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Jack Eaton*

The Crazy Economics of Air Freight

Measured by value of goods transported, about one third of all international trade today is moved by air. Severe cyclical fluctuations around the generally strong growth trend of the last decade have meant considerable problems for air freight companies, however. How have they attempted to deal with these problems? How would they be advised to behave in future?

Studies of the airline industry have rarely dealt satisfactorily with air freight. A possible reason is that the marketing emphasis of close contact with the customer is hidden, imputing a certain dullness to the activity. Secondly, the complexity of the air freight business makes analysis awkward and problematic. The everyday experience of most people induces a predisposition to envisage airlines and the "airline industry" as primarily involving the transport of passengers. Of course, to speak of the "airline industry" is to beg the question "what is an industry?" but at least the notion of airlines as being mainly engaged in producing "arrivals" of passengers appeals to common sense. When we *do* consider air freight we are beset with complexity from the start. Freight carrying capacity comes from three main sources:

- ☐ whatever space is available in the holds of passenger aircraft;
- ☐ all-cargo aircraft operated by the main passenger-carrying airlines;
- ☐ all-cargo aircraft operated by specialist air cargo companies.

Preferable as it might be conceptually to treat air freight transport as a separate business or "industry", in practice it is just not feasible. Nor is it sensible theoretically since the production complementarities are such that freight costs and revenues are inevitably strongly influenced by passenger volumes. Freight's Cinderella role in the big passenger-carrying airlines was until recently reflected in its organisational subsidiarity. BA's cargo division did not report separately to the main board until 1992. Lufthansa, too, did not separate its cargo and passenger business until recently.

Measured by value of goods transported, about one third of all international trade is moved by air. Since the advent of wide-bodied jets with bigger holds, it has been a fast-growing business over the long term but with that growth punctuated by severe cyclical fluctuations, especially in 1985 and 1992. Boeing forecast in 1992 that growth would recover and would average 6.5 per cent annually over the next 15 years, compared with 5 per cent for passengers.

The "feast and famine" nature of the air freight business was highlighted in the decade to 1992. The airline industry responded to high and rising demand – with shippers and forwarders queueing to have goods flown and sometimes having to wait for days – by investing in increased cargo capacity. According to their expectations, airline managements had to decide whether to "invest enormous capital sums in all-cargo, wide-bodied airliners, carry what cargo they can in the underfloor holds of their passenger airliners, or hedge their bets by buying or leasing *combis* – aircraft that can carry both passengers and freight on their main decks, separated by a divider that can be moved to take account of shifts in either type of traffic. The 'combi' solution enables the airline industry to overcome its traditional inability to forecast, with any degree of accuracy, traffic trends more than a year or so in advance."¹

Actually, of course, it is individual companies, rather than the industry as a whole, that have had to make forecasts of expected demand in order to reach decisions about cargo capacity. The aggregate result of such decisions, assisted by freight-carriage by passenger aircraft and combined freight/passenger capacity, has been that supply is surprisingly elastic. Consequently, from the feast of 1984, air freight capacity increased rapidly. On Atlantic routes, new operators, such as People

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¹ A. Reed: Air Freight: Special Report, in: The Times, 20th September, 1985.

Express and Virgin Atlantic, sought to maximise the cargo space in the underfloor holds of their wide-bodied airliners. Specialist forwarders operating their own aircraft, such as Federal Express, also contested the transatlantic market.

The huge increase in capacity meant that freight rates collapsed with the onset of recession. In 1991 air freight rates across the Atlantic halved. "From a typical price at the start of 1991 of 75-80 pence a kilo on the London-New York route, prices fell in the case of one airline to just 8 pence a kilo, as competition for business became ferocious. The cost of fuel alone to take a kilo of cargo across the Atlantic was almost 7 pence."²

The Basic Economics of Air Freight

□ *The demand side – what sort of goods are sent by air?*

The smoothness and speed of air transport makes it particularly suitable for transport of valuable livestock, such as racehorses. Fragile goods that would otherwise have to be heavily crated, precious metals, bearer securities and other products of high value in relation to their weight are carried, as are apparatus and tools too rarely used to be stored everywhere they are needed, such as highly specialised medical equipment, rescue equipment and salvage equipment of all kinds. Perishable commodities, such as luxury foods, exotic fruits, chilled meats and flowers, newspapers and fashion clothes are growth areas for air transport. As capacity has grown and freight rates have fallen, the range of goods carried by air has widened. A BA Boeing fortnightly service between Jeddah, Saudi Arabia and Heathrow carries clothing, crates of dates and half a dozen copper urns of holy water en route to Leicester for use in Moslem religious ceremonies. However, the most important rise in air cargo is derived from four categories: car and motor cycle parts; pharmaceuticals; textiles; and electronics.

