The economic contribution of the UK shipping industry

A report for Maritime UK

September 2017

Cebr

Disclaimer

Whilst every effort has been made to ensure the accuracy of the material in this document, neither Centre for Economics and Business Research Ltd nor the report's authors will be liable for any loss or damages incurred through the use of the report.

Authorship and acknowledgements

This report has been produced by Cebr, an independent economics and business research consultancy established in 1992. The views expressed herein are those of the authors only and are based upon independent research by them.

The report does not necessarily reflect the views of Maritime UK.

London, September 2017

Contents

Executive Summary

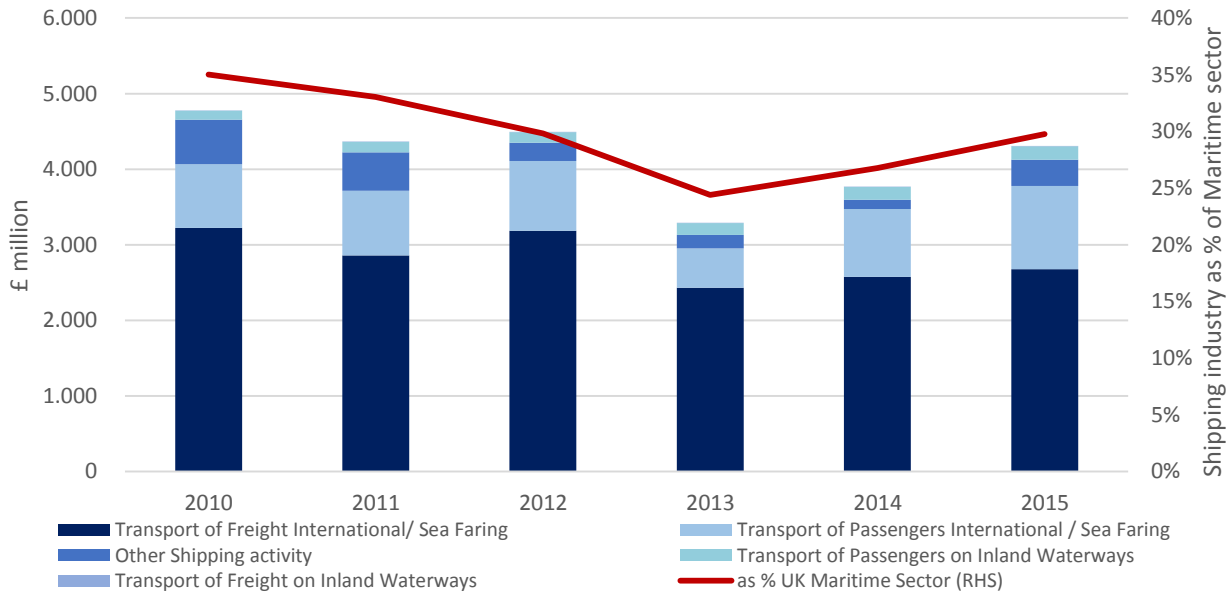
- The Centre for Economics and Business Research (Cebr) has been commissioned by Maritime UK to quantify the economic contribution of the shipping industry. This report forms one of seven reports which also assess the contribution of the Maritime sector as a whole, at industry-level, in Scotland, and in the Solent LEP region.

- **The shipping industry consists of various activities, including the transportation of passengers and freight on both inland and international waters.** This report has drawn upon a combination of data sources, including the UK Chamber of Shipping (UKCoS), to quantify both the direct and aggregate economic impact of these activities in the UK economy in the years 2010 to 2015.

- The shipping industry makes a substantive macroeconomic contribution to the UK through business turnover, Gross Value Added (GVA), employment and through the compensation of employees. **It is estimated that the shipping industry directly supported just over £13.9 billion in business turnover, £4.3 billion in GVA and 152,600 jobs (with 51,000 jobs for UK employees) in 2015.** This respectively equates to 35% of turnover, 30% of GVA and 27% of UK employment directly supported by the UK Maritime sector in 2015. **The International Transport of Freight is the largest constituent activity within the shipping industry in terms of economic activity**, directly contributing £2.7 billion in GVA and directly supporting around 29,800 jobs for UK employees in 2015.

- **The direct contribution of the shipping industry through Turnover, GVA and Employment has fallen since 2010**, when Turnover, GVA and Employment were estimated to be £4.8 billion, £13.4 billion and 52,800 jobs respectively. This corresponds to the observed fall in the total deadweight tonnage of the UK-owned shipping fleet during the same period. Figure A below shows trends in the direct contribution of the shipping industry through GVA between 2010 and 2015.

Figure A: The direct contribution of the shipping industry through GVA, and the industry's share of the Maritime sector's total direct contribution through GVA



Source: FAME, UKCoS, ONS, Cebr analysis

- The shipping industry also helps to raise millions of pounds each year to the UK Exchequer and makes a sizeable contribution to UK trade through exports of services. **The industry contributed an estimated**

total of just under £600 million in tax revenues in 2015, spread across Corporation Tax, Income Tax, National Insurance Contributions (NICs) and Business Rates, as well as £5.1 billion of exports.

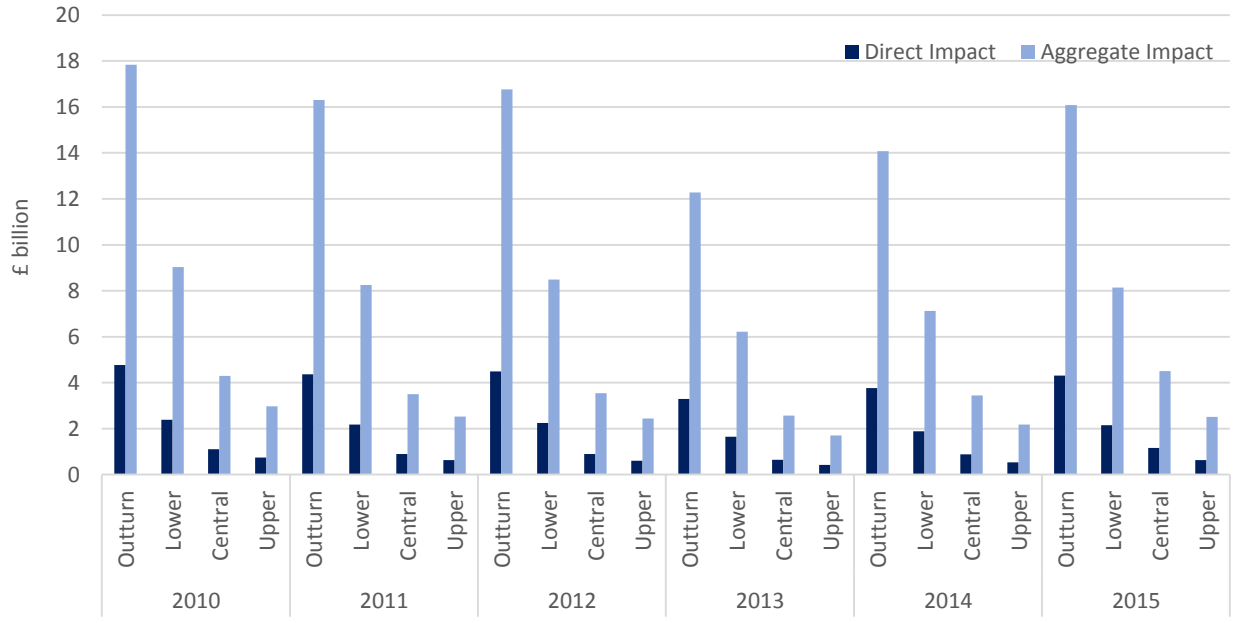
- After quantifying the aggregate economic impacts through the industry supply chains and induced effects on expenditures, **it is estimated that the shipping industry helped to support a total of £16.1 billion of GVA in 2015.** This implies that, for every £1 in GVA directly contributed by the industry, a further £2.74 in GVA is generated across the UK economy.

- These aggregate economic impacts associated with the shipping industry also extend to business turnover, employment and the compensation of employees. **It is estimated that the shipping industry helped to support a total of £36.7 billion in business turnover, 674,400 jobs and £4.7 billion through the compensation of employees in 2015.**

- **While the economic contribution of the industry is spread across all UK regions, London contributes the most to GVA and employment, both directly and more widely.** In 2015, it is estimated that the industry in London directly contributed £2.0 billion of GVA (47% of the industry) and 19,400 jobs (38%). After indirect and induced effects are considered, the aggregate contribution from London rises to £6.0 billion of GVA (43%) and 211,600 jobs (35%).

- There is strong evidence that the introduction of the Tonnage Tax regime in 2000 had a significant positive impact on the level of UK-owned shipping tonnage and the economic contribution in subsequent years. **Under a Central Scenario, Cebr estimates that without the Tonnage Tax regime, the shipping industry would have directly contributed £1.2 billion in GVA in 2015, and so £3.1 billion (73%) *less* than the GVA outturn of £4.3 billion.** This extends to 37,000 fewer jobs, £410 million less in tax contributions and £3.7 billion less in exports of Sea Transport services. Once the indirect and induced channels are considered, the reduction in GVA and employment rises to £11.6 billion and 451,000 jobs respectively in 2015. Figure B below shows the estimated GVA impact of the Tonnage Tax regime, comparing the outturn against three scenarios modelled.

Figure B: The direct and aggregate GVA impacts of the UK shipping industry under alternative scenarios



Source: FAME, UKCoS, ONS, Cebr analysis

1 Introduction

Cebr is pleased to present this report to Maritime UK on the economic impact of the shipping industry on the UK economy. For the purposes of this study, the shipping industry is defined as comprising of Sea and Coastal Passenger Water Transport, Inland Passenger Water Transport, Sea and coastal freight water transport, and Inland Freight Water Transport activities, in alignment with the National Accounts framework definition. Other vessels not included in this definition – such as those engaged in activities such as oil and gas, aggregate, wind, cable laying, hydrography, and surveying – are captured as part of Cebr's separate report on the economic contribution of the Marine industry.

This report forms one of seven reports on the economic contribution of the Maritime sector, which is defined as comprising the individual shipping, Ports, Marine and Maritime Business Services industries, each comprising a wide range of component activities. The other reports focus on the economic contribution of each of the other three industries at UK level, the economic contribution of the sector in Scotland, the Solent LEP, and the contribution of the Maritime sector at UK-level. It is therefore important to consider this report as part of the wider framework set out in the six reports, which set out the impact of the Maritime sector both at a national and regional level. Our examination spans the period from 2010 to 2015 (inclusive), with the latter being the latest year for which full data are available, and endeavours to capture the full economic 'footprint' of the shipping industry. As such, our report is not confined to direct ongoing contributions to GDP and employment through the shipping industry's operations and activities in the UK, but also provides assessments of the associated indirect and induced multiplier impacts.

1.1 About Maritime UK

Maritime UK is the promotional body for the UK's maritime sector, representing companies and partner organisations in the shipping, ports, marine and maritime business services industries. It acts to promote the sector, influence government and drive growth.

1.2 Purpose of this report

This study seeks to equip Maritime UK with statistics and figures on the value of the shipping industry to the UK economy, within the context of the value of the Maritime sector. As such, Cebr has focused on the following key economic indicators: Turnover, Gross Value Added (GVA), Employment, the compensation of employees, the Exchequer contribution (through tax revenues raised) and exports of goods and services. The study also seeks to identify the contribution of the shipping industry at regional level (across the former Government Office Regions), after accounting for the relatively high concentration of economic activity taking place in the City of London.

1.3 Overview of the study and methodology

Purpose of the study

This report provides a thorough and comprehensive examination of the role of the shipping industry in the UK and its constituent sub-regional economies. It presents a range of analyses demonstrating different aspects of the value contributed by the industry, including direct contributions to GDP and employment, indirect and induced multiplier impacts and the shipping industry's contribution to the UK Exchequer through tax revenues raised.

An important task has been to develop an in-depth understanding of the shipping industry. To produce a robust study, it is necessary to interrogate the available data to ensure that it captures the full range of activities that should be included in establishing the total economic 'footprint' of the industry. Following the collation of the necessary data capturing these activities, the values of key economic indicators were established to demonstrate the impact of the industry. The key macroeconomic indicators include:

- GVA[1] contributions to UK and regional GDP generated by the shipping industry, directly and through indirect and induced multiplier impacts.
- Jobs supported by the industry, including direct, indirect and induced jobs through multiplier impacts.
- The value of the turnover of shipping industry and, again, the turnover supported in the UK and regional economies through multiplier impacts.
- The value of employee compensation[2] generated by the shipping industry, representing the total remuneration of employees operating in the industry.
- The contribution of the shipping industry through revenues raised for the Exchequer.

Mapping the UK shipping industry

Cebr has followed the definition of the shipping industry as comprising the activity groupings listed below:

- **Transport of Passengers International / Sea Faring** (Standard Industrial Classification code 50100) – this consists of a variety of activities including: boat rental; coastal passenger transport; excursion, boat and sightseeing operations; passenger ferrying; water taxis; and other activities involving the transport of passengers over water (excluding inland routes, detailed below).
- **Transport of Passengers on Inland Waterways** (Standard Industrial Classification code 50300) – this consists of activities which represent the transport of passengers over inland water. Such activity cover: passenger canal carrying; the transport of passengers via rivers, lakes, ports, canals and harbours; passenger ferry transport (via inland waterways, rivers or estuaries); local authority passenger ferry services; and the rental of boats or pleasure boats with crew for inland water transport.
- **Transport of Freight International/ Sea Faring** (Standard Industrial Classification codes 50300 and 77342) – this grouping combines all activities relating to the international transportation of freight and related sea faring (except on inland waterways), as well as the rent and leasing of water freight transport equipment. These activities consist of sea and coastal freight shipping/ferrying services, heavy lift and launch barge services, and the rental of vessels for sea and coastal freight transport.
- **Transport of Freight on Inland Waterways** (Standard Industrial Classification code 50400) – this grouping differentiates freight transport services conducted on inland waterways from those services listed immediately above. It consists of activities such as: freight transport via lakes, estuaries, canals, ports and rivers, harbours and docks; freight transport via inland waterways; and the rental of boats (with crew) for inland waterway services.
- **Other shipping activity** – this reflects the activity of businesses whose primary SIC code is not one of the five listed above. For example, CEMEX – a large company producing aggregates and building materials – runs shipping operations in the UK but would only list shipping activities as one of its

[1] GVA, or gross value added, is a measure of the value from production in the national accounts and can be thought of as the value of industrial output less intermediate consumption. That is, the value of what is produced less the value of the intermediate goods and services used as inputs to produce it. GVA is also commonly known as income from production and is distributed in three directions – to employees, to shareholders and to government. GVA is linked as a measurement to GDP – both being a measure of economic output. That relationship is (GVA + Taxes on products - Subsidies on products = GDP). Because taxes and subsidies on individual product categories are only available at the whole economy level (rather than at the sectoral or regional level), GVA tends to be used for measuring things like gross regional domestic product and other measures of economic output of entities that are smaller than the whole economy.

[2] Compensation of employees is the total remuneration, in cash or in kind, payable by an employer to an employee in return for employers' social contributions, mainly consisting of employers' actual social contributions (excluding apprentices), employers' imputed social contributions (excluding apprentices) and employers' social contributions for apprentices.

secondary SIC codes. CEMEX's employment in shipping activities are instead captured through the UKCoS annual Manpower Survey.[3]

The first stage of the study has involved mapping the activities of the shipping industry against the National Accounts framework, in order to establish clarity on the precise definition of the industry as it maps against the Standard Industrial Classification (SIC) framework.[4] In essence therefore, this involves taking each of the shipping industry's activities, and mapping these to the most relevant Standard Industrial Classification (SIC) code in order to identify the activity's economic data.

It is clear that the majority of the activities of the shipping industry do map neatly onto the SIC framework. In fact, the major activity groupings listed above, with the exception of the last, each correspond to a particular SIC code. As a result, Cebr have been able to exploit company financials data in addition to publicly-available data sources such as the Annual Business Survey to gather data for some constituent activities of the shipping industry. Cebr has therefore drawn upon a combination of publicly-available data, desk research and industry data to quantify the economic contribution from the shipping industry.

Quantifying the direct economic impacts of the shipping industry and data sources

In order to quantify the direct economic impacts of the shipping industry, a number of different approaches have been taken which reflect the degree of alignment (or otherwise) for each shipping activity against the National Accounts framework. They are as follows:

- The major source of data used to quantify the direct economic contribution of the shipping industry is the Financial Accounts Made Easy (FAME)[5] database, which provides business demography and financial accounts data for companies operating in the UK shipping industry. The FAME database has been used to generate estimates for the business turnover, GVA, employment, the compensation of employees and profitability of the shipping industry.
- The indicative breakdown of shipping industry revenue by vessel type has been sourced from the UKCoS Annual Sea Inquiry.[6]
- FAME data has then been used by extension to quantify the contribution that the shipping industry makes to the UK Exchequer, and the productivity of the industry in terms of GVA per job. Data on foreign seafarer employment and an indicative breakdown of employment by type (officers, rating and shore-based staff) has been sourced from the annual UKCoS Manpower Survey.
- Data for exports of services exports from the shipping industry has been sourced from both the ONS Pink Book and the UKCoS Annual Sea Inquiry.

A more detailed description of sources used for each shipping industry activity can be found in the next section of this report.

[3] The Manpower Survey is run annually by UKCoS, collecting data from its membership of the number of seafarers they employ under contract from the Department for Transport (DfT) who use the data in the production of the National Statistics publication.
[4] The United Kingdom Standard Industrial Classification of Economic Activities (SIC) is used to classify business establishments and other standard units by the type of economic activity in which they are engaged.
[5] The FAME database of companies in the UK and Ireland provided by Bureau van Dijk. It contains information on company filings, SIC codes and industry descriptions, as well as accounts and documents as filed with Companies House.
[6] The Annual Sea Inquiry is an annual survey run by UKCoS on its membership, with data uplifted by the ONS to account for companies which are not members of UKCoS.

Quantifying the aggregate economic impacts of the shipping industry

After collation and interrogation, the direct economic impacts for the shipping industry have then been embedded within Cebr's economic impacts models of the UK economy. For each of the five activity groups, the direct impacts are then combined with the bespoke economic multipliers to generate indirect, induced and so aggregate impacts. These multipliers were calculated by Cebr using our input-output modelling approaches, as these activities are not 'standard' sectors reported in the ONS' input-output tables. Cebr's models establish the relationships between industries through supply chain linkages, as well as industries' linkages with government, capital investors and the rest of the world (through trade).

