

Forecasting port traffic the safer way

Basing traffic forecasts solely on GDP can be inaccurate – here's an alternative way to more reliably plan for the future

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There are two traditional methodologies that have been used to forecast port traffic volumes; one based on GDP and the other on desk and field research. Each has advantages and disadvantages, but both miss the big picture and lay themselves open to major error.

The GDP approach

This approach is based on the logical assumption that a variety of economic drivers determine demand for port cargoes. In practice, this fundamentally correct principle has been dramatically simplified to apply only the GDP trend to determine traffic, as if GDP accurately measures the impact of all economic drivers on particular cargoes or ports.

Under this approach, a historic relationship between cargo and overall GDP is estimated (for example, cargo grows at 1.5 times GDP growth) and that multiplier is applied to assumed GDP growth in the future to show how traffic volume will develop. Analysts sometimes apply an extra multiplier if, for whatever reason, they think trade in the future will grow faster, but this introduces considerable subjectivity and is hard to audit.

This effective 'dumbing down' of forecasting in the maritime industry may have occurred because of data problems in general and because the GDP approach has been an appropriate simplification for containerized trade route traffic; given that there is no information about the nature of the cargo within the boxes. Unfortunately, analysis based predominantly on GDP trends has become the norm for all cargo types and right down to the port level. The large majority of forecasts produced for the liquid and

dry bulk trades follow the same simple GDP methodology. This has happened despite the availability of data on other economic drivers and more accurate information about the volume and make-up of port trade; even in some cases for containerized traffic.

There is no fundamental statistical or economics justification for analyzing trade simply in terms of a relationship with GDP. Richer statistical methodologies reveal underlying relationships with the drivers of this type of traffic that GDP cannot capture. It is potentially deficient, if for no other reason that it ignores the effect on traffic flows that different sectors of the economy can exert: such as construction or the retail trade.

For example, one sector may experience a sustained downturn in activity whilst the overall economy remains strong; after having run at a similar rate for decades. This development will have a materially different effect on traffic flows from that indicated by GDP if that sector's imports or exports constitute a significant proportion of cargoes. Use of a GDP driver alone will always distort if different sectors are of differential importance to traffic and are growing at significantly different rates.

Figure 1 illustrates the differing rates of growth in the sectors of the UK economy between 1970 and 2008. The years in which there was a downturn in the economy are shown as vertical lines.

Just as important as the differential sectoral patterns in a port's hinterland are the sectoral developments in its main country trading partners. Use of simple GDP trends for foreign countries can introduce bias and risk incomplete analysis if developments within partner countries' economies are not considered.

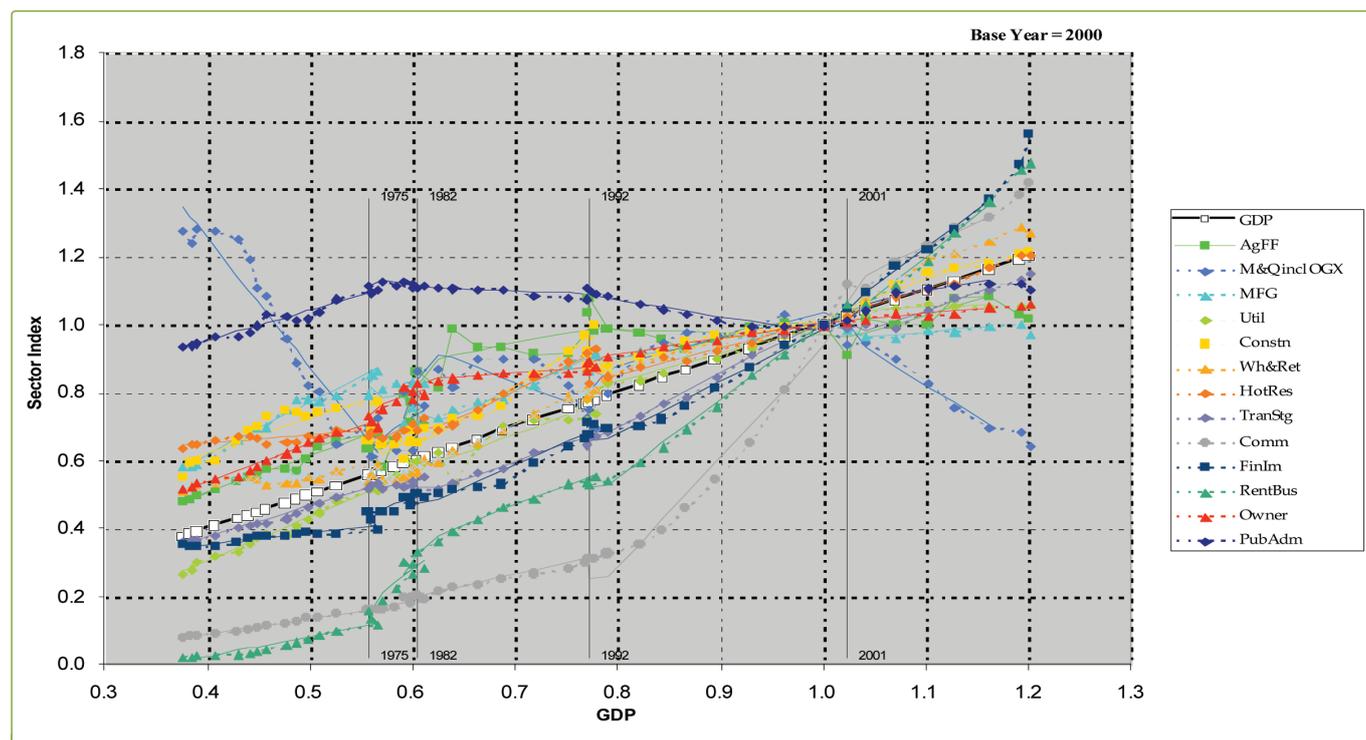


Figure 1. UK GDP and sectors 1970-2008.

