

Shipbuilding Policy in the UK: The Legacy of a Century of Decline and its Influence on Naval Procurement

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Shipbuilding Policy in the UK

The Legacy of a Century of Decline and its Influence on Naval Procurement

Paul Stott

While the shipbuilding industry in the UK is at a stage of maturity that would not ordinarily warrant a government strategy, the government has developed what is in essence an industrial strategy to maintain the ability to build warships. This strategy is the responsibility of the Ministry of Defence, and has developed to encompass commercial as well as naval shipbuilding. It aims to reverse the level of industry maturity through the stimulation of competition and exporting, and to improve the procurement process to reduce costs. The strategy is pervaded by a tendency to view the industry in the context of its history and the recovery of past shipbuilding glories – an aim of the shipbuilding industry in the UK for around a century. The fundamental need is to provide the UK with the ability to produce warships that represent value for money to the Treasury, and this does not require the ‘recovery of past glories’. New thinking based solely on objectivity, unconstrained by the past, may increase the potential to achieve this goal. Paul Stott uses a new data set to examine the UK government’s National Shipbuilding Strategy and considers its potential for success.

It is significant that the UK’s 2017 National Shipbuilding Strategy (NSS) was published by the Ministry of Defence (MoD).¹ While it is true to say that through the NSS the government expects input from all relevant ministries, the lead and ultimate responsibility lies with MoD. Commercial shipbuilding was mentioned in the NSS only briefly and was de facto outside the purview of the strategy. This changed to some extent with the revision of the strategy in 2022, but the strategy remains with MoD.² The UK’s shipbuilding industry has declined to the point where the governance of that industry is no longer seen as an industrial matter: one might otherwise have expected that such a strategy would emanate from the Department for Business, Energy

and Industrial Strategy (as of 2023, the department has now been split into three other departments).

This article examines the troubled history of British shipbuilding and the context of the government’s relationship to that industry. To do this it is necessary to address both the commercial and naval sectors. Until relatively recently the two sectors were routinely combined in the product mixes of shipyards. Only after nationalisation and the creation of British Shipbuilders in 1977 was warship building (outside the National Dockyards) separated into dedicated builders. In the modern industry, the mixing of the two sectors is problematic, both in terms of the products (the structures and standards in warship building are not directly compatible with

1. HM Government, ‘National Shipbuilding Strategy: The Future of Naval Shipbuilding in the UK’, Ministry of Defence, 2017, <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/643873/NationalShipbuildingStrategy_lowres.pdf>, accessed 1 February 2023.
2. HM Government, ‘National Shipbuilding Strategy: A Refreshed Strategy for a Globally Successful, Innovative and Sustainable Shipbuilding Enterprise’, National Shipbuilding Office, March 2022, <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061201/_CP_605____National_Shipbuilding_Strategy_Refresh.pdf>, accessed 1 February 2023.



HMS Dreadnought alongside the Royal Navy submarine depot ship, HMS Maidstone, with HMS Ursa on the far right, 1964. Courtesy of Royal Navy / OGL

those in the commercial sector) and the business economics.

The decline of shipbuilding in the UK is much studied in the annals of maritime history.³ This article uses a new data set⁴ to track the output of both commercial and naval ships, and to examine the legacy of decline on the development of strategy. The conclusion is that the legacy of decades of decline has led to difficulty in taking objective decisions for the efficient governance of the industry

and, thereby, the cost-effective supply of ships to the Royal Navy.

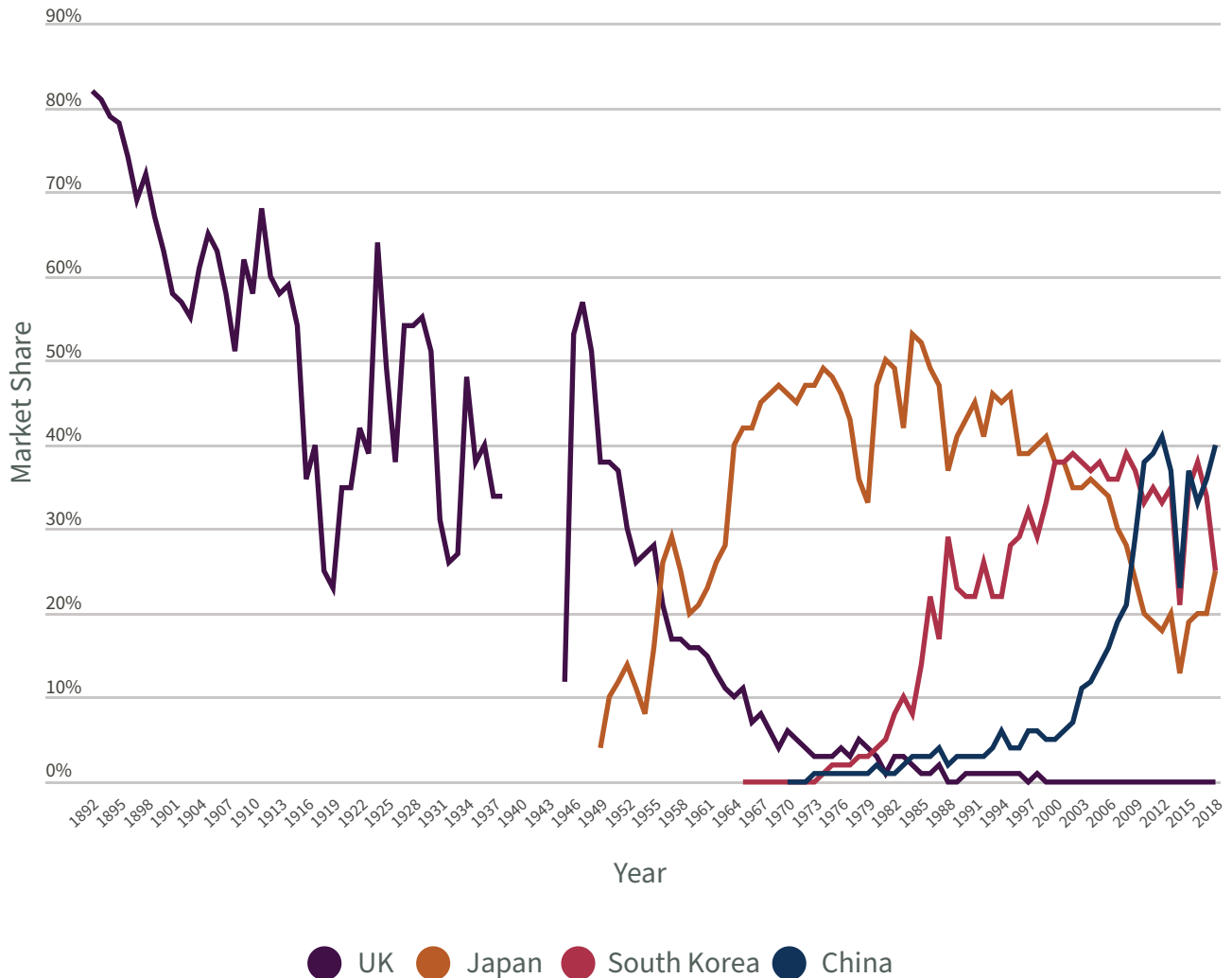
Measuring the UK's Greatness

In 1892, the UK's share of global commercial shipbuilding was over 80%. A century later this share had reduced virtually to zero, with the 20th century being characterised by a long slow decline

3. Sidney Pollard and Paul Robertson, *The British Shipbuilding Industry, 1870-1914* (Cambridge, MA: Harvard University Press, 1979); Anthony Burton, *The Rise and Fall of British Shipbuilding* (London: Constable, 1994); Alan G Jamieson, 'An Inevitable Decline? Britain's Shipbuilding Industries Since 1930', in David John Starkey and Alan G Jamieson (eds), *Exploiting the Sea: Aspects of Britain's Maritime Economy Since 1870* (Exeter: University of Exeter Press, 1998); Lewis Johnman and Hugh Murphy, *British Shipbuilding and the State Since 1918: A Political Economy of Decline* (Exeter: University of Exeter Press, 2002); Anthony Slaven and Hugh Murphy, *Crossing the Bar: An Oral History of the British Shipbuilding, Ship Repairing and Marine Engine Building in the Age of Decline, 1956-1990* (Oxford: Oxford University Press, 2013); Ian Buxton, Roy Fenton and Hugh Murphy, 'Measuring Britain's Merchant Shipbuilding Output in the Twentieth Century', *The Mariner's Mirror* (Vol. 101, No. 3, 2015), pp. 304–22.
4. Newcastle University 'Marine Technology Special Collection', Newcastle upon Tyne, UK, <<https://libguides.ncl.ac.uk/marinetech/speccol>>, accessed 1 August 2023.