The models produce three types of impact for four indicators – turnover, GVA, employment, and the compensation of employees. The three types of impact are:

- **Direct impact**: this is the value generated and jobs supported directly by the economic activities of the UK shipping industry.
- **Indirect impact**: this is the value generated and jobs supported in industries that supply inputs to the UK shipping industry.
- **Induced impact**: this is the value generated and jobs supported in the wider economy when the direct and indirect employees of the UK shipping industry spend their wages and salaries on final goods and services.

These three impacts are then combined to convey the aggregate impact associated with each activity within the shipping industry in terms of turnover, GVA, employment, and the compensation of employees.

1.4 Structure of the report

The remainder of the report is structured as follows:

- Section 2 provides an overview of how the Maritime sector has been defined, and how the shipping industry fits within this definition. Further information is also provided on how the key macroeconomic indicators have been captured or estimated;
- Section 3 outlines the direct economic impacts of the shipping industry. We consider the direct impacts through GVA, employment, the compensation of employees, the industry's contribution to the UK Exchequer through tax revenues, and the value of exported services.
- Section 4 considers the multiplier impacts of the shipping industry through the activities it stimulates in the local supply chain and in the wider economy when employees directly and indirectly employed by the Solent-based industry spend their wages and salaries in the local and wider economy.
- Section 5 examines the direct and multiplier impacts of the shipping industry at regional level, as disaggregated by the twelve former Government Office Regions (GORS).[7]
- Section 6 provides additional analysis of the Tonnage Tax regime and how its introduction is estimated have impacted the UK shipping industry since 2000. Analysis is framed around the counterfactual situation of what would have likely happened to the UK shipping fleet and the economic contribution of the shipping industry had the Tonnage Tax regime not been introduced.

[7] These are: Scotland, Wales, Northern Ireland, the East of England, the East Midlands, London, the North East, the North West, the South East, the South West, the West Midlands, and Yorkshire and the Humber.

2 The Maritime Sector and the shipping industry

Here we set out how the Maritime sector has been defined for the purposes of the study. On a holistic level, the wider sector can be disaggregated into the shipping, ports, marine and maritime business services industries, which in themselves are formed of numerous individual and distinct activities, of which the shipping industry is the focus of this report.

2.1 The definition of the Maritime sector and its constituent industries

Maritime UK have provided a list of activities which fall under the auspices of the Maritime sector; Cebr has subsequently undertaken a mapping exercise using this list to identify how each of these four industries aligns with the national accounts. For most Maritime sector activities, a corresponding Standard Industrial Classification (SIC) code exists which enables the identification and quantification of the direct economic impacts using publicly-available data sources. A minority of activities do not map neatly against the SIC framework, necessitating the use of industry or local-level data for quantification purposes.

- **Shipping industry**
  - International transport of passengers;
  - Transport of passengers on inland waterways;
  - International transport of freight;
  - Transport of freight on inland waterways.
  - Other shipping activity.
- **Ports industry**
  - Warehousing and storage;
  - Port activities and management;
  - Stevedores, cargo and passenger handling;
  - Border agency, HMRC and public sector employees operating in ports.
- **Marine industry**
  - Shipbuilding;
  - Boatbuilding (marine leisure vessels);
  - Marine renewable energy;
  - Marine support activities for offshore oil and gas, engineering and mining;
  - Recreational marine activities, marine finance and legal activities and general marine services;
  - Marine science and academic activities, including government vessels and technical consulting;
- **Maritime Business Services industry**
  - Shipbroking and other miscellaneous transport services;
  - Maritime insurance, finance and legal services; [8]
  - Ship surveying and classification;
  - Maritime education;
  - Maritime consultancy;
  - Maritime accountancy.

Here we focus solely on the shipping industry. The remainder of this section focuses on how the direct economic impacts of the constituent activities have been measured.

[8] These activities are distinct from those Insurance, Financial and Legal activities taking place within the Marine industry, and the contribution of these activities are treated and quantified separately as a result.

2.2 Quantifying the direct economic impacts of the industry at national level

Here we set out in further detail the approach taken to quantify the direct economic impact of the shipping industry through its constituent activities. Table 1 below shows how activities for the shipping industry have been identified, and the data sources used to capture and quantify the associated economic activity.

Table 1: Mapping of the shipping industry by activity

INDUSTRY	ACTIVITY	MAPPING	SOURCE(S) USED
SHIPPING	Transport of Passengers International / Sea Faring	Identified through SIC code 50100, "Sea and Coastal Passenger Water Transport".	FAME, BRES
	Transport of Passengers on Inland Waterways	Identified through SIC code 50300, "Inland Passenger Water Transport".	FAME, BRES
	Transport of Freight International/ Sea Faring	Identified through SIC codes 50200 and 77342, "Sea and coastal freight water transport", and "Renting and Leasing of Freight Water Transport Equipment".	FAME, BRES
	Transport of Freight on Inland Waterways	Identified through SIC code 50400, "Inland Freight Water Transport".	FAME, BRES
	Other shipping activity not captured through SIC codes 50100 – 50400 in the FAME database	Identified and quantified through UKCoS statistics for shipping-related employment	UKCoS Manpower Survey, FAME

Source: Maritime UK, Cebr analysis

Therefore, for the majority of shipping industry activities, business demography data taken from the FAME database has been used to generate UK-level estimates for the direct economic impacts of each activity.

2.3 Quantifying the direct economic impacts of the industry at regional level

Here we set out the approach taken to disaggregate the direct and aggregate economic impacts of the shipping industry at regional level. A full set of estimates for the regional direct economic impacts are provided in Annex A. As it is possible to quantify the economic contribution using SIC codes, by extension the approach taken involves using publicly-available statistics which can be disaggregated at regional level and combining these with the UK-level direct and aggregate impacts for the shipping industry.

The first step of this approach involved determining the regional disaggregation of employment for each industry activity. The major source of employment data by region was the Business Register and Employment Survey (BRES)[9], as accessed through NOMIS. Employment data associated with each SIC code for the shipping industry were gathered and an implied regional breakdown estimated after interpolating for some missing information.

[9] The Business Register and Employment Survey (BRES), produced by the ONS on an annual basis, is the official source of employee and employment estimates by detailed geography and industry within Great Britain.

As BRES only provides coverage for Great Britain, employment data in Northern Ireland has been estimated using a combination of BRES and the ONS Annual Business Survey (ABS)[10], the latter providing the proportion of employment in Northern Ireland across the nearest industrial sector category. For the other key macroeconomic indicators – turnover, GVA, and the compensation of employees – ABS has been used alongside the regional employment estimates.

The major source of employment data by region was the Business Register and Employment Survey (BRES)[11], as accessed through NOMIS. Employment data associated with each Standard Industrial Classification code for the shipping industry were gathered and an implied regional breakdown estimated after interpolating for some missing information. Shipping employment in Northern Ireland has been estimated using a combination of BRES and the Annual Business Survey, the latter providing the proportion of employment in Northern Ireland across the broader industrial sector categories.

Other adjustments have been made to the regional disaggregation of the key macroeconomic indicators which represent the direct economic impacts of the shipping industry, in order to reflect differences in economic performance across the regions. These are as follows:

- To account for regional differences in productivity (GVA per employee), the breakdown of GVA has been adjusted using the ONS GVA per employee by region statistics.[12] For example, the average employee in London in 2015 was 46% more productive than the average UK employee, while the average employee in the North East was 10% less productive.
- To account for regional differences in pay, wages and salaries paid to employees in the shipping industry have been adjusted using differentials taken from ASHE.[13] For example, the average wage for an employee in the South East was 4% higher than the UK average in 2015.
- To account for regional variation in the ratio of compensation of employees to GVA in different sectors, the compensation of employees for the industry have been adjusted using regional differentials implied by the closest industry, as sourced from the Annual Business Survey.

The regional disaggregation process can therefore be summarised as follows:

- Estimate the regional disaggregation of employment in the ports industry by combining the UK employment total with the BRES-implied split;
- Estimate the regional disaggregation of GVA by applying employment-to-GVA ratios, adjusting for regional productivity differentials, and constraining the regional totals to the UK total;
- Estimate the regional disaggregation of turnover by applying regional industry turnover-to-GVA ratios sourced from ABS, again constraining the regional totals to the UK total;
- Estimate the regional disaggregation of the compensation of employees (COE) by applying regional industry COE-to-GVA ratios sourced from ABS, again constraining the regional totals to the UK total.

[10] The Annual Business Survey is a census of production in the United Kingdom produced by the ONS.

[11] The Business Register and Employment Survey (BRES), produced by the ONS on an annual basis, is the official source of employee and employment estimates by detailed geography and industry within Great Britain.

[12] ONS, 2017. Subregional Productivity: Labour Productivity (GVA per hour worked and GVA per filled job) indices by UK NUTS2, NUTS3 subregions and City regions.

[13] Ibid.

Table 2 below shows the implied breakdown of employment in shipping as implied through BRES data.

Table 2: The estimated regional breakdown of UK employment in shipping as implied by BRES and ABS, 2010 to 2015

Shipping Employment	2010	2011	2012	2013	2014	2015
United Kingdom	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
England	77.1%	73.6%	76.5%	76.2%	77.8%	79.8%
Scotland	13.0%	14.5%	14.3%	14.0%	15.2%	12.5%
Wales	7.3%	8.3%	5.9%	7.1%	4.6%	5.4%
Northern Ireland	2.6%	3.6%	3.2%	2.8%	2.4%	2.2%
East of England	7.2%	8.3%	5.7%	6.4%	7.3%	4.5%
East Midlands	1.7%	0.6%	0.3%	2.4%	6.6%	3.0%
London	18.8%	21.8%	19.3%	16.9%	21.6%	31.8%
North East	0.9%	1.0%	0.8%	0.7%	1.4%	1.8%
North West	6.9%	7.8%	6.2%	7.1%	7.6%	6.4%
South East	27.6%	25.6%	27.3%	30.2%	26.3%	20.9%
South West	6.7%	4.4%	10.2%	8.0%	3.7%	6.7%
West Midlands	3.5%	1.1%	0.8%	1.3%	2.3%	1.2%
Yorkshire and the Humber	3.8%	3.0%	5.8%	3.1%	1.1%	3.5%

Source: ONS, Cebr analysis

The results of this analysis are shown in the final section of this report. The next sections in this report set out the direct and aggregate economic impacts of the shipping industry in the UK.

3 The direct economic impact of the shipping industry

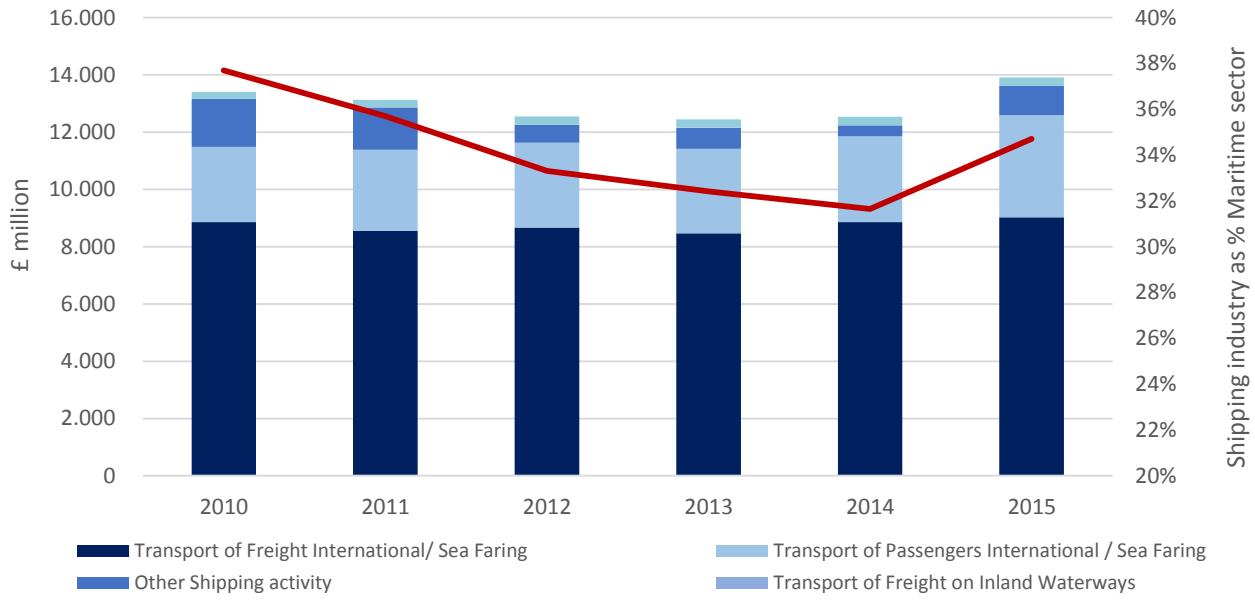
In this section we set out estimates for the direct contribution of the shipping industry to the following key macroeconomic indicators: turnover, GVA, employment, the compensation of employees, the Exchequer contribution through tax revenues raised, and exports. After quantifying the direct contributions made through the first three of these activities, the contribution that the shipping industry makes to the overall UK Maritime sector is then examined.

3.1 The direct economic impact through turnover

Turnover by shipping activity

Figure 1 below shows the breakdown of business turnover generated by the shipping industry and its constituent activities between 2010 and 2015. Overall, the industry contributed an estimated £13.9 billion in business turnover in 2015, an increase of 3.8% from the 2014 level and above the period average of £13.0 billion. During this period, the contribution that the shipping industry makes to the total level of turnover contributed by the Maritime sector has fallen from 37.7% in 2010 to 34.7% in 2015.

Figure 1: The estimated turnover of the shipping industry, and share of the Maritime sector's total direct turnover contribution



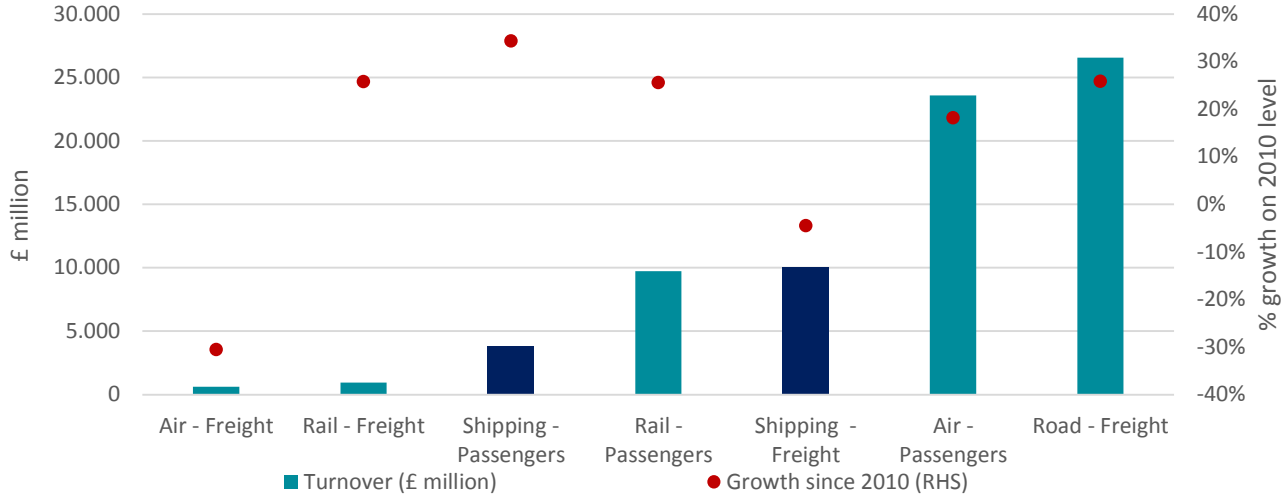
Source: FAME, UKCoS, ONS, Cebr analysis

The largest constituent activity within the shipping industry in terms of turnover directly generated is the Transport of Freight (International) and Sea Faring, with just over £9 billion of business turnover in 2015; turnover from this activity has remained broadly stable over the period considered. After this activity, Transport of Passengers (International) and Sea Faring is the next largest, with £3.6 billion of turnover in 2015. Combined, these activities represented 91% of the shipping industry's turnover in 2015.

To place this direct contribution in context, Figure 2 overleaf compares turnover in the freight and passenger activities of the shipping industry against that of comparable transport industry activities across air, road and rail; nominal turnover growth against the 2010 level is also shown for each industry activity. Turnover data for the comparable industries has been sourced from the Annual Business Survey (ABS). Domestic and international freight shipping lies behind passenger air transport and road freight transport,

with the latter reporting turnover of £23.6 billion and £26.6 billion in 2015. Turnover generated by domestic and international freight shipping is estimated to have declined by 5% since 2010.

Figure 2: The estimated turnover of the shipping industry against comparable industries in 2015, and growth against the 2010 level



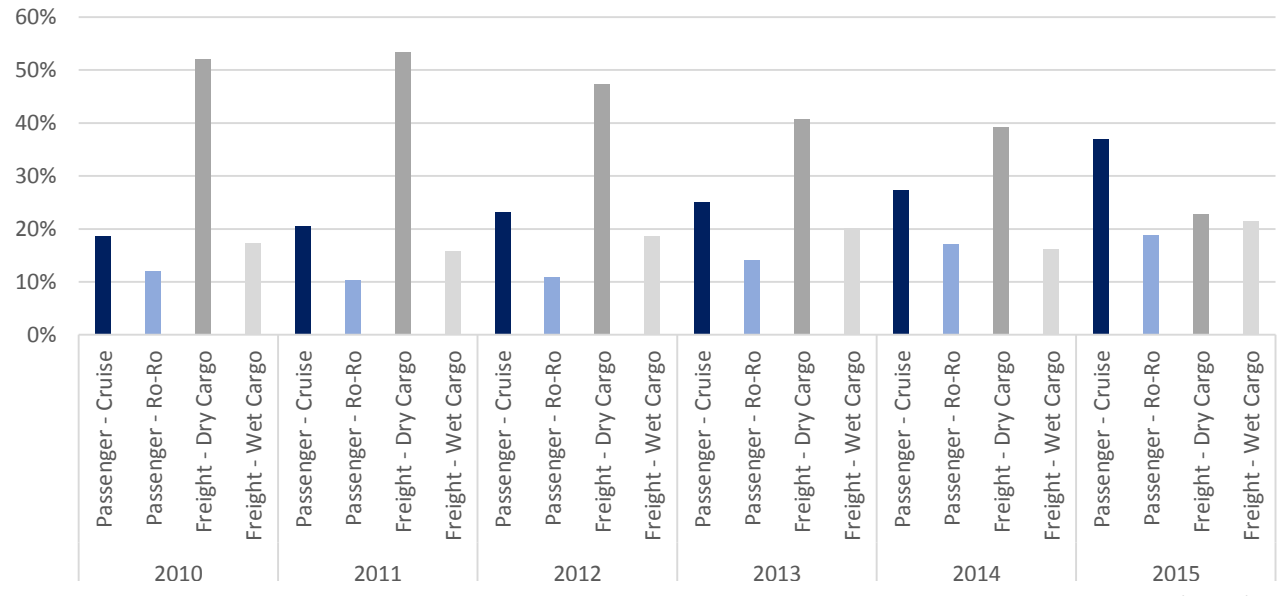
Source: FAME, UKCoS, ONS, Cebr analysis

In contrast, domestic and international passenger shipping directly contributed £3.8 billion in turnover in 2015, but experienced turnover growth of 34% between 2010 and 2015, the highest of the activities shown above. This growth was in turn largely driven by higher turnover from the ferry and cruise sector (international passenger shipping services) since 2010.

