



OXFORD
ECONOMICS

The economic contribution of ports to the UK economy

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Executive Summary

Ports are vital for the health of the UK economy and the movement of its population. They are gateways into the UK for trade and travel.

- Over 95% of UK imports and exports by volume and 75% by value pass through the country's ports.
- In terms of tonnage handled, the UK ports sector is the largest in Europe. In 2007, UK ports handled 580 million tonnes of freight.
- In 2007, 24.8 million international sea passengers went through UK ports. Nearly three quarters of journeys were to France. Another 14 per cent were to the Republic of Ireland.
- In 2007, 24.2 million domestic sea passengers traveled between ports in the UK. Sea crossings comprised 4.0 million of these journeys. Inter island journeys the remaining 20.2 million. Of which 10.7 million trips were between Hampshire and Isle of Wight and 8.0 million between the Scottish islands.

...they directly employ 132,000 workers...

- In 2007, the ports sector directly employed 132,000 people. This is 0.5% of total employment in the UK.
- Almost half (49% or 65,000) of the people who work in ports work in transport or transport-related activities. Another 11,000 are employed in cargo handling and storage (which involves the movement of freight between transport modes).

...directly contributing around £7.7 billion to GDP in 2007...

- The ports sector contributed £7.7 billion to UK Gross Domestic Product (GDP). This is 0.5% of the total output of the UK economy. It is slightly more than the hotels sector and the manufacture of aircraft and spacecraft industry contribute.

... and around £3.0 billion to the Exchequer in tax revenues...

- In total, the ports sector is estimated to have contributed £3.0 billion in tax receipts in 2007. Employment taxes provided £1.4 billion of this and corporation taxes a further £1.0 billion.

In total, the UK ports sector supports 363,000 jobs in the UK economy and contributes £17.9 billion to GDP...

- In total, the UK ports sector supported 363,000 jobs in 2007. This is 1.3% of all employment in the UK. Of the jobs, 132,000 are directly employed in the ports, 150,000 people are employed in ports' supply chain and 80,000 people owe their job to the consumer spending of ports staff and

those directly employed in its supply chain.

- Put another way, for every job generated in a port, another 1.74 jobs will be generated elsewhere in the economy supporting the port worker.
- In total, the ports sector supports £17.9 billion in GDP (or 1.2% of total). Of this, £7.7 billion is generated in the ports themselves, £6.7 billion in their supply chain and £3.4 billion in supplying consumer goods and services to their staff.
- For every £1 million of economic activity that occurs in a port, an additional £1.34 million is generated in ports' supply chain and the retail and leisure outlets ports staff visit.
- The ports sector is estimated to contribute £7.1 billion to the Exchequer in tax receipts. Of this, 42% originates from the ports, 38% from the activity the sector generates in its supply chain and 20% from the activity generated by its employees' consumer spending.

But the overall economic impact is even greater...

- Ports enable a range of industries to function.
- In 2007, there were 12,700 fishermen working on 6,670 fishing vessels out of UK ports. The fishing industry contributed £363 million to GDP in 2007.
- Ports are also used by the UK marine aggregate dredging fleet. In 2007, the industry employed 547 people as ships crew and in office-based roles in 2007. It generates about a £114 million contribution to UK GDP each year.
- Ports supply the North Sea oil and gas extraction industry.
- Industries heavily reliant on the import of bulk raw materials or export of finished goods are also enabled by ports. We estimate these employ 45,000 people on the port estate and contribute £6.9 billion to GDP in 2007.
- Up to 2.7 million people (or 4.7% of the population) participate in sea-based watersports each year. Many of these begin in ports.
- Nearly, 3,000 are employed in museums in ports mostly dedicated to the UK's maritime heritage.
- Many coastal communities rely on ports to attract visitors. There are 36,000 people employed in restaurants and 27,000 in bars and pubs in ports. These generate a £870 million contribution to GDP.

1. Introduction

The UK is a very open economy. In 2007, 30% of all the goods and services consumed in the UK were imported. Just over a quarter (26.4%) of all domestically produced goods and services were sold outside the UK. Ports play a crucial role in facilitating trade. Over 95% of imports and exports by volume and 75% by value pass through the country's ports.

The ports also serve as a gateway into the UK and between its various islands for millions of people. In 2007, 24.8 million passengers went through UK ports on international journeys. Of these, 23.7 million were short-sea ferry passengers, mostly heading to France and the Republic of Ireland. Another 24.2 million journeys were taken by domestic sea passengers. Of these, 20.2 million were inter island travel and 4.0 million were domestic sea crossings.

This report seeks to quantify the economic contribution of ports to the UK economy.¹ It was commissioned by the UK Major Ports Group (UKMPG) and British Ports Association (BPA).² It is structured as follows:

- Chapter 2 gives an overview of the ports sector in 2007.
- Chapter 3 analyses the direct economic impact of the UK ports sector, in terms of employment, GDP, productivity and tax it generates.
- Chapter 4 considers the multiplier impacts of the UK ports industry – the so-called indirect and induced impacts.
- Chapter 5 covers the catalytic impacts of the ports.
- Chapter 6 concludes.

¹ A sister report on the economic impact of the shipping industry is available from the Chamber of Shipping's website at www.british-shipping.org.

² The authors are very grateful for the input of the staff of the UKMPG, BPA and their member companies.

2. Brief overview of the ports sector in the UK

This chapter gives a brief introduction into the ports sector in the UK. It focuses on their role in the transportation of freight and passengers.

2.1. Brief overview of UK ports

There are about 120 commercial ports in the UK. The sector is very diverse. It ranges from major all-purpose ports (such as London and Liverpool); ferry ports (such as Dover); specialised container ports (such as Felixstowe), and ports catering for specialised bulk traffic. There are also smaller ports essentially catering for local traffic or for more particular sectors, such as fishing (like Peterhead and Fraserburgh) or leisure use (for example, Cowes which focuses on sailing and tourism).

The size and role of each port is influenced by many factors. Its physical attributes are important, in particular its size and nautical accessibility, as ships sizes continue to increase particularly on the long distance routes limiting their manoeuvrability. Location is also a major driver. This is with regard to both major shipping lanes and inland transport networks (road, rail and waterways) for freight and the destination in the case of passengers. Whether the port is close to a major industrial or urban area on land, an industry that relies heavily on imports of bulk raw materials or export markets, fish stocks or the North Sea energy fields will also play a part. For smaller ports focused on recreation, proximity to a piece of attractive coastline, flora or fauna, or a heritage site will also be influential. History and developments in the wider economy also shape each port.

Ports ownership structure is varied. Most of the largest ports are in private-sector ownership. Many of the smaller ports (and a few of the larger) are trust ports.³ A few ports belong to local authorities, notably Portsmouth and the oil terminals in Orkney and Shetland. All three types are open to the pressures of market forces. The UK Government takes a laissez faire approach to ports, as set out in Department for Transport (2007).⁴

2.2. Freight

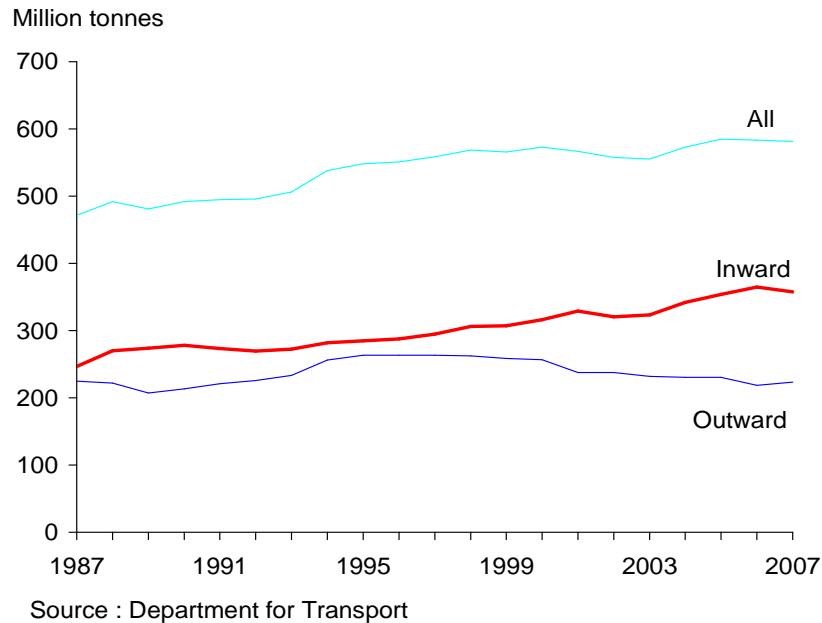
In 2007, UK ports handled 582 million tonnes of freight traffic. This was more than any other European country's ports. It was just under two million tonnes (or 0.3%) lower than in 2006. This masks a broad upward trend in freight coming through UK ports. In 2007, total tonnage was 4.1% higher than ten years ago and 23.3% higher than twenty years ago (Chart 2-1). The rise over time reflects an increase

³ Trust ports are independent statutory corporations but without shareholders. They operate on a quasi-commercial basis, but they do not pay dividends as they have no shareholders, and any profits they make are retained in the undertaking.

⁴ Department for Transport, (2007), 'Ports policy review interim report', 19 July.

in inward traffic, more than offsetting the fall in outward trade. Over the last ten years, inward traffic has increased by 21.3% and outward traffic has decreased by 15.1%.

Chart 2-1: Freight traffic passing through UK ports



Analysis of port traffic by cargo type shows liquid bulk accounted for 44% (or 249 million tonnes) of total tonnage in 2007 (Chart 2-2). The major liquids transported were crude oil (140 million tonnes) and oil products (86 million tonnes). Dry bulk ranked second in importance, constituting 23% of total (or 125 million tonnes). The major constituents were coal, ores and agricultural products. Roll-on/roll-off (ro-ro) traffic made up 18% (105 million tonnes). Container traffic was 11% (61 million tonnes). Other cargo (forest products, iron and steel products and general cargo) totalled 5% (27 million tonnes).

