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Centre for Sustainable Road Freight

CHANGES IN RETAILING, MANUFACTURING AND THE INTERNATIONAL TRADE IN GOODS IN THE UK

Briefing Report

Technical Report: ENG-TR.038

30th January 2024

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University of Westminster

This briefing report has been produced as part of the Centre for Sustainable Road Freight (SRF – EPSRC grant number EP/R035148/1). Further details about the SRF project are available at: http://www.csrf.ac.uk/

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1. Introduction

This report provides insight into changes in retailing, manufacturing and the international trade in goods in the UK; each of these changes has implications for freight transport and warehousing operations. The report is intended to supplement other SRF briefing reports. It supplements the report into warehousing in the UK, providing greater insight into important developments in the UK economy that have affected warehousing demand (Allen and Piecyk, 2023). It also supplements the report international and international freight transport activity in the UK provided by official statistics, providing insight into economic changes and changes in goods flows that affect freight transport activity (Allen and Piecyk, 2024).

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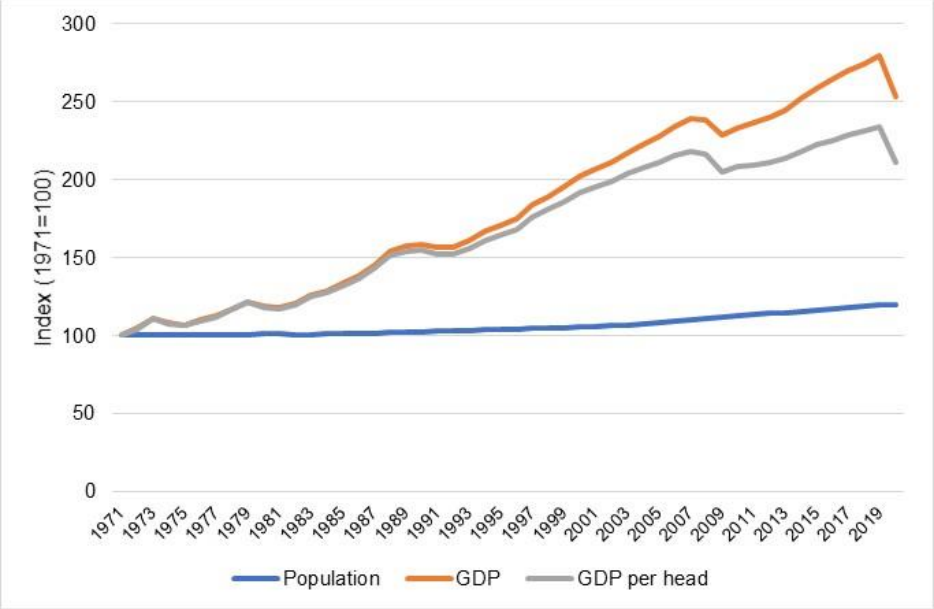
2. Changes in UK GDP, population, retail spending and retail market concentration

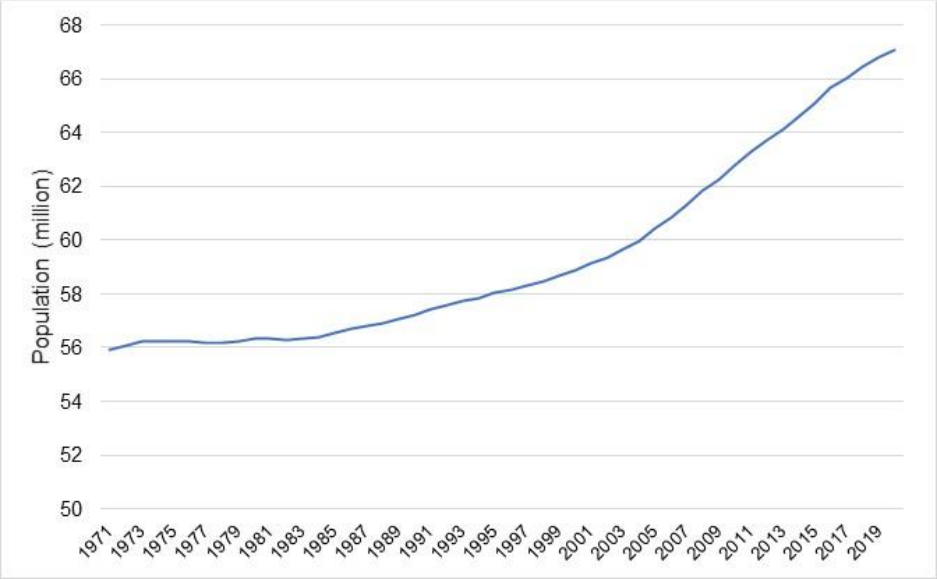
UK Gross Domestic Product (GDP) increased by 153% in real terms between 1971 and 2020 (see **Figure 1**). Over this same period, the UK population increased by 20% (see **Figure 2**). Some of this GDP growth was therefore attributable to population increase, with GDP per head increasing by 111% over this period. However, given that increases in GDP exceeded increases in GDP per head, this indicates economic growth in excess of that due solely to the rise in population (see **Figure 2**).

Figure 1: UK Index of population, GDP and GDP per head, 1971-2020 (1971=100)



Notes: GDP chained volume measures, seasonally adjusted.
Source: calculated from data in Office for National Statistics, 2021a, 2022a.

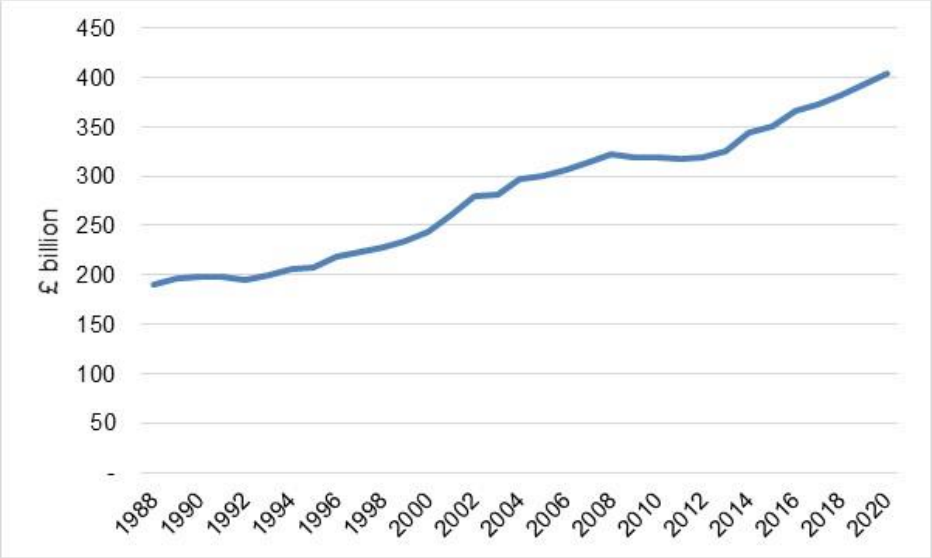
Figure 2: UK population estimates, 1971-2020



Note: based on mid-year population estimates.
Source: Office for National Statistics, 2021a.

