VOLUME 16

THE IRISH MARITIME TRANSPORT ECONOMIST



The Irish Maritime Development Office

The Irish Maritime Development Office (IMDO) is Ireland's national dedicated development, promotional and marketing agency for the shipping and shipping services sector.

The IMDO is the Irish government agency which provides support to national and international maritime businesses in Ireland. It is the aim of the IMDO to be the focal point for maritime business in Ireland. The IMDO provides government and industry with a range of information and reporting across the sector and works with international businesses to help them set-up or expand in Ireland. The IMDO is also Ireland's designated Shortsea Shipping Agency and provides independent advice and guidance on EU funding initiatives.

The IMDO was established by the Fisheries (Amendment) Act 1999, as part of the Marine Institute, under an amendment to the Marine Institute Act 1991 in December 1999. The IMDO commenced operations in July 2000. After subsequent amendment in the Harbours (Amendment) Act 2009 its legislative mandate includes the following functions:

- To promote and assist the development of Irish shipping and Irish shipping services and seafarer training.
- 2. To liaise with, support and market the shipping and shipping services sector.
- To advise the Minister for Transport on the development and co-ordination of policy in the shipping and shipping services sector so as to protect and create employment.

- To carry out policy as may be specified by the Minister for Transport relating to the shipping and shipping services sector and seafarer training.
- To advise the Minister for Transport on the development and co-ordination of policy and to carry out policy, as may be specified by that Minister, relating to ports and the ports services sector, and;
- any additional functions relating to the shipping and shipping services sector conferred on the Institute under section 4(4) of this Act.

Shipping services is defined as: sea routes, ship management, technical management, commercial management, crew management, ship finance and mortgages, marine insurance, maritime legal services, shipbroking and ship chartering.

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I am pleased to provide the foreword for this, the 16th edition of the Irish Maritime Transport Economist (IMTE), which analyses the performance of Ireland's maritime industry for 2018. This publication, and the research behind it, strengthens our knowledge and creates a robust and reliable evidence base on which to develop policy in this strategically important industry.

The need for a clear, evidence-based understanding of the maritime industry has been brought into sharp focus in recent times, arising from the challenges associated with Brexit. In the development of policy responses, we have relied heavily on the time series created over previous editions of the IMTE, to understand the implications of different withdrawal scenarios and to plan for the future. I am grateful to the staff of the IMDO and to my Departmental officials, who have worked so diligently and collaboratively to deliver policy advice that has informed our preparations for the UK's withdrawal from the European Union and the consequential effects on our maritime industry.

In 2018, the volume of traffic moving through Irish ports increased by 4%, as measured by the IMDO's iShip Index. Growth was recorded across all traffic modes, with Ro/Ro, Lo/Lo and Bulk trades increasing equally, by 4%, in the year under review. This upward trajectory reflects the close correlation that exists between the recovery of the Irish economy and continued growth in international trade. Notwithstanding the uncertainty that has resulted from the UK's decision to leave the European Union and the knock-on effects on exchange rates and consumer sentiment, Irish trade continues to grow strongly, reflecting the resilience and competitiveness of the economy and the ability of the maritime industry to meet increased demand. Irish ports have shown themselves to be resilient and adaptable in the face of significant market volatility in recent years and are to be commended for the invaluable contribution they make to Ireland's economic performance.

There are major development projects taking place currently in Irish Ports, with our Tier 1 ports leading the way in the provision of the capacity that will be required by our growing economy. The redevelopment of Alexandra Basin and associated infrastructure, will ensure that Dublin Port continues to play a vitally important role in facilitating trade and tourism in our capital city, the wider hinterland, and across our national economy. The Port of Cork is on its way to becoming one of the finest ports in Europe by providing deep-water berths

and state of the art infrastructure at its new Ringaskiddy facility. On the west coast, Shannon Foynes Port
Company continues to build its future around its unique deep-water resources and the availability of shore side facilities that can meet the requirements of the most demanding port users and future-proof the investments they may make in the port. The capacity provided by our Tier 1 ports is supplemented by the facilities at Tier 2 ports in Waterford and Rosslare and at smaller regional ports. The combined resources of our ports network have served the Irish economy well in recent years and my Department is currently reviewing total network capacity in the context of its ability to meet future demand and will report on this matter later this year.

2018 was an important year for the maritime industry, in which total port volumes reached record levels, exceeding those set in 2007 /2008. Irish ports have coped admirably with the additional throughput and are preparing carefully for future growth. The IMTE records the annual performance of our ports and shipping companies and provides the statistics and economic analysis that allows the maritime industry and my Department to plan for the future with confidence. I recommend this edition of the IMTE to stakeholders in the maritime industry and thank those who contribute so generously by providing the data for its production.



Rigi.

Shane Ross T.D.Minister for Transport, Tourism and Sport

Key Indicators 2018: GDP: +7%

GNP: +6%

Inflation: 0.7% Exports: +15%

Imports: +14% Trade Surplus: +17%

The 16th edition of the Irish Maritime Transport Economist reviews the performance of Ireland's maritime industry for 2018 and comes at a time when a great deal of attention is being focused on the industry.

Maritime transport is the most important means of connecting Ireland to international markets, accounting for more than 90% of Ireland's international trade, in volume terms. National Ports Policy (NPP) has provided the framework for the development of the industry since its publication in 2013. It has guided the response of the sector through periods of economic contraction and recovery, to a point in 2018 at which trade volumes through Irish ports surpassed the record high levels set in 2007. Although much of the growth that has been achieved in the past five years has been concentrated in Tier 1 ports, Tier 2 and Tier 3 ports continue to play an important role in connecting Ireland to international markets and provide the network capacity that will allow Ireland to respond to the many operational challenges that will be posed by Brexit. Ireland's economy has been well served by efficient and adaptable ports and by a competitive shipping sector, comprising some of the leading shipping companies operating in Europe.

Turning to the trade that moved through Irish Ports in 2018, it is encouraging to note that the iShip Index reached a new high in the last quarter of 2018, at 1.052 points. This exceeds the previous high of 1,042 set in 2007. Growth was recorded across all traffic modes, with Lo/Lo, Ro/Ro and Bulk traffic each growing by 4% on an annual basis. This growth is built on the remarkable resilience of the Irish economy, which grew by 6.7% to €312 billion in GDP terms, in 2018. Central Bank of Ireland forecasts suggest that economic activity will

continue to increase in coming years, although some moderation in growth is to be expected in 2019 and 2020.

In 2018, the IMDO completed a report into trade flows across the UK Landbridge. The report was commissioned by the Department of Transport, Tourism and Sport and addressed the volume of Irish trade using the UK Landbridge and its elasticity of demand, as transit times and costs are impacted by the negative consequences of Brexit. The report found that about 150,000 vehicles use the Landbridge each year and that demand is relatively inelastic, as the next best alternatives to the Landbridge cannot match the transit times that Landbridge users demand. Some dilution of Landbridge volumes is to be expected after Brexit, which will drive increased demand for direct services to the continent. In 2018, the shipping industry began to respond, by providing additional capacity on continental routes. The introduction of additional tonnage by Irish Ferries, Brittany Ferries and CLdN on direct routes to continental Europe was welcomed by the market and is an important indicator of the preparedness and willingness of the shipping industry to respond to market needs.

A review of Irish Ports Offshore Renewable Energy Services (IPORES) was also conducted in 2018 that found the Irish ports industry to be prepared and willing to respond to the demands of the emerging offshore renewable energy sector. This industry creates opportunities for ports during the

Key Indicators 2018: iShip Index: +4%

LoLo: +4%

RoRo: +4%

Bulk: +4% Passenger: -2%

construction and maintenance phases of development, with the potential to create up to 7,100 jobs in the industry, at the highest level of deployment.

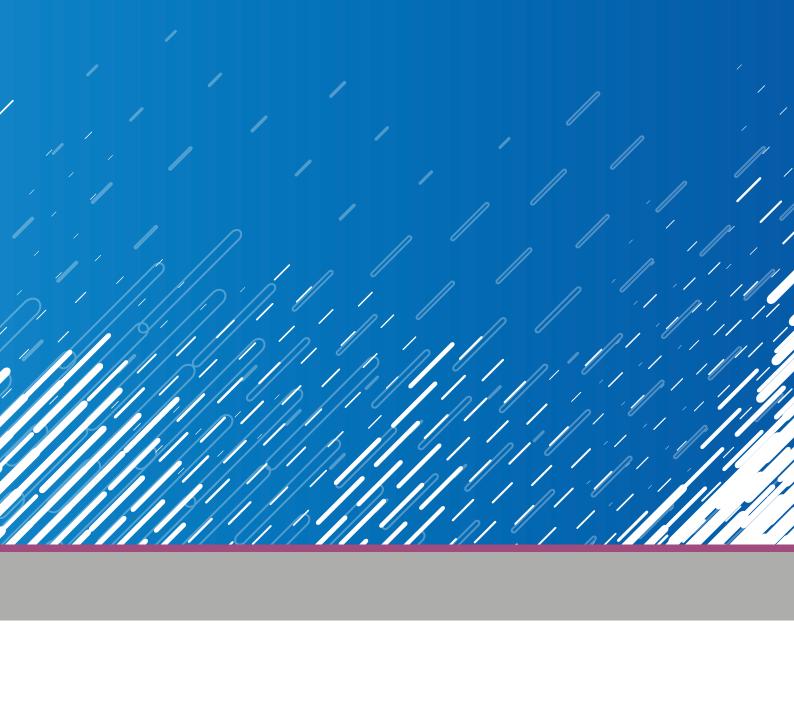
The Irish economy will remain heavily dependent on seaborne transport, regardless of the implications of Brexit. Ireland's maritime industry has shown itself to be responsive to changing market conditions and new market opportunities, with major developments taking place in Irish ports. The Alexandra Basin development and related works, which are taking place in Dublin Port, will result in approximately 3km of guay walls, a deeper harbour basin and a channel to accommodate larger vessels. The Port of Cork is building entirely new facilities in Ringaskiddy to accommodate larger vessels, to increase capacity to allow traffic to be transferred from the City Quay and Tivoli, and to provide for the growing demands of the region. Shannon Foynes Port Company (SFPC) is developing facilities that take advantage of the naturally occurring deep water in the estuary, meeting the needs of industrial users and servicing the demands of bulk cargoes in the Shannon region and in the wider economy. In addition, the ports of Waterford and Rosslare stand ready to meet the needs of current and new ports users, while ports of regional significance (Tier 3 ports) are capable of responding positively to commercial opportunities, as they arise.

In summary, 2018 has been a busy and challenging year for the maritime industry. Volumes grew significantly and reached new record levels, major redevelopment plans are underway, new and exciting opportunities are being progressed across the sector, and the challenges that will arise from Brexit are being addressed and factored into all planning decisions. I would like to take this opportunity to congratulate stakeholders in the maritime industry on their very considerable achievements in 2018 and to thank them for their continued interest in and support for, this publication. I would also like to thank all my colleagues in the IMDO for the effort, energy and professionalism that they put into this edition of the Irish Maritime Transport Economist.



Lvam Lacey

Liam LaceyDirector
Irish Maritime Development Office





NATIONAL ACCOUNTS

Gross Domestic Product (GDP) in Ireland grew by +6.7% to €312 billion in 2018, this is the seventh year of consecutive growth, as outlined in Table 1A. Gross National Product also grew in 2018 by +5.9% to €245 billion. GDP grew in Q2 (+2.5%), Q3 (+0.9%), and Q4 (+0.1%), but declined in Q1 (-0.6%). In the case of GNP, it also grew in Q2 (+0.7%), Q3 (+5.2%) and Q4 (+2.4%), but declined in Q1 (-4.9%).

According to the Central Bank of Ireland (CBI), due to the favourable international growth environment, Ireland's domestic economy grew at a strong pace in 2018. There was continued growth in employment and investment in construction, which has supported private consumption in the domestic economy. The increase in employment was spread across most sectors. Unemployment in Ireland, while lower than in 2017, remained within a range of 5.6% – 5.9% throughout 2018. This is down from the high of 15.9% in December 2011. Planning permissions for residential units grew strongly and construction sentiment remains high, suggesting continued momentum in construction activity in 2019.

The Balance of Payments current account balance, which is a measure of Ireland's financial flows with the rest of the world, was at \leq 29bn for 2018, up \leq 4bn from 2017.

In May, the European Commission and the European Central Bank (ECB) concluded its ninth post-programme assessment of the Irish economy. They concluded that while domestic economic activity is expected to remain robust in the short term, risks remain. These include changes to the international taxation regime, the UK's exit from the EU, and continued uncertainty in the global trade environment, in particular regarding the influence of multinationals within the Irish economy.

The housing supply shortage and continued increases in residential property prices and rents remain a major domestic challenge. Despite recent increases, housing supply remains below the level needed to address long-term housing demand adequately. The post-programme assessment identified that recent government measures to increase housing supply are going in the right direction, measures which will benefit from timely and efficient implementation.

CBI forecasts suggest that economic activity will continue to grow at a relatively solid pace in coming years, though some moderation in growth is a prospect in 2019 and 2020. The European Commission and the ECB identify this expected slowing of growth as a result of the advanced stage of the current cyclical expansion. They also highlight the uncertainty in the current global economic environment.

TABLE 1A

National Accounts: 2008 – 2018

| | (| onstant Pricres €'00 | 0 | |
|------|---------|----------------------|---------|----------|
| Year | GDP | % change | GNP | % change |
| 2008 | 183,050 | -4% | 156,151 | -4% |
| 2009 | 174,616 | -5% | 143,973 | -8% |
| 2010 | 178,100 | 2% | 149,341 | 4% |
| 2011 | 171,939 | -3% | 138,151 | -7% |
| 2012 | 175,561 | 2% | 142,012 | 3% |
| 2013 | 180,298 | 3% | 151,990 | 7% |
| 2014 | 194,537 | 8% | 164,822 | 8% |
| 2015 | 262,037 | 35% | 205,990 | 25% |
| 2016 | 275,567 | 5% | 226,749 | 10% |
| 2017 | 296,152 | 7% | 241,185 | 6% |
| 2018 | 312,464 | 7% | 245,736 | 6% |

Source: Central Statistics Office

TABLE 1B

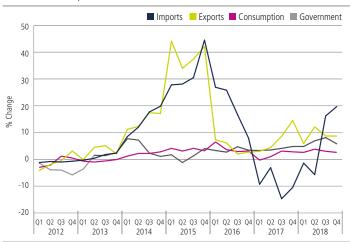
Real GDP Growth in Selected Economies: 2015 – 2020

| Real GDP % Change (national currency) | | | | | | | | | | |
|---------------------------------------|------|------|------|------|----------|----------|--|--|--|--|
| Country | 2015 | 2016 | 2017 | 2018 | 2019 (f) | 2020 (f) | | | | |
| Ireland | 25.1 | | | 6.8 | | | | | | |
| France | 1.1 | 1.2 | 2.2 | 1.5 | 1.3 | 1.5 | | | | |
| Germany | 1.7 | 2.2 | 2.2 | 1.5 | 1.1 | 1.7 | | | | |
| Italy | 0.9 | 1.1 | 1.6 | 1 | 0.2 | 0.8 | | | | |
| Spain | 3.6 | 3.2 | 3 | 2.5 | 2.1 | 1.9 | | | | |
| Eurozone | 2.1 | 2 | 2.4 | 1.9 | 1.3 | 1.6 | | | | |
| EU27 | 2.3 | 2.1 | 2.6 | 2.1 | 1.5 | 1.8 | | | | |
| United Kingdom | 2.3 | 1.8 | 1.8 | 1.4 | 1.3 | 1.3 | | | | |
| EU28 | 2.3 | 2 | 2.4 | 1.9 | 1.5 | 1.7 | | | | |
| China | 6.9 | 6.7 | 6.9 | 6.6 | 6.2 | 6.2 | | | | |
| Japan | 1.3 | 0.9 | 1.7 | 1.1 | 0.9 | 0.3 | | | | |
| United States | 2.8 | 1.5 | 2.2 | 2.8 | 2.5 | 1.8 | | | | |

Source: European Commission, Statistica.com

GRAPH 1A

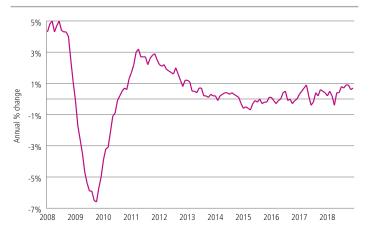
Growth in Components - ROI GDP: 2012 - 2018



Source: Central Statistics Office

GRAPH 2A

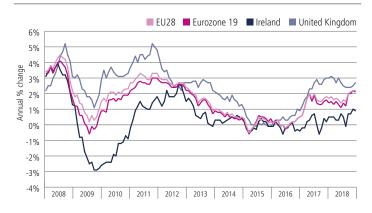
Consumer Price Index: 2008 - 2018



Source: Central Statistics Office

GRAPH 2B

ECB Harmonised Index of Consumer Prices: 2008 - 2018



Source: European Central Bank

GRAPH 2C

Wholesale Price Index: 2015 - 2018



Source: Central Statistics Office

INFLATION

Average headline inflation for 2018 was 0.7%, an increase from 0.3% on the previous year. This reflected a 0.2% decline in the price of goods, which was offset by a 1.6% increase in service prices, mainly driven by growth in housing rents. According to the Central Bank of Ireland's (CBI) Quarterly Bulletin No.1 for 2019, the "underlying inflationary pressures in the Irish economy remain subdued despite the strength of domestic activity." Together with Denmark, Ireland had the lowest level of inflation among the EU's Member States.

