The Asset Manager Arsenal:

Who Owns the UK Arms Industry?

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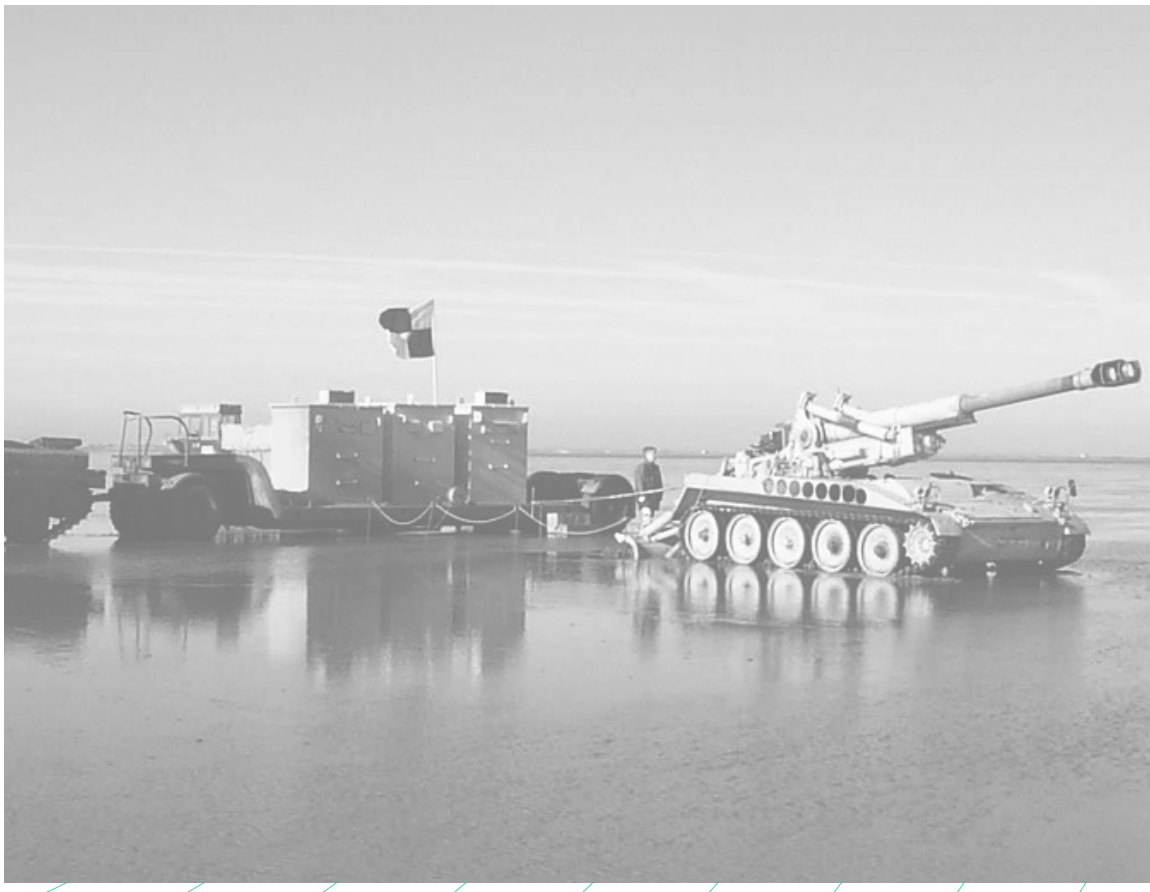

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Contents

Executive Summary

The arms industry is governed by a different set of rules than the rest of the UK economy. The industry — defined here as the major arms producing companies and providers of military services operating in the UK — is exempt from several trade treaties, including the World Trade Organisation (WTO) agreement on public procurement.[1] The industry is also the recipient of significant state intervention that reduces risk for investors: not only is the Ministry of Defence (MOD) its primary client, but research and development costs for arms companies are predominantly paid for by the state and by export customers as a component of procurement contracts. Indeed, between 1987 and 2009, defence production on average received 35 per cent of the UK's public research and development funding.[2] Despite this privileged position, the industry forms a smaller part of the UK economy overall than the scale of its state support would imply, adding less in value to the economy and employing fewer people than automotive manufacturing — an industry that is currently struggling for public investment to safeguard its future.[3]

The extent of this state support, the industry's legal privilege and, as detailed below, the flow of money from public subsidy to investor returns, raise several urgent questions. First, who are the primary beneficiaries of the industry? Second, what are the economic consequences of arms production in the UK? Third, how can some of the significant industrial capacity and public investment currently concentrated within the arms sector best be redeployed to address urgent societal challenges and needs?

In this report, we seek to answer the first two questions with new analysis of the ownership structures of arms companies operating in the UK, examining the nature of private ownership in the industry and the degree to which public subsidy and procurement expenditure flow to investment firm returns. As the academic literature

1. On the exemption of arms companies from trade treaties see James Simmie, "R&D and the 'Peace Dividend': A Review of the Implications for Some Local Defence Dependent Economies in the UK", *International Journal of Urban and Regional Research*, 1995, 19, pp.194-207. This definition of arms industry companies is taken from Lucie Béraud-Sudreau, Alexandra Marksteiner, Diego Lopes Da Silva, Nan Tian, Alexandra Kuimova, Pieter D. Wezeman and Siemon T. Wezeman, "Mapping the International Presence of the World's Largest Arms Companies", Stockholm International Peace Research Institute, 2020, see https://www.sipri.org/sites/default/files/2020-12/sipriinsight2012_mapping_the_international_presence_of_the_worlds_largest_arms_companies.pdf Further detail on how the UK arms industry is defined and used in the quantitative analysis for the report is included in the methodological annex.

