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Airbus and Boeing: Strengths and Limitations of Strong States

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Over the past three decades, Airbus has emerged as the world's leading manufacturer of large commercial aircraft. The success of Europe's Airbus is dramatic, given that three decades ago, American domination of the large commercial aircraft market outside the Soviet bloc was uncontested. Airbus is now one of the world's remaining two large commercial aircraft manufacturers. Airbus was created by a coalition of European states and firms committed to regaining a European presence in the international large commercial aviation market. By most measures, the rise of Airbus is a striking example of a successful industrial policy that required a sustained multi-state collaboration over a number of decades.

In this paper, we argue that limiting an explanation of Airbus's achievement to the framework of conventional industrial policy, although highly useful, ignores that a necessary condition to the pursuit of a globally competitive commercial aircraft industry is a strong state with the capacity and the commitment to achieve a global position in civil aviation. This paper argues that two distinctive factors were critical to the rise of Airbus. First, a coalition of European states was able to act as though they were a strong state in the creation and implementation of an industrial policy. Second, the United States was cautious and constrained in responding to the Airbus challenge. This caution contributed to the success of the Europeans in securing a major role in the manufacture and sale of commercial aircraft.

The central importance of a strong state in reestablishing the commercial aviation industry through the commitment of resources—both within its borders and outside its borders—was not lost on the Europeans. By the 1960s, European states recognized that their respective national aviation industries

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had dwindled to next to nothing in the world commercial aviation market. Individually, the European states were unable to compete with American firms and their powerful state backer, the American government. This recognition led four leading Western European states to coalesce and form a common industrial policy, a coalition that in time came to work together as a "strong state" to compete with the Americans.

The four-member Airbus consortium was led by France and supported by Germany, with a major role to Britain and a smaller role to Spain. These participating states understood that the development of a large commercial aviation sector was complementary to the manufacture of military aircraft on the part of two of the participating countries (France and the UK). But, more to the point, a large commercial aircraft industry was judged to be emblematic of a global European presence and a commitment to restore a significant European presence in civil aviation. The consortium reorganized and consolidated the state-based European large commercial aviation industry as a transnational industry: Airbus.

In the sections that follow, we explore the uses of industrial policy, the close relationship between the rise of aviation and the actions of North Atlantic states, the effective coalition of European states that worked together to build Airbus globally, and, finally, the muted nature of the American response to the rise of Airbus.

Industrial Policy and the Uses of a Strong State

The assumption that drives industrial policy is that the state can make substantive differences in economic growth by targeting selected sectors for development.[1] The critical challenge to industrial policy is that the state starts out promoting sunrise industries and ends up subsidizing sunset industries. We argue in this section that the development of aviation cannot effectively be separated from the history of a strong state, itself capable of exercising its commitments both domestically and abroad. An understanding of industrial policy helps to clarify the nature of the relationship between the state and its aviation industry, but a knowledge of the relationship between a strong state and aviation is instructive to understanding not only the rise of Airbus but also the muted nature of the American response to its rise.

Traditional industrial policy takes as its premise that economic competitiveness in a global market requires a well-thought-out cooperative strategy

[1] Klaus Stegemann, "Policy Rivalry from Industrial States: What Can We Learn from Models of Strategic Trade Policy?" *International Organization* 43 (Winter 1989): 73–76; William E. Hudson, "The Feasibility of a Comprehensive U.S. Industrial Policy," *Political Science Quarterly* 100 (Autumn 1985): 461–478; Alberto Ades and Rafael Di Tella, "National Champions and Corruption: Some Unpleasant Interventionist Arithmetic," *The Economic Journal* 107 (July 1997): 1023–1042; R.D. Norton, "Industrial Policy and American Renewal," *Journal of Economic Literature* 24 (March 1986): 1–40; Michael Mastanduno, "Do Relative Gains Matter? America's Response to Japanese Industrial Policy," *International Security* 16 (Summer 1991): 83–84.

between the export sectors and the state to realize the goal of securing or enlarging market share.[2] Industrial policy can, presumably, be achieved via a number of strategies. Implicit within the particular strategy selected are clearly identified goals, well-developed plans to realize these goals, and a grasp of the time and resource commitment needed.[3] Some critics have argued that states often lack the capacity to realize such policies. Other critics challenge the premise that such policies are needed at all.[4]

The form of industrial policy that has captured the most attention is industrial policy as sectoral policy. Its focus is the state's commitment to promote a specific industry's position within the international economy.[5] Gary Becker defined this traditional understanding of industrial policy as government subsidies for the development of specific sectors that "help America [in this case] compete in the global marketplace."[6] Becker's definition is stated simply but goes to the heart of what is often judged to be a critical and controversial component of industrial policy: the decision of the state to aid the advancement of a specific sector of the economy. A recurring issue for both proponents and critics of industrial policy is not only the identification of such an industry—that is, the process of picking a winner—but the understanding of how, once picked, the industry is to be successfully aided in becoming a persuasive competitor in the world market.[7] This question is made all the more challenging when that industry is aviation, an industry that cannot be separated historically from state sponsorship.

There does not appear to be any clear formula that maps out how a state should help a sector secure a strong position in a global market. Nor is there much discussion about how a state protects domestic priorities abroad by securing access to international markets. Some of the components that regularly appear in industrial policy are state assistance in research and development, funds for facilities construction, help in providing a suitable work force, a regulatory climate conducive to the developing sector, resources for marketing, help in building markets for the product at home, and, of course, securing contracts abroad.[8] Some of the assumptions that underlie many of the

[2] Hudson, "The Feasibility of a Comprehensive U.S. Industrial Policy," 463; Paul R. Krugman, *Pop Internationalism* (Cambridge, MA: MIT Press, 1996), 110.

[3] Ibid., 110.

[4] Norton, "Industrial Policy and American Renewal," 34–36.

[5] Ibid., 19.

[6] Gary Becker, "The Myth of Industrial Policy" in Robert Carbaugh, ed., *Inside the Global Economy: A Case Study Reader and Review Guide* (Cincinnati, OH: South-Western Publishing Company, 1995), 69.

[7] Hudson, "The Feasibility of a Comprehensive U.S. Industrial Policy," 465; Richard Beason and David E. Weinstein, "Growth, Economies of Scale, and Targeting in Japan (1955-1990)," *The Review of Economics and Statistics* 78 (May 1996): 286–295; Krugman, *Pop Internationalism*, 139.

[8] John Zysman and Laura Tyson, eds., *American Industry in International Competition: Government Policies and Corporate Strategies* (Ithaca, NY: Cornell University Press, 1983), 21.

strategies associated with industrial policy have to do with state capacity.[9] The key assumption is that adequate state capacity exists to take action on behalf of the appropriate sector, even when it is at the expense of other sectors.[10] The state's capacity should be sufficient to help the identified sector and ultimately to wield influence abroad on behalf of that sector.

Industrial policy was widely and prescriptively discussed in the early 1980s, both in public policy debates and in the literature on international political economy and related fields. Laura Tyson, former chair of President Bill Clinton's Council of Economic Advisors,[11] and her colleague John Zysman, among others, framed the discussion of industrial policy along these lines: even if the federal government did not articulate a well-developed industrial policy, it had one in any event, because the absence of action was, by default, an industrial policy. This framing of industrial policy reveals a core assumption: that state action or inaction is central to an explanation of why industries succeed or fail in the international market.

