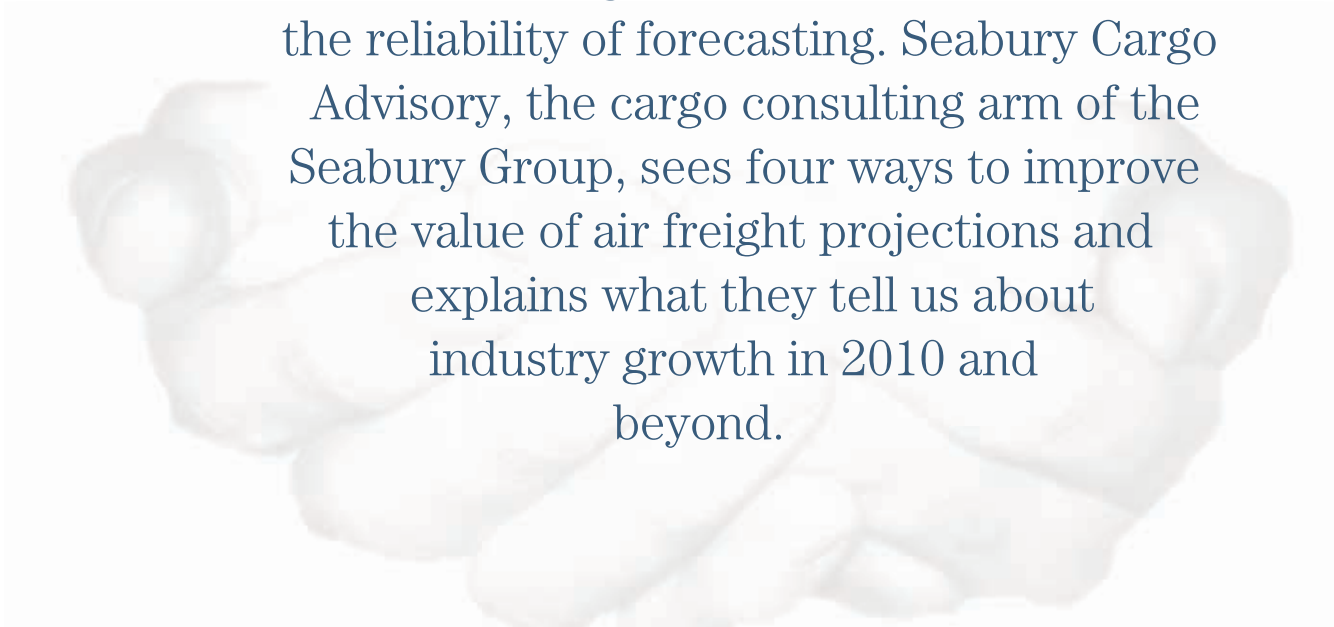




Forecasting:
“Neither Dark
Art Nor Infallible
Science”



As the world faces an uncertain economic future this year, most forecasters have been humbled by the economic crisis — leading many to be skeptical about the reliability of forecasting. Seabury Cargo Advisory, the cargo consulting arm of the Seabury Group, sees four ways to improve the value of air freight projections and explains what they tell us about industry growth in 2010 and beyond.

It's hard to remember when things were as bad in the air cargo industry as they were in 2009. Although at the time of writing we're experiencing a big pick-up in air exports from Asia, the industry details still make for grim reading.

The industry has seen its worst period in decades. International freight tonne kilometers (FTKs) in 2009 were down by about 14 percent year over year. International available tonne kilometers (ATKs) declined by about 7 percent in the same period, putting serious pressure on load factors. Moreover, net airfreight yields plummeted by 18 percent in the first half of 2009 compared to the same period in 2008.

Dismal though those numbers are, they might be tolerable if they were predictable. But volatility is the only thing that comes with any certainty these days. Forecasting in recent history has been extremely difficult; the steepness of the declines in air cargo took us and most of the industry by surprise. Just as few foresaw the extent to which the global economy would retreat, few have reliable insights into how soon and how strongly it will recover. The overall business climate remains as fickle as the British weather.