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Figure 1: Commercial Shipbuilding’s ‘Shifting Hegemony’ – Market Shares of Dominating Suppliers



Source: Collated by the author from numerous sources in the Marine Technology Special Collection, Newcastle University.

accompanied by a great deal of political, industrial and social difficulty.

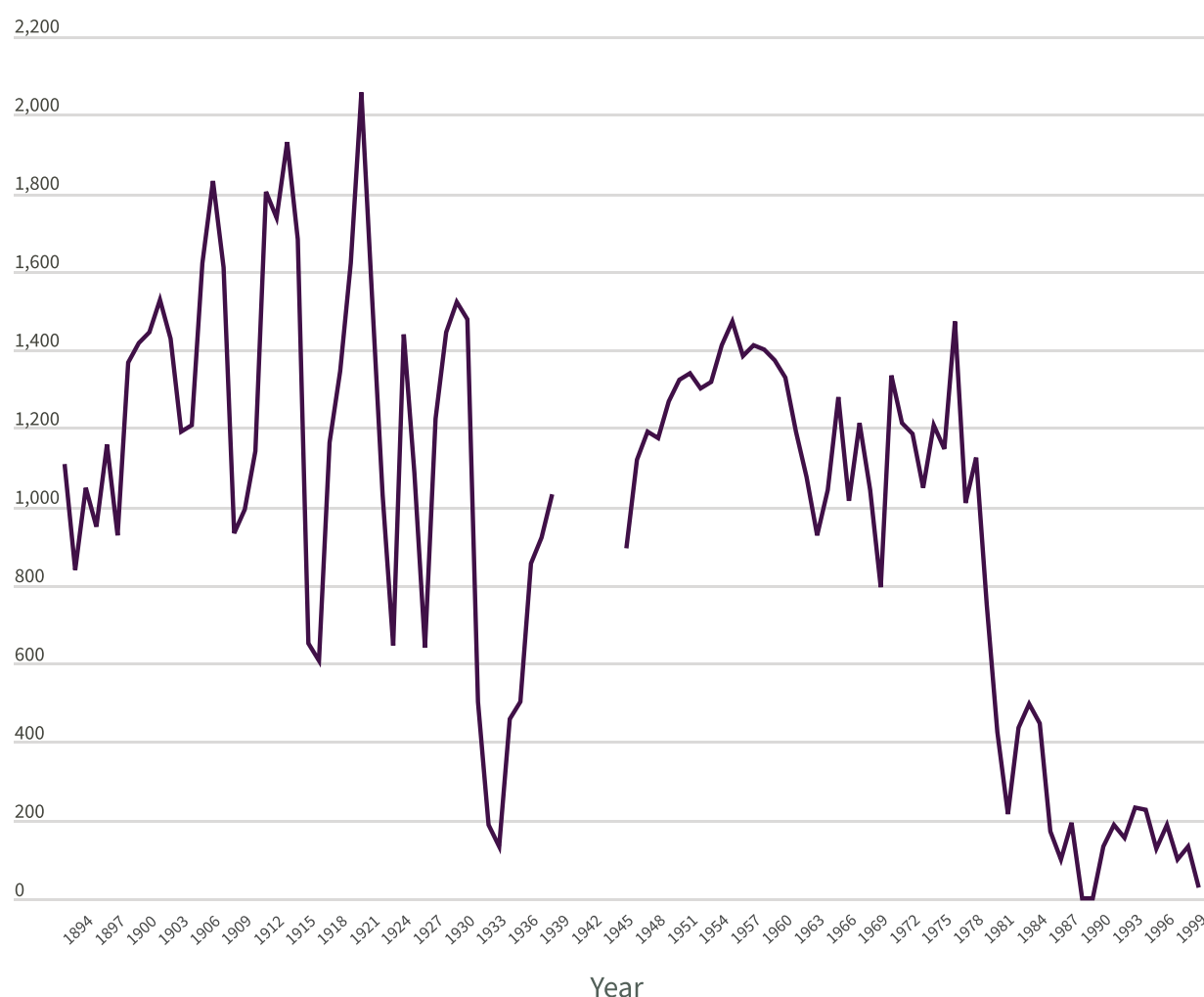
The UK’s ‘mighty’ industry had been stimulated by two root causes: technical supremacy in the development of iron ships and steam power, coupled with a significant home demand for both merchant and warships to serve the needs of the British Empire.

The development of market shares of the industry’s leaders since 1892, in global terms, is

shown in Figure 1,⁵ which demonstrates what some analysts have referred to as shipbuilding’s shifting ‘hegemony’;⁶ Japan superseded the UK post-Second World War and in turn was superseded by South Korea, which has now been challenged by China.

Figure 1 suggests a long slow decline for the UK of about 90 years, fluctuating before the Second World War but steadily declining thereafter. A review of output rather than market share, however, tells a

5. Reliable statistics for the Second World War period have not been found. Statistics for allied powers are mostly available but not for axis powers.
6. Lars Bruno and Stig Tenold, ‘The Basis for South Korea’s Ascent in the Shipbuilding Industry, 1970-1990’, *The Mariner’s Mirror* (Vol. 97, No. 3, 2011), pp. 201–17.

Figure 2: UK Commercial Shipping Output

Source: Collated by the author from numerous sources in the Marine Technology Special Collection, Newcastle University.

more nuanced story. Output⁷ from the UK in gross tons (GT⁸) from 1892 is presented in Figure 2.

Prior to the Second World War, volatility of demand was extreme, with the consequence that shipbuilding was a precarious place to be employed. The catastrophic recession that led to the fabled Jarrow March can be seen clearly in Figure 2 and the seeds of labour unrest and political difficulty can be found in this volatility.

The nature of demand changed following the Second World War, with the industry becoming less volatile. However, the average levels of output before and after the war, at least up until the start

of the final decline in 1976, were similar: 1.17 million GT per annum in the period 1892 to 1938, compared with 1.22 million GT per annum in the period 1945 to 1976. Thereafter the decline became extremely rapid from 1.5 million GT delivered in 1976 to under 100,000 GT a decade later. The decline coincided with a cyclical downturn in global shipbuilding, following about 25 years of unbroken market growth.⁹ The UK and other European shipbuilders managed to 'surf' this post-war shipbuilding boom only to decline in the market's collapse phase after 1975. The downturn, followed by an extended market trough, eventually saw the closure of most