During the early 1980s and throughout the decade, France and Japan (in particular) were frequently cited as examples of successful industrial policy. Ezra Vogel and others argued that the Japanese Ministry of International Trade and Industry orchestrated Japan's postwar success.[12] A number of Japanese industries, notably automobiles and electronics, became, within the space of two decades, globally competitive, if not dominant, in their sectors of the economy.[13] These Japanese industries remained powerful forces in the global economy even after the era of rapid growth.[14] During the decades of the 1970s and 1980s, the Japanese economy continued to expand rapidly, whereas the American economy stagnated. But by the mid 1990s, the situation was seemingly reversed, with the Japanese economy stagnating, despite vast expenditures by the Japanese state to stimulate demand.[15]

[9] Dennis P. Quinn and Robert Jacobson, "Industrial Policy through the Restriction of Capital Flows: A Test of Several Claims Made about Industrial Policy," *American Journal of Political Science* 33 (August 1989): 707.

[10] Ibid., 707.

[11] "Selective Realism," *The Economist*, 9 January 1993, 59.

[12] Ezra Vogel, *Comeback* (New York: Simon & Schuster, 1985), 12–25, 63–65; Marie Anchordoguy, "Mastering the Market: Japanese Government Targeting of the Computer Industry," *International Organization* 42 (Summer 1988): 513–543; Chalmers Johnson, *MITI and the Japanese Miracle* (Stanford, CA: Stanford University Press, 1982), 195–197; Glenn R. Fong, "State Strength, Industry Structure, and Industrial Policy: American and Japanese Experiences in Microelectronics," *Comparative Politics* 22 (April 1990): 276; *The Return of the Men from MITI*, *The Economist*, 31 August 1996, 17.

[13] Anchordoguy, "Mastering the Market," 511; Giovanni Dosi, Laura D'Andrea Tyson, and John Zysman, "Trade, Technologies, and Development: A Framework for Discussing Japan" in Chalmers Johnson, Laura D'Andrea Tyson, and John Zysman, eds., *Politics and Productivity, The Real Story of Why Japan Works* (Cambridge, MA: Ballinger, 1989), 33.

[14] Samuel P. Huntington, "Why International Primacy Matters," *International Security* 17 (Spring 1993): 71–76.

[15] Nakatani Iwao, "A World Seen From Japan: A Design for Transforming the Japanese Economy," *Journal of Japanese Studies* 23 (Summer 1997): 399–417.

Critics of industrial policy began to question the premise that the state could identify national champions without drifting toward support for ailing industries. One study of twentieth-century German economic history suggested that there was a steady trend toward increasing state subsidies to the industrial sector and that increasingly, those subsidies went to sunset industries.[16]

This apparent reversal of fortune, for countries such as Japan and for some European countries that had been celebrated for their skillful use of industrial policy, reinforced American skepticism about the benefits of industrial policy, to the point that the debate was largely shelved. Critics of industrial policy concluded, particularly after the seemingly prolonged stagnation of the Japanese economy that became apparent in the mid 1990s (and continued into the next decade), that the manner in which industrial policy was deployed contributed to the stagnation.[17] They argued that the assumptions that government–business collusion was preferable to market forces and that the state could successfully "pick industrial winners and losers and then subsidize the former" only encouraged corruption, as arguably had been the case in Japan.[18]

By the late 1990s, industrial policy as a proactive state strategy no longer captured the interest of scholars or policymakers to the extent that it had a decade earlier. Positive accounts of the state's role in an economy's growth or decline shifted to assessments of how states promote competition and reduce burdens on export sectors. The judgment that industrial policy may fail more than it may succeed has been voiced by the influential economist Paul Krugman. Krugman offers a cautionary note concerning the limitations of state intervention in industrial development: the industry may become simply the captive of domestic special interests and jeopardize the benefits of free trade.[19] But on both sides of the Atlantic, the negative evaluation of industrial policy did not change the long-standing and strongly supportive relationships between states and their respective commercial aircraft industries, although it did change the context in which this support took place.

The Historical Role of the State in the Development of Civil Aviation

The state has long been involved directly and indirectly in the production and sale of aircraft, particularly large commercial aircraft. But by no means is state

[16] James Foreman-Peck and Giovanni Federico, "European Industrial Policy: An Overview" in James Foreman-Peck and Giovanni Federico, eds., *European Industrial Policy, The Twentieth-Century Experience* (Oxford: Oxford University Press, 1999), 426–458.

[17] Iwao, "A World Seen from Japan," 400; "A Rude Awakening: Gradual Economic Reform Is No Longer Enough," *The Economist*, 27 November 1999.

[18] Robert J. Caldwell, "Commentary: Will Asian Tigers Sink or Soar?" *San Diego Union Tribune*, 12 December 1997.

[19] Paul R. Krugman, "Is Free Trade Passé?" *Journal of Economic Prospective* 1 (Autumn 1987): 131–144.

commitment alone sufficient for launching and sustaining a large commercial aircraft industry. A number of factors matter in sustaining a large commercial aircraft industry, such as the quality of the product and the health of the international market. Nonetheless, we contend, a strong state capable of securing support for the aircraft industry at home and abroad is a necessary condition for building and sustaining a large commercial aircraft industry.

It is difficult, if not impossible, to isolate the manufacture of large civil aircraft from the role of the state, particularly a strong state that is capable of projecting power successfully outside its borders. There are a number of reasons for this symbiotic relationship. William Diebold, writing at the beginning of the modern campaign for industrial policy in 1980, observed that "The building of ships is antediluvian; the building of aircraft is of the twentieth century. But there are similarities: both activities have to do with security as well as economy; almost everyone wants some capacity in the field, usually more than can be sustained by ordinary commerce … ."[20] Large commercial aviation markets are characterized by high research investment, high costs of production, and relatively small orders. This combination of factors seems to promote state intervention: an industry that is costly to run and yet is judged to be in the nation's interest, particularly if that nation has the capacities of a strong state.

The U.S. government was active in supporting both military and civilian aviation throughout the course of the twentieth century and continues this support into the twenty-first century. This long-standing pattern of governmental intervention has been the "hallmark of the industry almost since its inception."[21] "Ever since [President Woodrow] Wilson created the National Advisory Committee for Aeronautics in 1915 to review and coordinate all aeronautical research and technology policies … every president has supported the aviation industry."[22] The U.S. executive agencies and Congress have encouraged the growth of aviation through federal contracts and a variety of other means. U.S. policymakers have established agencies and funds to promote the sale of American aircraft abroad. Perhaps one of the closest connections has been the federal government's commitment to research and development in aviation, overwhelmingly in the military sphere.

The major political events of the twentieth century and the development of aviation, both as a military force and as civilian transportation, are closely intertwined.[23] Major developments in aviation have often come about as a result of state action.[24] This long-standing practice has produced, for both states and commercial aircraft manufacturers, a clear set of expectations that states

[20] William Diebold, Jr., *Industrial Policy as an International Issue* (New York: McGraw-Hill, 1980) 126.

[21] Vicki L. Golich, "Made in America? Sustaining a Competitive Presence in the Commercial Class Aircraft Industry in the 1990s," *The International Executive* 38 (July/August 1996): 465–499.

[22] Ibid., 477.

[23] Vicki L. Golich, "From Competition to Collaboration: The Challenge of Commercial-Class Aircraft Manufacturing," *International Organization* 46 (Autumn 1992): 910.

