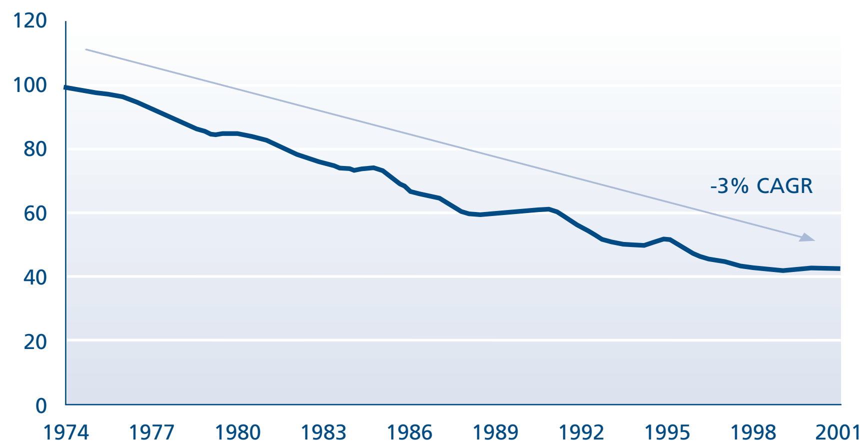
Securing the Future of Air Cargo

By Mark Kadar and John Larew

Even as passenger airlines looked back at 2002 as one of their worst years ever, managers of air cargo carriers had something to smile about. Thanks to the US West Coast port strike and the depressed level of passenger airline belly capacity, most of the air cargo industry swung into profit for the fourth quarter, and quite a few carriers reported healthy annual profits.

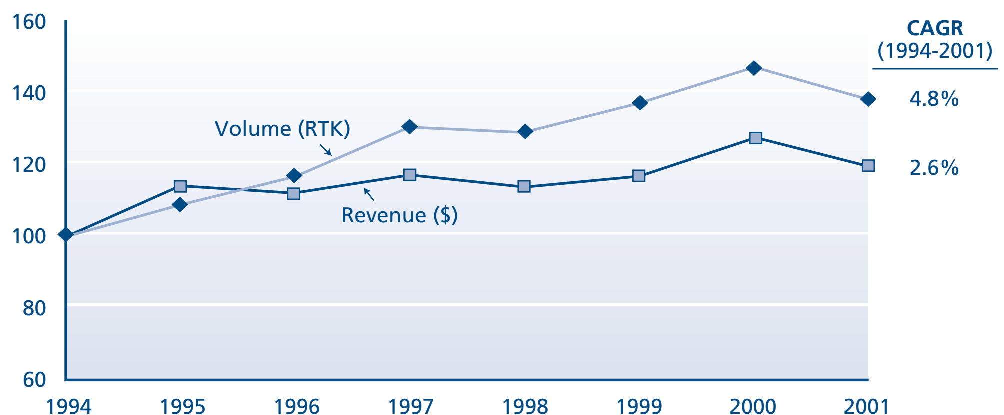
Unfortunately, 2002 was probably the exception that proves the rule: it remains terribly difficult to make a profit in air cargo. For the last three decades, there has been an almost uninterrupted trend of increasing cargo volumes (5-7 percent annual growth) and decreasing cargo yields (2-3 percent annual declines) (Exhibit 1). The impact of downward pressure on prices and revenues can be seen during the boom years of 1994-2000, when global cargo ton-miles grew by 47.5 percent, while revenues increased by only 27.3 percent, according to Boeing estimates (Exhibit 2).

Exhibit 1 **Indexed World Air Freight Cargo Yields, 1974-2001**
(1974=100)



Source: Mercer analysis.

Exhibit 2 **Indexed Air Cargo Industry Volumes and Revenues, 1994-2001**
(1994=100)



Source: Boeing World Air Cargo Forecast, 2002-2003.

The resulting profit squeeze has prevented most cargo carriers from covering their cost of capital. The traditional business design of air cargo shows signs of coming apart, and that should be of concern to all of us: Given the dependence of today's supply chains on air transport, the global economy could suffer if investment in the air cargo sector falters.

