Contrary to long-term predictions, circumstances over the past five years have prevented air freight traffic growth, with yields weakened as a consequence. Initial signs of a recovery are emerging, with hopeful prospects for passenger-to-freighter converters.

Will the floundering air freight market now recover?

The past five years have been the freight market's weakest period since 1945. Traffic volumes have fluctuated since 1999, and the global market overall has been unstable with little growth. Yields have also been weak, so there has been little replacement of freighters. Few airlines have needed to add aircraft, which has in turn placed pressure on passenger-to-freighter conversion providers. What then are the prospects for steady growth and the requirements for new freighter fleets over the next few years?

Traffic volumes

The conventional wisdom of freight market forecasts is that the freight sector can expect a consistent annual growth rate of 5-7%, which will double of freight volumes in about 15 years. This is mainly dependent on the strength of the global and regional economies in countries which have a high level of high-tech manufacturing industries. Most general air freight comprises high-tech manufactured goods.

The movement of manufacturing markets also causes a shift in major global air-freight traffic lanes. Central and South America is now becoming a major production area for pharmaceuticals and electronics.

The weak economic activity of the past five years has caused stagnation in traffic volume growth. Traffic volumes declined in 2000 from 1999 levels. The largest drop in freight traffic occurred in 2001, with an overall fall of 5.9%. The only market that grew in 2001 was domestic China. The largest falls were in the Europe-North America, Asia Pacific-North America, North America-Latin America and domestic US markets. The Asia Pacific-North American market contracted by 16%.

Freight volumes in revenue ton-kilometres (RTKs) grew moderately in 2002 and 2003, but traffic levels in early 2004 have not differed greatly from those in 1999. Effectively the industry has not had any growth for about four years.

Besides a weak global economy, e-commerce has had a negative impact on freight traffic. The Y2K issue in late 1999 stimulated the purchase of a high volume of electronic goods, causing a rise in general freight from the Asia Pacific to the US and Europe. The re-equipping of IT systems by major corporations at this time has since caused a low rate of capital expenditure on computer hardware. This equipment may be coming due for replacement and it is expected that there is a high level of pent-up demand for computer hardware which will result in a rebound of air freight traffic in the next few years.

Air freight markets

The five largest air freight markets account for about 70% of the world's total traffic volume. There are several other markets, but these only represent opportunity markets for freight carriers.

The two largest markets are the trans-Pacific and Europe-Asia Pacific, which account for 37% of the world's RTKs.

Europe and North America account for most of the traffic to and from the Asia Pacific. There are strong outflows of traffic from Asia Pacific, while volumes from Europe and North America into the Asia Pacific are weaker.

This region has been one of the few that has experienced growth in recent years, and airlines serving these markets have continued to add capacity. China Airlines has ordered large numbers of 747-400Fs to meet its growth, as have several other carriers, including Air France and Singapore Airlines (SIA). Cathay Pacific has announced that it will add converted 747-400s.

Cargolux has some of its highest capacity utilised in the Europe-Asia Pacific market. "We have 12 weekly frequencies out of Hong Kong and 40% of our services are for the Asia Pacific region," says Frederic Horst, manager of global accounts at Cargolux. "Because the Asia Pacific has been one of the few strong markets in recent years there has been a trend among European carriers to get a larger share of Asian traffic. A lot of Asian carriers have added capacity since 1999, including Korean Air, China Airlines, SIA and Cathay Pacific.

"The directional imbalance of freight volumes to and from the Asia Pacific is illustrated by the rates in either direction. Rates are more than $3 per kilogram to the US, but as low as $0.45 per kilogram from the US," continues Horst.

The third largest market is the domestic North American market, which accounts for about 15.4% of global air freight.

The US domestic market has suffered more than any other since 1999. The market is dominated by small package integrators, since the supply of passenger aircraft belly space prevents virtually any general freight market from developing. Integrators have seen the volume and yields of small packages weaken over the past five years, in a sharp contrast to the double-digit growth rates of the 1980s and early 1990s.