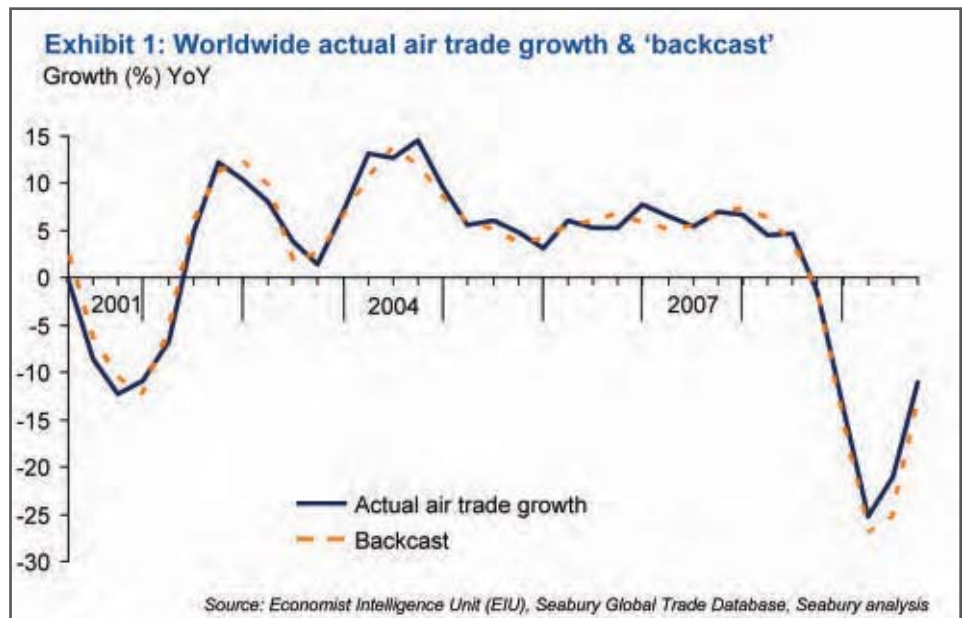
That raises a thorny question — one that challenges business orthodoxy but which nags many managers during times like these. The question: What good is forecasting anyway? Cynicism is understandable: As new and often detailed forecasts pour in on a weekly basis, one could be forgiven for thinking that effort applied to formal forecasting is effort that could be better expended on operational priorities.

However, we believe the question needs to change. Rather than doubting the value of forecasting as a business practice, it is important to know how a more reliable forecast can be created. Our stance is based in part on the tough questions we have been asking ourselves: How feasible is it to forecast the airfreight market in highly volatile market conditions? What approach can be used to anticipate the timing and intensity of sudden declines? How can industry players recognize outdated forecasts as underlying economic conditions change — and react accordingly?

This article shares some of the lessons that we have learned about air cargo forecasting. In Seabury's experience, forecasting is neither dark art nor infallible science; it is simply a tool in one's toolkit, with all of the limitations thus implied. Here are four insights that can help air cargo professionals use forecasting in appropriate ways to make better decisions.

1. IT IS POSSIBLE TO FORECAST AIR CARGO TRENDS

Before we go any further, let us restate the obvious: There is not, and never has been, a way to forecast with complete certainty. However, that is no basis for losing faith in forecasting per se. Nor does it excuse the actions of some air cargo firms that Seabury has learned have more or less stopped making forecasts — at least the fore-

