal was to ultimately account for one-third of the local market, since concentrating C919 sales on the rapidly growing Chinese market would be a safe option. During that process, the standard applied would still be international in terms of product

54 WTO (2001b), para. 184.

55 The International Civil Aviation Organization was created pursuant to the Convention on International Civil Aviation on 7 December 1944 to promote the safe and orderly development of civil aviation. It now consists of 191 Member States.

56 US Federal Aviation Administration, 'European Aviation Safety Agency: frequently asked questions', at http://www.faa.gov/aircraft/air_cert/international/easa/.

57 US Federal Aviation Administration, 'International Aviation Safety Assessments (IASA) program', at <http://www.faa.gov/about/initiatives/iasa/>.

58 'China's aviation ABCs: Airbus, Boeing, and COMAC', *Forbes Traffic*, 26 November 2012, at <http://www.cnn.com.cn/2012/11/26/232178.html>.

59 'China's plane rises to the challenge', *CanNews*, 21 November 2012, at <http://www.cnn.com.cn/2012/11/21/231599.html>.

development.⁶⁰ COMAC has also been active in signing memorandums of understanding to explore possible purchasers from foreign air carriers, such as the International Airlines Group in the EU⁶¹ and Eastern Air Lines in the US.⁶² Hence, an internationally recognized certification agency must be brought in to ensure the qualities of the C919, which is near the point of large-scale production. Delays in obtaining foreign airworthiness certifications, either from the FAA or the EASA, would render commercial returns from public investments to be infinitely uncertain.⁶³ They may also diminish the resolve of central and local governments to sustain such a long-term and hugely risky project.

The first problem encountered by the General Administration of Civil Aviation of China (CAAC) is that it must develop into a trustworthy certifier of products as complex as LCA in a short period of time. The agency desperately needs technical assistance to upgrade standard-setting and enforcement expertise and facilities, given that it must implement TBT immediately and without any exemption. In the 1980s, the convergence on international minimum standards which benefited US investors in China prompted the FAA to deliver valuable coaching, training, and advice to the Chinese aviation authorities. The two sides devised a technical-exchange programme to enhance the CAAC's surveillance role over certain types of US airplanes assembled in China.⁶⁴ In 1991, the FAA agreed further in the US–China Bilateral Airworthiness Agreement to establish a 'shadow certification' mechanism to assist, review, and accept the CAAC's certification of aircraft and aircraft components to US standards.⁶⁵ To date, the FAA has only agreed to accept airworthiness certification applications through CAAC from China-made regional jets ARJ21-700, which tried to avoid direct competition with the Boeing large airplanes.⁶⁶ The ARJ21-700 programme is currently undergoing flight tests and expected to receive certification from both the FAA and the

60 'COMAC poses no threat to Boeing, Airbus: President', *CNBC*, 14 February 2012, at http://www.cnbc.com/id/46376782/COMAC_Poses_No_Threat_to_Boeing_Airbus_President.

61 'British firm to consider buying Chinese plane', *CaixinOnline*, 7 October 2012, at <http://english.caixin.com/2012-07-10/100409399.html>.

62 'Growing demand for nation's C919 large passenger aircraft', *China Daily*, 21 November 2012, at http://www.chinadaily.com.cn/cndy/2012-11/21/content_15946481.htm.

63 'Further delays on Comac C919 program push first flight to 2015', *Aviation Week*, 24 May 2013, at http://www.aviationweek.com/Article.aspx?id=/article-xml/avd_05_24_2013_p01-01-581804.xml&p=1.

64 Keck (2000), at 16.

65 US–China Bilateral Airworthiness Agreement, effected by exchange of notes in Beijing, 14 October 1991, at http://www.faa.gov/aircraft/air_cert/international/bilateral_agreements/baa_basa_listing/ by selecting 'China', Article 3.

66 Civil Aviation Maintenance Association of China, 'CAAC and FAA held ARJ21-700 aircraft airworthy evaluation meeting', 2 November 2011, at http://www.camac.org.cn/en/show.php?class_id=55&news_id=8748. The development of ARJ21 regional jet was a key project listed in China's 10th Five-Year Plan beginning from 2002. It was led by the government-controlled AVIC I Commercial Aircraft Company (ACAC) consortium which was reorganized and became a part of COMAC in 2009. See 'ARJ21 regional jet aircraft, China', *Aerospace-technology*, at <http://www.aerospace-technology.com/projects/arj21/>.

CAAC in 2013.⁶⁷ The situation is a bit different for the C919, which is expected to be sold 20% cheaper or to give a 10% reduction in operation costs, thus making it a direct competitor to Airbus 320 Series or Boeing 737 in the narrow-body aircraft market.⁶⁸ Industry analysts have come to suspect that the FAA 'shadow certification' programme might be significantly delayed for the C919 project.⁶⁹ JDA, one of the world's leading aviation industry consultants, suggested that the technical and regulatory hurdles faced by China's aviation industry could be more sensitive and challenging than originally thought.⁷⁰ On 24 December 2010, CAAC and COMAC held a ceremony, without the official involvement of FAA, to accept an application for a C919 type certificate. Unlike the ongoing ARJ21-700 shadow audit conducted jointly with FAA officials, CAAC acted on its own to establish a C919 type certification group in Shanghai and put it in a 'central position to fully carry out the work of type certification'.⁷¹ This mode of work continued in the second half of 2012,⁷² although at the beginning of that year COMAC announced that it still expected to set up a joint certification group with FAA to certify the C919.⁷³ Given that the CAAC is new to the task of certifying large passenger jets, the lack of the FAA's cooperation can largely decrease rather than accelerate the speed with which the C919 can meet its target of global sales. Under the TBT Agreement, developed countries' obligations to transfer capacity-building assistance or technologies to developing countries are drafted largely in exhortatory language. No punishment or monitoring is imposed upon a developed country if it rejects or ceases to provide such assistance.⁷⁴ In the short run, it is also illusory for China to enter into a mutually equivalent agreement with the US or the EC, like the one benefiting Boeing and Airbus.