2. OECD data analysed in Enrico Moretti, Claudia Steinwender and John Van Reenen, "The Intellectual Spoils of War? Defense R&D, Productivity and International Spillovers", National Bureau of Economic Research Working Paper, 2019, https://www.nber.org/system/files/working_papers/w26483/revisions/w26483.rev0.pdf

3. For defence industry gross value added see "Industry Facts & Figures 2023", ADS Group, 2023, https://www.adsgroup.org.uk/industry-issues/facts-figures/industry-facts-figures-2023; for automotive manufacturing see: "SMMT Motor Industry Facts 2023", Society for Motor Manufacturers and Traders, 2023, https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-Motor-Industry-Facts-May-2023.pdf. On the public investment shortfall in the decarbonisation of the automotive sector see Khem Rogaly and Adam Almeida, "Owning the Gigafactory", Common Wealth, https://www.common-wealth.co.uk/publications/owning-the-gigafactory

makes clear, these returns are further underpinned by export relationships — the most prominent and lucrative of which is with Saudi Arabia — that help enable the violent repression of civilians in countries around the world with the support and involvement of the UK government.[4] State support for export production indicates the degree to which investment in the arms industry is grounded in the maintenance of geopolitical relationships, from which private investors continue to benefit.

Like most of the world economy, the UK arms industry forms part of the portfolio of global asset managers and investment firms.[5] The top three investors in the arms industry — BlackRock, Vanguard and State Street — together hold an average 16 per cent of shares of major arms companies operating in the UK. While this is comparable to the combined stake of these firms in other sectors of the UK economy, what makes these investments distinct within the asset manager arsenal is the consistent return on invested capital backstopped by both the MOD and the UK's arms export customers.[6] Our analysis shows that the UK arms industry averaged 12.5 per cent returns on invested capital between 2013 and 2020 compared to a FTSE 100 median of 11.7 per cent.[7]

Moreover, analysis of three of the MOD's prime suppliers — QinetiQ, BAE Systems and Babcock International — demonstrates the same pattern of returns on investment in companies that generate over 20 per cent of their global revenue from the MOD.[8] Export customers provide another source of revenue for the industry, although export contracts delivered by private companies are secured with financial and institutional support from the UK government in order to safeguard geopolitical relationships.[9] Given the increasing concentration of the UK's arms export base — in 2022, 45 per cent of the value of Standard Individual Export Licenses (SIELs) for arms

4. For a description of the UK state and arms industry's role in conflicts in Kashmir, Sri Lanka, Palestine and Yemen, see Anna Stavrianakis, "Debunking the myth of the 'robust control regime': UK arms export controls during war and armed conflict", *Global Policy,* 2023, 14, pp.121-130. On the UK's export relationship with the UAE see Saul Kelly and Gareth Stansfield, "Britain, the United Arab Emirates and the defence of the Gulf revisited", *International Affairs*, 2013, 89, pp.1203-1219. On the UK's export relationships with Gulf monarchies in general see David Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain,* Polity Press: 2019 and David Wearing, "The myth of the reforming monarch: Orientalism, racial capitalism, and UK support for the Arab Gulf monarchies", *Politics,* OnlineFirst edition, 2021, pp.1-16. Oxfam describe the use of UK arms exports in the war in Yemen, including the bombing of aid infrastructure. See "UK aid and arms in Yemen", Oxfam, 2019, https://policy-practice.oxfam.org/resources/uk-aid-and-arms-in-yemen-620860/

5. On asset manager ownership of the global economy see Adrienne Buller and Benjamin Braun, "Under New Management: Share Ownership and the Growth of UK Asset Manager Capitalism", Common Wealth, 2021, https://www.common-wealth.co.uk/publications/under-new-management-share-ownership-and-the-growth-of-uk-asset-manager-capitalism

6. Ibid.

7. This analysis was conducted using the Refinitiv database. See methodological annex for more detail on this and the use of returns on invested capital (ROIC) as a measure.

8. "MOD trade, industry and contracts 2022", Ministry of Defence, 2023, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

9. The interrelation between domestic production and export production is addressed in further detail in Section Two of the report.

went to Qatar and Saudi Arabia — the arms export industry serves in part to maintain relationships with a few close military allies.[10]

The political economic configuration of arms production in the UK contributes to three economic challenges that, following detailed analysis of ownership structures in the arms industry, are explored in this report. First, arms production is subject to significant cost pressure, in part due to the consolidation of the industry; the pattern of corruption within the arms trade further compounds the cost of production.[11] Second, the arms industry is highly carbon intensive both in production and in end use, with necessary emissions reductions likely to incur costs to the public. Third, in the long term, many jobs in arms production are insecure because of the industry's dependence on procurement agreements, the growth of arms imports to meet domestic demand, and the disproportionate role of multinational firms in the UK. This creates instability for workers but not for large firms that are able to move operations as procurement contracts fluctuate over time. These challenges raise the question — which our future research will address — of how the government can best repurpose some of the significant industrial capacity that it currently supports within the arms industry to meet existential threats such as climate crisis.