[24] Ibid., 910.

will take action on behalf of their national aviation industries to promote growth and to provide protection from foreign competition from time to time.[25]

The possibilities of air warfare became apparent in World War I and were devastatingly realized in World War II.[26] A number of the larger nations became committed to building military air power and began to invest heavily in research and development.[27] The consequences of this investment were often easily transferred to commercial aviation.[28] From the late 1920s on, state interests in aviation extended beyond military applications, notably to the delivery of mail and freight, as well as passenger transportation.[29] In the middle decades of the twentieth century, there were major aviation manufacturing concerns in France, Britain, Germany, and the United States.[30] There was as well some aircraft manufacturing in the Netherlands, Italy, Sweden, and the USSR.[31] Historically, the American aviation industry is in many ways similar to its European counterparts. A close, symbiotic relationship between great power status, national defense, and aviation was forged over the course of the twentieth century.

Aviation is a research-intensive industry. In the United States, expenditures for research and development amounted to 17.5 percent of net sales, a figure exceeded only by the electronics industry. Perhaps more to the point, federal support for aviation from 1945 to 1982 was $104 billion, 75 percent of which was provided by military agencies. Over the same period, private firms contributed 15 percent of the total research expenditures, or about $9 billion. It is generally thought that military research and development has resulted in useful spillovers to the civil aviation industry.[32]

[25] Laura D'Andrea Tyson, *Who's Bashing Whom? Trade Conflict in High-Technology Industries* (Washington DC: Institute for International Economics, 1993), 157.

[26] David Weldon Thornton, *Airbus Industrie: The Politics of an International Industrial Collaboration* (New York: St. Martin's Press, 1995), 23.

[27] Golich, "From Competition to Collaboration," 910–911.

[28] Ibid., 914.

[29] Vicki Golich, Thomas E. Pinelli, and Rebecca O. Barclay, "An Evolution of Large Aircraft in the U.S.—an Overview" in Thomas E. Pinelli et al., eds., *Knowledge Diffusion in the U.S. Aerospace Industry: Managing Knowledge for Competitive Advantage* Part A. (Greenwich, CT: Ablex Publishing Corp., 1997), 8.

[30] Heidi M. Colby et al., eds., *The Changing Structure of the Global Civil Aircraft Industry and Market: Implications for the Competitiveness of the U.S. Industry* (Washington DC: U.S. International Trade Commission, 1998), 2–11. In the late 1940s, nine British firms were producing large civil and military aircraft. Thornton, *Airbus Industrie*, 35. In France, several nationalized aerospace firms were producing aircraft mostly for the national market. Ibid., 51. Through most of the early 1950s, the German industry remained small and divided regionally. Ibid., 63.

[31] Colby et al., eds., *Changing Structure*, 2–18.

[32] Vicki L. Golich and Thomas E. Pinelli, "The Influence of U.S. Public Policy on Large Commercial Aircraft—Innovation, Transportation, and Knowledge Diffusion" in Thomas E. Pinelli et al., eds., *Knowledge Diffusion in the U.S. Aerospace Industry*, 35–83; David C. Mowery, *Alliance Politics and Economics: Multinational Joint Ventures in Commercial Aircraft* (Cambridge, MA: Ballinger, 1987); Charles W. Wessner, ed., *Trends and Challenges in Aerospace Offsets: Proceedings and Papers*, (Washington DC: Board on Science, Technology, and Economic Policy, National Research Council), 1999.

Subsidies for aircraft research and development have been matched with support for sales of aircraft abroad. Perhaps the best known example is the U.S. Export-Import Bank, often described as the "Boeing Bank."[33] It was created to support the sale of American products abroad where private financing is judged to be unavailable and to level the playing field where foreign subsidies are said to exist. The bank provides favorable financing for overseas airlines who wish to purchase Boeing aircraft. The bank's support is understandable, given the importance of aircraft sales to the American economy. The U.S. trade surplus in transport aircraft (excluding spare parts) was $35 billion from 1985 to 1989. While commercial transport aircraft represented only .3 percent of the U.S. gross national product in 1989, they accounted for 3.4 percent of the value of merchandise exports. The industry exported $39.6 billion worth of goods in 1991.[34] Another significant form of support is the use of presidential pressure. A notable example was President Clinton's visit to China, which was followed by an announcement of a major order for Boeing commercial jets.

The United States Comes to Dominate: The 1960s and 1970s

In the decades that followed World War II, aircraft manufacturing in general and commercial aircraft in particular moved away from Europe toward the United States—and, to a much lesser extent, the Soviet Union.[35] The United States was one of two superpowers as well as the world's leading economy. There seemed to be a close connection between the manufacture of large commercial aircraft and American power.

By the early 1970s, the international commercial aircraft market was dominated by American firms, with Boeing having the largest market share (Table 1).[36] By 1970, sales by American commercial aircraft makers constituted more then 90 percent of all non-Soviet-produced commercial aircraft.[37] The international market in that era did not span the globe but stopped instead at the edge of the Soviet sphere of influence. Within the Soviet Union, eastern Europe, and other markets such as India, Soviet-built passenger aircraft were found in civilian fleets that served these areas. The Soviet Union was at that time the third largest producer of commercial aircraft.[38] The contemporary Russian civil aviation industry is, however, a modest endeavor.

[33] David E. Sanger, "Two Roads to China: Nice, and Not So Nice," *The New York Times*, 9 June 1996.

[34] "Eximbank Aircraft Financing Volume Likely to Stay High, Official Says," *International Trade Reporter*, 8 June 1994.

[35] Thornton, *Airbus Industrie*, 35.

[36] Vicki L. Golich "Resisting Integration: Aerospace National Champions" in Peter Sterk and David Willis, eds., *Shaping Postwar Europe: European Unity and Disunity, 1945-1957* (London: Francis Pinter, 1991), 125.

[37] H. Landis Gabel and Damien Neven, "Boeing v. Airbus" in Olivier Cadot et al., eds., *European Casebook on Industrial and Trade Policy* (New York: Prentice Hall, 1996), 154.

[38] Colby et al., eds., *Changing Structure*, 2–18.

TABLE 1

*Gross Aircraft Orders 1965–2003**

Year	*Airbus*	*Boeing*	*McDonnell Douglas*	*Lockheed*	*Total*
<1965	—	706	311	—	1,017
1965	—	417	282	—	699
1966	—	379	272	—	651
1967	—	338	130	—	468
1968	—	185	199	102	486
1969	—	156	93	—	249
1970	—	99	66	25	190
1971	10	90	46	6	152
1972	6	170	76	15	267
1973	2	182	108	12	304
1974	6	181	73	26	286
1975	17	117	30	2	166
1976	8	170	54	15	247
1977	25	228	88	5	346
1978	70	489	119	26	704
1979	132	322	94	37	585
1980	32	375	42	12	461
1981	64	223	40	5	332
1982	16	110	142	—	268
1983	6	151	47	—	204
1984	93	173	135	6	407
1985	92	396	133	—	621
1986	171	343	149	—	663
1987	114	362	114	—	590
1988	160	673	310	—	1,143
1989	488	878	228	—	1,594
1990	289	556	192	—	1,037
1991	107	261	38	—	406
1992	135	245	64	—	444
1993	38	248	16	—	302
1994	125	124	22	—	271
1995	106	392	85	—	583
1996	326	719	45	—	1,090
1997	460	551	17	—	1,028
1998	556	614	41	—	1,211
1999	476	392	—	—	868
2000	521	618	—	—	1,139
2001	375	335	—	—	710
2002	300	251	—	—	551
2003	284	240	—	—	524
Total	5,610	13,459	3,901	294	23,264

Source: Jet Information Services, Inc., www.jetinventory.com.

* Gross orders, not adjusted for cancellation.