67 'Farnborough: ARJ21 first delivery pushed to end 2013', *Flightglobal*, 11 July 2012, at <http://www.flightglobal.com/news/articles/farnborough-arj21-first-delivery-pushed-to-end-2013-374219/>.

68 'Chinese passenger jet C919 takes on Boeing and Airbus', *CNN International*, 17 November 2010, at <http://www.cnn.com/explorations/life/made-china-passenger-jet-c919-takes-boeing-and-airbus-489192/>; 'China's aviation ABCs: Airbus, Boeing, and COMAC', supra n. 58.

69 'Plan for China C919 airliner hits a snag', *Aviation Week*, 9 September 2011, at http://www.aviationweek.com/aw/generic/story_generic.jsp?channel=awst&cid=news/awst/2011/09/12/AW_09_12_2011_p24-366882.xml.

70 'China's entry into world aerospace market faces technical and regulatory hurdles', *JDA Journal*, 12 June 2012, at <http://jdasolutions.aero/blog/china%E2%80%99s-entry-into-world-aerospace-market-faces-technical-and-regulatory-hurdles/>.

71 COMAC, 'CAAC officially accepts application for type certificate of C919', 24 December 2010, at http://english.comac.cc/news/latest/201101/28/t20110128_413566.shtml.

72 COMAC, 'C919 PSC signed in Shanghai', 31 July 2012, at http://english.comac.cc/home/photo/201208/06/t20120806_570643.shtml.

73 'China to seek FAA certification of passenger jet', *Dow Jones Newswires*, 21 January 2012, at <http://archive.chicagobreakingbusiness.com/2011/01/china-to-seek-faa-certification-of-passenger-jet.html#more-28358>. It was also expected that the involvement of GE Capital Aviation Service would help lobby the FAA to support and approve the FAA certification. See 'C919 jumbo jet: China unveils 1st large commercial jetliner', *Xinhua News*, 17 November 2012, at <http://www.whatsonningbo.com/news-450-c919-jumbo-jet-china-unveils-1st-large-commercial-jetliner.html>.

74 TBT, Articles 11, paras. 2–7.

The second outstanding issue is that, even if the FAA's participation might be available sometime, the C919 programme can still be exposed to undesirable delays if any foreign agencies adopt an extremely tough line against a new market entrant. Irrespective of the minimum airworthiness requirements operated by the International Civil Aviation Organization, each importing country has the sovereign right to adopt more stringent and precautionary measures against aviation risks. In the event of a legal dispute, considerable deference has been accorded by WTO tribunals to the 'chosen level of protection' imposed by a government as it sees fit.⁷⁵ Deviation from an international standard is acceptable if it is proved to be an ineffective or inappropriate means to achieve that level.⁷⁶ A case in point is the 1999 EC regulation to enact an aircraft noise reduction rule which ran directly counter to the Convention on International Civil Aviation.⁷⁷ Aircraft engines made in the US which employed devices called 'hush kits' to reduce noise could not meet the EC design requirement, while most European airplanes regardless of where their engines were made would not be affected by the regulation.⁷⁸ The US manufacturers would have been forced to adopt European technologies and equipment if they wanted to keep their market share in Europe. The US side alleged that there was no significance difference between the US and EC engines when measured by their actual levels of radiated noise. The EC regulation was thus claimed to be trade discriminatory on the basis of product origin. An arbitration process was initiated before the International Civil Aviation Organization Council, which urged the parties to resume bilateral negotiations to resolve their disputes. As the US took a very tough stance and threatened trade retaliation, the EC regulation was finally superseded and repealed by a new directive in March 2002.⁷⁹ Another recent episode is the EU levy of carbon tax, taking effect from 1 January 2012, on all airlines flying into the European airspace, regardless of opposition from more than two dozen countries, including the US, China, and Russia. The regulation was introduced as part of the EU Emissions Trading Scheme to help achieve the goal of cutting carbon emissions by 20% by 2020.⁸⁰ Pending the achievement of a negotiated solution among all interested parties,⁸¹ the EU legislation would function as an effective barrier to all foreign

75 Appellate Body Report, *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products (US–Tuna II (Mexico))*, WT/DS381/AB/R, adopted 13 June 2012, para. 304.

76 TBT, Article 2.4.

77 EC Council Regulation No. 925/1999 of 29 April 1999, *Official Journal of the European Communities*, 4 May 1999, L 115/1–L 115/4, Articles 2 and 3.

78 Murphy (2001), at 410–411.

79 EC Parliament and Council Directive No. 2002/30/EC of 26 March 2002, *Official Journal of the European Communities*, 28 March 2002, L 85/40–L 85/46.

80 'China blocks Airbus deals over EU carbon tax, says EADS', *IBTraveler*, 9 March 2012, at <http://au.ibtimes.com/articles/311286/20120308/china-block-airbus-deal-eads-eu-carbon.htm>.

