PROPOSED METHODOLOGY FOR DEVELOPMENT OF A VARIABLE TO DETERMINE THE "NATIONALITY OF ECONOMIC LINK FOR MERCHANT SHIPS"

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Introduction

A year ago, at the International Maritime Statistics Forum (IMSF) meeting in Cardiff, the complex subject of ownership of national merchant fleets was broached. Both Lloyd's Register and Fairplay Publications gave presentations on the subject and there was much discussion from the floor as to the issue of how (and indeed if) it would be possible to measure national ownership of such fleets across the world with any degree of accuracy.

It was agreed that there is no universal method for measuring fleets on any consistent basis. Any existing method that could be used with a degree of success for one country might be wholly inadequate and misleading for others.

The Cardiff meeting resulted in the setting up of an ad-hoc working group, consisting of: John Dowden, Senior Manager, UK Chamber of Shipping; Jerry Entract, Manager Ships Editorial, Lloyd's Register of Shipping; Peter Malpas, Data Manager, Fairplay Publications, and Stephen Reynolds, Statistician, DETR. The working group's aim was to examine the possibilities of identifying the true nationality of the company gaining direct economic benefit by application of a new ownership variable. This could be considered a suitable proxy for the nationality of the maritime transport operator. Operation would incorporate carriage of freight or passengers or other services.

The successful establishment of such a variable could:

a) Enable economic national fleets to be compared on a consistent basis

b) Provide a means for establishing the 'nationality of the maritime transport operator' as specified in the EU Maritime Statistics Directive

c) Enhance the usefulness of existing fleet data

With reference to (b) above, the European Commission (DG VII) has been very supportive and has shown a considerable interest in the outcome of this project.

Background

To date, there has been no satisfactory universal method of measuring nationality of ownership of merchant fleets. Historically, this could have been achieved fairly accurately by the use of flag registrations since generally each country registered its vessels with the national flag. The waters have been considerably muddied over the past twenty-five years, however, by the introduction of the "flag of convenience" and the practice of establishing "paper company" ownerships for vessels flagged in this way.

Of course, the reasons for such changes are reasonably obvious - money. Tax concessions, gradual abandonment of expensive national crews in favour of much cheaper crews from less-developed economies. These "flags of convenience" have grown enormously in size in recent years and with the growth came a realisation that quality and safety issues would have to be addressed if these flags were to have credibility in an increasingly regulated world. Most recently perhaps, these flags have been embraced by former Soviet bloc registries to enhance their viability for trading in the more lucrative and, therefore, necessary Western routes.

During the early 1980s, the UK Chamber of Shipping (then GCBS) and UK Department of Transport tackled the changes in partnership with the British Maritime Charitable Foundation and Lloyd's Register by seeking a method for measuring the UK-owned fleet, thus giving a more accurate picture than the dwindling figures for the UK flag registrations. What they sought to achieve then was a measurement of the UK fleet that reflected those vessels contributing to the UK balance of payments. DTp and GCBS were taking a quarterly tape service of LR data, now provided through Lloyd's Maritime Information Service (LMIS), which provided data covering Registered Owner, Manager and Parent Company for each vessel and the users manipulated the data to reflect the growing use of the above-referred "flags of convenience". It had become apparent by 1986 that an automatic indicator had to be sought that would more closely reflect the fleet they wished to identify by operating to a consistent set of criteria, giving regular analyses and capable of flexible output.

Initially, it was felt that use of the parent company's "true" nationality field on LR's database might be the key. This proved impractical, however, due to the number of leasing companies and banks shown as parents. Additionally, this criterion did not take account of the US oil majors whose UK branches such as Esso, Mobil UK, etc. have a degree of autonomy such that their vessels have always been considered as contributing to the UK balance of payments figures. Managers are, on the whole, not considered a useful proxy for owners and so the focus began to centre on registered owners as the key indicator of ownership. Thus, after experimenting with various permutations of the nationality indicators, a decision was jointly taken to adopt, for non-UK registered vessels, a criterion for UK ownership whereby the registered owner had a first nationality of GBI (this being the 3-letter code used for UK on LR's database). The first nationality field on the database reflects the country of incorporation of the company in question.
Finally, it was agreed that, in the interests of consistency, the definition be extended to both domestic UK as well as non-UK registered vessels, thus establishing an accepted method for analysis of its own fleet by the UK.