The original reason that Europeans banded together to take on Boeing through Airbus is a good example of industrial policy in action. Europeans worried that America's big three civil aircraft manufacturers would close down Europe's weak and divided industry. "Boeing, McDonnell Douglas and Lockheed, which withdrew from the civilian side of aircraft manufacturing in

1981, enjoyed the benefits of a huge home market, which meant their exported aircraft were cheap."[39] Since the 1960s, concern within Europe had grown over the steady diminution of a European presence within the commercial aviation market.[40] Between 1960 and 1967, French and British manufacturers had seen a 50 percent reduction in aircraft deliveries. In contrast, American manufacturers had enjoyed a nearly 50 percent increase in sales of aircraft.[41] In fact, *Flight International* quotes former Airbus president Roger Beteille as saying that "there was no European manufacturer that had ongoing designs or manufacture of an aircraft that could effectively compete worldwide with American products."[42]

The Development of Airbus

In response to what Charles de Gaulle called the "American colonization of the skies," the British and the French joined together in a supersonic program, launching the *Concorde* in 1962.[43] While the *Concorde* was not a picture of economic efficiency, Europeans placed blame for the aircraft's failure solely on the United States, because the American government had restricted landing rights to just sixteen aircraft.[44] Europeans looked upon *Concorde*'s restricted entry into the American market as another example of the American commitment to maintain its domination of the commercial aircraft industry.

In the 1970s, French Prime Minister Jacques Chirac declared, "The Airbus consortium will not be daunted by the Americans who killed off the *Concorde*. … We will fight any trade war blow-by-blow as the future of the aeronautical industry and their employees is at stake."[45] The decision to challenge American supremacy in commercial aviation grew out of the goal of establishing or reestablishing a European presence in what had long been regarded as a sector that exemplified national power. From its very beginning, a key Airbus objective was to lead the commercial aircraft market.[46] For the French, in particular, Airbus was aimed at strengthening the domestic aerospace industry while challenging U.S. hegemony in the commercial aerospace market.[47]

[39] "Peace in Our Time: Boeing v. Airbus," *The Economist*, 26 July 1997, 59.

[40] Keith Hayward and Vicki L. Golich, "European Approaches to Knowledge Diffusion—Public Policies Affecting Large Commercial Aircraft Research, Development, and Production" in Pinelli et al., eds., *Knowledge Diffusion in the U.S. Aerospace Industry*, 804–805.

[41] Tyson, *Who's Bashing Whom?* 178–179.

[42] "Airbus History," *Flight International*, 29 October 1997, lexis last visited January 2001.

[43] Mark A. Lorell, *Multinational Development of Large Aircraft: The European Experience* (Santa Monica, CA: Rand Corporation, 1980), 48.

[44] Robert Holtz, "New Look at Supersonics," *Aviation Week & Space Technology* 30 (April 1979): 21.

[45] Ibid., 188.

[46] Ian McIntyre, *Dogfight: The Transatlantic Battle Over Airbus* (Westport, CT: Praeger, 1992), 36.

[47] Thornton, *Airbus Industrie,* 72.

For Europeans, the rise of transnational research and development projects became the preferred means of gaining sufficient resources to compete in global aviation. Aviation firms and several Western European states began to allocate resources for both development and production in what, presumably, continues to be the best strategy for competing with the Americans.

In 1965, the British, French, and German governments launched a collaborative program to evaluate the commercial prospects of a new wide-body large commercial aircraft, later named the A300.[48] Although the British government formally withdrew from the program in 1969, the French and German governments launched the Airbus Industrie, G.I.E. ("AI"), in 1970.[49] Construcciones Aeronauticas S.A. (CASA) of Spain joined AI in 1971. The British withdrawal was, in part, motivated by the profound ambivalence Britain has often felt toward collaboration with other European states. In 1979, Britain reentered the consortium, but under terms more favorable to French and German leadership. British Aerospace became a partner in 1979.

Thus, by 1979, Airbus was made up of aircraft manufacturers from France (Aerospatiale, 37.9 percent), Germany (Daimler-Benz, 37.9 percent), the United Kingdom (British Aerospace, 20 percent), and Spain (CASA, 4.2 percent).[50] At the time of the consortium's formation, the four firms not only had close ties to their respective national governments but were partially owned by them as well.

While Airbus's market gains in the 1970s were marginal, it did manage to enter the U.S. market with the sale of twenty-three A300s to Eastern Airlines in 1976.[51] Throughout the early 1980s, Airbus's market share was not much of a presence in global sales. The consortium's viability as a commercial force seemed at risk. It seemed to some observers that Airbus survived only through the subsidies of the participating consortium members, and even with these subsidies, had limited prospects of overtaking American manufacturers.

Subsidies can be key to understanding the aircraft industry's very nature. The industry is characterized by high technological risks, large development costs, and a steep learning curve.[52] It is important to note that the return on

[48] Thornton, *Airbus Industrie*, 74–75. The collaboration was necessary because each nation had a small domestic market that could only create short production runs, causing European aircraft to be more expensive. The British Plowden Commission observed that the cost of building an airplane in the United States was 10–20 percent lower than in the UK because longer production runs due to a larger market allowed U.S. companies to absorb learning costs more rapidly. John Newhouse, *The Sporty Game* (New York: Knopf, 1982), 124.

[49] Office of Industries, U.S. International Trade Commission, *Global Competitiveness of U.S. Advanced-Technology Manufacturing Industries: Large Civil Aircraft* (Washington DC: U.S. International Trade Commission, 1993), 2–13.

[50] Ibid., 2–14.

[51] McIntyre, *Dogfight*, 44.

[52] Tyson, *Who's Bashing Whom?* 156.

investment in the manufacture of aircraft is long-term. It takes about twelve years and anywhere from $6 to $15 billion to get a single aircraft off the ground.[53] Because manufacturers generally launch an entire family of products (with each family consisting of three to five related models) in order to provide airlines with equipment commonality, increased economies of scale, and decreased learning curves, the costs of launching an aircraft increase even further to about $2 billion for each new aircraft family derivative.[54]

The expense and risk of aircraft development and production are illustrated by the experience of both Airbus and Lockheed. In the 1970s, both Lockheed and Airbus introduced new models. Both manufacturers had roughly the same research and development costs in approximately the same time frame.[55] Lockheed sold more planes at the beginning, but after a decade, both firms had sold approximately the same number of planes. Lockheed determined that it had lost $2.5 billion on the L-1011, an average of $10 million per plane (excluding the cost of borrowing money), and as a result, Lockheed ceased production and withdrew from the commercial aircraft market. Meanwhile, Airbus stayed the course and continued to produce the A320.[56]

The consortium of governments aided Airbus via direct financial support and other avenues. A report from the Organization for Economic Cooperation and Development suggests that these European governments played an important role in the development of their respective aerospace industries through financial support, public procurement, and government ownership. Over time, Airbus began to function as an effective unit, although a unit with a long line of credit.[57]

Over the past several decades, Airbus has gradually penetrated two of the largest markets, North America and Europe, as well as other markets, notably Asia (Tables 2 and 3). The sale of aircraft is sensitive to safety considerations, efficiency, and other needs specific to quite sophisticated customers. Over this time period, Airbus developed a reputation for producing a full line of technologically advanced, reliable aircraft. All of this suggests that the competitive focus of the European industrial policy was not lost. There was a powerful clarity in competing with first two and, finally, just one American competitor.

[53] Ibid., 162; "Peace in Our Time"; The high cost of launching an aircraft is explained by the need to integrate and design the many complex systems necessary for flight. Colby et al., eds., *Changing Structure*, 2–4. The cost of launching Airbus's newest aircraft, the A380, is estimated at $11 to $12 billion. "The French Factor," *The Economist*, 24 July 2000.

