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Boeing and Airbus: Duopoly in Jeopardy?

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Boeing and Airbus: Duopoly in Jeopardy?

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Abstract

For decades, Boeing and Airbus have struggled for dominance in the large commercial aircraft market. In 2010 and 2011, the World Trade Organization ruled that each firm has received illegal subsidies from the governments of the United States and the European Union, which have enhanced their competitive positions. This paper considers the nature of these rulings and the future competitive environment in the global jetliner industry.

KEYWORDS: Boeing, Airbus, subsidy, duopoly

Recent rulings by the World Trade Organization (WTO) have focused attention once again on the battle between Boeing and Airbus for dominance in the market for large commercial jetliners. The latest findings by the WTO are that both Airbus and Boeing have been recipients of illegal subsidies from their respective governments, and that these subsidies have given each firm unfair advantages in the marketplace. These rulings come as no surprise to most observers. Both the European Union and the United States have a long history of subsidizing the manufacturing of civilian jetliners. In this paper, as a follow-up to two papers that we have written for this journal (Carbaugh and Olienyk, 2002 and 2004) on competition between Boeing and Airbus, we briefly review the history of subsidies in the commercial jetliner market and analyze the implications of the recent WTO rulings for the nature and composition of the market going forward.

The Birth of Airbus

Airbus was founded in the late 1960s in the hope of preserving the remnants of Europe's fragmented commercial jetliner manufacturing base, consolidating it, and growing it into an international competitor. At that time, the global market for large commercial jetliners was overwhelmingly dominated by American firms. Boeing, Lockheed and Douglas Aircraft controlled about 90% of the market. The governments of France, Germany, Britain and Spain recognized that in order to meet the challenge from the Americans and overcome the huge barriers to entry in the industry, they needed to combine their resources. In 1970 the Airbus consortium was officially established, and the governments of the four countries made major commitments for financial support of this enterprise. This support came largely in the form of loans at below-market rates to fund the bulk of the development costs for the A300, the first airliner produced by this consortium. Government loans were also provided to European suppliers of Airbus, particularly Rolls-Royce, which produced the engines that were used to power the Airbus aircraft.

This method of financing, called launch aid, has been utilized to support the development of the entire family of jetliners now produced by Airbus, and has contributed significantly to the growth of Airbus. As time passed, this funding evolved from direct grants to reimbursable advances that were linked to sales. Under this system, loans from Europe's governments are repaid gradually with each aircraft or engine that is sold. However, if sales fail to reach specified goals, the loan is not fully repaid. Thus, the governments assume a portion of the market risk of developing new aircraft or engines. This arrangement reduces market risk for Airbus and its suppliers, and gives them the ability to borrow in the open market at lower rates than they would otherwise have to pay for additional financing that they might require.

Consolidation in the United States

As the Airbus experiment unfolded, changes in the marketplace occurred on the other side of the Atlantic as well. Lockheed lost a huge gamble when its L-1011 wide-body jet failed to attain profitability, and the firm withdrew from commercial aircraft production in the early 1980s. Production problems with its DC-8 and DC-9 jetliners, along with the cost of development of the DC-10, forced Douglas to merge with McDonnell Aircraft, a major producer of military aircraft, in 1967. Douglas Aircraft operated as a separate unit within McDonnell Douglas, but continued to be plagued by production problems and tepid sales. Weakness in its commercial aircraft division ultimately caused McDonnell Douglas to seek a merger with Boeing, and the two firms merged in 1997. This merger left Boeing as the sole producer of large commercial jetliners in the United States and resulted in an effective duopoly in the global market, with Airbus as the only other major competitor.

Although the U.S. government does not provide launch aid or loans to Boeing (nor to engine manufacturers such as General Electric or other Boeing suppliers) for new development programs, it has received “indirect” subsidies. For example, the National Aeronautics and Space Administration (NASA) supports aeronautics and propulsion research that is shared with Boeing. Research sponsored by the Department of Defense creates technological spin-offs that are reflected in commercial jetliner innovation, most notably in aircraft engines and aircraft design. Furthermore, several state and local governments, particularly the states of Washington, Illinois and Kansas, provide tax breaks to Boeing, which has production facilities in those states.

The 1992 Accord

As Airbus began to increase its market share and establish itself as a viable competitor, Boeing became increasingly vocal about the unfairness of the launch aid that Airbus received. Airbus responded by drawing attention to the indirect subsidies received by Boeing. As sales of the Airbus A-320 began to chip away at sales of the popular Boeing 737 in the latter part of the 1980s, the debate became much more heated. This resulted in both sides coming to the bargaining table, and in 1992 they agreed on limitations on the level of subsidies. Launch aid for Airbus was limited to 33 percent of development costs and indirect subsidies to Boeing were limited to 3 percent of revenue.