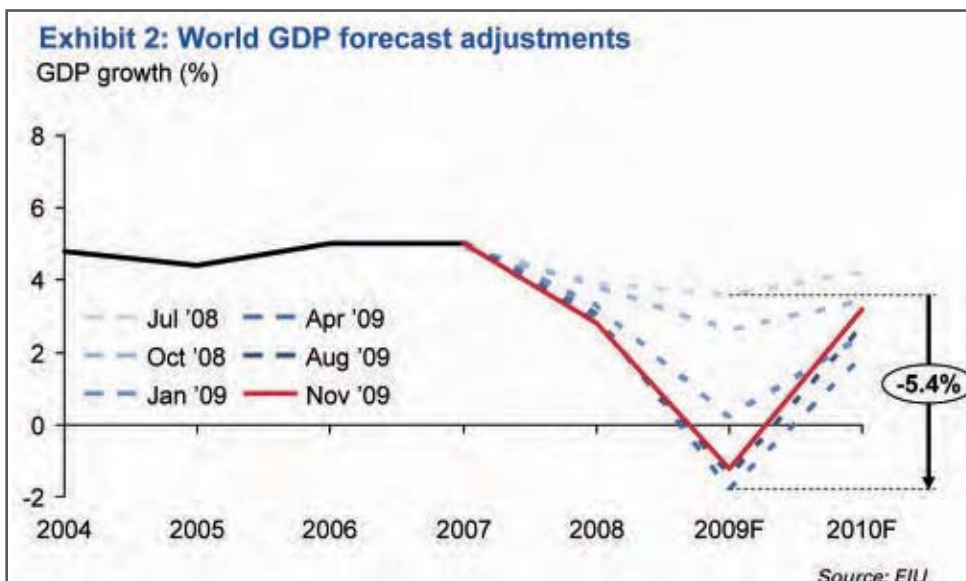


casts that address the short term. Those firms are essentially trying to hit their targets with their eyes tightly shut.

As shown in Exhibit 1, by using just two variables — one relating to global industrial production and one dealing with credit conditions — it's possible to reconstruct a model that is able to forecast growth trends in global air trade with a fair degree of accuracy. Although there

is no certainty that this relationship will hold, it is likely, given the length of historical fit and the validity of the economic indicators used, that this model will result in a reasonable estimation of global air cargo growth rates.

Such models are very effective in stable economic environments or when accurate forecasts of the underlying economic variables are available. However, during the turbulent last four quarters, projections of those fundamentals have been very volatile. Just one recent instance: the widely respected Econo-



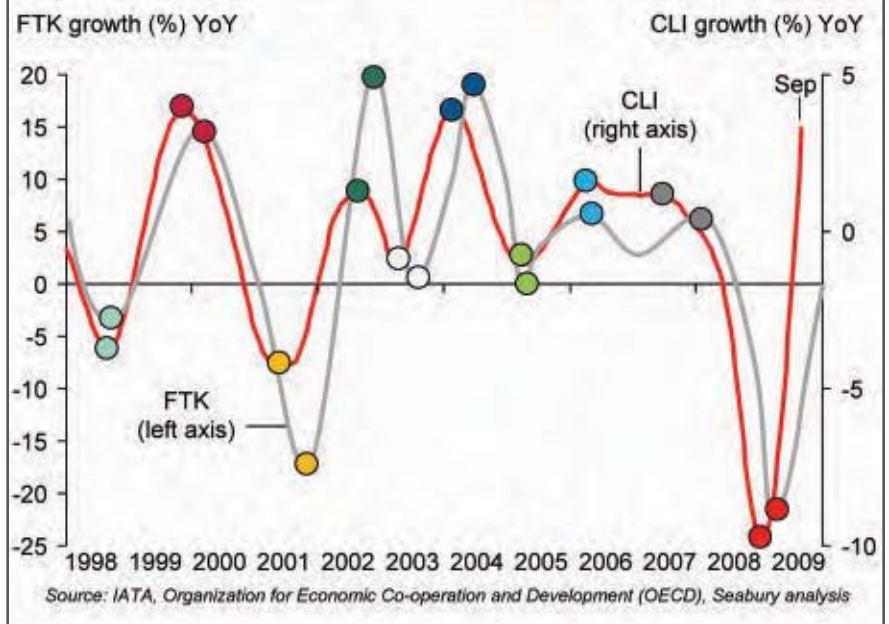
mist Intelligence Unit (EIU) changed its estimates for 2009 global GDP several times, going from a positive 4 percent in July 2008 to as low as negative 2 percent in April 2009 (Exhibit 2). Such drastic shifts in GDP and other economic indicators can have a serious impact on a derivative air cargo forecast.

So how can the airfreight industry make sense of such variability? Two complimentary methods seem to be appropriate: scenario forecasting — recognizing the volatility and preparing a set of forecasts based on different scenarios for recession and recovery — and leading indicators (discussed more in the next section). With the first approach, the forecast that best fits with the recession and the unfolding recovery scenario can be quickly identified. And leading indicators can be tracked to identify the turning points in the business cycle so more realistic projections of when the fortunes of the air cargo sector will turn can be made.

2. TURBULENT TIMES CALL FOR LEADING INDICATORS

In the preceding section, we've acknowledged that the econometric forecast we described is compromised when the economy is volatile; without solid economic forecasts, that model would not have captured the dramatic drop in air cargo demand in the fourth quarter of 2008, let alone its prolongation far into 2009.