81 'EU puts airline carbon tax on hold for a year', *Science News*, 21 March 2013, at <http://phys.org/news/2013-03-eu-airline-carbon-tax-year.html>.

airliners until they absorb the costs by dramatically reducing carbon emissions in flight.

The series of lessons taught to new LCA developers is that internal regulations can result in a more arduous impediment for their exports to overcome than apparent border protection. In an effort to navigate the development of high-tech industries through the technical jungle, the Chinese government has adopted an innovative strategy of ‘increased participation in international standardization through enterprise innovation’.⁸² The idea marks a sea-change in the country’s attitude towards international standardization activities. While admitting that Western standards are technically advanced in some aspects, the Chinese government is becoming increasingly aware of the significance of promulgating self-developed industrial standards in the international policy arena. For instance, on 16 February 2010, the International Standardization Organization approved the adoption of ISO 12384 standard as a modified version of ISO 1540 regarding digital equipment for measurement of aircraft electrical power characteristics. The decision embodied a historical breakthrough for China because for the first time its national standard became the foundation of an international standard in the aerospace sphere.⁸³ It is well understood by the local authorities that maximizing the reflection of local industrial standards and technical specificities in international standards can help to prevent, or at least to weaken, technical barriers set at all foreign borders.

5. Subsidies and Chinese IPR rules

The success of an LCA industry is not simply fuelled by the opportunities that the world market can offer. Given the formidable costs and risks at the pre-competitive stage, it is also dependent on determined and sustained government support to acquire adequate resources to build a modern industry. In anticipation of tangible interests, including prestige, national security, export earnings, employment creation, and technological advancement, states have historically taken a role in subsidizing ground-breaking civil aircraft manufacturers. Boeing, the single largest exporter in the US, and Airbus, the quickly growing competitor from Europe, were both no exception to the rule. Industry analysts tend to converge on the view that ‘government direct and indirect subsidies have exerted demonstrable effects on the development of Boeing and Airbus’.⁸⁴ Likewise, the two dominant regional jet producers, that is Canada’s Bombardier and Brazil’s Embraer, received generous subsidies and export finance before they could find a way to penetrate the highly

82 State Council of the PRC, ‘Supporting policies’, *supra* n. 19, Section 6, para. 34.

83 General Administration of Quality Supervision, Inspection and Quarantine of the PRC, ‘Interview on the AVIC Aero-Polytechnology establishment’s standardization activities’ (Chinese), at http://www.aqsiq.gov.cn/zjxw/dfzjxw/dfftpxw/201010/t20101015_157753.htm.

84 Carbaugh and Olienyk (2001), at 266.

competitive market.⁸⁵ The WTO tribunal has nevertheless determined so far that a great part of those government support schemes are not perfectly consistent with multilateral trade norms.

US and EC subsidy controversies originated as early as the 1976 Tax Legislation case under GATT 1947,⁸⁶ continued with the *US–Foreign Sales Corporation (FSC)* case adjudicated by the WTO in 1998, and developed into the current aircraft subsidy saga.⁸⁷ To date, both the *US–Large Civil Aircraft (2nd Complaint)* and *EC and Certain Member States–Large Civil Aircraft* disputes have undergone the panel proceedings and the appellate review, amounting to periods of more than six years respectively. On 1 June 2011, the Appellate Body report was adopted for the *EC and Certain Member States–Large Civil Aircraft* case. The Appellate Body reversed the panel’s finding that certain A380 ‘Launch Aid or ‘Member State Financing’ contracts signed between Airbus and the UK, German and Spanish governments amounted to export subsidies.⁸⁸ Nonetheless, it was able to confirm the existence and illegitimacy of several categories of domestic production subsidies totalling US \$18 billion over a period of more than forty years.⁸⁹ These actionable subsidies had brought serious prejudice to competitors of the US via the channels of financing arrangements known as ‘Launch Aid’ or ‘Member State Financing’, government-provided equity infusions into the Airbus consortium, and infrastructural support tailored for new airplane construction projects. The Appellate Body confirmed that these subsidies had resulted in the displacement of exports of certain Boeing single-aisle and twin-aisle aircrafts from the European, Chinese, Korean and Australian markets.⁹⁰ Later, on 23 March 2012, the Appellate Body report was adopted for

85 Goldstein and McGuire (2004), at 552–554.

86 GATT 1947 Panel Report, *United States Income Tax Legislation (DISC)*, BISD 23S/98, presented to the Council of Representatives on 12 November 1976; GATT 1947 Panel Report, *Income Tax Practices Maintained by France*, BISD 23S/114, presented to the Council of Representatives on 12 November 1976; GATT 1947 Panel Report, *Income Tax Practices Maintained by Belgium*, BISD 23S/127, presented to the Council of Representatives on 12 November 1976; GATT 1947 Panel Report, *Income Tax Practices Maintained by the Netherlands*, BISD 23S/137, presented to the Council of Representatives on 12 November 1976. The tax systems of both the US and the European countries were judged by the panels to be inconsistent with certain provisions of GATT 1947.

87 Appellate Body Report, *EC and Certain Member States – Measures Affecting Trade in Large Civil Aircraft (EC and Certain Member States–Large Civil Aircraft)*, WT/DS316/AB/R, adopted 1 June 2011; *EC and Certain Member States – Measures Affecting Trade in Large Civil Aircraft (2nd Complaint) (EC and Certain Member States–Large Civil Aircraft) (2nd Complaint)*, WT/DS347, request for consultations received on 31 January 2006, authority for panel lapsed on 7 October 2007; *US – Measures Affecting Trade in Large Civil Aircraft (US–Large Civil Aircraft)*, WT/DS317, request for consultations received on 6 October 2004, panel composed on 20 July 2005; Appellate Body Report, *US – Measures Affecting Trade in Large Civil Aircraft (2nd Complaint) (US–Large Civil Aircraft) (2nd Complaint)*, WT/DS353/AB/R, adopted 23 March 2012.