Graph 2A outlines the Central Statistics Office's (CSO) Consumer Price Index (CPI), which increased from an average of 0.34% in 2017 to 0.49% for 2018, the highest rate since 2013. The CPI measures the change in the average level of prices paid for consumer goods and services by all private households and foreign visitors to Ireland.

For the CPI, the CSO reports that the most notable changes in the year were increases in Housing, Water, Electricity, Gas & Other Fuels (+4.6%); Alcoholic Beverages & Tobacco (+2.8%); Restaurants & Hotels (+2.1%); and Education (+1.7%). There were decreases in Furnishings, Household Equipment & Routine Household Maintenance (-3.5%); Miscellaneous Goods & Services (-2.4%); Communications (-1.5%); and Food & Non-Alcoholic Beverages (-1.4%).

Graph 2B outlines the ECB's Harmonised Index of Consumer Prices (HICP) for Ireland, the UK, the Eurozone and the EU28. The HCIP for the EU28 grew from +1.7% to +1.9%. In the Eurozone, the index rose from +1.5% to +1.8%, while in the UK, the index declined from +2.7% to +2.5%. The ECB uses the HICP to measure changes over time in the prices of consumer goods and services acquired by households.

The 2018 Wholesale Price Index (WPI) from the CSO is shown in Graph 2C. It measures changes in prices received by Irish manufacturers for goods produced in Ireland, and sold to the home or export markets. For Home Sales, it declined slightly from an average of 99.9 in 2017, to 98.9 in 2018. A decline also took place in Export Sales from 101.3 in 2017 to 98.8 in 2018.

The CBI expects inflation to increase to 0.8% in 2019, and to reach 1.3% in 2020.

INTEREST RATES

Continued divergence between the major international interest rates continued in 2018, following similar trends in 2017, as displayed in Graph 3A. The European Central Bank (ECB) kept its main interest rate unchanged throughout 2018 at 0%. The People's Bank of China (PBoC) kept their interest rate at 4.35%. However, both the Bank of England (BoE) and the US Federal Reserve (USFR) increased their national interest rates, to 0.75% and 2.5% respectively.

In December 2018, the ECB's Governing Council maintained the key interest rates at 0%, and will likely continue to do so until the summer of 2019, "and in any case for as long as necessary" to ensure inflation remains below 2%. The European Commission has highlighted that during 2018 the EU economy experienced its sixth year of uninterrupted growth. However, the moderation of momentum since the start of 2018 has resulted in leading indicators suggesting that economic growth peaked in 2017. The Commission's Economic Sentiment Indicator (ESI) reached 115 points in December 2017, its highest since 2000, but declined to 107.6 in December 2018.

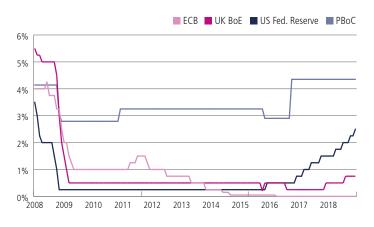
Unemployment in the EU28 was 6.5% in December 2018 and 8.2% within the nineteen members of the Eurozone. Youth unemployment stood at 14.2% in the EU28 and at 15.6% in the Eurozone. Germany had the lowest unemployment (3.1%) and youth unemployment (5%), while Greece had the highest in both categories, at 18.2% and 39.5% respectively.

The BoE's Monetary Policy Committee decided in December 2018 to maintain interest rates at 0.75%. It is expected that further increases will take place in the coming years, however, the UK's planned departure from the EU challenges the accuracy of forecasts. In December the USFR's Federal Open Market Committee increased the interest rate to 2.5% as a result of the sustained expansion of economic activity, strong labour market conditions, and inflation near the Committee's symmetric 2% objective for the medium term. Downward pressure on the Chinese economy was the result of lower levels of industrial output and the continued imposition of trade tariffs by the US. It retained rates at the same levels throughout the year.

In terms of Ireland's credit ratings, they have remained consistent throughout 2018, with all three of the leading rating agencies giving Ireland a 'stable' rating. Stand & Poor's rating has applied since 2015, with Fitch and Moody's unchanged since 2017. Ireland's 10-year government bond yields dropped further in 2018, from 1.13% to 0.90% due to the positive trends in the wider economy and national finances.

GRAPH 3A

International Interest Rates: 2008 - 2018



Source: European Central Bank, Bank of England, US Federal Reserve, People's Bank of China

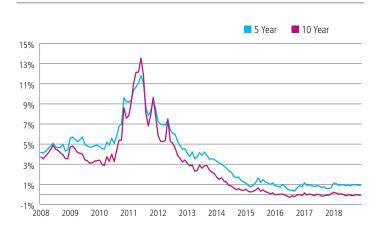
TABLE 3A

Source: Rating Agencies Rankings: December 2018 Moody's Fitch Ireland A2 A+Aa2 UK AA AA France AAAa2 AA Germany AAA Aaa AAA BBB BBB Italy Baa2 A-Baa1 A-Spain US Aa2 AAA Japan Α1 China Α1 A+

Source: tradingeconomics.com

GRAPH 3B

Irish Bond Yields: 2008 - 2018



Source: Investing.com

TABLE 4A

Selected Exchange Rates: Annual Averages (Units per Euro)

| Annual Averages | | | | | | | |
|-----------------|------|------|------|-------|--------|--|--|
| Year | USD | GBP | CNY | CHF | JPY | | |
| 2008 | 1.47 | 0.80 | 1.59 | 10.22 | 152.46 | | |
| 2009 | 1.39 | 0.89 | 1.51 | 9.53 | 130.34 | | |
| 2010 | 1.33 | 0.86 | 1.38 | 8.97 | 116.24 | | |
| 2011 | 1.39 | 0.87 | 1.23 | 9.00 | 110.96 | | |
| 2012 | 1.28 | 0.81 | 1.21 | 8.11 | 102.49 | | |
| 2013 | 1.33 | 0.85 | 1.23 | 8.16 | 129.66 | | |
| 2014 | 1.33 | 0.81 | 1.21 | 8.19 | 140.31 | | |
| 2015 | 1.11 | 0.73 | 1.07 | 6.97 | 134.31 | | |
| 2016 | 1.11 | 0.82 | 1.09 | 7.35 | 120.20 | | |
| 2017 | 1.13 | 0.88 | 1.11 | 7.63 | 126.71 | | |
| 2018 | 1.18 | 0.88 | 1.15 | 7.81 | 130.40 | | |

Source: Central Bank of Ireland

GRAPH 4A

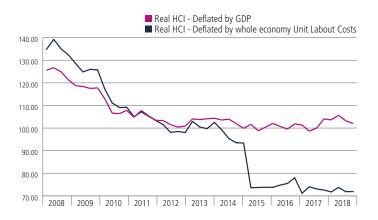
Euro Exchange Rates: 2008 - 2018



Source: Central Bank of Ireland

GRAPH 4B

HCI - Ireland: 2008 - 2018



Source: Central Bank of Ireland

EXCHANGE RATES

The euro posted gains across leading currencies again in 2018, following similar trends in 2017, as observed in Table 4A. The currency saw one of its biggest increases against the US dollar growing by +4.5% to \$1.18. The euro also increased in value against the Swiss franc, reaching CHF1.15, an average growth rate of +3.9%. Similar trends were observed against the Japanese Yen at ¥130.40 (+2.9%), and the Chinese Renminbi at CNY 7.80 (+2.3%).

The euro recorded a +1% increase on the British pound to £0.88. Graph 4A highlights the continuing trend of the euro gaining on the British pound since the June 2016 Brexit referendum. From reaching highs of £0.92 in 2009, it fell to as low as £0.71 in 2015.

The CBI points to exchange rate risks in 2019 as a result of disruptions to the global trading architecture. This was highlighted by unilateral tariff increases by the US, which was followed by retaliatory measures by its trading partners, including the EU, China and Canada. Additionally, negotiations surrounding the UK's exit from the EU causes difficulty in forecasting exchange rates.

Based on data from the CBI for Q1 – Q3 2018, the Harmonised Competitiveness Index (HCI) recorded a +3% increase compared to the same period in 2017, when it is deflated by GDP. When it is deflated by unit labour costs, the CBI's HCI declined by -1% over the same period. The HCI provides meaningful and comparable measures of euro area countries' price and cost competitiveness, while taking account of exchange rate fluctuations.

The National Competitiveness Council (NCC) has identified Brexit as a key factor that could undermine Ireland's competitiveness. The NCC state that Brexit underlines the importance of keeping costs down to mitigate the effects of continuing uncertainty and unfavourable exchange rate movements.

OIL AND BUNKER PRICES

The average prices of Brent crude oil in 2018 increased by +31% to \$70.94 per barrel (/b) as presented in Table 5A. OPEC decided in June 2018 to increase oil supplies as a means to balance the market and tame prices, which have crept upwards since Q2 2016. Nonetheless, throughout much of 2018, Brent prices rose with prices reaching a high of \$81.03/b during October.

The increase in prices throughout the year was the result of a series of market uncertainties. Despite both Libya and Nigeria producing at near-full capacity, other producers such as Venezuela and Angola were underperforming. There was increased geopolitical risk over the potential of new sanctions against Iran that raised the possibility of a fall in Iranian output.

However, while prices rose after June 2018, they fell rapidly in November declining to \$57.36/b in December. The cause of the rapid price falls was the result of oversupply in the market, as world inventories were still rising in Q4 2018, global supply was rapidly outpacing demand. Oil inventory levels reached record levels of production in Russia, Saudi Arabia, and in particular the US. In response to this plunge in prices, OPEC decided in December 2018 to remove 1.2 /mbpd from the market. While the OPEC Basket rate increased by +35% in 2018 to \$70.66/b, it declined in December to \$56.94/b.

A Reuters News Agency poll, of leading economists and analysts, forecasts an average price of \$69.13/b in 2019, compared with \$71.76/b in 2018. However, the US's Energy Information Administration (EIA) expects Brent to reach an average of \$61/b in 2019, and \$65/b in 2020. Nonetheless, with the US having emerged as the world's largest crude oil producer in 2018, its swelling production might still place this market under pressure throughout 2019.

The other key benchmark for oil prices is that of West Texas Intermediate (WTI) which grew by +28% to \$50.88/b in 2018. It mirrored trends in Brent crude, reaching highs last observed in Q3 2014 of \$76.41 in October, before dropping to \$42.53 in December. The EIA has predicted that WTI will reach \$54.19 in 2019.

In terms of Bunker Prices in Table 5A, similar trends were observed for Oil Prices throughout 2018. The annual average price for Intermediate Fuel Oil (IFO) benchmark 380 centi-Stoke (cSt) Rotterdam grew by +31% to \$399.89 /tonne in 2018, compared to the previous year. The Los Angeles price grew by +29% to \$434.67 /tonne, with Singapore growing by +31% to \$432.15. These three bunker benchmarks grew from Q1 - Q3, and in some cases by average of +11% in May. However, in Q4 declines were recorded across all three, as much as by -17% in December, reflecting wider trends following OPEC's decisions throughout 2018.

TABLE 5A

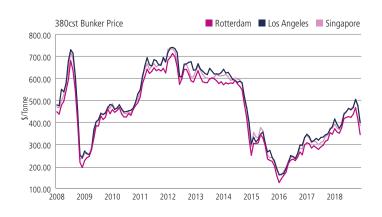
Bunker Prices (\$/Tonne) and Crude Oil Prices (\$/): 2008 - 2018

| | | Oil Prices | | | Bunker Prices | |
|------|-------|------------|-------------|-----------|---------------|-----------|
| Year | Brent | WTI | OPEC Basket | Rotterdam | Los Angeles | Singapore |
| 2007 | 98.7 | 99.6 | 94.1 | 471.9 | 524.5 | 505.6 |
| 2008 | 61.8 | 61.7 | 60.9 | 353.8 | 375.1 | 371.9 |
| 2009 | 79.7 | 79.4 | 77.4 | 450.2 | 468.8 | 464.1 |
| 2010 | 111.2 | 94.9 | 107.5 | 617.9 | 655.9 | 646.9 |
| 2011 | 112.5 | 94.1 | 109.5 | 639.6 | 681.4 | 664.1 |
| 2012 | 109.7 | 97.9 | 105.9 | 594.8 | 631.4 | 615.9 |
| 2013 | 99.6 | 93.3 | 96.3 | 532.1 | 568.3 | 559.7 |
| 2014 | 52.4 | 48.7 | 49.5 | 264.1 | 288.0 | 291.6 |
| 2015 | 43.3 | 43.1 | 40.7 | 213.1 | 234.0 | 232.8 |
| 2016 | 54.2 | 50.9 | 52.5 | 305.2 | 338.0 | 328.7 |
| 2017 | 70.9 | 64.9 | 70.7 | 399.9 | 434.7 | 432.2 |

Source: Clarksons Shipping Intelligence

GRAPH 5A

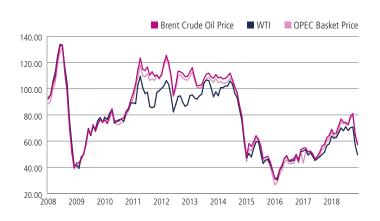
Bunker Prices: 2018 – 2018



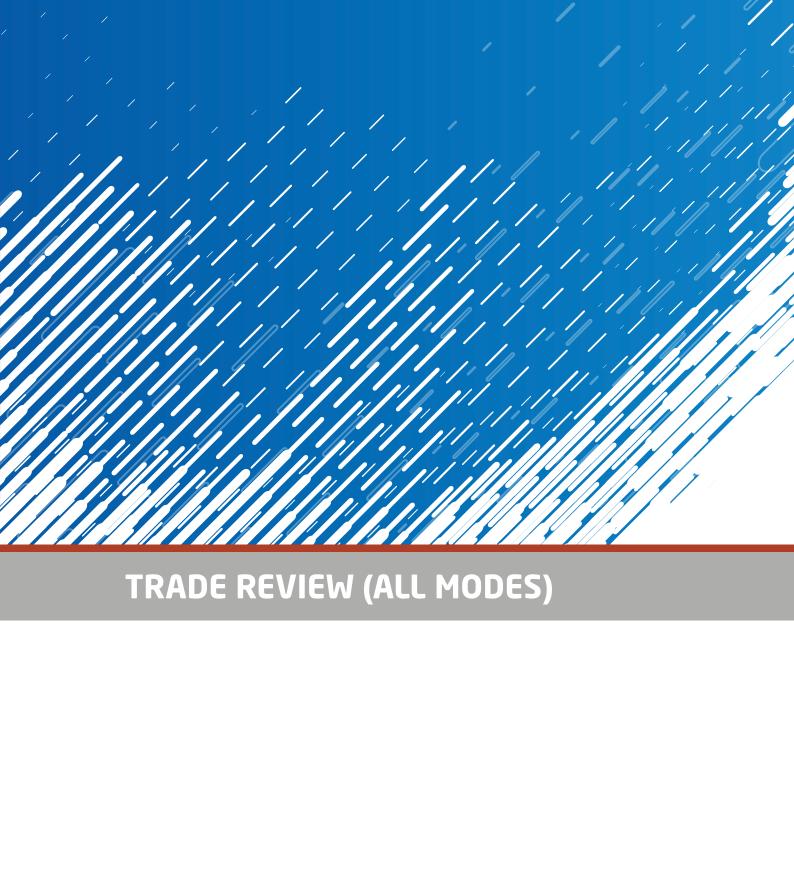
Source: Clarksons Shipping Intelligence

GRAPH 5B

Oil Prices (\$): 2008 - 2018



Source: Clarksons Shipping Intelligence



EXTERNAL MERCHANDISE TRADE: VALUE

The value of trade for Ireland grew again in 2018 as outlined in Table 6A, with exports increasing +15% to €140.8 billion, while imports also grew by +14% to €90.1 billion. The trade surplus expanded by +17% to reach €50.6 billion.

Table 6B outlines the value of trade categories as defined by the Central Statistics Office which Ireland exported and imported in 2018. Chemicals & Pharmaceuticals held the largest share of Irish exports at 61% with a value of €86.1 billion, an increase of +27% compared to the previous year. The two largest sub-sections here grew in 2018 with Medical & Pharmaceutical (€46.3 billion) growing by +31%, and Organic Chemicals (€26.7 billion) increasing by +35%.

Machinery & Transport Equipment was the second largest export category at 14%, with a value of €19.8 billion, a decline of -6% compared to 2017. One factor behind this trend was in decline of -17% in Electronic Machinery & Appliances to €5.3 billion.