Over the past few years, the current method has proved to be increasingly uncertain however as further factors in the equation have intervened to show the shortcomings inherent in the use of registered owner's first nationality. *(It was always recognised that while this method worked relatively well in the UK its application in many other countries would produce a less than satisfactory result).* For example, Blue Star Line re-registered ownership of its fleet of reefers under a US-registered company called Blue Star America Inc. Its vessels immediately fell off the list of UK-owned vessels used for calculating contributions to the UK balance of payments. Similarly, Bibby Line registered most of its fleet under a company called Bibby (IOM) Ltd., registered in the Isle of Man possibly for easing of the tax burden or for ease of using foreign crews. Again these vessels fell off the list. Alternative intelligence however indicated that these vessels should indeed feature strongly in any such list.

A better method for measuring these figures had to be found. But did it exist? Previous attempts, even amongst "experts" on the subject, had failed in the past to find the elusive match that would satisfy the admittedly complex mix in the UK-registered fleet, let alone allow a parallel measurement for other countries' fleets that could be used universally.

A Universal Measure?

This exercise began by looking at the United Kingdom fleet, not from any nationalistic interest on the part of the participants (both Fairplay's and LR's maritime data covers the entire globe after all) but because it was the fleet that attempts had been made in the past to measure. Also two of the participants in the working group know that fleet best and know that unless a solution were able to satisfy <u>that</u> fleet it certainly would not be in any way a universal solution.

i) The UK is an international centre still for the maritime world and this is why such a complex mix of nationalities participate in the UK-based picture. The UK balance of payments figures therefore need to include the UK branches of the oil majors and such international organisations as Maersk yet exclude the London-based Greek owners, who historically do not generally contribute to the UK balance of payments but to the Greek economy.

ii) In Greece the use of the 1st nationality of registered owner would work for only a tiny fraction of the Greek-owned fleet (and therefore be unusable) due to the fact that the Greek trading fleet is mostly flagged out to Panama, Liberia, Cyprus, Malta etc.

iii) Some leading European countries will probably lie somewhere between the above two examples. France, Netherlands, Italy and others will have a larger national fleet than Greece but a less diverse arrangement than that in the UK.

A universal variable was now needed that can be applied across all the above using the same criteria in order to produce meaningful comparison studies. Can it be done?

Progress towards a solution

The working group had the first of a number of initial sessions within two months of last year's meeting in Cardiff. These meetings highlighted the scale of the dilemma ahead especially when viewed from a world fleet perspective. It soon became clear that the process towards a solution required taking the problem back to its basic fundamental building blocks of the information available to the industry. Fairplay and Lloyd's Register identified the relevant ownership fields present on their respective databases. From the definitions of each field these were then compared and matched with each other to produce the following table:

Fairplay		Lloyds Register
Operator	≈	Fleet Manager
Owner	≈	Parent Group
Manager	≈	Ship Manager
Registered Owner	≈	Registered Owner

Development of the Algorithm

The first attempts to identify a method to determine the nationality of economic link for merchant ships centred on the existing data fields identified above. Various comparisons were made between Fairplay data and Lloyd's Register data using a single field approach.

Unfortunately significant discrepancies were noted between the resultant analytical outputs due to differing interpretation by the two organisations and the sources of data used by each. This problem will always be present but agreement was established between Fairplay and Lloyd's Register to work together within the working group to explore alternative methodology to achieve the objective. As mentioned above, the UK fleet was first initially examined and more specifically the relationship concerning the London based Greek shipping community. It became apparent at this early stage in the research that a simple "IF" statement would identify which nationality's economy is the primary beneficiary from the employment of vessels with this category. The following statement was established from our market intelligence and knowledge of the specific companies involved.