[54] Office of Industries, *Global Competitiveness*, 4-3. The development costs of Boeing 7E7 will range between $7 and $10 billion. Renae Marle, "Boeing Gets First Order for New Jet," *The Washington Post*, 27 April 2004.

[55] Tyson, *Who's Bashing Whom?* 183.

[56] Walter J. Boyne, *Beyond the Horizons: The Lockheed Story* (New York: St. Martin's Press, 1998), 364–365.

[57] OECD Economic Studies, 15 (Autumn 1990).

TABLE 2

Aircraft by Region: North America (Selected Airlines)*

	Airbus		*Boeing***	
Airline	*Fleet*	*Order*	*Fleet*	*Order*
Aeromexico			72	8
Air Canada	124	13	45	
AirTran	4		75	59
Alaska Airlines			109	2
American	33		669	56
ATA			59	9
America West Airlines	81	20	57	
Continental Airlines			350	59
Delta Air Lines			494	66
Federal Express	89	10	233	
Frontier Airlines	28	31	12	
Jet Blue	57	96		
Mexicana	38	15	10	
Northwest Airlines	149	40	280	
Southwest Airlines			388	126
Spirit Airlines		35	32	
United	147	42	372	1
UPS	34	56	204	
US Airways	112	29	157	
WestJet			46	22
Total	896	387	3,664	408

Source: World Airline Directory, *Flight International*, 16 March/23 March/30 March 2004.

* Selected are those with twenty or more large commercial aircraft.

** Includes Boeing and McDonnell Douglas Aircraft.

The combined political influence of the consortium has proved politically persuasive in gaining marketing entry.

It should be observed that the consortium has been able to act as a robust "strong" state both in securing resources within Europe to build Airbus as well as in gaining access to markets both within and outside Europe. In combination, these countries appear to take on certain aspects of a strong state. These members, acting in concert and in possession of a vibrant military aviation industry, were capable of projecting their power abroad both politically and economically, making them capable of shaping the policies of the emerging European Union in relation to the United States. To be sure, it is also the case that orders will not turn into sales unless the aircraft is of sufficient quality that airlines do not perceive a risk in buying from Airbus.

From the early 1980s to the late 1990s, Airbus grew over 1,000 percent. Both its market share and the number of planes sold increased significantly. The significance of Airbus's achievement—and, to a greater extent, if it even represents an achievement—is debatable. Some argue that Airbus grew not only at the expense of its American competitors but also at the expense of profits. Airbus, as suggested earlier, was instructed to secure market share first

TABLE 3

Aircraft by Region: Europe (Selected Airlines)*

	Airbus		*Boeing***	
Airline	*In Fleet*	*On Order*	*In Fleet*	*On Order*
Air Berlin			43	
Air Europa			31	4
Air France	159	37	87	18
Aer Lingus	19	17	11	
Alitalia	45	1	112	2
Austrian Airlines	24	5	7	3
British Airways	60	16	172	
British Midlands	25	4		
EasyJet	1	114	70	3
Finnair	27	2	24	
Hapag-Lloyd	6		29	
Iberia	89	27	61	
Icelandair			14	
KLM		5	98	6
LOT			21	2
Lufthansa	119	27	90	
Malev			20	8
Olympic Airways	7		18	
Ryan Air			70	107
SAS	19	4	108	3
Spainair	16	5	29	
Swiss International	38	7	4	
TAP Air Portugal	38			
Turkish Airlines	12		42	
Virgin Atlantic	15	10	15	
Total	719	281	1,145	156

Source: World Airline Directory, *Flight International*, 16 March/23 March/30 March 2004.

* Selected are those with twenty or more large commercial aircraft.

** Includes Boeing and McDonnell Douglas Aircraft.

and to address profits later. The risk of such a strategy is that to postpone thinking about profits is not to think about them at all. Indeed, there were reports that consortium partners acted to supply parts to Airbus at prices beneficial to the supplier but with little thought as to whether Airbus as a purchaser benefitted.[58] But it would appear that the Airbus consortium kept its attention on the two goals of securing a place on the world market and staying in the global market over the longer run. The first goal required a good deal of support (subsidies) to develop a competitive product. The second goal required strategy to limit subsidies and to improve efficiency if Airbus was to stay in the global market as an effective competitor.

[58] Janet Guyon, "The Sole Competitor: Europe's Airbus, Boeing's Fierce Rival, Has its Own Troubles. The Likely Solution: Run It Like a Business," *Fortune*, 12 January 1998, 102.

The Airbus consortium stated that at some point they would form a single publicly traded firm.[59] There was, however, skepticism about when this would occur, given that the consortium's intent to coalesce was regularly announced and regularly postponed. There was also considerable doubt as to how this firm would be structured, particularly in light of the French government's separate aerospace industry. Nonetheless, Airbus has emerged as a firm with an identity that is apart from its national sponsors.

The critical next step for Airbus in its extended competition with Boeing is at the large end of the aircraft manufacturing scale. To compete with the 400-seat Boeing 747, Airbus is building its own super jumbo jet, the A380, which will seat 150 more passengers than the Boeing 747.[60] The development of the A380 is estimated to cost around $11 billion.[61] Additionally, Airbus has become competitive in every part of the world, including the fast growing Asian market predicted to become one of the strongest markets for large commercial aircraft, where some argue that Airbus is succeeding in its role as David to Boeing's Goliath.[62]

A European Commission report published on 29 January 2001, called the "2020 Vision," stated that "European Union member states must pool their research resources in the aeronautical sector if European companies such as Airbus Industrie are going to build on their significant recent market gains and overtake [their] U.S. competitor, the Boeing Co."[63] By 2003, Airbus was publicly committed to capturing a larger role in the military aircraft market, both globally and within the United States.[64]

Near the end of his administration, President Clinton warned the Europeans, and Airbus specifically, that building the A380 could lead to a trade war.[65] But there seemed to be little regard for such a threat in Europe. Indeed, the administration's grave warnings highlight the contrast between American rhetoric and the rather understated nature of the American response, which did not take serious steps to translate threats into actions blocking Airbus.

[59] Laurence Zuckerman, "The Jet Wars of the Future; Airbus Prepares to Take On 'The Boeing That Will Be,'" *The New York Times*, 9 July 1999.

[60] Pierre Sparaco, "Europe Embarks on $11-Billion A380 Gamble," *Aviation Week & Space*, 1 January 2001, 22.

[61] Pierre Sparaco, "The Waiting Game," *Aviation Week & Space*, 10 March 2003.

[62] William Love and Wayne Sandholtz, "David and Goliath: Airbus vs. Boeing in Asia" in Vinod K. Aggarwal, ed., *Winning in Asia, European Style* (New York: Palgrave, 2001), 187–224.

[63] "EC Report Urges Pooling of Resources of Member States for Airbus Research," *International Trade Reporter*, 1 February 2001, 198.

[64] John Tagliabue, "Airbus Aiming at the U.S. Military Market," *The New York Times*, 30 September 2003.

[65] "Airbus Launches Jet Project as EU Snubs Clinton Warning," *The Wall Street Journal*, 20 December 2000; Edward Alden and Kevin Done, "Storm Clouds Greet Newest Airbus: The Launch of the A3XX Super-Jumbo Could Trigger a Bitter Transatlantic Trade Dispute," *Financial Times*, 20 December 2000.

