

Canada faces CSeries crisis

For the past year, Bombardier has tried to launch its CSeries of 110/135-seat jetliners. This effort received a strong boost in May when Bombardier received promises of \$700 million in government launch aid: Canada's federal government in Ottawa offered \$320 million, the provincial government in Quebec offered \$280 million, and the U.K., home to Bombardier's Shorts unit in Northern Ireland, committed \$100 million.

This new aircraft family faces serious obstacles on its way to market entrance. In fact, the odds look seriously stacked against it. Yet the durability of the program in the face of these negative odds, and the strong support it enjoys from Canada's government, tells an interesting story about the past, present, and future of Canada's aerospace industry.

A history of support

The level of promised aid for the CSeries is consistent with the Canadian government's record of aerospace industry support. This aid originated with an industry catastrophe: In 1959 Canada's Diefenbaker government cancelled the Avro Arrow, an impressive but troubled jet fighter. This

put an end to decades of Canadian military aircraft prime contractor work and resulted in thousands of layoffs, serious industry restructuring, and a significant migration of Canadian engineering talent to U.S. aerospace companies.

In the traumatic aftermath of the Arrow cancellation, Canada began providing generous research and product development support for its remaining industry assets, which were primarily concerned with commercial aircraft. In addition to coordinating industry cooperation, the federal and provincial governments provided R&D seed money and direct launch aid for new products. Between 1982 and 1997 the government provided C\$771.7 million to Canadian prime contractors alone.

While much of this aid took the form of repayable loans, there has been very little transparency of the repayments. Additional aid helped major suppliers, many of them Canadian-based subsidiaries of U.S. and European companies, most notably Pratt & Whitney Canada.

The result was prosperity, once the post-Arrow cancellation situation stabilized. Canadian companies achieved solid success as subcontractors, but even more

impressive was their ongoing success as prime contractors. De Havilland Canada was soon a market leader in commuter turboprops, while Canadair became a major force in the large business jet market. Later, both companies were absorbed under the Bombardier umbrella. Bombardier extended its aviation industry empire in the 1990s with the acquisition of U.S.-based Learjet and U.K.-based Shorts.

By the late 1980s, when Bell Helicopter Textron moved its commercial rotorcraft production to its Montreal-based subsidiary, Canadian and Canadian-based prime contractor production exceeded \$1 billion annually.

Sudden transformation

This stable environment was transformed in the second half of the 1990s, when Bombardier rode the two biggest growth waves in the history of aviation. The company's business jet side, by then the single biggest player in the industry, grew in tandem with the broader market. Between 1995 and 2001, business jet deliveries increased in value by an unprecedented 350%.

Meanwhile, the air transport industry was transformed by regional jets, pioneered by Bombardier's CRJ. Embraer emerged as a strong competing force, but market growth ensured plenty of demand for both players. After a slow start, CRJ sales grew at a breakneck pace, exceeding \$4.7 billion in deliveries in 2003.

All told, at the peak of Canada's aerospace prime contractor success in 2003, Bombardier and Bell delivered well over \$6 billion worth of jet and turboprop regional aircraft, business jets, and helicopters. This represents the highest growth rate attained by any nation's aerospace industry after the arrival of modern jetliners.

Yet inevitably, this unparalleled success ended, and the markets began to deflate. Business jet deliveries fell by over

Bombardier's CSeries is facing serious obstacles on its way to market entrance, despite promises of cash infusions from the Canadian and U.K. governments.





The Avro Arrow was cancelled in 1959.

40% between 2001 and 2003. The company's market position also slipped to second place after Gulfstream, primarily because of a decision to reduce customer finance to a more conservative level.

Meanwhile, on the regional jet side, the initial 30/50-seat market headed down. Demand for larger 70/90-seat regional jets increased, but not enough to compensate for the smaller aircraft's market shrinkage. Worse, Embraer succeeded in bringing a new family of 70/110-seat aircraft to the market, with first ERJ 170 deliveries beginning in 2004. Although Bombardier's CRJ-700 is a competitive 70-seat design, the company's CRJ-900 has been a disappointment in the 90-seat class, and Embraer is now alone in the 80/100-seat segment. This might be a small niche, but every operator that wants a plane in this class is quite likely to choose the ERJ 170 over the CRJ-700 for reasons of commonality.

While CRJ production stayed high in 2004, the balance had shifted, and by the end of the year Embraer's unfilled regional jet order backlog exceeded Bombardier's by 400 to 280 aircraft.

Problems with the solution

This deflation was highly traumatic for Canadian industry. Not only were double-digit growth rates taken for granted, but there was the inevitable pain of any business downturn. For the first time in over a decade, Canada's aerospace companies were announcing layoffs. And the creation of a much larger industry, relative to pre-1995 years, guaranteed a much bigger industrial constituency. This meant politically active unions and strongly empow-

ered companies, all clamoring for government support.

There was little to be accomplished on the business jet market. Technology had reached a plateau, and there was little hope of additional organic demand. However, regional jets held promise. If Bombardier could introduce an all-new large regional aircraft, or even a small mainline aircraft, Canada could

make inroads against Embraer and even attract demand away from traditional Airbus and Boeing airline customers.

The supply side is extremely difficult. Bombardier's stock price remains quite low compared to its pre-2002 levels. In November 2004, Moody's cut the company's credit rating down to junk levels (Baa3). Clearly, obtaining capital from nongovernment sources for CSeries development would prove very difficult.

Bombardier's track record of new product development is also quite limited. The company spends less on new commercial products as a percentage of company sales than even Boeing Commercial in its recently finished 10-year product development holiday. Most Bombardier

jets, aside from the Global Express, Lear 45, and Challenger 300, were either acquisitions (obtained with company purchases) or derivatives of existing models.