88 Appellate Body Report, *EC and certain Member States–Large Civil Aircraft*, para. 1416.

89 Office of the US Trade Representative, ‘WTO Appellate Body confirms U.S. win in Airbus case: \$18 billion in illegal European subsidies to Airbus’, May 2011, at <http://www.ustr.gov/about-us/press-office/press-releases/2011/may/wto-appellate-body-confirms-us-win-airbus-case-18-bill>.

90 Appellate Body Report, *EC and certain Member States–Large Civil Aircraft*, para. 1414.

the *US–Large Civil Aircraft (2nd Complaint)* case. It upheld the panel’s finding that the US had not entirely withdrawn export subsidies which were identified in the former *US–FSC* case. Consequently, the recommendations made in the *US–FSC* panel report that such subsidies should be removed without delay continued to be operative.⁹¹ In addition, the Appellate Body confirmed the existence of a variety of actionable subsidies amounting to a total of US\$5–6 billion. These subsidies were disguised as research and development funds, procurement contracts and state tax remissions over the period from 1989 to 2006. Subsidies to be disbursed after that date until the initiation of the dispute were estimated to be at least US\$3.1 billion. The effects of these subsidies were predominantly the displacement and impeding of Airbus aircraft in third-country markets, downward pressure on prices and significant lost sales.⁹²

When it came to the compliance stage, both parties were reluctant to withdraw or modify their subsidy programmes immediately. The US took the initiative of seeking authorization from the Dispute Settlement Body (DSB) to take retaliatory measures on 22 December 2011. When it came to the beginning of the year 2012, the two parties submitted a joint request to suspend the work of the DSB until they applied for its resumption.⁹³ On 30 March 2012, the US unilaterally requested the establishment of a compliance panel under the Dispute Settlement Understanding (DSU) Article 21.5 to examine whether the EC had implemented the DSB’s recommendations and rulings by withdrawing illegitimate subsidies or removing their adverse effects.⁹⁴ The panel was later approved and composed on 17 April 2012.⁹⁵ In return, the EC asserted that it retained its right to request the establishment of a parallel DSU Article 21.5 panel at any time to monitor compliance by the US.⁹⁶ Pending the adjudication results, it remains unclear whether the two trade powers might choose to resolve their controversies inside the WTO or more comfortably negotiate a mutually acceptable solution outside the framework. It appears that no party will be willing to overhaul its long-established subsidization programmes unless it is fully convinced that similar actions will be taken by the other side.

91 Appellate Body Report, *US–Large Civil Aircraft (2nd Complaint)*, footnote 2716.

92 *Ibid.*, para. 1350; Directorate General for Trade of the European Commission, ‘Background fact sheet WTO disputes EU/US large civil aircraft (updated 12 March 2012)’, at http://trade.ec.europa.eu/doclib/docs/2010/september/tradoc_146486.pdf, at 2.

93 *EC–Measures Affecting Trade in Large Civil Aircraft*; recourse to Article 22.6 of the DSU by the United States; communication from the Arbitrator, WT/DS316/22, circulated 2 February 2012.

94 *EC–Measures Affecting Trade in Large Civil Aircraft*; recourse to Article 21.5 of the DSU by the United States; request for the establishment of a panel, WT/DS316/23, circulated 3 April 2012.

95 *EC–Measures Affecting Trade in Large Civil Aircraft*; recourse to Article 21.5 of the DSU by the United States; constitution of the panel; note by the Secretariat, WT/DS316/24, circulated 25 April 2012.

96 *US–Measures Affecting Trade in Large Civil Aircraft (2nd Complaint)*; understanding between the European Union and the United States regarding procedures under Articles 21 and 22 of the DSU, WT/DS353/14, circulated 27 April 2012.

An earlier series of aircraft disputes involved Brazil and its main competitor, Canada, in the world market of regional civil aircraft. Through a sequence of mutual accusations in the WTO, the two countries tried to convince the tribunals that illegitimate export financing subsidies were maintained by the opposing party. In the 1999 *Brazil–Aircraft* dispute, the Appellate Body agreed with Canada that the Brazilian government’s low interest rate payment to the local aircraft producer Embraer was a subsidy contingent upon export performance.⁹⁷ A similar judgement was reached in the 1999 *Canada–Aircraft* case that the Canadian government’s various forms of financial support to Bombardier, a Canadian aircraft producer competing directly against Embraer, was an export subsidy.⁹⁸ In the 2002 *Canada–Aircraft Credits and Guarantees* dispute, the panel decided again that certain loan financing contracts signed between the Canadian government and a regional airline, Air Wisconsin, had better than commercial rates and a relationship of dependence on the firm’s export earnings.⁹⁹ At the implementation stage, both sides were initially unwilling to concede to external adjudication results, refusing to remove their export financing subsidies expeditiously. Compliance was not achieved until the very last stage when both parties feared that mutually expansive retaliatory actions would escalate into an outright trade war.¹⁰⁰ The two parties ultimately reached a ceasefire outside the purview of the WTO legal system. From 2005 until July 2007, Brazil made great efforts to participate in the renegotiations and obtained membership of the Sectoral Understanding on Civil Aircraft of the Arrangement on Guidelines for Officially Supported Export Credits (OECD Arrangement),¹⁰¹ to which Canada was an original contracting party. A level playing field thus seemed to have been secured for the main providers of aircraft export credits in the global market.¹⁰² According to the ‘safe haven’ clause contained in the Agreement on Subsidies and Countervailing Measures (SCM), government interest rates in conformity with the OECD Arrangement shall not be considered as prohibited export subsidies.¹⁰³