Exhibit 3: OECD Composite Leading Indicator (CLI)



But there have always been other ways to tell that things are changing. By looking at signals such as OECD's Composite Leading Indicator (CLI) in 2008's third quarter, it was possible to spot an imminent decline in the air cargo market (Exhibit 3). Those who arm themselves with the right leading indicators for their businesses have a powerful way to make their forecasts more reliable and thus useful.

But what exactly are leading indicators? By definition, they reveal changes in the direction of growth before the market's growth direction changes; they are used to forecast turning points or new phases of the business cycle.

Exhibit 4 defines five often-used leading indicators that can help point ahead to the turning points in air cargo movement.

So which of these indicators should be tracked? Which are really most predictive? Seabury recently tested each of the five for its correlation with U.S. airfreight exports and imports (Exhibit 5). The vertical axis charts each indicator's level of predictability, with 1 being an optimum value. The periods circled on the horizontal axis show the number of months over which the indicator leads air cargo growth.

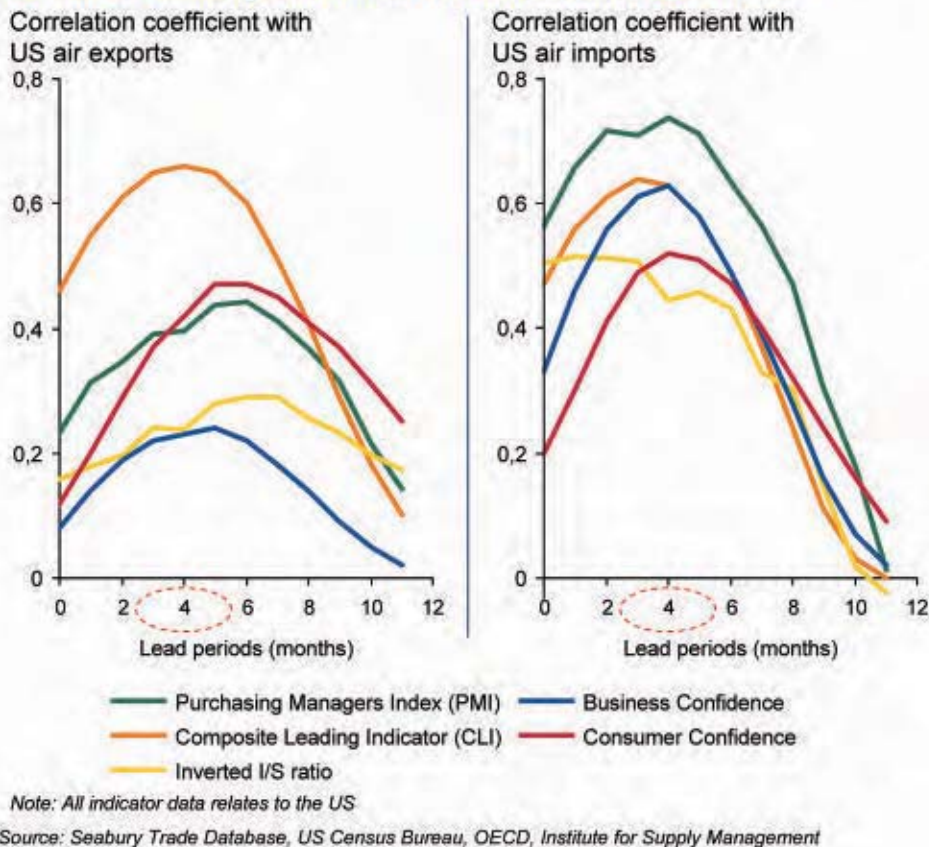
The results of our tests show that one of the industry's most touted leading indicators — the

Exhibit 4: Leading Indicator definitions

Leading indicator	Definition
Business Confidence Indicator (BCI)	Measure of the level of optimism people who run companies have about the performance of the economy and their organizations' prospects
Composite Leading Indicators (CLI)	Set of component series selected from a wide range of key short-term economic indicators, including observations or opinions about economic activity, housing permits, financial and monetary data, etc.
Consumer Confidence Indicator (CCI)	Measures of the degree of optimism on the state of the economy that consumers express through their activities of savings and spending
Inventory to Sales ratio (I/S)	Relationship of the end-of-month values of inventory to the monthly sales
Purchasing Managers Index (PMI)	Indicator for the economic health of the manufacturing sector, based on five major indicators: new orders, inventory levels, production, supplier deliveries and the employment environment

Source: OECD, US Census Bureau, Institute for Supply Management

Exhibit 5: Leading indicators and correlation US air trade



trends; they are less suitable for predicting how severe a decrease or increase in long-term growth rates will be. So leading indicators should be used together with scenario forecasting outputs to enable better clarity and usability.