Understanding the nature of ownership in the arms industry is critical to developing future industrial strategies for UK manufacturing — allowing us to learn from the possibilities offered by the level of public investment and coordination of production currently unique to the arms industry and the risks of public subsidy without public equity and strategic control. These lessons inform future questions about the potential to redirect public investment and capacity towards collective challenges. This initial analysis provides the foundation for research over the next two years, in collaboration with workers in the arms industry, to reflect on the future of the sector and to ask how some of the productive capacity within the sector might be repurposed.

Key Findings

- State guarantees — including institutional support for exports, state investment in research and development and public procurement — appear to support strong average returns for the UK arms industry and its investors. Between 2013 and 2020, average returns on invested capital in the UK arms

10. This includes licenses granted for both military and non-military goods which formed less than two per cent of SIELs in 2022. David Wearing examines the concentration of the UK's arms export base after the Cold War. See David Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain,* Polity Press: 2019. For 2022 SIEL data see "Strategic export controls: licensing statistics, 2022", Department for Business and Trade, 2023, https://www.gov.uk/government/statistics/strategic-export-controls-licensing-statistics-2022

11. See for an introduction Laurence Lustgarten, *Law and the Arms Trade: Weapons, Blood and Rules*, Bloomsbury: 2020. The issue of corruption within the industry is covered in further detail in Section Three of the report.

industry were 12.5 per cent compared to the FTSE100 median of 11.7 per cent. Returns on invested capital at BAE Systems, QinetiQ and Babcock International all outstripped the FTSE median: BAE Systems averaged 13.8 per cent returns, QinetiQ 24.2 per cent and Babcock 12.3 per cent.

- The major companies that form the UK arms industry are controlled by investment firms and asset managers. These investors, and the clients and beneficiaries whose assets they use to invest, benefit from state support. Ownership of the UK's arms industry is concentrated, with just three investment firms (BlackRock, Vanguard and State Street) holding a combined average of 16.3 per cent of shares listed in the major arms companies operating in the UK.
- Just two investment firms — BlackRock and Capital Group — together control more than a quarter of the MOD's prime supplier, BAE Systems (successor to the publicly owned company British Aerospace).
- The UK's arms export base has grown more concentrated since the Cold War, increasing the UK's economic ties to a limited pool of export partners and its dependence on political relationships with Gulf monarchies — 47 per cent of the value of Standard Individual Export Licenses (SIELs) for arms went to Gulf Cooperation Council (GCC) countries in 2022.

Introduction: The Leading Example of UK Industrial Strategy

Unlike most UK manufacturing sectors, the arms industry is underpinned by an active state industrial strategy.[12] This includes public procurement, public investment in research and development and state support for export contracts, as detailed below. Yet the arms industry is almost entirely privately owned, with the exception of the Atomic Weapons Establishment, operated as a public body by the MOD.[13]

Box 1: What is distinct about state support for the arms industry?

- Arms companies operating in the UK are backstopped by public sector demand, with the MOD spending £242 billion on equipment procurement

12. For more detail on the deficit of industrial strategy in UK automotive see Rogaly and Almeida, "Owning the Gigafactory", Common Wealth, https://www.common-wealth.co.uk/publications/owning-the-gigafactory

13. "MOD trade, industry and contracts 2022", Ministry of Defence, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

and support over the next ten years.[14] In other manufacturing industries, comparative ten year plans on public procurement are not in place. While procurement guidelines encourage the use of UK steel in public projects, the relative scale of demand is limited: in 2020/21 public projects used £640 million of steel, an estimated £268 million of which was produced in the UK.[15]

- The MOD further provides the arms industry with support for export production. For instance, the government strategically uses procurement to reduce the cost of export deals and provides institutional support to reach export agreements.[16]
- Research and development costs in the arms industry are predominantly paid for by state customers, with research and development forming part of the overall cost of contracts.[17] Between 1987 and 2009, defence production on average received 35 per cent of the UK's public research and development funding.[18]
- The government and industry are closely connected in personnel: four BAE Systems staff have been on secondment in the government's procurement body Defence Equipment and Support for more than three years; six staff are on secondment from QinetiQ and further staff have been supplied by Rolls Royce and Babcock.[19]The government takes an active role in the coordination of arms production both through procurement decisions and through the Defence Suppliers Forum, which sets joint priorities for the industry and is co-chaired by the Minister of Defence and the CEO of BAE Systems.[20]

14. "The Defence Equipment Plan, 2022-2032", Ministry of Defence, 2022, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1120332/The_defence_equipment_plan_2022_to_2032.pdf

15. "New UK Government regulations to boost uptake of British-made steel in public project", Tata Steel, 2023, https://www.tatasteeleurope.com/corporate/news/new-uk-government-regulations-to-boost-uptake-of-british-made-steel-in-public-projects

16. This is covered in detail in Section Two of the report.

17. "Determination: Treatment of RDEC in determining allowable costs", Single Source Regulations Office, 2022, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1090401/RDEC_July_2022A.pdf