Therefore according to the Fairplay definitions:

IF Operator = "United Kingdom"
&
IF Owner = "Greece"
Then
Country of Economic Benefit = "Greece"

According to Lloyd's Register definitions

IF Fleet Manager = "United Kingdom"
&
IF Parent Group = "Greece"
Then
Country of Economic Benefit = "Greece"

Conversely, according to Fairplay

IF Operator = "United Kingdom"
&
IF Owner/Parent Group ≠ "Greece"
Then
Country of Economic Benefit = "United Kingdom"

According to Lloyd's Register

IF Fleet Manager = "United Kingdom"
&
IF Parent Group ≠ "Greece"
Then
Country of Economic Benefit = "United Kingdom"

This process was expanded with further examples for well know nationality relationships, in some cases looking outside the UK. Some of the examples are shown below:

Operator/Fleet Manager	Owner/Parent Group	Country of Economic Benefit
United Kingdom	United Kingdom	United Kingdom
United Kingdom	Greece	Greece
United Kingdom	Bermuda	United Kingdom
United Kingdom	Ukraine	Ukraine
Isle of Man	United Kingdom	United Kingdom
United States	United States	United States
United States	Greece	Greece

Development of the Matrix

Once problems associated with the development of the algorithm were overcome focus was then directed towards its presentation. The process described above worked well for a relatively small number of examples but soon became a burden when considering any substantial number of nationality relationships. Whilst identifying the appropriate format with which to present the research conducted thus far, the idea of using a 2-dimensional matrix was conceived. The y-axis comprised the nationality of the Operator/Fleet Manager and the x-axis the nationality of the Owner/Parent Group. The result of the intersection was therefore the nationality of the country of economic benefit. This concept for the first time in the research gave a structured picture of the findings achieved so far:

	Nationality of Owner/Parent Group		
Nationality of Operator/Fleet Manager	**UK**	**GR**	**IOM**
UK	UK	GR	UK
GR	GR	GR	GR
IOM	UK	GR	IOM

After further discussion in the working group the matrix concept was adopted as a suitable mechanism to take the research forward. Next began the process of its application on a global basis. Microsoft Excel was chosen as the software tool in which to build the global matrix. Fairplay and Lloyd's Register then both extracted from their own databases a list of all current countries which were valid and amalgamated these to create one master list. A new Excel workbook was created and the master list of around 200 nationalities was loaded into this file. Around 200 nationalities appeared along each axis to provide approximately 40,000 cells. The country of the Operator/Fleet Manager was pre-loaded into the resultant cells for convenience and country codes were used instead of full titles to ease the management of the matrix.

Identification of Important Cells

The research task then required looking at each cell to establish the nationality of country of economic benefit from the nationalities of the Operator/Fleet Manager and Owner/Parent Group. Clearly working through all 40,000 cells would be impractical. Also many of the combinations do not exist in reality. An extraction was made from the Lloyd's Register database of all vessels and the nationality of the Fleet Manager, nationality of Parent Group and the vessel's dwt. This extraction was supplied to the working group to establish the total number of vessels and total dwt for each cell combination. The percentage these totals represented of the entire world fleet was also calculated. The percentages were ranked with the largest first and the cumulative percentage total established. An assumption was made that where the nationality of Operator/Fleet Manager was the same as the nationality of the Owner/Parent Group then the nationality of Country of Economic Benefit would also be the same.

- 77% of the world fleet by dwt was automatically assigned as a consequence of the same nationality of Operator/Fleet Manager and Owner/Parent Group.
- This related to only 200 cells.
- An additional 500 cells equating to 18% of the world fleet by dwt were individually researched by the authors.
- 95% of the world fleet by dwt was deemed to be accurately assessed.
- The remaining 5% of combinations were not researched but still contained the pre-loaded nationality of Operator/Fleet Manager.
- A general assumption was made that half of these 5% cells would be correct.
- Therefore the process would deliver a total accuracy level of 97.5%.