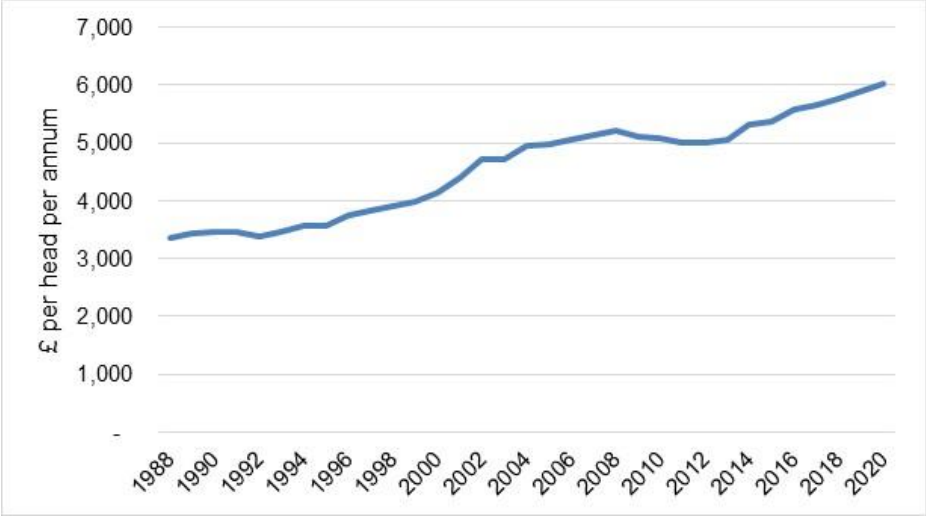
Total retail spending (excluding vehicle fuel) in the UK increased 109% between 1988 and 2020 at constant prices (i.e. taking inflation into account – see **Figure 3**). Non-store retail spending (i.e. online shopping) increased by 318% per head in constant prices over this same period reflecting its exceptional growth. This increase in retail spending was due to both increases in population and increases in spending per head. Analysis indicates that average retail spending per head at constant prices increased by 79% over this period (see **Figure 4**). Although not all UK individuals will have increased their retail spending at the same rate, with the greatest increases likely to have occurred among the more affluent, the data reflects the substantial average increase in expenditure in nominal terms on retail goods per person.

Figure 3: Total retail spending in the UK 1988-2020 (at constant prices)



Note: Retail spending excluding vehicle fuel at constant prices.
Source: calculated from data in Office for National Statistics, 2021a, 2022b.

Figure 4: Average retail spending per head per annum in the UK 1988-2020 (at constant prices)



Note: Retail spending excluding vehicle fuel at constant prices.
Source: calculated from data in Office for National Statistics, 2021a, 2022b.

Market share in many retailing sectors in the UK have become concentrated into the hands of a small number of businesses. This process began in the 1970s with retail markets becoming

increasingly concentrated over time as large, multiple retailers opened shops throughout the country. Grocery is the most concentrated retail market in the UK with the top eight grocery retailers in Britain accounting for 92.4% of grocery sales in the 12-week period to the end of January 2022 (Kantar, 2022). This concentration in UK retail sectors has resulted in the majority of retail goods flowing through the supply chains and logistics facilities of a small number of businesses, each of which handles substantial volumes of product.

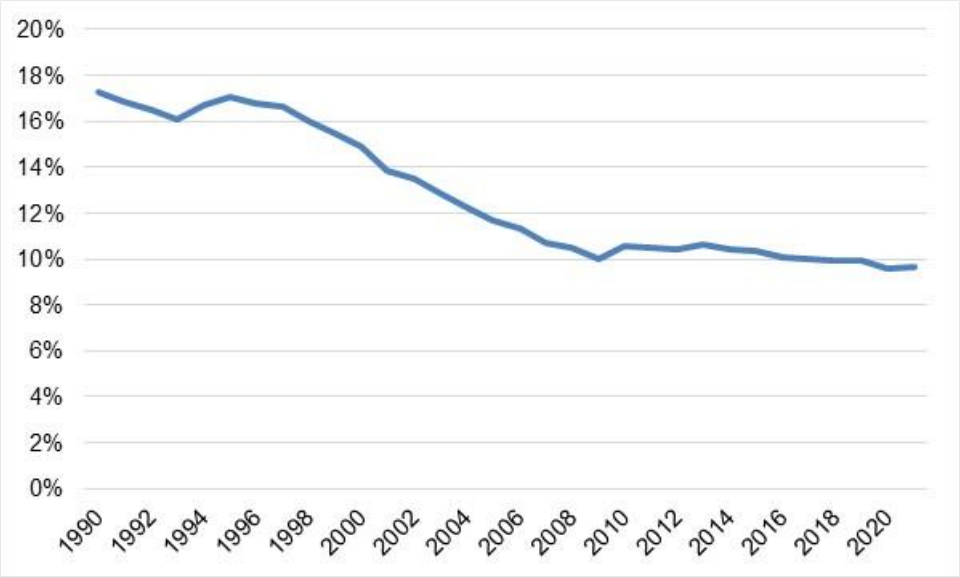
Over time, these multiple retailers have also taken greater control over the flow of goods in their supply chains to their physical shops and online fulfilment centres. Whereas several decades ago, manufacturers and wholesalers supplying these goods to retailers were responsible for the control of goods right up to deliveries to retail outlets, nowadays retailers take control for retail goods far further upstream in the supply chain, channelling them through major national and/or regional distribution centres (DCs) either operated by themselves or on their behalf by logistics providers. As well as increasing logistics efficiency and reducing logistics costs in UK retailing, it has also made it easier, quicker and less expensive from a logistics and procurement perspective to source goods from overseas manufacturers, often taking ownership and control of them in the foreign manufacturer's country either at the port or at the factory. The UK retailers are then responsible for the international transport of these goods to the UK which primarily takes place either via lift on, lift off container vessels (often used for longer distance movements) or through the use of powered HGVs or accompanied trailers making ferry crossing from mainland European ports.

The growth in the market share of major retailers over recent decades has influenced their decision about the amount of warehousing floorspace they require, where to locate these warehouses and the average size of these warehouses, which have increased over time.

3. Changes in UK manufacturing

The UK was one of the leading manufacturers in the world until a few decades ago. In 1950 this one third of the labour force was employed in the manufacturing sector and a further million were employed in coal mining (Coutts and Rowthorn, 2013). Whilst UK manufacturing output is still substantial and continues to grow in absolute terms, its growth rate became far less than emerging service sectors from the 1950s onwards. Despite total UK manufacturing growth being slow but relatively consistent (at an annual average rate of 1.4% between 1948 and 2013) some sectors of the manufacturing industry have experienced strong annual growth while others have not (Hardie and Banks, 2014). As a result of the relatively slow overall growth of the UK's manufacturing industry, it accounts for an ever-smaller share of UK economic output over time, accounting for 10% of UK Gross Value Added (GVA) in 2021 (see **Figure 5**). Employment has reduced considerably across the UK manufacturing industry since the mid-1970s as a result of the introduction of machinery and other technology. As UK manufacturing has diminished in its relative importance, the service sector has been expanding, with this referred to by some as the UK becoming a 'post-industrial' economy.

Figure 5: Manufacturing industry share of the UK's total economic output, 1990-2021

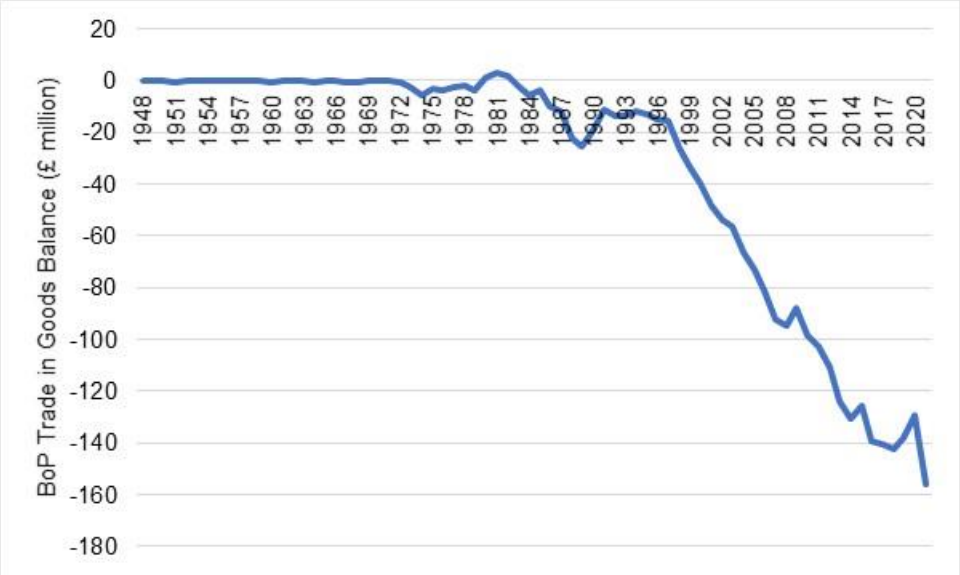


Note: Total economic output as measured by Gross Value Added (GVA) at current prices.
Source: calculated from data in Office for National Statistics, 2022c.