□ *The supply side – costs.*

These last four categories are nowadays distributed by air freight around the world on a "just-in-time" basis, enabling the user to free valuable warehouse space. W.S. Barry, who wrote perhaps the first book of its kind in Europe on airline management, was ahead of his time in drawing attention to this: "Because shippers of freight regard their aim as that of producer-satisfaction rather than consumer-satisfaction, they usually try to achieve it at minimum cost, taking into account all the circumstances. For this reason the rate structure is critically important. It is made even more so by the fact that shippers tend to assess the cost of

air transport simply by looking at how much they have to pay to the carrier. They disregard the savings that can be made in the other costs of handling, packing, storage and insurance. For many years to come it will be the job of sales to put shippers right in these calculations."³

The obvious implication was that rates were set disproportionately low in view of other savings to which attention is drawn in total distribution cost theory: "This approach to the logistics of distribution suggests that while the total costs of distribution (covering the flow of goods from plant to user) may represent half the total costs attaching to products, transport costs are usually only a small part of distribution costs. In particular it emphasises the costs of possession, in the shape of costs of interest, storage, insurance and obsolescence. It also focuses attention on the distribution costs of crating, damage and revenue lost from slow delivery."⁴

Barry reckoned that air transport cargo marketing management could, by making inroads into these distribution costs, bring about a change in the significance of its own rates. However, although just-in-time distribution will make for savings in this area, the logic of the market is far from being that this will necessarily accrue to the airlines. On the contrary, they are likely to be captured by shippers, forwarders, sales outlets and, to a lesser extent, manufacturers. It is not a matter of airline marketing management's correcting shippers' calculations, it is a facet of technological change and the nature of competition for air freight. A crucial reason for the expansion of air freight has been the development of wide-bodied jet aircraft, especially the Boeing 747. The amount of space left over in its cargo hatch after passengers' baggage is loaded allows airlines to act as freight carriers without buying specialist aircraft. Such capacity will not be withdrawn even if the market collapses as the space is available and some carriers will seek to fill up at virtually any price.

From the individual carrier's point of view, this flexibility is advantageous. For the air freight carrying business, for airlines in aggregate, it can be ruinous, permitting rapid additions to capacity at the margin but constraining capacity reduction when demand falls and therefore pulling rates downwards. In 1985 Al Hicks, vice-president of the European division of specialist air cargo carrier Flying Tiger (acquired by Federal Express in 1988), remarked that passenger airlines "only view cargo as an additional revenue service – something in their empty

² D. Green: Air Freight takes fright at the gravity of recession, in: Financial Times, 19th August, 1992.

³ W. S. Barry: Airline Management, London, Allen & Unwin, 1962, p. 41.

⁴ Ibid., p. 273.

bellies is better than nothing." Regarding the lowness of rates quoted by passenger carriers to the USA, he questioned whether the airlines offering them could really be concerned about the economics of what their real costs were in handling this freight.

Even before the advent of the wide-bodied jet, this "quasi-free rider" problem existed for the airlines. Barry⁵ noted that it was sometimes claimed that passenger aircraft gave shippers the best service because they were "free, frequent and fast". The word "free" is used to indicate that, as space for freight is available on passenger aircraft whether it is used or not, it can be regarded as being produced at no cost, and, therefore carriers are able to fix low rates. The wide-bodied jet removed two remaining cost constraints: smallness and awkwardness of holds in passenger aircraft and hindrance to cheap, automated methods of loading and unloading.

Freight Forwarders

Another apparent cost constraint during the 1960s was that "air freight may well be offered in thousands of penny packets that are valuable in total but costly to handle individually."⁶ The solution of the free market was the rise of freight forwarders. Barry rather disparaged them, remarking that "forwarders claim they can reduce costs to a competitive level, give a wide sales coverage and consolidate traffic to enable airlines to make profits."⁷ Instead, he believed that forwarders increase the problems of airlines by aiming to achieve the maximum consolidation of freight daily. Unquestionably, he was right to imply that forwarders are not in business to enable airlines to make profits from cargo. They are one of the vital intermediaries to which the market gives rise but are seeking to capture productivity gains for themselves. Some vertically integrate into own account carriers. Federal Express started in this way but its 1988 acquisition of Flying Tiger made it the fourth largest air freight carrier in freight-tonne kilometres. However, forwarders are most often contracting businesses, rather than organisations with complex hierarchical structures. From an admittedly self-interested survey in 1985, the freight forwarder Haniel International found that of 95 exporters, over 50 per cent said that they could not export without using a forwarder, while 70 per cent said that they used international parcels and express services at one time or another. Forwarders offer a service that would be "off-line" for airline companies but their overall effect is to make the market for air freight even more competitive.