Over time the mix of products being transported through ports has changed reflecting wider developments in the UK economy, shipping industry and alternative forms of transport. Two of the major developments in the past decade reflect alterations in the UK's energy production and usage. Since 2000, there has been a fall in the volume of liquid bulk traffic (Chart 2-3), caused by a 24% decline in crude oil traffic (as production in the North Sea has decreased). In contrast, dry bulk has increased, given impetus by almost a doubling in imports of coal for electricity generation over the last decade. The increase in containerization of the shipping industry is also apparent. Over the last decade, the number of containers entering the UK has increased by 35%. Ro-ro tonnage has increased by a slightly less.

Chart 2-2: UK major port traffic by cargo type in 2007

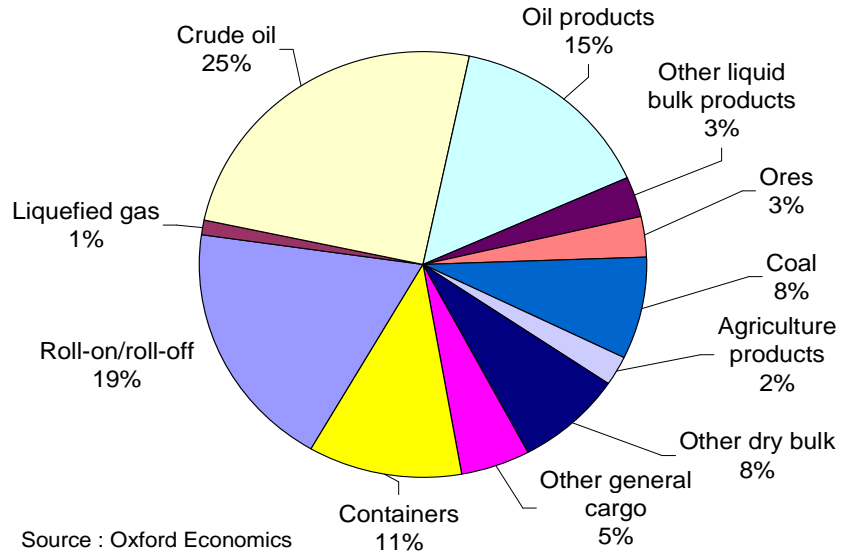
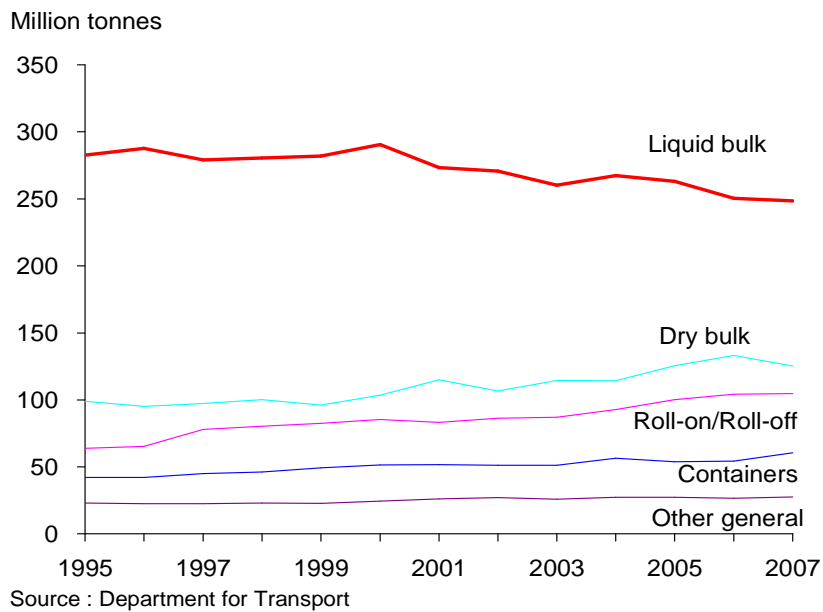


Chart 2-3: UK major port traffic by cargo type



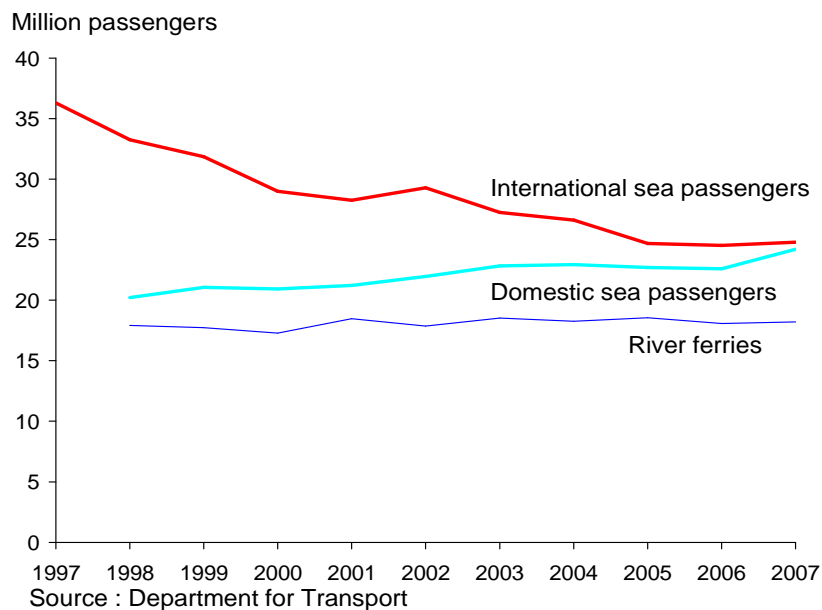
2.3. Passengers

For most of the past decade, the number of passenger going through UK ports on an international journey (defined as traveling to or from a port outside the UK) has been declining (Chart 2-4). This is mostly due to the increased popularity of other modes of transport, in particular the rise of budget airlines and increased use of the Channel Tunnel. This trend has come to a halt over the past three years (2005 to 2007) when international passenger numbers have been broadly constant.

In 2007, 24.8 million passengers went through UK ports on international journeys (Chart 2-4).⁵ Of these, 23.7 million were short-sea ferry passengers. Nearly three quarters (73.4% or 17.4 million) of these passenger journeys were to France (Table 2-1). The Republic of Ireland (13.9%), the Netherlands (6.9%), Belgium (3.2%) and Spain (1.5%) were also important destinations. The destination plays a significant role in determining which port the passenger uses. Ferries to France and Spain leave from ports located in Thames & Kent and the South Coast. The West Coast ports serve the Republic of Ireland. The East Coast ports serve Denmark, Germany, the Netherlands, Norway and Sweden. Ferry journeys to Belgium leave from ports in Thames & Kent and the East Coast. Dover is the dominant ferry port, serving 60% (14.3 million) of all international passengers.

The majority of other international passengers are on cruises (1.1 million). Most cruise passengers embark or disembark at Southampton (0.7 million). Only 68,000 people traveled on long sea journeys.

Chart 2-4: The number of passengers passing through UK ports



⁵ In 2007, the Channel Tunnel handled 17.7 million passengers.

Table 2-1: Number of International passengers on short sea ferry routes in 2007 (thousands)

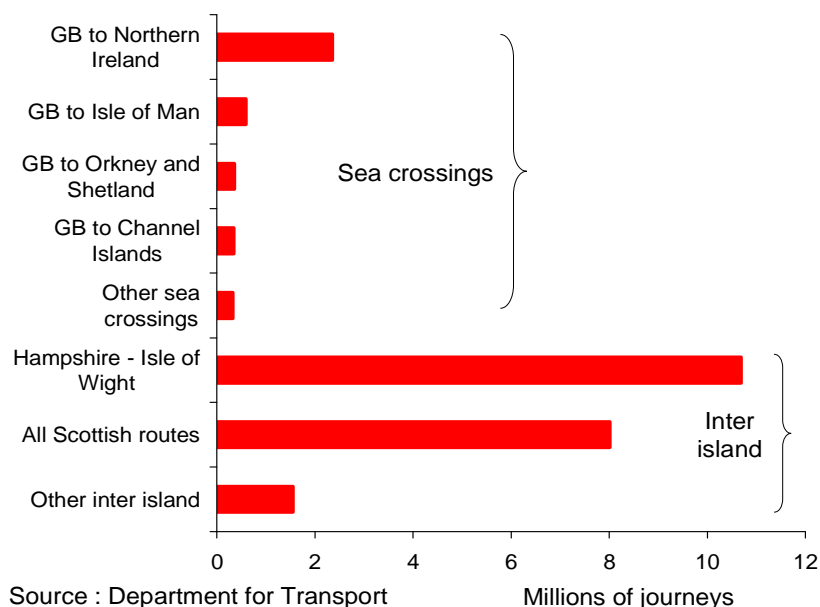
Country	Thames & Kent ⁽¹⁾	South Coast ⁽²⁾	West Coast ⁽³⁾	East Coast ⁽⁴⁾	Total	Percent of total
Belgium	244	0	0	507	751	3.2%
Denmark	0	0	0	96	96	0.4%
France	14,258	3,120	0	0	17,378	73.4%
Germany	0	0	0	1	1	0.0%
Irish Republic	0		3,291	0	3,291	13.9%
Netherlands	0	0	0	1,636	1,636	6.9%
Norway	0	0	0	153	153	0.6%
Spain	0	357	0	0	357	1.5%
Sweden	0	0	0	5	5	0.0%
Total	14,502	3,477	3,291	2,398	23,668	100%
Percent of total	61.3%	14.7%	13.9%	10.1%	100%	

Source: Department for Transport and Oxford Economics

- (1) Thames and Kent includes the ports of Dover, Folkestone and Ramsgate.
- (2) South Coast includes the ports of Newhaven, Plymouth, Poole, Portsmouth and Weymouth.
- (3) West Coast includes the ports of Fishguard, Holyhead, Liverpool, Mostyn, Pembroke, Swansea.
- (4) East Coast includes the ports of Felixstowe, Forth, Harwich, Hull, Killingholme and Tyne.