4. Changes in UK importation of goods and trade in goods deficit

Figure 6 shows the UK Balance of Payments (BoP) for trade in goods since 1948 (this is the difference between the value of goods exports and imports with the rest of the world). Given the higher growth rates in the UK service sector than in manufacturing and in growth in retail spending in recent decades, the UK has become increasingly dependent on the importation of all types of goods over time. This is reflected in a UK Balance of Payments trade deficit in goods that has grown over time. UK BoP for trade in goods first entered deficit in the 1970s (i.e. with the value of imports exceeding exports) and this deficit has continued to increase ever since, reaching £156 billion in 2021 in current prices.

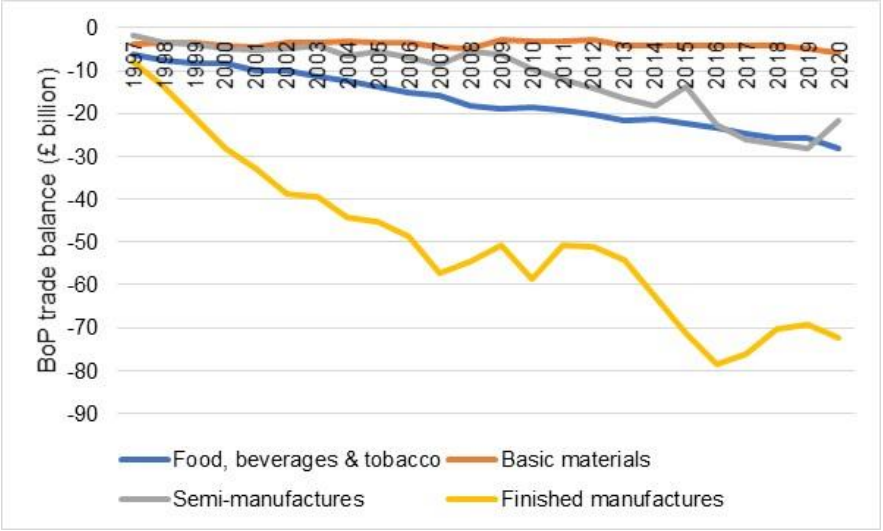
Figure 6: UK Balance of Payments international trade in goods at current prices, 1948-2021



Source: Office for National Statistics, 2022d.

Figure 7 shows the UK Balance of Payments international trade in goods deficit by type of goods since 1997. The deficit grew over time for all types of goods and is largest in finished goods, followed by food, drink and tobacco and semi-finished goods.

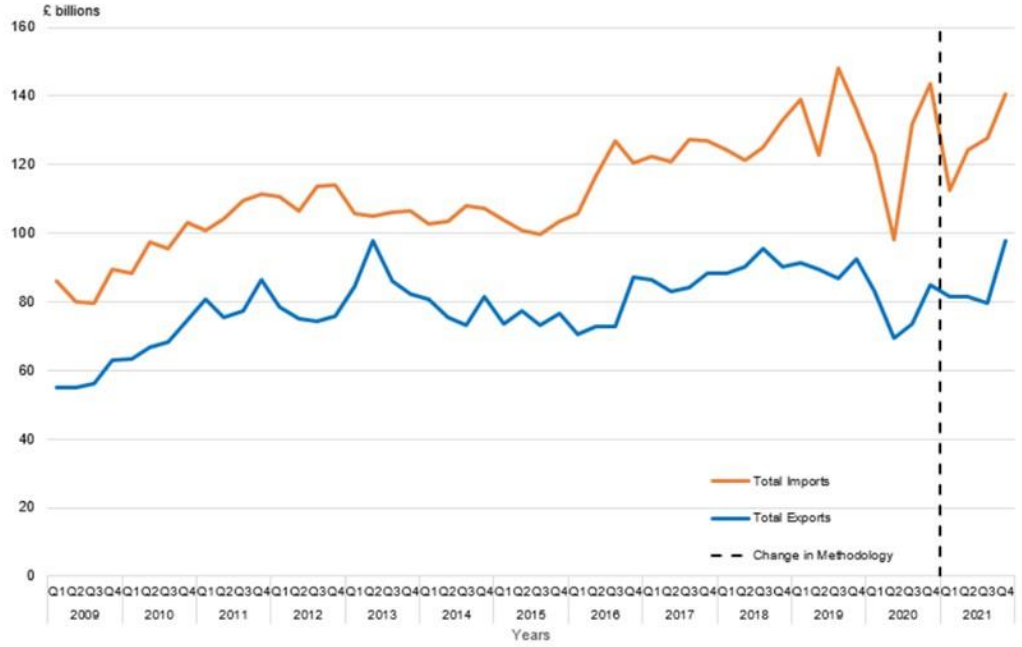
Figure 7: UK Balance of Payments trade in goods deficit by type of goods, 1997-2020



Source: produced using data in Office for National Statistics, 2021c.

Figure 8 provides data on the import and export of goods to and from the UK on a quarterly basis between 2009 and 2021. This reflects that the UK's quarterly trade deficit continued to increase in absolute terms over this period.

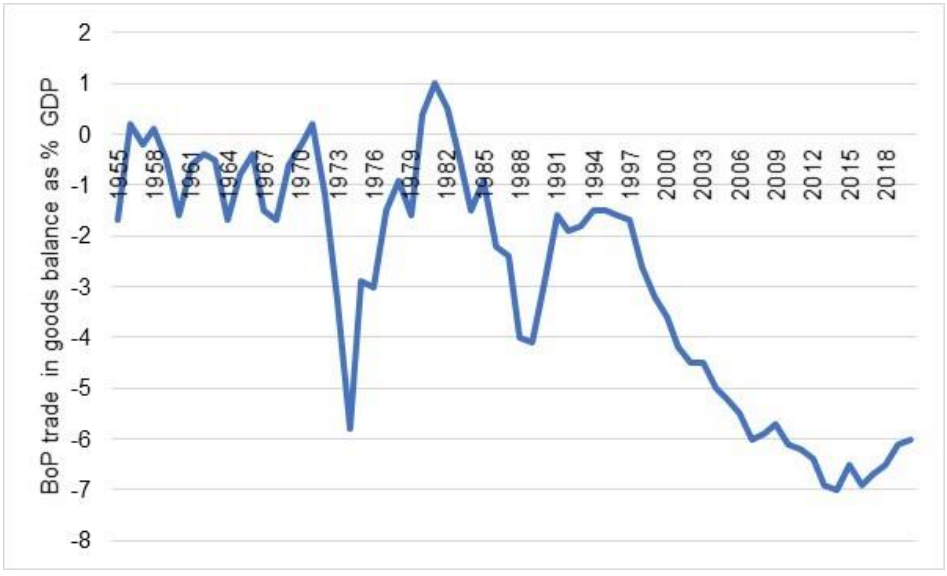
Figure 8: Quarterly UK Trade in Goods, 2009 – 2021



Note: 2021 data is provisional.
Source: HM Revenue and Customs, 2022a.

In 1950, the UK had a trade surplus in manufactured goods equal to 10% of GDP. By 2011 this trade surplus in goods had become a trade deficit in manufactured goods of 4% of GDP manufactured goods stood at £43 billion, equivalent to 7% of UK GDP (Office for National Statistics, 2021b). **Figure 9** shows the UK Balance of Payments trade in goods as a percentage of GDP since 1955.

Figure 9: UK Balance of Payments trade in goods as a percentage of GDP, 1955-2020



Source: produced using data in Office for National Statistics, 2021c.

In 2021, the UK had a total international trade in goods deficit of £156 billion **(£164 billion in data below)**, which was a 20% increase on the deficit in 2020 (Department for International Trade, 2022a). In 2021, China and Germany were the UK's largest import markets for goods, accounting for 12% and 11% of total UK goods imports respectively. **Table 1** shows the UK's top 10 import and export countries for goods by value in 2021, together with the total.

By value, the European Union (EU) accounted for 56% of UK imports and 54% of UK exports in 2021. In terms of tonnages of international goods handled at major UK seaports, the EU accounted for 55% in 2020). This indicates that goods imported and exported to the UK with the EU have an overall value density that is equivalent to those traded with non-EU countries.