3. AIR CARGO GROWTH DOES NOT EQUAL TWO-TIMES GDP GROWTH

Many who track the macroeconomic factors affecting air cargo demand use GDP growth as a preferred metric. In fact, it's often argued that there is a very close link — that, on average, growth in air cargo traffic outpaces GDP growth by a factor of two — the “2x” relationship.

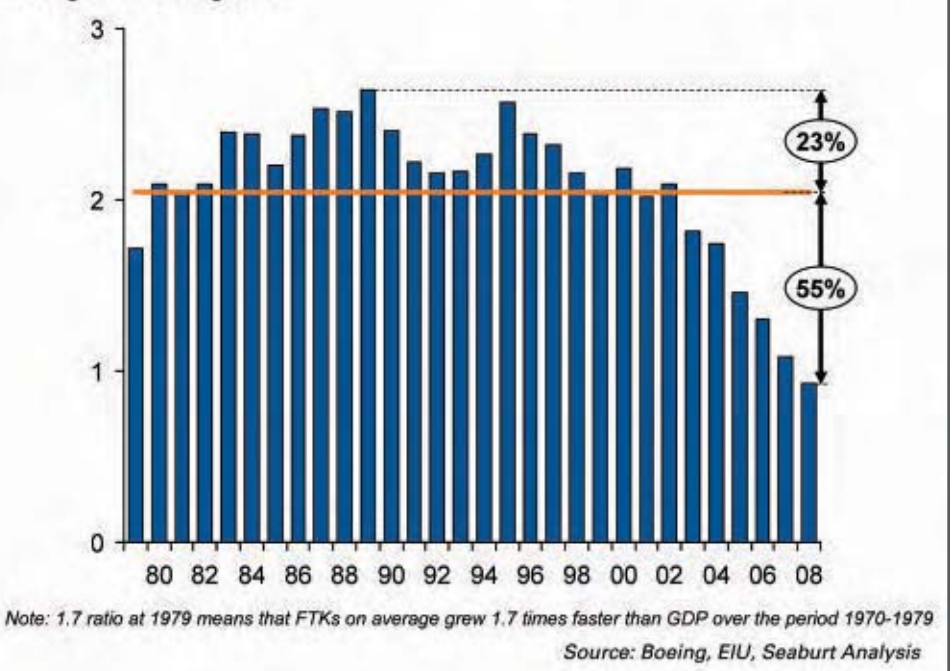
There is no debate about the validity of GDP as a fair indicator of world trade. It is a good measure of economic activity, and economic activity does stimulate trade, and trade ultimately influences the fortunes of the air cargo sector. However, another macroeconomic indicator, global industrial

inventory-to-sales (I/S) ratio — proves not to be a good tell-tale for airfreight after all. In fact, it shows that for U.S. air imports, the I/S ratio is the least effective of the indicators tested. Indicators such as CLI and PMI are far better predictors, leading airfreight by an average of four months, each with a correlation coefficient (R^2) of about 0.7. (The example shown in Exhibit 5 applies only to the U.S.; the significance of each leading indicator might differ for other regions. It is advisable to conduct additional research when using leading indicators as predictors for other regions.)

The upshot: Although air cargo growth is commonly thought of as a leading indicator for other industries, other indicators lead the air cargo industry. Leading indicators should be closely tracked to project short-term changes in

... mately influences the fortunes of the air cargo sector. However, another macroeconomic indicator, global industrial

Exhibit 6: Relation between FTK growth and World GDP growth



production, has a higher correlation (R^2) as well as a more direct and closer relationship with growth in air cargo trade. Industrial production is more closely related to the trade of physical goods, while GDP includes services such as banking, insurance, and business services, whose demand patterns do not directly affect air trade. As expected, the correlation of industrial production with airfreight growth is also stronger at 88 percent — that is, 88 percent of the variance in air cargo growth can be explained by industrial production — versus 79 percent for GDP growth.