Too Many Trouble Spots

Why is air cargo's traditional business design failing? Unfortunately, one can't point to just one or two things the industry is doing "wrong"—rather, many different internal and external factors are playing a role, including:

- *Persistent overcapacity.* Chronic low returns have not driven air cargo capacity down to equilibrium level, because so much space is available on passenger planes. Although all-freighter capacity is growing faster, passenger bellies still made up 48 percent of global air cargo capacity in 2001. As long as half the capacity in the market is driven by the demands of an unrelated market, supply and demand will remain difficult to balance.

- *Demand imbalances.* The overcapacity problem is compounded by the directionality of cargo flows. To satisfy all of the cargo demand from Asia to the United States, the industry must grossly oversupply the market in the other direction.

- *Incremental mindset.* Air cargo carriers, especially those at passenger airlines, have often succumbed to the temptation to sacrifice revenue quality in order to generate incremental business (which, from a short-run perspective at least, falls almost straight to the bottom line). The result is competitive retaliation and a downward spiral in prices.

- *Poor revenue management.* Passenger airlines face the same temptation as cargo carriers to fill planes at any price, but they have sophisticated revenue management systems to guard against cannibalization and downward price spirals. For air cargo carriers, effective revenue management is a technical challenge of considerably greater difficulty, and so is almost unheard of (see sidebar on page 5). Consequently, the volume ethos that animates the sales forces of many cargo carriers goes largely unchecked, as is the case in other heavy freight sectors, such as liner and rail.

- *Lack of differentiation.* For the most part, cargo carriers don't own the end customer relationship. With the exception of integrators such as FedEx and UPS, most cargo carriers are reliant on a powerful channel—freight forwarders—which are better positioned to own the customer relationship.

- *Fragmentation.* The air cargo industry is unusual in being both strongly globalized and highly fragmented, with the largest player having only a 7 percent global share. Restrictions on cross-border ownership and the designation of traffic rights by nationality of the carrier have prevented further global consolidation.

- *Unfavorable cost structure.* Cargo carriers' biggest costs (fleet ownership, flight crews, navigation, and landing charges) are partly driven by unrelated passenger business, while fuel is out of carriers' control entirely. Cost pressures also are increasing, due to demands for greater security and the expansion of information technology.

- *Modal competition*. The radius of competitiveness for ground transport is growing. In the United States, ground transport is now competitive up to 1,000 miles. Shippers are increasingly optimizing supply chains to rely on cheaper ground and sea shipments supplemented by occasional air express shipments (a premium segment in which integrators have the upper hand over air cargo carriers).

The very length of this list indicates that the structural economics of the business are such that most players will not be permitted to make a profit. In particular, all-belly carriers, with their dependence on volatile passenger capacity and their "supply push" model, will see their unit revenues tend toward the incremental cost of production.

Can Revenue Management Save Air Cargo Carriers?

Beginning in the early 1980s, passenger airlines learned to optimize their onboard revenue through revenue management, i.e., holding back seats for high-paying customers while selling a limited number of low-fare tickets to fill up the back of the plane. Combined with other measures, such as ring fencing low fares with restrictions, and overbooking to balance out cancellations, airlines avoid letting seats go empty while maintaining higher average fares than the market clearing price.

Why don't air cargo carriers do the same?

A few have taken important steps in this direction, but their technical capabilities generally fall short of the standard set by the passenger airlines. Here are some of the reasons:

- Cargo capacity is volatile. The available payload of a cargo aircraft can vary widely depending on many conditions, including (in the case of passenger planes) the number of passengers and bags on board. To match demand to supply, cargo revenue management systems must hit a moving target.

- Cargo demand is multi-dimensional. In a passenger aircraft, one seat accommodates one passenger. In the cargo hold, a shipment has to fit within the available constraints on weight, volume, and positional footprint. Revenue management relies on accurate demand forecasting, and the more dimensions in the forecast, the less likely it is to be reliable.