These high growth rates may have been expected to continue, but the advent of e-commerce and change from a time-sensitive to time-definite market has eroded express package volumes and yields have come under pressure. As well as removing the need for fleet additions,

The express package market in the US has suffered from a weak economy, falling yields and shrinking traffic volumes. FedEx has a large number of 727s to replace, but does not need to replace their capacity on a one-for-one basis.

this has also delayed fleet renewals for some integrators and also led to a reduction in capacity by some carriers. FedEx, for example, is considering the replacement of 727-200Fs with 737-300s and Astar Air Cargo has acquired 727-200s to replace older models. It is unlikely that the US market will show much growth in coming years.

The fourth largest market is the transatlantic, accounting for 11.7% of global RTKs. The transatlantic is similar to the US domestic market in that there is a high volume of capacity offered in the belly space of passenger aircraft. This deters general freight operators except for a few niche services, and express packages account for the majority of traffic. The market dominated by the major integrators.

Like the US domestic market, the transatlantic has experienced weakening traffic volumes and poor yields.

Icelandair Cargo is a niche carrier on the transatlantic, carrying mainly fish out of Iceland to the US, and general freight from the US. Icelandair Cargo also carries fish into Europe, and general freight to Iceland. Like many other airlines, Icelandair Cargo has seen traffic volumes fluctuate over the past three to four years. "We have seen steady growth since about September 2003, but traffic volumes are now only back to 2000 levels," says Petur Eiriksson, managing director of Icelandair Cargo. "There has been some shift in capacity from the transatlantic to the trans-Pacific by some major freight operators, including Cargolux. Yields in the US-to-Europe market declined between 2000 and 2002 in the order of 30%. The Europe to US market had been more stable, but then also declined."

The fifth largest market is the intra-Asia Pacific. It is only about half the size of the transatlantic in terms of RTKs, but accounts for 13% of the total global tonnage. This is one of the few markets to have experienced growth in the past three to four years, with some carriers reporting double-digit growth rates.

The intra-Asia Pacific market is followed by several other smaller ones which have a small share of global RTKs. These include the US-Latin American and domestic Chinese markets. The domestic Chinese market is experiencing annual growth rates in excess of 10%.

Lufthansa Cargo sees China as a steadily growing market, while others have remained steady or have contracted.

Freight rates

Another factor that has challenged freight carriers in recent years is freight yields. These have been weakened by poor traffic volumes and the ailing global economy.

Freight carriers will cut rates to stimulate traffic when traffic levels are weak, but low rates are often insufficient to cover long-term costs and so are not sustainable.

The situation has been made more difficult for freight carriers by high fuel prices and increased security measures that have led to the imposition of a variety of surcharges. These surcharges have added to freight rates, and in some cases exceed the net rates airlines receive for freight. The high gross rates have also depressed demand and delayed resumption of growth. Horst explains that surcharges are about $0.30 per kilogram in some cases. "The ones for risk and security will be permanent, and are about $0.15 per kilogram. The problem is that air freight is very price-sensitive," says Horst. "Ignoring the effects of surcharges, rates have stayed the same since about 1996, except for 2001 when rates went down."

Rates have actually fluctuated over the past three or four years. In addition to difficulties with the global economy, freight carriers have had to deal with oversupply from increased passenger aircraft belly space. Passenger traffic growth rates have been more stable over the past three to four years and airlines have also gone through a major re-fleeting process, especially in the case of widebodies. The addition of the A330, A340 and 777 has increased passenger airline belly capacity. Passenger airlines have also cut freight rates to fill capacity, thereby undermining the pure freight carriers. Horst estimates that on a global basis, 55-60% of air freight is carried by pure freighters and the remainder by passenger aircraft, although the actual share varies with each market and its capacity constraints. Air freight traffic growth rates are expected to be higher than passenger traffic growth rates in the long term, and so the share of air freight carried by pure freighters will increase. Sustained high growth rates may be seen in the major general freight markets, but the volumes of express packages may change little, having reached maturity.

Freight capacity

The freighter fleet has been polarised between freight airlines that have needed to add capacity and those that have not been able to justify fleet replacement or additions. The addition of passenger aircraft belly space and weakened yields has prevented many general freight

Despite market values of 747-400 passenger-configured aircraft being at a level that makes conversion to freighter economic, the weakened state of the air freight sector has probably delayed the decision to replace ageing 747-100s/-200s by most freight operators.

operators from replacing their fleets. Airlines which have increased their freighter fleets are those serving the Asia Pacific; several carriers have added 747-400Fs, and are planning to make further additions, as described. Eleven 747Fs were delivered in 2003, a year which had a low rate of growth.