18. Moretti, Steinwender and Van Reenen, "The Intellectual Spoils of War? Defense R&D, Productivity and International Spillovers", National Bureau of Economic Research Working Paper, https://www.nber.org/system/files/working_papers/w26483/revisions/w26483.rev0.pdf

19. Lucas Amin, "Weapons firms install 50 staff inside the Ministry of Defence", *Open Democracy,* 27 September 2022, https://www.opendemocracy.net/en/dark-money-investigations/arms-companies-install-staff-inside-ministry-of-defence

20. "2025 — Defence Industry Vision", Defence Suppliers Forum, 2019, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1139408/DSF_2025_Defence_Industry_Vision__002_.pdf

In contrast to the UK, the public hold minority stakes in arms producing companies in many European countries. Airbus was formed from the publicly owned French arms company Aerospatiale and the French (10.9 per cent), German (10.8 per cent) and Spanish (4.1 per cent) governments all hold minority stakes in the firm, although their governing rights are distinct from those of other shareholders.[21] The Italian government has a 30.2 per cent stake in Leonardo, one of the world's largest defence contractors, which has a significant UK operation.[22] This indicates the specificity of the UK industry's architecture of ownership and control. As detailed below, this system protects the interests and returns of private investors while also providing state support for the UK's military allies.

The political economic dynamics of the UK arms industry offer two key lessons: first, they demonstrate the practical possibility of coordination and public investment in manufacturing. For instance, through its Defence and Security Industrial Strategy and via the Defence Suppliers Forum, the UK government coordinates the direction of the defence industrial base along with the private sector.[23] Second, the arms industry illustrates the outcomes of significant public investment without public equity: shareholders are offered security by the public while claiming the bulk of the surplus from production.

This second lesson is perhaps most informative. As described in detail below, public subsidy for the UK arms industry is not matched by the economic size and contribution of the industry overall. This reflects the political foundations of the industry from which shareholders are able to profit: unlike other sectors, arms manufacturing and arms export relationships are seen as government priorities — a decision that directly benefits investors. ADS group — the body representing the aerospace, defence, security and space industries — estimates that the defence sector added £9.8 billion in value to the UK economy and directly employed 147,500 people in 2022.[24] By comparison, the gross value added from the chemicals industry in the North West of England alone is £8 billion per year on average.[25] The UK chemicals industry produces an average of £30.3 billion gross value added annually and directly employs 151,000

21. "Investors: Share Price & Information", Airbus, 2023, https://www.airbus.com/en/investors/share-price-and-information. For further detail on the governance rights and security agreements attached to French, German and Spanish government shares in Airbus see "Progressing with Purpose: Airbus Annual Report 2022", Airbus, 2023, https://www.airbus.com/en/investors/financial-results-annual-reports/2022-airbus-annual-report, pp.192-194.

22. "Shareholders Base", Leonardo, 2023, https://www.leonardo.com/en/investors/stock-info/shareholders-base

23. "Defence and Security Industrial Strategy", Ministry of Defence, 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/971983/Defence_and_Security_Industrial_Strategy_-_FINAL.pdf and "2025 — Defence Industry Vision", Defence Suppliers Forum, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1139408/DSF_2025_Defence_Industry_Vision__002_.pdf

24. "Industry Facts & Figures 2023", ADS Group, https://www.adsgroup.org.uk/industry-issues/facts-figures/industry-facts-figures-2023

25. "CIA Second Quarter Economic Report 2023", Chemical Industries Association, 2023, https://www.cia.org.uk/Portals/0/Documents/CIA%20Q2%202023%20Economic%20Report.pdf

people.[26] Overall, manufacturing added £206 billion to the UK economy in 2022, more than 20 times the value add of the defence sector the same year.[27]

While automotive manufacturing — which added £14.1 billion to the UK economy and directly employed 182,000 people in 2021 — has struggled for limited public investment to support the infrastructure necessary to meet new climate mandates and secure a smooth transition to electric vehicle production, the arms industry benefits from significant (but often little understood) state support each year.[28] The comparative state of the UK's manufacturing industries raises further questions of whether and how industrial capacity can best be redirected to meet future needs.

Beyond direct investment and institutional coordination, the arms industry's demand base provides further shelter from investment risk. While some multinational arms companies operating in the UK have a diverse customer base, others rely heavily on the MOD. As the government's 2021 Defence and Security Industrial Strategy notes, "customers for security related goods and services are often private entities, which is in stark contrast to the defence sector where government is often the main, and sometimes the sole, customer for defence goods".[29]

Excluding Foreign Military Sales agreements with the US, the MOD paid £28.6 billion to UK and foreign-owned organisations (including public and private organisations in all sectors) in 2021/22, 42 per cent of which was directed to the MOD's top ten suppliers.[30] £4 billion was spent on the leading supplier BAE Systems alone, of which 91 per cent was awarded through non-competitive contracts.[31] Overall, 37 per cent of MOD contracts were awarded following a non-competitive process and 39 per cent after a competitive process — 24 per cent of contracts are not recorded.[32]

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26. For gross value added see "Economics", Chemical Industries Association, 2023, https://www.cia.org.uk/Policy/Economics; for employment figures see "CIA Second Quarter Economic Report 2023", Chemical Industries Association, 2023, https://www.cia.org.uk/Portals/0/Documents/CIA%20Q2%202023%20Economic%20Report.pdf

