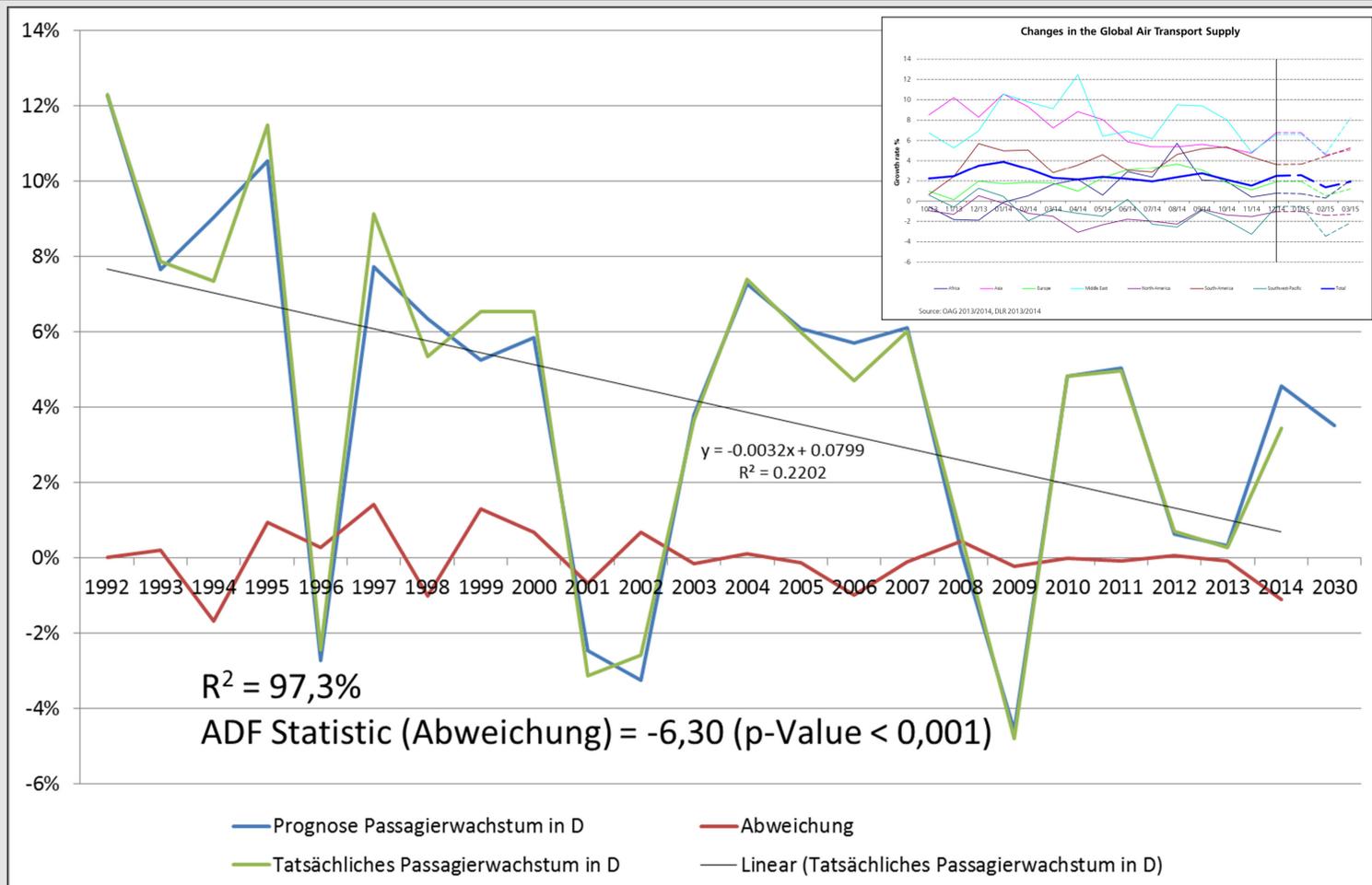


Short, Medium and Long-Term Air Traffic Growth Forecasts



Definition & areas of application

Forecasts, and in this case air traffic forecasts, serve a number of purposes and are of great significance for numerous applications. They can be differentiated according to region, time horizon and the object under consideration. Using the example of a forecast for German air traffic, the various characteristics of short, medium and long-term forecasts will be described in more detail. However, a modified approach can be employed to address global and regional issues. The primary objects of the forecast are typically passenger volume, flight movements and freight volume. The short-term forecast covers a period of up to one year and the medium-term forecast has a horizon of up to five years. Forecasts with a horizon of >5 years are thus considered to be long-term. This differentiation can vary depending on the individual case, however in principle short-term developments appear in short-term forecasts – with the focus in particular on seasonality – whilst in long-term forecasts, longer term developments such as economic or technical developments are of greater significance. Medium-term forecasts to a certain extent unite aspects of short and long-term forecasts, demonstrating a stronger degree of diversity depending on the focus. Nevertheless, medium-term forecasts are, alongside short and long-term forecasts, of great significance for operative and tactical planning in the aviation industry, e.g. airports, airlines and air traffic control. This type of forecast is also of great interest for political decision-makers.

Methodology and approach

Pure time-series methods are most frequently used in short-term forecasting. Within the Global Aviation Monitor this is an advanced development of second-order exponential smoothing with seasonal correction. Long-term forecasting primarily makes use of structural models with explanatory variables such as economic development, building on regression technique. However, since economic and traffic time series are frequently non-stationary in nature, co-integration models in particular are almost essential for long-term forecasting. This makes it possible to identify long-term equilibrium conditions enabling well-founded system analysis and reliable forecasting. The ADF test is one important tool for cointegration analysis. Medium-term forecasting on the other hand is a mixture of the two aforementioned types of forecast, depending on the focus. The primary objects of the forecasts are typically flight movements, passenger volume and freight volume. Of course it is also possible to consider other objects. The way in which the logical context is modelled (selection of variables, functional context, etc.) must always be looked at individually and depends on the concrete issue under consideration as well as the availability and reliability of empirical data. An acceptable model value tends to lie in a zone from R^2 to >90% whereby our methods are sometimes significantly above this. However this is also very much depends on the specific problem.

	Coefficient	Standard Error	t-ratio	P-value
Constant	-6.49981	3.04304	-2.13596	0.0349633
Avg_Distance	-1.11083	0.119563	-9.29074	2.11E-15
Avg_Weight	-0.918515	0.140769	-6.52497	2.33E-09
Share of Tourism	0.317125	0.0727195	4.36093	2.99E-05
Transit Country_AE_CH	0.667916	0.170824	3.90996	1.62E-04
LnSumGDP	12.8799	1.94817	6.6113	1.54E-09
LnSumPop	-3.68539	0.801915	-4.59574	1.19E-05
GC Index	12.0453	1.77957	6.76865	7.21E-10
Distance	0.388695	0.160183	2.42656	0.0169137
ATAT	1.78243	0.274465	6.49418	2.69E-09
TR	0.889148	0.105041	8.46476	1.47E-13
DE	0.165251	0.105935	1.55992	0.121731
Crisis Indicator	-0.0021856	0.00191051	-1.14399	0.255181

Abhängige Variable: ln(Flights) Bestimmtheitsmaß (R^2) = 92.22%