In 2007, there were 42.2 million domestic passenger journeys. Of these, 24.2 million were domestic sea passengers, travelling between ports on different islands within the UK. There were 4.0 million domestic sea crossings (Chart 2-5). The most popular route was between Great Britain and Northern Ireland (2.4 million), followed by trips from Great Britain to the Isle of Man (0.5 million), the Orkneys and Shetland (0.4 million) and the Channel Islands (0.3 million). The other sea crossings involved inter island travel. Nearly 10.7 million passengers travelled between Hampshire and the Isle of Wight, 8.0 million between the Scottish Islands and 1.6 million between other islands within the same country. River ferries comprised the remaining 18.2 million passenger journeys.

Chart 2-5: UK domestic sea passengers by route in 2007



2.4. Summary

- In 2007, UK ports handled 582 million tonnes of freight traffic. This is more than the ports in any other European country.
- The breakdown of major port traffic by cargo type in 2007 was: liquid bulk 44 per cent; dry bulk 23 per cent; roll-on/roll-off cargo 18 per cent, lift-on lift-off containers 11 per cent and other general cargo 5 per cent.
- In 2007, 24.8 million international sea passengers went through UK ports. Nearly three quarters of journeys were to France. Another 14 per cent were to the Republic of Ireland. The destination plays a significant role in determining which regions' port the passenger uses.
- In 2007, 24.2 million domestic sea passengers traveled between ports in the UK. Sea crossings comprised 4.0 million of these journeys. There were 20.2 million inter island journeys. Of which, 10.7 million trips were between Hampshire and Isle of Wight and 8.0 million between the Scottish islands.

3. The direct economic contribution of ports

A standard analysis of the economic contribution of any sector to the economy focuses on three channels of impact: direct; indirect and induced. The direct impact measures the economic activity and jobs generated by ports themselves. This activity causes a ripple effect in the rest of the economy, stimulating output and employment in other industries. The indirect impact captures the effect ports have on activity and jobs in their supply chain. Whilst the induced impact considers the effect of wages and salaries paid to staff within ports and their supply chain on the rest of the economy through consumer spending.

This chapter quantifies the direct impacts of ports on the UK economy. This is the employment they create, their contribution to GDP and the taxes their employees and constituent firms pay. These impacts occur on the port estate.

3.1. Previous studies' approaches to collecting data on ports

The Office for National Statistics (ONS) publishes data on businesses split by type of economic activity they undertake. As ports encompass a number of economic activities (for example, cargo handling and passenger operations), the ONS does not publish data on the ports sector *per se*. This means there is no universally recognised data on the size of the port sector in the UK and provides the motivation for this study.

The ONS publishes data on employment and GDP created by different economic activities. These activities are classified using the Standard Industrial Classification (SIC) framework.⁶ These data have been used by previous studies on the size of individual ports and all ports in the UK to calculate the size of the sector. For example, the Department for Transport's (2005) study on port employment levels and accident rates uses SIC codes in part in deciding which 'port' businesses to survey, especially those not on port premises. Unfortunately, each port undertakes a slightly different set of activities to the others due to location, size, role etc. As a result, past studies on the size of individual ports have taken different views as to which SIC codes to include. At a national level the selection of appropriate SIC codes is made more complex as many of the activities that would seem core to what ports do (for example, cargo handling), also occur at other modes of transport hubs, such as at airports.

A second way of estimating the economic contribution of the ports sector is to use ONS data split geographically. The ONS publish data on employment (and some other variables) at the level of

⁶ ONS (2008), Standard Industrial Classification (SIC) is a framework used for "classifying business establishments and other statistical units by the type of economic activity in which they are engaged".

electoral wards.⁷ In principle, data on the wards containing ports can be used. However, this approach has its own drawbacks. Port boundaries are not always well defined. Even where they are, it is unlikely the port maps neatly to an electoral ward or wards. Therefore, this approach may include the port plus a range of other unrelated business activities or it may miss some parts of port activities.

A third way is to use accounting information published by companies that own ports. The Crown Estate (2008) takes this approach, using figures from the Associated British Ports' (ABP) 2005 annual report, grossed up by ABP's share of employment in the Department of Transport's (2005) estimate of total port employment, to generate total revenue and gross value added numbers for all UK ports. An advantage of this methodology is that the ports industry is quite concentrated, therefore only a relatively small number of port groups' accounts are required to get significant coverage of the sector. The main disadvantage with this approach is that it will only capture activities of the group or authority itself and not the companies that provide many of the services that occur in their ports. For example, the Port of London Authority owns no docks, so information on its activities will only capture a minute part of the activity within the port. Another disadvantage is that a number of the major port groups are now foreign-owned. These groups publish accounting information on a worldwide consolidated basis. It is at their discretion whether they publish data on their UK activities. Most foreign-owned groups opt to not provide much, if any, information about their UK port operations. An additional disadvantage is that it can be a challenge to find accounting information on the smaller ports, some of which are owned by local authorities or trusts.

Several port studies have used surveys to collect information. This method again requires the selection of which firms or other bodies to survey. As stated above, the boundaries of what constitutes a port either by geographical or industrial grounds is debatable. It was deemed as impractical for this study, as locating all the firms who operate in the sector or a representative sample of them across the UK seemed intractable. The approach works better for studies of individual ports. Surveys are used by several studies on individual ports including Southampton⁸ and Liverpool.⁹

3.2. Employment

Following the Department for Transport (2005) report, we adopt a hybrid approach. Using the ONS Annual Business Inquiry (ABI) we have selected SIC codes that reflect the type of activities that occur in ports.¹⁰ This is mapped to wards containing ports as shown by maps on the websites of the major port groups and in hard copy. Using these twin criteria we have collected ONS data on employment in

⁷ Electoral wards are the spatial areas used to elect local government councillors in all parts of the UK except the Isles of Scilly. There are between 10 and 11 thousand in number. They vary significantly in terms of population, but the national average is about 5,500 people per ward.

⁸ ARUP (2006), "Port of Dover economic impact assessment: Final report", November, Dover Harbour Board.

⁹ Fisher Associates (2007), "The Maritime Sector on Merseyside Economic Impact Study", January.

¹⁰ The Annual Business Inquiry (ABI) covers all UK businesses registered for Value Added Tax (VAT) and/or Pay As you Earn (PAYE). Focusing on employment and financial information its data is disaggregated by industry and geography.

18 ports between 2003 and 2007.¹¹

The employment data collected from the ABI are for ports which deal with in excess of 10 million tonnes in freight or 1 million international sea passengers. These 18 ports are listed in Table 3-1. In 2007, the 18 selected ports dealt with 80.4% of all freight and 85.2% of all international passengers entering or leaving the UK. To generate our estimate for total direct employment in UK ports, the data from our sample of 18 ports is grossed up using a scaling factor based on the remaining ports' share of all freight entering or leaving the UK. The scaling (or grossing factor) is 1.25. This is a small grossing factor, which should lead to a relatively accurate estimate for the whole UK.

Table 3-1: Ports on which we have collected Annual Business Inquiry data (tonnage of freight and passenger numbers in 2007)

	Port	Freight (thousand tonnes)	Per cent of all UK	International sea passengers and cruises (thousand)	Per cent of all UK
1	Grimsby and Immingham	66,279	11.4%	63	0.3%
2	London	52,739	9.1%	11	0.0%
3	Tees and Hartlepool	49,779	8.6%	0	0.0%
4	Southampton	43,815	7.5%	716	2.9%
5	Forth	36,681	6.3%	110	0.4%
6	Milford Haven	35,496	6.1%	379	1.5%
7	Liverpool	32,258	5.5%	173	0.7%
8	Felixstowe	25,685	4.4%	15	0.1%
9	Dover	25,144	4.3%	14,433	58.2%
10	Sullom Voe	16,573	2.9%	0	0.0%
11	Medway	15,417	2.7%	0	0.0%
12	Belfast	13,416	2.3%	0	0.0%
13	Hull	12,497	2.1%	1,010	4.1%
14	Clyde	12,063	2.1%	0	0.0%
15	Bristol	11,178	1.9%	0	0.0%
16	Orkney	10,592	1.8%	0	0.0%
17	Portsmouth	3,961	0.7%	2,084	8.4%
18	Holyhead	3,468	0.7%	2,138	8.6%
	Total of 18 ports	467,043	80.3%	21,132	85.2%
	UK	581,504	100.0%	24,800	100.0%

Source: Department for Transport (2008)

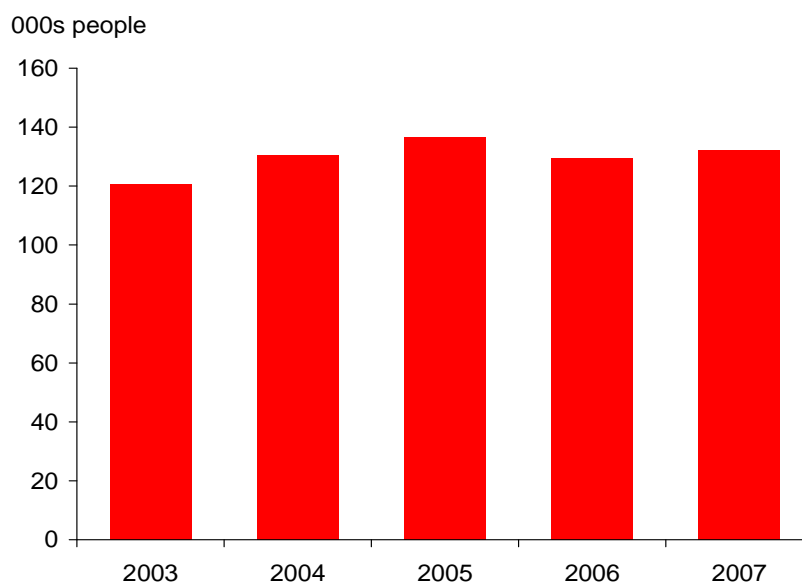
¹¹ The industries we have selected as comprising port activities are shown in Table 1 in Appendix 1. The choice has been informed by those industries selected in Department for Transport (2005) study on all UK ports and Fischer Associates (2008) study on the Mersey. It is significantly wider than the Department for Transport (2005) study as this was focussed on jobs 'directly related' to port operations (i.e. the mode switch process of moving freight or passengers between land and water, but including the administrative and regulatory jobs as well as operational ones), and only included other employment on port estates (such as ship repair, other industry, or supporting services such as catering) as 'indirectly related', 'partially related' or 'unrelated' activities. The electoral wards used for each port are listed in Table 2 in Appendix 1.