27. "Industrial Strategy: A Manufacturing Ambition", Make UK, 2023, https://www.makeuk.org/insights/reports/industrial-strategy-a-manufacturing-ambition#:~:text=The%20UK%20manufacturing%20sector%20is,higher%20than%20a%20decade%20ago

28. For automotive manufacturing gross value added and employment figures see ""SMMT Motor Industry Facts 2023", Society for Motor Manufacturers and Traders, https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-Motor-Industry-Facts-May-2023.pdf. On the public investment shortfall in the decarbonisation of the automotive sector see Rogaly and Almeida, "Owning the Gigafactory", Common Wealth, https://www.common-wealth.co.uk/publications/owning-the-gigafactory. The 2018 Automotive Sector Deal attempted to introduce an industrial strategy for the automotive sector although the government's Industrial Strategy Council was since made non-statutory, see "Industrial Strategy: Automotive Sector Deal", HM Government, 2018, https://www.gov.uk/government/publications/automotive-sector-deal

29. "Defence and Security Industrial Strategy", Ministry of Defence, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/971983/Defence_and_Security_Industrial_Strategy_-_FINAL.pdf, p.33.

30. "MOD trade, industry and contracts 2022", Ministry of Defence, 2023, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

31. Ibid.

32. Ibid.

Given the consolidation of the industry and relative dominance of top suppliers, even formally "competitive" processes are often open to a limited number of participants.

The arms industry is further backstopped by export relationships — last year the UK provided £8.6 billion of Standard Issue Export Licenses for arms — that the MOD provides financial and institutional support to help secure.[33] Of all parts of the sector, however, export production is the most insecure as it is subject to shifts in the UK's geopolitical relationships and the changing military needs of its allies, especially the Gulf monarchies.[34]

Crucially, while some major arms companies operating in the UK receive over half their global revenue from the MOD — a point explored in detail below — they have lower investment needs than other comparable industries. This is because research and development expenditure in the arms industry is primarily covered by public customers, meaning that returns on private capital invested are comparatively high and public investment helps develop technologies from which firms can benefit.[35] The MOD invests in research and development directly through procurement contracts and by commissioning defence-related research, including through specialist bodies such as the Defence and Security Accelerator.[36] In 2022, for instance, BAE Systems paid for just 14.35 per cent of its own research and development programmes, which cost £2 billion in total. The remainder of the tab was paid for by public customers.[37] State subsidy of research and development — alongside subsidy through export contracts — thus offers a layer of protection for private investors that undergirds consistently strong returns on invested capital (see methodological annex for more detail on the use of this measure). While median returns on invested capital in the FTSE100 were 11.7 per cent between 2013 and 2020, our analysis finds the major arms companies operating in the UK enjoyed 12.5 per cent average returns.[38]

Although political economy research on the ownership of the UK arms sector is relatively limited, analysis of the US military industry offers a useful reference point. The US industry operates at a different scale, with public subsidy at a much higher

33. "Strategic export controls: licensing statistics, 2022", Department for Business and Trade, 2023, https://www.gov.uk/government/statistics/strategic-export-controls-licensing-statistics-2022

34. 48 per cent of the value of Standard Individual Export Licenses (SIELs) for arms went to Gulf Cooperation Council (GCC) countries in 2022, see ibid.

35. For a detailed analysis of this dynamic in the US military industry see "Contract Finance Study Report", Department of Defense, 2023, https://www.acq.osd.mil/asda/dpc/pcf/docs/finance-study/FINAL%20-%20Defense%20Contract%20Finance%20Study%20Report%204.6.23.pdf

36. For an overview of public funding for defence research see "Doing Business with Defence", Ministry of Defence, 2020, https://www.gov.uk/guidance/mod-procurement-an-overview. On the MOD's strategy for funding academic research see "Science and Technology Collaboration and Engagement Strategy — Accessing More UK Talent", Ministry of Defence, 2023, https://www.gov.uk/government/publications/accessing-more-uk-talent/science-and-technology-collaboration-and-engagement-strategy-accessing-more-uk-talent

37. "Annual Report 2022: BAE Systems plc", BAE Systems, 2023, https://investors.baesystems.com/~/media/Files/B/Bae-Systems-Investor-Relations-V3/PDFs/results-and-reports/results/2022/bae-ar-complete-2022.pdf

38. This is according to analysis using the Refinitiv database. See annex for further methodological information.

order of magnitude, but the political economy undergirding it is similar. As historian of military Keynesianism (which describes the use of military spending to create demand in the economy) Timothy Barker writes, the US military is the "largest government programme in history".[39] The US government spent $877 billion on its military in 2022 — accounting for 39 per cent of global military spending.[40] As in the UK, the military industry in the US is privately owned.

A recent contract financing study produced by the US Department of Defense (DOD) raised questions about the business environment that government subsidy has produced for the arms industry.[41] While arms manufacturers' associations cited by the DOD claimed to face financial pressures as a result of the Covid-19 pandemic and ongoing supply shocks, the DOD argued that the current model of contract financing produced "financial returns... greater than contract profit rates and well above contractors' cost of capital — creating value for shareholders".[42] These shareholder returns reflect the beneficial financial environment produced through state support: the DOD found that defence companies paid higher total returns to shareholders than equivalent civilian firms or stock market indices.[43] Moreover, this pattern of sustained shareholder returns occurred at the same time as falling investment in research and development: between 2000 and 2019, dividends and share buybacks increased by 73 per cent in the US defence industry while spending on research and development fell.[44] This is illustrative of the operation of the arms industry in both the US and the UK: bolstered by state support, arms companies produce consistent returns for private, internationally distributed shareholders.