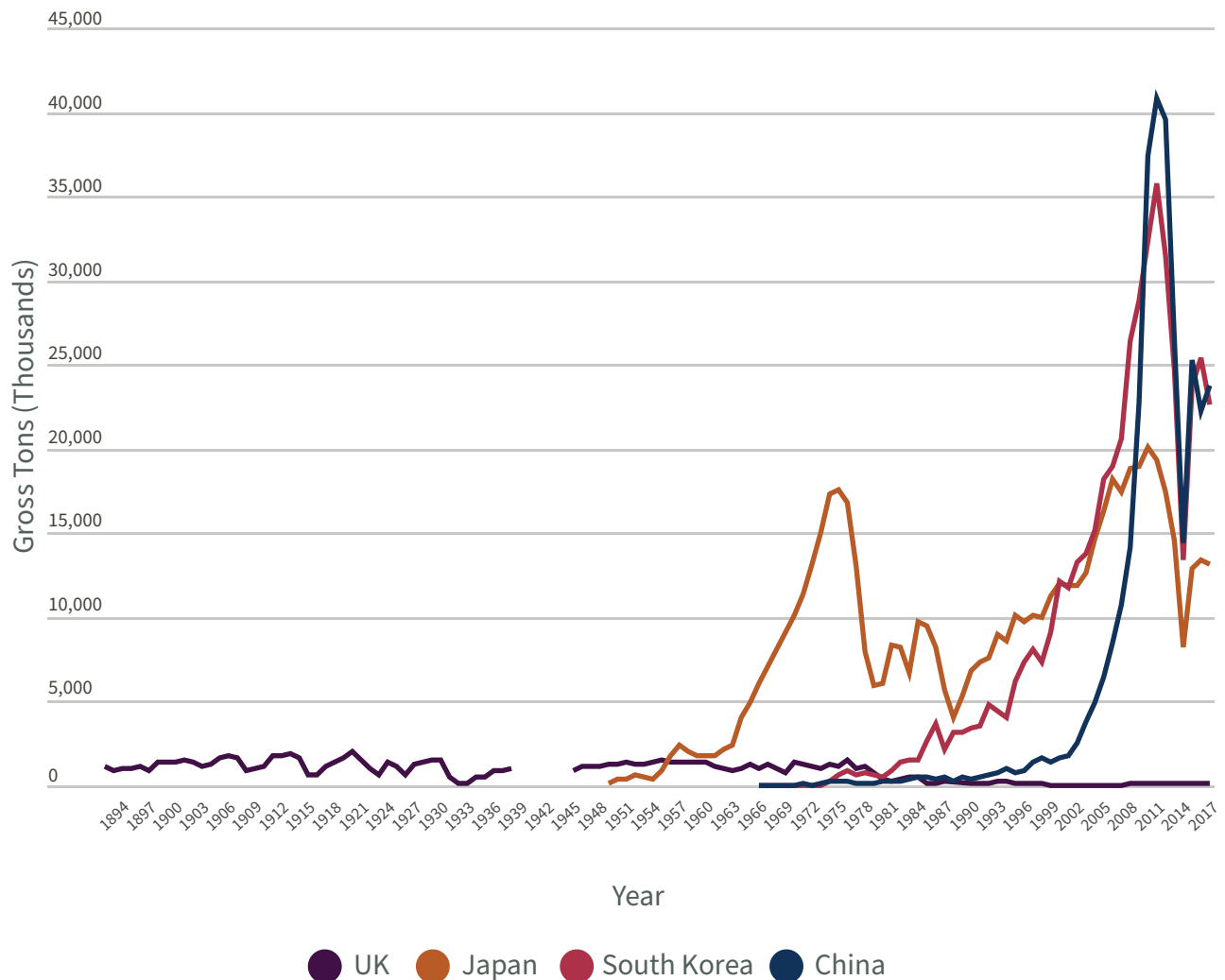
7. Using the same data as for Figure 1.

8. Gross tons is the basic measure of the physical size of a merchant ship. It measures the enclosed volume of hull and superstructures with one gross ton being 100 ft³. It should not be considered as a weight but is often mistaken as such.

9. P W Stott, 'The Shipbuilding Industry and its Interaction with Shipping', in Roger Vickerson (ed.), *International Encyclopedia of Transportation* (London: Elsevier, 2021), pp. 617–24.

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Figure 3: Commercial Shipbuilding's Shifting Hegemony – Output from Dominating Suppliers



Source: Collated by the author from numerous sources in the Marine Technology Special Collection, Newcastle University.

of UK commercial shipbuilding and much of that in continental Europe.

The clearest perspective on the UK's long-term positioning in the global context, however, comes not from market share but from output in gross tons of ships delivered (Figure 3).

The Second World War represented a watershed for the shipbuilding industry, with construction strategies, processes and the nature of investment changing radically to create what can be regarded as the modern shipbuilding industry.¹⁰ The UK's typical output of around 1 million GT per annum may have been significant in the industry of the pre-war era, but it was very small in the context of the industry

that has developed in the modern era. In effect, the UK's dominance was of an industry that ceased to exist with the end of the Second World War, and in the modern industry the UK has never been more than a minor player.

Declining demand has led to an extreme degree of maturity in the commercial shipbuilding sector in the UK, with typically now only between one and three shipyards delivering commercial ships in any year and those predominantly delivering very small vessels. It may even be argued that commercial shipbuilding no longer exists as an industry in the UK. The extreme state of maturity is below any critical mass that would ordinarily constitute an industry sector.

10. P W Stott, 'Shipbuilding Innovation: Enabling Technologies and Economic Imperatives', *Journal of Ship Design and Production* (Vol. 33, No. 3, 2017), pp. 1–11.

The Loss of Commercial Shipbuilding

By the 1920s the technical lead enjoyed by British shipbuilding had been eroded by competition from other nations. In 1926, a commission was configured by the Shipbuilding Employers' Federation and the Shipyard Trade Unions, whose aim was to make an inquiry into 'foreign competition and conditions in the shipbuilding industry'.¹¹ The commission was convened in response to the unexpected loss of orders to German shipyards in 1925. The terms of reference were to arrive at: 'definite conclusions as to the best means which could be taken to re-establish the industry and enable it to retain its pre-eminent position in world shipbuilding'. The year 1925 was an 'average' year for the British industry and the loss of orders therefore could not have been due to any shortage of capacity but, as stated in the terms of reference, by this point the industry had lost 'its pre-eminent position in world shipbuilding'. It is significant to note that the word 're-establish' in relation to the industry, a word which is still used in the development of strategy in the UK, was first used at least as long ago as 1926. The UK has been intending to regain past glories, without any success, for almost a century.

The loss of technological lead was exacerbated by disruptive technology developed in US shipyards in the Second World War to build merchant ships to replace losses in the Battle of the Atlantic and elsewhere. To build ships at the rate required, there was no option but to abandon riveting and adopt welding. The introduction of welding changed the nature of the shipbuilding process and the required skills and investment.

The industry in the UK had been slow to adopt welding prior to the war. This was partly due to technical misgivings but also because the industry was heavily dependent on the skilled workforce and, in particular, the riveting squads. What was to be done with the time-served skilled workforce in an industry that no longer needed those skills? The British industry spent the next 40 years trying to shoehorn the old labour paradigm into shipbuilding's new world order, and friction was inevitable. Against this, the ascendant industry in Japan had no 'old world order' and greater efficiency was the result, eroding the UK's pre-war competitive position

within 10 years of the end of the Second World War (Figure 1).

The new shipbuilding strategy also required a new layout and style of shipyard. These new form shipyards were developed in Japan with US capital and US expertise, and the facilities needed to compete changed in a very short space of time. The shape of the new investment was radically different to the constrained 'ribbon' riverside investments that characterised most of the industry in the UK. Reluctance or inability to invest sufficiently meant that, just as with labour, the industry tried to shoehorn the new shipbuilding strategy into the old capital investment with the resulting predictable inefficiency.

The pre-war investment in British shipbuilding was also deficient in the new world order for another reason. Ship size increased by orders of magnitude as globalisation developed after Bretton Woods (1944), way beyond the size capability of the UK's constrained shipyard sites and rivers. The ascendant Japanese shipyards invested in volume production in pursuit of economies of scale, and market leading shipyards became much larger. By 1970, the world's leading shipyard, Mitsubishi Nagasaki, was alone delivering the equivalent of the output of the entire UK industry of the 20th century per year (around 1 million GT per year). By 2000, the largest yard (DSME) was alone producing five times that per year and by 2010, seven times. Even where the will to invest may have been present in UK shipbuilding, the nature of existing capital investment was unlikely to become competitive at that scale.