These different trends in sectors can persist into the medium- and long-term and are hence important for port studies, both in terms of determining the historic relationships and in particular how they are projected.

There is also a second major problem with the traditional GDP approach. This arises from the standard use of fixed relationships: i.e. the assumption that the multiplier was always the same value and will remain so. An examination of historical data indicates that such relationships are not static and are unstable for a multitude of reasons. Figure 1 evidences sectors growing at different rates with respect to each other and GDP after structural change in the economy, indicated in the years marked in white and with vertical lines.

If there has been structural change during the period that is used to establish the relationship between GDP, sectors and/or any other drivers that affect port traffic and this change is not recognized, the multipliers used to project cargo volumes in the forecast period will be wrong.

The desk and field research approach

A few forecasters take a distinctly different approach, which involves interacting with individuals and organizations in the industrial sectors that import and export to ascertain their views and knowledge of developments. This information is used to build cargo type forecasts, with aggregation where necessary. The principle of this kind of research is sound, as supply and demand side intelligence not available in official statistics can be obtained and built in.

The approach gets into dangerous waters, however, where the third parties' forecasts are relied on for they explicitly, or implicitly, make assumptions about influences on the sector from outside about which the analyst will not know (for example, interest rates or developments in the global economy). Worse, these third parties may base their views of the future on what they have read in published economic forecasts; information disseminated by their trade associations, or very recent market conditions (which they assume will continue). There is also a danger that those in an industry are too close to their market to see the wider implications for the economy as a whole, particularly if they have a relatively narrow client base or their long-term view is influenced by wishful thinking.

Forecasts based on aggregates of industry views are potentially well placed to predict short-term activity in their sector. This is generally based on the level of orders and enquiries the major players in each sector are currently receiving. However, forecasts based on industry surveys did not predict the recession in 2008/2009 and many of the largest global industries, such as the automotive sector, were caught out by the slowdown in economic activity. Similarly, most (if not all) of the major container lines did not predict the substantial increase in traffic volumes that began in 2010.

However useful this approach is for the short-term, it is not suitable for a port forecast that needs medium- and long-term insight.

The alternative

The alternative to these two approaches can best be described as multi-factoral: a more fundamental and comprehensive approach to forecasting port cargoes. It adds to the simple GDP method the relationships between cargo volumes and both sectoral or industry developments, and the economies of partner countries. It also determines and incorporates an understanding of how past and future relationships have changed, temporarily or permanently. In addition it takes into account, by specialized desk research, the impact of changes in the infrastructure, technology and commercial state of the transport sector itself.

The multi-factoral methodology is applied through Maritime Traffic Forecasts' Maricasts model and research methods developed specifically to predict any cargo types, including containers, at the port as well as at the regional, national and trade route level. The main components of the modeling work are in three areas:

1. Conducting an in-depth statistical or econometric analysis, using long runs of data to identify the key sector drivers for each kind of freight, and how they and other disaggregated data modify the relationship of cargo type with GDP and hence alter traffic projections.
2. Identifying and appraising the impact of past shocks to the economy on economic relationships, in order to ensure that the new relationships that are established between GDP and each component sector and traffic volumes are factored into the estimate of future traffic growth. An assessment is then made as to whether and to what extent they return to historic patterns later in the forecast period.

These shocks are not necessarily sudden or downward. For example, the credit boom of the mid-2000s in the 'advanced countries' built up over ten years at least and was structural (being based on new structures in the critical financial industry). It produced relationships between economic data and trade volumes that are unlikely to persist in a period when the damage has to be unwound or even when stability is restored.
3. Actual levels of cargo throughput can reflect much more than macro-economic trends due to changes in product markets and the transport industry. Potential changes in the structure of the market of export and import industries must be examined. For example, the competitiveness of industries in international markets relevant to the traffic of a port needs to be examined. In a globalised economy it is relatively easy for new suppliers to appear, or for production to be re-located to wherever it is most cost efficient to produce the product. In addition, changes in the transport system itself must be incorporated: such as port construction elsewhere. Changes in government policy and new technology can have significant impacts. Desk and field research in these areas complements statistical analysis to make the forecast as close to reality as possible.

Only by approaching the challenges of medium- to long-term projections of port traffic in such a holistic manner can analysts best serve those who take the risk of making major financial and resource commitments to strategic port developments and investments.

ABOUT THE AUTHOR AND COMPANY



Graham Cox is a Director of **Maritime Traffic Forecasts Ltd.** The company is a specialized consultancy focused on the development of bespoke projections of port traffic by cargo type for use in a wide range of applications, including risk analysis, project evaluation, due diligence and investment appraisal.

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