As detailed in Section Two, shareholders benefit from the symbiosis between the MOD, the arms industry and arms export customers that props up the UK's military relationships often at the risk of civilians. However, even in economic terms, the industry faces three problems that this report considers in turn. First, overspending and rising costs within arms production are augmented by the costs of corruption, which forms a pattern within the arms trade.[45] Second, arms production and use are highly carbon intensive and the technological capacity and regulation to mitigate emissions do not exist, with associated future costs likely to be borne by the public. Third, many jobs in the industry are insecure, contingent on shifting geopolitics and

39. Timothy Barker, "'Don't Discuss Jobs Outside This Room' Reconsidering Military Keynesianism in the 1970s" in Jennifer Mittelstadt and Mark R. Wilson (eds.), *The Military and the Market*, University of Pennsylvania Press: 2022, pp. 135-150. The definition of military Keynesianism is taken from the same source.

40. Nan Tian, Diego Lopes da Silva, Xiao Liang, Lorenzo Scarazzato, Lucie Béraud-Sudreau and Ana Carolina de Oliveira Assis, "Trends in World Military Expenditure, 2022", Stockholm International Peace Research Institute, 2023, https://www.sipri.org/publications/2023/sipri-fact-sheets/trends-world-military-expenditure-2022

41. "Contract Finance Study Report", Department of Defense, https://www.acq.osd.mil/asda/dpc/pcf/docs/finance-study/FINAL%20-%20Defense%20Contract%20Finance%20Study%20Report%204.6.23.pdf

42. Ibid, p.18.

43. Ibid.

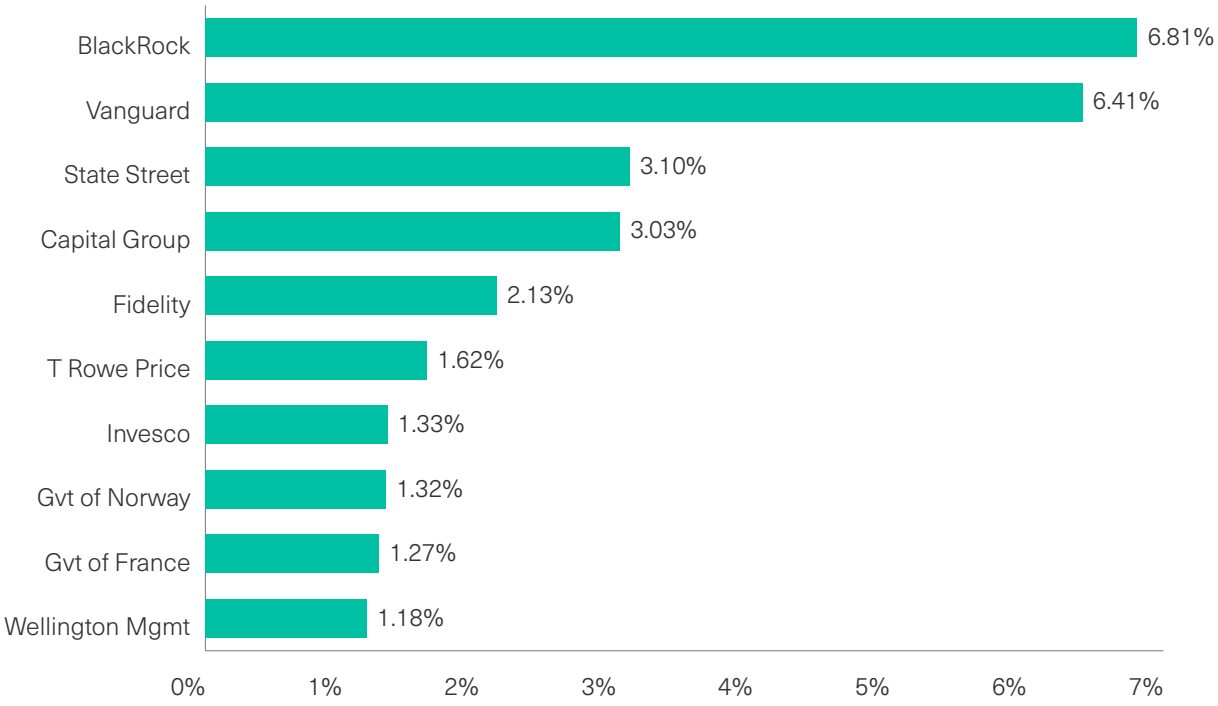
44. Ibid.

45. See Section Three for further detail and reference points for the history of corruption within the arms industry.

the procurement practices and political alliances that shape the industry. The political economic configuration of arms production raises two questions: first, how can the public coordination and investment currently devoted to the arms industry best be repurposed to meet social needs, primarily the existential threat of climate crisis, and second, whether repurposing productive capacity in the industry can provide long-term security for workers. This report provides an initial evidence base to raise these questions for future research.