Table 1: Top 10 countries for goods imports to and exports from the UK by value, 2021

Imports to UK			**Exports from UK**		
Country	**£ billion**	**%**	**Country**	**£ billion**	**%**
China	62.8	12%	USA	43.5	13%
Germany	54.3	11%	Germany	29.6	9%
USA	43.8	9%	Switzerland	28.8	8%
Netherlands	31.8	6%	Netherlands	25.4	7%
Norway	26.8	5%	Ireland	21.2	6%
Belgium	22.6	4%	France	19	6%
France	21.7	4%	China	15.2	4%
Russia	18.1	4%	Belgium	14.6	4%
Italy	17.8	4%	Italy	8.9	3%
Spain	14.5	3%	Spain	8.1	2%
Top 10	314.2	62%	Top 10	214.3	63%
Others	190.5	38%	Others	126	37%
Total non-EU	***282.2***	***56%***	***Total non-EU***	***185***	***54%***
Total EU	***222.5***	***44%***	***Total EU***	***155.1***	***46%***
Total	**504.7**	**100%**	**Total**	**340.2**	**100%**

Note: Data is provisional.
Source: HM Revenue & Customs Overseas Trade in Goods Statistics quoted in HM Revenue and Customs, 2022b.

Table 2 shows the imports to the UK by value in 2021 by commodity category, all of which, with the exception of fuels, include semi- and finished manufactured goods.

Table 2: Goods imports to the UK by value, 2021, by commodity category

Commodity category	Value of imports (£ billion)	% of total UK goods imports by value
Machinery and transport equipment	156.9	32.9%
Miscellaneous manufactures	68.4	14.4%
Material manufactures	60.9	12.8%
Chemicals	60.9	12.8%
Fuels	53.3	11.2%
Food and live animals	37.5	7.9%
Crude materials	14.8	3.1%
Beverages and tobacco	9.4	2.0%
Unspecified goods	12.7	2.7%
Animal and vegetable oils and fats	1.6	0.3%
Total	**476.3**	**100.0%**

Notes:
'Chemicals' include plastics, medicinal and pharmaceutical products, toilet and cleansing preparations, organic and inorganic chemicals, dyeing, tanning and colouring materials, and processed fertilisers.
'Crude materials' include wood and cork, pulp and waste paper, textile fibres, Oilseeds and oleaginous fruits, hides, skins and fur skins, crude rubber, metal ores and scrap, crude minerals and fertilisers and other crude animal and vegetable materials.
'Machinery and transport equipment' includes finished and semi-finished telecoms and sound equipment, electrical goods, office machinery, electric motors, generators, cars, other transport vehicles, specialised machinery, industrial machinery, metal working machinery.
'Miscellaneous manufactures' include clothing and footwear, scientific instruments, photographic and optical goods and clock, works of art, jewellery, plumbing, heating and lighting fixtures, furniture, travel goods and handbags, and other manufactures.
'Material manufactures' include leather rubber and wood and cork manufactures, paper and paperboard, textile fabrics, mineral manufactures, iron and steel, non-ferrous metals, and miscellaneous metal manufactures.
Source: Office for National Statistics, 2021d.

The UK's largest national source for goods imports is China, with a trade in goods deficit of £48 billion in four quarters to the end of Q3 2021 (compared with £26 billion in the four quarters to the end of Q3 2020). In the four quarters to the end of Q3 2021, the top five categories of goods imported from China were telecommunications and sound equipment (£7.3 billion), office machinery (£7.3 billion), other consumer manufactures (£5.2 billion), clothing (£4.6 billion) and chemicals (£4.0 billion). These five categories accounted for 44% of the value of all goods imported from China (Department for International Trade, 2022b). In 2020, the UK imported 46% of the food it consumed, with 28% coming from the EU and 18% from the rest of the world (DEFRA, 2021).

Survey work carried out in 1985 identified the extent to which large foreign manufacturers had invested heavily in UK warehousing, making a significant contribution to warehousing demand over the previous decade. Many of these warehousing sites were located in the South East, with respondents citing their centrality relative to demand, proximity to ports and airports and links to motorways as the three most important factors in these locational decisions (McKinnon, 1986).

In 2020, by value, there was an imbalance between the goods imported to and exported from the UK of 60:40. In terms of the tonnages of all goods imported to and exported from the UK there was an imbalance of 65:35 (this only includes maritime and air freight as inbound and outbound freight tonnages by rail via the Channel Tunnel are not available).

The off-shoring of many manufactured products and the consequent increase in manufacturing imports to the UK has resulted in an increase in road freight transport activity to support these

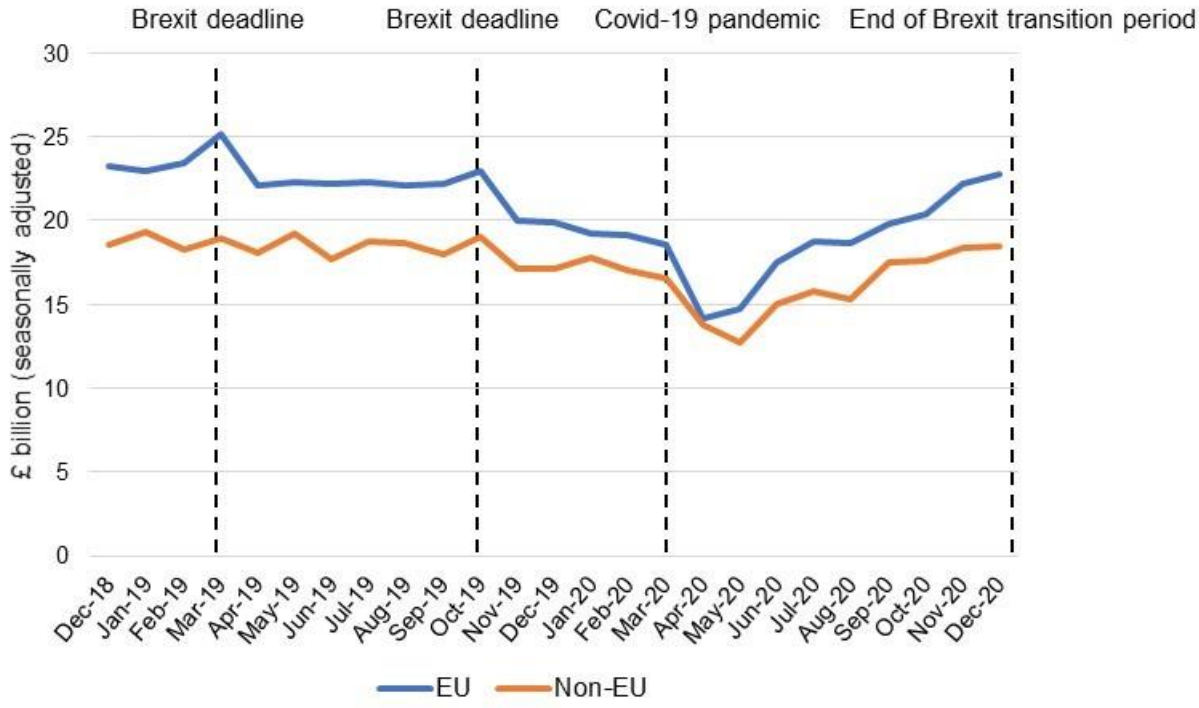
flows in the countries in which they are produced (especially China as well as countries in the Far East and central and Eastern Europe where costs of production are lower than in the UK) and in international shipping to the UK. While the relocation of production facilities from the off-shoring country to these alternative locations in other countries results in an increase in freight transport activity in these other locations to support these material flows and related logistics activities. These off-shored goods also still require freight transport from point of entry to the UK (most commonly a sea port) to their point of sale or use.