Turnover by type of vessel

Here we examine the breakdown of industry turnover by vessel, drawing upon analysis of the UK Chamber of Shipping's Annual Sea Inquiry (ASI). Figure 3 below shows the percentage share of revenue raised by the cruise, ro-ro (roll-on, roll-off), dry cargo freight, and wet cargo freight services in the years 2010 to 2015. The percentage share of revenue from dry cargo freight services has fallen from 52% in 2010 to only 23% in 2015, with revenue from passenger cruise services rising from 19% to 37% over the same period; this reflects the shift in revenue patterns shown in Figure 1 above.

Figure 3: Shares of shipping industry revenue by service type, 2010 to 2015



Source: UKCoS, ONS, Cebr analysis

Industry profitability

Despite the fall and then recovery in business turnover, average profitability (as measured using the aggregated ratio of gross profits to turnover) in the shipping industry is estimated to have increased since 2010. Table 3 shows trends in profitability across each industry activity. The overall profitability of the industry, which in 2010 was in alignment with the Maritime sector average, was 8ppt higher in 2015. Transport of Passengers International / Sea Faring was the most profitable activity in all years considered.

Table 3: Estimated profitability (gross profit ratio) of the shipping industry and constituent activities

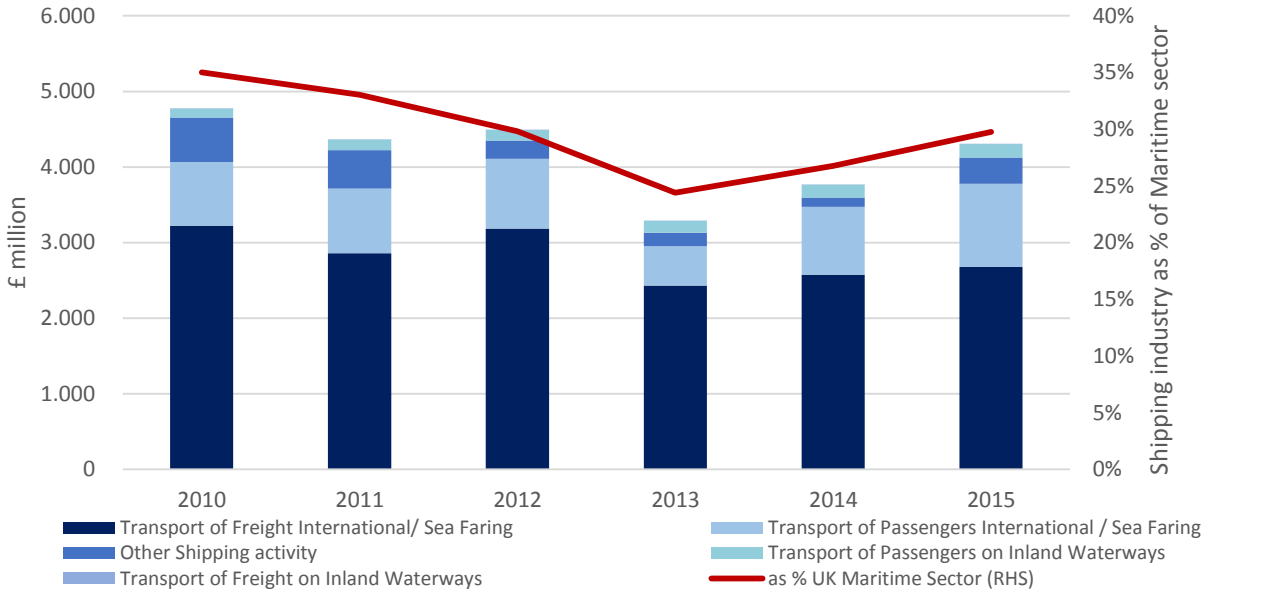
Profitability	2010	2011	2012	2013	2014	2015
UK Maritime sector	**18.4%**	**19.7%**	**21.4%**	**21.4%**	**23.0%**	**22.9%**
UK shipping industry	**18.9%**	**21.5%**	**24.3%**	**25.3%**	**29.2%**	**30.7%**
Transport of Passengers International / Sea Faring	13.4%	34.9%	45.0%	52.8%	60.3%	59.5%
Transport of Passengers on Inland Waterways	35.7%	35.0%	34.7%	38.8%	41.8%	44.8%
Transport of Freight International/ Sea Faring	20.1%	16.7%	16.9%	15.2%	18.3%	18.9%
Transport of Freight on Inland Waterways	52.4%	50.9%	48.4%	47.2%	52.4%	43.0%
Other shipping activity	30.4%	34.3%	36.3%	38.5%	43.2%	41.6%

Source: FAME, UKCoS, ONS, Cebr analysis

3.2 The direct economic impact through GVA

This subsection illustrates the contributions in terms of the GVA from the shipping industry to UK GDP. Figure 4 below shows this direct impact, disaggregated by industry activities in the years 2010 to 2015, as well as the shipping industry's share of GVA directly generated by the Maritime sector.

Figure 4: The direct contribution of the shipping industry through GVA, and the industry's share of the Maritime sector's total direct contribution through GVA



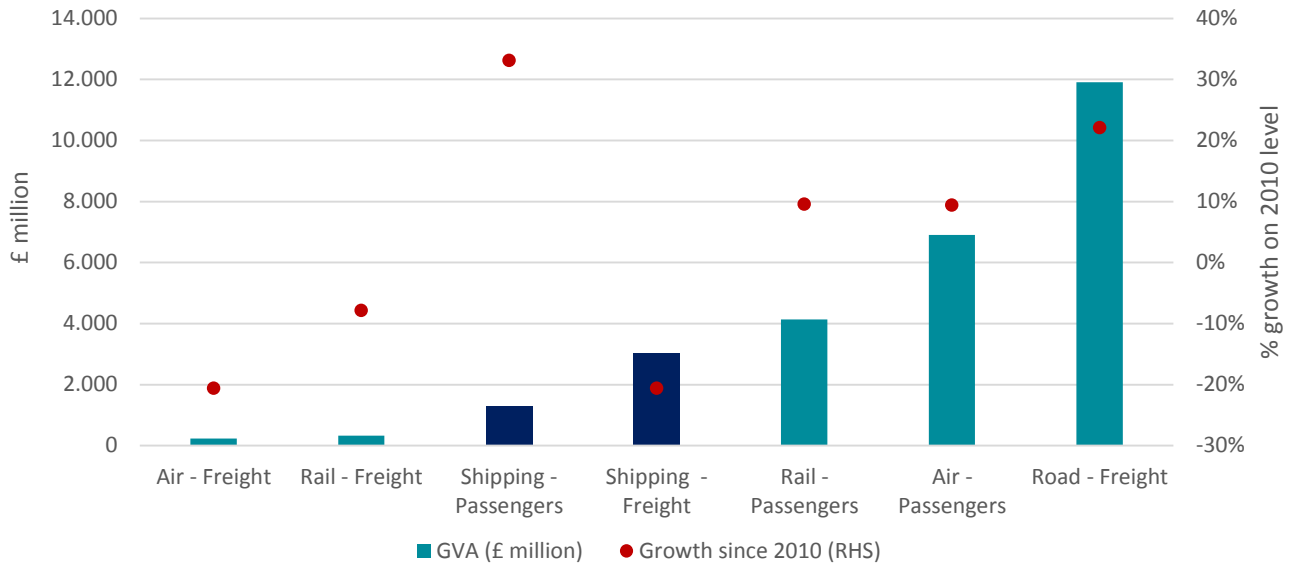
Source: FAME, UKCoS, ONS, Cebr analysis

It is estimated that the shipping industry directly contributed a total of £4.3 billion in GVA in 2015, a fall from £4.8 billion in 2010. The fall in GVA over the six year period, and partial recovery, is consistent with changes in the UK-owned shipping fleet during this time, discussed further in the final section of this report. Overall, the shipping industry is estimated to have contributed 29.8% of the UK Maritime sector's direct contribution through GVA in 2015.

Following Figure 2, Figure 5 below compares GVA trends in the shipping industry against those of comparable activities. In terms of the direct GVA contribution in 2015, the shipping industry (passenger and

freight transport combined) is larger than rail passenger industry, with £4.3 billion against £4.1 billion. Like turnover, GVA growth since 2010 has been negative for domestic and international freight shipping (-21%), but strongly positive (33%) for domestic and international passenger shipping.

Figure 5: GVA of the shipping industry against comparable industries in 2015, and growth against the 2010 level

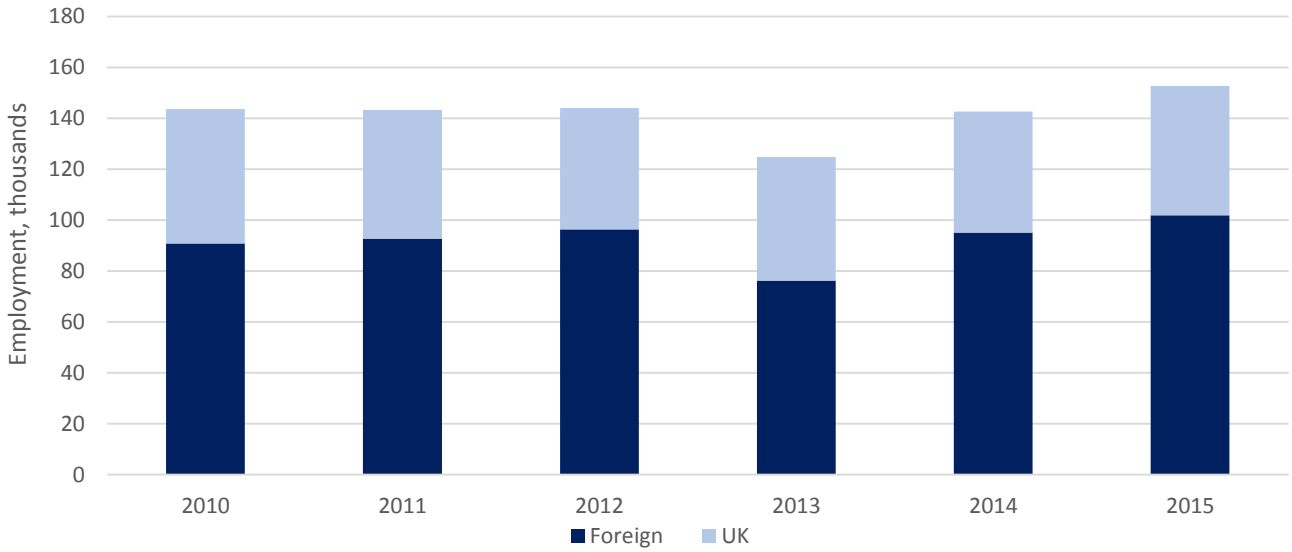


Source: FAME, UKCoS, ONS, Cebr analysis

3.3 The direct economic impact through employment

In addition to its contribution through GVA, the shipping industry also directly supports a significant number of jobs, both for foreign and UK employees (seafarers and shore-based). Figure 6 below shows the total level of employment in the UK shipping industry between 2010 and 2015, broken down by foreign and UK employment.

Figure 6: Employment in the shipping industry, 2010 to 2015, thousands



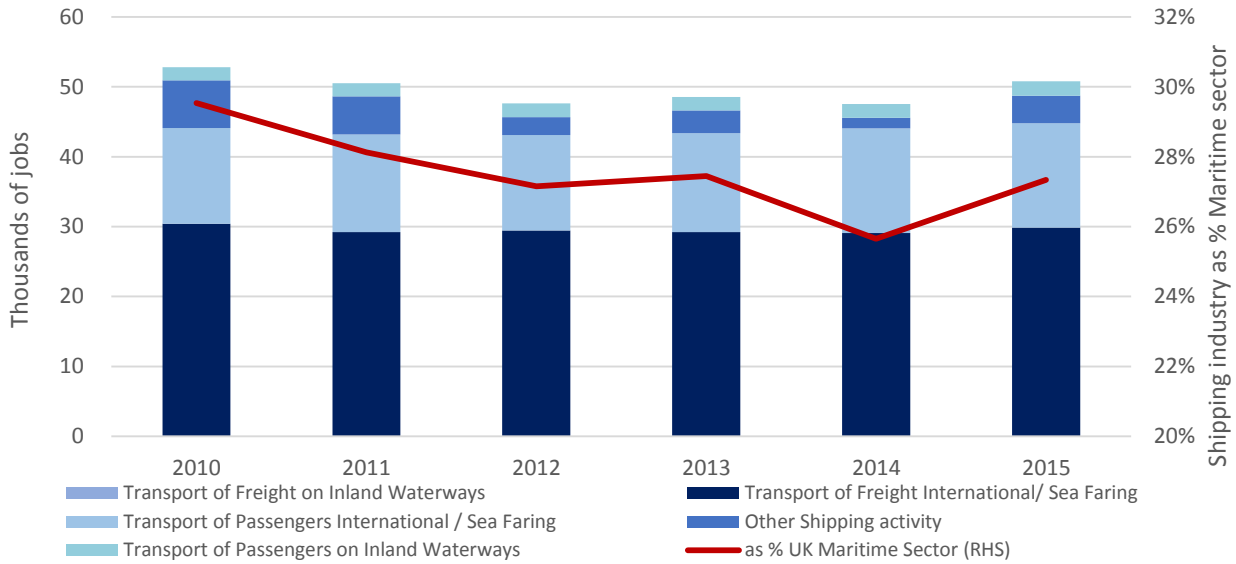
Source: FAME, UKCoS, ONS, Cebr analysis

The total level of employment initially declined from the peak of 143,600 in 2010, falling to 124,800 in 2013, before rebounding to 152,600 in 2015. As a share of total UK shipping industry employment, UK nationals have comprised on average around 35% over the period considered, with employment of 50,800 in 2015.

UK employment by shipping activity

Figure 7 below highlights the direct contribution of the shipping industry to UK employment, disaggregated by individual industry activity.

Figure 7: The direct contribution of shipping industry through UK employment, and the industry's share of the Maritime sector's direct UK employment contribution

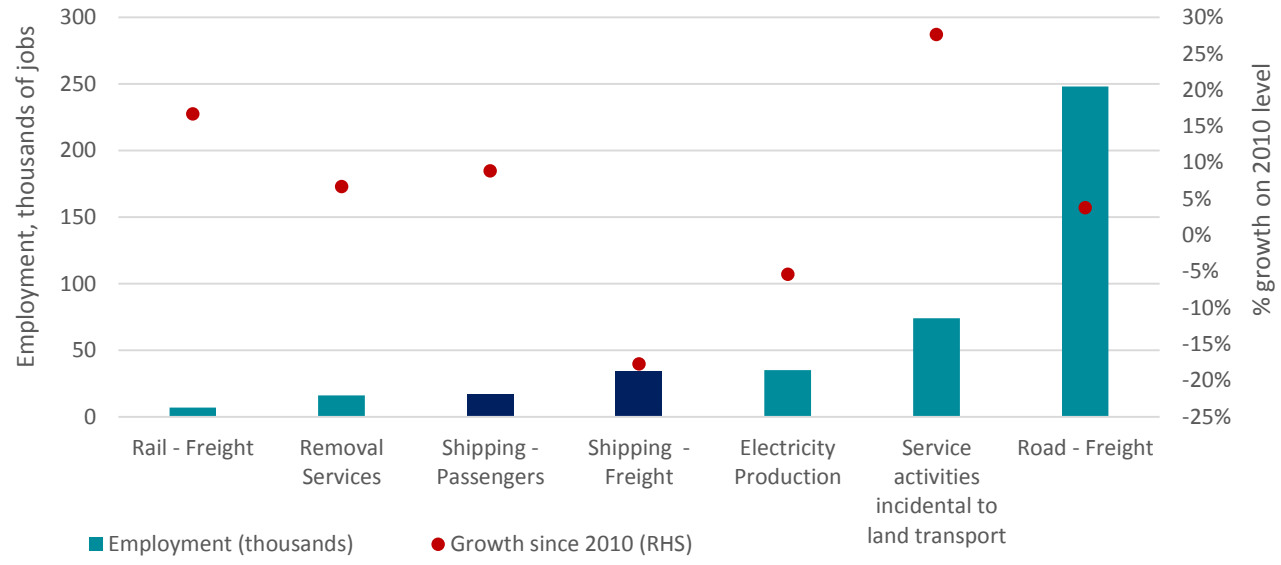


Source: FAME, UKCoS, ONS, Cebr analysis

It is estimated that the shipping industry directly supported around 50,800 jobs for UK employees in 2015, a slight fall from 52,800 jobs in 2010. Consequently, the industry's share of total employment directly supported by the Maritime sector also fell over this period, on average around 29.5% of Maritime sector employment in 2010 to 27.3% in 2015. As with turnover and GVA, in each year the international transport of freight and passenger activities contributed the lion's share of employment, with 88% in 2015.

Figure 8 below compares the direct contribution that the shipping industry made through UK employment in 2015 against comparable industries. Employment in passenger shipping activities in 2014 was 9% higher than in 2010; in contrast, employment in freight shipping fell by 18%. UK employment in the shipping industry in 2014 (50,800 jobs) lay above below that of Electricity Production activities (35,000 jobs).