Grossing up to a total for the UK ports sector from a sample of large ports has one potential disadvantage. It may misrepresent the non-sampled ports (19.7% by freight tonnage or around 142 by number of commercial ports) if there are marked differences in the type of activities large and small ports undertake. This may be the case if large ports focus on freight and passengers, while smaller ones focus more on recreation and maintaining smaller scale but important services like ferry links to island communities.

For some of the public sector occupations in ports (for example, customs officers) it is possible to obtain more accurate information from other government sources. The National Audit Office (2008) reports HM Revenue & Customs (HMRC) had 4,500 staff working for the UK Border Agency on detection. If we split these in proportion to the volume of imports into the UK that comes via ports, this suggests there were 3,375 people working as custom officers at UK ports in 2007. Border & Immigration Agency (2007) reports a total of 8,700 full time equivalent staff were employed in Border Control and Migration. Given ONS (2008) reports air travel accounted for 75% of all arrivals into the UK, we assume 2,175 of the UK Border Agency's staff are employed in ports.

On this basis, we estimate ports employed 132,000 people in 2007 (Chart 3-1). Of these, around 90% were full time and 10% part time. To give a sense of scale, 132,000 jobs corresponds to 0.5% of total employment in the UK. In 2007, employment in ports stood 2,500 above its level in 2006, still below its level of 137,000 in 2005.

Chart 3-1: Employment in the ports industry in the UK



Source : Oxford Economics

Our estimate of 132,000 employees is in the region of those calculated by other studies. The narrow Department for Transport (2005) estimate of what constitutes port-related activity used to calculate accident rates statistics is 74,000 full time equivalent people. If the five individual ports studies (Belfast, Bristol, Dover, Liverpool and London) which we are aware of and have comparable data are grossed

up to come to a UK-wide figure based on their share of total freight, total employment in ports in the UK would equate to 216,000 people. However, this figure would represent a combination of both full-time employment and headcount data.

An alternative way of gauging the size of the ports industry's direct impact on employment is to compare it to other industries which employ similar numbers of people (Chart 3-2). On this basis ports employ slightly more people than furniture manufacturers (110,000), travel agencies and tour operators (115,000), treatment and coating of metals (117,000) and gaming, betting and other recreational activities (132,000). They employ slightly fewer people than adult education and training (145,000), printing and related services (158,000), publishing (166,000) and manufacturers of plastic products (180,000).

Chart 3-2: Employment in various industries in 2007

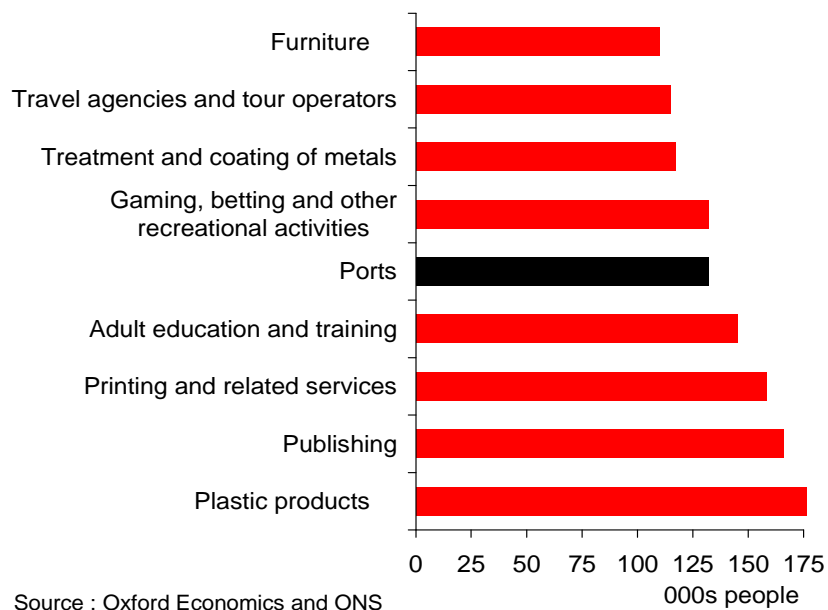
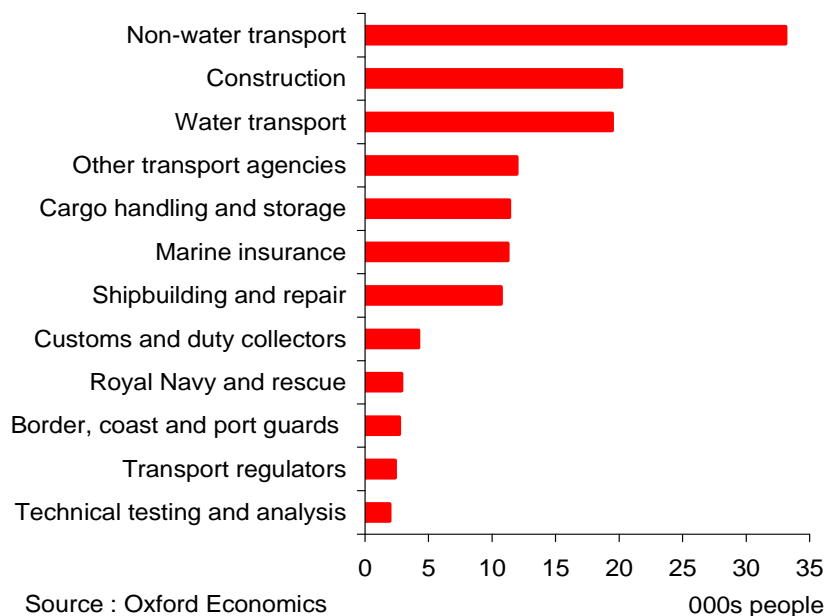


Chart 3-3 shows the industrial breakdown of employment in ports. Reflecting their role as places where freight and passengers switch between water-based modes of transport to land-based forms (roads or rail), almost half of the people who work in ports (49% or 65,000) work in transport or transport-related activities. Non-water transport, water transport and other transport agencies rank first, third and fourth in importance. Perhaps unsurprisingly cargo handling and storage (which involves the movement of freight between transport modes) ranks fifth in importance with 11,000 jobs.

Chart 3-3: Employment in ports in 2007 by industry



3.3. Contribution to GDP

Gross Domestic Product (GDP) is the main measure of the level of economic activity in a region or country in a given time period. It is the indicator used by economists to determine the rate of growth of the economy and when it enters recession. It is commonly estimated using the “output approach” which measures the sum of the gross value added (GVA) created through the production of goods and services within the economy. GVA refers to the difference between an industry’s total pre-tax revenues and total brought-in costs (i.e. costs excluding wages and salaries) adjusted for any changes in stocks.

To calculate the GVA contributed by the ports sector to the UK economy, we have multiplied the number of employees in each industry operating within the ports sector by the average productivity of employees working in that industry. The calculation is undertaken at the 4 digit SIC level.¹² The labour productivity estimates are sourced from the ABI results for Great Britain, dividing gross value added by employment for each industry.

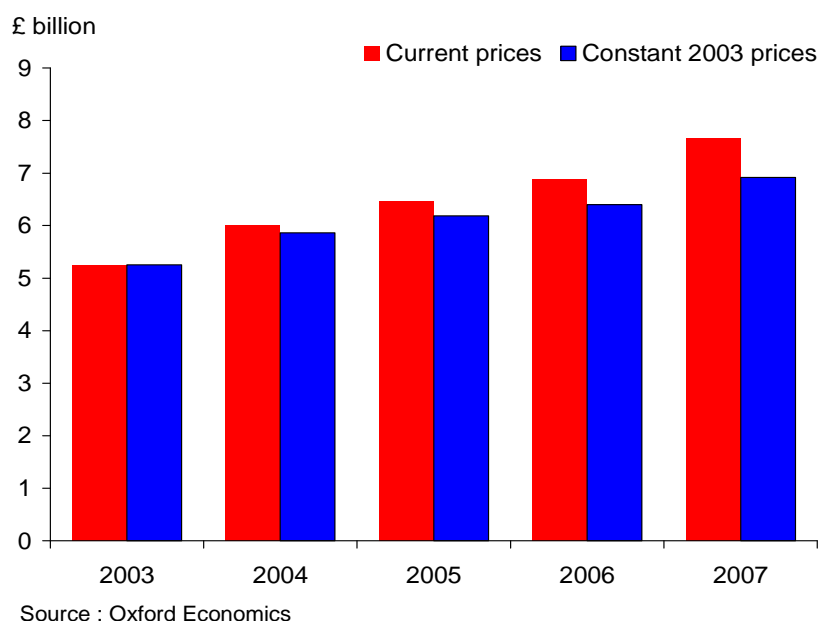
In 2007, we estimate the ports sector contributed £7,660 million in GVA to UK GDP (Chart 3-4). This is 0.5% of the total output of the UK economy. There is only one study we are aware which results are directly comparable to our estimate of the ports sector’s contribution to UK economy. The Crown Estate (2008) report estimates the ports sector contributed £5,045 million in GVA in 2005. This is some 28% lower than our own estimate of £6,475 million in 2005. The Crown Estate’s (2008) estimate is

¹² Where the ONS does not publish the information required to calculate productivity at the 4 digit SIC code level in the ABI, we use the appropriate 3 digit code.

calculated by scaling up Associated British Ports (ABP) staff costs and profits in 2005 by ABP's share of employment in the Department of Transport's (2005) estimate of total UK port employment.