However, as Boeing continued to lose market share to Airbus in the ensuing years, trade frictions intensified once again. In 2004, Boeing accused Airbus of violating the provisions of the 1992 pact and renounced the agreement. Trade

representatives from the United States and the European Union attempted to negotiate a settlement to the dispute in 2005, but their efforts were unsuccessful. Boeing filed a suit at the WTO, claiming that Airbus received illegal subsidies from European governments. Airbus immediately retaliated by filing a suit against Boeing, claiming that the federal and state subsidies received by Boeing were illegal. (Platzer, 2009).

The 2010 and 2011 Rulings

The first of the WTO's rulings in the case was announced in June, 2010. The WTO found that the government loans to Airbus, particularly those made to support development of the huge Airbus A380, contained elements of illegal subsidy and that these subsidies should be halted immediately. The launch aid was found to violate international trade regulations, resulting in a competitive disadvantage for Boeing. The government loans in question were priced at below market rates and had overly generous repayment terms. This decision could potentially result in Airbus having to repay or restructure billions of dollars in past aid or risk allowing the United States to retaliate by increasing tariffs on products imported from Europe. Airbus has filed an appeal, claiming that the ruling is incorrect. The WTO ruling on the Airbus appeal is expected later in 2011. Although the WTO cannot force countries to eliminate subsidies, it can authorize the country where the harmed company resides to retaliate with trade sanctions of an equal amount, giving each side an incentive to claim maximum harm. It is up to the losing government to define its compliance in a proposal agreed to by the winner.

Airbus officials emphasize that the WTO's decision does not rule out launch aid in principle, indicating that Airbus fosters competition that facilitates healthy choice for its customer airlines. They also claim that the WTO's decision does not imply that the subsidies have caused material injury to Boeing in the form of lost sales and profits. However, Boeing officials have declared that the landmark decision is good news for aerospace workers in America who for decades have competed against a heavily subsidized Airbus. The decision should "level the playing field" and provide a vital precedent for other Airbus products or other nations with intentions to enter the commercial jetliner business, according to Boeing.

In February, 2011, the WTO issued a separate report declaring that Boeing received illegal subsidies from the U.S. government, to the detriment of Airbus. The WTO found that some funding provided by the U.S. Department of Defense and NASA resulted in illegal subsidies. Support for Boeing from the states of Washington, Illinois, and Kansas was also deemed an illegal subsidy. Although Airbus claimed in its filing that Boeing received about \$24 billion in illegal

subsidies from state and federal governments in the United States, the initial report of the WTO did not reveal how much of the aid received by Boeing was illegal. This data will be forthcoming later in 2011 when the WTO makes its report available to the public.

Thus far, Boeing has acknowledged the receipt of \$2.6 billion in improper subsidies. As for Airbus, it claims that the WTO ruling, when made public, will show that without those illegal subsidies Boeing would not have been able to launch the 787. All in all, Airbus estimates that it has lost at least \$45 billion through lost sales and lower prices as a result of Boeing subsidies.

Boeing and Airbus have each claimed victory in the subsidy dispute. Boeing contends that the rulings are completely separate and deal with very specific issues. According to Boeing, the WTO ruled clearly in 2010 that all government money provided to Airbus for development of new aircraft is an illegal subsidy and must cease. That debate is over and it is now time for compliance, according to Boeing. Boeing has also stated that it is prepared to accept compliance with a WTO ruling regarding its illegal subsidies. However, Airbus has emphatically resisted abandoning launch aid. It views the two rulings as a key to a future negotiated settlement by Europe and the United States under which launch aid and indirect subsidies will continue but they will be subject to specified limits, similar to the 1992 agreement.

According to Airbus, only when the two companies terminate litigation and begin negotiating will a basis be created for a level playing field in global aircraft manufacturing. Most industry experts agree that negotiation between the United States and the European Union remains the only reasonable way out. Unfortunately, such negotiations in the past have dragged on for years, and while Boeing and Airbus dither, the market environment is changing.

The Evolving Competitive Environment

Manufacturers of civilian commercial aircraft are normally divided broadly into two classes. In one class are the producers of large civilian aircraft, those with 100 or more seats. This market segment is a duopoly shared by Boeing and Airbus as producers of commercial jetliners and General Electric, Pratt and Whitney, and Rolls Royce as producers of jet engines. To spread their risk and decrease the cost of capital investment in new products, these firms are increasingly engaging in multinational joint ventures and creating partnerships with firms in countries such as China and Japan. The other class of producers is comprised of firms that manufacture smaller jetliners, those with fewer than 100 seats. This market for regional jets is dominated by Canada-based Bombardier and Brazil-based Embraer. These firms have displaced European manufacturers of regional jets in the global

market and are beginning to compete against Boeing and Airbus in the lower end of the 100-plus seat jetliner category. (U.S. Department of Commerce, 2005).