Offshoring does not necessarily simply relocate greenhouse gas (GHG) emissions associated with these freight transport and logistics activities from the UK to the country in which the goods are now produced, it often leads to greater GHG emissions in the other country as they are likely to be using older less efficient freight transport vehicles, and the goods are being transported over greater distances to their point of consumption in the UK. Therefore, as well as the freight transport-related GHG emissions increasing in the country to which the manufacturing is outsourced, it is also likely to lead to a global increase in GHG emissions associated with the freight transport activity for the product. However, it is important to note, that the overall GHG emission effects of off-shoring manufacturing also depends on the GHG-intensity of production operations for the goods concerned, and the production-related GHG emissions can exceed freight transport-related GHG emissions for many manufactured products (McKinnon, 2018).

5. Impact of Covid and Brexit on trade and stockholding

Figure 10 shows the trade in goods imports (excluding non-monetary gold and other precious metals) from December 2018 to December 2020. The figure shows the growth in imports ahead of anticipated Brexit withdrawal dates in March 2019 and October 2019, when at that point in time, it was not known what the nature of the UK's exit from the EU would be, and hence the impact of import and exports. The value of goods imports from the EU increased by £1.7 billion in March 2019 and by £0.8 billion in October 2019. This shows the substantial stockpiling that UK businesses engaged in during these two months as they stockpiled key goods in case of future trade delays and disruptions (including raw materials, food and drink and medicinal and pharmaceutical products). It also shows the decline in imports between March and May 2020 as businesses used up these stocks and also as a result of the Covid-19 pandemic that took businesses by surprise and which they had little time to prepare for. Goods imports can be seen to rise after May 2020 as goods began to be transported internationally again as Chinese factories and international ports began to reopen, continuing to climb as businesses replenished stock in advance of the end of the Brexit transition period as the UK prepared to leave the EU.

Figure 10: Trade in UK goods imports (excluding non-monetary gold and other precious metals), December 2018 to December 2020



Source: produced from data in Office for National Statistics, 2021g.

The IHS Markit /CIPS UK Manufacturing Purchasing Managers Index (PMI) is a monthly survey carried out by IHS Markit of a panel of approximately 600 purchasing managers in UK businesses. These managers are asked to provide responses based on the direction of change compared to the previous month. A diffusion index is calculated for each survey variable collected with this index being the sum of the percentage of 'higher' responses and half the percentage of 'unchanged' responses. The indices vary between 0 and 100, with a reading above 50 indicating an overall increase compared to the previous month, and below 50 an overall decrease. The indices are seasonally adjusted. The headline Manufacturing PMI is a weighted average of five indices: new orders (with a weighting of 30%), output (25%), employment (20%), suppliers' delivery times (15%) and stocks of purchases (10%). The suppliers' delivery times Index is inverted so that it moves in a comparable direction to the other indices.

The UK Manufacturing PMI survey results in 2019 showed that manufacturing purchasing managers increased their stocks of purchases prior to the anticipated dates on which the UK would leave the EU without a trade deal. In February 2019, 70% of respondents stated that efforts to mitigate potential supply chain disruptions from Brexit was the reason for their increased stockpiling of raw materials and finished products, with the former reaching a record high since the survey began in 1992 due to fears of customs delays, tariffs and a no-deal Brexit (CIPS, 2019).

The February 2020 UK Manufacturing PMI survey results showed that suppliers' delivery lead times had increased to their longest since July 2018, with an 8 point fall on the previous month, the greatest for this supplier delivery time index in 28 years that the survey had been running (CIPS, 2020). This was due to the global manufacturing, border and shipping problems that were occurring in other countries due to the onset of the Covid-19 pandemic.

The April 2020 UK Manufacturing PMI survey results found that manufacturing output, new orders and employment all contracted at the fastest rates in the 28-year survey history, while supplier delivery times increased to their greatest ever. The composite Manufacturing PMI fell to a record low of 32.6 in April 2020 (compared with 47.8 in March 2020). The fall in the Manufacturing PMI was somewhat softened somewhat by a relatively modest reduction in stocks of purchases as businesses attempted to stockpile goods given the manufacturing, shipping and delivery problems caused globally by the effects of the Covid-19 pandemic on production, border delays for international shipments, international and national logistics disruptions due to labour shortages and falling sales levels, and Brexit specifically in the UK (IHS Markit and CIPS, 2020).

The February 2021 UK Manufacturing PMI survey results continued to reflect the effects of port/ border delays and other transport disruption on supplier delivery lead times with nearly 59% of respondents reporting worsening delivery delays from suppliers, despite the fact that manufacturing output had been increasing for ten months since May 2020. Both Covid-19 and Brexit were cited as factors in these delays (CIPS, 2021).

At a global level, the JP Morgan Global Manufacturing PMI, compiled by IHS Markit from its business surveys in 32 countries, fell to 39.7 in April 2020 (down from 47.3 in March), its lowest since the global financial crisis in 2008/9. This was due to the factory closures in countries in response to the Covid-19 pandemic. Only respondents in China reported a month-on-month increase in production in April 2020, but even here the increase was modest (as March and April had also been, following a record fall in China in February 2020) (Williamson, 2020a). New global export orders also declined in April 2020 to an extent never previously reported in 22 years of survey work (Williamson, 2020b).

The IHS Markit / CIPS UK all sector PMI (i.e. not just manufacturing industry) fell to a 22-year record low of 13.4 in April (compared with 36.3 in March – the record low prior to March had been 37.5 in November 2008 during the global financial crisis. The UK manufacturing, services and construction industries all reported record lows in activity by sizeable margins, with sectors including hotels and restaurants reported the greatest falls in activity. The only sectors reporting growth in April 2020 were food production, healthcare products and pharmaceuticals (Williamson, 2020c).

These various PMI surveys in the UK and globally have shown improvements over the period to April 2022 since the initial on-set of the Covid-19 pandemic, but with further falls at times of further lockdowns. The S&P Global / CIPS UK Manufacturing PMI stood at 55.2 in March 2022 (see **Figure 11**).

Figure 11: IHS Markit and CIPS UK Manufacturing PMI (overall composite index), March 2022

Notes: seasonally adjusted. A score of more than 50 indicates an improvement since previous month.
Source: IHS Markit and CIPS, 2022.

The March 2022 survey also showed that manufacturing purchasing managers were still experiencing longer than usual delivery lead times from suppliers, however these were less severe than in early 2020 and much of 2021 (see **Figure 12)**. March 2022 survey results also showed that manufacturing businesses had slightly increased their stockholdings of raw materials and finished goods (IHS Markit and CIPS, 2022).

Figure 12: IHS Markit and CIPS UK Manufacturing PMI Suppliers' Delivery Times Index, March 2022

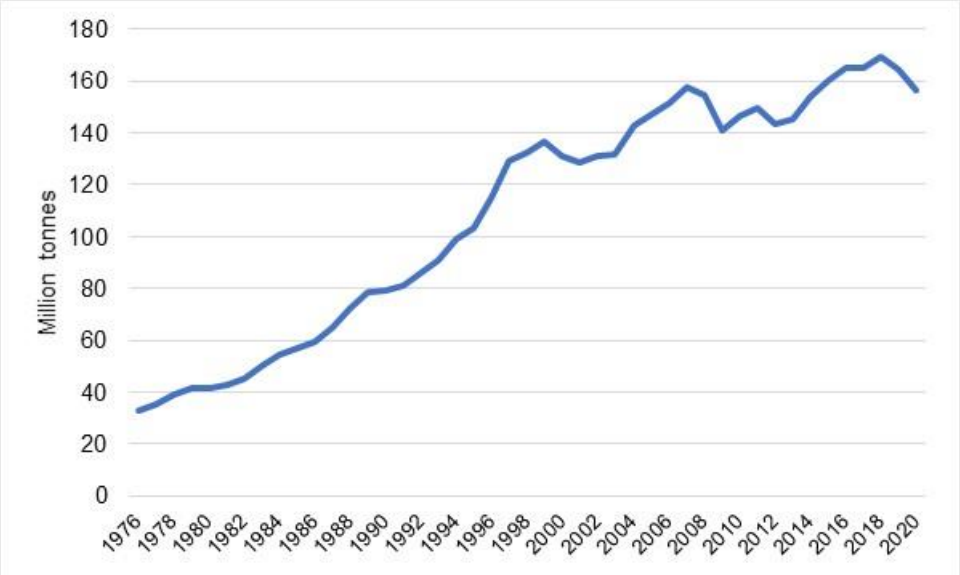
Notes: seasonally adjusted. A score of more than 50 indicates an improvement since previous month.
Source: IHS Markit and CIPS, 2022.