A Complex but Restrained American Reaction to Airbus

In the mid 1970s, the American share of the global market in large commercial aircraft was nearly 90 percent. By the end of the 1990s, it was under 50 percent. The steady and significant erosion of the American share of the international commercial aviation market raises a challenge for a paper that argues for the existence of a strong state as a necessary condition for any sort of sustained and significant participation in the global aviation market. The challenge is that the United States, a very strong state, seemed unwilling or unable to blunt the European Airbus challenge. Successive administrations, from those of Jimmy Carter to George W. Bush, have threatened sanctions if the consortium members and the European Union did not stop providing Airbus with what the United States regarded as unfair support.[66] The Americans have argued repeatedly that without European subsidies and other forms of support, Airbus would not have been able to make inroads into commercial aviation markets around the globe—at the expense of American firms.

Over the past several decades, American complaints and European concerns about these complaints resulted in just one formal agreement, the 1992 accord between the United States and the European Union, which established limits on the subsidies that could be employed in aircraft development.[67] But, as discussed shortly below, the accord is rather general and of limited value, leading analysts such as Steven McGuire to conclude that the rise of Airbus in the context of American–European trade demonstrates the limits of American hegemony.[68]

There is little doubt that American response to the rise of Airbus has been muted or ineffectual, particularly if measured by American manufacturers' loss of market share. The explanation for the nature of the American response, we suggest, lies in the interplay of a number of factors that, taken as a whole, support the argument that a coalition of states can act as a strong state—as a sophisticated actor in international trade. Such a coalition was strengthened as the European Union developed. The European Union is now a cohesive force in international trade and thus able to promote Airbus around the globe.

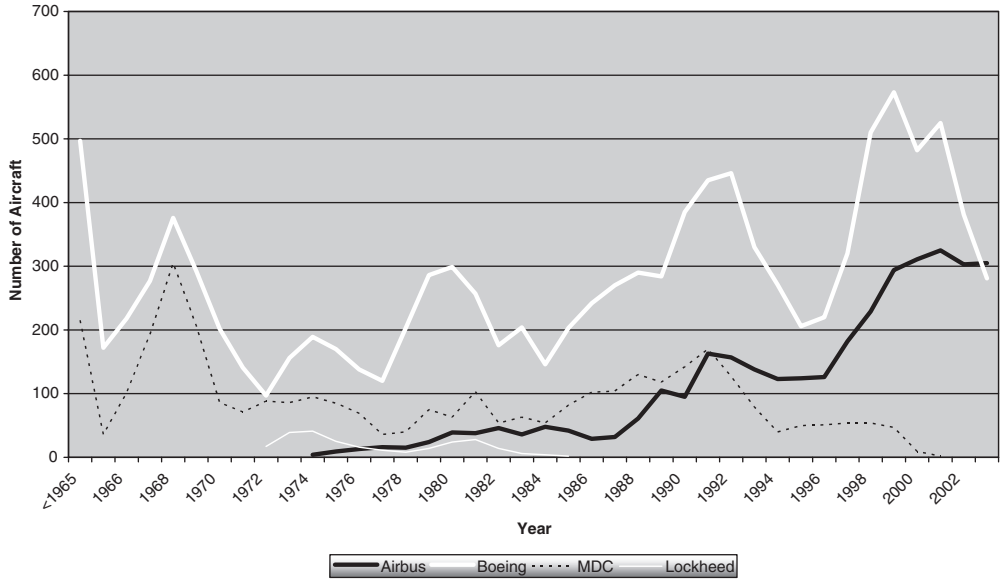
We propose that the factors that shaped and constrained the American response are as follows: First, the development of the commercial aviation

[66] "Europe Warned by U.S. to Halt Airbus Subsidies," *Seattle Post-Intelligencer*, 1 May 2002; "Clinton Issues Warning Over Airbus," *European Report*, 20 December 2000, No. 2544; "U.S. Vows Duties on EC Imports; Move Escalates Trade Dispute on Subsidies," *The Washington Post*, 1 May 1992.

[67] Agreement Between the Government of the United States of America and the European Economic Community Concerning the Application of the GATT Agreement on Trade in Civil Aircraft On Trade in Large Civil Aircraft," July 17, 1992, accessed on the website of the U.S. Department of Commerce at http://tcc.export.gov/Trade_Agreement/All_Trade_Agreements/exp_002816.asp, 15 October 2006.

[68] Steven McGuire, *Airbus Industrie: Conflict and Cooperation in US-EC Trade Relations* (New York: St. Martin's Press, 1997).

FIGURE 1
Aircraft Deliveries 1965–2003



Source: Jet Information Services, Inc., www.jetinventory.com.

industry is strongly linked to a wide variety of state subsidies and protections; this has been an enduring practice on both sides of the Atlantic. American criticism that the Airbus consortium unfairly subsidizes Airbus is blunted by the fact that the U.S. government has for a very long time subsidized American commercial aircraft manufacturers in similar ways. Second, Airbus moved quickly to penetrate the American market by relying upon American suppliers for major components of the aircraft and by securing orders from American commercial airlines for the expanding Airbus line. In short, Airbus sought to build, through American consumer and supplier networks, domestic support for Airbus in its competition with Boeing. Third, the aircraft manufacturing sector depends heavily upon the international export market. Exporters are acutely aware that if a country tightens rules governing imports, other countries will raise barriers to its exports in kind. This realization can serve—and likely did serve—as a constraint upon the American response to Airbus. Fourth, the elimination of McDonnell Douglas left Boeing as the sole American manufacturer of large commercial aircraft, with a potential monopoly at home and abroad that could possibly generate a serious political problem (Figure 1). Fifth, during much of the time in which Airbus was improving its market share, the global market in commercial aircraft grew at a rate that allowed Boeing to see an absolute increase in orders and deliveries of large commercial aircraft.

Over the past three decades, commercial aviation has steadily expanded, particularly from the vantage point of Asia and the nations bordering the North Atlantic. Between the 1960s and the 1990s, the commercial world aircraft market grew by nearly 220 percent. In some years, especially during the late 1980s, the aircraft market experienced a drop-off. But with the global expansion of the mid 1990s and the collapse of the Soviet Union opening markets to the East, Boeing sold more aircraft than ever, even with Airbus's steady climb to parity.

When Boeing became the sole U.S. manufacturer of large commercial aircraft, it represented a monopoly for a brief period at home and abroad—until Airbus penetrated both the American market and world markets.[69] The American corporate regulation regime is periodically given to bouts of deep concern over the rise of a single supplier and the threat that such a monopoly could pose to the workings of the marketplace. The challenge to monopolies in the United States has often been the stuff of high political drama, from Standard Oil through AT&T and Microsoft. It is, of course, only speculation, but if for some reason Airbus were to disappear and Boeing were to remain the only supplier of domestic commercial aircraft, the result could be a negative domestic political reaction. Perversely, Airbus today could be viewed as politically useful to Boeing, given that Airbus is a competitor in the American large commercial aircraft market.

But there should be no confusion about the negative reaction that American aircraft manufacturers, American trade officials, and office holders have had about the inroads Airbus has made in global aviation markets. What could be done about the Airbus challenge has been much less clear, given the interplay of domestic and international constraints on both Boeing and American policymakers.

The long-standing complaint directed at Airbus by successive American administrations revolves around the extensive subsidies provided by the consortium for the development of the Airbus line.[70] There are two difficulties with this complaint. First, some of the subsidies apparently provided by the Europeans to European aircraft parts manufacturers have also benefitted American suppliers and airlines based in the United States. And second, as the Europeans have pointed out to several American administrations, the U.S. government has provided indirect subsidies to American aircraft manufacturers, a point we have discussed earlier.