Bombardier is developing two new aircraft to compete in this market. The CS100 and the CS300 will have seating capacity in the 110 to 130 range. These planes will be built partly of composite materials and will burn 20 percent less fuel per passenger mile than models currently on the market. The maiden flight of the first CSeries prototype is scheduled for 2012, with first deliveries in 2013. Bombardier has 90 firm orders for these aircraft. Embraer has had aircraft of similar size in service for several years. The two largest members of Embraer's E-Jet family of aircraft, the E190 and E195, have seating capacity in the 98 to 122 range. Airlines from around the world are currently flying a combined total of more than 360 of these aircraft. These CSeries and E-Jet aircraft are in direct competition with the smaller versions of the Boeing 737 and the Airbus A320 family of aircraft.

Additional competition is springing up in other parts of the globe. Russian manufacturers have recently produced the first new civilian airliner since the collapse of the Soviet Union. The Sukhoi Superjet 100 is a 75 to 95 seat aircraft that its manufacturers claim is more efficient and less expensive to operate than Bombardier and Embraer aircraft of similar size. Sukhoi has more than 200 orders for the plane so far, from buyers in Thailand, Indonesia, Hungary and Mexico as well as Russia. The first deliveries are scheduled for the first quarter of 2011, and there are plans to build stretched versions of this aircraft that would have greater seating capacity. Sukhoi's civilian aircraft division is 25 percent owned by the Italian conglomerate Finmeccanica, which will make it easier for Sukhoi to penetrate western markets. Another Russian aircraft manufacturer, Irkut, has recently signed a contract with the Russian government to continue research and design work on a large commercial aircraft. The Irkut MS-21 will come in three variants, with seating capacity ranging from 150 to 212. Projected completion of the first prototype is scheduled for 2013, with first deliveries scheduled for 2016. It is important to remember that while large commercial aircraft are not currently being built in Russia, the Russians have shown in the past that they have the capability to produce significant numbers of such aircraft.

Historically, the Asian aerospace industries have produced a steady stream of failed commercial aircraft endeavors. Most ventures, such as South Korea's plans in the 1990s to manufacture a 50-seat regional jet, and several attempts by Japanese firms during the 1960s to 1990s to produce a commercial aircraft, never got beyond the drawing board. The Indonesian government pumped billions of dollars into the development of a regional jet in the 1990s. Two prototypes were built, but the project was ultimately abandoned. The Chinese attempted to produce what was essentially a copy of the Boeing 707 in the 1960s, but that project did not go beyond the prototype stage.

However, Japan's Mitsubishi has recently re-entered the regional jet market. The inaugural flight of the 88-seat MRJ90 is scheduled for 2012, with the first deliveries scheduled in early 2014. Mitsubishi already has 65 firm orders for the MRJ90, and it is preparing to launch a larger, 100-seat model as well. In addition, Japanese firms in total are responsible for building about 20 percent of Boeing's 777 and about 35 percent of the new Boeing 787. The technology transfer implied in this type of arrangement increases the possibility that Japanese manufacturers can support the development of larger aircraft in Japan in the future.

The China Factor

In the near future, the greatest threat to the Boeing-Airbus duopoly in large aircraft, and the dominance of Bombardier and Embraer in the regional jet market, will likely come from China. Like its Asian neighbors, China has had some false starts in its attempts to produce indigenous civilian jetliners over the past forty years. But all of that is in the past. The large increases in per capita income resulting from the rapid economic growth in China are creating significant increases in demand for air travel within the country, and the Chinese government intends to ensure that much of that demand is met with new regional jets and large commercial aircraft developed and manufactured in China.

In 2008 the Chinese government launched the Commercial Aircraft Corporation (COMAC). COMAC is a consortium of Chinese aerospace firms brought together to pursue a single goal – to develop and produce of commercial jetliners in China. COMAC immediately took control of a regional jet project in China that was already under development. Development of the ARJ-21 began in 2002, and its maiden flight was in late 2008. This aircraft has seating capacity of 70 to 95 passengers, and by late 2010 it boasted 240 firm orders, mostly from Chinese airlines. The first deliveries are scheduled for late 2011.