Not only is the correlation between GDP and air trade growth suboptimal, but the ratio between the two variables has changed markedly over time. Although FTKs have indeed grown twice as fast as GDP has done over the last 40 years on average — spurred by Just In Time management and globalization, which resulted in Asia's booming manufacturing industries — the term “average” does not mean “normal” as judged by the ten-year rolling average of the ratio between them (Exhibit 6).

The pitfalls of using averages and generalizations become apparent when studying the recent past. Exhibit 6 reveals that from the start of the 1990s, the FTK/GDP ratio has been gradually falling to the current ‘1’ ratio. (Each year's ratio number refers to a “look back” over the pre-



vious decade.) At this point, we know of nothing that will either raise or lower this figure in the near future. However, if the ratio does remain around unity, it would indicate dampened future growth for the air cargo industry. Given that long-term GDP growth is forecasted at around 4 percent, the FTK/GDP ratio will need to significantly increase for air cargo forecasts of 5.5 percent and up to become a reality.

Here's what this analysis tells us: It is advisable to look at indicators other than GDP — indicators such as global industrial production that

have a higher predictive value and show a more stable relationship with FTK growth. It also makes sense to question the value of using time series that stretch far back into the past; that practice only makes sense if the relationship between variables remains stable.

4. CORRELATION ISN'T EVERYTHING

Having a high correlation is a necessary condition for forecasting, but it's no guarantee of success. Yet it's quite common to gauge the validity of new data by asking how closely it correlates with certain benchmarks. It's necessary to kill the myth that 98 percent correlation, say, is automatically “better” than 92 percent correlation.

The point is well made with an unusual example. As it happens, growth in air trade has an almost perfect correlation with the count of certain species of birds that spend the winter in Minnesota.

As seen in Exhibit 7, there is a perfect fit between actual air trade growth and the number of these birds over time. Yet no right-thinking person will assume that air trade can be forecasted by studying the forecasted population strength of groups of birds. The lesson is this: Instead of yielding to the temptation of plowing through a

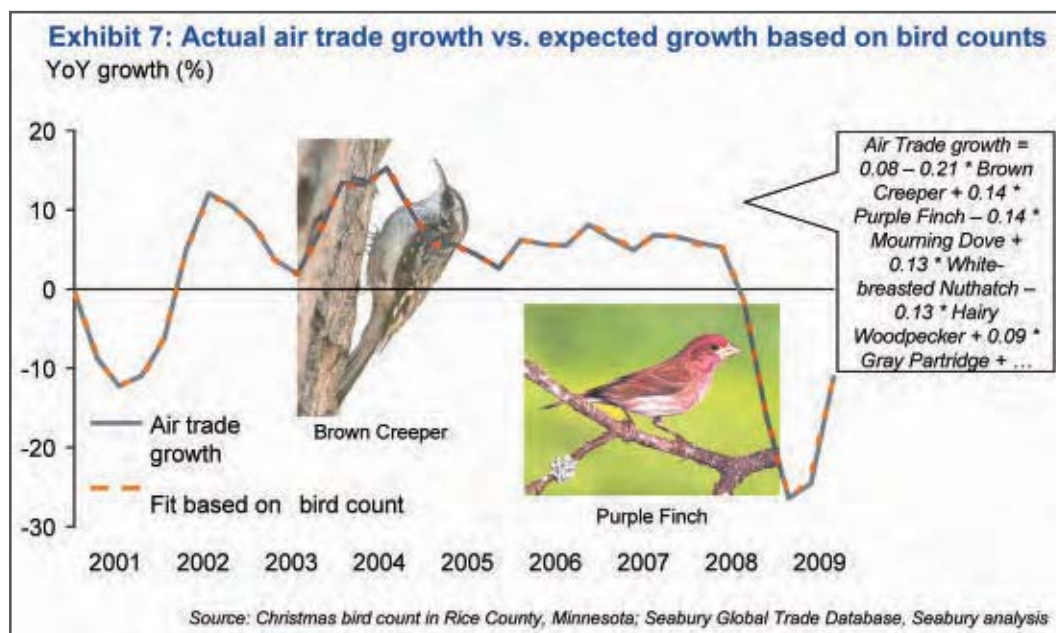
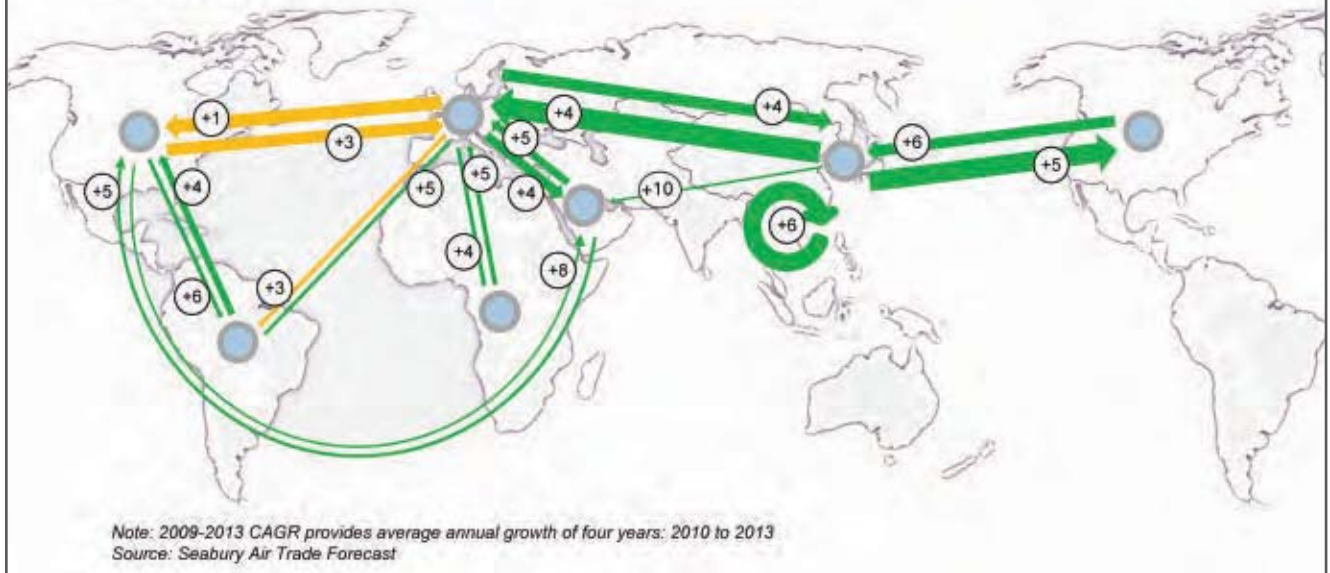