Miscellaneous Manufactured Articles was the third largest category of Irish exports at 11%, growing by +6% to €15.7 billion. The increase was due to Professional & Scientific Apparatus expanding by +4% to €6.1 billion, Photographic Apparatus growing by +1% to €1.3 billion, and Miscellaneous Manufactured Articles growing by +9% to €7.4 billion.

Regarding imports by value, Machinery & Transport Equipment, the largest category of imports at 42%, grew by +19% to a value of €38.2 billion. This was due to Office & Data Processing Machines (€4.4 billion) expanding by +33%, Road Vehicles (€3.6 billion) expanding by +2%, and Other Transport Equipment (€20.6 billion) observing growth of +22%.

Chemicals & Pharmaceuticals is Ireland's second largest import commodity at 22%. This grew by +13% to \in 19.8 billion in 2018. This increase was due to the +28% growth in Medical & Pharmaceutical Products to \in 11.2 billion.

The other headline set of commodities that Ireland imports are Miscellaneous Manufactured Articles, with a value of €8.6 billion and representing 10% of imports, growing by +4%. Increases in Professional & Scientific Apparatus (+6%) to €1.8 billion, and Miscellaneous Manufactured Articles (+4%) to €3.1 billion accounted for this growth.

TABLE 6A

Ireland External Merchandise Trade Growth (Value €'000): 2008 – 2018

| Year | Exports | Imports | Trade Surplus | % Export Change | % Import Change | % Trade Surplus Change |
|------|---------|---------|------------------|-----------------------|-----------------------|------------------------------|
| 2008 | 88,503 | 59,335 | 29,167 | -2% | -10% | 20% |
| 2009 | 87,585 | 48,203 | 39,382 | -1% | -19% | 35% |
| 2010 | 90,923 | 48,694 | 42,229 | 4% | 1% | 7% |
| 2011 | 93,190 | 53,035 | 40,155 | 2% | 9% | -5% |
| 2012 | 93,506 | 56,179 | 37,327 | 0.3% | 6% | -7% |
| 2013 | 89,181 | 55,787 | 33,394 | -5% | -1% | -11% |
| 2014 | 92,615 | 62,157 | 30,458 | 4% | 11% | -9% |
| 2015 | 112,407 | 70,111 | 42,296 | 21% | 13% | 39% |
| 2016 | 119,292 | 74,236 | 45,055 | 6% | 6% | 7% |
| 2017 | 122,711 | 79,270 | 43,440 | 3% | 7% | -4% |
| 2018 | 140,834 | 90,175 | 50,659 | 15% | 14% | 17% |
| | | | | | | |

Source: Central Statistics Office

TABLE 6B

Ireland External Merchandise Trade by Commodity Group (Value €'000): 2017 – 2018

| | E | In | Imports | | | |
|---------------------------------|---------|---------------------|--------------------|--------|---------------------|--------------------|
| Commodity Group | € | % Change 2017 | % Share 2018 | € | % Change 2017 | % Share 2018 |
| Food & Live Animals | 11,105 | -2% | 8% | 7,754 | 8% | 9% |
| Beverages & Tobacco | 1,435 | 5% | 1% | 896 | -1% | 1% |
| Crude Materials | 1,929 | 6% | 1% | 932 | 3% | 1% |
| Mineral Fuel & Lubricants | 1,201 | 21% | 1% | 5,990 | 26% | 7% |
| Animal & Vegtable Oils | 64 | -30% | 0% | 259 | 0% | 0% |
| Chemicals & Pharmaceuticals | 86,100 | 27% | 61% | 19,820 | 13% | 22% |
| Manfactured Goods | 2,360 | 4% | 2% | 5,374 | 6% | 6% |
| Machinery & Transport Equipment | 19,809 | -6% | 14% | 38,242 | 19% | 42% |
| Misc. Manfactured Articles | 15,710 | 6% | 11% | 8,647 | 4% | 10% |
| Other Commodities | 1,117 | 11% | 1% | 2,257 | -1% | 3% |
| Total | 140,830 | 15% | | 90,171 | 14% | |

Source: Central Statistics Office

GRAPH 6A

Ireland External Merchandise Trade (Value €'000): 2008 - 2018

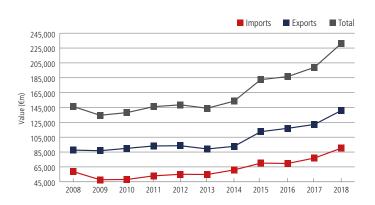


TABLE 7A

Ireland External Merchandise Trade Growth (Volume '000) 2008 – 2018

| Year | Exports | Imports | Trade | % | % | % |
|------|---------|---------|----------|--------|--------|---------|
| | -Tonnes | -Tonnes | Balance | Export | Import | Trade |
| | (000s) | (000s) | - Tonnes | Change | Change | Balance |
| | | | (000s) | | | Change |
| 2008 | 14,000 | 38,196 | -24,196 | 1% | -8% | -12% |
| 2009 | 12,369 | 32,814 | -20,445 | -12% | -14% | -16% |
| 2010 | 13,885 | 35,150 | -21,265 | 12% | 7% | 4% |
| 2011 | 15,017 | 34,165 | -19,148 | 8% | -3% | -10% |
| 2012 | 15,728 | 34,007 | -18,279 | 5% | 0% | -5% |
| 2013 | 15,672 | 36,602 | -20,930 | 0% | 8% | 15% |
| 2014 | 16,714 | 36,385 | -19,671 | 7% | -1% | -6% |
| 2015 | 18,551 | 39,061 | -20,510 | 11% | 7% | 4% |
| 2016 | 18,825 | 38,676 | -19,851 | 1% | -1% | -3% |
| 2017 | 18,438 | 40,350 | -21,912 | -2% | 4% | 10% |
| 2018 | 18,279 | 43,981 | -25,702 | -1% | 9% | 17% |

Source: Central Statistics Office

TABLE 7B

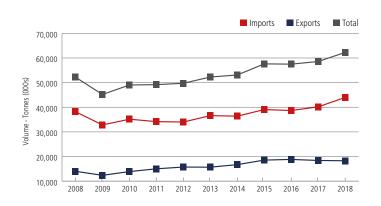
Ireland External Merchandise Trade by Commodity Group (Volume '000) 2017 – 2018

| | E | xports | Ir | Imports | | |
|---------------------------------|------------------|---------------------|--------------------|------------------|---------------------|--------------------|
| Commodity group | Tonnes (000s) | % Change 2017 | % Share 2018 | Tonnes (000s) | % Change 2017 | % Share 2018 |
| Food & Live Animals | 4,314 | 3% | 24% | 10,651 | 8% | 24% |
| Beverages & Tobacco | 861 | 6% | 5% | 830 | 4% | 2% |
| Crude Materials | 4,463 | -3% | 24% | 8,180 | 0% | 19% |
| Mineral Fuel & Lubricants | 2,419 | -13% | 13% | 13,841 | 2% | 31% |
| Animal & Vegtable Oils | 110 | -12% | 1% | 327 | 15% | 1% |
| Chemicals & Pharmaceuticals | 1,221 | 1% | 7% | 4,100 | 7% | 9% |
| Manfactured Goods | 4,045 | 3% | 22% | 3,904 | 21% | 9% |
| Machinery & Transport Equipment | 439 | 4% | 2% | 1,103 | 14% | 3% |
| Misc. Manfactured Articles | 321 | 4% | 2% | 1,024 | 4% | 2% |
| Other Commodities | 81 | 17% | 0% | 17 | -12% | 0% |
| Total | 18,274 | -1% | | 43,977 | 9% | |

Source: Central Statistics Office

GRAPH 7A

Ireland External Merchandise Trade (Volume '000) 2008 – 2018



EXTERNAL MERCHANDISE TRADE: VOLUME

The volume of Irish exports declined by -1% to 18.2m tonnes from 18.4m tonnes in the previous year, as outlined in Table 7A. This is the second consecutive year of declines in the volume of exports, having reached 18.8m tonnes in 2016. However, import volumes increased again by +9% to 43.9m tonnes, a new record high having expanded by +34% from a low of 32.8m tonnes in 2009.

Table 7B highlights how three commodity categories accounted for 70% of the volume of Irish exports in 2018; Crude Materials (24%), Food & Live Animals (24%) and Manufactured Goods (22%). Crude Material exports declined by -3% to 4.4m tonnes. This was the result of declines in Pulp & Waste Paper (-5%) to 396,982 tonnes and Crude Fertiliser & Minerals (-46%) to 297,060 tonnes.

The volume of exports of Food and Live Animals increased by +3% to 4.3m tonnes. The biggest increases were observed in Dairy Products & Birds' Eggs (+8%) to 914,601 tonnes; Sugar, Sugar Preparation & Honey (+68%) to 136,995 tonnes; and Feeding Stuff for Animals (+7%) to 344,983 tonnes.

The final headline volume export set of commodities of Manufactured Goods expanded by +3% to just over four million tonnes in 2018. Accounting for 72% of this category alone is Non-metallic Mineral Manufactures, which grew by +4% to 2.9m tonnes.

Imports by volume into Ireland is dominated by Mineral Fuel & Lubricants (31%), Food & Live Animals (24%), and Crude Materials (19%). Mineral Fuel & Lubricants grew by +2% to 13.8m tonnes, due to increases in Gas (Natural & Manufactured) by +14% to 3.6m tonnes and Coal, Coke & Briquettes grew by +29% to 1.8m tonnes. However, the largest commodity here of Petroleum Products declined by -6% to 8.3m tonnes.

Imports of Food & Live Animals grew by +8% to 10.6m tonnes. This increase was due to growth in Feeding Stuff for Animals which grew by +7% to just over four million tonnes; growth in Cereals & Cereal Preparations by +34% to 3.1m tonnes; and growth in Vegetables & Fruit and Dairy Products & Birds' Eggs by +6% and +10% respectively to just over one million tonnes each.

Crude Materials, at 8.1m tonnes, observed no growth in 2018. This was due to Metalliferous Ores & Scrap Metal, worth 4.6m tonnes, declining by -5% (-217,700 tonnes) and Crude Fertilisers & Minerals worth 2.7m tonnes growing by +12% (295,676 tonnes). Both categories account for 90% of the volume of Crude Materials.

EXTERNAL MERCHANDISE TRADE: COUNTRY

In 2018 the value of Irish exports was \leqslant 140.8 billion, with the EU, including the UK, accounting for 50.4% (\leqslant 70.9 billion) while 49.6% (\leqslant 69.8 billion) went to the rest of the world. In terms of imports, which were worth a total of \leqslant 90.1 billion, 60% (\leqslant 54 billion) was sourced from the EU, with the rest of the world compromising of the remaining 40% (\leqslant 36 billion).

As outlined in Table 8A, just five Member States accounted for 82% (€58 billion) of all Irish exports in the EU. The top export destination in the EU was to Belgium, with trade having increased by +38% to €18.4 billion compared to 2017. Exports to the UK declined by -2% to €16 billion. Exports to Germany grew by +4% to €10.5 billion, and to the Netherlands by +29% to €7.6 billion. No changes were observed with exports to France at €5.3 billion. Irish Exports to the other 18 members of the Eurozone grew by +21% to €50.4 billion

In terms of EU imports, the same five Member States accounted for 86% (\in 46.2 billion) of Irish – EU imports. The UK was the leading market, with imports increasing by +5% to \in 19.7 billion, followed by Germany at \in 10.5 billion which expanded by +53%. Imports from France grew by +8% to \in 11.3 billion, from the Netherlands by +21% to \in 2.9 billion, and from Belgium by +17% to \in 1.6 billion. Imports to the Eurozone grew by +22% to \in 30.6 billion.

Looking at the UK specifically, Great Britain accounted for 26% (\in 14 billion) of all Irish EU exports, and 53% (\in 18.3 billion) in EU imports. In the case of Northern Ireland, it was the source of 3% both for EU exports (\in 2 billion) and imports (\in 1.4 billion) for Ireland.

For non-EU exports, five countries accounted for 80% of Irish exports in 2018, worth \in 55.7 billion, as presented in Table 8B. The largest single destination is the US with exports of a value of \in 39.1 billion, which increased by +18% in 2018. This is followed by Switzerland (\in 6.4 billion) which grew by +4%, China (\in 4.6 billion) grew by +7%, Japan (\in 4 billion) grew by +54%, while Mexico (\in 1.4 billion) declined by -1%.

Due to the interconnectedness of Irish trade with the UK, the latter's departure from the EU will move a considerable portion of what was previously termed as EU trade, into non-EU. This is highlighted in Graph 8A. With the UK leaving the regulatory framework of the Single Market, and the Customs Union, additional processes in the treatment of UK products will occur.

TABLE 8A

Ireland - EU Trade: 2018 vs. 2017

| | Ехр | orts | Imp | orts | % Change to | 2017 €'000 |
|------------------|--------|----------------|--------|----------------|-------------|------------|
| | €'000 | Tonnes '000 | €'000 | Tonnes '000 | Exports | Imports |
| Belgium | 18,405 | 544 | 1,631 | 861 | 38% | 17% |
| UK | 16,097 | 9,937 | 19,782 | 17,643 | -2% | 5% |
| Germany | 10,552 | 421 | 10,570 | 1,598 | 4% | 53% |
| Netherlands | 7,628 | 1,166 | 2,948 | 1,612 | 29% | 21% |
| France | 5,350 | 1,151 | 11,362 | 1,334 | 0% | 8% |
| Italy | 3,638 | 237 | 1,572 | 315 | 39% | 0% |
| Spain | 2,564 | 300 | 1,441 | 1,626 | -1% | 9% |
| Poland | 1,156 | 93 | 675 | 219 | -13% | 8% |
| Sweden | 921 | 382 | 665 | 756 | 21% | 30% |
| Denmark | 729 | 106 | 506 | 267 | 12% | 17% |
| Czech Republic | 570 | 31 | 725 | 70 | 37% | 64% |
| Greece | 534 | 11 | 67 | 89 | 62% | 8% |
| Portugal | 442 | 152 | 201 | 177 | -3% | -20% |
| Austria | 416 | 37 | 317 | 84 | 7% | 11% |
| Romania | 388 | 17 | 92 | 32 | 24% | -9% |
| Eurozone | 50,490 | 4,163 | 30,611 | 8,212 | 21% | 22% |
| EU27 | 54,886 | 4,984 | 34,300 | 9,767 | 18% | 24% |
| EU28 | 70,983 | 14,922 | 54,083 | 27,410 | 13% | 16% |
| Great Britain | 14,085 | 6,884 | 18,306 | 13,909 | -3% | 5% |
| Northern Ireland | 2,011 | 3,053 | 1,476 | 3,733 | 4% | 8% |

Source: Central Statistics Office

TABLE 8B

Ireland - Non-EU Trade: 2018 vs. 2017

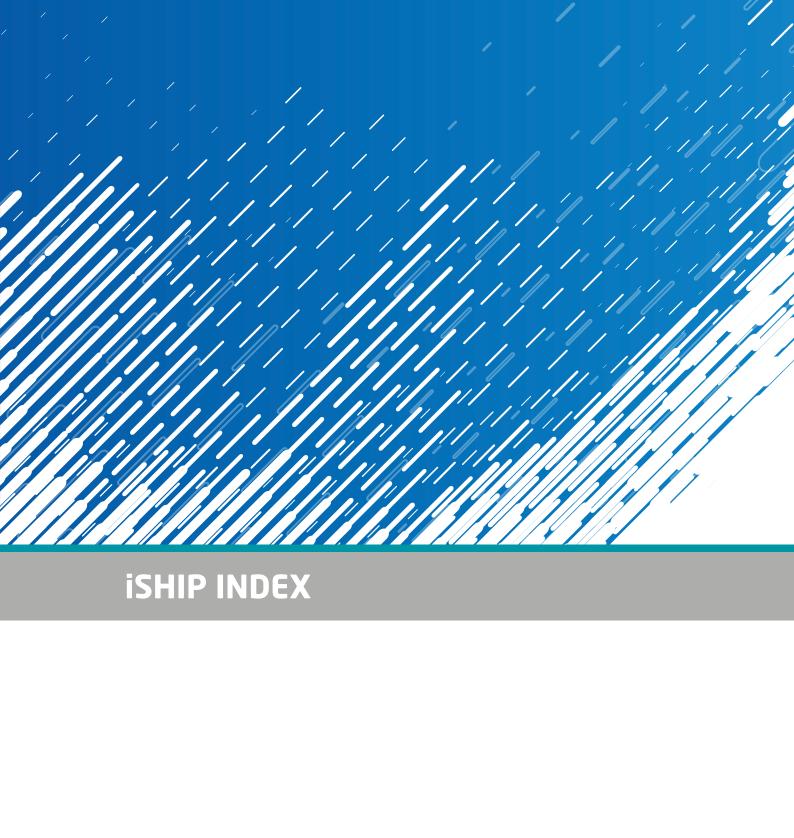
| | Exp | Exports Imports % Change | | % Change t | o 2017 €'000 | |
|-------------------------|--------|--------------------------|--------|----------------|--------------|---------|
| | €'000 | Tonnes '000 | €'000 | Tonnes '000 | Exports | Imports |
| United States | 39,120 | 600 | 15,759 | 2,426 | 18% | -4% |
| Switzerland | 6,479 | 15 | 723 | 25 | 4% | 20% |
| China | 4,674 | 322 | 5,245 | 525 | 7% | 19% |
| Japan | 4,033 | 66 | 1,440 | 59 | 54% | 19% |
| Mexico | 1,416 | 35 | 350 | 12 | -1% | 31% |
| Canada | 1,351 | 25 | 525 | 12 | 24% | -18% |
| Australia | 834 | 41 | 106 | 37 | -6% | 8% |
| Hong Kong | 786 | 46 | 114 | 5 | 14% | 13% |
| Singapore | 700 | 23 | 444 | 3 | 2% | 44% |
| South Korea | 590 | 25 | 856 | 61 | -7% | -12% |
| Turkey | 565 | 57 | 610 | 313 | 7% | 7% |
| Saudi Arabia | 546 | 30 | 18 | 21 | -23% | 125% |
| Russia | 520 | 28 | 557 | 1,689 | 5% | 79% |
| United Arab Emirates | 361 | 28 | 76 | 81 | -10% | 217% |
| Norway | 349 | 23 | 986 | 1,520 | -11% | -13% |
| Total | 69,850 | 3,356 | 36,092 | 16,571 | 17% | 10% |

Source: Central Statistics Office

GRAPH 8A

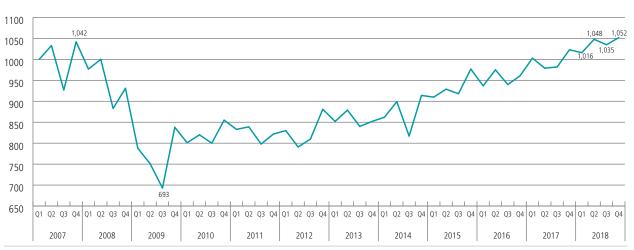
Ireland - Imports & Exports with EU27, UK & Rest of World (RoW): 2018





SHIPPING INDEX

Irish Maritime Development Office – iShip Index: 2007 – 2018



Source: IMDO

ISHIP INDEX

In 2018 the iShip Index indicates a +4% gain in Irish shipping activity, attaining 1,038 points as presented in Graph A, with positive growth recorded across all four quarters.