U.S. officials have complained that as much as $3.5 billion of the total $11 billion development cost for the latest addition to the Airbus line, A380,

[69] Eric J. Stock, "Explaining the Differing U.S. and EU Positions on the Boeing/McDonnell-Douglas Merger: Avoiding Another Near-Miss," *University of Pennsylvania Journal of International Economic Law* 20 (Winter 1999): 843.

[70] "The US Aerospace Industry is Facing its Biggest-Ever Challenge and Can no Longer Expect to Survive on a Diet of Massive Federal Spending," *Flight International*, 26 November 2002, 3; "Superjumbo Trade War Ahead," *The Economist*, 6 May 2002.

will come from government loans.[71] But part of those funds are being spent in the United States. Some observers believe that 40 percent of the A380 components will be manufactured in the United States. For instance, BF Goodrich alone will get $2 billion for the landing gear.[72] In addition, other observers suggest that Airbus has over 800 subcontractors in the United States and has placed orders amounting to $6 billion annually. Airbus argues that the A380 program will create up to 60,000 American jobs.[73] Securing on terms quite favorable to the purchasers a share of the American domestic market gave the consortium American allies, which helped in fending off Boeing and its supporters in Washington.[74]

Airbus aircraft represented 14 percent of the world's total available seat miles (ASM) in 1996, which nearly doubled to 27 percent in 2004. In contrast, Boeing's total world ASM share eroded 15.2 percent during the same period. Ironically, ASMs flown by Airbus planes grew most quickly in the United States, with a 205 percent jump from Airbus's 6.5 percent market share of ASMs in 1996. This still, however, represented less than 20 percent market share in the United States.[75]

Over a number of decades, Congress has sought to facilitate the sale of American-manufactured aircraft abroad, as we described earlier, with the creation of the Export-Import Bank. This so-called Boeing bank has long helped to support aircraft sales abroad.[76]

Although the response of various U.S. administrations to Airbus has often seemed confined more to rhetoric than action, there is no question that it was not long-standing and focused. The complaint concentrated on the extent of support provided by the European consortium to the manufacture of the Airbus line. Starting in 1978, during the Carter administration and around the time that Airbus was negotiating the sale of A300s to Eastern Airlines,

[71] "USA to Step Up Opposition to A380 Launch Aid," *Flight International*, 5 November 2002, 24; Pierre Sparaco, "Europeans Embark On Massive R&D Effort," *Aviation Week & Space Technology*, 18 November 2002, 30.

[72] Alexei Bayer, "Airbus to the Rescue: How Does Airbus Boost the U.S. Economy By Competing with Boeing?" 3 August 2001, accessed on the website of *The Globalist* at wysiwyg:theglobalist.com/nor/richter/2001/08-03-01.shtml, 10 August 2001.

[73] "Airbus Chief Says A380 Will Create 60,000 U.S. Jobs," *Aviation Daily*, 30 April 2001, 2. Emma Kelly, "Lufthansa Closes on A380 Deal," *Flight International*, 2 January 2001, 15. However, some American politicians dispute the number of jobs created by Airbus. Airbus claims that it has as many as 800 suppliers and vendors in the United States, which sustains 100,000 jobs and injects $5 billion a year into the U.S. Economy. Washington Senator Patty Murray, however, argues that the U.S. Commerce Department could not identify more than 250 U.S. firms working with Airbus and could only identify 500 jobs created in the United States by Airbus. Pierre Sparaco, "Walking a Fine Line," *Aviation Week & Space Technology*, 26 May 2003.

[74] Bayer, "Airbus to the Rescue."

[75] Steve Lott, "Airbus Capacity Share Rising, But Boeing Has Lead," *Aviation Week & Space Technology*, 2 May 2005, 40.

[76] Eximbank Aircraft Financing.

the American aircraft industry and its supporters began raising the issue with Airbus.[77]

By 1987, however, concern over Airbus took on a new dimension, when it became apparent to American manufacturers that Airbus was affecting them at the margin. In the face of small but steady sales to U.S. domestic carriers (often characterized as "innovative"), the industry began to complain more vigorously.[78] Boeing took the lead in voicing concern over the challenge Airbus was mounting to American manufacturers.[79] These concerns culminated in the 1979 General Agreement on Tariffs and Trade (GATT) on Commercial Aircraft, which reduced overall tariff barriers in the industry but did not explicitly prohibit subsidies.[80]

The debate over subsidies resumed and became very contentious in the second Reagan administration. The point of contention was the extent of German support for Airbus. The Reagan administration sent a team to Europe to protest European violations of the GATT. The Europeans, likewise, favored an agreement that opened the American market to Airbus. The agreement preceded a significant increase in aircraft sales on both sides of the Atlantic. For the first and only time over the last several decades, the United States brought a formal complaint under the GATT over a German exchange rate scheme that allowed Germany to provide additional subsidies to Airbus.[81]

In response to American protests, the Europeans were willing to negotiate, partly out of fear that the Airbus dispute would have an adverse affect on transatlantic cooperation on other issues. The commercial success of Airbus had also reduced the level of subsidy needed for Airbus to survive.[82] As a result, an agreement was reached in 1992, the 1992 United States–European Agreement on Trade in Large Civil Aircraft, which limited direct subsidies to 33 percent of aircraft development costs. It also limited indirect subsidies to 3 percent of the turnover of the civil aircraft industry of a party, or 4 percent of the value of a particular manufacturer's civilian sales.[83] Although both sides viewed the accord as preliminary, to be replaced eventually by a multilateral GATT agreement, it appears not to have been in either side's interest to push

[77] McIntyre, *Dogfight*, 82–83.

[78] McGuire, *Airbus Industrie*, 140.

[79] Ibid.

[80] "Agreement on Trade in Civil Aircraft," 6 November 1979, accessed on the website of the World Trade Organization at http://www.wto.org/english/docs_e/legal_e/air-79_e.pdf, 1 January 2003. Signatories included Canada, Egypt, the European Union, Japan, Macau, Norway, Romania, Switzerland, and the United States.

[81] Richard O. Cunningham, "Subsidies to Large Civil Aircraft Production: New WTO Subsidy Rules and Dispute Settlement Mechanism Alter Dynamics of U.S.-E.U. Dispute," *Air & Space Law Journal* 14 (Fall 1999): 4.

[82] McGuire, *Airbus Industrie*, 144.

[83] Agreement on Trade in Civil Aircraft; Daniel I. Fisher, "'Super Jumbo' Problem: Boeing, Airbus, and the Battle for the Geopolitical Future," *Vanderbilt Journal of Transnational Law* 35 (May 2002): 874–875; Cunningham, "Subsidies to Large Civil Aircraft Production," 5.

for a GATT agreement that applied to commercial aircraft manufacturing.[84] Indeed, the actual mention of aircraft in the final GATT agreement is limited to three footnotes; this has produced considerable ambiguity and disagreement as to whether the Uruguay round GATT agreement actually applies to commercial aircraft.[85]

It would appear that both the Americans and the Europeans were disinclined to place the manufacturing of large commercial aircraft for export under increased international scrutiny. Both sides of the Atlantic may have had a shared fear that the complex structure of support and intervention provided to Airbus and Boeing could be at risk if additional explicit agreements were to be negotiated as a part of the GATT. It is likely that both parties saw a greater risk of weakening their respective partnerships with their commercial aircraft industries if they were to opt for a GATT commercial aircraft agreement or seek redress under the existing GATT structure.