Figure 8: UK employment in the shipping industry against comparable industries in 2015, and growth against 2010 level

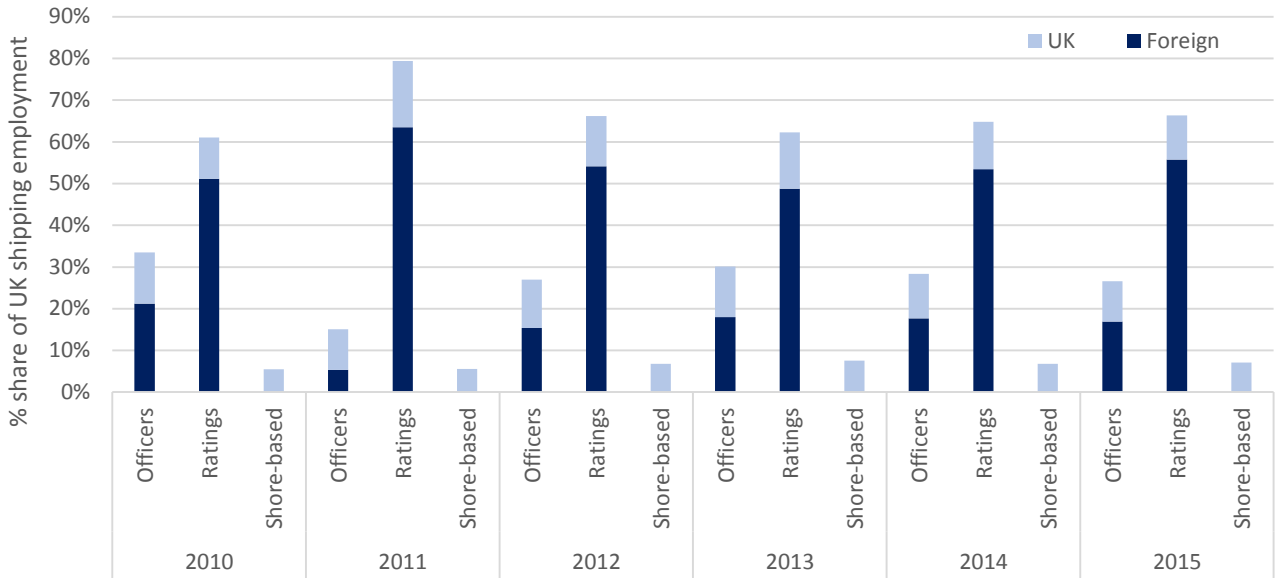


Source: FAME, UKCoS, ONS, Cebr analysis

Employment by type

Figure 9 below shows the breakdown of foreign and UK employment by type: officers, ratings and shore-based staff, with this breakdown sourced from the UKCoS Manpower Survey.

Figure 9: Foreign and UK employment in the shipping industry by type



Source: UKCoS, Cebr analysis

Industry productivity

Based on trends in GVA and employment presented in Figures 4 and 7, UK employees operating in the shipping industry are highly productive, as measured by GVA per job. Table 4 below shows the estimated productivity of each industry activity across the years 2010 to 2015, and compared against the average productivity level of the Maritime sector and the UK as a whole. The shipping industry as a whole is more productive than the broader Maritime sector and the UK (on average); while the average industry job generated £84,000 in GVA in 2015, the average job in the UK economy only generated £50,800.

Table 4: Productivity (GVA per job) in the shipping industry and constituent activities against the Maritime sector and UK economy

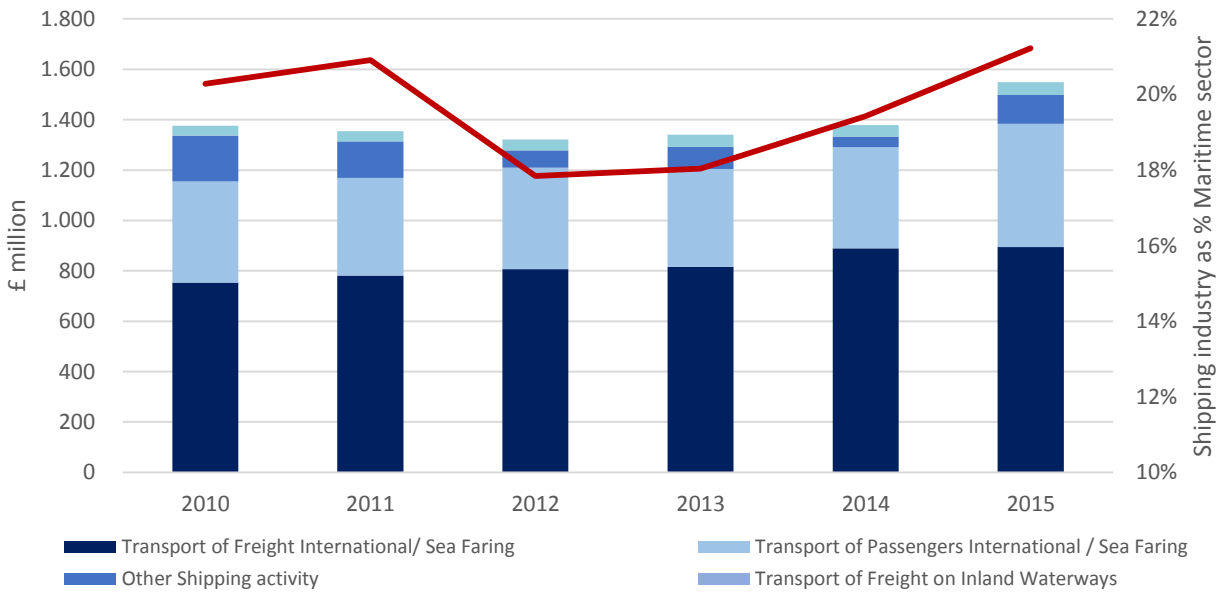
GVA per UK job	2010	2011	2012	2013	2014	2015
UK economy	**£45,734**	**£46,652**	**£47,735**	**£49,009**	**£50,205**	**£50,830**
UK Maritime sector	**£76,273**	**£73,557**	**£85,822**	**£76,130**	**£75,917**	**£77,897**
UK shipping industry	**£90,447**	**£86,400**	**£94,206**	**£67,678**	**£79,226**	**£84,818**
Passengers Int'l / Sea Faring	£61,412	£61,476	£67,847	£36,756	£60,053	£73,581
Passengers, Inland Waterways	£64,680	£75,608	£70,929	£79,817	£85,474	£88,350
Freight Int'l/ Sea Faring	£106,011	£97,832	£108,091	£83,220	£88,439	£89,710
Freight, Inland Waterways	£72,822	£25,107	£40,758	£104,378	£164,621	£174,023
Other shipping activity	£86,435	£92,702	£92,733	£55,333	£83,096	£88,378

Source: FAME, UKCoS, ONS, Cebr analysis

3.4 The direct economic impact through the compensation of employees

Figure 10 overleaf illustrates the compensation of employees which is directly supported by the shipping industry, disaggregated by activity. It also illustrates the proportion of all direct employee compensation in the Maritime sector which is directly supported by the industry.

Figure 10: The direct contribution of the shipping industry to the compensation of employees, 2010 to 2015, £ billion



Source: FAME, UKCoS, ONS, Cebr analysis

It is estimated that the shipping industry directly contributed just under £1.6 billion through the compensation of employees in 2015. Once again, the international transport of freight and passenger activities contributed the highest share (89% in 2015). Overall and as a consequence of this, the total value of compensation of employees directly supported across the Maritime sector from the UK shipping industry is estimated to have increased from 20.3% in 2010 to 21.2% in 2015.

3.5 The direct contribution to the UK Exchequer

This section discusses the contribution of the shipping industry to the UK Exchequer. For each activity within this industry, Cebr have calculated the contributions in terms of the tax heads listed below. It has been assumed that the shipping industry does not generated Value-Added Tax (VAT) revenues for the UK Exchequer, with zero-rating applying to shipping services provided by the industry.[14]

- Income Tax;
- National Insurance Contributions (NICs) – from both employees and employers;
- Corporation Tax;
- National Non-Domestic Rates (Business Rates).

For the personal taxes listed above, Income Tax and NICs revenues have been calculated by applying tax rates to the estimated wages and salaries paid to employees operating in each industry activity; rates and thresholds have been sourced from HMRC for the years 2010 to 2015. Wages and salaries for employees have been sourced from FAME and the Annual Survey for Hours and Earnings (ASHE).[15]

[14] The following services are zero-rated by HMRC: Passenger transport in a vehicle, boat or aircraft that carries not less than ten passengers; International freight transport that takes place in the UK and its territorial waters; Domestic leg of freight transport to or from a place outside the EU; and Ship repairs and maintenance. Further information on the list of zero-rated and VAT-exempt goods and services can be found here: https://www.gov.uk/guidance/rates-of-vat-on-different-goods-and-services#transport-freight-travel-and-vehicles

[15] The Annual Survey of Hours and Earnings (ASHE) provides data on the levels, distribution and make-up of earnings and hours worked for UK employees by sex and full-time or part-time status in all industries and occupations.

For the business taxes listed above, Corporation Tax revenues have been estimated by combining the revenues raised through the Tonnage Tax regime, with estimates for Corporation Tax raised from businesses who opt to not use the Tonnage Tax regime. As Tonnage Tax liabilities are calculated based on gross tonnage, rather than profits, the actual revenue raised from the regime is miniscule in the context of the total tax revenues raised from the Maritime sector and in general. Table 5 below shows the revenue raised by HMRC between 2010-11 and 2013-14, obtained by Cebr through a Freedom of Information (FOI) request.

Table 5: Tax revenue raised by HMRC through the Tonnage Tax regime, 2010-11 to 2013-14 (£ million).

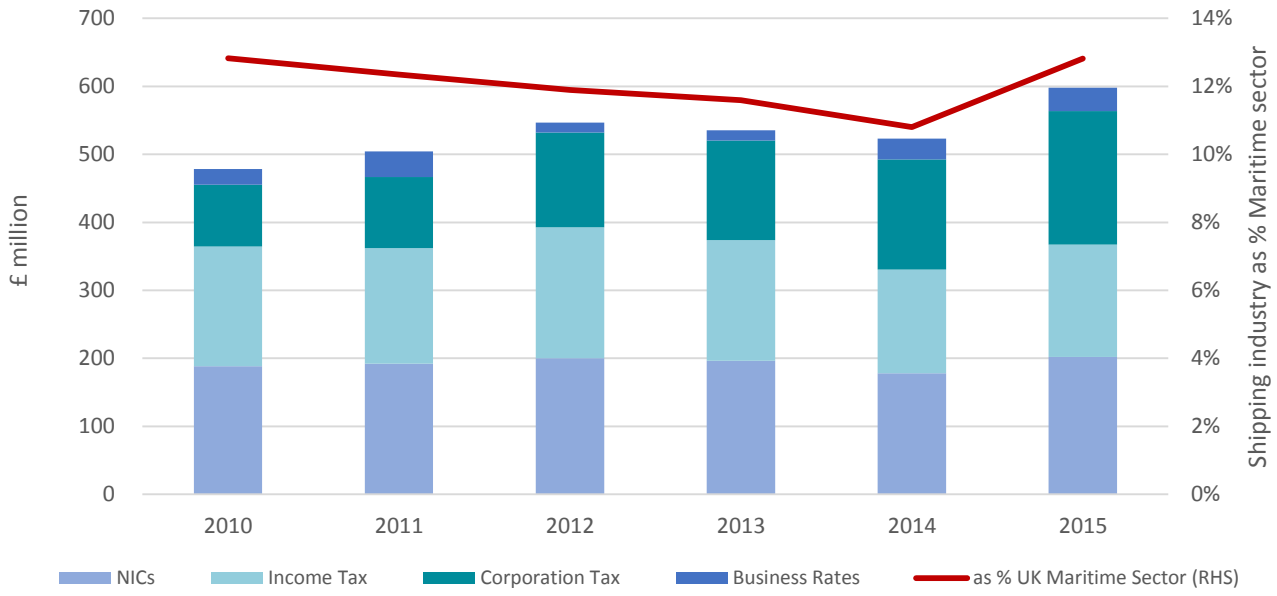
	2010-11	2011-12	2012-13	2013-14
Tonnage Tax revenues	4.5	4.4	4.2	3.8

Note: Information is not yet available for 2014-15 and 2015-16. Source: HMRC

For those businesses not using the Tonnage Tax regime, Corporation Tax revenues have been estimated by applying HMRC estimates for Average Effective Tax Rates (AETRs) to the estimated Gross Profit of each industry activity. Business Rates have been estimated using the average level of Business Rates paid as a proportion of GVA, drawing upon the ONS Annual Business Survey (ABS).

Figure 11 below shows the direct contribution of the shipping industry to the UK Exchequer across the years 2010 to 2015, disaggregated by tax head.

Figure 11: The direct contribution of the shipping industry to the UK Exchequer, 2010 to 2015, and as a share of the Maritime sector's total contribution to the UK Exchequer



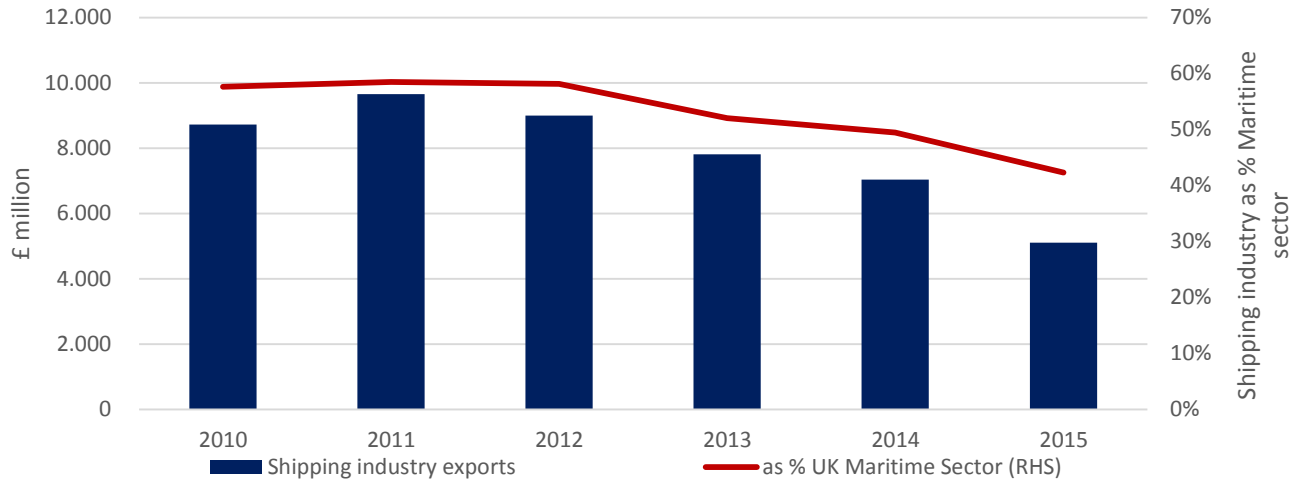
Source: FAME, UKCoS, ONS, HMRC, Cebr analysis

The shipping industry is estimated to have directly generated just under £600 million in tax revenues for the UK Exchequer in 2015, with this contribution steadily rising since 2010, when the UK Exchequer contribution was around £480 million. Overall, tax revenues raised from the shipping industry represented 12.8% of the total tax revenues directly generated by the wider UK Maritime sector, with this share remaining broadly constant over the six years considered.

3.6 The direct contribution to the UK's exports of goods and services

In this final subsection we consider the contribution that the shipping industry makes to goods and services exported from the UK. In this context, the shipping industry is assumed to only export services, through the transport of freight and passengers internationally. Figure 12 below shows trends in the value of services exports from the shipping industry between 2010 and 2015, with exports then expressed as a share of the total value of Maritime sector exports across the same period.

Figure 12: Exports of services from the shipping industry, 2010 to 2015, £ million

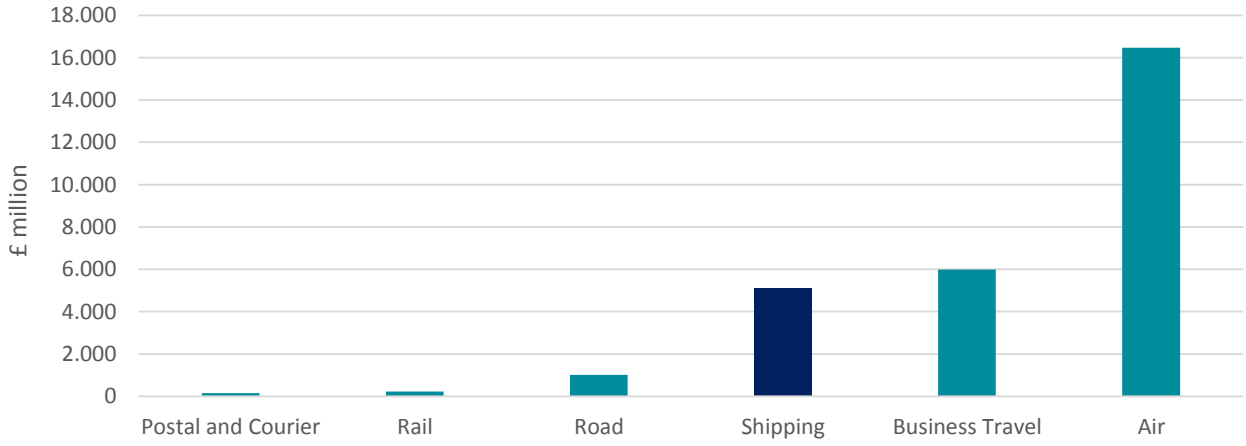


Source: UKCoS, ONS, Cebr analysis

The shipping industry exported services valued at £5.1 billion in 2015, in comparison to £8.7 billion in 2010; exports have fallen in recent years as overseas income reported in the Annual Sea Inquiry has fallen; as a consequence, the proportion of Maritime sector exports supported by the shipping industry has fallen from 57.7% in 2010 to 42.3% in 2015.

Figure 13 compares exports from the shipping industry against those from other transportation activities. We observe that the value of exports of services from the shipping industry was easily larger than that of Road, Rail and Postal and Courier activities, and slightly lower than the value of Business Travel[16] exports (just under £6.0 billion).

Figure 13: Exports of services from the shipping industry in 2015 against comparable transportation activities, £ million



Source: ONS, Cebr analysis

[16] Business Travel (ONS series FJPG) consists of expenditure by seasonal and border workers (FJCQ) , as well as exports through other business travel services (FJNO).

4 The aggregate economic impact of the shipping industry

This section sets out the aggregate economic impacts of the shipping industry, by taking into account the indirect (or supply chain) and induced (employee spending) impacts that arise from the activities of firms within this industry.

The four macroeconomic indicators for which the aggregate economic impact have been calculated are as follows: business turnover; GVA; employment; and the compensation of employees. Multipliers have been generated from Cebr's economic impact model for the UK.

4.1 The aggregate economic impacts through turnover

Figure 14 below illustrates the turnover multipliers for the shipping industry within the UK. The interpretation is that for example, for every £1 of turnover directly generated by the industry, £1.01 worth of turnover is stimulated in the supply chains and £0.62 worth of turnover in the wider economy when direct and indirect (supply chain) employees spend their earnings. **Therefore, for every £1 of turnover initially generated by the shipping industry, the UK economy as a whole experiences an increase in turnover of £2.63.**

Figure 14: Turnover multiplier impacts of the UK shipping industry in 2015

Source: UKCoS, FAME, ONS, Cebr analysis

Table 6 below shows the estimated aggregate turnover impacts from the individual industry activities when taken in isolation. The shipping industry directly contributed £13.9 billion in turnover in 2015 (see previous section); once the indirect and induced economic channels are taken into consideration the industries contributed £36.6 billion in turnover.