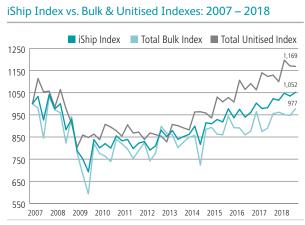
Since 2007 the IMDO has produced the iShip Index, a quarterly weighted indicator that outlines trends within Ireland's shipping industry, and as a result, the wider economy. Five separate market segments account for the Index, which represent the main maritime traffic moving through ports in Ireland. The unitised trade includes Lift-on/Lift-off (LoLo), Roll-on/Roll-off (RoRo), while the Bulk traffic includes Break Bulk, Dry Bulk and Liquid Bulk.

As all three bulk segments are measured in tonnage, LoLo and RoRo volumes are expressed in tonnage terms, whereby 1 TEU = 10 tonnes, and 1 RoRo Freight Unit = 14 tonnes, thus establishing a common denominator. The base period is Quarter 1 2007 at which point, all indices were set at 1,000.

LoLo grew by +4% reaching an average of 899 on the iShip Index. The market segment for RoRo also grew by +4% reaching 1,341 on the Index. Liquid Bulk grew by +2% to reach 923. Dry Bulk reached a new high of 1,031 on the iShip Index. Break Bulk achieved 633 on the Index having grown by +11%.

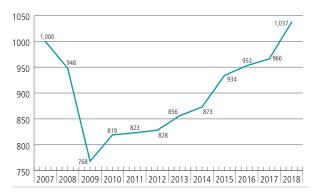
Graph B compares the Indexes for Unitised traffic (LoLo and RoRo) with all Bulk (Break, Dry and Liquid) with the iShip Index. Since 2013, Unitised traffic has exceeded the iShip Index, reaching 1,169 in Q4 2018, compared to Bulk which achieved 977.

GRAPH A



GRAPH B

Annual iShip Index



Source: IMDO

GRAPH D

RoRo Index



Source: IMDO

GRAPH F

Dry Bulk Index



Source: IMDO

GRAPH C

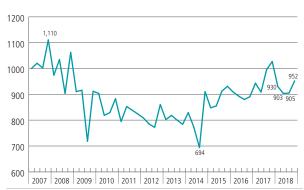
LoLo Index



Source: IMDO

GRAPH E

Liquid Bulk Index



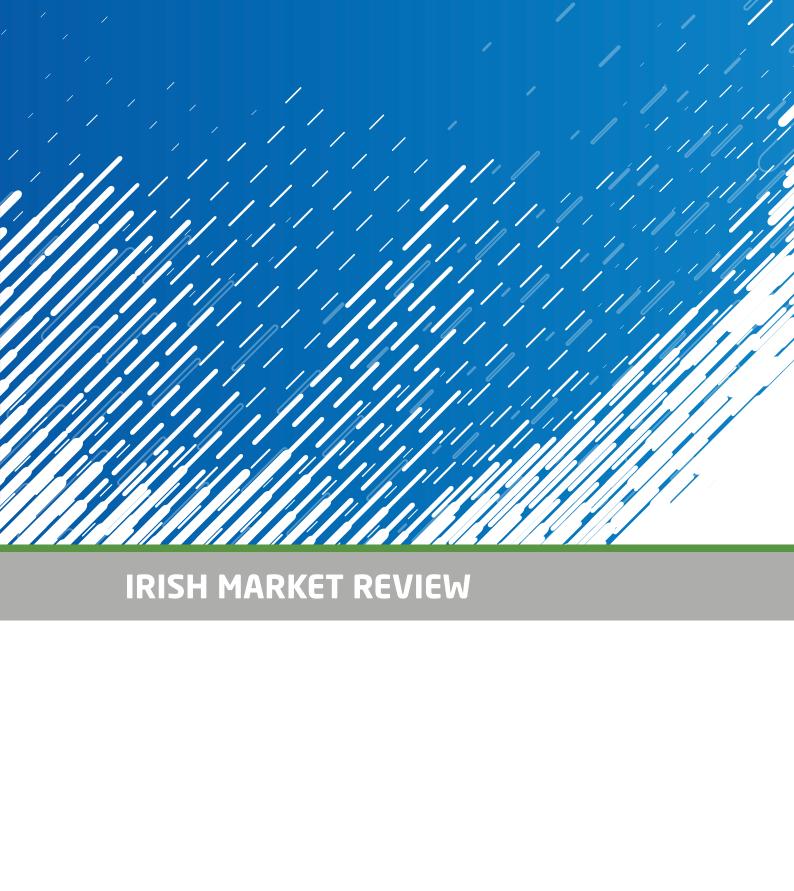
Source: IMDO

GRAPH G

Break Bulk Index







IRISH PORT TRAFFIC: TOTAL BULK VOLUMES

As outlined in Table 9A, the total volumes of Bulk port traffic through Ireland in 2018 increased by +3% to 31.3 million tonnes, with volumes through Northern Ireland increasing +4% to 12.7 million tonnes. On an all-island basis, throughput increased by +3% to 44.1 million tonnes. When oil trans-shipments from Bantry Bay are excluded, Ireland's port Bulk traffic increased by +4% to 30.7 million tonnes. On an all-island basis it increased +4% to 43.5 million tonnes.

When Bulk traffic for Ireland is broken down into imports and exports, 77% (24.1 million tonnes) of it was imports, with the remaining 23% (7.1 million tonnes) as exports. Imports grew by +4% when compared to 2017, with no growth in the case of exports. Similar Bulk traffic breakdowns can be observed in Northern Ireland, with imports at 73% (9.3 million tonnes) of total trade flows, and exports at 27% (3.4 million tonnes). Imports grew by +8%, with exports by +2% in Northern Ireland.

Of the thirteen Irish ports which handle Bulk traffic, eight saw increases in port traffic with Cork, Dublin, Drogheda and Waterford all experiencing sizeable increases. However, the largest Bulk port in Ireland, Shannon Foynes saw a decline of -5%. Of the Northern Irish ports, all saw increases in port traffic, with the largest Belfast increasing by +3%.

Cork, Dublin and Shannon Foynes again dominated the Bulk traffic market. Cork retained the same share of the Bulk market in 2018 as it did in the previous year at 24%. Dublin saw its share increase from 21% to 22%. While Shannon Foynes declined from 37% to 34%. Together these ports accounted for 81% of Bulk traffic, a decrease of -1% compared to 2017. The remaining ten ports saw their share collectively increase to 19%.

Of the Northern Irish ports, Belfast's share declined -1% to 77%, Warrenpoint's share declined -1% to 7%. Foyle grew +1% to 15%, in addition to Larne which grew from 0.2% to 0.4%.

Growth across the quarterlies varied both in Ireland and Northern Ireland in 2018, when compared to the same periods in the previous year. In Ireland, when excluding Bantry Bay, Bulk traffic saw no growth in Q1, while Q2 saw the highest level of growth for the year at +9%, with Q3 increasing at +6%, and +2% in Q4. In Northern Ireland, Bulk traffic grew by +12% in Q1, declined by -1% in Q2, before returning to +2% growth in Q3, and finishing at +2% for Q4.

The performance of individual Bulk categories of Break, Dry and Liquid are assessed in more detail in the following sections. Graph 9A and 9B illustrate the size of each market segment in Ireland and Northern Ireland. Break Bulk accounts for the smallest amount of traffic in Ireland (5%) and Northern Ireland (6%). However, Dry Bulk is the largest in both, at 56% in Ireland and even higher in Northern Ireland at 71%. Liquid Bulk accounts for 39% of Ireland's Bulk traffic, and 23% of Bulk traffic in Northern Ireland.

TABLE 9A

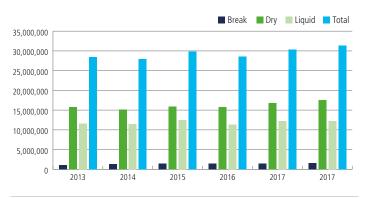
| Takal | Dialle | Tueland | 0. | N I a while a war | Tue laue de | 2017 | 2010 |
|-------|--------|---------|----|-------------------|-------------|------|----------|
| iotai | bulk - | rreiana | α | Northern | rreiana: | 2017 | VS. 2010 |

| Port | 2017 | % Share | 2018 | % Share | % Change |
|------------------------|------------|---------|------------|---------|----------|
| Bantry | 838,979 | 3% | 548,020 | 2% | -35% |
| Cork | 7,195,672 | 24% | 7,616,673 | 24% | 6% |
| Drogheda | 1,282,113 | 4% | 1,456,148 | 5% | 14% |
| Dublin | 6,336,106 | 21% | 7,020,022 | 22% | 11% |
| Dundalk | 74,341 | 0.2% | 112,444 | 0.4% | 51% |
| Galway | 601,312 | 2% | 577,804 | 2% | -4% |
| Greenore | 789,330 | 3% | 905,833 | 3% | 15% |
| New Ross | 345,423 | 1% | 388,647 | 1% | 13% |
| Rosslare | 43,729 | 0.1% | 19,202 | 0.1% | -56% |
| Shannon Foynes | 11,343,089 | 37% | 10,719,731 | 34% | -5% |
| Waterford | 1,328,908 | 4% | 1,701,579 | 5% | 28% |
| Wicklow | 142,641 | 0.5% | 188,071 | 1% | 32% |
| Youghal | 118,538 | 0.4% | 77,997 | 0.2% | -34% |
| Total Ireland | 30,440,181 | | 31,332,169 | | 3% |
| Belfast | 9,617,952 | 78% | 9,861,875 | 77% | 3% |
| Foyle | 1,770,360 | 14% | 1,943,886 | 15% | 10% |
| Larne | 25,575 | 0.2% | 45,346 | 0.4% | 77% |
| Warrenpoint | 928,139 | 8% | 934,518 | 7% | 1% |
| Total Northern Ireland | 12,342,026 | | 12,785,625 | | 4% |
| Total All-Island | 42,782,207 | | 44,117,794 | | 3% |
| | | | | | |

Source: IMDO

GRAPH 9A

Total Bulk - Ireland: 2013 - 2018



Source: IMDO

GRAPH 9B

Total Bulk - Northern Ireland: 2013 - 2018

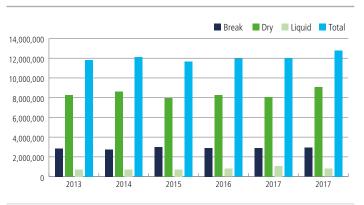


TABLE 10A

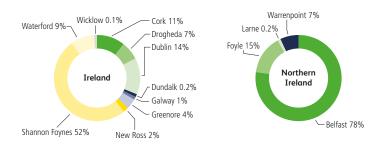
Dry Bulk - Ireland & Northern Ireland: 2017 vs. 2018

| Port | 2017 | % Share | 2018 | % Share | % Change |
|------------------------|------------|---------|------------|---------|----------|
| Cork | 1,386,855 | 8% | 1,880,040 | 11% | 36% |
| Drogheda | 1,000,514 | 6% | 1,212,656 | 7% | 21% |
| Dublin | 2,033,572 | 12% | 2,374,678 | 13% | 17% |
| Dundalk | 52,999 | 0.3% | 37,320 | 0.2% | -30% |
| Galway | 145,628 | 1% | 163,619 | 1% | 12% |
| Greenore | 628,607 | 4% | 737,780 | 4% | 17% |
| New Ross | 345,423 | 2% | 388,647 | 2% | 13% |
| Shannon Foynes | 9,962,951 | 59% | 9,227,807 | 52% | -7% |
| Waterford | 1,206,370 | 7% | 1,551,308 | 9% | 29% |
| Wicklow | 2,970 | 0.02% | 16,764 | 0.1% | 464% |
| Total Ireland | 16,765,889 | | 17,590,619 | | 5% |
| Belfast | 6,636,353 | 79% | 7,047,324 | 78% | 6% |
| Foyle | 1,110,139 | 13% | 1,344,728 | 15% | 21% |
| Larne | 11,680 | 0.1% | 19,266 | 0.2% | 65% |
| Warrenpoint | 619,330 | 7% | 654,621 | 7% | 6% |
| Total Northern Ireland | 8,377,502 | | 9,065,939 | | 8% |
| Total All-Island | 25,143,391 | | 26,656,559 | | 6% |
| Source: IMDO | | | | | |

Source: IMDO

GRAPH 10A

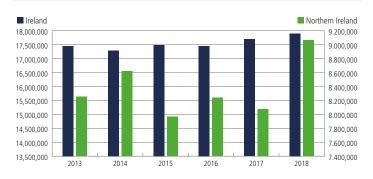
Dry Bulk - Market Share in Ireland & Northern Ireland: 2018



Source: IMDO

GRAPH 10B

Dry Bulk - Ireland & Northern Ireland: 2013 - 2018



Source: IMDO

DRY BULK

Dry Bulk traffic through ports in Ireland grew by +5% in 2018 to 17.5 million tonnes. Eight out of the ten ports which handle this traffic saw an increase in throughput, as outlined in Table 10A. Dry Bulk through Northern Irish ports grew by +8% to just over 9 million tonnes, with all ports reporting increases in 2018. On an all-island basis, throughput rose by +6% to 26.6 million tonnes.

Imports for Dry Bulk accounted for 77% (13.4 million tonnes) of the total trade flow in Ireland, with exports accounting for 23% (4 million tonnes). Imports grew by +6%, with exports growing by +2%. In Northern Ireland, imports accounted for 64% (5.8 million tonnes) of Dry Bulk, with exports making up the remaining 36% (3.2 million tonnes) of Dry Bulk. Imports increased by +15%, with exports expanding by +7%.

Commodities in this market segment include animal feed, iron ore, coal, fertilizer, cement, alumina and bauxite.

Demand for these commodities is volatile and is affected by changes in weather conditions.

Five of the ports which handle this type of traffic in Ireland accounted for 92% of this market segment. Shannon Foynes at 52% was the largest port in the Dry Bulk sector, despite its share declining from 59% in 2017. Dublin, Waterford and Drogheda saw their shares increase to 13%, 9% and 7% respectively, with Cork growing to 11%.

In Northern Ireland, Belfast saw its share of the Dry Bulk market decline -1% to 78%, while Foyle increased +1% to 15%. Warrenpoint retained its 7% share, with Larne growing from 0.1% to 0.2%.

Growth was mixed across the quarters in Irish ports, Q1 declined -3% compared to the previous year, however, growth was recorded for the remaining quarters, +10% in Q2, +11% in Q3 and +2% in Q4. However, Northern Ireland saw positive trends throughout the year, growing by +18% in Q1, by +5% in Q2, +8% in Q3 and by +3% in Q4.

Traffic in Animal Feed increased by +37% in 2018 as a result of the fodder crisis brought about by poor weather conditions in Q1 and Q2. Additionally, Fertiliser increased by +10%. Alumina and Bauxite declined -4%, Cement by -22% and Coal and -37%.