⁵ Ibid., p. 41.

⁶ Ibid., p. 273.

⁷ Ibid.

A host of such companies developed rapidly during the 1980s. Pandair offered an inclusive service covering collection, processing, freight carriage and delivery for a single price. Instone Air Transport had changed from being a pioneering airline to an air broker arranging aircraft leases and freight services. Kuehne and Nagel, jointly owned by the Swiss Kuehne family and Lonrho, had by 1985 developed a worldwide organisation of 800 offices dealing, *inter alia*, with air freight, forwarding and insurance.

The Airline Companies and Air Freight

Barry believed that because the shipper tends to look at cost and disregard other features, as long as they meet minimum requirements, this should influence the freight marketing strategy of airlines. By changing traditional attitudes to transport costs and by adjusting rates to exploit demand more fully, shippers would be given a comprehensive view of the costs of materials movements. There was an assumption here that airlines could "mark-up" prices and freight rates in a "full cost" kind of way. Instead, the "supply revolution" of wide-bodied jets and the development of freight forwarders, now augmented by information technology, ensured that air cargo continues to be a fiercely competitive business with shippers often able to negotiate spot prices on a day-to-day basis. The

Table 1
Top Ten Air Freight Carriers 1989
(freight tonnes/kilometres)

Lufthansa	3,810
JAL	3,400
Air France	3,120
Fed Express	2,960
Korean Air	2,360
BA	2,170
KLM	1,990
Singapore AL	1,680
Cathay P	1,270
Alitalia	1,090

Source: IATA.

Table 2
Quoted Rates per Kilo over 1,000 Kilos,
London – New York, September 1992

35 p	American Airlines
50 p	Continental
50 p	United Airlines
57 p	BA
70 p	Lufthansa
73 p	Virgin
76 p	Northwest
76 p	KLM
82 p	US Air

Source: Air Cargo News International.

recession of the 1990s worsened matters as over-capacity led to a sharp fall in freight rates.

There are of course categories of freight that require, or are more cost effectively performed by, specialist cargo airlines, such as the United States-based Emery and Federal Express (with a fleet of 400 in 1990), diversified by the acquisition of Flying Tiger whose 40-strong fleet includes 20 Boeing 747 jumbo jets and whose principal cargoes are fashions, textiles, oil drilling equipment, machinery and machine parts and perishables, such as seafoods and fruit. Nevertheless, perhaps inevitably since passenger services dominate the thinking of the world's major airlines, the present study has concentrated on them. In doing so, significant observations can be made about the role of freight in airline company strategy.

Of primary significance, given the "fill-up" role of freight cargo space on passenger aircraft, BA sold its all-cargo fleet in the early 1980s, becoming the biggest air freight carrier in the world without such aircraft. The company was behind Flying Tiger, Japan Air Lines, Lufthansa, Air France and KLM but they had all-cargo aircraft in their fleets. BA pursued an alternative cost-saving strategy of stretching and modifying freight containers and pallets to fit more snugly into underfloor holds, thereby reckoning to have reclaimed the equivalent volume of two Boeing 747s by utilising every spare bit of space in its wide-bodied fleet. BA also addressed the vital role of surface transport in the total process of air transport by investing in its own fleet of long distance lorries to feed cargo into Heathrow and other airports and operating to strict schedules.

BA's withdrawal from the all-cargo aircraft proved to be a rescient move. True, during the Gulf war and for a year afterwards, awareness of cargo traffic increased dramatically as passenger demand dropped but cargo demand held up. Empty passenger planes meant more room for cargo and feedback transmitted this information to corporate agendas. The airlines' response was to invest in the cargo business to make up for lost passengers. Temporarily, air freight was insulated from the effects of recession. As the just-in-time production logic suggests, businesses cut their stocks to economise and increasingly turned to air freight in order to deliver goods at short notice. Lufthansa, the world's biggest airline freight operator, with cargo at 21 per cent of total sales, increased its cargo revenues by 14 per cent between 1990 and 1991.

Of Lufthansa's total sales of 16 billion marks in 1991, 3.0 billion were generated by its cargo division, employing just 8 per cent of its total workforce. In buoyant conditions, this looks like sound economics and good business but suddenly recession produced massive over-capacity and ferocious price-cutting as the key air freight markets of the

USA and Japan (Narita is the world's largest but most congested freight-handling airport) suffered economic downturns. The trade in car parts followed the decline in world car sales. As Japanese vehicle exports fell, so freight rates to Europe languished. Lufthansa, having expanded rapidly in the three years to 1991, increasing employment by 20 per cent to over 61,000 and its fleet by 120 aircraft to 275, declared a loss of 300 million marks, its first for many years. It had far too much capacity and was forced to retrench. However, since the cargo business was not yet an autonomous profit centre, it is not possible to suggest to what extent it contributed to losses. Despite the Gulf war, Lufthansa increased the tonnage of freight and mail carried by 6.7 per cent. The revenue load factor for freight improved by 1.4 per cent to 66.8 per cent. According to the company's annual report, these satisfactory results can be attributed largely to the stimulus provided by German unification. This was particularly true of mail traffic, which increased by more than 30 per cent. All the same, another interpretation is that freight revenue did not grow by as much as expected when the investment decisions were made and, certainly, the freight market became tougher in 1992.