There is a large disparity amongst areas within this aggregate economic contribution. Transport of Freight International/ Sea Faring contributed £23.8 billion to turnover in the UK. In contrast, the Transport of Freight on Inland Waterways – a relatively tiny proportion of the industry in terms of economic activity – generated an aggregate turnover impact of £32 million.

Table 6: Turnover impact of the shipping industry in 2015 by industry activity, £ million

Turnover in 2015	Direct Impact	Indirect Impact	Induced Impact	Aggregate impact
Total	**13,917**	**14,008**	**8,692**	**36,617**
Transport of Passengers International / Sea Faring	3,560	3,583	2,223	9,367
Transport of Passengers on Inland Waterways	282	284	176	742
Transport of Freight International/ Sea Faring	9,032	9,091	5,641	23,764
Transport of Freight on Inland Waterways	12	12	8	32
Other shipping activity not captured through SIC codes	1,031	1,038	644	2,713

Source: UKCoS, FAME, ONS, Cebr analysis

Table 7 below presents in each year the direct contribution to turnover from the shipping industry, alongside our estimate of the composite turnover multiplier that applies to the entire industry. The total turnover impact has grown from £35.3 billion in 2010 to £36.7 billion in 2015.

Table 7: Direct and total turnover impact of the shipping industry, 2010 to 2015, £ million

	Direct Impact	Composite multiplier	Aggregate impact
2010	13,407	2.63	35,275
2011	13,131		34,548
2012	12,547		33,014
2013	12,447		32,749
2014	12,539		32,993
2015	13,917		36,617

Source: UKCoS, FAME, ONS, Cebr analysis

4.2 The aggregate economic impacts through GVA

Figure 15 below illustrates the GVA multipliers for the shipping industry within the UK, disaggregated by industry activity. The interpretation here is that, for every £1 of direct GVA generated by the shipping industry, £1.62 worth of GVA is stimulated in the supply chains and £1.12 worth of GVA in the wider economy when direct and indirect (supply chain) employees spend their earnings. **Therefore, for every £1 of GVA initially generated by the shipping industry, the UK economy as a whole experiences an increase in GVA of £3.74.**

Figure 15: GVA multiplier impacts of the UK shipping industry in 2015

Source: UKCoS, FAME, ONS, Cebr analysis

Table 8 below shows the estimated direct and total GVA impacts from the individual industry activities when taken in isolation. The shipping industry directly contributed £4.3 billion in GVA in 2015 (see previous section); once the indirect and induced economic channels are taken into consideration the industries contributed £16.1 billion in GVA. Within this aggregate economic contribution, the Transport of Freight International/ Sea Faring contributed £10 billion to GDP in the UK.

Table 8: GVA impact of the shipping industry in 2015 by industry activity, £ million

GVA in 2015	Direct Impact	Indirect Impact	Induced Impact	Aggregate impact
Total	**4,306**	**6,971**	**4,807**	**16,084**
Transport of Passengers International / Sea Faring	1,099	1,780	1,227	4,107
Transport of Passengers on Inland Waterways	181	293	202	676
Transport of Freight International/ Sea Faring	2,677	4,333	2,989	9,999
Transport of Freight on Inland Waterways	1	2	2	5
Other shipping activity not captured through SIC codes	347	562	388	1,297

Source: UKCoS, FAME, ONS, Cebr analysis

Table 9 below presents in each year the direct contribution to GVA from the shipping industry, alongside our estimate of the composite GVA multiplier that applies to the entire industry. The total GVA impact has fallen from £17.8 billion in 2010 to £16.1 billion in 2015.

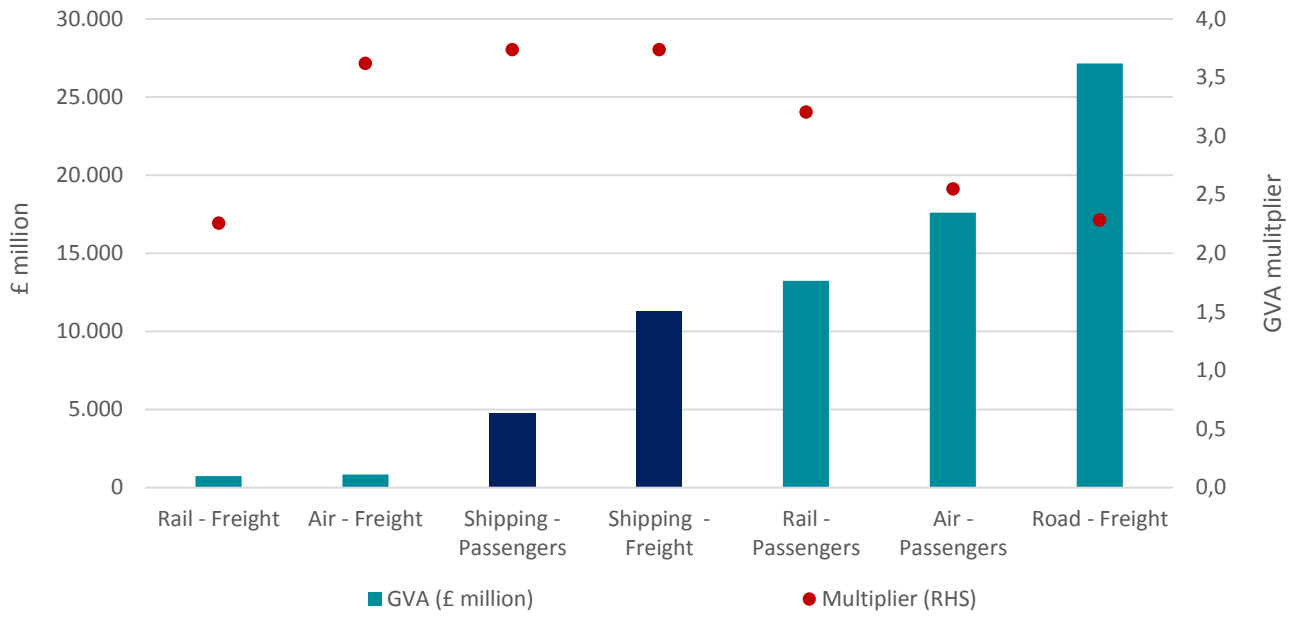
Table 9: Direct and aggregate GVA impact of the shipping industry, 2010 to 2015, £ million

	Direct Impact	Composite multiplier	Aggregate impact
2010	4,775	3.74	17,835
2011	4,364		16,301
2012	4,489		16,767
2013	3,287		12,277
2014	3,768		14,073
2015	4,306		16,084

Source: UKCoS, FAME, ONS, Cebr analysis

To place these results in context, Figure 16 below compares the total GVA impact of the shipping industry against the comparable transport activities identified in the previous section. In addition, the GVA multipliers associated with each activity are also presented.

Figure 16: The aggregate GVA impact and aggregate GVA multiplier of the shipping industry against comparable industries in 2015



Source: UKCoS, FAME, ONS, Cebr analysis

Although both freight and passenger activities within the shipping industry have a lower aggregate impact through GVA in 2015, the associated GVA multiplier is considerably higher. In other words, while air transport of passengers generated a total GVA impact of £17.6 billion in 2015, its GVA multiplier was 2.55. This means that for each additional £1 of GVA initially generated through this activity, a total of £2.55 in GVA was generated in the wider economy – compared to £3.74 for the shipping transport of passengers.

4.3 The aggregate economic impacts through employment

Here we examine the aggregate economic impact of the shipping industry through employment. Figure 17 below illustrates the employment multipliers for the industry within the UK. The interpretation here is that, for every job supported by the shipping industry, 7.2 jobs are stimulated in the industry's supply chains and a further 5.1 jobs supported in the wider economy when direct and indirect (supply chain) employees spend their earnings.

Figure 17: Employment multiplier impacts of the shipping industry in 2015

Source: UKCoS, FAME, ONS, Cebr analysis

Applying these multipliers to the total direct employment impact of the shipping industry – covering both UK and foreign workers – would yield an aggregate employment impact of over 2 million in 2015. This should be treated as an extreme upper limit, as it is extremely difficult to determine the economic impact that foreign workers will have on the UK economy. The indirect, induced and aggregate figures presented in this subsection solely relate to UK employment, as a conservative estimate; the true aggregate economic impact through employment in the shipping industry is likely to be somewhere in between these lower and upper bounds.

Table 10 below shows the estimated aggregate UK employment impacts from shipping industry activities when taken in isolation. An inspection of the intermediate consumption trends of Water Transport services (which in itself almost entirely captures shipping industry activities as defined in the study) within the ONS Supply Use Tables shows the extent of the shipping industry's linkages with other industries; the shipping industry predominately consumes a significant amount of economic output from industries such as employment services, construction, warehousing and storage, and legal services. As these industries are heavily labour-intensive, this is the cause of the high employment multiplier.

The very high employment multiplier associated with shipping services in the UK accentuates the aggregate impact employment impact across all activities; as with turnover and GVA, the activity with the higher jobs impact is Transport of Freight International/ Sea Faring, with nearly 400,000 jobs alone supported through the combination of direct, indirect and induced effects. **For every additional job for a UK employee directly supported by the shipping industry in 2015, a total of 13.3 jobs were sustained across the UK economy.**

Table 10: Employment impact of the shipping industry in 2015 by industry activity, thousands of jobs

Employment in 2015	Direct Impact	Indirect Impact	Induced Impact	Aggregate impact
Total	**50.8**	**365.6**	**258.0**	**674.4**
Transport of Passengers International / Sea Faring	14.9	107.6	75.9	198.5
Transport of Passengers on Inland Waterways	2.0	14.8	10.4	27.2
Transport of Freight International/ Sea Faring	29.8	214.9	151.6	396.4
Transport of Freight on Inland Waterways	0.0	0.1	0.0	0.1
Other shipping activity not captured through SIC codes	3.9	28.3	20.0	52.2

Source: UKCoS, FAME, ONS, Cebr analysis

Table 11 overleaf presents in each year the direct contribution through employment from the shipping industry, alongside the domestic employment multiplier that applies to the entire industry. The aggregate employment impact has fallen from around 701,000 jobs to 674,000 jobs in 2015.

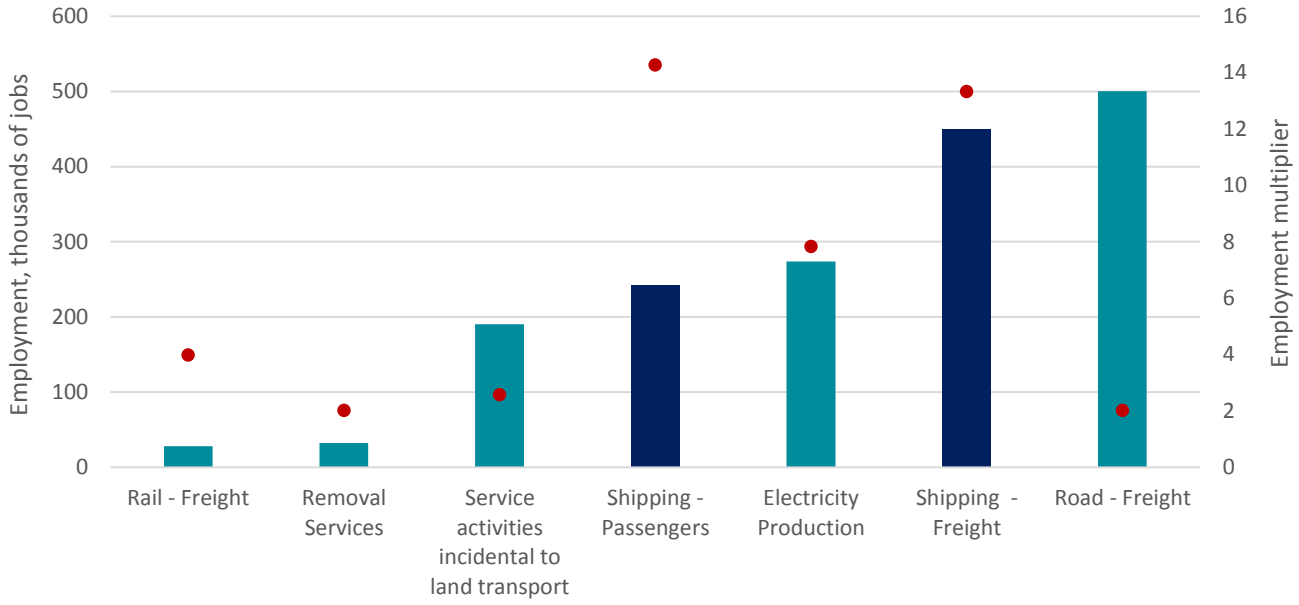
Table 11: Direct and aggregate employment impact of the shipping industry, 2010 to 2015, thousands of jobs

	Direct Impact	Composite multiplier	Aggregate impacts
2010	52,791	13.28	701,258
2011	50,511		670,971
2012	47,648		632,937
2013	48,564		645,104
2014	47,555		631,706
2015	50,767		674,369

Source: UKCoS, FAME, ONS, Cebr analysis

To place these results in context, Figure 18 below compares the total employment impact of the shipping industry in 2015 against the comparable industries and activities identified in the previous section. In addition, the employment multipliers associated with each activity are also presented.

Figure 18: The aggregate employment impact and aggregate employment multiplier of the shipping industry against comparable industries and activities in 2015



Source: UKCoS, FAME, ONS, Cebr analysis

As a result of having a much higher employment multiplier, the shipping industry has a much higher aggregate employment impact in 2015 in comparison to some other transportation activities. In other words, while road freight transport generated a total employment impact of around 500,100 jobs in 2015, its employment multiplier was only 2.02. This means that for each additional job initially supported through this activity, a total of just over two jobs were sustained in the wider economy – compared to over 13 jobs in the shipping industry.

4.4 The aggregate economic impacts through the compensation of employees

In this final subsection we consider the aggregate economic impact of the shipping industry through the compensation of employees. Figure 19 below illustrates the direct, indirect and induced compensation of employee impacts associated with the industry, disaggregated by industry activity.

Figure 19: Multiplier impacts for the compensation of employees for the UK shipping industry in 2015

Source: UKCoS, FAME, ONS, Cebr analysis

Here the interpretation is that, for every £1 of employee compensation directly supported by the shipping industry, '£X' of wages and salaries and other employee remuneration is supported in total throughout the economy through supply chain (indirect) and employee spending (induced) channels. For each £1 of employee compensation in the shipping industry in 2015, £1.33 was supported through the supply chain and an additional £0.68 was supported through employee expenditures – yielding an aggregate impact of £3.01. **For the shipping industry as a whole therefore, for every £1 directly raised in the compensation of employees in 2015, a total of £3.01 in employee compensation was supported in the UK economy.**

Table 12 shows the direct and aggregate impact through the compensation of employees across each industry activity. It is estimated that the shipping industry supported a total of £4.7 billion in employee compensation in 2015, with over half generated by Transport of Freight International/ Sea Faring activities.

Table 12: Impact through the compensation of employees of the shipping industry in 2015 by industry activity, £ million

Compensation of employees in 2015	Direct Impact	Indirect Impact	Induced Impact	Aggregate impact
Total	**1,550**	**2,068**	**1,055**	**4,674**
Transport of Passengers International / Sea Faring	489	653	333	1,475
Transport of Passengers on Inland Waterways	51	68	35	154
Transport of Freight International/ Sea Faring	894	1,193	609	2,697
Transport of Freight on Inland Waterways	0	0	0	1
Other shipping activity not captured through SIC codes	116	154	79	348

Source: UKCoS, FAME, ONS, Cebr analysis

Finally, Table 13 below shows the progression in the direct and aggregate impact through the compensation of employees in the shipping industry, from 2010 to 2015. The aggregate impact through the compensation of employees has grown from £3.9 billion in 2010 to £4.7 billion in 2015.

Table 13: Direct and aggregate impact through the compensation of employees of the shipping industry, 2010 to 2015, £ million

	Direct Impact	Composite multiplier	Aggregate impact
2010	1,362	2.85	3,882
2011	1,351	2.88	3,886
2012	1,323	2.94	3,896
2013	1,338	2.93	3,919
2014	1,377	2.98	4,098
2015	1,550	3.01	4,674

Source: UKCoS, FAME, ONS, Cebr analysis

In the next and final section we examine how both the direct and aggregate economic impact of the shipping industry is disaggregated at regional level.

5 The regional economic impact of the shipping industry

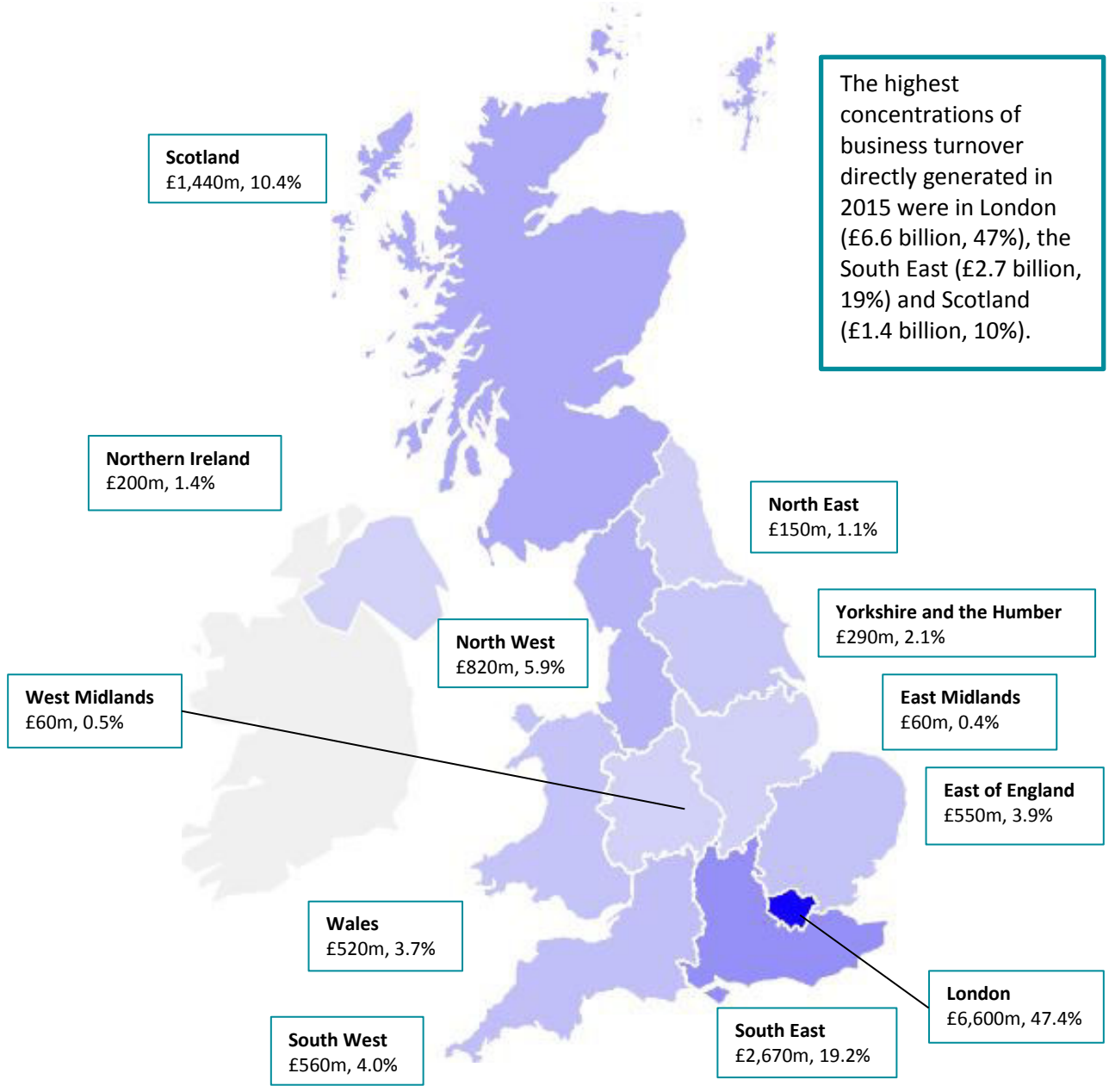
In this final section we examine the economic contribution of the shipping industry across the different UK regions, following the approach set out earlier in section 2 of this report. A full set of regional direct economic impacts for each year over the period 2010 to 2015 can be found in Annex A.