LIQUID BULK

Liquid Bulk, including Bantry Bay throughput, was relatively unchanged in 2018 at 12.2 million tonnes, as outlined in Table 11A, with many ports reporting a decline for the full year. However, in Northern Ireland a +1% increase to 2.9 million tonnes in traffic was observed. Taken together on an all-island basis, no growth was recorded in 2018 with total levels remaining at 15.1 million tonnes.

However, when trans-shipments through Bantry Bay are removed, Liquid Bulk in Ireland increased by +2% to 11.6 million, while on an all-island basis port traffic for Liquid Bulk increased by +2% to 14.5 million tonnes. Due to the fluctuations in Bantry Bay, a more accurate overview of Liquid Bulk in Ireland is achieved when it is removed from the annual total. However, Bantry Bay plays a vital strategic role in relation to the National Oil Reserves Agency, a standalone state body under the aegis of the Department of Communications, Climate Action and Environment.

In Ireland, imports of Liquid Bulk accounted for 81% (9.8 million tonnes) in 2018, exports accounting for the remaining 19% (2.3 million tonnes). As outlined in Graph 11A, Cork was Ireland's largest port for Liquid Bulk at 44%; Dublin increased its share of this market to 38% due to an increase of throughput of +8%. Shannon Foynes increased its share to 10% following an increase of +11% in throughput. Galway saw its share decline due to a -10% drop in Liquid Bulk throughput, while modest increases were achieved by Drogheda.

In Northern Ireland, Belfast accounted for 81% of Liquid Bulk traffic, an increase of +4% in 2017. The only other significant port to handle this commodity is Foyle, which saw its share of Liquid Bulk decline to 19%.

There were divergences across the quarters in both Ireland and Northern Ireland. While increases took place in Ireland in Q1 (+3%) and Q2 (+7%), no growth was observed in the final two quarters. Northern Ireland ports recorded a -1% decline in Liquid Bulk traffic in Q2, but volumes increased by +1% in Q1, by +4% in Q3 and +2% in Q4.

TABLE 11A

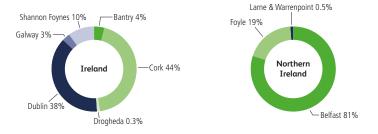
| Liquid | Bulk - | Ireland | & | Northern | Ireland: | 2017 | vs 2018 |
|--------|--------|---------|--------|-------------|------------|------|----------|
| Liquiu | Duik | riciana | \sim | 14016116111 | ir Ciaria. | 2017 | VJ. 2010 |

| Port | 2017 | % Share | 2018 | % Share | % Change |
|-----------------------------------|------------|---------|------------|---------|----------|
| Bantry | 838,979 | 7% | 548,020 | 4% | -35% |
| Cork | 5,556,719 | 45% | 5,399,449 | 44% | -3% |
| Drogheda | 33,001 | 0.3% | 35,677 | 0.3% | 8% |
| Dublin | 4,280,355 | 35% | 4,621,640 | 38% | 8% |
| Galway | 450,774 | 4% | 403,830 | 3% | -10% |
| Shannon Foynes | 1,074,617 | 9% | 1,192,944 | 10% | 11% |
| Total Ireland | 12,234,445 | | 12,201,559 | | 0% |
| Total Ireland excl. Bantry Bay | 11,395,466 | | 11,653,539 | | 2% |
| Belfast | 2,279,283 | 79% | 2,362,747 | 81% | 4% |
| Foyle | 589,242 | 20% | 542,101 | 19% | -8% |
| Larne | 2,943 | 0.1% | 3,883 | 0.1% | 32% |
| Warrenpoint | 11,268 | 0.4% | 10,719 | 0.4% | -5% |
| Total Northern Ireland | 2,882,736 | | 2,919,450 | | 1% |
| Total All-Island | 15,117,181 | | 15,121,009 | | 0% |
| Total All-Island excl. Bantry Bay | 14,278,202 | | 14,572,989 | | 2% |

Source: IMDO

GRAPH 11A

Liquid Bulk - Market Share in Ireland & Northern Ireland: 2018



Source: IMDO

GRAPH 11B

Liquid Bulk - Ireland & Northern Ireland: 2013 – 2018

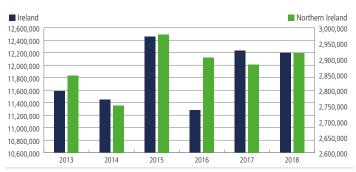


TABLE 12A

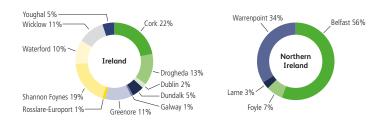
| Break Bulk | - Ireland | & Northern | Ireland: 2 | 017 vs | 2018 |
|------------|-------------|------------|--------------|-----------|------|
| DIEUK DUIK | - II Elullu | & NOLLIEIT | Il Ciuliu. Z | O I / VS. | 2010 |

| Port | 2017 | % Share | 2018 | % Share | % Change |
|------------------------|-----------|---------|-----------|---------|----------|
| Cork | 252,097 | 18% | 337,184 | 22% | 34% |
| Drogheda | 248,598 | 17% | 207,815 | 13% | -16% |
| Dublin | 22,179 | 2% | 23,704 | 2% | 7% |
| Dundalk | 21,342 | 1% | 75,123 | 5% | 252% |
| Galway | 4,910 | 0.3% | 10,355 | 1% | 111% |
| Greenore | 160,723 | 11% | 168,053 | 11% | 5% |
| Rosslare | 43,729 | 3% | 19,202 | 1% | -56% |
| Shannon Foynes | 305,522 | 21% | 298,980 | 19% | -2% |
| Waterford | 122,537 | 9% | 150,270 | 10% | 23% |
| Wicklow | 139,671 | 10% | 171,307 | 11% | 23% |
| Youghal | 118,538 | 8% | 77,997 | 5% | -34% |
| Total Ireland | 1,439,847 | | 1,539,990 | | 7% |
| Belfast | 702,316 | 65% | 451,804 | 56% | -36% |
| Foyle | 70,980 | 7% | 57,057 | 7% | -20% |
| Larne | 10,952 | 1% | 22,197 | 3% | 103% |
| Warrenpoint | 297,541 | 28% | 269,178 | 34% | -10% |
| Total Northern Ireland | 1,081,788 | | 800,236 | | -26% |
| Total All-Island | 2,521,635 | | 2,340,226 | | -7% |
| Course IMDO | | | | | |

Source: IMDO

GRAPH 12A

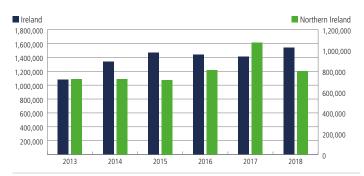
Break Bulk - Market Share: 2018



Source: IMDO

GRAPH 12B

Break Bulk - Ireland & Northern Irish: 2013 – 2018



Source: IMDO

BREAK BULK

Break Bulk traffic through Ireland in 2018 increased by +7% to 1.5 million tonnes, as outlined in Table 12A. Seven of the ports that handled this traffic reported increases for the year. However, in Northern Ireland Break Bulk declined -27% to 800,236 tonnes, due to a decline in three of the ports in 2018. On an all-island basis, the market segment declined -7% to 2.3 million tonnes.

In terms of trade flows, imports accounted for 53% of Irish Break Bulk traffic increasing by +2% to 813,851 tonnes. The remaining 47% was exports that increased by +23% to 727,107 tonnes. In the case of Northern Ireland, 81% of Break Bulk traffic is made up of imports, which declined by -15% to 651,406 tonnes. The remaining 19% relates to exports, which declined significantly by -52% to 148,830 tonnes.

As shown in Graph 12A, three ports accounted for over half of Break Bulk port throughput in Ireland (55% or 843,979 tonnes), an increase of +5% on the previous year. Cork overtook Shannon Foynes as the largest port in this market segment, increasing its share to 22%, due to a substantial (+34%) increase in traffic. Shannon Foynes dropped to 19% with returns declining -2% in 2018. As a result, Drogheda was the third largest port handling Break Bulk in Ireland with 13% of the market. The remaining eight ports saw an additional +10% of Break Bulk traffic through their networks (696,011 tonnes).

In Northern Ireland, Belfast's market share declined to 56% due to a .36% drop in throughput in 2018. As a result, Warrenpoint's share in Northern Ireland increased to 34%, despite its traffic market share falling by .10%. Foyle retained its 7% share of the market, with Larne increasing its own to .3%.

Break Bulk commodities involve loose, non-containerised cargo stowed directly into a ship's hold. Commodities such as timber, steel products, machinery and general project cargo make up the majority of Break Bulk. The main drivers of volumes in this segment are construction activities and the delivery of project cargo.

LIFT-ON/LIFT-OFF MARKET: PORTS*

As presented in Table 13A, a total of 763,862 laden TEU passed through Irish ports, an increase of +4% compared to the previous year. In Northern Ireland, laden LoLo traffic declined by -1% to 186,195 TEU. This is the third consecutive year of declines in this market segment in Northern Ireland, while it was the fifth consecutive year of growth for Irish ports. Taken on an all-island basis, total laden LoLo traffic grew by +3% in 2018 to 950,057 TEU. For the island of Ireland, laden exports increased by +1% to 414,941 TEU, and imports grew by +5% to 535,114 TEU.

Laden LoLo exports in Ireland grew by +3% to 328,571 TEU in 2018, and accounted for 43% of all laden traffic. Cork and Dublin each grew by +3%, to 94,622 TEU and 215,675 TEU respectively. Waterford saw an increase of +2% to 18,274 TEUs, the highest it has reached since 2013.

Laden LoLo imports to Ireland grew by +6% to 435,291 TEU in 2018, which accounted for 57% of all laden LoLo traffic. Cork grew by +5% to 83,179 TEU, Dublin grew by +6% to 339,588 TEU, with Waterford growing by +1% to 12,524 TEU.

In Northern Ireland, LoLo exports declined by -4% to 86,372 TEU, which accounted for 46% of all laden LoLo traffic in 2018 through Northern Irish ports. It was the second year of decline in LoLo laden exports here. Warrenpoint's traffic fell by -25% decrease to 12,073 TEU, while Belfast grew by +1% to 74,299 TEUs.

Laden imports in Northern Ireland increased by +1% to 99,823 TEUs. Belfast saw no growth in 2018 with 93,611 TEUs, while Warrenpoint grew by +28% to 6,212 TEUs.

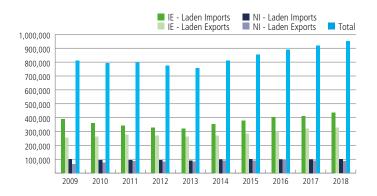
TABLE 13A

| Port | 2017 | 2018 | % Change | All-Island % Share |
|------------------------|---------|---------|----------|--------------------|
| Cork | 170,876 | 177,801 | 4% | 19% |
| Dublin | 530,287 | 555,263 | 5% | 58% |
| Waterford | 30,292 | 30,798 | 2% | 3% |
| Total Ireland | 731,455 | 763,862 | 4% | 80% |
| Belfast | 167,465 | 167,910 | 0% | 18% |
| Warrenpoint | 20,958 | 18,285 | -13% | 2% |
| Total Northern Ireland | 188,423 | 186,195 | -1% | 20% |
| Total All-Island | 919,878 | 950,057 | 3% | |

Source: IMDO

GRAPH 13A

Laden LoLo Traffic - Ireland (IE) & Northern Ireland (NI): 2009 - 2018



Source: IMDO

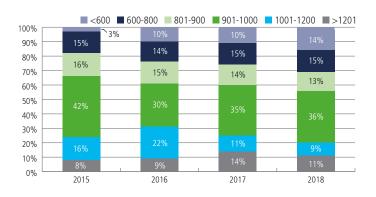
TABLE 13B

| Total All-Island | 286,896 | 299,873 | 5% | |
|------------------------|---------|---------|----------|--------------------|
| Total Northern Ireland | 59,752 | 63,819 | 7% | 219 |
| Warrenpoint | 11,517 | 7,563 | -34% | 39 |
| Belfast | 48,235 | 56,256 | 17% | 19% |
| Total Ireland | 227,144 | 236,054 | 4% | 79% |
| Waterford | 12,122 | 13,145 | 8% | 49 |
| Dublin | 168,132 | 170,949 | 2% | 579 |
| Cork | 46,890 | 51,960 | 11% | 179 |
| Port | 2017 | 2018 | % Change | All-Island % Share |

^{*} For unitised traffic, both RoRo and LoLo freight moves in an all-island context. While figures for bulk in its various forms are given for the Republic of Ireland, it is our normal practice to include traffic through Northern Ireland ports for analysis of unitised traffic.

GRAPH 14A

TEU Distribution of LoLo Vessel Arrivals – All Island: 2015 – 2018



Source: MarineTraffic

GRAPH 14B

LoLo Liner Service Countries: 2008 - 2018



Source: Eurostat

GRAPH 14C

Estimated Total Capacity & Traffic - All Island: 2019



Source: MarineTraffic

LIFT-ON/LIFT-OFF MARKET: OPERATORS

Data from MarineTraffic highlights that the average weekly calls of LoLo vessels into the island of Ireland was 35.9 in 2018, while the average monthly numbers of calls reached 158.9. In the case of TEU, the weekly average was 29,137 TEU, while the monthly average was 128,688 TEU in 2018. The busiest week was in early May, where 50 calls resulted in 44,909 TEU, while the busiest month was August with 176 vessel calls and 140.410 TEUs.

Dublin had the highest number of LoLo vessel calls at 1,067 (56%) and also TEU at 849,702 (55%). This was followed by Cork at 364 calls (19%) and 375,720 TEU (24%); Belfast with 273 calls (14%) and 206,262 TEU (13%); Waterford had 5% of all calls (104) and 5% of TEU (79,596); while Warrenpoint had 5% of LoLo vessel calls (99) and 2% of the annual TEU (32,980).

Graph 14A highlights the distribution of LoLo vessel calls on the island of Ireland from 2015 – 2018. The single largest section was again the 801 – 900 TEU range of vessels, which accounted for 37% (up +2% compared to 2017) of all containership calls in 2018. This was followed by the 1,001 – 1,200 TEU range at 15% (no change); the largest vessels in excess of 1,201 TEU had the third largest presence at 14% (+4% increase since 2017); vessels between 901 – 1,000 TEUs were fourth at 13% (down -1%). The two smallest ranges of LoLo vessels to call were the <600 TEU at 11% (-3%) and 600 – 800 TEU at 9% (-2%).

Graph 14A confirms the overall international trend towards the use of larger vessels. The sub-800 TEU vessels accounted for 20% of all LoLo vessels calls into the island of Ireland in 2018. LoLo vessels above 1,000 TEUs accounted for 30% in 2018, having steadily increased from 18% in 2015.

In Graph 14B the Netherlands is the largest source of LoLo traffic for Ireland, accounting for 62% of such traffic, up from 58% from 2017. Belgium accounted for 13%, down from 14%, while the UK was 12%, down from 15%. These three countries represented 88% of all LoLo traffic in Ireland in 2018, up from 87% from the previous year.

This highlights the importance of short sea shipping and feeder services within Ireland's LoLo market. Since April 2016 there is just one deep-sea LoLo service into Ireland, the A.P. Møller – Mærsk A/S service into Cork as part of a weekly route from South America to Northern Europe. Mærsk's MV Polar Costa Rica became the largest vessel to call at Cork in June 2018, the 230m long containership has a capacity of 3,947 TEUs.

The provision of additional capacity was largely consistent with demand throughout 2018, as outlined in Graph 14C. There was a total of 299,873 TEU empty containers repositioned from ports on the island of Ireland in 2018, up +5% from the previous year. Ireland accounted for 79% (236,054 TEU) of all empty containers, while Northern Irish ports represented the remaining 21% (63,819 TEU). On an all-island basis, Dublin handled 57% (170,949 TEU) of empty containers, down from 59% in 2017; Belfast had 19% (56,256 TEU) up from 17%; Cork also increased its share from 16% to 17% (51,960 TEU); Waterford saw no change in its share at 4% (13,145 TEU); while Warrenpoint declined from 4% to 3% (7,563 TEU).

ROLL-ON/ROLL-OFF MARKET: PORTS

RoRo traffic in Ireland increased by +4% in 2018 to 1,163,872 units, as outlined in Table 15A. In Northern Ireland, the market segment grew by +1% to 849,901 RoRo units. On an all-island basis, RoRo units increased by +3% to 2,013,773.

On a quarterly basis, Ireland saw continuous growth throughout the year in Q1 (+2%), Q2 (+6%), Q3 (+4%) and Q4 (+3%). In Northern Ireland, RoRo traffic increased in Q1 (+1%), by +3% in both Q2 an Q3, however, a decline of -1% took place in Q4. On an all-island basis, volumes increased by +2% in Q1, by +5% in Q2, by +3% in Q3 and by +2% in Q4.

Graph 15A outlines the percentage share of the RoRo market that each of six RoRo ports on the island of Ireland have held from 2013 – 2018. Dublin has an all-island market share of 51%, which has gradually increased from 47% since 2013. Irish ports accounted for 58% of all RoRo traffic in 2018, while Northern Ireland has 42%.