The record of jurisprudence above indicates that it has been an uneasy journey for most WTO Members, rich or poor, developed or developing, in casting off the

97 Appellate Body Report, *Brazil–Export Financing Programme for Aircraft (Brazil–Aircraft)*, WT/DS46/AB/R, adopted 20 August 1999, para. 196.

98 Appellate Body Report, *Canada–Measures Affecting the Export of Civilian Aircraft (Canada–Aircraft)*, WT/DS70/AB/R, adopted 20 August 1999, para. 220.

99 Panel Report, *Canada–Export Credits and Loan Guarantees for Regional Aircraft (Canada–Aircraft Credits and Guarantees)*, WT/DS222/R, adopted 19 February 2002, para. 8.1.

100 Sullivan (2003), at 95.

101 Arrangement on Guidelines for Officially Supported Export Credits, effective as of 1 April 1978, amended progressively, the latest version effective from September 2011; Sector Understanding on Export Credits for Civil Aircraft, annexed to the OECD Arrangement in 1986, amended in 2007, effective as of 1 July 2007.

102 OECD, ‘The Export Credits Arrangement 1978–2008: achievements and challenges continued!’, <http://www.oecd.org/tad/xcred/40594872.pdf>, at 10.

103 SCM, Annex I, item (k), para. 2.

legacy of subsidizing valuable manufacturing sectors. Highly selective or even enormous subsidies were used to consolidate industries offering growth, innovation and jobs in a country. Both Boeing and Airbus are regarded as symbols of technological and market dominance in the US and the EC. The national security argument to protect aerospace industries is also strong in both economies.¹⁰⁴ It is therefore doubtful that the forerunners would agree to bind their hands when facing new LCA competitors, including Canada, Brazil, Russia, Japan and China, to emerge in the international product market.¹⁰⁵ According to an industry observer, government support would surely be retained and appear in new forms in the two regions.¹⁰⁶ The international trade community is thus intrigued to know whether the current saga can end in an expansive and political agreement to harmonize subsidy practices of more countries in the world. The two Members' resistance to embarking on radical reform of subsidization policies may either do harm to the WTO system, or reopen the debate about the dubious pragmatism of its subsidy rules.

Having committed to the same set of rules, China encounters the intricate balancing issue of how to promote local LCA while fulfilling its legal obligations in good faith. The legal text declares affirmatively that export subsidies and production subsidies distorting fair pricing have detrimental effects on the maximization of global welfare. There is little possibility that Members will agree on a roll-back of the stringent disciplines. In reality, otherwise lawbreakers from both developed and developing countries may entice the Chinese authorities to manipulate all sorts of subsidies in the short term. Even when an unfavourable multilateral ruling is received, withdrawal of illegitimate subsidies can be considerably delayed or offset by counterclaims in revenge. To overcome the enormous initial thresholds, there is little doubt that a giant industry such as LCA needs some kind of assistance in any country to take off. In addition to its limited registered capital of RMB19 billion (then equal to US\$2.7 billion), COMAC has sourced substantial development funds as a state-owned enterprise from its shareholders, consisting of the central government, the Shanghai municipal government and several other state-owned companies. With the remarkable growth of private investment and partnership in China's civil aviation sector,¹⁰⁷ a private source of capital is also possible to help discipline commercial operations of the company in the way forward. Despite all these efforts, COMAC recognized that because its LCA could not emerge in one or two days, no genuine threat would be posed to large jet-makers like Boeing and Airbus for a long time.¹⁰⁸ During the

104 Tyson (1992), at 155; Carbaugh and Olienyk (2001), at 261.

105 The author wishes to thank Peder Andersen for his clarification of the country list.

106 Lee (2006), at 157.

107 'Civil aviation industry ready to take off', *China Daily*, 13 November 2012, at http://usa.chinadaily.com.cn/business/2012-11/13/content_15921457.htm.

108 'COMAC poses no threat to Boeing, Airbus: President', *supra* n. 60.

development journey, the government is taking great care to ensure that COMAC will become independently viable once the subsidies are phased out.