5.1 The direct economic impact of the shipping industry by UK region

Business turnover and GVA

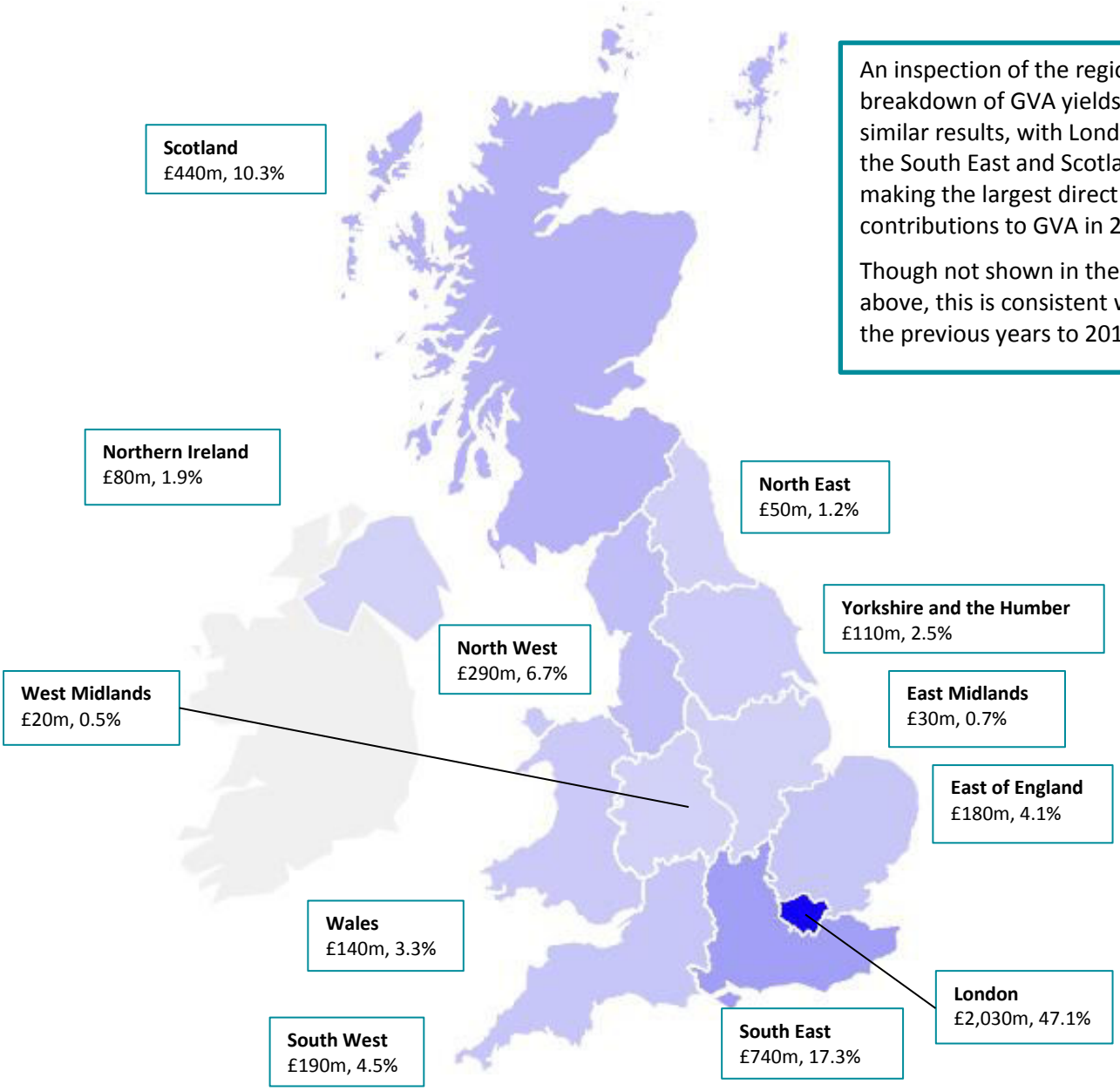
Figures 20 and 21 below show the estimated regional breakdown of business turnover and GVA directly supported by the shipping industry in 2015.

Figure 20: Regional breakdown of turnover directly contributed by the shipping industry in 2015, £ million



Note: Figures subject to rounding to nearest £10 million. Source: UKCoS, FAME, ONS, Cebr analysis

Figure 21: Regional breakdown of GVA directly contributed by the shipping industry in 2015, £ million



An inspection of the regional breakdown of GVA yields similar results, with London, the South East and Scotland making the largest direct contributions to GVA in 2015.

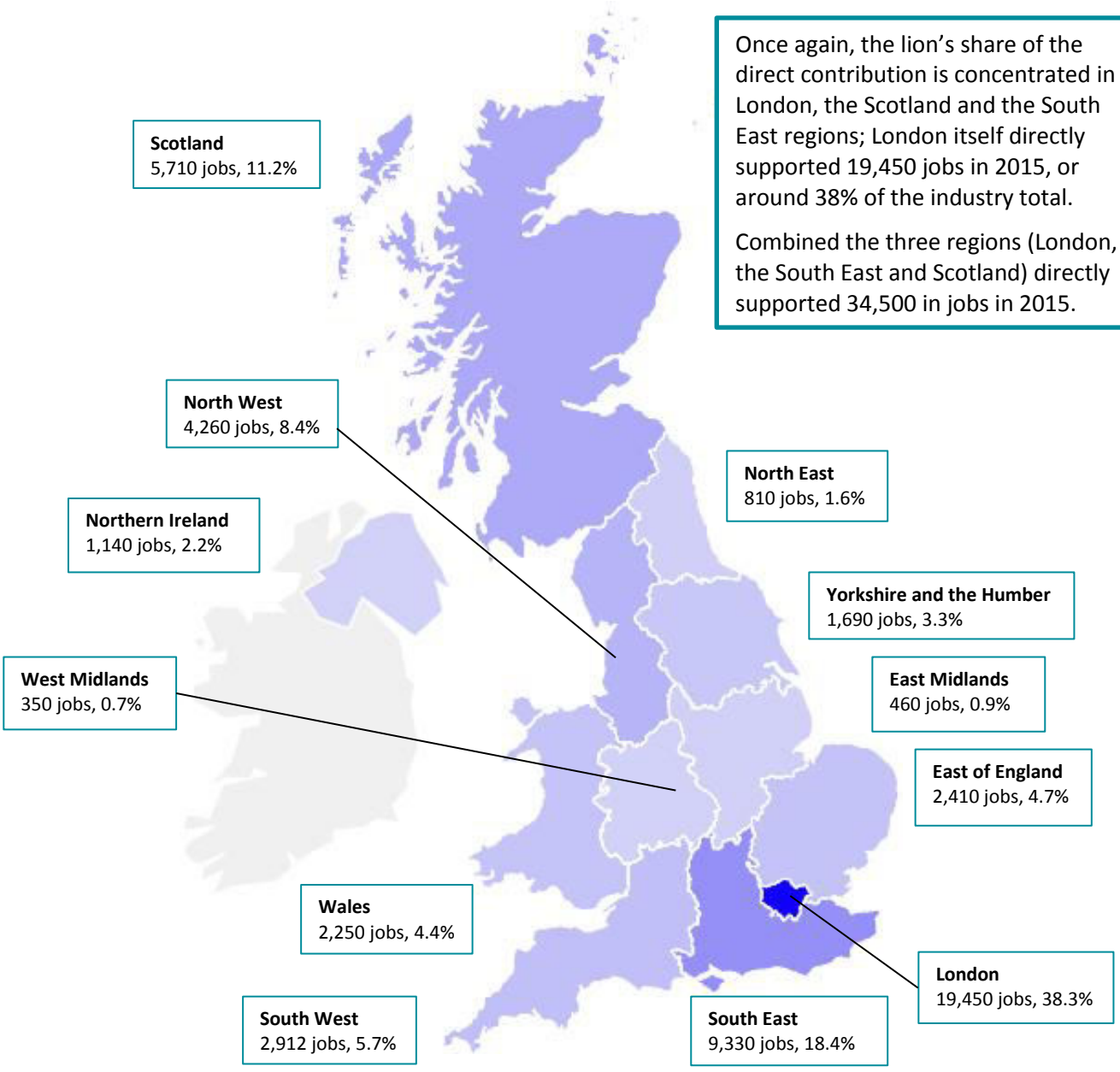
Though not shown in the table above, this is consistent with the previous years to 2010 also.

Note: Figures subject to rounding to nearest £10 million. Source: UKCoS, FAME, ONS, Cebr analysis

Employment and the Compensation of Employees

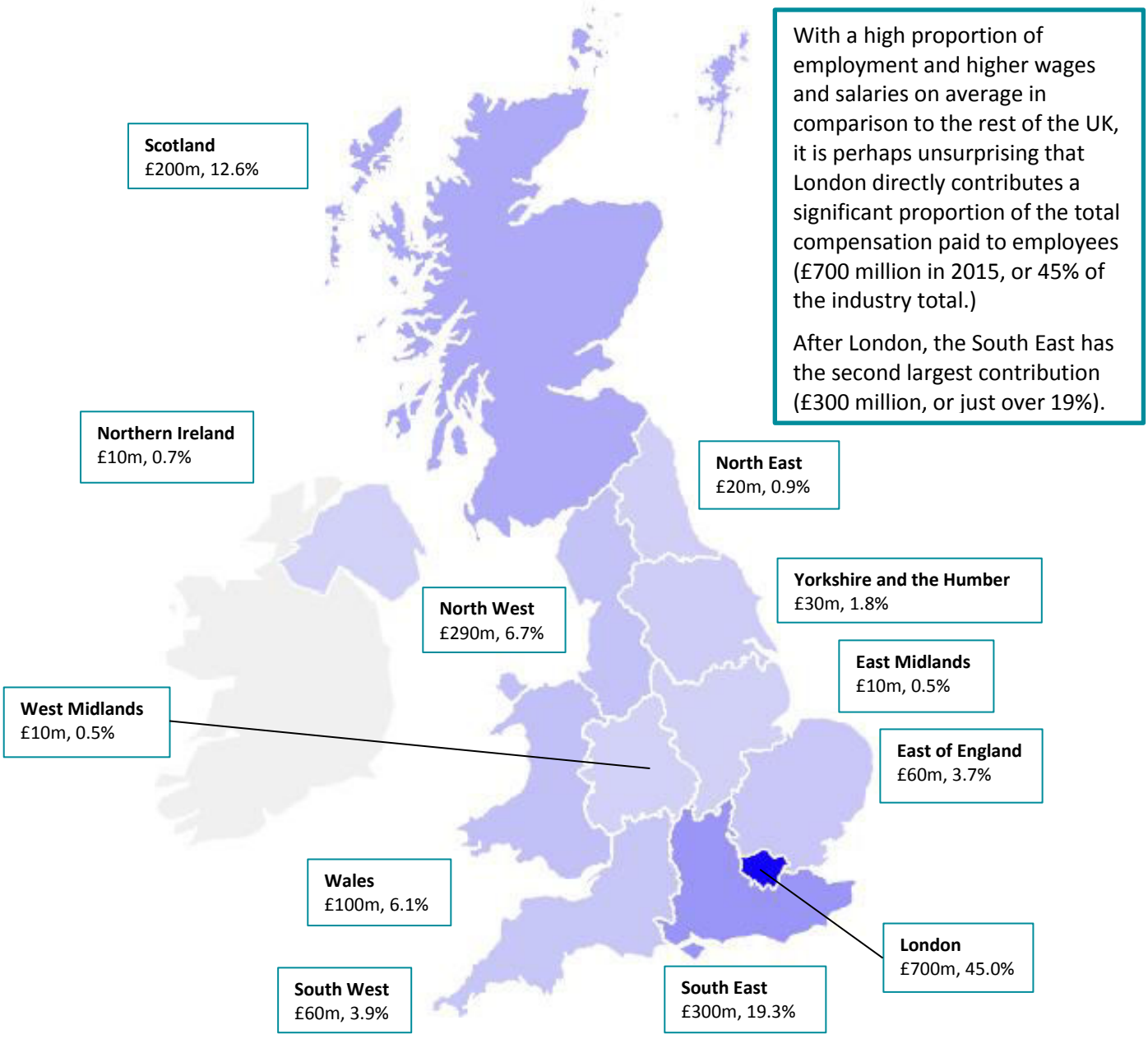
Figures 22 and 23 below shows the estimated regional breakdown of employment and the compensation of employees directly supported by the shipping industry in 2015.

Figure 22: Regional breakdown of employment directly contributed by the shipping industry in 2015



Note: Figures subject to rounding to nearest 10 jobs. Source: UKCoS, FAME, ONS, Cebr analysis

Figure 23: Regional breakdown through the compensation of employees directly contributed by the shipping industry in 2015



Note: Figures subject to rounding to nearest £10 million. Source: UKCoS, FAME, ONS, Cebr analysis

5.2 The aggregate economic impact of the shipping industry by UK region

This final subsection examines the aggregate economic impact of the shipping industry across each region for the four macroeconomic indicators covered in the previous subsection.

In order to estimate the aggregate economic impact of the industry at regional level, the direct economic impacts as already estimated were combined with Cebr's suite of regional economic impact models, within which the activities of the shipping industry were separately identified and isolated. It should be noted that the economic impact multipliers as estimated for each region are necessarily lower than the equivalent multiplier for the shipping industry as a whole, reflecting the leakage of impacts when the activity of the industry in a particular region imports inputs from elsewhere in the UK outside that region.

The aggregate economic impacts for business turnover and GVA by region

Table 14 below shows the breakdown of direct and aggregate economic impacts for business turnover and GVA in 2015, alongside the composite industry multiplier for each region. It is estimated that from a total of £13.9 billion in turnover and £4.3 billion in GVA directly contributed by the shipping industry in 2015, a total of £32.4 billion and £14.1 billion respectively was sustained in total across the UK regions. For GVA, the highest multiplier impacts are associated with the South East, East of England and the South West.

Table 14: Regional breakdown of business turnover and GVA directly contributed by the shipping industry in 2015, £ million

	Turnover			GVA		
Region	**Direct**	**Multiplier**	**Aggregate**	**Direct**	**Industry**	**Aggregate**
Scotland	1,441	2.41	3,467	444	3.36	1,492
Wales	518	2.29	1,186	141	3.18	448
Northern Ireland	196	2.45	481	81	3.43	278
East of England	546	2.57	1,407	176	3.63	640
East Midlands	60	2.32	138	31	3.22	101
London	6,598	2.11	13,917	2,027	2.98	6,030
North East	151	2.40	362	52	3.36	173
North West	821	2.47	2,026	287	3.46	993
South East	2,673	2.69	7,177	743	3.80	2,825
South West	563	2.45	1,376	194	3.43	665
West Midlands	63	2.39	150	23	3.33	77
Yorkshire and the Humber	288	2.35	678	108	3.27	352
TOTAL	**13,917**	**2.33**	**32,365**	**4,306**	**3.27**	**14,074**

Source: UKCoS, FAME, ONS, Cebr analysis

The aggregate economic impacts for employment and the compensation of employees by region

Finally, Table 15 shows the breakdown of direct and aggregate economic impacts for employment and the compensation of employees in 2015, alongside the shipping industry multiplier for each region. The region with the largest aggregate impacts through employment and the compensation of employees was London, with an aggregate impact of 212,000 jobs and £1.9 billion respectively.

Table 15: Regional breakdown of the direct and aggregate economic impact through employment and the compensation of employees contributed by the shipping industry in 2015 (employment in thousands of jobs; compensation of employees in £ million)

	Employment			Compensation of Employees		
Region	**Direct**	**Multiplier**	**Aggregate**	**Direct**	**Industry**	**Aggregate**
Scotland	5.7	12.16	69.5	196	2.77	542
Wales	2.3	11.64	26.2	95	2.65	252
Northern Ireland	1.1	12.46	14.2	11	2.82	31
East of England	2.4	13.25	31.9	58	2.96	171
East Midlands	0.5	11.82	5.5	7	2.67	20
London	19.4	10.88	211.6	697	2.75	1,919
North East	0.8	12.20	9.8	15	2.77	40
North West	4.3	12.60	53.6	77	2.85	220
South East	9.3	13.72	128.0	299	3.07	917
South West	2.9	12.43	36.2	60	2.82	170
West Midlands	0.4	12.15	4.3	7	2.75	19
Yorkshire and the Humber	1.7	11.89	20.1	27	2.71	74
TOTAL	**50.8**	**12.03**	**610.8**	**1,549**	**2.83**	**4,376**

Source: UKCoS, FAME, ONS, Cebr analysis

6 The economic impact of the Tonnage Tax regime on the shipping industry

This final section of the report sets out Cebr's estimates on the benefits of the Tonnage Tax regime. This system, a fully-approved EU State Aid, was introduced in 2000 as a means to support the UK shipping industry, seeking to boost the size of the declining UK fleet and to increase the levels of training imparted on UK seafarers. While the revenues raised through the Tonnage Tax regime for the UK Exchequer are minimal (as shown earlier in this report), Cebr estimate that the gains in terms of economic performance from introducing the regime far outweigh the associated costs of deferred Corporation Tax revenues.