The contribution of ports to total UK GDP has increased rapidly over the last few years. In nominal terms, ports' GVA increased by an average of 10% a year between 2003 and 2007 (red bars in Chart 3-4). If we ignore the effects of rising prices, ports' GVA has still increased by an average of 7% a year (blue bars in Chart 3-4). This is a faster rate of growth than the whole economy which has averaged 3% a year (in real terms) over the same time period. It compares to an average growth in freight (by tonnes) of 1% a year and average declines in international passenger traffic of -2% a year over the same time period.

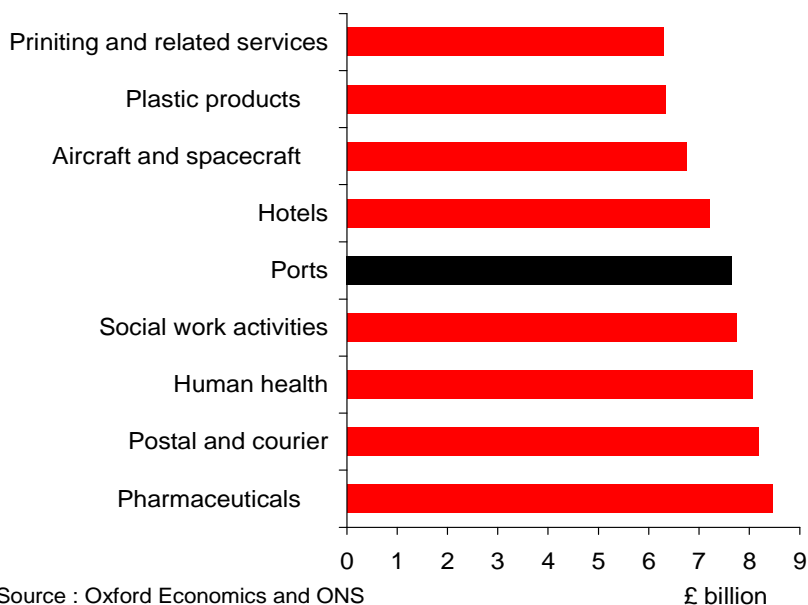
Chart 3-4: The ports industry's gross value added (in current and constant 2003 prices)



As with employment, another way to try to gauge the importance of the ports sector is to look at which industries contribute a similar amount of GVA to the UK economy. In 2007, ports created slightly more GVA than the hotels sector, the manufacture of aircraft and satellites, plastic products and printing (Chart 3-5). Ports contributed slightly less than social work activities, human health activities, postal and courier services and the pharmaceutical sector.¹³

¹³ Social work activities includes homes for blind, disabled and elderly, hostels for the homeless, orphanages, adoption services, marriage and family guidance, nursery's, crèches and day care for children and other. Human health activities include hospitals, doctors, nurses, ambulance service, clinics, school health service, health centres and other.

Chart 3-5: Various industries' contribution to UK GDP in 2007



3.4. Tax receipts

The ports sector pays a number of different types of taxes to the Exchequer. It directly pays corporation tax on its profits and Council tax on the buildings within the port estate. Through its payment of wages to its staff, it directly contributes income tax and employee and employer National Insurance Contributions (NICs). While port employed staff pay VAT and other indirect taxes when they spend their wages and Council tax on any domestic property they may own or rent.

To estimate of the amount of employment taxes (income and NICs) ports pay, data on average gross earnings employees receive in each industry in the ports sector (Chart 3-3) in 2007 have been sourced from the ONS' Annual Survey of Hours and Earnings (ASHE).¹⁴ This is combined with income tax and National Insurance Contribution allowances and rates for 2007 from HMRC. Jones (2008) shows the tax rates different households in the income distribution pay in 2006/7. We calculate VAT and other indirect taxes and workers' Council tax payments by matching port workers' gross earnings to these average tax rates. Figures on Council tax paid by firms within ports are sourced from UK Major Ports Group, scaled up for all ports. The corporation tax estimates are constructed by calculating the average profitability of each employee by industry.¹⁵ This combines profitability data from the ONS Input-Output analyses and the ONS ABI employment numbers. We then multiply the profit per person by the numbers employed in each in industry in the port to get total profits and apply the 2007

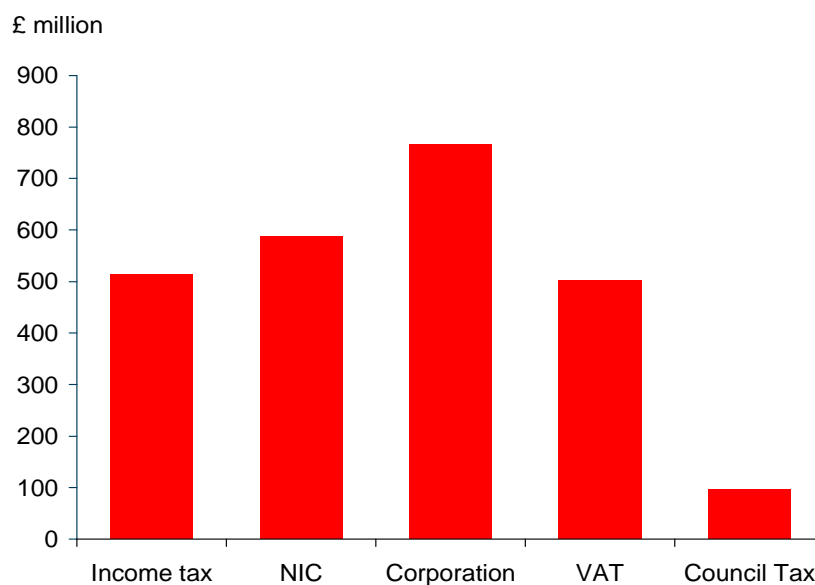
¹⁴ Where information on the average earnings in the appropriate 4 digit SIC code is suppressed or unavailable, the broader 3 digit (then 2 digit) codes is used.

¹⁵ We have included estimates for capital allowances in this calculation and assumed that half of businesses pay tax at the higher corporation tax rate.

corporation tax rate.

In total, the ports sector is estimated to have contributed £2,970 million in tax receipts in 2007 (Chart 3-6). The largest generator of tax receipts is corporation tax (£950 million), followed by employer and employee NIC contributions (£730 million) and income tax (£640 million).

Chart 3-6: The direct contribution of the UK ports sector to the Exchequer in 2007



Source : Oxford Economics

3.5. Summary

- In 2007, we estimate ports directly employed 132,000 people. To give a sense of scale, this corresponds to 0.5% of total employment in the UK. Ports employ slightly more people than furniture manufacturers, travel agencies and tour operators, the treatment and coating of metals industry and gaming and betting industry.
- In 2007, we estimate the ports sector directly contributed £7,660 million in GVA to UK GDP. This is 0.5% of the total output of the UK economy. It is slightly more than the hotels sector and aircraft and spacecraft manufacturing industries.
- The ports sector is estimated to have contributed £2,970 million in tax receipts in 2007. The largest generator of tax receipts is corporation tax (£950 million), followed by employer and employee NIC contributions (£730 million) and income tax (£640 million).

4. Indirect and induced impacts

The ports sector does not exist in isolation. Ports purchase inputs of goods and services from many parts of the UK economy. Port workers spend their wages at retail and leisure outlets, purchasing imported and domestically produced goods. Both effects generate economic activity, employment and taxation. This chapter summarises the impacts in the wider UK economy.

4.1. Contribution to GDP and employment

The indirect impacts of the port sector are the effects it has on its supply chain. They occur predominately through ports' purchases of goods and services. This spending generates output, profits and employment at suppliers, whose own spending on inputs creates second round effects. The activity and employment generated contributes to the tax base locally and nationally.

To calculate the size of the indirect effects we multiply the direct GDP of each industry in the port sector by a supply chain (or Type I) multiplier derived from ONS (2002).¹⁶ Where there is not a direct match between a multiplier and an industrial sector, the nearest broader industry multiplier has been used. The results for all these individual industries are then aggregated to estimate the value added contribution to GDP that the ports sector's purchases of inputs generates in its UK supply chain. To calculate the number of people employed in the ports' supply chain we divide the estimate of indirect GDP by a figure for average whole economy productivity (£44,556 per person in 2007) sourced from ONS data.

In 2007, we estimate ports spending on inputs of goods and services made a value added contribution to GDP of £6,680 million in their supply chain. A total of 150,000 people were required to produce this output.

The induced effects of the ports sector measure the impact of the consumer spending by those employed in ports or directly in their supply chain. These effects will initially occur at the retail and leisure outlets where these employees spend their wages. This is typically close to where they live. But there will also be second round effects in the retailers' and leisure outlets' supply chains.