6. International freight transport effects of these long-term changes in sourcing of retail and manufactured goods

The patterns in retail spending per head, total population, growing market concentration in UK retail markets, the relative decrease in the importance of UK manufacturing and its inability to meet the demand of businesses and private individuals, leading to the growing importation of goods, as described in the previous sections, have had important implications for logistics operations in the UK. The increase in the importation of manufactured and retail goods has led to substantial increases in freight transport activity to and from the UK providing these flows. The vast majority of this has taken place by maritime shipping. In 2020, it is possible to estimate that maritime shipping accounted for 93% of all international freight transport lifted to and from the UK (with rail accounting for approximately 6% and air for less than 1%) (calculated from data in Department for Transport, 2021a, 2021b, 2021c).

Retail and manufactured products shipped to the UK are typically transport are unitised loads, either via Lift-on lift-off containers on container vessels (for longer distance movements) or as Roll-on roll-off HGV movements on ferries (either as self-propelled vehicles or non-self-propelled units including unaccompanied HGV trailers). **Figure 13** shows RoRo and LoLo freight traffic handled at major UK seaports since 1976. Between 1976 and 2020, the goods lifted in these unitised maritime flows at UK major seaports increased by approximately 380%.

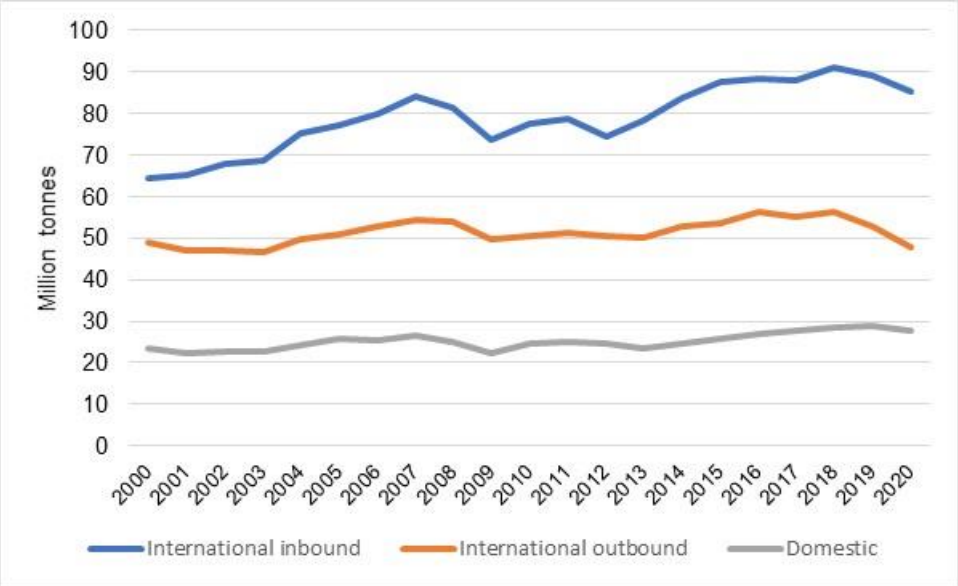
Figure 13: International and domestic RoRo and LoLo traffic to and from major UK seaports, 1976-2020 (million tonnes)



Note:
Includes powered HGVs, unaccompanied HGV trailers and containers moved by RoRo and containers moved on LoLo vessels.
Source: Department for Transport, 1986, 1996, 2006 and 2021d.

International RoRo and LoLo handled at UK major seaports greatly exceeds domestic RoRo and LoLo traffic. In both 2000 and 2020, international flows accounted for 83% of all unitised traffic handled at UK major seaports (see **Figure 14**).

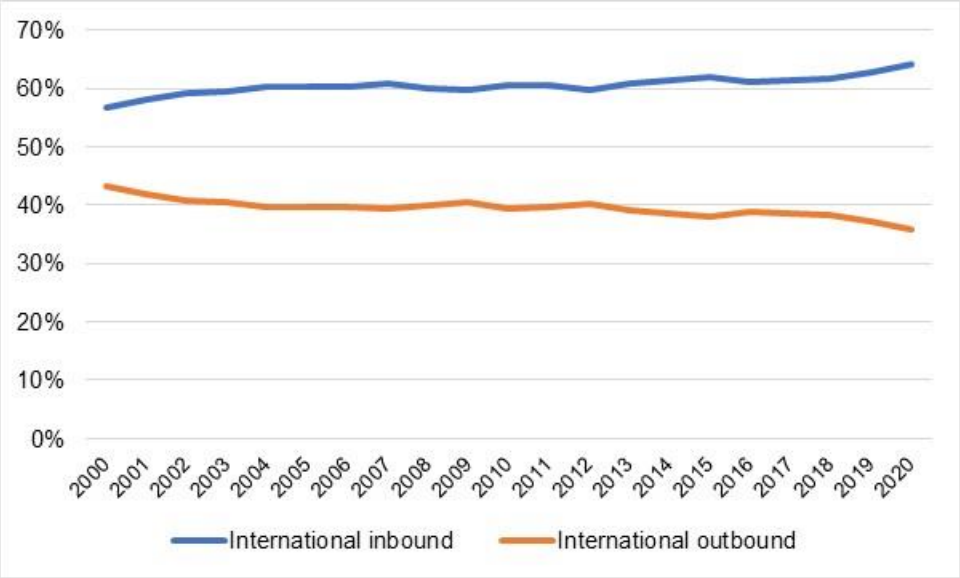
Figure 14: International and domestic RoRo and LoLo traffic to and from major UK seaports, 2000-2020 (million tonnes)



Note: includes all container LoLo, and all self-propelled and non-self-propelled RoRo.
Source: Department for Transport, 2021e.

Figure 15 shows the change in inbound and outbound Roll-on roll-off (RoRo) ferry traffic and Lift-on lift-off container vessel traffic to UK seaports since 2000. Inbound freight exceeded outbound freight for the entire period, with the difference between them growing. In 2020, inbound unitised cargo (RoRo and LoLo combined) accounted for 64% of all unitised international cargo handled at major UK seaports compared with 57% in 2000.

Figure 15: RoRo and LoLo international cargo to and from UK major seaports, 2000-2020

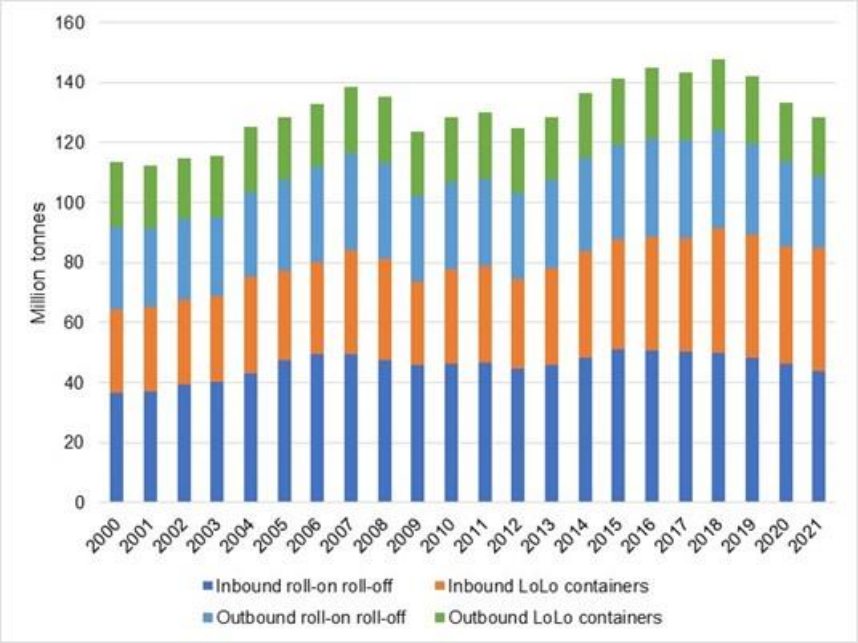


Note: includes all container LoLo, and all self-propelled and non-self-propelled RoRo.
Source: Department for Transport, 2021e.