The remaining market shares of other RoRo ports have either declined (Larne, Rosslare-Europort) or remained static (Belfast, Warrenpoint). While Cork's RoRo throughput increased in 2018 to 0.2% of the all-island share.

Services from Ireland to Great Britain increased by +5% in 2018, while direct services to the EU declined by -1% in 2018. In terms of the latter, disruptions to sailings reduced the frequency of services throughout the year with a number of shipping operators. In terms of Northern Ireland, services are only provided to Great Britain, which increased by +1%.

Dublin maintained its position as the core RoRo port in Ireland, accounting for 88.7% of throughput, with Rosslare-Europort at 11% and Cork the remaining 0.3%. In Northern Ireland, Belfast handled 64% of RoRo traffic, Larne at 24% and Warrenpoint at 12%.

As outlined in Table 15B, accompanied RoRo traffic declined by -3% in all ports, with unaccompanied RoRo traffic increasing by +6%. This is part of a wider trend towards unaccompanied traffic. As a percentage of Dublin's RoRo traffic, accompanied has fallen from 47% in 2007 to 34% in 2018. In the case of Rosslare-Europort, it has declined from 58% to 51% over the same period, while Cork's has increased from 69% to 80%.

In Northern Ireland, the opposite outcome has arisen. RoRo accompanied traffic in Larne has increased from 51% in 2007 to 65% in 2018, with a slight increase in Warrenpoint from 7% to 11%. Belfast has remained consistent since 2013, with accompanied representing 34% of its RoRo throughput.

TABLE 15A

| RoRo - Freight Unit | s: Ireland an | d Northern | Ireland: 201 | 7 vs. 2018 |
|------------------------|---------------|------------|--------------|------------------|
| Port | 2017 | 2018 | % Change | All-Island Share |
| Cork | 556 | 3,561 | 540% | 0.2% |
| Dublin | 992,062 | 1,031,897 | 4% | 51% |
| Rosslare | 127,769 | 128,414 | 1% | 6% |
| Total Ireland | 1,120,387 | 1,163,872 | 4% | 58% |
| Belfast | 525,556 | 548,035 | 4% | 27% |
| Larne | 214,788 | 200,394 | -7% | 10% |
| Warrenpoint | 98,589 | 101,472 | 3% | 5% |
| Total Northern Ireland | 838,933 | 849,901 | 1% | 42% |
| Total All-Island | 1,959,320 | 2,013,773 | 3% | |

Source: IMDO

TABLE 15B

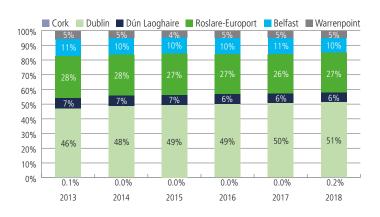
Roll-on/Roll-off Freight Traffic (Freight Units): 2017 - 2018

| | | Accompan | ied | U | naccompani | ed |
|------------------------|---------|----------|----------|-----------|------------|----------|
| Port | 2017 | 2018 | % Change | 2017 | 2018 | % Change |
| Cork | 473 | 2,844 | 501% | 83 | 717 | 764% |
| Dublin | 359,643 | 355,359 | -1% | 632,419 | 676,538 | 7% |
| Rosslare | 69,572 | 65,704 | -6% | 58,197 | 62,710 | 8% |
| Total Ireland | 429,688 | 423,907 | -1% | 690,699 | 739,965 | 7% |
| | | | | | | |
| Belfast | 182,220 | 183,922 | 1% | 343,336 | 364,113 | 6% |
| Larne | 148,203 | 130,092 | -12% | 66,585 | 70,302 | 6% |
| Warrenpoint | 7,549 | 7,870 | 4% | 91,040 | 93,602 | 3% |
| Total Northern Ireland | 337,972 | 321,884 | -5% | 500,961 | 528,017 | 5% |
| Total All-Island | 767,660 | 745,791 | -3% | 1,191,660 | 1,267,982 | 6% |

Source: IMDO

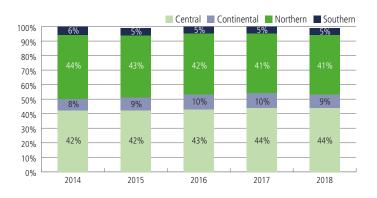
GRAPH 15A

Share of RoRo traffic in Ireland & Northern Ireland: 2013 - 2018



GRAPH 16A

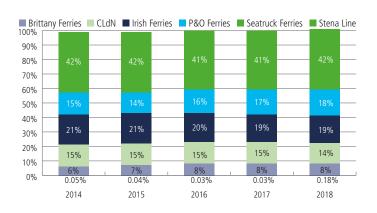
RoRo Units per Corridor: 2014 - 2018



Source: IMDO

GRAPH 16B

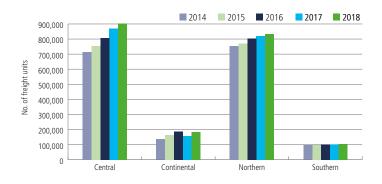
Operator Share of the All-Island RoRo Market: 2014 - 2018



Source: IMDO

GRAPH 16C

RoRo Units per Corridor: 2014 – 2018



Source: IMDO

ROLL-ON/ROLL-OFF MARKET: OPERATORS

RoRo traffic from Ireland and Northern Ireland moves on into four corridors, Central, Continental, Northern and Southern. The Central corridor accounts for services from the port of Dublin to Great Britain. This includes sailings to Holyhead by Irish Ferries and Stena Line; to Liverpool by P&O Ferries and Seatruck Ferries; and to Heysham by Seatruck. It grew by +4% in 2018 to account for 45% of all RoRo traffic on an all-island basis. Since 2008, this is the highest it has reached, having grown from 40% in 2012.

The Continental corridor provides direct services to Belgium, France, the Netherlands and Spain. Brittany Ferries operates from Cork to Roscoff, and since May 2018, to Santander. CLdN added capacity to its RoRo service to Zeebrugge and Rotterdam, with the 7,800 lane meter MV Delphine joining its fleet in February. On this corridor, Irish Ferries only operate from Dublin to Cherbourgh, following the closure of its Rosslare-Europort services to Cherbourg and Roscoff. Stena Line continues to provide a service to Cherbourg from Rosslare-Europort. Volumes on this corridor declined by -1% in 2018 as a result of disruption to services, which reduced sailing frequencies.

The Northern corridor offers sailings from Northern Ireland to Great Britain; from Larne to Cairnryan by P&O Ferries; Warrenpoint to Heysham by Seatruck Ferries; and Stena Line offering services from Belfast to Cairnryan, Liverpool, and Heysham. The corridor grew by +1% in 2018 and accounts for 41% of all RoRo traffic on the island of Ireland.

The final route, the Southern corridor, includes routes from Rosslare-Europort to Fishguard by Stena Line and Pembroke by Irish Ferries. It recorded zero growth in 2018, whereby it retained its 5% share of the all-island RoRo market, a share which has steadily declined from 8% since 2008.

At 41% of the market for the third consecutive year, the Swedish company Stena Line dominates the all-island RoRo market, operating on all four corridors. In a press release in December, Stena Line reported its best performing year on its Dublin to Holyhead route, as it reached over 250,000 RoRo units. This route will see the first of three new vessels added to the company's Irish Sea fleet in 2020. The new vessel will offer over 3,000 lane metres of freight capacity, doubling current capacity.

The British company Seatruck increased its capacity in 2018 on services from Dublin and Warrenpoint. In terms of the former, the Clipper Ranger vessel was replaced by a larger P series vessel, which offers almost twice the capacity. Capacity on services from Warrenpoint have been increased by +30% with the introduction of the Seatruck Performance and Seatruck Precision.

In January 2019 the owner of Irish Ferries, Irish Continental Group, secured a €155m loan from the EU's European Investment Bank (EIB) for two new ferries that will operate on routes from Dublin to Holyhead and Cherbourg. The WB Yeats, which can transport 165 trucks, was partly financed with €75m from the EIB. In June 2018, the EIB also provided €80m to Irish Ferries for a second new vessel, due for delivery in 2020. It will be able to transport up to 300 trucks.

In light of Brexit, P&O Ferries announced in late 2018 that it is to re-flag all its ships which operate on the English Channel to Cyprus. Additionally, the operator was purchased by the Dubai-based DP World for €375 million in January 2019. DP World had previously acquired the British company in 2006, but soon sold off P&O Ferries to its major shareholder, Dubai World.

PASSENGER TRAFFIC

Passengers using routes from Ireland to Great Britain and France, and from Northern Ireland to Great Britain declined by -2% (80,586) to 4,470,927 passengers in 2018. Passenger ferry routes exist on all four corridors, Central, Continental, Northern and Southern. Routes from Ireland accounted for 85% (-68,230) of the decline in passenger numbers, while routes from Northern Ireland accounted for the remaining 15% (-12,356).

The Central corridor accounted for 40% of all passenger traffic on an all-island basis, and declined by -3% in numbers during 2018 to 1,786,390. The corridor comprises of four routes from Dublin to Holyhead (Irish Ferries and Stena Line), while P&O Ferries operate to Liverpool. Additionally, the Isle of Man Steam Package Company conduct a summer seasonal service to from Dublin to Douglas.

The Continental corridor was the only corridor to experience growth in 2018, up +3% (+13,315) to 397,181. The corridor accounts for 9% of all passenger traffic on the island. The four routes on this corridor include Brittany Ferries' services from Cork to Roscoff and Santander, the latter having commenced in May 2018. With the closure of its services from Rosslare-Europort to Roscoff and Cherbourg from 2019, Irish Ferries now only operate a service from Dublin – Cherbourg. Stena Line continues to operate from Rosslare-Europort to Cherbourg.

The Northern corridor, which accounted for 38% of all passenger throughput, declined by -1% (12,356 passengers) in 2018 to 1,735,684. This corridor consists of three routes, one by P&O Ferries from Larne to Cairnryan, with Stena Line operating routes from Belfast to Liverpool and Cairnryan.

The Southern corridor, which offers services to Fishguard and Pembroke from Rosslare-Europort, saw volumes fall by -4% (-25,541) to 551,672. The two routes from Rosslare-Europort to Fishguard by Stena Line and Pembroke by Irish Ferries accounted for 12% of all passenger traffic in 2018.

GRAPH 17A

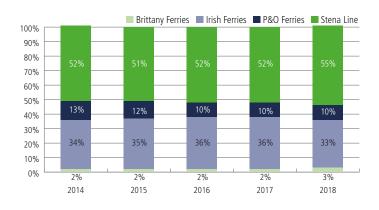
Passenger per Corridor: 2014 – 2018



Source: IMDO

GRAPH 17B

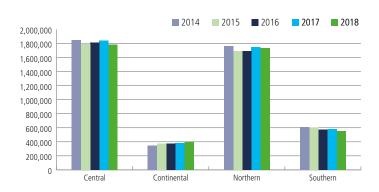
Operator Share of the All-Island Passenger Market: 2014 - 2018



Source: IMDO

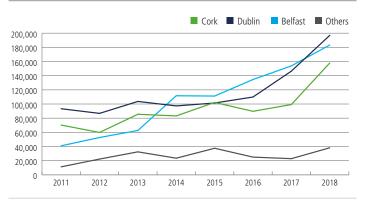
GRAPH 17C

Passenger Numbers per Corridor: 2014 – 2018



GRAPH 18A

Annual Numbers in Cruise Ship Calls: 2011 - 2018



Source: IMDO

TABLE 18A

| Port | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Bantry | 964 | 1,385 | 1,167 | 2,399 | 106 | 174 | 1,551 | 5,472 |
| Castletownbere | 0 | 42 | 0 | 0 | 0 | 134 | 0 | 7(|
| Cork | 70,283 | 59,839 | 85,495 | 83,201 | 102,217 | 89.686 | 99,263 | 157,867 |
| Dublin | 93,336 | 86,771 | 103,633 | 97,316 | 101,400 | 109,884 | 146,429 | 196,899 |
| Dún Laoghaire | 0 | 100 | 13,952 | 952 | 12,947 | 6,268 | 1,452 | 632 |
| Galway | 723 | 2,422 | 2,094 | 2,860 | 2,326 | 1,567 | 4,063 | 5,828 |
| Killybegs | 1,278 | 4,360 | 3,016 | 4,976 | 5,975 | 6,226 | 7,209 | 13,070 |
| Schull | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 170 |
| Shannon | 1,403 | 2,640 | 1,536 | 0 | 1,421 | 0 | 207 | 1,333 |
| Waterford | 3,850 | 8,210 | 7,583 | 10,197 | 11,641 | 7,498 | 4,710 | 8,728 |
| Total Ireland | 171,837 | 165,769 | 218,476 | 201,901 | 238,033 | 221,437 | 264,884 | 390,069 |
| Belfast | 40,974 | 52,705 | 62,628 | 111,676 | 111,238 | 134,592 | 153,801 | 183,290 |
| Foyle | 0 | 0 | 0 | 1,687 | 3,102 | 2,602 | 3,358 | 2,878 |
| Warrenpoint | 3,090 | 3,090 | 3,090 | 407 | 0 | 567 | 281 | (|
| Total Northern Ireland | 44,064 | 55,795 | 65,718 | 113,770 | 114,340 | 137,761 | 157,440 | 186,16 |
| Total All-Island | 215,901 | 221,564 | 284,194 | 315.671 | 352,373 | 359,198 | 422,324 | 576.23 |

TABLE 18A

| Total All-Island | 207 | 240 | 279 | 245 | 257 | 299 | 336 | 422 |
|------------------------|------|------|------|------|------|------|------|------|
| Total Northern Ireland | 42 | 55 | 67 | 68 | 65 | 90 | 105 | 121 |
| Warrenpoint | 10 | 10 | 10 | 1 | 0 | 3 | 2 | 0 |
| Foyle | 0 | 0 | 0 | 3 | 6 | 4 | 9 | 6 |
| Belfast | 32 | 45 | 57 | 64 | 59 | 83 | 94 | 115 |
| Total Ireland | 165 | 185 | 212 | 177 | 192 | 209 | 231 | 301 |
| Waterford | 11 | 13 | 19 | 16 | 15 | 14 | 12 | 18 |
| Shannon | 4 | 4 | 4 | 0 | 2 | 0 | 2 | 3 |
| Schull | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Killybegs | 6 | 12 | 6 | 10 | 9 | 13 | 12 | 15 |
| Galway | 3 | 6 | 6 | 6 | 5 | 4 | 5 | 8 |
| Dun Laoghaire | 0 | 2 | 12 | 4 | 8 | 8 | 7 | 3 |
| Dublin | 85 | 87 | 100 | 86 | 93 | 109 | 127 | 150 |
| Cork | 53 | 57 | 62 | 52 | 57 | 57 | 62 | 93 |
| Castletownbere | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| Bantry | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 9 |
| Port | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |

Source: IMDO

CRUISE SECTOR

A total of 422 cruise vessels called into ports in both Ireland and Northern Ireland in 2018. This is a +26% increase compared to the previous year. The number of passengers reached 576,237, a +36% increase in numbers compared to 2018. Ireland accounted for 71% (301) of cruise calls, and 68% (390,069) in terms of passenger numbers. Northern Ireland made up 29% (121) of cruise calls, and 32% (168,168) of passengers in 2018.

Three ports accounted for 85% of cruise calls, and 93% of all passengers in Dublin, Belfast and Cork. Dublin is by far the largest destination for cruise liners, with 150 vessel calls, an increase of 23 from the previous year. This constituted an increase of 50,470 passengers compared to the previous year, totalling 196,889 passengers (an increase of 29,849). Belfast had 115 calls (an increase of 21) and 183,801 passengers (an increase of 29,849) Cork had the greatest increase in cruise calls with 31 additional callings, totalling 93 calls into the port, bringing an additional 58,604 passengers, which totalled 157,867 passengers in 2018.

Outside of the top-tier cruise ports, Waterford's cruise calls increased from 12 to 18, almost doubling passenger numbers from 4,710 to 8,728. Bantry Bay had 9 calls in 2018 with 5,472 passengers; Galway saw 8 cruise ships visit the city, bringing 5,828 passengers; while 6 vessels and 2,878 passengers visited Foyle harbour in 2018. Dún Laoghaire and Shannon - Foynes each had three cruise ship calls.

While cruise traffic has more than doubled since 2011, growth is not confined to the leading ports. For example, Killybegs saw 15 cruise ships and 13,070 passengers visit the harbour, an increase from 12 calls and 7,209 passengers in the previous year. Elsewhere, in May, the Ocean Nova became the first cruise ship to call into the West Cork island of Cape Clear and Schull with 70 passengers. Also in May, 170 passengers from the cruise ship MS Hanseatic called into Bere Island.

The growth in cruise tourism in Ireland mirrors the international trend, which has resulted in year-on-year progress this decade. The Cruise Liners International Association forecast global cruise passenger numbers to grow from 28.2 million to 30 million in 2019, an increase of +53% compared to 2011.

FORECASTING

Tables 19A, 19B and 19C show IMDO forecasts of growth in the RoRo, LoLo and Dry and Break Bulk markets in 2018 under conditions of Low, Baseline and High economic growth scenarios. Projections are also made according to Brexit outcomes: that of a no, soft or hard Brexit. Liquid Bulk is expected to remain unchanged regardless of Brexit or economic growth scenario.