Exhibit 8: Forecast air trade growth
CAGR 2009-2013 (%)



series of economic indicators in a model and performing regression analyses to pick the best correlating variables, one should pay close attention to the factors that truly will influence air trade and formulate an appropriate economic model with the right kinds of interrelationships.

TOWARD MODEST RECOVERY IN 2010-2013

Seabury has put these and other insights into practice to project how the airfreight sector will fare over the next four years. Our updated forecast shows that air cargo is set to grow at an average annual rate of 4.9 percent through 2013 — a sharp contrast to the 7 percent seen from 2002 to 2007. The overall economic outlook seems to support this view: Whereas world GDP growth averaged 3.6 percent from 2002 to 2007, EIU's forecast for the next four years is down to 2.7 percent (real GDP growth, market exchange rates).

This year, 2010, will look positively robust compared to 2009's record negative growth; global air trade is expected to increase by 5.0 percent. Growth in 2011 will be tempered by a forecasted deceleration of the U.S. economy, dropping back to 3.8 percent before picking up again in 2012 and 2013, each with approximately 5.5 percent year-on-year increases. Air cargo volumes won't return to pre-recession (2007) levels until 2013. Exhibit 8 shows how the major air trade flows are expected to develop over the next four years.

Let's look at the three main economic regions in more detail.

United States: The EIU forecasts modest overall GDP growth of 2.5 percent in 2010. Economic growth is expected to fall back to 1.3 percent next year — partly the result of tightening of monetary policy — before recovering to about 2.0 percent for the following two years.

The modest economic growth is specifically reflected in the air trade growth rates of the transatlantic trade lanes. With westbound annual growth of 1 percent and eastbound expansion of 3 percent through 2013, the transatlantic trade lanes are mature. The bright spot is trade growth with countries outside **Western Europe**; eastbound freight to Central Europe and Russia will annually expand by around 10 percent; westbound trade from Central Europe and the Balkans will grow by more than 4 percent.