The scale of the induced effects are estimated using Oxford Economics' UK macroeconomic model. This is an extensive set of statistical relationships that characterise the complex interactions that occur within the UK economy. The scale of the induced effects are calculated by increasing income from employment and tracing the impact through the economy until it eventually affects gross value added and employment.

¹⁶ A Type I multiplier shows the activity generated by the sectors spending on inputs of goods and services. It measures the size of the direct and indirect effects divided by direct effects.

The induced effects of the ports sector are estimated to contribute £3,580 million to UK GDP. It creates 80,000 jobs.

4.2. Multiplier tax contributions

To the extent that the ports sector supports employment and economic activity at other firms, both in its supply chain and from induced spending, it also supports tax contributions. We follow an analogous approach to calculating these as for the direct effect tax contribution. But we have less information as we do not know the exact industrial breakdown of ports' supply chain or which industries' goods and services are purchased by their staff. So the income tax, VAT and indirect, Council tax payments per person are based on whole economy average earnings in 2007 from the ONS ASHE data. The tax payments per person are multiplied by the employment estimates for indirect and induced effects discussed in Section 4.1. Corporate taxes are based on the profitability of employees across the whole economy.

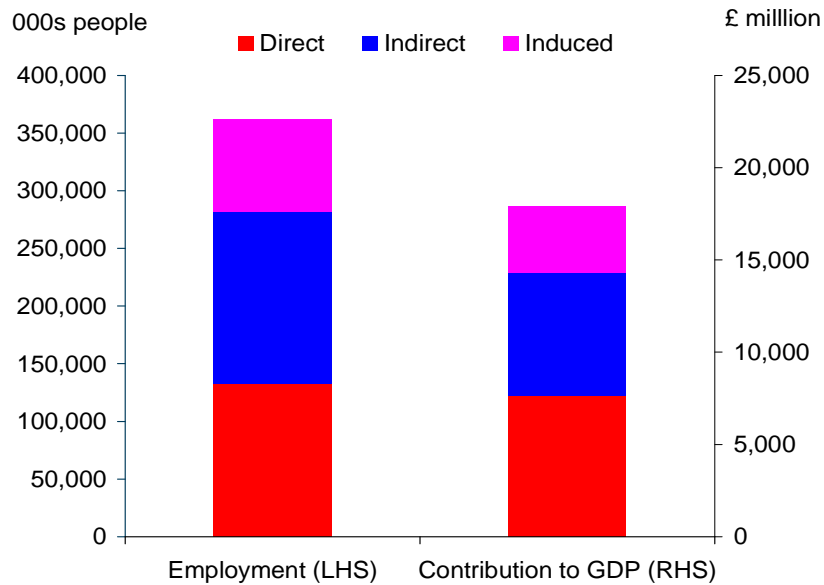
We estimate the tax receipts generated by the port sector's supply chain to be £2,680 million. The induced tax effects are £1,440 million.

4.3. Total impact of the ports sector

In total, we estimate the UK ports sector supported 363,000 jobs in 2007 (Chart 4-1). This is 1.3% of all employment in the UK. Of the total numbers of jobs supported, 132,000 (or 36%) are directly employed in the ports themselves. An additional 150,000 (or 41%) are employed in ports supply chain. The consumer spending of ports staff and those directly employed in its supply chain generates another 80,000 jobs (or 22%).

In total, the ports sector supports £17,910 million in GDP in the UK (or 1.2% of total). Of this, £7,660 million is generated by the ports themselves (Chart 4.1). The ports indirect (or supply chain) contribution to GDP is estimated to be £6,680 million. The induced (or consumption) impacts are estimated be worth £3,580 million.

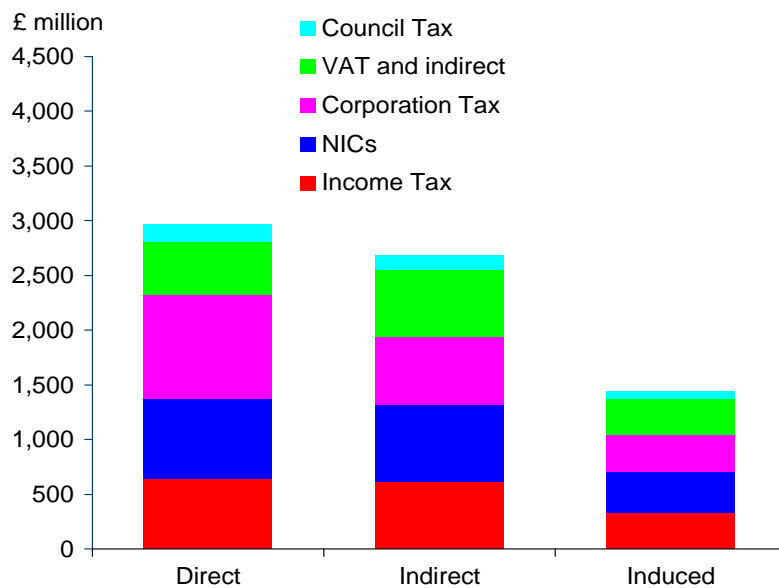
Chart 4-1: The direct, indirect and induced contribution of the UK ports sector



Source : Oxford Economics

The ports sector is estimated to contribute £7,090 million to the Exchequer in tax receipts. Of this, £2,970 million (or 42%) originates from the ports themselves (Chart 4-2). A further £2,680 million (or 38%) originates from the activity it generates in its supply chain. Lastly, induced payments comprise £1,440 million (or 20% of total). By type of tax, the activities the ports sector supports contribute the most through corporation tax (£1,920 million), followed by National Insurance Contributions (£1,810 million) and income tax (£1,580 million).

Chart 4-2: The contribution of the UK ports sector to the Exchequer in 2007



Source : HMRC, ONS and Oxford Economics

4.4. Multipliers

The results of economic impact studies are sometimes presented as multipliers. This facilitates comparison across sectors of differing sizes. There are two types of multipliers. The Type I (or indirect) multiplier shows the impact on the supply chain as a result of the port sector's purchases of inputs. The Type II (or induced) multiplier shows the additional impacts of the consumer spending of those who derive their incomes from the direct and supply linkage impacts of the port sector. The formulas for their calculation are detailed below.

$$\text{Equation 1} \quad \text{Type I Multiplier} = \frac{\text{Direct effects} + \text{Indirect effects}}{\text{Direct effects}}$$

$$\text{Equation 2} \quad \text{Type II Multiplier} = \frac{\text{Direct effects} + \text{Indirect effects} + \text{Induced effects}}{\text{Direct effects}}$$

Table 4-1 shows the results in the form of Type I and II multipliers. Ports Type II employment multiplier (2.74) is higher than its' tax (2.39) and GVA (2.34) equivalents. This means ports have a larger knock-on effect on employment in the rest of the economy, than tax and GVA. To illustrate, for every 100 people employed in the ports sector in the UK, another 174 jobs are supported elsewhere in the economy. This compares to £134 million worth of GDP generated in the rest of the economy for every £100 million of GDP created by ports. This is because the industries within the ports supply chain and the wider UK economy are less productive than those in the direct ports sector.

Table 4-1: Results of the study presented in multiplier form

	Employment	GVA	Tax
Type I	2.13	1.87	1.90
Type II	2.74	2.34	2.39

Source: Oxford Economics

4.5. Summary

- In 2007, ports contributed £17.9 billion to UK GDP. This is 1.3% of the country's economic output. It includes output created directly in ports, through multiplier effects in the supply chain and through consumer spending effects.
- In 2007, the ports sector supported 363,000 jobs in the UK economy. This was 1.2% of total employment. These jobs include those directly in ports, in ports' supply chain and in the retail and leisure outlets where port workers spend their wages.
- The ports sector is estimated to contribute £7,090 million to the Exchequer in tax receipts. Of this, £2,970 million (or 42%) originates from the ports themselves. A further £2,680 million (or 38%) originates from the activity it generates in its supply chain. Lastly, induced payments comprise £1,440 million (or 20% of total).

5. Catalytic impacts

The overall impact of ports on the UK economy extends far beyond the direct, indirect and induced contributions to GDP, employment and tax revenues that were discussed in the previous chapter. This chapter looks at a range of industries whose existence depends on ports. It continues by investigating the more recreational aspects of ports.

5.1. Industries enabled by ports

Ports enable a range of other industries to operate. Without ports these sector would not be able to function. The industries ports enable can be split into three broad types. First, the industries which use ships to access the sea, or ships to service their facilities at sea. Second, those industries which are heavily reliant on imports of bulky raw materials or exports of finished goods. Third, those which are reliant on the natural or historic heritage associated with the coastline, ports or shipping.

This is a relatively narrow selection. In 2007, 30% of all the goods and services consumed in the UK were imported. Just over a quarter (26%) of all domestically produced goods and services were sold outside the UK. Over 95% of imports and exports by volume and 75% by value pass through the country's ports. To some extent any industry which imports or exports goods has a dependency on ports. Similarly, consumer choice in retail outlets would be radically reduced if ports were not there to permit the import of foreign food and consumer goods.