First, regarding science and technology investment, financial contributions are channelled in when the LCA project is considered feasible in terms of perceivable market returns and upgrading of technological capacity. Appropriations are focused on supporting the firm's pre-competitive research and development, which used to be a category of non-actionable subsidies under the SCM Article 8, to acquire, adapt and recreate key technologies and equipment. To make sure that no resources are inappropriately misused or abused, result-based surveillance and assessment mechanisms have been administered during the whole development process.¹⁰⁹ Second, regarding tax incentives, the public authorities establish objective and automatic criteria for eligibility for subsidies. According to the SCM Agreement, when these criteria are spelled out clearly in the law and strictly adhered to, the subsidies are not considered specific and legally challengeable.¹¹⁰ For any type of enterprise in China, a consistent policy applies to firms' research and development and employee training costs, below a pre-set level, which are permitted to be deducted from the current year's business income tax. For officially recognized high-tech enterprises, income tax can be remitted for the first two years from the time when they begin making profits. With respect to the seven prioritized national major high-tech projects, the companies involved do not incur customs duties and value-added taxes for the importation of equipment, technology, materials and components which are unavailable from a local source.¹¹¹ And third, regarding financial support, the government directs state-owned banks to diversify their investment in the commercialization of LCA innovations and to assist the importation and adaptation of foreign technologies. Incentives are also given to local commercial banks to encourage their active participation in financing the same activities.¹¹² According to the principle of equal and mutually shared benefits, COMAC entered into long-term strategic cooperative partnerships with the Construction Bank of China, the Export-Import Bank of China, and the Bank of China. The bilateral framework agreements enabled it to obtain an additional RMB50 billion (then equalling US\$7.46 billion) through credits, aircraft leasing, cash management, financial advice, etc., from each bank on top of its registered capital. These banks were committed to providing high-quality financial services to help the industry expand its global sales.¹¹³

109 State Council of the PRC, 'Supporting policies', supra n. 19, Section 1, paras. (3), (5), and (6).

110 SCM, Articles 1.2 and 2.1(b).

111 State Council of the PRC, 'Supporting policies', supra n. 19, Section 2, paras. (7), (9), and (10); Ministry of Finance et al., 'Interim rules' (15 July 2010), supra n. 24, Article 2.

112 State Council of the PRC, 'Supporting policies', supra n. 19, Section 3, paras. (15) and (16).

113 COMAC, 'COMAC signs contract for seller's credit on exports of high-tech products with Export-Import Bank of China', 8 June 2011, at http://english.comac.cc/news/latest/201107/04/t20110704_440724.shtml; 'CBC to inject 50 billion yuan into COMAC', *Global Times*, 27 September 2010, at <http://business.globaltimes.cn/industries/2011-04/577749.html>; Bank of China, 'Bank of China's

In view of the above, is it safe to predict that the supporting programmes run by the Chinese governments can avoid adverse effects on foreign competitors and hence not be captured by the SCM constraints? The somewhat extreme view of the WTO is that subsidization of most types delays the establishment of genuine international competitiveness. This attitude reached its peak with the termination of the ‘non-actionable’ subsidy group in 2000, regardless of the fact that economists persistently explore ‘good’ types of subsidies, or at least ‘good’ use among them of the all.¹¹⁴ For instance, government bail-out actions to address the 2008 financial crisis have reopened the discussion about the relationship between the roles of market and government in a free market.¹¹⁵ Moreover, it may also be pointed out that China’s subsidies to aircraft trucks can arguably give a bonus to the US or the European purchasers, who produce and export aircraft engines back to the territory of China.¹¹⁶ The government should be able to emphasize, above all, that none of its current policies has made apparent use of export subsidies or local sourcing subsidies categorically proscribed by the SCM norms. In addition, the promotional efforts above primarily focus on strengthening COMAC’s ability to acquire government support to better overcome the various technological snags. Talent building, popularization of knowledge and scientific platforms all represent typical infrastructural and skill-upgrading incentives. For instance, the central authorities created as early as in the 1970s the Shanghai Aircraft Design and Research Institute to be responsible for the design, testing, advanced research and key technologies of regional jets and trunk liners in China.¹¹⁷ Another pioneering base is the Beijing Civil Aircraft Technology Research Centre which was set up by COMAC on its own initiative in 2010. It works principally to recruit senior experts from overseas to assist in the overall planning of the Chinese aviation industry.¹¹⁸ This government-led and industry/academia/research collaborative mechanism is a leading pattern for unleashing the innovative potential of local businesses to the full in China.¹¹⁹ Assuming that the main problem of the Chinese LCA is the lack of cutting-edge aircraft technologies and skilled engineers, such subsidization efforts are likely to be a direct recipe to address this, and for that reason accepted by economists as a means of ‘optimal intervention’.¹²⁰ As explained above, the

RMB 50 billion support for COMAC international market promotion’, 9 June 2011, at http://www.boc.cn/en/bocinfo/bi1/201106/t20110609_1416677.html.

114 Sykes (2003), at 6.

115 Weber and Grosz (2009), at 973.

116 The author is grateful for the advice from the anonymous reviewer during the first review round.

117 COMAC, at http://english.comac.cc/home/subsidiaryenterprises/201012/27/t20101227_410347.shtml.

118 COMAC, at http://english.comac.cc/home/subsidiaryenterprises/201012/27/t20101227_410344.shtml.

119 Ministry of Science and Technology *et al.*, ‘Interim rules’ (1 August 2010), *supra* n. 23, Article 4, paras. (2) and (5).

120 Johnson (1965), at 4.

incumbent LCA producers are inclined to jealously guard the control of aircraft know-how embodied in their products either exported to or assembled in China. Inaccessibility of foreign technologies in the commercial market can be a sore issue for the Chinese manufacturers for a significant period of time. Furthermore, the private market alone may also fail to provide adequate or profitable investment for a local company to create entirely independent and proprietary technologies. The successful stories of Boeing and Airbus tend to show that governments often think of themselves as better candidates than private investors to commence and sustain ground-breaking aircraft projects (see above).