The eastbound transpacific trade lane is expected to show modest average growth of 5-6 percent in the next four years, spurred by a strong Asian manufacturing base. With an expected growth rate of 8 percent annually, China will remain the main driver for growth to the U.S., contributing roughly 80 percent of overall incremental tonnes. The westbound routes across the Pacific — led by industrial goods and machinery — have much smaller volumes. Their forecasted growth is no more than 6 percent — at least a percentage point lower than the 2002-2007 CAGR. While trade to China will grow with a firm 12 percent, the lanes to particularly Japan, Taiwan and Australia are expected to show lackluster growth.

Elsewhere, pockets of above average growth can be seen in flows between the U.S. and the Middle East/South Asia (MESA), Latin America, and Africa. For the four years through 2013 — excluding the effects of the 2009 drop — U.S.-to-MESA trade is set to grow at 8 percent a year, with U.S.-to-Africa trade expanding by 9 percent annually. At the same time, flows from the U.S. to Latin America will be strong with a 6 percent growth, with U.S.-to-Brazil cargo racing ahead at 9 percent a year. American imports from these regions are also robust through 2013, expanding at 5 percent a year from MESA and 3 percent and 4 percent respectively from Africa and Latin America.



Europe: The Western European and the Transition economies were particularly hard hit by the financial crisis and the large decline in external demand. The EIU forecasts 1.4 percent annual average GDP growth for Western Europe and a stronger recovery for the Transition economies — 3.4 percent annually between 2009 and 2013. This disparity in the level of economic recuperation is also clearly visible in the future air cargo growth levels of these two regions.

Air trade from Asia to Europe will grow at just 4 percent annually — a dip from 2005-2007 average growth and less than a third of the expansion rates seen between 2000 and 2005. Nevertheless, westbound freight from Asia to Central Europe and Russia will perform well and expand by around 9 percent annually. Meanwhile, routes from Europe to Asia Pacific — with industrial goods and machinery as primary shipments — are also forecasted to grow at 4 percent. Specifically, Seabury projects that German exports to Asia Pacific, the route's largest trade lane contributing 30 percent of the overall traffic, will expand at 4-5 percent year on year from 2009 to 2013. Eastbound trade from Central Europe and the Balkans will grow more than 8 percent a year.

Growth in air cargo volumes from Europe to MESA is set to grow by 4 percent a year from 2009 to 2013 — well below 2002-2007's annual average. The slower-growth pattern is also visible in air trade from the Middle East to Europe: Seabury expects no more than 5 percent year-on-year increases — less than half the 2002-2007 rates of growth.

Asia: This region experienced a relatively short downturn. Nevertheless, North East Asia saw large declines in its largest air export categories — high-tech and machinery parts — more than 20 and 30 percent respectively for the first three quarters of 2009. Within Asia, 2009's economic performance differed significantly between countries. Whereas China enjoyed positive GDP growth of around 8 percent, Japan saw GDP plummet by about 6 percent. The EIU recognizes disparate recovery scenarios for the region between now and 2013, ranging from 1 percent GDP

growth for Japan to 8.4 percent for China.

Intra Asia's air trade growth for the next four years will mimic 2002-2007's average annual growth of 6 percent. Both imports and exports will continue to be driven largely by China, albeit more slowly than before. Other countries such as Korea, Taiwan and Thailand will increasingly drive exports within the region.

China's annual air export growth for 2009-2013 will equal 8 percent — a huge drop-off caused largely by reduced air shipments of high-tech products. Imports into China will reach 10 percent — again, a significant fall-off from the pre-recession years.

Japan's air exports appear to have matured; Seabury sees annual growth rates of 5 percent over the next four years. The highest growth of 7 percent will be for air cargo to other Asian countries — mainly based on solid growth in shipments of high tech and machinery parts. Japan's air cargo exports to Europe and the U.S. will grow at a 2-3 percent average. Imports into Japan are set to grow by more than 3 percent — an acceleration that is mainly attributable to increased exports from the U.S.

2010

Over the next year, "alertness" will be the watchword for all players in the airfreight industry. Even with recovery in global trade volumes on the horizon, global capacity will also be on the rise. Factors such as the current offset in utilization and load factors, as well as the return to service of aircraft and the deliveries of brand-new wide body freighters will continue to put pressure on the demand/supply relationship.

In such a volatile environment, tomorrow's top performers will be the ones that embrace forecasting as a valuable instrument to making sound business decisions. **ACW**

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