5.1.1. Ship-based industries

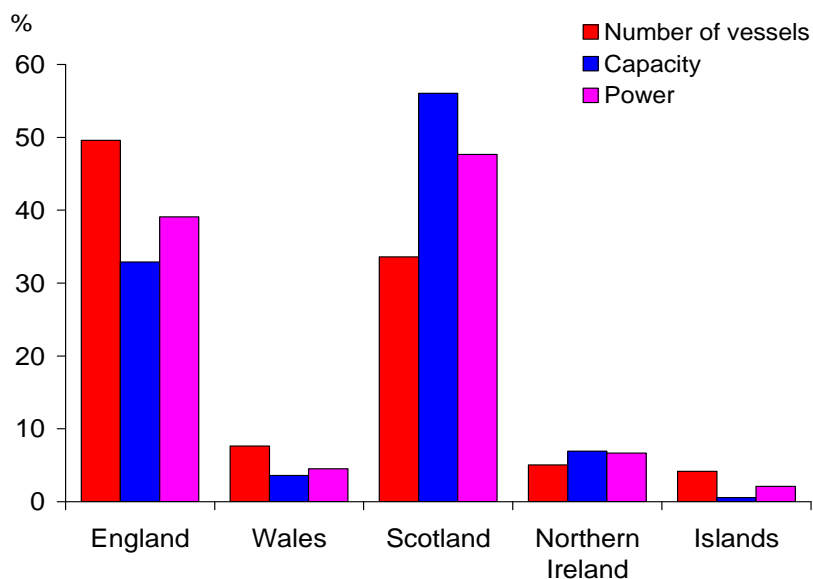
The first group of industries facilitated by ports are those which use ships for their day-to-day functioning.

The Marine and Fisheries Agency (2007) estimate that there were 12,700 fishermen in the UK in 2007. They work on 6,670 fishing vessels. Of these, 3,307 (or 50%) work out of ports in England, 2,240 (34%) in Scotland, 509 (8%) in Wales, 336 (5%) in Northern Ireland and 278 (4%) in the Islands (Chart 5-1). The vessels working out of Scottish ports have the highest share of capacity and power. The three largest ports by value of fish landed in 2007 are Peterhead (£94.0 million), Fraserburgh (£53.0 million) and Lerwick (£48.9 million). All of which are located in Scotland. The fishing industry contributed £363 million to GDP in 2007. An additional 17,000 people were employed in the fish processing industry, which contributed £1,843 million to GDP.

Ports are also used by the UK marine aggregate dredging fleet. This industry produces sand and gravel dredged from the sea bed. According to British Marine Aggregate Producers Association

(2008)¹⁷ 23.2 million tonnes of marine aggregate was produced in 2007. Of this 14.5 million tonnes was landed in the UK and 6.7 million tonnes delivered to the European market. In 2007, the industry employed 547 people as ships crew and in office-based roles in 2007. The Crown Estate (2008) estimates it generates about a £114 million contribution to UK GDP each year.

Chart 5-1: Share of the UK fishing fleet in 2007



Source : Marine and Fisheries Agency (2008)

In 2007, the extraction of oil and gas contributed £29.8 billion to UK GDP. Ports play an important role in servicing the North Sea energy industry. Unfortunately, it is difficult to quantify the size of this role. Oil & Gas UK (2008)¹⁸ estimate 230,000 people were employed in the North Sea oil and gas industries' wider supply chain. An additional 89,000 are employed due to the oil workers induced spending. Some of those will be located in ports. Predominately, in Aberdeen and those ports which are closely linked to the oil and gas industries.

5.1.2. Industries reliant on bulk imports or exports

A range of other industries are enabled by ports as they are reliant on imports of bulky raw materials by sea. Alternatively, they are reliant on ports to export finished manufactures. Typically, they locate their plants on the port estate or very close to it. To investigate which industries these are, a range of interviews were undertaken with the representative of major ports. Interviewees were asked which industries present on their port estate were enabled by the ports presence. The selection by SIC code is shown in Table A-3 in the Appendix. We take the same approach to quantifying their size as was

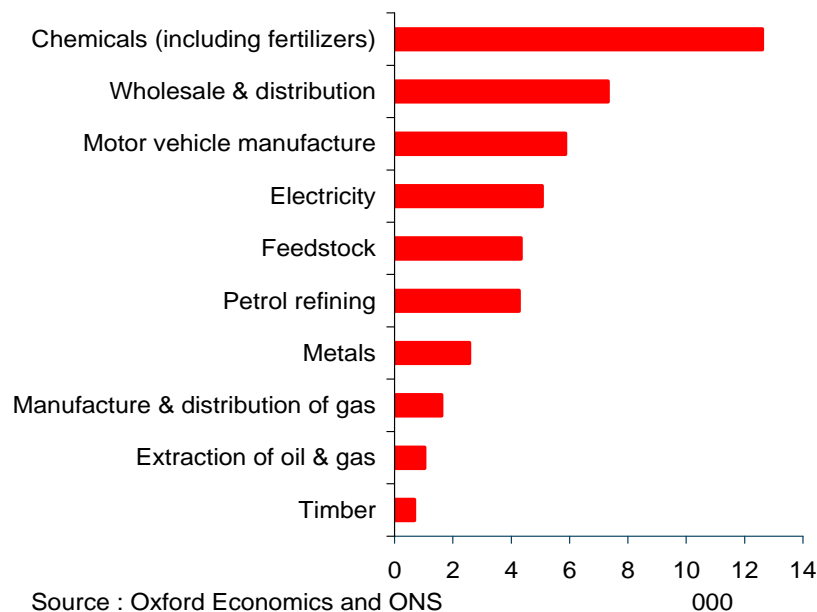
¹⁷ British Marine Aggregate Producers Association (2008), 'Strength from the depths', November.

¹⁸ Oil & Gas UK (2008), 'Economic report 2008'.

taken for the estimation of the direct effects. This means we download employment data from the ABI for the industries selected in wards within the largest 18 ports. This figure is then grossed up on the basis of their share of tonnage to get a figure for all UK ports.

In total, we estimate a further 45,000 jobs were reliant on the bulk importation of raw materials or export of finished goods in 2007. The breakdown is shown in Chart 5-2. The three largest employers were chemicals manufacturers (including fertilizer) which employed 13,000 on UK ports' estate, wholesale and distribution (7,000) and motor vehicle manufacturers (6,000). Multiplying by the average productivity of workers in each industry suggests these enabled firms contributed £6.9 billion to GDP. The high figure reflects the capital intensive nature of many of the industries.

Chart 5-2: Industries enabled by ports in 2007



5.2. Ports as places for recreational activities

Ports, particularly the smaller ones, play a significant role in providing recreational opportunities for the UK population. These come in various guises.

Ports facilitate watersports. Table 5.1 shows up to 2.7 million people (or 4.7% of the population) participated in sea-based watersports in 2007. The figure is a maximum as some of the sports activities can also be undertaken on inland water. Also the same individual may participate in more than one activity. It is difficult to quantify the employment or GDP contribution from watersport activities. In part, this reflects the aggregated nature of ONS statistics. We have included boat building in ports in the direct effects (as it is not broken down by type of boat).

Ports are also heavily connected with the UK maritime heritage. Over the centuries ports have played a significant role in naval warfare and the movements of goods, people and ideas. Van Hooydonk (2006) highlights the historical relevance of London and Liverpool ports as “gateways to the British Empire”.¹⁹ He stresses the importance of the architecture associated with the port authority, industrial waterfronts and monuments in port cities that derive their historic prosperity from ports.

Table 5-1: Participation in sea-based watersports in 2007

Sporting activity	Average percentage of the UK population	Maximum number of adults
Small sail boat activities	1.16	639,000
Power boating	0.72	410,000
Yacht cruising	0.82	465,000
Water ski-ing	0.78	444,000
Windsurfing	0.48	285,000
Small sail boat racing	0.48	284,000
Yacht racing	0.32	196,000
Total	4.76	2,723,000

Source: The Watersports & Leisure Participation 2007 survey

Again, it is relatively difficult to quantify the number of tourists that visit ports, particularly when they are not required to purchase a ticket to gain access to the waterfront. However, we can measure the number of people employed in museums, the preservation of historical sites and buildings on the port estate (using the ABI employment data and the same methodology used for direct effects). On this basis, we estimate nearly 3,000 people were employed in museums in ports in 2007. Large numbers are employed in Liverpool, London and Portsmouth. Liverpool has a number of museums which emphasize its role in as a major port in the British Empire, in particular with trade to the United States. Portsmouth contains a number of historical ships which have played a part in naval warfare including the HMS Victory, the Mary Rose, HMS Warrior, and HMS Trafalgar, as well as Royal Dockyards.

Ports, in particular some of the smaller ones, are attractive places to wander around. Tourists are attracted to the waterfront. This generates employment in bars, restaurant and shops on or close to ports and harbours. There are 36,000 people employed in restaurants and 27,000 in bars and pubs in ports. They generate a £870 million contribution to GDP.

¹⁹ Van Hooydonk, E, (2006), ‘Soft values of seaports: A plea for soft values management by port authorities’, University of Antwerp.

5.3. Summary

- A number of industries are dependent on ports for their existence. These include the fishing, marine dredging and North Sea oil and gas servicing industries. The first two employ over 13,000 people, generating a £1,960 million contribution to GDP.
- Industries heavily reliant on the import of bulk raw materials or export of finished goods are also enabled by ports. We estimate these employ 45,000 people on the port estate and contribute £6.9 billion to GDP in 2007.
- Ports also play a significant role in recreation. Up to 2.7 million people (or 4.8% of the population) participated in sea-based watersports.
- Ports are also an attractive place to visit. In 2007, nearly 3,000 people were employed in museums, 36,000 in restaurants and 27,000 in bars in ports and harbours.