Problems with the supply side mean that government financial aid is more than just a luxury for the CSeries. Without it, the CSeries would not even have survived to the current preliminary design phase. But May's aid announcement indicates that the Canadian federal and provincial government commitment to support the country's aerospace industry is still strong.

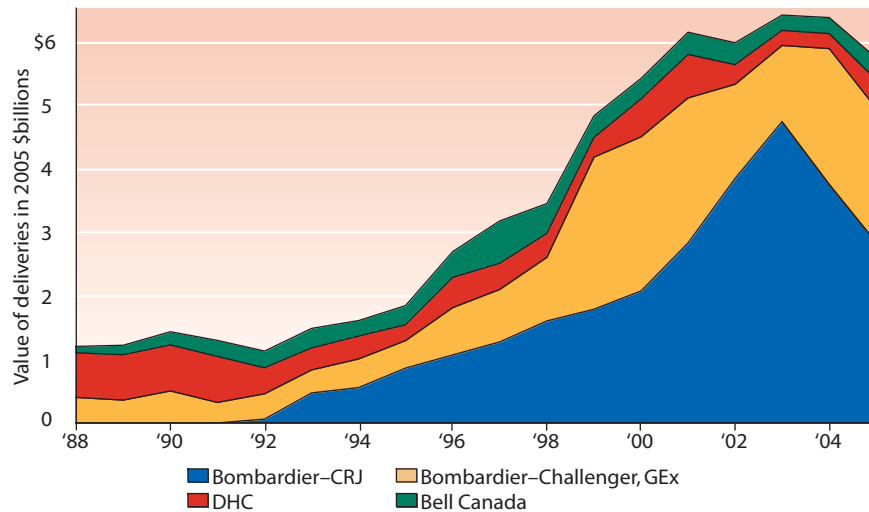
Yet that government aid has historically been geared toward supporting a much smaller industry, not continuing the unprecedented growth of a much larger one. This is a trickier challenge. The first Bombardier large jet initiative, the 100-seat BRJ-X, died after a relatively short study phase. While the CSeries is aimed at a larger and more promising market segment, there are serious obstacles preventing Bombardier from exploiting that market.

Most important, there are already competitors in this segment. Bombardier can certainly design a more efficient 110/135-seat narrowbody than the current downsized versions of the A320 or 737. But the same could be said for the Fokker 100 and Boeing's 717 or MD-90, all killed by a market that favored those downsized A320s or 737s. With relatively conventional technology (about 20% of the

Bombardier's CRJ-700 is competitive in the 70-seat market; however, it is facing a difficult road.



THE CANADIAN BUBBLE



CSeries will be comprised of advanced composite materials, making it a relatively conventional metal design), it is far from clear how the CSeries will avoid the fate of these other dead aircraft.

The problem revolves around economies of scale. The CSeries will not merely compete with the unit price of a 737-700 or an A319. Rather, it will compete with Airbus's and Boeing's marginal cost to sell additional A319s or 737-700s, on top of the hundreds of A320/321s and 737-800/900s they are building. Most CSeries target customers also need the larger planes anyway, so they can get excellent prices for the smaller versions of the same aircraft. When Airbus and Boeing are each building 15-20 planes a month, the cost of also building 5-10 smaller planes is minimal.

Embraer's ERJ-190/195 will be less expensive to buy, attacking the market from the bottom.



While Airbus and Boeing are underpricing the top end of the CSeries range, Embraer will attack the bottom. The ERJ-190/195 will be less expensive to buy and operate, if only for reasons of size (the factor that would make the CSeries more efficient than its larger competition). The CSeries will have no advantage at either end of its range.

Also serious is the prospect of new competitors to the CSeries. In a few years Airbus and Boeing are likely to develop composite-skinned versions of their current narrowbody families. Again, as a conventional metal design, the CSeries will find itself in a technologically inferior position. The efficiencies provided by composites would also obviate much of the operating cost advantage offered by the CSeries' smaller size.

Complicating this situation are the government's dreams of a vertically Canadian plane. David Emerson, Canada's minister of industry, says, "Canadian firms play key roles in many existing global aerospace projects, and the government of Canada will work with companies across the aerospace industry to promote their capabilities to participate with Bombardier in the CSeries." This means risk would be kept in country. Most notably, after the two major engine suppliers in this class (CFM and IAE) walked away from the project, Pratt & Whitney Canada announced that it would seek to provide the necessary turbofan. If the CSeries fails, many of Canada's aerospace suppliers will be dragged down with it.

Meanwhile, the CSeries would hurt Bombardier's plans for new business jet models, which would be starved for corporate and government development money. Since new models are the life's blood of the industry, Bombardier's business jet unit would continue its post-2001 tumble, possibly going to the number three spot by the end of the decade.

By contrast, while Canada pressed ahead with the CSeries, Embraer unveiled plans for two new business jets, one light and one very light, and clearly the start of more ambitious developments in this market. Embraer has obviously concluded that money should be taken from the low-margin regional jet side of the company and given to the higher margin corporate aviation side, to encourage higher profit growth. Canada might have reached the opposite conclusion.

The CSeries might survive these daunting odds and emerge as a credible third force in the mainline single-aisle jetliner market. But given the problems associated with the market segment, the more likely scenario is continued program deferral and, ultimately, cancellation.

Assuming the latter scenario, the CSeries will occupy a unique place in Canadian aviation history. It will be the last effort to maintain the unsustainable growth rates experienced by Canadian aviation in the 1990s. Cancellation would prove that even lavish government aid cannot overcome the fundamentals of a bad market.

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