A greater potential threat to Boeing and Airbus will come in the form of COMAC's C919. The C919 will be a new entrant in the large commercial aircraft market, with passenger capacity of 168 to 190. Its maiden flight is scheduled for 2014, with first deliveries slated for 2016. The C919 will be constructed using lightweight carbon composites and will be powered by new fuel-efficient engines. Its designers anticipate that it will be 12 to 15 percent more fuel efficient than comparable Boeing and Airbus aircraft. While this aircraft has been developed by Chinese engineers and will be produced in China, its engines and internal systems will come largely from western aviation technology firms, including GE Aviation, Honeywell, and Eaton Corp. These foreign suppliers will work with Chinese firms in joint ventures to produce the components. This structure will, of course, involve substantial technology transfer as the Chinese partners in these ventures gain knowledge and experience from working with foreign suppliers on each

component part of the aircraft. Moreover, additional technology transfer is taking place in Tianjin, where Airbus has built a complete production line for the Airbus A320, and aircraft are being delivered from that facility to fill current orders from Chinese airlines. Several Chinese firms also serve as subcontractors to Boeing.

The C919 project is indicative of China's resolve to become a global power in the aviation industry. The original plan had been for the first delivery of the C919 to occur in 2020, but with the creation of COMAC and by putting the C919 on a fast track, China has sent a strong message to the rest of the industry that it intends to become a major player not only in China, but in the global market as well. By pushing this initiative, the Chinese government is showing its determination to accelerate the evolution of its industrial base from that of a low-cost producer of cheap labor-intensive products to one characterized by technologically advanced, locally designed and engineered, high value-added production.

Success in the aircraft industry is an important component of this vision of the Chinese government. Such success would have a positive impact on a host of other industries related to the aviation industry, such as electronics and material sciences. But success is not assured. Despite recent progress, the Chinese aircraft industry still faces major challenges. The commercial aviation business has very high entry costs and the established firms -- Boeing, Airbus, Bombardier, and Embraer -- will not sacrifice market share quietly. Also, airlines insist on quality, reliability, safety and support as much as they do a competitive price. Given China's substandard reputation in product quality, airline executives might well be skeptical about making major commitments to Chinese aircraft. (Blitzinger, 2010) That said, if the same resolve and ability to marshal vast amounts of resources that went into the construction of the Three Gorges Dam and the development of the Chinese space program and other megaprojects are directed toward the commercial airline industry, the odds of a positive outcome may be quite good.

Conclusions

Boeing and Airbus have dominated the market for large commercial aircraft for the past three decades. In recent years they have split the market almost equally, with a slight edge to Airbus. In 2010, Boeing delivered 462 jetliners while Airbus delivered 510. Up to now, the two firms have been protected by very large barriers to entry. That protection, however, is weakening as other firms are beginning to enter the lower end of this market. This is an important issue for Boeing and Airbus, since the 737 and A320 families of aircraft accounted for about 80 percent of deliveries and a little more than half the dollar value of sales for each of these firms in 2010.

To meet the challenge from these new competitors, Boeing and Airbus have several options. One option is to make small design changes and install more efficient engines to reduce operating costs for their smaller aircraft. Another is to completely re-engineer these planes and essentially produce new models in this market class. A third is to maintain the status quo and depend on their reputation for quality and service to fend off these competitors.

Whatever course of action Boeing and Airbus take, what might be most troublesome for them is the path that these new competitors are taking to compete for market share. While both Boeing and Airbus have been found guilty by the WTO of benefitting from illegal government subsidies, their new competitors have been receiving substantial government support as well. This can be seen most directly in the fact that the central government of China and the regional government of Shanghai own a substantial stake in the Chinese consortium COMAC. As another example, Bombardier is using about \$1 billion in launch aid from the governments of Canada and Britain for development of its CSeries aircraft. The British government has also provided subsidies to Bombardier as a way of keeping some its production in Northern Ireland, which is an economically depressed area. Ironically, Bombardier has charged that the rapid growth that Embraer has recently been experiencing has been supported by large subsidies from the Brazilian government. This is after the WTO found that both Bombardier and Embraer were guilty of taking advantage of illegal subsidies in the late 1990s and early 2000s. Embraer has denied the most recent charges and has pointed to the direct government support that Bombardier is receiving.

The Boeing-Airbus subsidy dispute is thus only part of a much larger issue. Resolution of this conflict has implications not only for how Boeing and Airbus will compete with each other in the future, but also how successful the new rivals will be. If Boeing and Airbus continue to ignore the trade regulations set by the WTO, they create a precedent for other competitors to follow. The result could be that governments will feel that they have *carte blanche* to support their domestic aircraft manufacturers at will, thus bringing the entire notion of free trade into doubt. For this reason, we feel that it is vitally important for trade representatives from the United States and the European Union, in concert with Boeing and Airbus, to expedite negotiations and agree to a comprehensive set of rules regarding government subsidies that would be binding for all members of the WTO.

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