Application of Market Knowledge

As highlighted above the 500 cells which equated to 18% of the world fleet were individually researched. This was undertaken by the authors' examination of all the vessels and companies which were the components of the cells by having access to both Fairplay's and Lloyd's Registers databases. Using the authors' market knowledge and experience for the companies examined, the nationality of the country of Economic Benefit was agreed. This was aided by each author having a full understanding of their respective databases and the ability to track the activities of the companies in question. The resultant nationality was then entered into the matrix. This task became the most time consuming element of the entire research process, requiring a series of regular meetings over a number of weeks.

On completion of this task it was then possible to feed the matrix back into the core databases. By identifying all the cells which contain the code for a particular nationality of economic benefit for a specific country, it is possible to identify the individual vessels which have an economic link. This enables a new field of information to be created in both the Fairplay and Lloyd's Register databases. From this field of information it is possible to analyse the databases to provide a complete fleet analysis by whichever criteria are desired. This process was used to produce a list of vessels, which according to the matrix provided an economic benefit to the UK. This list was submitted to the working group for inspection and comment.

Problems with the 2 dimensional Matrix in relation to the UK fleet

An extract for the UK economically linked fleet based on the above criteria was carried out and compared with an extract using the "old" convention mentioned in the background. The comparison had indicated considerable mismatches between the two results leading to concern over the validity of the criteria. In general terms the new extract generated a much larger fleet that the conventional method. More specifically, difficulties arose in allocating vessels of multinational companies (e.g. P&O Nedlloyd) to different nationalities due to difficulties in determining the level at which operational decisions are taken. This rigidity also resulted in the "blanket" allocation of a particular nationality dependent on the definition of Operator/Fleet Manager and Owner/ Parent Group within the matrix. Consequently, in certain cases, all fleets within a company structure were allocated to a particular nationality when in reality they should be allocated - often on a sectoral basis - to different nationalities.

Need for a 3rd Dimension

Due to the problems specified previously, further refinement of the 2-dimensional model was required. From the feedback in relation to the UK fleet it was established that the main problem was the inclusion of vessels which had a genuine registered owner outside the UK. Following a subsequent meeting, the working group concluded that the inclusion of a third dimension was required; this being the registered owner of a vessel. The ability to differentiate between traditional registered owners and so called "brass-plate" registered owners was also required. For ease of presentation the 3rd dimension was not incorporated into the established 2-dimensional matrix but acted as a pre-matrix filter. The 200 nationalities used to create the previously referenced master country list were separated into two groups. The first grouping was a list of nationalities which may be deemed to include traditional registrations e.g. UK, USA, Germany and Japan. The second list contained those nationalities deemed to be used for offshore owner registration e.g. Panama, Honduras, Liberia and St Vincent. The working group agreed that if a vessel had a registered owner based in the first list i.e. traditional nationalities then that nationality would be deemed to the country of economic benefit. However if the nationality of the registered owner was from a country in the second list then the 2-dimensional matrix would be applied.

Current Situation

This is the point at which the working group and the authors of this paper have reached today. Initial analysis has only been produced for the UK economic linked fleet and early indications suggest that this refinement by the use of the third dimension has been very successful. However it is now realised that the matrix will now need to be updated to take account of the fact that a considerable quantity of tonnage has its nationality derived outside of the matrix. This will require a revisit to the original matrix to repeat the tasks detailed earlier.

The Next Stage

The working group aim to continue the series of meetings in order to continue development of a new variable provisionally known as "Economic Linkage". A significant amount of further research is required to examine the results of the UK economic fleet output by means of postal questionnaires and personal interviews in order to compare results with information held by government departments, trade associations etc. This process may be repeated for the economic fleets of other maritime nations.

The working group will also continue to produce summary reports of current activities and progress following each meeting of the group for dissemination to group members, DG VII and other interested parties. The Internet will be used to promote and generate feedback. Final results of the research will be reported to DG VII by August 31, 2000. These results will be fully documented and show either the production of a new variable, the unfeasibility of producing such a variable or the justification for further research. Upon successful completion of the project the new variable will be incorporated into both Fairplay's and Lloyd's Register's databases. This will enable members of this forum and the wider spectrum of maritime data users to benefit from the work by conducting their own analyses as required.