- Cargo customers are concentrated. A relative handful of forwarders and shippers account for the majority of global air cargo. Thus, the standard airline practice of holding back some seats for high-paying last-minute customers is less applicable.

- Returns on investment in systems are lower for cargo carriers. The average cargo carrier is a fraction of the size of the largest airlines, so a revenue uplift of 3-5 percent means less. Passenger revenue management is a relative bargain: an investment of a few million dollars can return hundreds of millions. For cargo carriers, installing a revenue management system generally costs much more, in absolute terms, and returns much less in incremental revenue.

The upshot is that most cargo carriers are not in a position to fund development of large-scale revenue management systems. Some vendors have picked up on this and are looking toward an application services model for cargo revenue management. Even if only a few carriers made use of these services, it should have a salutary impact on the industry, because of the power of revenue management to stop yield erosion across the marketplace.

Picking the Wrong Winners?

Some air cargo carriers have attempted to address these issues visibly and loudly by annexing value-added capabilities, such as supply chain solutions and integrator-type services. Unfortunately, these attempts regularly have ended in failure, providing a cautionary tale not just for air cargo but for other heavy freight industries, such as liner and rail, that have attempted to solve the problem of poor margins by "moving up the food chain."

The success of integrators, for example, has provided a tempting model. Integrators offer a branded product, global coverage, and extremely high delivery reliability—qualities that air cargo carriers often envy. But "if you can't beat them, join them," has not worked for air cargo, which has been unable to replicate integrators' seamless service and premium door-to-door express capability. Lufthansa Cargo, for example, launched this strategy, but later retreated, preferring to refocus on its core airport-to-airport segment.

The problem with imitating the integrators is that the scale of business for most air freight carriers simply doesn't justify the IT investments needed to deliver integrator-like service. Equally difficult is competing with the integrators in terms of geographic coverage. There could, however, be room for a limited form of this strategy (see "*Focus on Express Freight*" below).

Another direction in which air cargo carriers have looked is that of the third-party logistics (3PL) segment. Having seen 3PLs' succeed at tapping into shippers' supply chain management, some air freight players have remarketed themselves as "supply chain solutions providers." But such supply chain management has not been a winning point of differentiation for air cargo carriers, even for strong carriers such as KLM Cargo and Cargolux, because of a lack of credibility in the shipper community. Indeed, in an era when every tiny "mom & pop" trucking company claims to provide logistics solutions, the very terms have ceased to mean much.

Even established 3PL providers have to struggle with customer apathy and low category awareness. When a traditional cargo carrier stakes a claim to supply chain management competence, the suspicion quickly arises that its "solutions" are, as the cartoon character Dilbert once observed, "a lot like a 'product,' only more expensive."

Two other models are proving only marginally successful in terms of generating value for air freight:

- Low-cost carriers, such as Atlas, have been pursuing the ACMI model (for Aircraft, Crew, Maintenance, and Insurance), in which the idea is to build on a low-cost platform and gain economies of scale by operating a particular fleet type. Success has been only modest, due to low barriers to entry, failure to achieve critical scale, and extreme vulnerability to swings in market demand. Atlas Air's parent company is in the midst of a major restructuring; the outcome of that process probably will have a far-reaching impact on the future willingness of investors to back the ACMI model.

- Global alliances are beginning to form, to overcome some of the limitations on consolidation that cargo carriers face, such as cross-border ownership restrictions. These have yet to make much of an impact. As they develop

further, they may come to resemble the passenger airline alliances, which have had some positive impact on revenues, even if they have not completely fulfilled their promise.

Straighten Up and Fly Right

Mercer believes that there are business designs and opportunities out there that offer a better chance for air cargo carriers to achieve long-term revenue and profit growth (Exhibit 3). Key to any redesign effort will be focusing in on what drives margins—rather than simply volume—as well as overcoming the challenge of industry fragmentation.