As a counterfactual situation, it is ultimately impossible to determine the performance of the UK shipping industry in an environment in which the Tonnage Tax regime was not in place. However, it is clear that given the marked reversal in the performance and size of the UK shipping fleet followed the introduction of the Tonnage Tax regime, and the contemporaneous macroeconomic conditions and experience of other European countries, the impact of Tonnage Tax is highly unlikely to be coincidental. The analysis presented in this section therefore seeks to quantify the economic contribution that the UK would have forgone had the Tonnage Tax regime not been introduced. This economic contribution is measured through the GVA, UK employment and exports that would have been forgone, and draws upon the direct economic impacts analysis presented earlier in this report. The benefits from the higher levels of seafarer training imparted, while important, are not considered here.

6.1 About Tonnage Tax

In July 2000, the UK Government introduced a new optional tax regime for UK shipping sector - the Tonnage Tax regime. The Tonnage Tax regime allows shipping companies with qualifying vessels to pay Corporation Tax liabilities based upon the weight of tonnage for the ships they operate, rather than paying based upon the actual profits of the company (as is normally the case). In other words, the regime provides an alternative way of calculating the taxable profits of UK shipping businesses.

For those companies which opt in to using the Tonnage Tax regime, a fixed level of "profit" which is subject to Corporation Tax is calculated based on the net tonnage of a vessel and the number of days a year in which the vessel is in operation. A decreasing profit rate is applied for higher tonnage brackets. Therefore in some circumstances it is possible for a company which has opted into the Tonnage Tax regime to have to pay Corporation Tax to the UK Exchequer despite making a loss. The regime is attractive for both pecuniary and planning reasons. For the former, participating companies typically face net tax liabilities far lower than they would have under the standard Corporation Tax regime, thereby increasing flexibility in company financing options. For the latter, the regime provides certainty, with companies able to determine level of tax payable at any particular time.

Alongside supporting funding for seafarer training, the objective of the Tonnage Tax regime was to reverse the steady decline in UK-owned commercial vessels; with a strong relationship between international trade, employment and shipping, the UK's continuing prosperity is partly tied to the size of its shipping fleet. It is widely perceived that the introduction of the regime was a strong contributing factor in the marked uptick in the size of the shipping fleet and the net value of trade in shipping services. In 2005, the House of Commons Transport Committee noted that *"The tonnage tax regime has led to an increase in the number of ships on the UK register and a small increase in the UK owned fleet."*[17] In 2011, the Office for Tax Simplification (OTS) [18] argued for the regime to be maintained to allow the UK shipping industry to compete

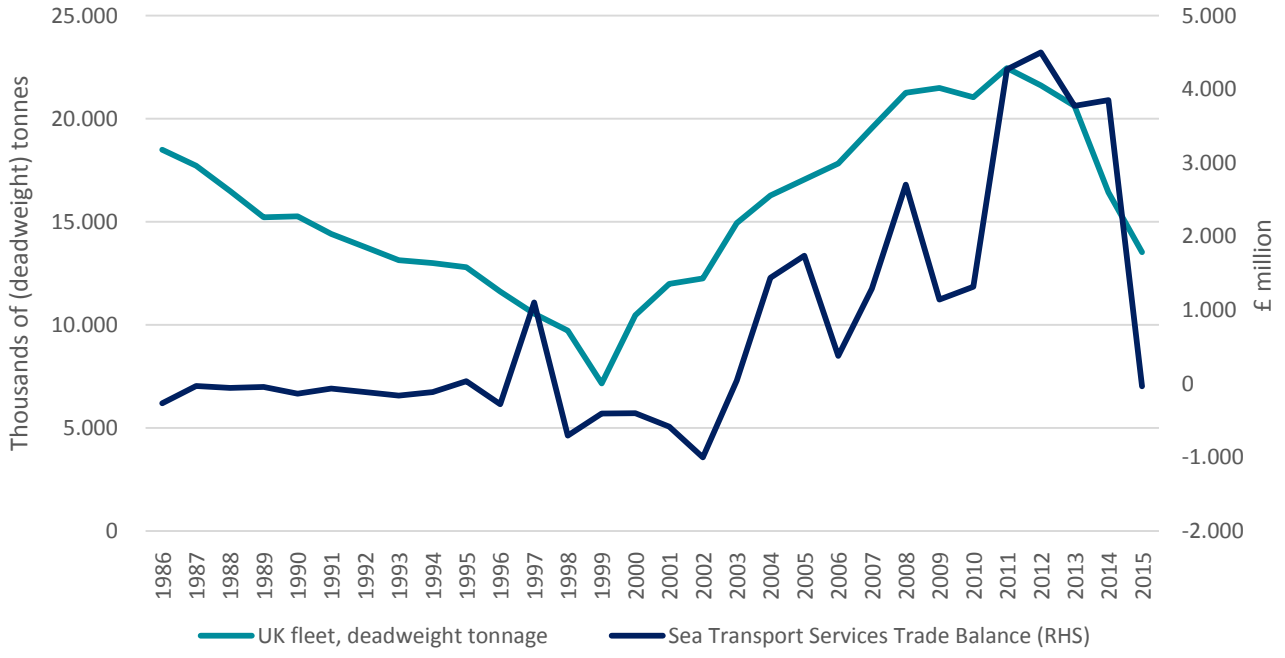
[17] House of Commons Transport Committee (2005). *"Tonnage Tax: Second Report of Session 2004-05"*

[18] Office for Tax Simplification (2011). *"Review of tax reliefs, Final Report"*

effectively, also noting that *"If tonnage tax were to be abolished there is a danger that, in a highly mobile industry where shipping companies can migrate from the UK and register their ships in foreign jurisdictions at short notice, companies would abandon the UK."* The UK has not been alone in bringing in such a regime to support its domestic shipping industry. As identified in the paper, "Tonnage tax: it is working?"[19], almost all maritime EU countries now operate a similar regime, including: Greece; Netherlands; Norway; Denmark; Finland; Spain; Ireland; Belgium; and France, alongside many other countries across the world.

To further highlight the significant tangible impact that Tonnage Tax is likely to have had, Figure 24 below shows the trend in deadweight tonnage[20] of UK-owned shipping vessels up to 1999 (just before the Tonnage Tax regime was introduced), as well as the trade balance in sea transport services as recorded in the ONS Pink Book (including disbursements in ports). An important caveat to note here is that only ships of 500 gross tonnes[21] and above are included here in the total deadweight tonnage (so some smaller vessels will be omitted) and secondly that it only includes trading vessels, (those that carry cargo or passengers), and will therefore not include vessels such as those operating in offshore oil and gas, for instance.

Figure 24: Deadweight tonnage of UK-owned shipping vessels, 500 gross tons or over, thousands of deadweight tonnes; UK trading balance in sea transport services, £ million (unadjusted, right hand axis)



Source: UKCoS, Department for Transport, ONS, Cebr analysis

From 1986 and prior to 2000, the total deadweight tonnage of UK-owned vessels was declining year-on-year by an average of 6.8% per annum; this decline accelerated in 1999 to 26.3%. Similarly, the UK trade balance in sea transport services was in deficit in every year with the sole exception of 1995 (where growth in exports exceeded that of imports), with a period of average of £88 million. We then observe a marked reversal in trends for both series after 2000. The total level of deadweight tonnage immediately recovered to 10.5 million tonnes. Year-on-year growth since then has averaged at 5.1%, although there has once again been a decline following 2011. The trade balance also improved after 2000, with exports exceeding imports in 2003 and the trade balance peaking at £2.7 billion in 2008.

[19] Leggate and McConville, 2006. *"Tonnage tax: is it working?"*, Maritime Policy & Management

[20] Deadweight tonnage is the weight, measured in tons, of all the cargo, fuel, dry provisions, and supplies carried on board a ship. In other words, it refers to the weight of the volume of water displaced by a vessel in normal seagoing condition.

[21] Gross tonnage is a non-linear measure of a ship's overall internal volume (defined by the International Maritime Organization as "the moulded volume of all enclosed spaces of the ship"), and is by definition not a measure of a ship's weight or mass.

6.2 Quantifying the economic impact of the Tonnage Tax regime

Summary of the approach

The objective of this section is to compare what has happened to the shipping industry in the current circumstances (i.e. following the introduction of the Tonnage Tax regime) against a scenario in which the Tonnage Tax regime had not been introduced.

The first step involves estimating the size of the UK shipping fleet in this counterfactual scenario in the years following 2000, as measured through deadweight tonnage. After determining the likely path of the UK shipping fleet after 2000 without the Tonnage Tax, the relationship between the key macroeconomic indicators of interest – GVA, employment, tax revenues and exports – and this level of deadweight tonnage is then determined, drawing upon the direct economic impacts outlined earlier in this report. The difference between deadweight tonnage outturns and deadweight tonnage in the counterfactual can then be translated into the direct and aggregate economic contribution that would have been forgone had the Tonnage Tax regime not been introduced.

The impact of Tonnage Tax on the UK-owned shipping fleet and the key macroeconomic indicators

In order to determine the likely path of the UK shipping fleet in an environment where the Tonnage Tax regime had not been introduced, Cebr have presented the following three scenarios alongside the actual path of the size of the UK-owned shipping fleet:

- **Outturn** – this is the deadweight tonnage of the UK shipping fleet (comprising vessels of 500 gross tons or above) under the current regime (in other words, what has actually happened to the total deadweight tonnage of the UK-owned shipping fleet between 1986 and 2015).
- **Low Scenario** – this scenario assumes that the size of the UK shipping fleet would be half that as under the current regime. For example, in 2015 the deadweight tonnage of the UK-owned shipping fleet was just over 13.5 million tonnes; under the Low Scenario deadweight tonnage is assumed to have fallen to 6.8 million tonnes (subject to rounding).
- **Central Scenario** – this scenario assumes that deadweight tonnage followed a declining fitted exponential trend between 1986 and 1999, with this trend assumed to continue after 2000. The Central Scenario reflects the persistent fall in the size of the UK-owned shipping fleet prior to 2000.
- **Upper Scenario** – this scenario utilises a fitted econometric model which attempts to control for other factors which are likely to have influenced growth (or decline) in the size of the UK-owned shipping fleet. These other factors, expressed in growth terms include growth in world trade and the oil price; a dummy variable to represent the introduction of the Tonnage Tax regime in 2000 has been included.

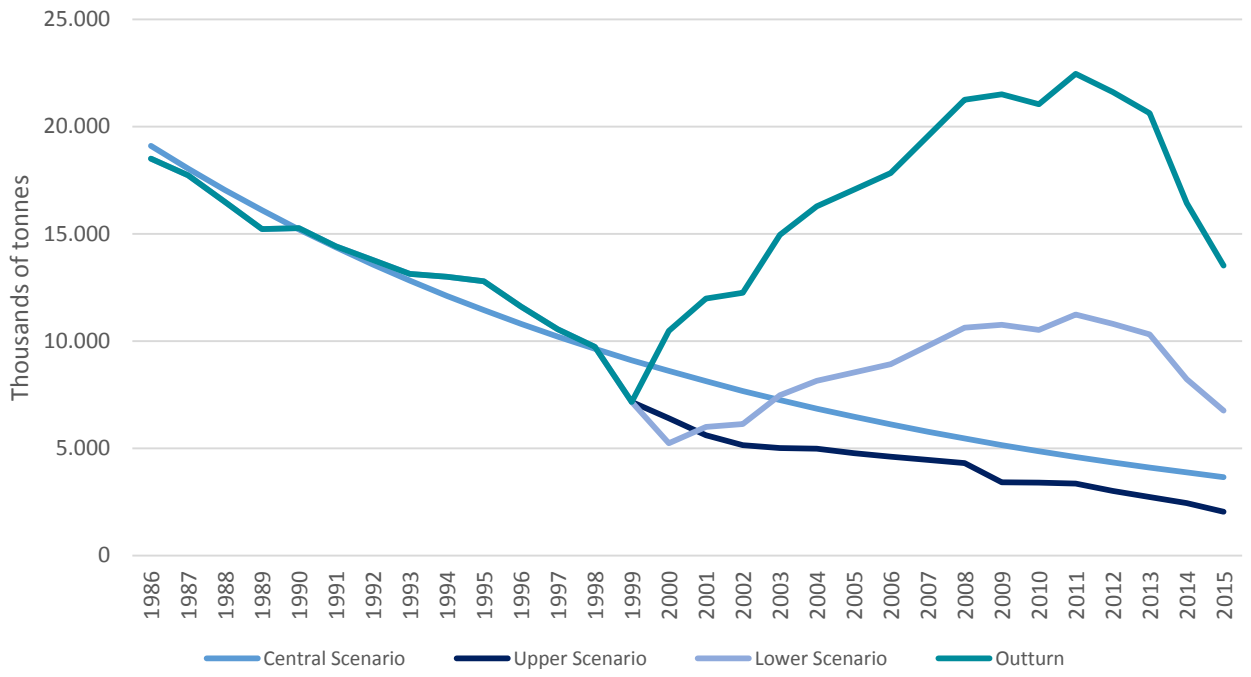
After quantifying the impact on the total level of deadweight tonnage under the three scenarios described above, it is assumed that there is a proportional relationship between the direct contribution that the shipping industry makes through GVA, UK employment, the contribution to the UK Exchequer (tax revenues) and exports.

The impact of Tonnage Tax on the aggregate economic impact of the shipping industry has been estimated by assuming that, with the sole exception of the Ports industry, all other industries in the shipping industry's supply chain would have been negatively affected by the reduction in shipping activity. We assume that the ports industry would not have been affected by the reduction in economic activity from the UK shipping industry, as UK ports could have continued to provide their services to foreign-owned ships; the aggregate economic impact of the shipping industry relating to Ports has therefore been maintained.

6.3 The impact of Tonnage Tax on the UK-owned shipping fleet

Figure 25 below shows the path of total deadweight tonnage for the UK-owned shipping fleet under three different scenarios since 2000, alongside the outturn since 1986. As a fitted trend based on data from 1986 to 1999, the Central Scenario necessarily does not map neatly onto the outturn values prior to 2000. Under the Lower Scenario, total deadweight tonnage would have fallen as low as 6.8 million tonnes by 2015; under the Central and Upper Scenarios the levels of deadweight would have been 3.7 million and 2.0 million tonnes respectively.

Figure 25: Total level of deadweight tonnage for UK-owned shipping fleet, outturn versus Lower, Central and Upper Scenarios



Source: UKCoS, Department for Transport, ONS, Cebr analysis

Under all three scenarios, deadweight tonnage would have been markedly lower than under the outturn; in 2015 total deadweight tonnage had fallen but was still recorded at 13.5 million tonnes, in comparison to 7.2 million tonnes in 1999. Given the large discrepancies in deadweight tonnage, it is clear therefore that is a good deal of evidence to suggest that the economic contribution of the shipping industry would have been considerably lower without the introduction of the Tonnage Tax regime.

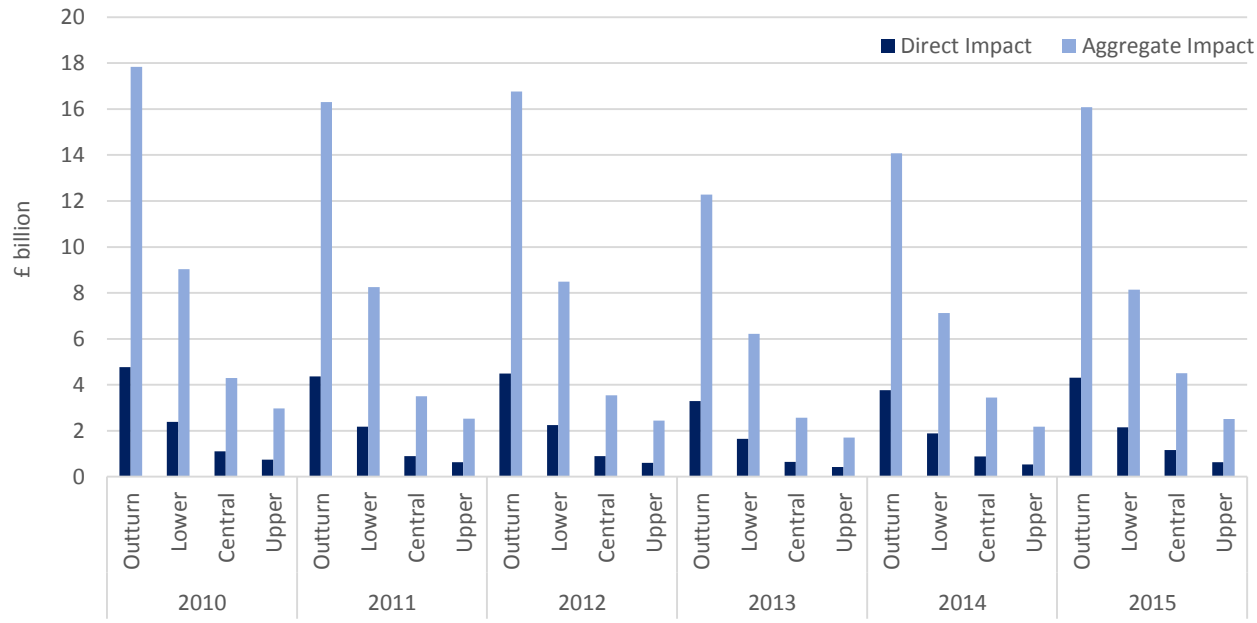
6.4 The impact of Tonnage Tax on GVA

Here we examine the impact of Tonnage Tax on the direct and aggregate impact on GVA from the shipping industry. Figure 26 overleaf shows the projected impact across the years 2010 to 2015 under the three scenarios described earlier in this section.

Under the most conservative (Lower) scenario, the direct impact through GVA in 2015 would have been £2.15 billion, and thus £2.2 billion *less* than the outturn of £4.3 billion. This discrepancy would have been at its highest in 2010, when the direct impact under the lower scenario would have been £2.4 billion less than the outturn. Under the Upper Scenario, the direct GVA impact in 2015 would have been £0.6 billion, and so £3.7 (85%) billion *less* than the outturn.

To place the 2015 Lower Scenario direct impact in context, this is equivalent to a loss of 0.11% of UK GDP in 2015; expressed in terms of the contribution of a sector, this would be equivalent to the UK economy losing the entire direct GVA contribution from the dairy manufacturing (£2.0 billion) or beer manufacturing (£2.1 billion) industries, or most of other services incidental to water transportation (£2.5 billion).