According to Clarksons' Shipping Intelligence, global containership trade is forecast to grow by +4.7% in 2019, and decrease slightly to +4.5% in 2020. The outlook for the global containership market remains cautiously optimistic. Clarksons' expect a return to fundamental rebalancing in the sector, alongside an expected significant moderation in fleet capacity growth and relatively healthy demand trends. However, risks exist within the global economy, such as increasingly negative economic trends in China, and continued trade disputes between China and the US. These, and other risk factors, need to be tracked closely.

The Economic and Social Research Institute (ESRI) has stated that Ireland's Gross Domestic Product grew by +6.7% in 2018, and has forecasted that it will moderate growth to +3.8% in 2019, and +3.2% in 2020. Gross National Product, according to the ESRI, grew by +5.9% in 2018, and has forecast that growth here will also moderate in 2019 to +3.4%, and +3% in 2020. Similar to trends highlighted previously by Clarksons', the ESRI emphasise the underlying weaknesses in the Chinese economy, and the deteriorating trade relationship between China and the US. Additionally, the Eurozone recovery stalled somewhat in 2018. These have contributed to a reduction in the alobal outlook for 2019 and 2020. The ESRI believe that inevitably this will impact on the domestic economy, with the contribution of the trade balance to growth set to decline. Further, the impact of the UK leaving the EU in an orderly or disorderly manner, will impact economic forecasting due to the significant disruptions it could result in.

The IMDO forecast that the Ireland Dry and Break Bulk market will grow by between +3.29% and +4.15%. This market section differs from unitised trade as it is more volatile due to the nature of the commodities involved, such as agricultural products which vary due to weather and harvest yields.

The IMDO's forecasts were generated using an AutoRegressive Integrated Moving Average (ARIMA) forecasting model (see technical note in the annex). The main advantage of using this type of approach is that it allows for correlation between port throughput and macroeconomic variables to be estimated. This means that growth projections in variables such as Gross Domestic Product and domestic consumption can be used to infer future port throughput. For this exercise, forecasts of macroeconomic variables from Oxford Economics were used to calculate throughput estimates for Irish ports in 2018.

TABLE 19A

| No Brexit | 4.4% | 3.9% | 1.47% | 1.48% | 1.52% |
|-----------|------|------|-------|----------|-------|
| | 2017 | 2018 | Low | Baseline | High |
| | 2017 | 2019 | | 2019 (f) | |

| | 2017 | 2010 | Low | Baseline | High | |
|-------------|------|------|-------|----------|-------|--|
| No Brexit | 4.4% | 3.9% | 1.47% | 1.48% | 1.52% | |
| Soft Brexit | - | - | 1.17% | 1.19% | 1.27% | |
| Hard Brexit | _ | - | 1.04% | 1.06% | 1.14% | |

Source: Port Capacity Study (ARUP/EY)

TABLE 19B

| LoLo Annual Grov | wth (Historical | & Forecast) |
|------------------|-----------------|-------------|
|------------------|-----------------|-------------|

| | 2017 | 2010 | 2019 (f) | | |
|-------------|-----------|------|----------|----------|-------|
| | 2017 2018 | 2018 | Low | Baseline | High |
| No Brexit | 4.2% | 4.4% | 3.16% | 3.25% | 3.55% |
| Soft Brexit | - | - | 2.37% | 2.53% | 3.07% |
| Hard Brexit | - | - | 2.01% | 2.16% | 2.69% |

Source: Port Capacity Study (ARUP/EY)

TABLE 19C

Dry & Break Bulk Annual Growth (Historical & Forecast)

| | 2017 | 7 2010 | | 2019 (f) | | |
|-------------|------|--------|-------|----------|-------|--|
| | 2017 | 2018 | Low | Baseline | High | |
| No Brexit | 5.5% | 5.1% | 3.53% | 3.63% | 3.96% | |
| Soft Brexit | - | - | 3.39% | 3.56% | 4.15% | |
| Hard Brexit | - | - | 3.29% | 3.45% | 4.03% | |

Source: Port Capacity Study (ARUP/EY)



TANKER MARKET

Time charter rates (TCR) fell again in 2018 across the guideline rates, as outlined in Table 20A. On average, Product declined -13% to \$13,131, Aframax by -31% to \$14,923, Suzemax by -36% to \$17,477 and VLCC to \$22,965 by -37%, the largest fall in the guidelines rates. However, when comparing quarterly returns to 2017, while rates continued to decline from Q1 through to Q3 in 2018, they returned to growth rates in Q4. In the first three quarters of 2018 declines were observed in Aframax (-10%), Suezmax (-13%) and VLCC (-24%), when compared to the same period in 2017.

The OPEC's decisions in May and December 2017 to reduce output production resulted in reduced demand for crude oil tankers. Further, the accumulated impact of several years of expansion in the fleet, continued to supress rates throughout much of 2018.

However, the TCR increased in the final quarter, with growth recorded by Aframax (+14%), Suezmax (+18%) and VLCC (+11%), compared to the same period in 2017. This upturn of rates was the result of the OPEC's decision in July 2018 to a modest increase in output, resulting in an increase of demand for transport. By the end of 2018, the TCR for Aframax (\$18,750), Suezmax (\$24,000) and VLCC (\$33,000) reached levels last observed in Q3 2016, as highlighted in Graph 20A.

In 2018, Product vessels saw a reverse of TCR fortunes, with +1% growth observed throughout Q1 - Q3, but declines of -5% in the final quarter. While Product tankers were lagging by the end of 2018 compared to other market segments, the additional crude oil in circulation due to the July 2018 decision by OPEC, will likely boost demand according to Clarksons.

Elsewhere, the US became a net exporter in November 2018 for the first time since data began to be collected in 1973 by Clarksons. Crude imports into China for 2018 rose by +10% to 9.28 /bpd, with November 2018 setting a new record for such imports into China at 10,48 /bpd. In Iraq, seaborne exports grew by +1% in 2018 at 3.9m /bpd with increased output in Basra, Kirkuk and elsewhere. In Russia, output increased by +2% to reach 11.2 /bpd in 2018, despite the country's participation in the OPEC-lead supply cut decision.

Looking to 2019, the December 2018 decision by OPEC to cut output will impact the market, with global oil supply expected to ease slightly from +2% in 2018, to +1.6% in 2019. However, while global oil demand reached +1.3% in 2018, it is projected to expand by +1.4% in 2019. As a result, the projected demand for crude tankers has been revised down to +3.6%, although this is still at a faster pace of growth than the +2.2% for 2018, as presented in Graph 20B.

TABLE 20A

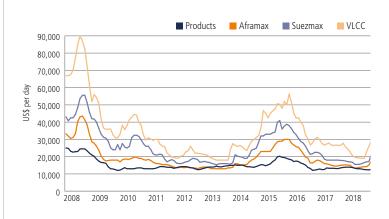
| One-Year Time Charte | r Rates | (\$/day |): 2018 |
|----------------------|---------|---------|---------|
|----------------------|---------|---------|---------|

| | Product | Aframax | Suezmax | VLCC |
|-----|---------|---------|---------|--------|
| Jan | 13,938 | 15,125 | 17,125 | 24,500 |
| Feb | 13,875 | 15,000 | 17,000 | 22,563 |
| Mar | 13,700 | 13,975 | 16,700 | 20,500 |
| Apr | 13,281 | 13,344 | 15,500 | 19,594 |
| May | 13,031 | 13,563 | 15,500 | 19,375 |
| Jun | 13,000 | 13,800 | 15,600 | 19,225 |
| Jul | 12,813 | 14,000 | 16,000 | 19,000 |
| Aug | 12,525 | 14,200 | 16,600 | 19,200 |
| Sep | 12,438 | 14,250 | 17,000 | 23,000 |
| 0ct | 12,344 | 15,219 | 17,250 | 26,125 |
| Nov | 12,725 | 17,850 | 21,450 | 29,500 |
| Dec | 13,906 | 18,750 | 24,000 | 33,000 |

Source: Clarksons Shipping Intelligence

GRAPH 20A

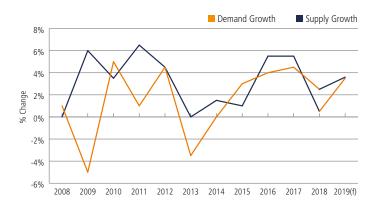
Tanker One-Year Time Charter Rates: 2008 – 2018



Source: Clarksons Shipping Intelligence

GRAPH 20B

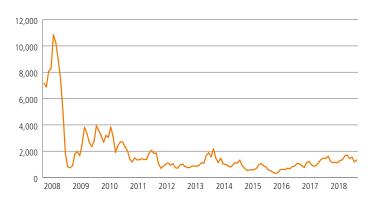
Demand Supply Dynamics: Crude Tankers: 2008 – 2019(f)



Source: Clarksons Shipping Intelligence

GRAPH 21A

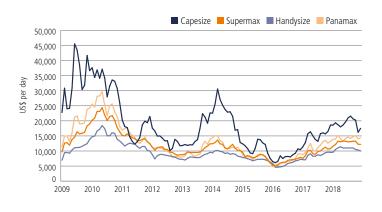
Baltic Dry Index: 2008 - 2018



Source: Clarksons Shippina Intelliaence

GRAPH 21B

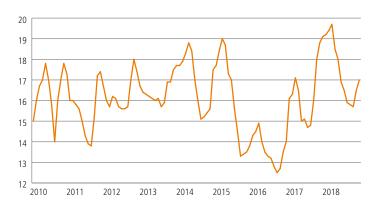
Dry Bulk One-Year Time Charter Rates: 2009 – 2018



Source: Clarksons Shipping Intelligence

GRAPH 21C

Short Sea Index: 2010 - 2018



Source: HC Shipping & Chartering

DRY BULK MARKET

The London based Baltic Dry Index (BDI), as outlined in Graph 21A, increased by +17% in 2018 compared to 2017, reaching an average of 1,348 points, compared to 1,153 in the previous year. The DBI measures the rates charged for chartering ships that carry major raw materials, such as coal, iron ore, crude oil, grain, etc. The BDI is a composite of the Capesize, Panamax and Supramax time charter rate (TCR) averages. It is reported globally as a proxy for Dry Bulk shipping stocks as well as a general shipping market bellwether.

HC Shipping & Chartering's Short Sea Index (SSI), as presented in Graph 21C, grew from an average of 16.45 in 2017, to 17.42 in 2018. It was a mixed year for the market. In Q1 2018 the SSI reached a quarterly high of 19.43, however, it declined for much of the remainder of the year. This is a common trend for this period of the year moving into Q2 (17.80). The hot, dry summer resulted in poor harvests impacting the SSI overall performance in Q3 (16.06), with Q4 (16.40) proving poor demand until late in 2018. The SSI is often cyclical, with public holidays (such as Easter) or changes in the weather impacting it.

Global seaborne Dry Bulk trade expanded by +2.4% in 2018, with volumes reaching 5.2bn tonnes, a slower pace of growth compared to +4.2% in 2017. The slower pace was partly as a result of weaker iron ore imports into China due to greater use of scrap in the country's steel industry, as well as disruption to grain trade flows caused by the China - US 'trade war'.

Overall, 2018 was a positive year for the Dry Bulk market, as displayed in Graph 21B, with TCR expanding by an average of +27% year-to-year across the four core categories of vessels in this market. Capesize grew by +27% to an average of \$19,157, Supramax expanded the most by +31% to \$12,795, Handysize grew the slowest at +24% to \$10,695, with Panamax grew by +25% to \$14,297.

However, while the TCR for the Tanker Market saw growth in Q4 2018, the opposite occurred in the Dry Bulk Market. Significant growth was observed in Q1 (+42%), Q2 (+30%) and Q3 (+10%) across the main guideline rates, when compared to 2017, but slowed in Q4 to +10%. This was the first year-to-year decline since Q3 2016, bringing an end to eight consecutive quarters of such gains, the longest period of growth since 2008.

Clarkson's identify this unexpected trend was partly caused by disruption to iron ore exports at the Port Hedland in Australia in November and the fallout in the China-US 'trade war' disrupting Chinese imports of US soybeans and other grains. China also imposed import restrictions on coal. Additionally, concerns over the overall health of the global economy impacted market sentiment.

While there is cause for concern, it is expected in 2019 that global seaborne Dry Bulk trade could expand by +2.6% in terms of tonnes and c. +2% in 2020. However, increased availability of iron ore from Brazil and Australia, and an expected rebound in grain trade following disruption last year could result in this expansion.

CONTAINERSHIP CHARTER MARKET

In 2018, global seaborne containership trade grew by +4.3%, a slower pace compared to the +5.2% observed in 2017. The Trans-Pacific trade grew by +6.8%, due in part to 'frontloading' of cargos due to the ongoing China – US 'trade war'. The Far East – Europe route expanded by +2.2% in 2018.

This increase in containership trade in 2018 was reflected in the time charter rates (TCR) across the four guideline vessel categories, as outlined in Table 22A, which grew by on average +19% to \$6,634. Feeder 350 TEU grew by +6% to \$3,808, Feedermax 725 TEU also grew by +6% to \$5,588, Handysize 1,000 TEU expanded by +22% to \$7,467, while Handymax 1,700 TEU grew the highest rate of +34% to \$9,675.

Rates across the four main categories followed similar trends as found in the Dry Bulk Market, with expansion for Q1 – Q3, but declines in Q4. The Feeder sized vessels saw its TCR grow by an average of +8% (\$3,811) in the first three quarters of 2018. Similar observations took place for Feedermax growing at +10% (\$5,706), Handysize at +27% (\$7,778), with Handymax expanding the most by +48% (\$10,144).

In the final quarter of 2018 slower growth took place for Feeder (\$3,800) and Handyszie (\$6,533) at +2% and +5% respectively. With declined observed in the Feeder class by -4% (\$5,233), and no growth for Handymax (\$8,267).

This was reflected in Clarksons' Containership Timecharter Rate Index in Graph 22A, which began the year at 54 points. It reached a high of 68 in June, a figure last observed in 2011, before easing back for the remainder of the year, ending at 52 in December. However, on average the Index reached 60 points in 2018 compared to 47 in the previous year, a +28% increase.

While Clarksons associate this slowdown in activity due to regular cyclical expectations, in particular for December, weakening sentiment over growing uncertainties over global trade volumes was also highlighted as an issue. It is these heightened risks within the global economy which will see containership growth slow to +4.1% in 2019, and +4% in 2020.

In terms of the largest operators, as outlined in Graph 22B, Danish company A.P. Møller – Mærsk A/S, more commonly known as Maersk, expanded its TEU in 2018 by +10% to 2.3m, while its number of vessels increased by +5% to a fleet of 326. Since the merger in 2016 of the two Chinese state companies, China Ocean Shipping Company (COSCO) and China Shipping, the container fleet of the new company has expanded significantly. China Shipping – COSCO is now the second largest container operator in the world, with its TEU expanding by +82% to 1.9m and fleet by +53% to 235 ships in 2018.

The Italian-based MSC (Mediterranean Shipping Company) is now the third largest container operator in the world with 1.2m TEU and a fleet of 208, both of which expanded by +2% in 2018. The French company CMA CGM saw its TEU and fleet grow by +12% each, to 1.1m and 146 vessels respectively. Finally, the German-based Hapag-Llyod saw a decline in its TEU by -2% to just over 1m, and by -5% in terms of its fleet to 112 ships.