The shift to globalisation would also bring with it another feature that would erode further the factors of competitiveness that led to British shipbuilding's one-time dominance: the home market, based on colonial trades and ship owners, would rapidly disappear. In 1920 the British fleet constituted 35% of all commercial tonnage. This would fall to 20% by 1950 and 5% by 1980, after which time Hope talks about the 'exodus' of the British fleet.¹² Put simply, the home market on which the industry first established its dominance, and which continued to provide work through the first half of the 20th century, evaporated.

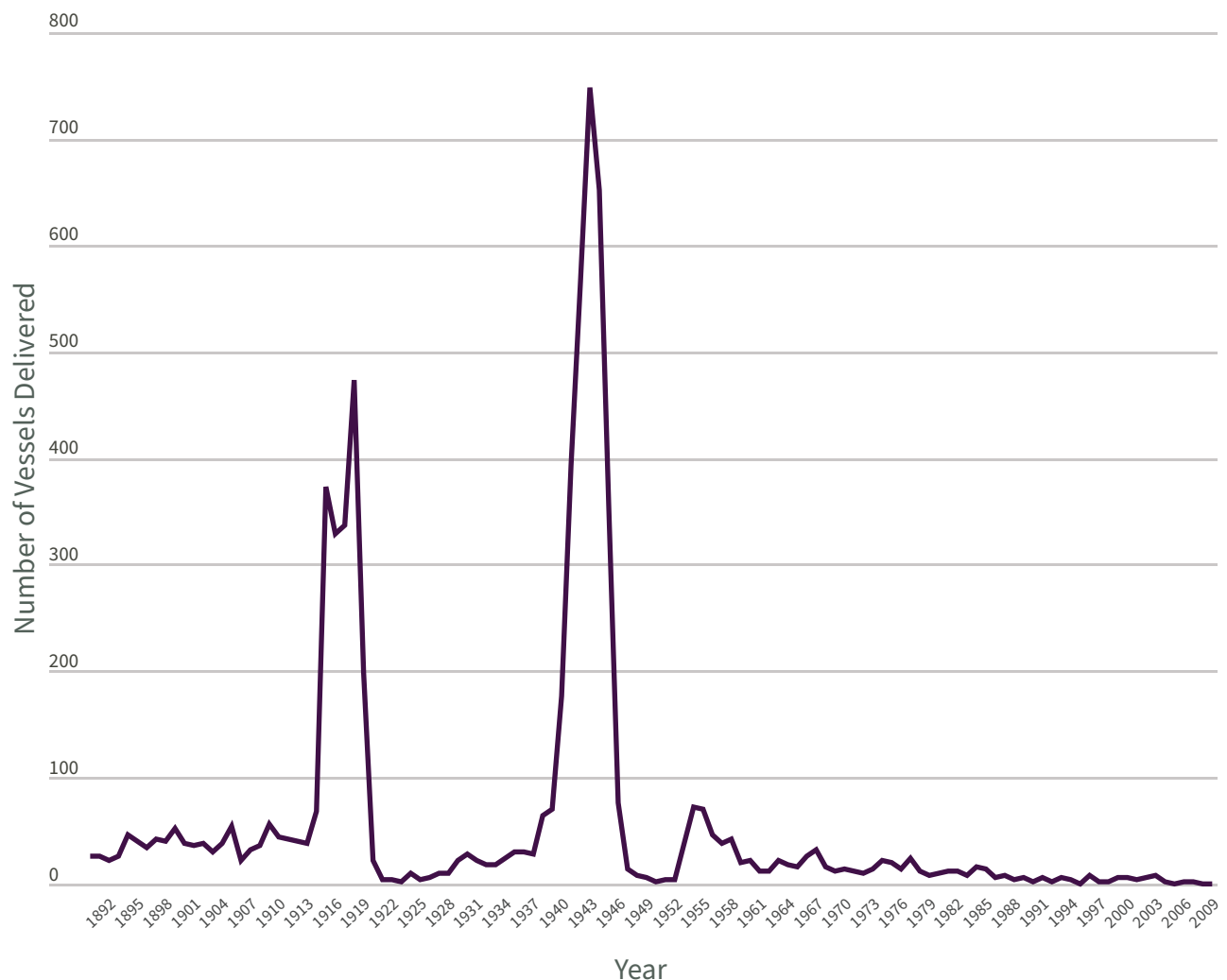
In essence, the decline of the UK industry was due to a failure to evolve in the post-war world. Such an evolution would have required scrapping the old industry and investment in the new volume

11. Joint Committee of the Shipbuilding Employers' Federation and Shipyard Trade Unions, 'Report of Joint Inquiry into Foreign Competition and Conditions in the Shipbuilding Industry', Shipbuilding Employers' Federation and Shipyard Trade Unions, London, 1926.

12. Ronald Hope, *A New History of British Shipping* (London: John Murray Pubs Ltd, 1990), p. 454.

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Figure 4: Total Number of Naval Vessels Delivered from UK Yards, 1890 to 2010



Source: British Shipbuilding Database, held at the Marine Technology Special Collection, Newcastle University.

paradigm. Shipbuilding is an industry characterised by high risk and low returns and Bruno and Tenold have shown that the establishment of a significant shipbuilding industry in the modern era is impossible without government support because of the level of capital needed and the economic nature of the industry. Such an investment in British shipbuilding was beyond the interest of private capital and in the UK the economy was moving on from what were seen as the 'sunset' sectors of heavy industry.

The Decline of Warship Building

British shipbuilding historically benefited from a strong home market for warships, as well as work

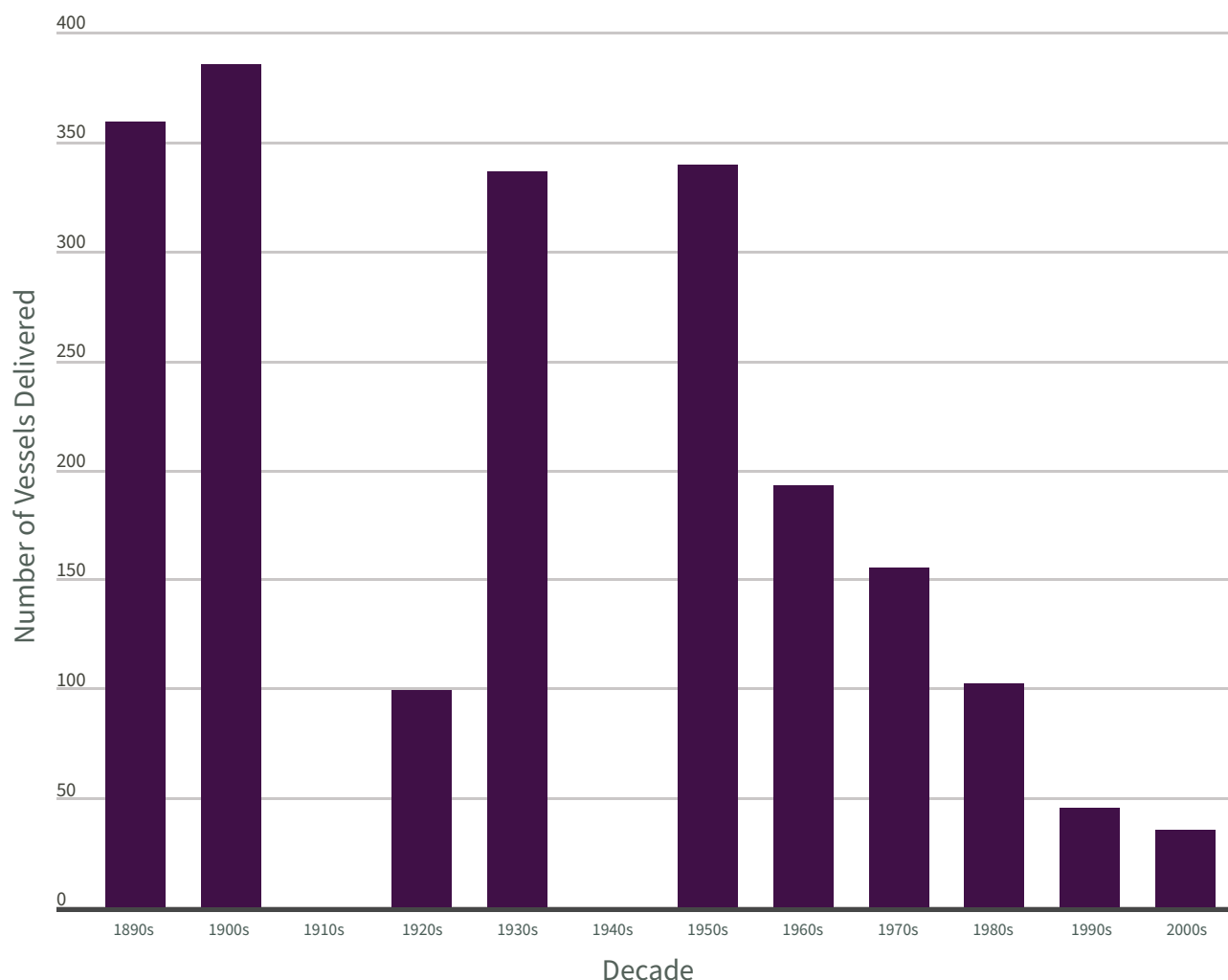
from the commercial sector. It is hard to overstate how important this sector was in the late 19th century and early years of the 20th century. Johnstone and Buxton point out:

In the battleship building era [1860 to First World War], defence expenditure made up about half of the British Government's budget [...] battleship building was the largest element of British Government expenditure [from 1895] up to the start of the First World War and commanded great political and public interest, in much the same way that the health service expenditure does today.¹³

Even this was not the zenith of the naval shipbuilding industry in the UK, however.

13. Ian Johnston and Ian Buxton, *The Battleship Builders: Constructing and Arming British Capital Ships* (Barnsley: Seaforth Publishing, 2013).

Figure 5: Total Number of Naval Vessels Delivered from UK Yards by Decade, 1890 to 2010 (Dominating War Decades not Shown)



Source: British Shipbuilding Database, held at the Marine Technology Special Collection, Newcastle University.

Figure 4 shows the total number of naval ships delivered from UK shipyards since 1890. Data in this analysis is sourced from the British Shipbuilding Database, held at the Special Collection at Newcastle University, which contains records of 81,000 ships constructed at UK shipyards since the middle of the 19th century.¹⁴ The data shown is for 6,893 vessels constructed in UK shipyards that are classed as 'naval vessels' but excluding fleet support ships, which in the UK are classed as merchant vessels. In effect, only combatants are included in the data.

The trend in this data is hard to see due to the dominating nature of the two world wars. Clearly those events presented significant opportunities for UK shipyards, although average displacement in the war decades was low due to the large number

of small coastal defence boats, many of which were wooden, that were built for the war effort, and which make up a significant part of the peaks shown in Figure 4. Figure 5 shows the decline more clearly, tracking the total number of vessels delivered by decade, excluding the dominating war decades.

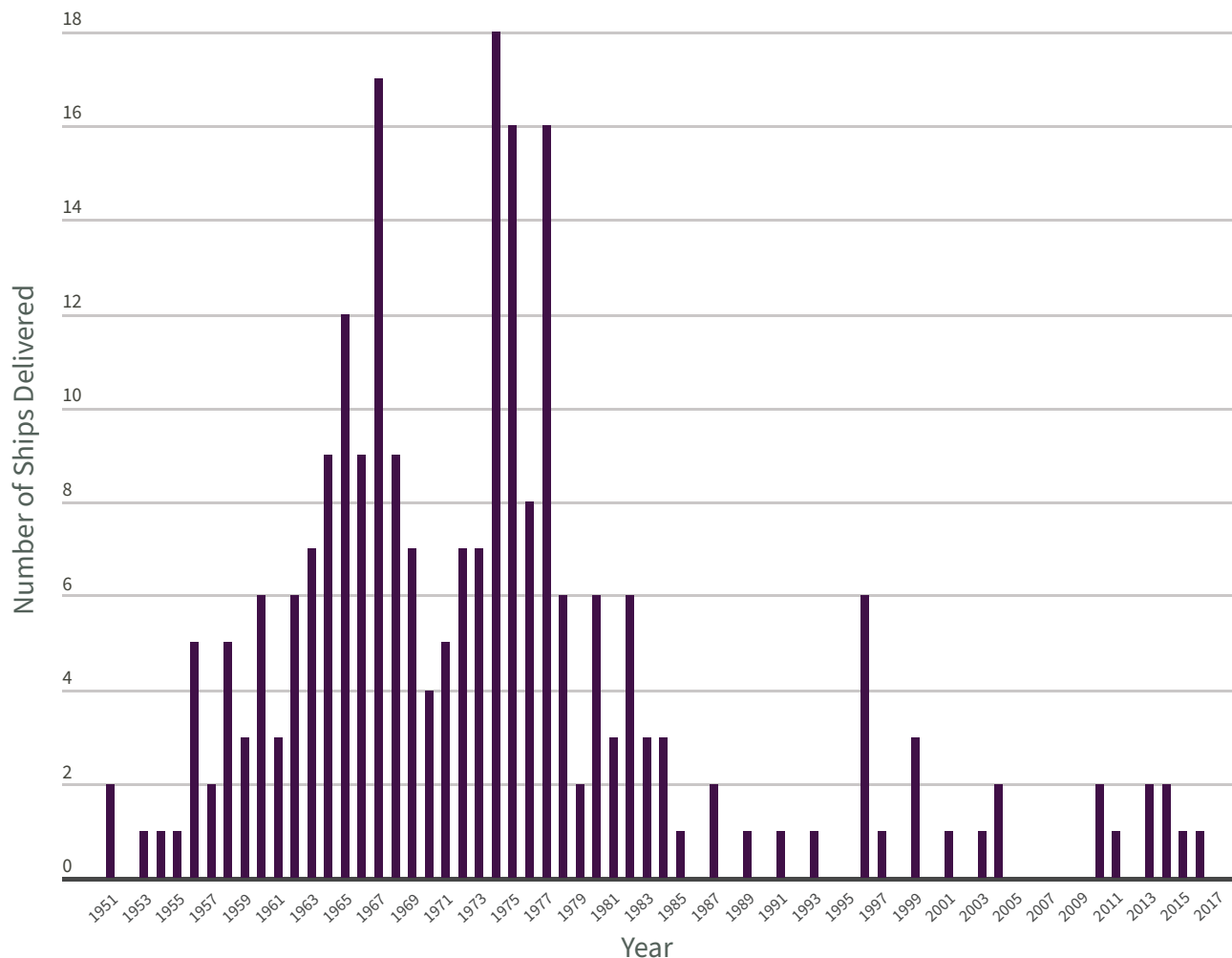
The decline was generated by the shrinking British fleet, which today requires a smaller number of larger and more capable ships than in previous eras, and by a reduction in opportunities for export orders. The availability of export contracts has been declining since the 1980s, as illustrated in Figure 6.

This does not mean to say that exporting of warships from the UK has ceased. Opportunities to export ships still arise on an occasional basis, but in recent years the export of designs, systems and

14. Newcastle University, 'British Shipbuilding Database', Newcastle University, 2019.

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Figure 6: Number of Export Ships Delivered from UK Shipyards Per Year Since 1950



Source: British Shipbuilding Database, held at the Marine Technology Special Collection, Newcastle University.

technology has become the dominant mode, rather than exporting completed ships.