Figure 26: The direct and aggregate GVA impacts of the UK shipping industry under alternative scenarios



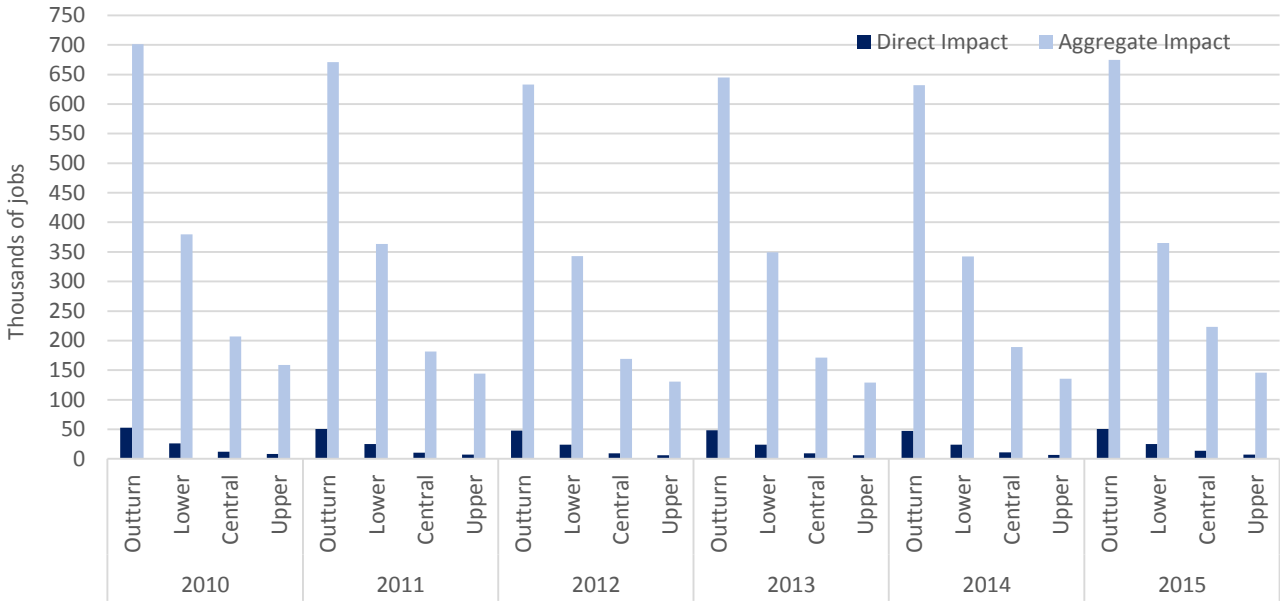
Source: UKCoS, Department for Transport, ONS, Cebr analysis

After the indirect and induced impacts are considered, the difference in the GVA contribution is accentuated under the three different scenarios. Under the Central Scenario, the loss of indirect and induced impacts means that the shipping industry would have only had a total GVA impact of £4.5 billion in 2015, and so £11.6 billion *less* than the outturn total impact of £16.1 billion. This is equivalent to an approximate reduction of 0.6% in GDP in 2015.

6.5 The impact of Tonnage Tax on UK employment

Here we examine the impact of Tonnage Tax on the direct and aggregate impact on UK employment from the shipping industry. Figure 27 below shows the projected impact across the years 2010 to 2015 under the three scenarios against the outturn.

Figure 27: The direct and aggregate employment impacts of the UK shipping industry under alternative scenarios



Source: UKCoS, Department for Transport, ONS, Cebr analysis

In 2015 the shipping industry directly supported 51,000 jobs for UK employees, but under the Central Scenario this direct employment contribution would have only been 13,700 jobs; this is equivalent to a reduction of 73%. This difference would have been more pronounced in 2010, when the direct employment impact under the Central scenario would have been 12,200 jobs and so 40,600 fewer jobs than the outturn level. Even under the more conservative Lower Scenario, there would be 25,400 fewer jobs for UK employees in the shipping industry in 2015 had the Tonnage Tax regime not been introduced.

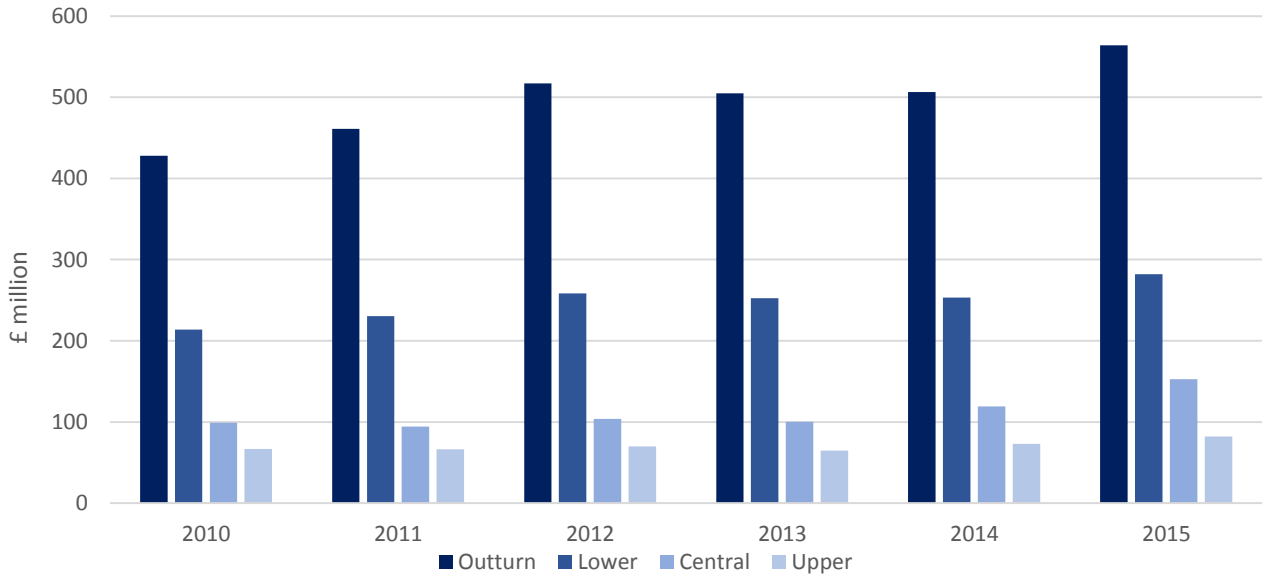
To place the 2015 Central Scenario direct employment impact of 13,700 jobs in context, this is equivalent to a loss of 0.12% of total UK employment; expressed in terms of the contribution of a sector, this would be equivalent to the UK economy losing the entire direct employment contribution from the entire concrete, cement and plaster manufacturing (29,000 jobs), general purpose machinery manufacturing (22,000 jobs) or programming and broadcasting (32,000 jobs) industries in 2015.

Once the indirect and induced impacts are considered as part of the Central Scenario, without the Tonnage Tax regime, only a total of 223,300 jobs would have been supported by the shipping industry across the UK economy in 2015, in comparison to the outturn of 674,400 jobs. This is equivalent to a reduction of 1.4% in the total level of UK employment in 2015.

6.6 The impact of Tonnage Tax on the UK Exchequer Contribution and Trade

After considering GVA and employment impacts, Figure 28 below shows the contribution of the shipping industry to the UK Exchequer under each of the scenarios against the outturn. A total of just over £560 million in tax revenues was raised from the industry in 2015; under the Central scenario, this contribution would have fallen to only £150 million, with the most pessimistic (Upper) scenario projecting a yield of only £85 million in the same year.

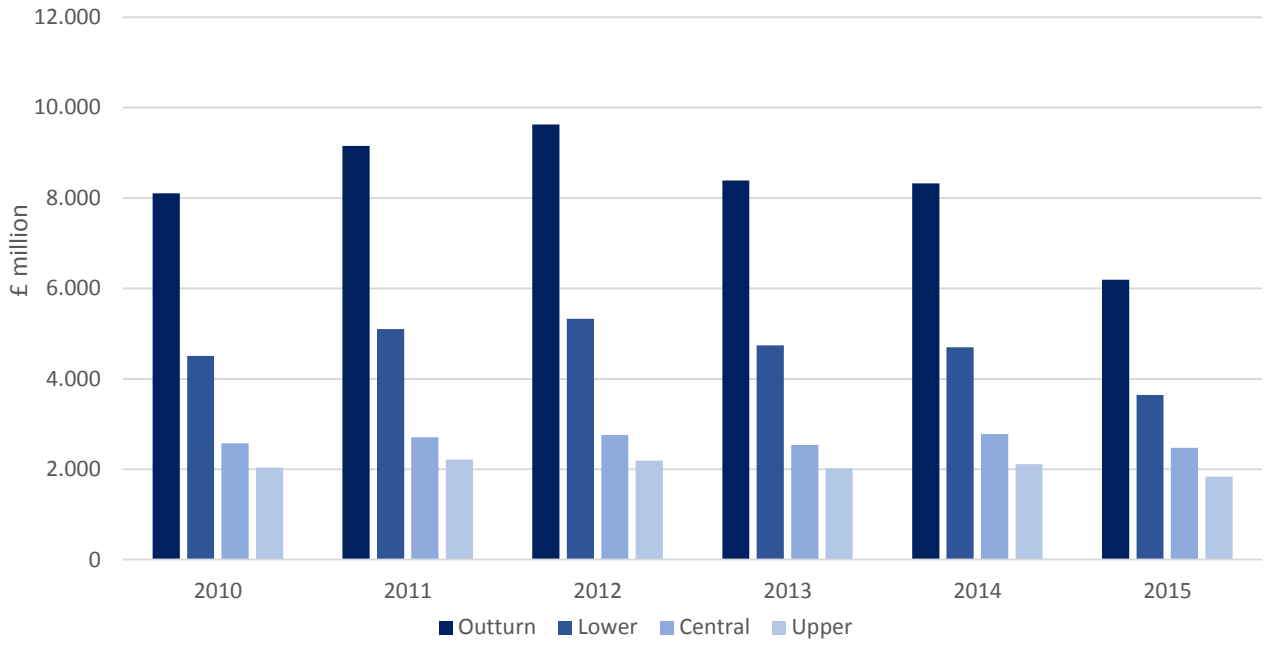
Figure 28: The contribution of the UK shipping industry to the UK Exchequer under alternative scenarios, £ million



Source: UKCoS, Department for Transport, ONS, Cebr analysis

Figure 29 overleaf shows the contribution of the shipping industry through the exports of services under each of the scenarios against the outturn. It is assumed that exports of disbursement services would not have been affected by the introduction of the Tonnage Tax regime (on the assumption that UK ports would continue to export disbursements services to foreign ships); however, all other exports of services are linked to the tonnage of the UK shipping fleet. Conversely, it is assumed that imports of shipping services, aside from disbursements, would have been unaffected if the Tonnage Tax regime had not been introduced; however, imports of disbursement services would have been reduced in line with the reductions in the size of the UK-owned shipping fleet.

Figure 29: The contribution of the UK shipping industry to service exports under alternative scenarios, £ million

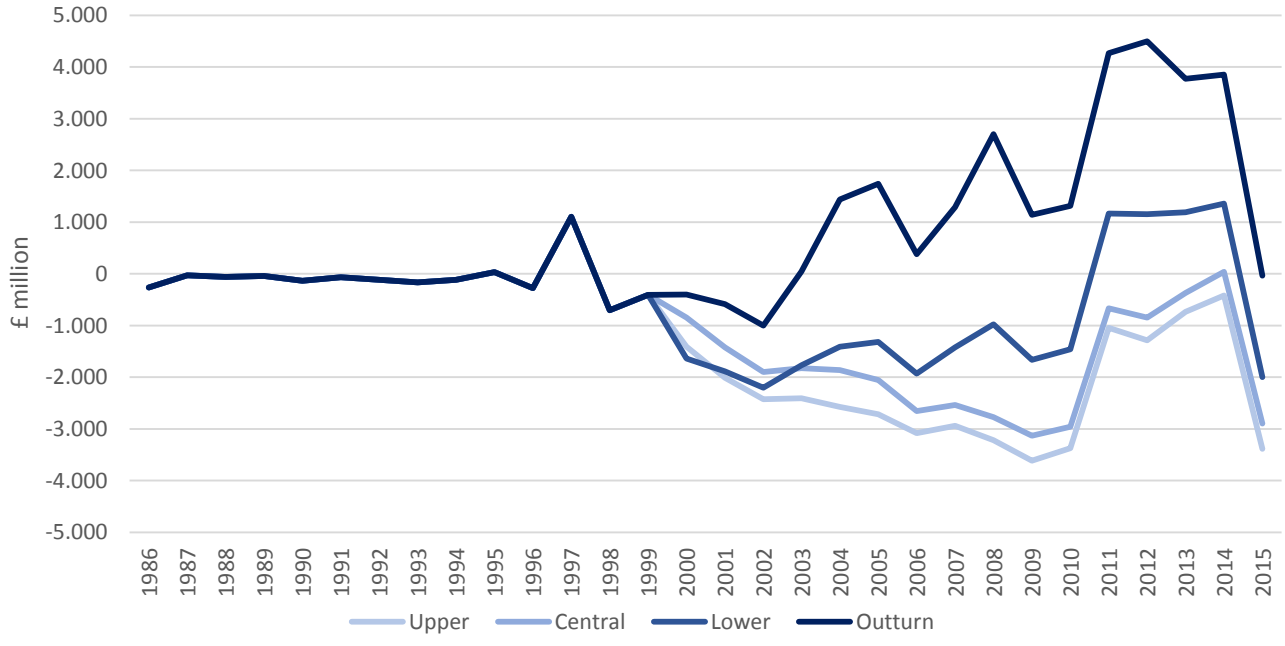


Source: UKCoS, Department for Transport, ONS, Cebr analysis

Under the Central Scenario, it is estimated that the value of exports from the shipping industry and exports of disbursements from Ports would have been £2.4 billion in 2015, in comparison to the outturn of £6.2 billion. Even under the optimistic Lower Scenario, service exports would have fallen to £3.6 billion.

Finally, following Figure 24 earlier in this section, Figure 30 below shows the projected trend in the trade balance of Sea Transport service exports after 2000 based on the three different scenarios against the outturn. Under each of the three scenarios, the trade balance would have been negative (i.e. the value of sea transport imports would have exceeded that of exports) throughout the period 2000 to 2010. Under the Central Scenario, the trade balance would have £2.9 billion in deficit in 2015, in contrast to the outturn value of -£37 million.

Figure 30: The Sea Transport exports trade balance under alternative scenarios, £ million



Source: UKCoS, Department for Transport, ONS, Cebr analysis

Annex A: Full set of direct economic impacts by region

Table A.1: Direct economic impact of the shipping industry through turnover, 2010 to 2015, £ million

TURNOVER	2010	2011	2012	2013	2014	2015
United Kingdom	**13,407**	**13,131**	**12,547**	**12,447**	**12,539**	**13,917**
England	11,463	10,833	10,575	10,317	10,382	11,762
Scotland	989	1,253	1,049	1,594	1,633	1,441
Wales	523	729	661	374	330	518
Northern Ireland	432	316	262	162	193	196
East of England	1,034	1,291	877	971	781	546
East Midlands	108	25	26	118	573	60
London	4,225	5,250	4,697	3,685	4,611	6,598
North East	110	90	50	92	103	151
North West	1,107	957	930	1,103	804	821
South East	3,719	2,639	3,022	3,207	2,911	2,673
South West	566	302	563	760	321	563
West Midlands	205	59	21	103	231	63
Yorkshire and the Humber	388	220	391	279	48	288

Source: FAME, UKCoS, ONS, Cebr analysis

Table A.2: Direct economic impact of the shipping industry through GVA, 2010 to 2015, £ million

GVA	2010	2011	2012	2013	2014	2015
United Kingdom	**4,775**	**4,364**	**4,489**	**3,287**	**3,768**	**4,306**
England	4,025	3,594	3,701	2,765	3,117	3,640
Scotland	463	455	526	336	486	444
Wales	180	182	137	108	87	141
Northern Ireland	107	133	125	78	78	81
East of England	309	316	217	209	247	176
East Midlands	67	11	14	33	187	31
London	1,679	1,729	1,603	1,132	1,378	2,027
North East	42	43	33	23	35	52
North West	335	319	276	260	281	287
South East	1,070	882	1,011	814	790	743
South West	223	149	305	178	106	194
West Midlands	128	29	13	24	73	23
Yorkshire and the Humber	171	118	229	91	19	108

Source: FAME, UKCoS, ONS, Cebr analysis

Table A.3: Direct economic impact of the shipping industry through employment, 2010 to 2015, number of jobs

EMPLOYMENT	2010	2011	2012	2013	2014	2015
United Kingdom	**52,791**	**50,511**	**47,648**	**48,564**	**47,555**	**50,767**
England	42,645	39,592	37,805	38,658	37,937	41,669
Scotland	5,855	6,056	6,192	5,942	6,780	5,710
Wales	2,908	3,060	2,101	2,611	1,688	2,251
Northern Ireland	1,382	1,803	1,550	1,353	1,150	1,136
East of England	3,736	4,111	2,571	3,319	3,458	2,406
East Midlands	909	184	174	588	2,772	461
London	13,334	14,837	12,391	11,391	12,935	19,447
North East	555	610	428	381	572	807
North West	4,223	4,390	3,414	4,205	4,135	4,259
South East	12,775	11,216	11,531	13,326	10,958	9,332
South West	3,087	2,128	4,149	3,406	1,678	2,912
West Midlands	1,765	424	208	428	1,100	354
Yorkshire and the Humber	2,262	1,693	2,939	1,615	329	1,693

Source: FAME, UKCoS, ONS, Cebr analysis

Table A.4: Direct economic impact of the shipping industry through the compensation of employees, 2010 to 2015, £ million

COMPENSATION OF EMPLOYEES	2010	2011	2012	2013	2014	2015
United Kingdom	**1,376**	**1,355**	**1,322**	**1,340**	**1,379**	**1,549**
England	1,066	1,020	1,047	1,079	1,094	1,247
Scotland	139	146	115	182	213	196
Wales	135	150	122	70	61	95
Northern Ireland	35	39	38	8	11	11
East of England	104	122	88	107	82	58
East Midlands	11	3	2	15	50	7
London	412	492	460	405	494	697
North East	7	9	9	9	10	15
North West	81	85	84	105	79	77
South East	342	241	300	299	320	299
South West	65	40	73	99	34	60
West Midlands	15	7	3	12	21	7
Yorkshire and the Humber	27	22	30	29	5	27

Source: FAME, UKCoS, ONS, Cebr analysis