Figure 16 shows the difference between inbound and outbound international flows broken down for RoRo and LoLo. In 2021, 68% of all international LoLo and 66% of all international RoRo tonnage to/from UK major seaports was inbound. This compares with 56% and 57%, respectively,

in 2000, indicating the growing imbalance in both types of flows, with the imbalance in LoLo growing fastest.

Figure 16: RoRo and LoLo international cargo to and from UK major seaports by direction of travel, 2000-2021



Source: calculated from data in Department for Transport, 2022a.

In terms of the split of RoRo between that performed by powered HGVs and unaccompanied trailers, this was 65%:35% in 2021, compared with 53%:47% in 2000.

Table 3 shows the region of loading/unloading for international LoLo and RoRo to and from UK major seaports in 2021. This shows that the overwhelming majority of RoRo (97%) travelled to and from the EU. For LoLo, EU-UK flows accounted for the greatest tonnage (43%), followed by Asian-UK flows (34%), with flows to/from ports in other European and Mediterranean regions and ports in the Americas accounting for 10% and 11%, respectively, of LoLo flows to/from the UK.

Table 3.X: International LoLo and RoRo traffic at UK major seaports by route, 2021 (based on tonnages)

Region of loading / unloading	**Lo-Lo containers**		**Roll-on / Roll-off**	
	Million tonnes	**%**	**Million tonnes**	**%**
European Union	26.2	43%	65.4	97%
Other European & Mediterranean	6.2	10%	0.6	1%
Africa	1.4	2%	0.1	0%
Americas	6.4	11%	0.6	1%
Asia	20.6	34%	0.4	1%
Australasia	0.2	0%	0.2	0%
Total	**61.1**	**100%**	**67.3**	**100%**

Note: Total international port traffic at UK major ports (i.e. inbound and outbound traffic)
Source: Department for Transport, 2022b.

Table 4 shows the ten most important UK ports for LoLo movements in 2020, with Felixstowe and London responsible for 31% and 25% of all LoLo tonnage handled at UK major ports. These two ports were followed in importance of LoLo tonnage handled by Southampton (14%), Liverpool (9%) and Tee and Hartlepool (3%). In terms of TEU (twenty-foot equivalent unit) containers handled in 2020 rather than tonnage of goods, Felixstowe accounted for 36% of the UK major ports total, followed by London (18%) and Southampton (18%) (calculated from data in Department for Transport 2021d).

Table 4: Top ten largest UK ports for LoLo containers in 2020 (international and domestic cargo – based on tonnage handled)

Port	Million tonnes	% of all UK major ports traffic
Felixstowe	19.2	31%
London	15.4	25%
Southampton	8.4	14%
Liverpool	5.9	9%
Tees & Hartlepool	2.8	5%
Forth	2.2	3%
Hull	2.1	3%
Grimsby & Immingham	2.1	3%
Belfast	1.6	3%
Bristol	0.8	1%
Top ten ports	60.5	97%
All UK major ports	**62.2**	**100%**

Source: Department for Transport, 2021f.

Table 5 shows the ten most important UK ports for RoRo transported by powered HGVs in 2020, with Dover responsible for 53% of all powered HGV RoRo tonnage handled at UK major ports. The next most important ports for this RoRo traffic were Holyhead (9%), Liverpool (5%), Belfast (5%) and Harwich (4%).

Table 5: Top ten largest UK ports for RoRo by powered HGVs in 2020 (international and domestic cargo – based on tonnage handled)

Port	Million tonnes	% of all UK major ports traffic
Dover	21.0	53%
Holyhead	3.6	9%
Liverpool	2.0	5%
Belfast	1.9	5%
Harwich	1.7	4%
Larne	1.5	4%
Cairnryan	1.5	4%
Portsmouth	1.4	3%
Loch Ryan	1.3	3%
Grimsby & Immingham	1.0	3%
Top ten ports	37.0	93%
All UK major ports	**39.7**	**100%**

Source: Department for Transport, 2021f.

Table 6 shows the ten most important UK ports for RoRo transported by unaccompanied HGV trailers in 2020, with Grimsby and Immingham responsible for 21% of all unaccompanied trailer

RoRo tonnage handled at UK major ports. The next most important ports for this RoRo traffic were Belfast (13%), Liverpool (12%), Heysham (12%), Felixstowe (8%) and London (8%).

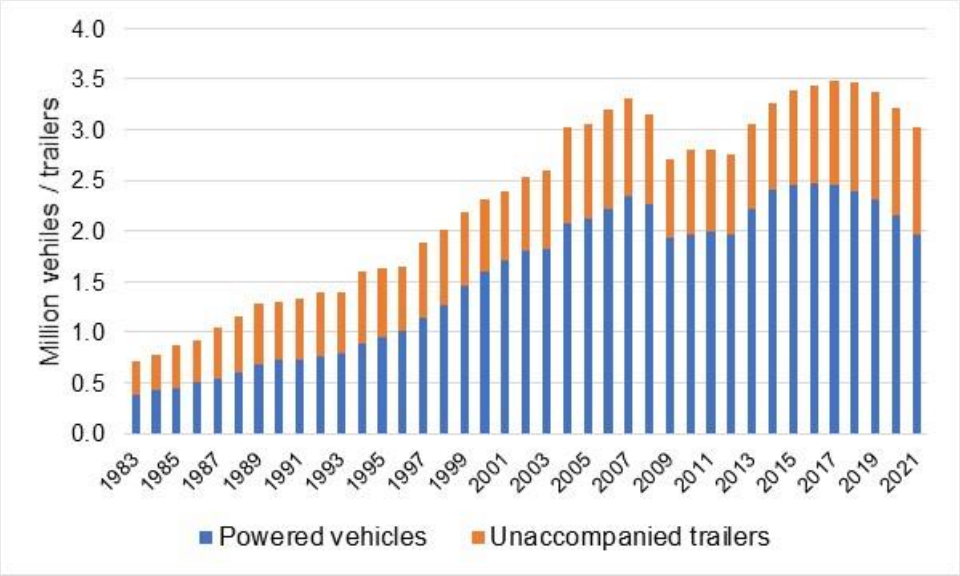
Table 6: Top ten largest UK ports for RoRo by unaccompanied HGV trailers in 2020 (international and domestic cargo – based on tonnage handled)

Port	Million tonnes	% of all UK major ports traffic
Grimsby & Immingham	9.6	21%
Belfast	5.7	13%
Liverpool	5.4	12%
Heysham	3.8	8%
Felixstowe	3.7	8%
London	3.1	7%
Holyhead	2.3	5%
Warrenpoint	2.0	4%
Harwich	1.9	4%
Loch Ryan	1.3	3%
Top ten ports	38.7	86%
All UK major ports	**45.0**	**100%**

Source: Department for Transport, 2021f.

Considering only RoRo traffic by powered HGVs and unaccompanied trailers, in 2021 there were 3.0 million goods vehicle/trailer crossings departing the UK via seaports and the Channel Tunnel to EU ports (compared with only 0.7 million in 1983 – an increase of 327%). Of these, 2.0 million were powered HGV RoRo movements by ferry and rail (65%) and 1.1 million unaccompanied HGV trailer RoRo movements by ferry (35%). This split between powered and unaccompanied HGVs using RoRo services has changed over time, with 53% powered goods vehicle and 47% unaccompanied trailer crossings in 1983. The Channel Tunnel commenced operations in 1994 and its use grew rapidly (see **Figure 17**).