BA, by contrast, was far less discountenanced by the recession's ruinous effect on freight rates. While remaining the fourth largest freight operator, it could regard its rivals' desperate efforts to maintain market share with a shade of equanimity. Its general manager of cargo marketing remarked in 1992 that, "they are all losing their shirts. The normal rate from Japan is 700-800 yen per kilo. We know of one airline asking 300 yen."⁸ BA did enter into the price-cutting, reducing its quoted price from London to New York from nearly 80 pence a kilo to about 60 pence a kilo during the first half of 1992. Discounted rates actually paid fell further still.

What Can Airline Managements Do?

The essence of the problem was that capacity had risen much faster than increased demand. The American Airlines company increased the amount of cargo it carried by 38 per cent, while revenues rose only 25 per cent. Carriers using cargo as a fill-up pulled down prices. One recourse, previously taken by BA and, belatedly in 1992, by Air Canada, is for an airline to sell its freighter fleet but 1992 was not an auspicious time to sell with many aircraft surplus to requirements parked in the Arizona desert.

Another possibility is to specialise in niche markets but this is where the cargo-only airlines come into their own. Federal Express is well known. Heavylift Cargo of the UK seeks outsize loads anywhere in the world.

⁸ D. Green, *op. cit.*

For the mainly passenger-carrying airlines that are the principal focus of this article another possibility is to restructure and invest in information technology and automated loading equipment. Following its takeover of UTA and Air Inter, Air France merged their cargo interests into a separate division. As a result, the company has become the second largest air freight carrier and must extend "Pelican", its freight handling information system.

Lufthansa is seeking to establish and extend joint ventures. In June 1992 it increased its share in the internationally-owned specialist freight operator, DHL, from 5 per cent to 25 per cent in an effort to secure market share. JAL increased its stake by the same amount. Lufthansa, Air France, Cathay Pacific and JAL have combined to develop TRAXON, a global communications network for the air cargo market, that went on-line in 1991. The system will expedite computerised international

cargo booking and offers all those concerned in the air freight business a rapid exchange of data worldwide. As in many other sectors of the globalised market, in the airline business joint ventures are increasingly important. As a Japan Airlines manager put it in 1992, "going it alone is too expensive". Expense here does not refer only to the capital costs of installation. Airlines have conventionally made their forecasts and defined their strategies as individual companies. In such a cyclical and turbulent sector as air freight, they are coming to appreciate the potential advantages of collaborating and sharing information to produce a combined or global forecast of expected demand. The rationale of deregulation for policymakers in deregulating and opening markets to contestability runs up against the profit motive of international airlines who have no interest in investing in capacity that has to be run at a loss or wasting assets parked in the desert.

Jochen Böhmer*

Can the International Debt Strategy Use the Concept of Corporate Compositions?

So far, it has been possible to stave off really serious consequences for the world economy and the international financial system since the developing-country debt crisis started in 1982. Yet for many developing countries, external debt problems and the underlying economic crisis are as pressing as ever. The following article identifies five central elements of a general orientation framework for dealing with the debt crisis which has been inspired by the basic idea of the concept of corporate compositions found in commercial law.

In 1982, the total external debt of developing countries reached US\$ 770 billion, but by 1993 that figure had more than doubled, to \$1,560 billion. Approximately 70 countries have been unable in recent years to meet their external debt service obligations; taken together, these countries are responsible for half of the total external debt outstanding from developing countries. Most of them face the question of how they will ever be able to meet their debt obligations in the medium term in view of their present stock of debt.

In this respect, it is interesting to consider the London debt agreement entered into by West Germany 40 years ago and Indonesia's debt rescheduling which took place in 1970. These two arrangements belong to a small minority of creditor/debtor agreements which have taken a long-term view, re-opening prospects of economic development for the debtor country. In an approach similar to the composition procedures found in civil law (known as "Vergleich" in Germany and somewhat similar to "Chapter 11" proceedings in the USA), both of these agreements include a partial cancellation of debts, thus helping on the one hand to avert further economic decline in the debtor country, which would have been detrimental

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