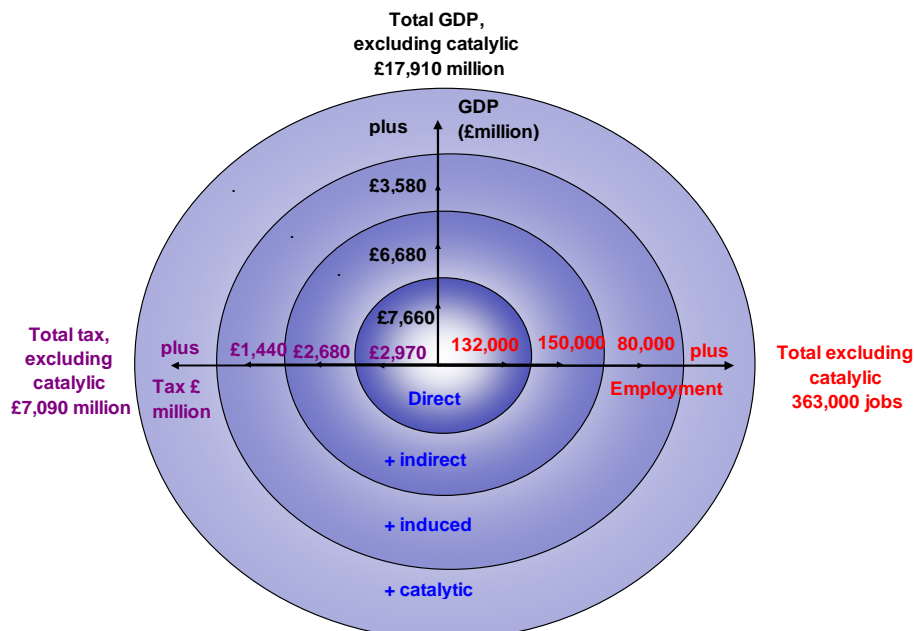
6. Conclusions – summary of overall impact

This report sets out the contribution of the UK ports sector to the UK economy. Taking into account the direct, indirect and induced impacts, we estimate that the UK ports sector in total:

- supported 363,000 jobs in 2007.
- contributed £17.9 billion to UK GDP in 2007.
- contributed £7.1 billion to the Exchequer.

The breakdown of the value added and tax contribution to the UK economy is summarised in Chart 6-1.

Chart 6-1: Contribution of the UK ports sector to the UK economy in 2007



The overall contribution of the UK ports sector is far wider through impacts such as:

- enabling industries dependent on the import of bulky raw materials or exports of finished goods;
- enabling ship-based industries, for example fishing and marine dredging;
- facilitating sea-based watersports;
- Attracting tourists to visit the UK's maritime heritage sites and relax in waterfront bars and restaurants.

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APPENDIX

Table A-1: Industries included in our definition of the ports sector

4 digit SIC code	Name of four digit SIC code	Example of activities included
3511	Building and repairing of ships	Building and repair of ships for work purposes (eg hovercraft, passenger and freight ferries, fishing boats, etc);
3512	Building and repairing of pleasure and sporting boats	Building and repair of boats for pleasure (eg. Sailboats, yachts, power boats, etc)building;
4521	General construction of buildings and civil engineering works	Construction and laying of offshore pipelines;
4524	Construction of water projects	Dredging; Harbour, marina, dry dock or lock construction;
6010	Transport via railways	Freight transport by inter-urban railways
6024	Freight transport by road	Road haulage of freight (including in tankers or refrigerated containers);
6030	Transport via pipelines	Gas, liquid or oil transport via pipelines;
6110	Sea and coastal water transport	Excursion, cruise or sightseeing boat operations; Hovercraft, passenger or freight ferries;
6120	Inland water transport	Passenger or freight ferry (on river or estuary);
6311	Cargo handling	Cargo, container and passenger bag handling; Stevedoring;
6312	Storage and warehousing	Frozen and refrigerated goods storage services; Bulk liquid and gases storage services; Grain silos and warehouse operation;
6321	Other supporting land transport activities	Goods handling station operation;
6322	Other supporting water transport activities	Cargo and passenger terminal services; Dock and harbour authorities; Harbour operation; Navigation activities; Pilotage activities;
6340	Activities of other transport agencies	Customs clearance agents activities; Packer and shipper; Shipping agent or broker; Transport documents issue and procurement;
6603	Non-life insurance	Marine insurance;
7122	Renting of water transport equipment	Boat, ship or water transport hire for passengers or freight;
7430	Technical testing and analysis	Cargo, ship or marine insurance surveyors; Ships certification; Pipeline and ancillary equipment testing activities;
7511	General (overall) public service activities	Customs administration; Duty and tax collection;
7513	Regulation of and contribution to more efficient operation of business	Fishing and transport services administration and regulation;
7522	Defence activities	Naval and sea rescue; Royal Marines; Royal Navy establishments;
7524	Public security, law and order activities	Border guards; Coast guards;

Source: Oxford Economics and ONS

Table A-2: Electoral wards chosen for each of the eighteen ports

Ports	Wards
Bristol	Avonmouth, Easton-in-Gordano, Gordano, Pill
Clyde	Anderston, Androssan South, Dalmuir/Central, Drumoyne, Hayburn, Ibrox, Kelvingrove, Kingston, Largs South and Fairlie, Victoria Park, Ward 10, Ward 16, Ward 5, Ward 7, Ward 8, West Kilbride, Whitecrock, Yoker.
Dover	Castle, Maxton, Elms Vale and Priory, St Margaret's-at-Cliffe, Town and Pier.
Felixstowe	Felixstowe South, Felixstowe West.
Forth	Aberdour and Burntisland West, Auchtertool and Burntisland East, Craigiebank, Dundas/Kerse, East Port, Granton, Inverkeithing West and Rosyth South, Methil, Newhaven, Portobello, Tilbury Riverside & Thurrock Park, Trinity, Zetland.
Grimsby	Barton, Burton upon Stather and Winterton, East Marsh, Ferry, Freshney, Immingham, West Marsh, Wolds.
Holyhead	Holyhead Town, Morawelon, Porthyfelin.
Hull	Marfleet, South West Holderness
Liverpool	Abercromby, Birkenhead, Church, Everton, Linacre, Seacombe, Tranmere, Vauxhall.
London	Beckton, Belvedere, Blackwall & Cubitt Town, Canning Town South, Canvey Island West, Corringham and Fobbing, Cremorne, Custom House, Erith, Fairfield, Grays Riverside, Greenhithe, Greenwich West, Joyce Green, Littlebrook, North End, Northfleet North, Pelham, Peninsula, Rainham and Wennington, River, Riverside, Royal Docks, Sands End, South Hornchurch, St. Mary's Park, Stone, Stood Rural, Thames, Thamesfield, Thamesmead East, West Thurrock and South Stifford, Woolwich Riverside.
Medway	River, Sheerness East, Sheerness West.
Milford Haven	Hundleton, Milford:Central, Milford:East, Milford:Hakin, Milford:Hubberston, Neyland:West, Pembroke Dock:Central, Pembroke Dock:Llanion, Pembroke Dock:Market, Pembroke Dock:Pennar, St.Ishmael's.
Orkney Southampton	Berstane & Work, Pickaquoy, Shapinsay and Kirkwall Harbour Bargate, Dibden and Hythe East, Fawley, Blackfield and Langley, Freemantle, Furzedown and Hardley, Hythe West and Langdown, Marchwood, Millbrook, Redbridge, Titchfield, Totton East, Totton South, Warsash, Woolston.
Sullom Voe	Delting West
Tees & Hartlepool	Charltons, Dormanstown, Jackson, Middlehaven, Seaton, St. Cuthberts, St. Hilda, Stranton
Portsmouth	Charles Dickens, Nelson, Paulsgrove, St. Jude, St. Thomas.

Source: Oxford Economics

Table A-2: Select group of industries enabled by ports

Industry
0501 : Fishing
1110 : Extraction of crude petroleum and natural gas
1120 : Service activities incidental to oil and gas extraction excluding surveying
1520 : Processing and preserving of fish and fish products
1752 : Manufacture of cordage, rope, twine and netting
2010 : Saw milling and planing of wood, impregnation of wood
2320 : Manufacture of refined petroleum products
2411 : Manufacture of industrial gases
2412 : Manufacture of dyes and pigments
2413 : Manufacture of other inorganic basic chemicals
2414 : Manufacture of other organic chemicals
2415 : Manufacture of fertilisers and nitrogen compounds
2416 : Manufacture of plastics in primary forms
2417 : Manufacture of synthetic rubber in primary forms
2420 : Manufacture of pesticides and other agro-chemical products
2430 : Manufacture of paints, varnishes and similar coatings, printing ink and mastics
2451 : Manufacture of soap and detergents, cleaning and polishing preparations
2911 : Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
2912 : Manufacture of pumps and compressors
2922 : Manufacture of lifting and handling equipment
2923 : Manufacture of non-domestic cooling and ventilation equipment
3320 : Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
3410 : Manufacture of motor vehicles
4011 : Production of electricity
4012 : Transmission of electricity
4013 : Distribution and trade in electricity
4021 : Manufacture of gas
4022 : Distribution of gaseous fuels through mains
5111 : Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods
5112 : Agents involved in the sale of fuels, ores, metals and industrial chemicals
5113 : Agents involved in the sale of timber and building materials
5114 : Agents involved in the sale of machinery, industrial equipment, ships and aircraft
5151 : Wholesale of solid, liquid and gaseous fuels and related products
5155 : Wholesale of chemical products
5190 : Other wholesale
2710 : Manufacture of basic iron and steel and of ferro-alloys
2721 : Manufacture of cast iron tubes
2722 : Manufacture of steel tubes
2731 : Cold drawing
2732 : Cold rolling of narrow strip
2733 : Cold forming or folding
2734 : Wire drawing
2741 : Precious metals production
2742 : Aluminium production

2743 : Lead, zinc and tin production
2744 : Copper production
2745 : Other non-ferrous metal production
2751 : Casting of iron
2752 : Casting of steel
2753 : Casting of light metals
2754 : Casting of other non-ferrous metals

Source: Oxford Economics