As with the commercial sector, this has led the naval shipbuilding industry in the UK to an advanced stage of maturity with what, in recent years, has been essentially a duopoly supplying surface ships and a monopoly supplying submarines (Figure 7).

Measuring the Political Response to the Decline

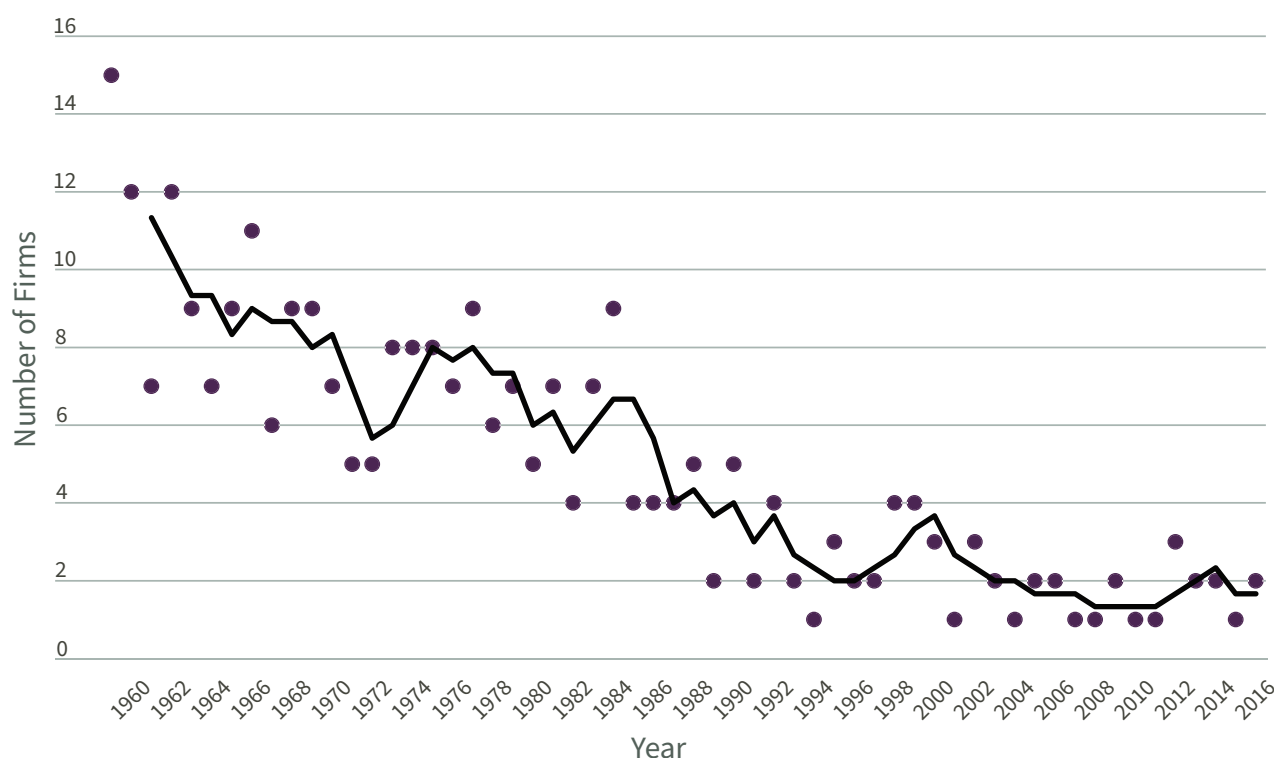
The difficult nature of the British industry of the 20th century is reflected in the amount of parliamentary time spent debating the sector. This has been analysed using the database of debates published by *Hansard*.¹⁵ The database was searched for debates

on the subject of shipbuilding, and the results compared with debates for another notoriously politically difficult ‘traditional’ industry sector: coal mining. The results are presented in Figure 8, which shows the density of debates per decade between 1890 and 2019. Significant events in relation to each sector are marked on the chart.

Coal mining was the most significant draw on the government’s time prior to 1960, but this shifted to shipbuilding between 1960 and 1990. Some political fatigue might be expected in relation to shipbuilding following this period, recognising that 200 debates over 10 years at the peak in the 1970s represents around two debates on the industry every three weeks for that decade – bearing in mind that parliament sits for around 30 weeks per year. By the 1980s there was an atmosphere of fatigue and

15. *Hansard*, ‘The Official Report of All Parliamentary Debates’, UK Parliament, <<https://hansard.parliament.uk/>>, accessed 23 July 2019.

Figure 7: Development of Sector Maturity in Naval Shipbuilding in the UK (Number of Firms Delivering Ships)



Source: British Shipbuilding Database, held at the Marine Technology Special Collection, Newcastle University.

pessimism in civil service tasked with dealing with the industry, which was experienced by the author of this article at the time. In effect, at least in relation to the commercial aspects, the UK government got rid of the shipbuilding industry 'headache' by the end of the century: a development entirely justified by the level of maturity of the commercial sector; the economy had moved on.

Because of the UK's strategic need to build and maintain the Royal Navy, however, the country cannot consign the shipbuilding industry to history, as has been done with coal mining. But politically, it has migrated to defence rather than industry.

The Fallout in Relation to National Shipbuilding Strategy Development

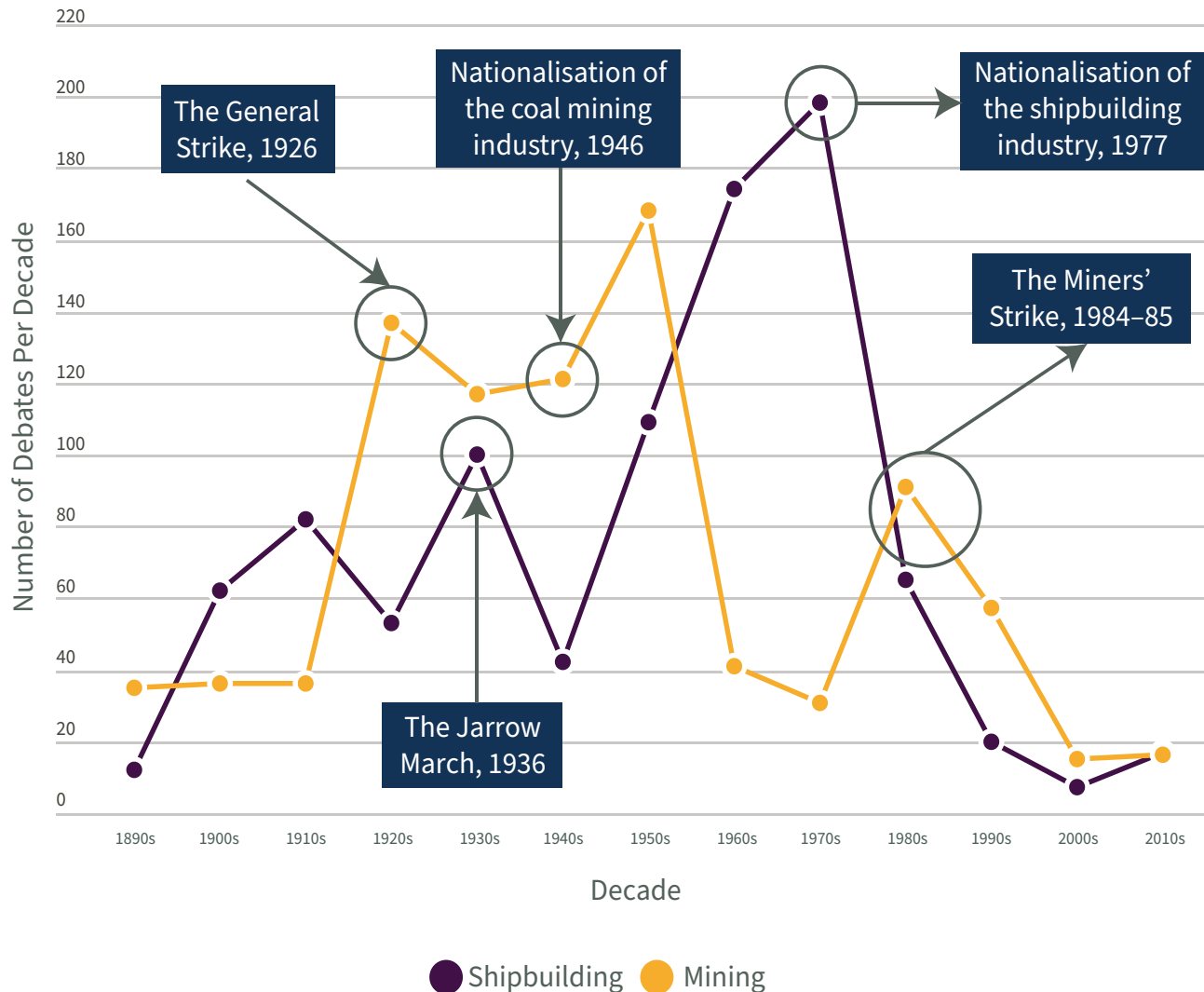
That the UK was once a global dominator could be viewed as something of a millstone around the nation's neck, making an objective view of the