Several carriers have acquired aircraft during the past four years, but in many cases these were replacements of older fleets rather than a result of traffic growth. A large number of 727s, DC-8s and 747-200s have been retired over the past four years, and some A300B4s have also been dismantled. These have been replaced by MD-11s, a small number of 767s and 737-300s.

The only express package carrier to replace aircraft in 2003 was United Parcel Service as it continued to take delivery of MD-11s, A300s and 757s. FedEx has already taken delivery of some converted A300-600s and A310s, but has not continued to convert further aircraft. Other integrators have delayed any replacement of their fleets, which includes large numbers of DC-8s and 727s.

Many general freight and wet-lease operators have also delayed fleet replacements. Some have parked aircraft and will remain with an excess of capacity for some time.

The delay in fleet replacement by most freight carriers has had a negative impact on passenger-to-freighter conversion providers. The only aircraft to have been converted at a steady pace has been the MD-11. This is explained by the aircraft's high payload capacity in relation to its size and the large number that UPS has ordered from Boeing.

Most other types have seen a low level of conversion activity. Although Bedek Aviation has launched its 767 conversion programme with orders, few airlines have actually selected the aircraft. The exception are carriers which have gained from the 767's superior operating performance over their older aircraft types.

Bedek Aviation and Pemco have received several orders for 737-300 modifications, and both have received a request for proposals from FedEx for up to 50 aircraft as potential replacements for its 727s.

The 747-400SF is in a strong position to replace a large portion of the 747-100/-200/-300 and MD-11 freighter fleet, based on the 747-400's current market values and cash operating cost advantage it can offer. The 747-400SF also has a capital cost advantage over the 747-400F. There has been little interest so far in the 747-400SF, however, but it is well positioned to replace fleets operated by a large number of aircraft when the freight market regains strength.

There are several conversion programmes for the 757-200. Boeing's original modification for a 14-container aircraft has now been taken over by Singapore Technologies and Bedek Aviation, but this will be re-engineered to a 15-container aircraft and will become available in a few years.

The 757 conversion programme that has made the most progress is that offered by Precision Conversions. It has six firm orders, including two from ILFC, for aircraft that will be operated by Shanghai Airlines. Precision Conversions has its first aircraft in the process of modification, and expects to receive its supplemental type certificate (STC) in the second half of 2004.

Alcoa-SIE is in the process of developing an STC for a 757-200 freighter conversion with a 14-and-a-half container capacity.

The other main freighter conversions are for the A300-600 and A310-300, offered by EADS-EFW. The company has converted a large number of A310s for FedEx, but has since stopped taking more conversions. EADS-EFW has not won an order for about 15 months.

Market recovery

The biggest factor that will lead to a recovery is a rebound in the global economy, and there are signs that this may have begun with the US in recent months. Like the US, the West European economy has also been flat, but this is expected to remain so for the foreseeable future. The recent enlargement of the European Union by 10 countries has given some hope that this will offer new opportunities to freight carriers, but this is more likely to be in the long term.

A recovery will also be stimulated by expanding economies, of which China is a front runner. Together with the continuing growth in the Asia Pacific, China will possibly see a diversion of capacity from the transatlantic to the trans-Pacific. Such a move would alleviate some of the surplus capacity in the transatlantic market.

Eiriksson now expects steady growth in the transatlantic market over the next four years, and says this should eventually pull rates up. "While there is still overcapacity, there should be higher traffic growth than increases in capacity and this should stabilise yields. The decline in rates on the North Atlantic has stopped in the past six or seven months. This is a sign that the market is beginning to stabilise."

Lufthansa Cargo is another carrier that has experienced zero growth over the past two years, and has seen some markets grow while others have contracted. It has seen a slight recovery in the global economic situation with a small increase in the US over the past few months. One major market for the future

Although DC-8 numbers have diminished, there are still several major fleets in operation which are overdue for replacement. There are several candidates for this role, and a return to stable growth, lower fuel surcharges and improved yields would put many freight carriers in the position of making a selection.

is Eastern Europe, with Lufthansa Cargo having seen tonnage of freight increase by 30% over 2002 levels. It expects significant growth to continue over the next few years.