Justifying LCA subsidization programmes under the WTO legal system is a bit more complex and it surely requires far more than a simple declaration. Governments lacking strong persuasive ability and evidential sophistication cannot readily overcome the legal hurdles, considering the fact that no safety net exists for purely research and developmental subsidies. The nature of COMAC as a state-owned enterprise is bound to render the determination of its relationship with the Chinese government a difficult and sensitive one should disputes arise. The primary concern is that a special group of assessment criteria have been written into China's accession protocol to identify and calculate such subsidies. First, the government is forbidden from invoking the privatization and transition economy exceptions for subsidies granted to any state-owned enterprises.¹²¹ Even if the government investor is expecting an independent and modern enterprise, COMAC cannot enjoy immunity of any kind for prohibited or actionable subsidies, if any, to accelerate its market-orientation process. Second, government subsidies are viewed automatically as specific for all Chinese state-owned enterprises, if they represent the predominant recipients or receive a disproportionately large amount of such subsidies.¹²² The presumption that those subsidies are bad can make it easier for subsidies received by COMAC to be legally challenged or countervailed, even if the company may happen to be one beneficiary under an overall stimulus package. And third, any WTO Member can resort to an alternative benchmark if there are 'special difficulties' in determining the market conditions prevailing in China.¹²³ Because there is no restriction on how 'special' such 'difficulties' must be, an importing country is free, in principle, to make any kind of adjustment to Chinese prices. As in the case of anti-dumping investigations, it may either employ prices available in a third country of comparable economic status to China or even its own market prices as a basis of comparison. This provision has a permanent standing, irrespective of the fact that China or certain of its economic sectors are recognized by some countries as a mature market economy. In the WTO's jurisprudential practice, the provision has led to China's current complaint about the imposition of

121 WTO (2001b), para. 171.

122 WTO (2001a), Section 10.2.

123 Ibid., Section 15(b).

countervailing duties by the US, arising from its ignorance of relevant market prices prevailing in China.¹²⁴

In this respect, what can be further noted is that weak local IPR systems are also deemed by the WTO as ‘implicit’ subsidies to local businesses. WTO Members agree under the Agreement on Trade-Related Intellectual Property Rights (TRIPS) to eliminate all IPR infringing acts by law and to compete as fair followers rather than free-riders in high-tech areas. In the view of the chief negotiator for China’s WTO accession, ‘if China does not develop its own patents, copyrights and trademarks it will forever trail behind the developed countries and will never become a major economic power’.¹²⁵ COMAC, having paid high prices for protected foreign technologies and components, is actively engaged in the design and production of a locally made LCA engine. At a later stage of development, buyers of the C919 will be able to choose engines from the first generation manufactured by CFM International (a US–France joint venture) and the new Chinese engine to be installed on their airplanes.¹²⁶ As the ability of local innovators develops, their claim for stronger IPR protection grows dramatically. China as an innovation-oriented economy therefore should cast off the legacy of IPR under-protectionism.¹²⁷ The IPR regulators also need to avoid over-protectionism in the formulation of new rules which can even weaken the overall competitiveness of rich countries.¹²⁸ It may be argued that what would most suit the LCA agenda is not merely a strong or weak, but a well-balanced and pro-development IPR legal framework. It is IPR equilibrium that can better reflect the optimal trade-off between the two conflicting values of innovation and competition.¹²⁹

At one pole of innovation, as Chinese governments at various levels have invested heavily in science and technology development in recent years,¹³⁰ China is becoming more of a ‘full insider’ in terms of honouring and benefiting from its comprehensive TRIPS commitments. As part of the 11th Five-Year Plan, the State Council vowed to reach a world standard in creating, utilizing, protecting and enforcing IPRs by 2020. For the next five years, one of the strategic goals is to

124 China requested consultations with the United States concerning the imposition of preliminary and final countervailing measures on certain Chinese imports. It claimed that the challenged measures were inconsistent with Article 14(d) of the SCM Agreement and Article 15 of the Protocol of Accession of China by rejecting actual transaction prices in China as benchmarks in countervailing investigations. A WTO panel was composed on 26 November 2012 to decide on the case. See *United States–Countervailing Duty Measures on Certain Products from China*, request for consultations by China, WT/DS437/1, 25 May 2012.

125 Long (2002), at 167.

126 ‘Design of C919’s engine completed’, *China Daily*, 14 June 2012, at http://www.china.org.cn/business/2012-06/14/content_25646152.htm.

127 Deardorff (1990), at 506.

128 Macdonald (2002), at 29–30; Reichman (1997), at 24.

129 He (2011), at 829.

130 Gilman (2010), at 4.

cultivate a substantial body of self-developed IPRs in terms of world-level local patent applications as well as overseas patent applications.¹³¹ Raising the proportion of exportable goods rich in IPRs is considered a vital step in stimulating fundamental changes in the pattern of China's trade growth.¹³² Aeronautics, among others, is prompted to create a group of patentable technologies to set in motion the nation's overall technological advancement.¹³³ In other words, the country has resolved to make the best of its TRIPS commitments as an emerging producer and exporter, rather than a net importer of IPRs.