Who Owns the UK Arms Industry?

Figure 1 Global Asset Management Firms Top the List of Shareholders in Major UK Arms Companies



Source Common Wealth Analysis of Refinitiv Database

Note The governments of Norway and France have outsized average holdings in arms companies with UK operations as a result of the ownership structures of a few companies within the industry. Norway has majority shares in Kongsberg Gruppen and France has significant minority stakes in Thales, Safran and Airbus

While the arms industry relies on state subsidy, shares in the arms companies operating in the UK — nearly all of which are publicly listed — are predominantly controlled by private investment firms. As our analysis of the Refinitiv database shows, investment firms such as BlackRock, Vanguard and State Street hold significant equity in the major arms companies operating in the UK. BlackRock holds on average 6.8 per cent of shares listed in firms across the sector and the top three firms jointly control an average of 16.3 per cent of outstanding shares. The clients and beneficiaries of these global investment firms thus see the returns from arms production backstopped by export deals and state subsidy, including research and development investment as

well as public procurement. Further analysis below of the top shareholders of three key MOD suppliers, QinetiQ, BAE Systems and Babcock International, illustrates the extent to which state support flows to investors, including at firms that were previously under public ownership or that manage state assets.

Box 2: What are investment firms and asset managers? And, how do they operate?

- Asset managers held $98 trillion of assets worldwide in 2022, even after the second largest annual fall in assets under their management in history.[46]
- Asset managers take a "universal" approach to share ownership, controlling stock across all industries and regions of the global economy, often through funds that invest in broad stock market indices.[47]
- Asset managers invest on behalf of pension funds, foundations, wealthy individuals and other asset owners, charging fees based on the size of the asset pool they manage, while remaining the legal owners of the stocks they buy and holding the governance rights attached.[48]
- Due to their fee-based model, asset managers do not retain their returns on investment. Instead, returns flow to their beneficiaries who are overwhelmingly wealthy: the top ten per cent of UK households by income own 35 per cent of both direct and pension-mediated equities.[49] Pension fund ownership is unequally distributed: nearly half of all UK pension wealth is held by households in the top two income deciles and the top decile holds 30 per cent of all private pension wealth.[50]

Although top investment firms invest across the global economy — BlackRock, Vanguard and State Street's stake in the arms industry is relatively consistent with their exposure to the FTSE350 as a whole — investors with stakes in the arms industry benefit from a far higher level of public intervention than in most equivalent UK sectors.[51] Three of the MOD's top suppliers derive over 20 per cent of their global revenue from

46. "The Tide Has Turned: Global Asset Management 2023", BCG, 2023, https://web-assets.bcg.com/c8/97/bc0329a046f89c7faeef9ab6a877/bcg-global-asset-management-2023-may-2023.pdf

47. See Adrienne Buller and Chris Hayes, "The Passive Revolution", Common Wealth, 2022, https://www.common-wealth.co.uk/publications/the-passive-revolution

48. Adrienne Buller, "Explainer: What's the Deal With Asset Management", Common Wealth, 2022, https://www.common-wealth.co.uk/publications/explainer-whats-the-deal-with-asset-management

49. Adrienne Buller and Chris Hayes, "Will Pensioners Suffer if We Restrain Corporate Excess?", *Perspectives*, 15 May 2023, https://www.common-wealth.co.uk/perspectives/will-pensioners-suffer-if-we-restrain-corporate-excess

50. Ibid.

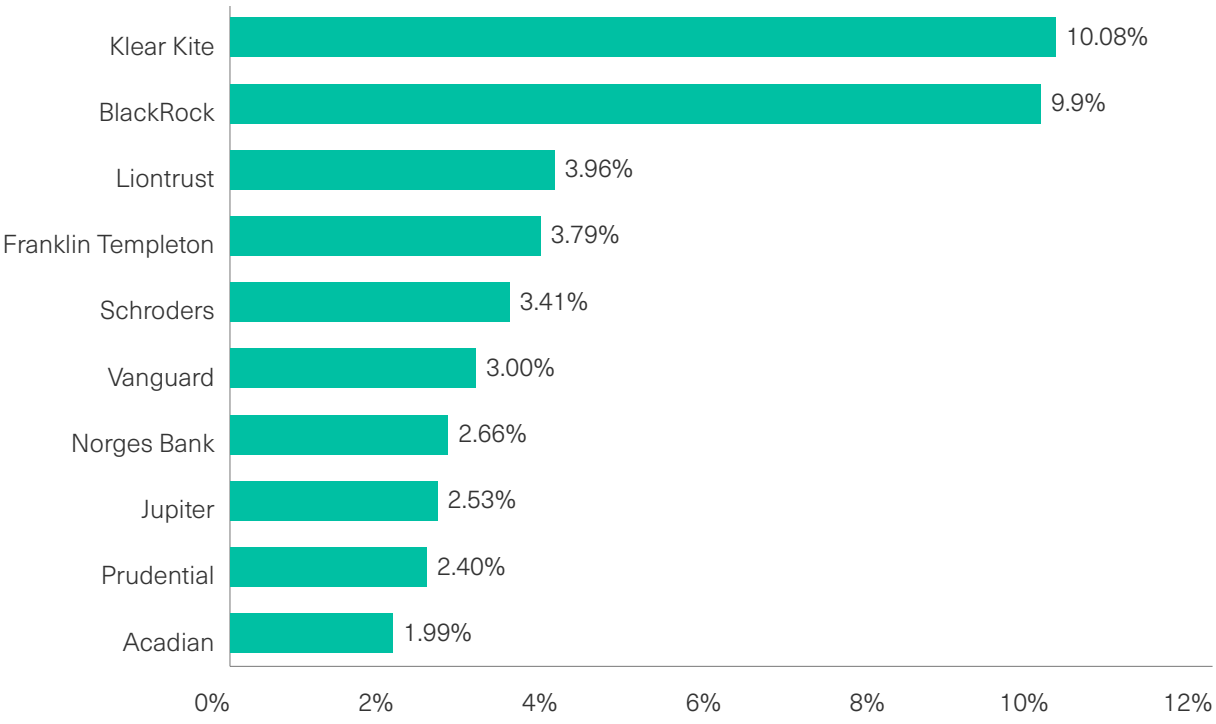
51. On investment firm ownership of the FTSE350 see Buller and Braun, "Under New Management: Share Ownership and the Growth of UK Asset Manager Capitalism", Common Wealth, https://www.common-wealth.co.uk/publications/under-new-management-share-ownership-and-the-growth-of-uk-asset-manager-capitalism