Drawing on the work of Helen Milner and others, McGuire concludes that when an important export sector is caught in a trade dispute, the sector will work to reduce tensions and will try to block retaliatory responses from its own government. The sector's fear is that such a response would be likely to result in a loss of market access for its product. We do not challenge the view that export sector manufacturers are prudential actors, but we do claim that they will seek a situation that grants them maximum access abroad while reducing their competitors' access. Such an objective is easier to achieve when competing against a weak rather than a strong state.[86]

We argue that the United States, although it recognized that the 1992 accord did relatively little to blunt the steady expansion of Airbus in markets around the globe, did not marshal its frustration into any sort of interest in strengthening the GATT framework as a useful tool for forcing the Europeans to reduce their support for Airbus. GATT—much more so than the accord—could seriously constrain both the European Union and the United States, interfering with support for their respective commercial aircraft industries. The state/private partnership regime that has long governed the large commercial aviation industry on both sides of Atlantic could be at risk if the GATT trade rules were applied to the Boeing/Airbus competition.

[84] Shane Spradlin, "The Aircraft Subsidies Dispute in the GATT's Uruguay Round," *Journal of Air Law & Commerce* 60 (May–June 1995): 1209–1210.

[85] Marc Kleiner, "Bananas, Airplanes and the WTO: Prohibited Export Subsidies," *University of Miami International and Comparative Law Review* 10 (Fall 2002): 136–137.

[86] Helen V. Milner and David B. Yoffie, "Between Free Trade and Protectionism: Strategic Trade Policy and a Theory of Corporate Trade Demands," *International Organization* 43 (Spring 1989): 239–272; Klaus Stegemann, "Policy Rivalry among Industrial States: What Can We Learn from Models of Strategic Trade Policy?" *International Organization* 43 (Winter 1989): 73–100; Paul R. Krugman, "Is Free Trade Passé?" *The Journal of Economic Perspectives* 1 (Autumn 1987): 131–144; Timothy Wendt, "Strategic Trade: Protecting American Economic and Political Interests" *Proceedings of the Academy of Political Science* 37 No. 4; Howard Pack and Kamal Saggi, "Is There a Case for Industrial Policy? A Critical Survey" *World Bank Research Observer* 21 (2006): 267–297.

The Americans have a complex trading relationship with the Europeans. An important component of this complexity is the size and power of the European trading bloc. In short, the United States lacks both the commitment and possibly the capacity to impose on Europe a trade regime that applies to both competitors. For that matter, Europe may be in a similar position vis-a-vis the United States.

CONCLUSION

Over the past thirty years, Airbus has greatly extended its product line and its overall market share to more than parity with Boeing. We have argued that the rise of Airbus cannot be understood without recognizing that the manufacture of large commercial aircraft has historically been and continues to be shaped by the industrial policies of strong states, both in realizing its preferences domestically and in exercising influence abroad in world markets. Such a state today must be understood as globally strong. Over the course of the past four decades, policymakers in the major Western European states have become acutely aware, perhaps painfully so, that individual European states can no longer participate in the global large commercial aviation market. The formation of the European consortium in some ways anticipated the emergence of the deepening economic integration of the European Union.

The importance of the strong state thesis is reinforced in the examination of the muted response of the United States to the rise of Airbus. The capacity of the unified Western European states to enter the American market, both in securing suppliers and in the sale of large commercial aircraft, constrained the American response. More to the point, the United States was unable to challenge the Europeans in the World Trade Organization without calling into question its own support for the manufacture of American aircraft. The emergence of a global trade regime over the past several decades excluded the large commercial aviation market, an exclusion supported by both the Americans and the Europeans. When the American large commercial aviation market began to contract, and Americans were losing market share to the Europeans, the United States was unable or unwilling to challenge the Europeans. We submit that the inability of America to maintain dominance in the large commercial aviation market is, in large measure, the result of the Western European achievement of acting as a strong state in this particular global sector.

AUTHORS' POSTSCRIPT

A number of profound developments have taken place since this article was accepted for publication. Indeed, a year ago, only a few observers would have questioned Airbus's rising dominance in the large commercial aviation industry, and even fewer would have predicted a dramatic reversal in Airbus's global standing. And yet in 2006, for the first time in five years, Airbus has dropped below Boeing in new orders.[87] The falloff in Airbus orders/sales has been dramatic. During the first nine months of 2006, Airbus received just 204 net orders against a record 723 orders for Boeing.[88] EADS shares have lost about a third of their value since June 2006.[89] Many of Airbus's most loyal customers have publicly questioned the design of the A350, Airbus's answer to the Boeing 787, forcing Airbus to redesign the aircraft.[90] One commentator called it "the worst crisis to hit Airbus during the 36 years in which it has slowly evolved from an unwieldy multinational joint venture into something approaching a normal corporate structure."[91]

The crisis at Airbus is in part a function of the delays surrounding the production of the Airbus A380. The setbacks in the production of the 555-passenger jumbo jet, which is two years behind schedule and nearly 5bn Euros over budget, have not only dealt a blow to Airbus's credibility but have also raised significant questions regarding the French–German political alliance that underpins the governance of EADS and Airbus.[92]

Despite the transformation of Airbus from direct government ownership to ownership by EADS, a publicly traded entity, and the current United States action against the European Union in the WTO, the French, German, and Spanish governments have clearly signaled their willingness to continue both exercising control over and subsidizing Airbus. Recently, French President Jacques Chirac and German Chancellor Angela Merkel "pledged to defend their countries' national interests" with regard to a recently announced restructuring plan for Airbus, potentially undermining the plan.[93] Indeed, the German government is considering purchasing a direct stake in Airbus.[94]

Only a few years ago, Boeing was said to be in a state of decline. The large commercial aircraft industry is noted for operating in a changing environment. In this article, we have argued that the combination of high cost and fluctuating markets has contributed to the adoption of industrial policy. What is apparent is the willingness of the French and German states to intervene to reclaim the stronger respective roles they exercised in the past. But what is less clear is whether the policy that brought so much success for Airbus can also sustain it in the longer term.

[87] Tim Hepher and Jason Neely, "Revamped Airbus A350 'Extra-wide Body' Jet," *The Seattle Times*, 18 July 2006, D1.

[88] Kingsley-Jones, "Air Transport," *Flight International*, 17 October 2006.

[89] Doug Cameron, Kevin Done, and Gerhard Hegmann, "Airbus to Lag Boeing for Years," *Financial Times*, 5 October 2006, 1.

[90] Daniel Michaels and J. Lynn Lunsford, "Under Pressure, Airbus Redesigns a Troubled Plane," *The Wall Street Journal*, 14 July 2006, A1.

[91] "Airbus in a Tailspin: It Can Pull Out of Its Dive by Learning a Bit from Boeing," *Financial Times*, 5 October 2006, 18. Holman W. Jenkins, Jr., "It's 1970 Again at Airbus," *The Wall Street Journal*, 18 October 2006, A21.

[92] "Airbus In a Tailspin"; Kevin Done, "Superjet Crisis to Cost EADS over Pounds 3bn," *Financial Times*, 4 October 2006, 1; Dominic Gates, "Airbus' Crisis Looks Like Boeing's in 1997," *The Seattle Times*, 7 October 2006, A1.

[93] Daniel Michaels and David Gauthier-Villars, "European Leaders Weigh In on Airbus's Future," *The Wall Street Journal*, 13 October 2006, A3.

[94] "Airbus in a Tailspin"; "It's 1970 Again at Airbus."