At the other pole of competition, the policy-makers are clear-minded about the fact that an IPR system does not exist solely for the benefit of IPR holders. According to the amended Chinese Patent Law of 2008, IPR protection is granted for 'encouraging inventions, giving an impetus to the application of inventions, improving innovative capabilities, and promoting scientific and technological progress as well as economic and social development'.¹³⁴ The legislation allows for the availability of general exceptions to IPRs in a broad manner, namely a patentee can only restrain infringing acts 'for production or business purposes'.¹³⁵ There is no listing of acceptable or unacceptable exceptions in an exclusive manner. Depending on the strictness of the judicial interpretation of this provision, the door could be open to IPR exceptions applicable for fundamental research, pre-competitive industrial research and academic-business cooperative research. In addition, Article 14 of the Patent Law prescribes that where a patent created by a state-owned enterprise or any other public institution is of great significance to public interests, designated entities can be allowed to exploit such patent, subject to payment of royalties to the patentee. By putting indigenously developed IPRs into wide social uses, the provision gives a strong incentive to local learning and cross-fertilization. In this sense, the new patent law essentially labels innovations created by state-owned enterprises as part of the overall national knowledge asset. With the increasing importation and utilization of foreign aircraft components, it remains to be seen whether the exceptional use of IPRs can turn into a legal obstacle between China and its foreign partners. Whenever joint ventures are formed or purchasing agreements signed, the foreign suppliers are probably apt to avoid the encroachment of Chinese ownership or control on their critical know-how at the next stage. A thorny problem in their eyes could be the state-owned nature of COMAC, and hence the possibility of wide dissemination and localization of its IPRs, including those transferred or learnt from foreign sources. In the event of a dispute, the relevant provisions of TRIPS can be evoked to determine whether the Chinese laws

131 State Council of the PRC, 'Supporting policies', *supra* n. 19, Section 2, paras. (6) and (7).

132 *Ibid.*, Section 3, para. (11).

133 *Ibid.*, Section 4, para. (16).

134 Decision of the Sixth Session of the Standing Committee of the Eleventh National People's Congress, Patent Law of the PRC (as amended 2008), effective as of 1 October 2009, Article 1.

135 *Ibid.*, Article 11.

have honestly observed the rule that IPR exceptions are strictly limited to non-commercial or non-business uses.¹³⁶

6. Conclusion

It is undisputed that WTO membership is generally conducive to China's ongoing trade and economic policy reforms. It accords with the country's desire to maintain the long-term health of the overall national economy and its particularly valuable segments. As discussed above, the multilateral constraints on industrial tariffs, quantitative restrictions, local content requirements and discriminatory application of trade measures all have suitable roles to play in China's progressive liberalization approach. What is at issue here are the emerging implications of WTO-plus commitments on the growth period of a complex giant, that is, the manufacturing and trade potential of Chinese LCA. The case study confirms the gravity of such an impact by demonstrating how those commitments have significantly narrowed the government's leeway either to learn from overseas practices, or to create new incentive tools as it chooses. When Airbus was first constructed in Europe to become a potential rival to Boeing, the European policy-makers explicitly acknowledged that they were developing an 'infant' industry and that their subsidies were therefore warranted.¹³⁷ The modern trade rules are becoming more limiting in every respect under the consolidated WTO legal system. By whatever standard of market efficiency, industrial development assistance can be subject to stringent scrutiny if it delivers an artificial advantage to local producers. In reality, the remarkably changed rule structure has not always delivered the same policy results for countries of different economic sizes and political influence. The languishing disputes between Boeing and Airbus and their subsequent stalemate suggest that trade powers may have a better opportunity to exercise *carte blanche* to support important industrial players. It then makes it hard to persuade other nations to stand aside rather than replicate the same strategy to industrialize and become rich. In order to avoid the most undesirable consequence that the entire notion of free trade is put into doubt, the WTO must insist on the implementation of the rule of law and supervise effective self-constraint by every participant.

The more intriguing evidence from the experience of Chinese LCA is that the government is becoming increasingly aware of its challenging but inevitable task of discharging WTO-plus responsibilities. Senior government leaders have expressed on different occasions a strong determination to privatize the local LCA enterprise and to push it into fully-fledged market competition in future. Undeniably, a good start cannot always make for a good ending. What remains to be observed is how the multi-tier public authorities can work together to effectively complement or

¹³⁶ He (2011), at 850.

¹³⁷ Carbaugh and Olienyk (2004), at 2.

strengthen, rather than substitute for, the role of the market in mobilizing indigenous and international human resources and technologies. A rigorous and honest market-orientation effort is indispensable to ensuring the quality, safety and affordability of a C919 type aircraft, for it to become a comfortable choice for international consumers in addition to the existing Airbus and Boeing types. While the Chinese LCA programme proceeds along its predetermined path, a host of questions could be posed and call for thorough deliberation. For example, an issue open to question is whether the Western forerunners would be sensitive to emerging competition pressures by ‘dumping’ aircraft products in their export market so as to stay ahead of the competition.¹³⁸ Or positively, in a sense of international coordination, would there be the need for a delicately balanced plurilateral or multilateral harmonization agreement to pin down maximum ceilings for civil aircraft subsidization? If so, which countries should be encouraged or urged to participate in the agreement so that a necessary mass of global LCA suppliers will make and exchange binding commitments? Even more speculatively, would these LCA suppliers autonomously find it a better option to make concerted efforts in the exploration of a safer, cheaper and greener prospect of civil aviation for their mutual and non-confrontational benefit?¹³⁹ Overall, the purpose of this article is mostly to set forth some of the questions and to put forward evidence to generate fresh discussion about them. It is hoped that this could lead in time to definite answers to the intricate issues identified for LCA and similar cases elsewhere.

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138 The author is grateful for the advice from the anonymous reviewer during the first review round.

139 Note in this respect that COMAC and Boeing have already joined hands to develop green technologies applicable to their airplane products. See COMAC, ‘Boeing-COMAC Aviation Energy Conservation and Emissions Reductions Technology Centre established in Beijing’, 16 Aug. 2012, at http://english.comac.cc/home/photo/201208/21/t20120821_573551.shtml.

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