future of the industry difficult to achieve – the emotive nature of the industry is never far from the surface. The notion of British supremacy in shipbuilding remains in the UK's national collective consciousness and in developing strategy the view is normally constrained by the spectre of what has been lost. The concept of recovery of past glories is never out of sight, for example:

- The foreword to the NSS by the Secretary of State for Defence states an aspiration that 'we will go to even greater lengths to inspire a new shipbuilding generation to match the innovative feats of their forebears', and in the strategy itself it is stated: 'It is only by building ships, that we will once again become good at building ships'.
- Even more overtly, in the introduction to the 'refresh' of the strategy in 2022, the Prime Minister stated: 'I have long been clear about my ambitions to bring shipbuilding home'.
- The GMB Union's response to the NSS carries the title: 'Turning the Tide: Rebuilding the UK's Shipbuilding

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Figure 8: Number of Debates in the UK House of Commons and House of Lords Per Decade, 1890 to 2019



Source: Author's analysis of data retrieved from Hansard (<https://hansard.parliament.uk>, access 23 July 2019).

- Industry'.¹⁶
- In an introduction for the annual conference of the UK Society of Maritime Industries in Portsmouth in February 2019, at which the 2017 strategy was widely discussed, the chairman of the board of the society stated: 'The conference programme has been designed to draw together many of the varied strands of that work which seeks to foster the rejuvenation of shipbuilding in the UK'.¹⁷

These quotations reflect the thoughts of investors (Society of Maritime Industries), the

workforce (the GMB) and government (MoD and the Prime Minister) and demonstrate that retrospective thinking is pervasive. But note also that the UK has been talking of this rejuvenation now for around 100 years.

It is difficult to justify that an industry as mature as the UK shipbuilding sector warrants any strategic consideration from government at all, apart from the imperative for the UK to maintain the capability to build naval ships. In developing a strategy to achieve this, however, the UK has permanently at least one eye looking

- Laurence Turner, 'Turning the Tide: Rebuilding the UK's Defence Shipbuilding Industry and the Fleet Solid Support Order', GMB Union, 2018, <<https://www.gmb.org.uk/sites/default/files/turning-the-tide.pdf>>, accessed 1 Feb 2023.
- Society of Maritime Industries Annual Conference, 'The UK Maritime Enterprise: Implementing A National Shipbuilding Strategy', Portsmouth Guildhall, 20–21st February 2019.

in the rear-view mirror. The author is grateful to one of the anonymous reviewers of this article for pointing out that this tendency is consistent with the predictions of Role Theory, which argues that decision makers' conceptions of their state's role and status on the world stage influences that state's defence and foreign policy behaviour. In this case, the UK has aspired to retain its defence status by persisting/aspiring to maintain a comprehensive onshore defence industrial base, reflected in its approach to warship procurement.

The 2017 national shipbuilding strategy seeks to improve the naval procurement process, with the aim of reducing costs, and to promote the development of competition through stimulation of an export market, in particular through the development and sale of a relatively low-cost warship – aiming to reverse the long-term decline in opportunities for exporting naval ships. The aim of the strategy, therefore, is in essence to try to reverse the degree of maturity of the industry and to stimulate competition in the sector, leading to better value for money for the UK taxpayer whilst maintaining the desired strategic capability.

It is understandable, given the level of maturity, that the 2017 strategy acknowledged but did not address the commercial shipbuilding sector. The strategy was styled as a 'national shipbuilding strategy', however, rather than a naval procurement strategy, and vested interests questioned the validity of the decision to exclude the commercial sector, particularly as it had played a role in supplying steel blocks for the aircraft carriers *Queen Elizabeth* and *Prince of Wales*. The commercial sector has subsequently become part of the strategy. In expanding the scope of the strategy in this way, MoD has become responsible for governance of a difficult commercial industry sector, and this is unlikely to sit easily.

Because of the strategic imperative, the UK government is stuck with shipbuilding, arguably the most difficult of all industry sectors.¹⁸ An effective strategy can only be developed on an objective basis, with reference to the past being important for context but not for aims or aspirations. The policy question is not: how do we resurrect the UK's shipbuilding sector, but how do we create a relatively low volume industry that is resilient to the extreme volatility of demand that shipbuilding represents, whilst achieving value for money for the taxpayer in procurement of naval vessels?

The strategic constraints relating to naval shipbuilding in the UK are:

1. Building warships is a strategic imperative for the UK.
2. Volume is low and volatility of demand is high.
3. Margins for the shipbuilder (the 'assembler') are low.
4. Business risk is high and investment is difficult.
5. Export opportunities (for ships, rather than design and systems) are limited.
6. The existing sector is at the far stage of maturity.
7. Skills and experience have been lost as the sector has declined, probably to a point below a level that would constitute a 'critical mass'.
8. Commercial shipbuilding is extremely mature and provides limited scope for support of the military sector.

The solution to this conundrum of constraints, objectively and without prejudice, lies somewhere on a spectrum from state investment in a national dockyard at one end to perpetuation of free market competition at the other end. The current strategy has defaulted to the free market end: what other forms of investment and business model could be found between these two extremes, that may provide a more sustainable sector and better value for the tax payer?