Exhibit 3 **Business Design Opportunities to Improve Air Cargo Growth**

Business Design Opportunity	Strategy	Key Benefits
Express freight focus	• Don't try to duplicate integrator networks; focus on key customers and lanes • Partner with freight forwarders/3PLs for ground component	• More direct relationship with customers
Same-day service	• Build a nationally branded, high-margin product • Partner with ground courier network; achieve industry-wide cooperation	• Price premium generates attractive margins
Sell more than you fly	• Carriers "virtually" consolidate, by buying capacity as a group wholesale, then retail through own commercial organization	• Marketing carrier builds wallet share • Steady income stream and reduced costs for outsourcing carriers
Fly but don't sell	• For players with less than $100 million in revenues, outsource all capacity to a larger carrier	• Annuity revenue stream, reduced overhead costs
Global M&A	• Be prepared for liberalization, followed by a wave of mergers and acquisitions • Cross-border minority equity investments can build initial ties	• Transformation of industry's operating economics – Access to global capital – Cargo multinationals with much greater scale and scope

Focus on Express Freight

Air cargo carriers have little chance of duplicating the global express networks of the integrators, but they can "cherry pick" express business from integrators on key lanes. Doing so successfully will require a focused approach to key customers and industry verticals on those key lanes, highly reliable capacity, partnering with a forwarder or 3PL to supply the ground component and information component, and competitive prices to undercut integrator rates. By forging a more direct relationship with the customer, air cargo carriers could then begin taking steps toward the holy grail of the business: the "take or pay" contract, in which customers make a firm revenue commitment to the carrier.

Air carriers may be skeptical (with some justification) that forwarders would allow themselves to be drawn into such a partnership, since forwarders traditionally have fiercely defended their customer relationships from such encroachment. The key to overcoming this resistance is to focus on customer segments where forwarders are most threatened by integrators. In such cases,

forwarders may recognize that sharing customers is a better option than losing them.

Build the Same-Day Segment

Same-day delivery is still a tiny portion of express parcel services. Most supply chains use same day only on a rare, ad hoc basis. Then again, few imagined in the mid-1970s that overnight delivery would one day become commonplace. Frequency and network density mean that commercial air carriers are uniquely positioned to deliver same-day service. Integrators, by contrast, are strongly wedded to their investments in their overnight hub-and-spoke infrastructure.

All of the major US airlines and several international airlines offer same-day courier products, but market awareness is low and the products are not always suited to customer needs. Air cargo carriers have a major opportunity to build a nationally branded same-day product through industry-wide cooperation, backed by an alliance with a strong ground courier network. Even if total demand for such service is relatively modest, the price premium for same-day would result in very attractive margins.

Sell More Than You Fly. . .

If cargo carriers are barred, at present, from much actual consolidation, then "virtual consolidation" may be the way to go. Acting as a group, carriers could buy up belly capacity wholesale and resell it through their own commercial organization. Such a strategy would allow the marketing carrier to build up wallet share with major accounts, thus increasing its importance relative to forwarders and 3PL providers. The partner carriers that "outsource" their bellies in this model can trade the complexity and expense of cargo sales for a steady income stream.

Lufthansa Cargo has announced that it will pursue such a business model with its "Yellow Cargo" venture. Thus far, Yellow Cargo's partners are limited to a couple of Lufthansa-affiliated airlines, but if Lufthansa succeeds in taking over the bellies of unrelated carriers, other strong cargo carriers could move to imitate the strategy.

. . . Or Fly But Don't Sell

The flip side of virtual consolidation is that mid-sized belly carriers have an opportunity to exit the cargo business without abandoning the revenue potential of their cargo space. Sales cost, handling, and overheads can eat up 30 percent of the price of a shipment for a small cargo carrier, and ultimately add no value from the shipper's perspective. For the shipper, the value consists of the physical lift, the guarantee of capacity, and the ease of doing business. This opens the door for the development of a "supercarrier," tasked with marketing capacity from many airlines, and so able to provide it at a lower cost.