TABLE 22A

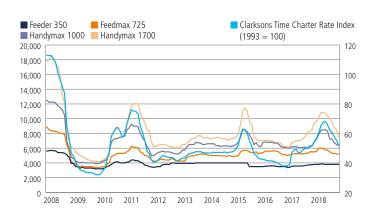
| One Year | Time | Charter | Rates (| \$/day |): 2018 |
|----------|------|---------|---------|--------|---------|
|----------|------|---------|---------|--------|---------|

| | Feeder 350 TEU | Feedermax 725 TEU | Handysize 1000 TEU | Handymax 1700 TEU |
|-----|-------------------|----------------------|-----------------------|----------------------|
| Jan | 3,800 | 5,500 | 6,800 | 9,400 |
| Feb | 3,800 | 5,550 | 7,200 | 9,550 |
| Mar | 3,800 | 6,000 | 7,800 | 10,100 |
| Apr | 3,850 | 6,000 | 8,400 | 10,800 |
| May | 3,850 | 6,000 | 8,500 | 10,850 |
| Jun | 3,800 | 5,750 | 8,500 | 10,750 |
| Jul | 3,800 | 5,750 | 8,300 | 10,400 |
| Aug | 3,800 | 5,500 | 7,250 | 9,950 |
| Sep | 3,800 | 5,300 | 7,250 | 9,500 |
| 0ct | 3,800 | 5,300 | 6,750 | 8,800 |
| Nov | 3,800 | 5,200 | 6,500 | 8,500 |
| Dec | 3,800 | 5,200 | 6,350 | 7,500 |
| | | | | |

Source: Clarksons Shipping Intelligence

GRAPH 22A

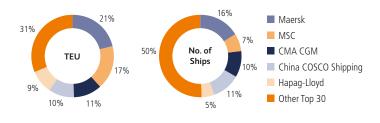
Containership One-Year Time Charter Rates: 2008 – 2018



Source: Clarksons Shipping Intelligence

GRAPH 22B

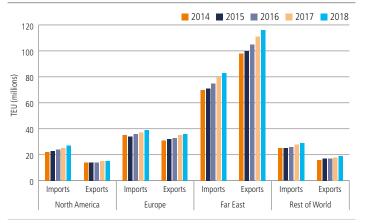
Leading Containership Operators: 2018



Source: Clarksons Shipping Intelligence

GRAPH 23A

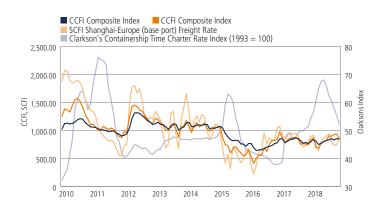
Container Imports and Exports – Global: 2018



Source: Clarksons Shipping Intelligence

GRAPH 23B

Containership Charter Rates vs Container Freight Rates: 2010 – 2018



Source: Clarksons Shipping Intelligence

GRAPH 23C

Annual Number of Vessels & Container Capacity: 2008 – 2018



Source: Clarksons Shipping Intelligence

DEEP SEA CONTAINER TRADES & FREIGHT RATES

CONTAINER TRADE GROWTH

Global trade in containerships reached 200m TEU in 2018, a record high and an increase of +4.3% compared to 2017. It was the eighth consecutive year of growth in global seaborne traffic, which began in 2011. In terms of leading container route traffic, the Trans-Pacific route increased by +6.8% in 2018, while the Far East – Europe route increased by +2.1%. As outlined in Graph 23A, the Far East dominated global container imports (47%) and exports (61%), with both increasing by +4% and +5% respectively compared to 2018. Europe occupies a smaller share of the international share of such imports (22%) and exports (19%), however, they grew by +4% and +3% respectively. While North America, with a 15% share of container imports grew by +7%, while its exports with an 8% share, grew by +1%.

CONTAINER CAPACITY

Total containership capacity increased by +5.6% in 2018, with a forecast of +2.9% in 2019 and 3.2% in 2020. However, such growth projections could be impacted by the forthcoming IMO 2020 global sulphur cap. With increases across main-lane containership routes, such as the Far East – Europe, both of the EU's top ports increased their TEU throughput by +2%. The port of Rotterdam handled 13m TEU in 2018, while the port of Antwerp reached 11m TEU, stating that "additional container handling capacity is urgently needed" due to demand. The percentage of the containership fleet capacity that was idle increased from 2% in 2017 to 2.8%. This follows idle capacity highs of 6.9% in 2015 and 7.1% in 2016. The average age of the container fleet is 12.08 years, the highest level reached since Clarksons' records for this began in 1996.

BOX FREIGHT RATES

Overall, Clarksons' containership time charter rate index increased from an average of 47.2 points in 2017, to 60.4 in 2018, levels which it had not reached since 2015, as outlined in Graph 23B. However, the China (Export) Containerized Freight Index (CCFI) on average declined in 2018 to 818 points, compared to 820 points in the previous year. The Shanghai (Export) Containerized Freight Index (SCFI) on the other hand saw modest increases from 828 to 834 in 2018. In base port SCFI Shanghai – Europe freight rate also declined from \$875 /TEU in 2017 to \$819 /TEU.

CONSOLIDATION

Throughout 2018, further major shipping operator mergers and acquisitions took place, which increased the consolidation from smaller, regional companies. China Shipping – COSCO acquainted the Hong Kong-based Orient Overseas (International) Limited (OOIL), while CMA CGM completed the acquisition of Container Finance Ltd Oy. Also, A.P. Møller – Mærsk's regional carrier brands MCC Transport, Sealand and Seago Line were reorganised to operate under the single name 'SeaLand – A Maersk Company'. Graph 23C highlights the continued growth in global TEU capacity in 2018, increasing by +4% to 20,847 million TEUs, while there was no growth in the number of containerships, that stood at 5,163.

NEWBUILDING AND DEMOLITION MARKET

TANKER FLEET

The fleet grew by +4% to 9,562 vessels and by +5% to 741,000 DWT. The largest vessel category VLCC accounted for 30% of total global tanker DWT and 8% in the number of vessels. Since 2008, the Tanker market fleet has expanded by +48% in terms of ship numbers, and +57% by total DWT. The number of delivered vessels in 2018 declined by -19% to 374, while the DWT also declined by -26% to 34m DWT, with VLCC ships accounting for 36% of the delivered DWT. Declines also took place in terms of vessels on the order book, with the number of vessels down -5% (991) and DWT -5% (90m DWT). VLCC vessels accounted for 35% of order book DWT. Compared to 2008, the order book has declined for the number of vessels is -66% and -58% by DWT. However, in demolitions, significant increases took place both in the number of ships (+83%, 243) and DWT (+92%, 21m DWT) in 2018. VLCC was the largest vessel category (45%) of DWT to be demolished.

DRY BULK FLEET

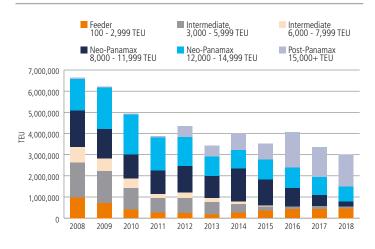
This fleet expanded by +2% to 11,119 vessels in 2018, and +3% for DWT to 817m. Since 2008, the number of vessels in this fleet has expanded by +65%, and the DWT by +108%. The largest vessel class, Capesize, accounts for 40% of the DWT of the global fleet. However, in terms of deliveries of new vessels, declines were observed both in the number of vessels (-36%, 293 ships) and DWT (-27%, 28m DWT). Capesize was the largest type of vessel delivered in 2018, accounting for 51% of all new vessels in the Dry Bulk fleet. There was also declines in the order book, both in the number of vessels -14% (879 ships) and in DWT at -2% (88m DWT). The smaller Handysize vessels were largest vessel category to be on the order book (52%) in 2018. For demolitions, declines were observed here also, both in the number of ships -74% (57) and the DWT at -70% (4.4m DWT). At 71%, Capesize was the largest vessel type to be demolished.

CONTAINERSHIP FLEET

In 2018 the overall fleet increased slightly by ten vessels to 5,163, while TEU grew by +4% from 20m to 20.8m. Neo-Panamax vessel type had the largest share of global TEU at 41%. Overall, the fleet's TEU has expanded by +91% since 2008, and +18% by the number of vessels. In terms of deliveries of new vessels, 171 were added to the fleet with a combined TEU of 1.2m. Intermediate vessels accounted for the majority of the global TEU at 69% of deliveries. However, for ordered vessels, 2018 was the third consecutive decline both for the number of ships at -8% (429) and TEU at -11% (2.9m). Compared to 2008, the number of ordered vessels is -70% and -55% for TEU. For demolitions, 67 ships of a combined 1.1m TEU were demolished, down -53% and -70% respectively for both compared to 2017. Of the headline vessel types, intermediate was the only type in 2018 that was demolished.

GRAPH 24A

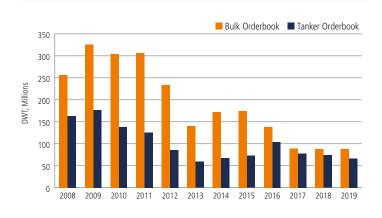
Containership Orderbook by Size Range: 2008 – 2018



Source: Clarksons Shipping Intelligence

GRAPH 24B

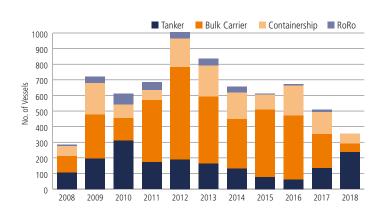
Bulk Carrier Orderbook: 2008 - 2018



Source: Clarksons Shipping Intelligence

GRAPH 24C

Demolition by Fleet Category: 2008 – 2018



Source: Clarksons Shipping Intelligence

GLOSSARY OF TERMS

Aframax: derives its name from AFRA (Average Freight Rate Assessment), which refers to a tanker of between 80,000 – 120,000 DWT.

Balance of Payments: is a statistical statement that systematically summarises, for a specific time period, the economic transactions of an economy with the rest of the world.

bpd: barrels per day.

Capesize: are Dry Bulk vessels that average at 156,000 DWT, they cannot transit the Suez Canal.

cSt: Centistoke is a measurement of fuel viscosity.

EU27: refers to the number of Member States in the EU without the UK.

EU28: refers to the number of Member States in the EU including the UK.

Eurozone: refers to the nineteen members of the EU's single currency.

Gross Domestic Product (GDP): measures the total output of the economy in a period i.e. the value of work done by employees, companies and self-employed persons.

Gross National Product (GNP): The work done by employees in Ireland generates incomes but not all of the incomes earned in the economy remain the property of residents. The total income remaining with Irish residents is the GNP and it differs from GDP by the net amount of incomes sent to or received from abroad.

IFO: Intermediate Fuel Oil, oil with a maximum viscosity of 380 centistokes (<3.5% sulphur), see cSt.

Merchandise Trade: Goods which add or subtract from the stock of material resources of a country by entering (imports) or leaving (exports) its economic territory.

OPEC: The Organization of the Petroleum Exporting Countries is an intergovernmental organisation of 14 nations, founded in 1960 in Baghdad by the first five members, and headquartered since 1965 in Vienna, Austria.

Panamax: are Dry Bulk cargo vessels that travel through the Panama Canal, with a size of up to 52,500 DWT.

Product tankers: are used to transport petroleum based chemicals.

Suexmax: Oil tanker vessels between 120,000 – 250,000 DWT in size.

TCR: time charter rates are set for shipping vessels for a fixed period of time instead of a certain number of voyages. Rate averages allow comparisons between periodic changes in a shipping company's performance.

VLCC: Very Large Crude Carrier is an oil tanker between 150,000 – 320,000 DWT in size.

Supramax: are Dry Bulk cargo vessels of between 50,000 – 60,000 DWT.

SOURCES OF DATA

The bulletin contains the results of quarterly and annual analysis of activity from Irish and Northern Irish ports, and the activity of shipping lines operating from those ports. The data collected is compiled from returns made by those Harbour Authorities, State Companies, County Councils and RoRo shipping lines on routes to and from the island of Ireland, as outlined below:

PORT COMPANIES:

Drogheda Port Company

Dublin Port Company (Including Dundalk Port Company)

Dún Laoghaire Rathdown County Council¹

Galway Port Company

Greenore Port Company

New Ross Port Company

Port of Cork Company (Including Bantry Bay Port Company)

Port of Waterford Company

Port of Youghal Company

Rosslare-Europort

Shannon Foynes Port Company

Wicklow County Council²

NORTHERN IRELAND PORTS:

Belfast Harbour Commissioners

Foyle Port

Port of Larne

Warrenpoint Harbour Authority

ROLL-ON/ROLL-OFF SHIPPING LINES:

Brittany Ferries

CLdN Cobelfret

Irish Ferries

P&O Ferries

Seatruck Ferries

ADDITIONAL SOURCES OF DATA:

Bank of England, Central Bank of Ireland, Central Statistics
Office, Clarksons' Shipping Intelligence, Economic and Social
Research Institute, Eurostat, European Central Bank, European
Commission, Harrison – Collins (HC) Shipping & Chartering,
investing.com, MarineTraffic, People's Bank of China, Statistica.com,
tradingeconomics.com, US Federal Reserve.

ACKNOWLEDGEMENT:

MarineTraffic very kindly provided the data for Graphs 14A and 14B (p. 27) and we would like to thank them for their professionalism and helpfulness in assisting us with it.

- Dún Laoghaire Harbour Company was dissolved in October 2018 under Statutory Instrument 391/2018. The Harbour was transferred to Dún Laoghaire Rathdown County Council.
- ² Wicklow Port Company was dissolved in August 2016 under Statutory Instrument 462/2016. The Company was transferred to Wicklow County Council

TECHNICAL NOTE

- The iShip Index is a weighted indicator comprised of five separate indices, representing the main maritime freight categories moving through ports in Ireland: Break Bulk, Dry Bulk, Liquid Bulk, LoLo and RoRo.
- The LoLo index comprises solely of laden traffic.
- The following ports have been included in the iShip Index; Drogheda Port Company, Dublin Port Company, Dundalk Port Company, Galway Port Company, Greenore Port Company, New Ross Port Company, Port of Cork, Port of Waterford Company, Rosslare-Europort, Shannon Foynes
- Port Company, Wicklow County Council. Bantry Bay Port Company is excluded as its throughput is predominantly of a transhipment nature. Additionally, Dún Laoghaire Rathdown County Council is also excluded as at present, it does not handle any of the five categories that move through Irish ports.
- All data is derived from the individual port companies and subject to a one-year revision period.
- The case period is Quarter 1 2007, at which all indices equal 1,000.

TRAFFIC BREAKDOWN

BULK PORT TRAFFIC:

Refers to three market segments of port and shipping activity, Liquid, Dry, and Break Bulk which are further explained individually in this glossary.

BREAK PORT TRAFFIC:

Involves loose, non-containerised cargo stowed directly into a ship's hold. Commodities such as timber, steel products, machinery and general project cargo make up the majority of break bulk cargo. The main drivers in this segment's volumes are construction activities and the delivery of project cargo.

LIQUID BULK:

Is a commodity that ranges from petrol for cars, cooking oil for home consumption, to crude oil or liquefied natural gas. Due to their physical characteristics, these are not boxed, bagged or hand stowed, but are instead stored in large tank spaces, known as the holds, of a tanker.

DRY BULK:

Commodities in this segment include animal feed, iron ore, coal, fertilizer, cement, bauxite and alumina. This market segment can be particularly affected by adverse or mild weather conditions during the course of a year.

LoLo (LIFT ON/LIFT OFF):

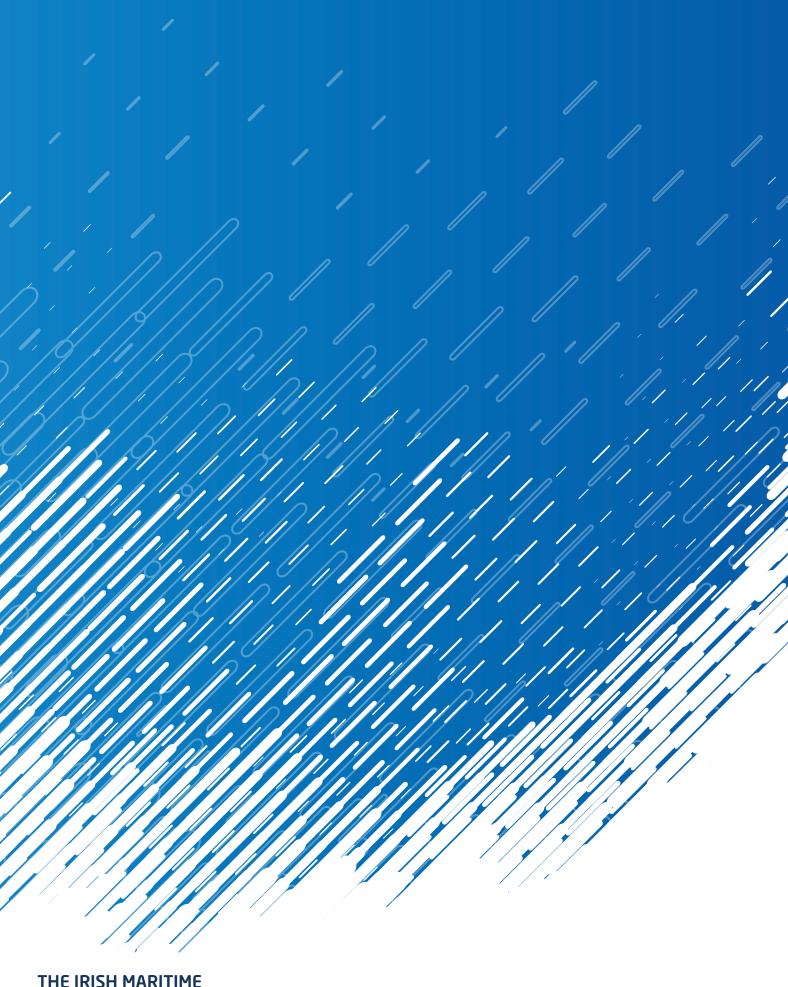
LoLo involves a specific ship that engages in the transportation of freight, that is loaded and unloaded with the use of different cranes or other lifting devices at a port. To describe the capacity of containership or container terminals, twenty-foot equivalent unit (TEU) is used to measure such parameters.

The twenty-foot equivalent unit (often TEU or teu) is an inexact unit of cargo capacity often used to describe the capacity of container ships and container terminals.

RoRo (ROLL ON/ROLL OFF):

RoRo involves vessels designed to carry wheeled cargo, such as cars, trucks, semi-trailer trucks, trailers, etc., that can be driven on and off the ship on their own wheels, or using a platform vehicle, such as a self-propelled modular transporter.





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