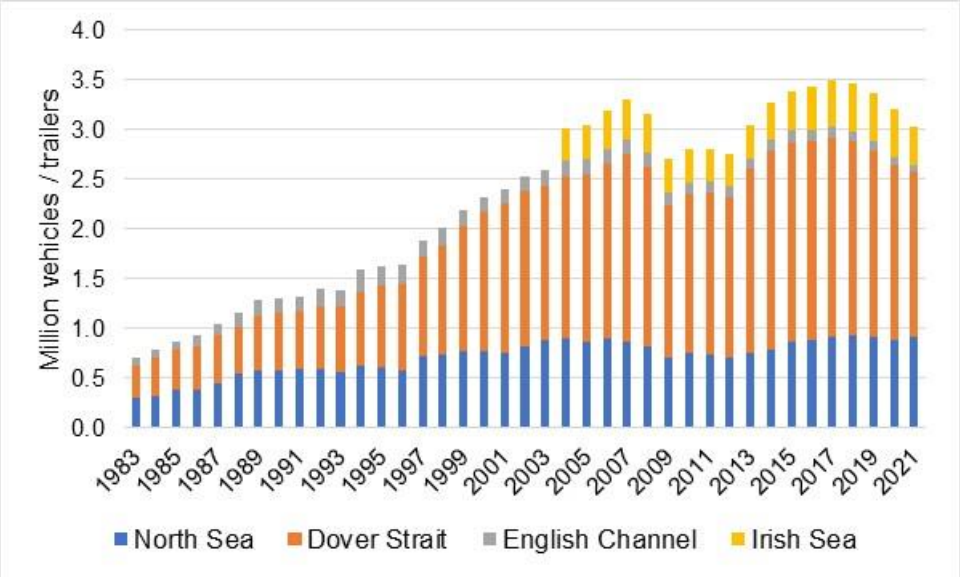
Figure 17: Road goods vehicles travelling by RoRo (powered vehicles and unaccompanied trailers) from UK to EU by sea and rail, 1983-2021



Note: Until 2004 data is only for journeys to mainland Europe; data for the Republic commenced in 2004.
Source: calculated from data in Department for Transport, 2021g.

In terms of routes taken by RoRo crossings from UK to the EU, the number of vehicles/trailers using ports and rail in the Dover Straits increased by approximately 400% between 1983 and 2021, while those using North Sea ports increased by approximately 200% (see **Figure 18**).

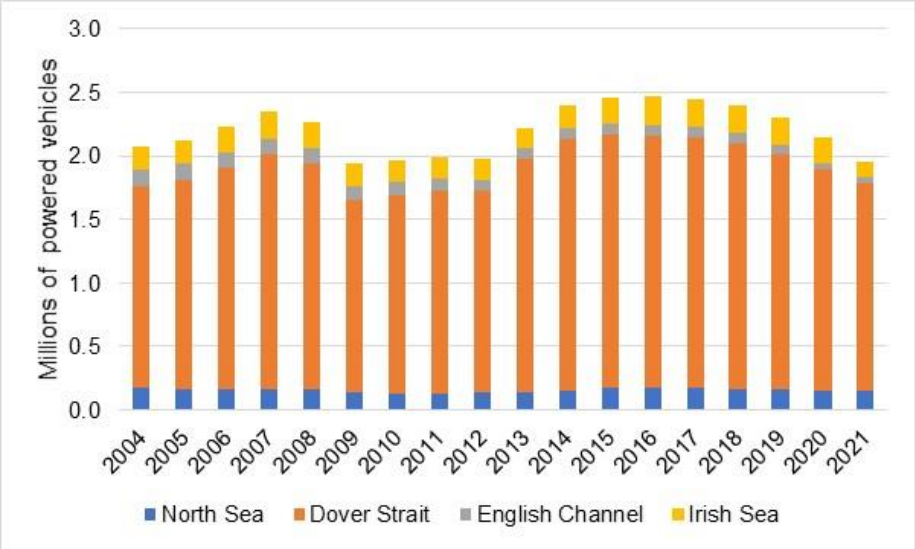
Figure 18: Road goods vehicles travelling by RoRo (powered vehicles and unaccompanied trailers) from UK to EU seaports by route/port group, 1983-2021



Notes:
North Sea: Ferry routes from all GB ports on the east coast, north of and including the Thames estuary.
Dover Strait: Ferry routes from Dover, Folkestone and Ramsgate, along with the Channel Tunnel (opened 1994).
English Channel: Ferry routes from all GB ports on the south coast, west of Folkestone.
Irish Sea: Ferry routes from all GB ports on the west coast.
Until 2004 data is only for journeys to mainland Europe; data for the Republic of Ireland commenced in 2004.
Source: calculated from data in Department for Transport, 2021h.

RoRo crossings of the Dover Straits between the UK and EU are almost entirely made by powered HGVs (i.e. with the driver present), whereas North Sea RoRo crossings are mostly of unaccompanied HGV trailers. **Figure 19** shows the breakdown by route for powered vehicle RoRo crossings from UK to EU ports. In 2021, the Dover Straits (including both sea and rail crossings through the Channel Tunnel) accounted for 84% of all UK powered vehicle crossings (up from 76% in 2004), the North Sea for 8%, the Irish Sea for 6% and the English Channel for 2%.

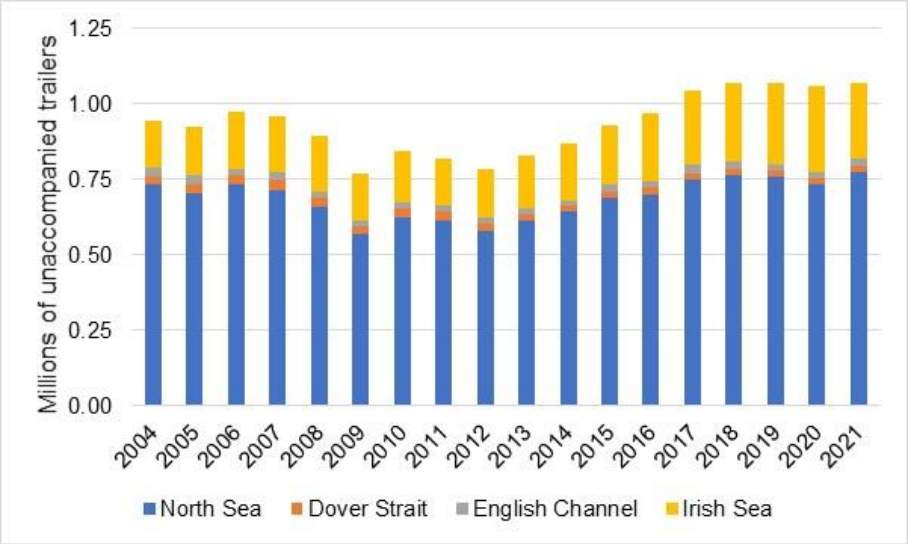
Figure 19: RoRo powered HGVs travelling from UK to EU by sea and rail by route/port group, annually 2004-2021



Notes:
North Sea: Ferry routes from all GB ports on the east coast, north of and including the Thames estuary.
Dover Strait: Ferry routes from Dover, Folkestone and Ramsgate, along with the Channel Tunnel.
English Channel: Ferry routes from all GB ports on the south coast, west of Folkestone.
Irish Sea: Ferry routes from all GB ports on the west coast.
Movements between Britain and Northern Ireland not included as these are not UK-EU port movements.
Source: calculated from data in Department for Transport, 2021i.

Figure 20 shows the breakdown by route for unaccompanied trailer RoRo crossings from UK to EU sea ports. In 2021, the North Sea accounted for 72% of all unaccompanied trailer crossings between the UK and EU, the Irish Sea for 24%, and the English Channel and Dover Strait both for 2%.

Figure 20: RoRo unaccompanied HGV trailers travelling from UK to EU by sea by route/port group, annually 2004-2021



Notes:
North Sea: Ferry routes from all GB ports on the east coast, north of and including the Thames estuary.
Dover Strait: Ferry routes from Dover, Folkestone and Ramsgate.
English Channel: Ferry routes from all GB ports on the south coast, west of Folkestone.
Irish Sea: Ferry routes from all GB ports on the west coast.
Movements between Britain and Northern Ireland not included as these are not UK-EU port movements.
Source: calculated from data in Department for Transport, 2021j.

For RoRo arriving at UK ports this is typically transported onto its destination, often a distribution centre, by road. In the case of LoLo containers arriving in the UK, their onward transport most commonly also takes place by road, but with rail also used in some cases where the port and distribution centre have rail connectivity. Rail freight was responsible for 17% of ports intermodal traffic in 2016/17 (UK Major Ports Group, 2021).

A small proportion of containerised goods arriving at UK major ports are distributed onwards to other smaller ports closer to their UK destination via coastal shipping feeder services.

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