For any carrier with less than $100 million in cargo revenues, there is a compelling business case for outsourcing its cargo space to a larger partner, thus transforming the volatile cargo business into an annuity revenue stream, while significantly reducing overhead costs. Over time, the threshold of viability for this model could rise to $500 million or more. As the carriers of the SkyTeam Cargo alliance, for example, evolve toward shared marketing and handling functions, the smaller partners might arrive at the "fly but don't sell" model by default.

Be Ready for Global M&A

Like their passenger airline cousins, cargo carriers are largely prevented from consolidating across national borders due to bilateral traffic rights and cross-border ownership restrictions. But there are signs that these limitations may be breaking down. Civil aviation authorities seem increasingly inclined to separate cargo services from passenger services in international air service agreements, opening up the possibility that liberalization of the skies could proceed faster for the transport of goods.

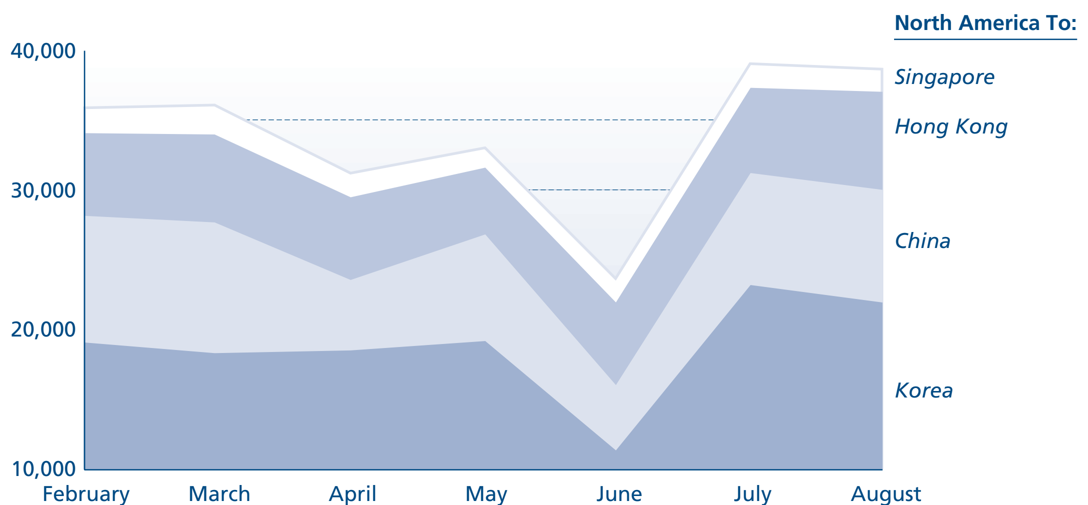
At the same time, the scarcity of investors willing to put their money into airlines has caused national governments to reconsider the wisdom of keeping out foreign capital. If, in a few years time, truly global capital flows are permitted to follow a substantially global air cargo market, today's alliances may coalesce into cargo multinationals. That, more than anything, would transform the operating economics of the industry. Recent cross-border minority equity investments may presage a truly global wave of mergers.

Time for a Fresh Start

Air cargo has done well within its limitations. But the business designs that prevailed over the last 40 years are quickly running out of steam. Alternative business designs are starting to emerge, and the forces currently pressuring the industry may soon push them to the fore.

Even as air cargo has become indispensable to global manufacturing and distribution, the supply of reliable air cargo capacity is increasingly at risk. A recent, glaring example of what can happen was precipitated by the SARS epidemic in the spring of this year. Overnight, available air cargo capacity plunged, as airlines cancelled passenger flights, and belly space disappeared (Exhibit 4). Shippers were aghast. They had come to expect that air cargo capacity would always be one step ahead of demand. Those shippers will have to hope that air cargo carriers can figure out how to generate the returns needed to keep their business aloft.

Exhibit 4 **Impact of SARS on Transpacific Cargo Capacity**
(LD3 equivalent units, westbound only)



Note: An LD3 equivalent unit is one standard measure of belly/lower deck air cargo capacity, equal to 160 cubic feet.

Source: OAG, Mercer analysis.