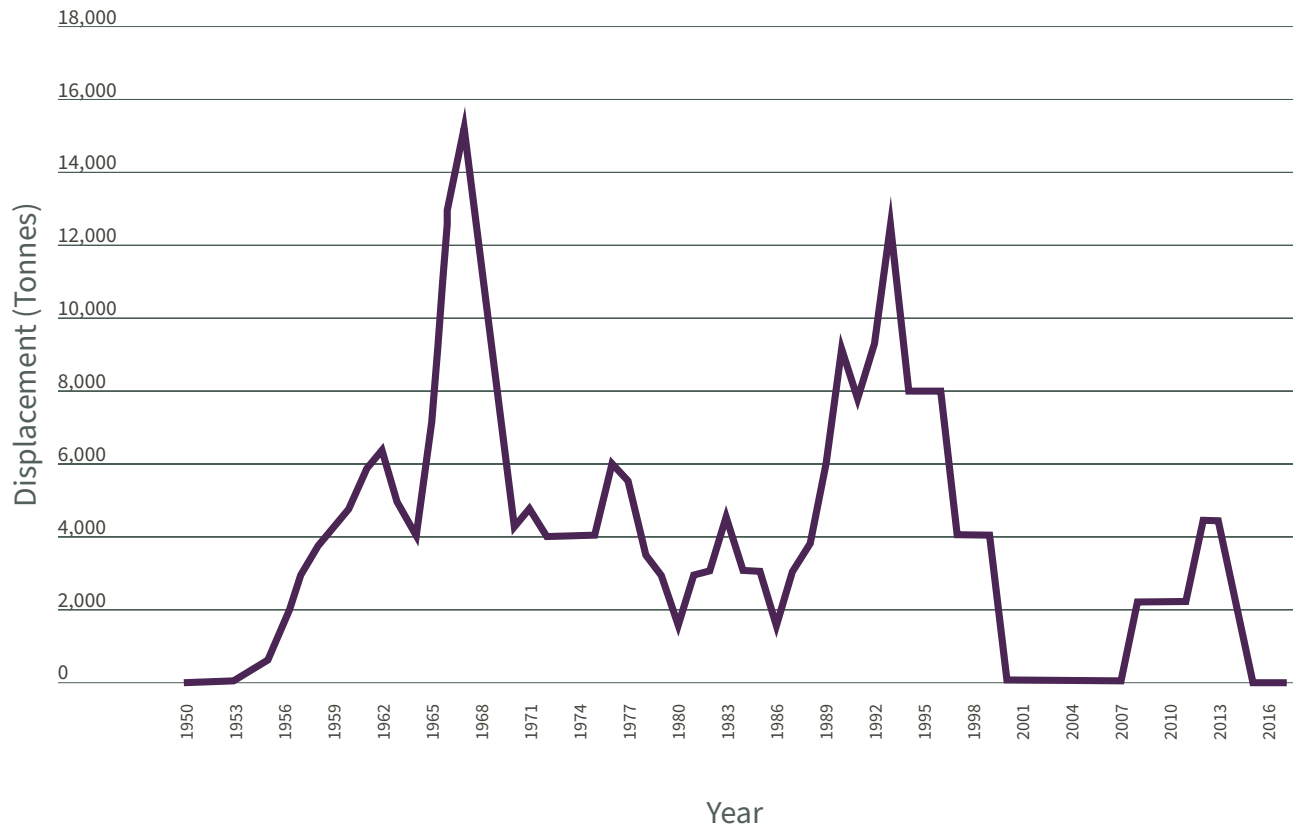
As an example, is there a place for the state to assume some of the capital risk, given the nature of the business? There are examples of state investment in docking facilities (in Qatar and the UAE) that are leased or rented to users as needed. It is not just investment in docking facilities that is difficult for businesses to justify, however. In an era where innovative manufacturing processes are proposed, but which require significant investment, could this investment be shared between common shipyard users, rather than requiring all competitors to duplicate the investment, given that it is difficult enough for any single company to make that investment?

The role of government support and protectionism must also be adequately considered in the strategy. The de facto protection of warships for UK shipbuilders clearly makes the statement that in a 'free market' some form of protectionism is sometimes justified, but how far should that protection extend? The most obvious question is whether fleet support ships should be protected as well as warships. Some reluctant

18. Paul W Stott, 'Towards a Better Understanding of the Commercial Shipbuilding Market', OECD Council Working Party on Shipbuilding (WP6), Paris, May 2018; Karin Gourdon, 'An Analysis of Market-distorting Factors in Shipbuilding: The Role of Government Interventions', *OECD Science, Technology and Industry Publishing Papers* (No. 67), DOI:10.1787/b39ade10-en.

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Figure 9: Estimated Tonnes Fabricated for Submarines in UK Shipyards Since the Second World War (author's estimate)



Source: Author's estimate based on submarine delivery data taken from the British Shipbuilding Database.

progress has been made on this, but the presumption remains against protection of any but the warship sector, even though the full value of protection of other sectors has not been adequately estimated. The full value includes not only return to the Treasury by taxes but also the intangible value of the support that such contracts would provide for investment in a difficult business, and to retain skills and experience.

As an extreme example of intangible value, Figure 9 shows an estimate of displacement fabricated per year for submarines from UK shipbuilders since the Second World War, based on output data from the British Shipbuilding Database.

A hiatus in fabrication can be seen in the seven years between 2000 and 2007 where virtually no submarine fabrication was undertaken in the

UK. During this period, a significant part of the experience of how to build submarines was lost along with a proportion of the skills needed. This in all probability contributed to cost and time overruns in that programme. This cost, which is an inevitable feature of volatility, must be factored into the economic consideration of the industry.¹⁹

The US provides an example of more widespread protection in the shipyard sectors, including both naval and commercial shipbuilding. Significant protection is afforded by the Merchant Marine Act of 1920, commonly referred to as the 'Jones Act', which seeks to protect commercial vessels that are operated within and between US territorial waters, that is to say involved in cabotage trades, to being US-owned and controlled, US-crewed and

19. For discussion of these issues in the house of commons, see the Forty-Third Report of the Select Committee on Public Accounts (October 2004), <<https://publications.parliament.uk/pa/cm200304/cmselect/cmpubacc/383/383.pdf>>, accessed 3 August 2023; and House of Commons Defence Select Museum, 'Memorandum from the Keep Our Future Afloat Campaign', 19 December 2006, <<https://publications.parliament.uk/pa/cm200607/cmselect/cmdfence/59/59we07.htm>>, accessed 1 August 2023.

US-built and repaired.²⁰ This is a significant fleet of ships including, for example, offshore vessels operating in the Gulf of Mexico, cargo ships trading between continental US and any island or remote state (including Alaska, Hawaii and Puerto Rico), all harbour tugs and service craft operating in US ports, ferries and casino vessels, inland waterway vessels (including operations on the Mississippi and the Great Lakes), fishing vessels and more.

The protection of military vessels for US shipyards is also covered in an amendment to the Act, known as the 'Burns Tollefson Amendment'. The aim of this Act, which followed the First World War, is to support the maintenance of national security in times of war by ensuring a minimum capability for both shipping and shipbuilding. Under such terms it would not be possible in the US to import fleet support vessels, as is routinely done in the UK. The justification for the Jones Act is essentially the same as the justification for protection of naval shipbuilding in the UK but the scope is much wider. The downside is that US domestic shipping may be significantly expensive, due to the high cost of ships built in US shipyards, and the Act has many critics, both within the US and internationally. But it also has many supporters, particularly in the shipyard industries, much of which might struggle to compete if exposed to global competition. The protectionism probably fails to convey any significant economic advantage in the cost of building warships. It is undoubtedly successful, however, in maintaining and developing skills and in supporting investment. It is not suggested here that the UK follows this as a model but a strategic question arises: is there any

level of protection beyond combatants that would provide economic, skills and investment support to the benefit of the industry and therefore to the benefit of Treasury in the UK? This question has not been addressed by the current strategy.

In conclusion, the current shipbuilding strategy in the UK is not based sufficiently on objective rationality and is constrained by prejudice: prejudice that the model the UK should aspire to comes from its historical position, with a reversion to the industry of the 20th century. The lack of rationality calls into question the probable success of the strategy. The UK needs to free itself from these constraints to achieve a successful industry and value for money in warship acquisition. To achieve this, future iterations of the strategy must be based on sound strategic analysis only and, ideally, the thinking should come from outside the industry to remove the blinkers that constrain current thought. ■

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20. Merchant Marine Act 1920, <<https://uscode.house.gov/view.xhtml?jsessionid=5142A83A2AAB12A25A2F9AB8A3949F92?req=granuleid%3AUSC-2000-title46a-chapter24&saved=%7CZ3JhbnVsZWlkeiVtQy0yMDAwLXRpdGxINDZhLWNoYXB0ZXIyNC1zZWNoaW9uODYx%7C%7C%7C0%7Cfalse%7C2000&edition=2000>>, accessed 1 August 2023.