Some forecasts predict a growth rate of 7% in 2004, which would take traffic levels over 2000 volumes. This would need to continue in 2005 for the market and yields to stabilise, which in turn would lead to a return in demand for fleet replacements.

"The past four years has seen no growth, and there was a lot of surplus capacity in 2001," says Jurgen Haberman, vice president of sales & marketing at EADS-EFW. "The situation is now not so bad, and if growth resumes this will stimulate the need for replacement aircraft by freight operators. There are large numbers of 727s and DC-8s that are overdue for replacement, which has been delayed by the weak economic situation. The US is a replacement market, especially in the case of FedEx. Other markets are emerging and this could stimulate a requirement for new fleets. This includes the Middle East and the parts of the Asia Pacific where growth is high. Although there is a recovery in the US economy there will probably be zero freight traffic growth because it is a mature market. An improved economy may lead to more stable traffic and yields, however, which may lead to fleet replacements.

Growth rates in the intra Asia Pacific could be as high as 6-8% and about 3-4% in the international market serving the Asia Pacific. Although we have not had orders for freighter conversions for about 15 months we are now getting the highest level of requests for 18 months. Overall there are signs of improvement with the need to replace old fleets, emerging markets and growth returning."

There are some signs that sustained growth is finally returning to parts of the market. Several major air freight airports, including Frankfurt and Hong Kong, and airlines are reporting large increases in traffic volumes compared to 2003. The air transport association, for example, reported that cargo traffic in February 2004 was up 9.1% on the year. Cathay Pacific has reported its cargo tonnage for March 2004 was up 10.7% on the year and Cargolux's traffic for 2003 was up 6.5% on 2002. As a sign of the high growth rates in the Middle East, Emirates Skycargo's freight volume for the year ended March 2004 was up 26% on the previous year.

Freighter prospects

There are several hundred aircraft in the freight fleet that could potentially be replaced over a short-term period.

The first group of airlines to analyse is the integrators. UPS has several orders in place to replace its DC-8s and 727-100s, and so is not a likely candidate for further aircraft orders. FedEx represents the largest opportunity for freighter orders, in particular with its 727-200 fleet. The airline still operates almost 100, and has issued requests for proposals to several passenger-to-freighter conversion providers. These include Bedek Aviation and Pemco for up to 50 737-300s.

The other major US integrator is DHL, which contracts Astar Air Cargo to provide capacity. The carrier has acquired 727-200s to replace older 727-200s in the past year, however, and is unlikely to provide any prospects for fresh freighter conversions in the short-term.

DHL has several other air freight operations, and these include Europe, Central and South America, the Middle East and the Asia Pacific. DHL's operation in Latin America has been taking aircraft retired from the European fleet operated by European Air Transport (EAT). EAT has taken delivery of 757-200SFs to replace 727-200s. The airline also operates A300B4s, however, and these aircraft have generally proved to be expensive to operate. Some aircraft converted in the 1990s have already been dismantled. This thus represents an opportunity for medium-widebody freighter aircraft.

DHL's operation in the Middle East is experiencing high growth rates, and so is a possible source of aircraft orders.

The other major European integrator is TNT, which operates a large fleet that includes A300B4s and BAe146s. These aircraft are candidates for freighter placement.

Outside of Europe and the US other integrator airlines offering opportunities for aircraft placement are small but fast growing carriers such as Estafeta Carga Aerea in Mexico and Blue Dart in India. Several Chinese carriers are also emerging as strong carriers.

Several major general freight airlines have already emerged as strong aircraft placement candidates in recent years. These include Lufthansa cargo, Martinair, Tampa Cargo, Dasair in Uganda, and Lan Chile and its partners; Absa and Masair.

Several other large fleets of ageing 727s, DC-8s, A300B4s and 747-100s/-200s are operated in Europe and North America. These include All Canada Express, Kelowna Flightcraft, MK Airlines, Air Hong Kong, Channel Express, Arrow Air, BAX Global, Atlas Air/Polar Air Cargo, Evergreen Airlines, Express.Net Airlines, Express One International, Kitty Hawk Aircargo and Tradewinds Airlines.

In addition to aircraft replacement in these fleets, there is the additional potential that growth in traffic will provide in certain regions of the world, in particular China and the Asia Pacific. AC