UK public procurement, helping to safeguard consistent returns on capital for their investors.[52] The MOD also supports export relationships between leading firms and the UK's military allies: for instance, the UK's defence cooperation agreement with Saudi Arabia connects the Kingdom closely with BAE Systems.[53] As detailed through case studies of three firms below — QinetiQ, BAE Systems and Babcock International — investors in UK arms companies have benefited significantly from a combination of privatisation and public subsidy. In the seven years before the Covid-19 pandemic, returns on invested capital at all three firms outstripped the FTSE100 average.[54] This illustrates how investors retain the benefits from state support for arms production.

Given sharp inequalities in both pension wealth and corporate equity — with the top one per cent of UK households by income owning 39 per cent of directly held shares and the top decile holding 35 per cent of direct and pension-mediated equities — the flow of state subsidy through the arms industry is to the disproportionate benefit of the wealthiest in society.[55] This raises the question of whether some public coordination and industrial capacity could best be repurposed towards other sectors of the economy.

The curious case of QinetiQ

Figure 2 The Top Ten Shareholders in QinetiQ



Source Common Wealth Analysis of the Refinitiv Database

52. "MOD trade, industry and contracts 2022", Ministry of Defence, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

53. This is detailed further in Section Three of the report. See Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

54. Analysis using the Refinitiv database. See methodological annex for more detail.

55. Buller and Hayes, "Will Pensioners Suffer if we Restrain Corporate Excess?", *Perspectives*, 15 May 2023, https://www.common-wealth.co.uk/perspectives/will-pensioners-suffer-if-we-restrain-corporate-excess

QinetiQ was the MOD's Defence Evaluation and Research Agency (DERA) until 2001, at which point it was renamed before it was partially sold to the Carlyle Group (a private equity firm) in 2003 and later publicly listed in 2006.[56] Despite being owned by private shareholders, QinetiQ received 61 per cent of its global revenue from the MOD in 2021/22, reflecting the undiversified nature of its customer base and its reliance on the UK government.[57] Paradoxically, while research and development is at the core of QinetiQ's business, the vast majority of its research and development work is paid for by customers: in the 2022 financial year, just 4.45 per cent of QinetiQ's research and development was internally funded.[58] QinetiQ's clients, including the MOD and export customers, predominantly cover research and development costs within their contracted orders. Correspondingly, between 2013 and 2020, QinetiQ produced average returns on invested capital of 24.2 per cent — more than 12 percentage points higher than the FTSE100 median — enabling its shareholders to reap the benefits of its research and development arrangement and stable income from the UK government.

The privatisation of QinetiQ further illustrates the significant profit produced by the political economy of the arms industry, both for shareholders and, in this case, for ex-MOD officials. As a 2007 National Audit Office (NAO) report describes, the initial privatisation of QinetiQ in 2003 was undertaken rapidly: the Carlyle Group was selected as the preferred bidder for QinetiQ before the firm agreed its Long Term Partnering Agreement (LTPA) with the MOD, leading the NAO to conclude that the sale could have yielded the public more money if the LTPA had been made beforehand.[59] The NAO further noted that Carlyle used share incentives to align its interests with senior DERA officials, who later became QinetiQ management, without government oversight.[60]

As a result of the privatisation of QinetiQ, the top ten managers at DERA who became QinetiQ employees saw the shares they purchased during the initial sale increase in value from £537,250 in 2003 to £107 million at the time of the 2006 public flotation.[61] Due to their role in the sale of a public asset — first to private equity and later to shareholders — former DERA officials saw average personal returns of £10.6 million. This extraordinary sum was also unevenly distributed, with certain individuals seeing even higher returns: the QinetiQ Chairman Sir John Chisholm and CEO Graham Love both saw their shares increase by over £20 million in value, while the

56. "The privatisation of QinetiQ", National Audit Office, 2007, https://webarchive.nationalarchives.gov.uk/ukgwa/20170207052351/https://www.nao.org.uk/wp-content/uploads/2007/11/070852es.pdf

57. "MOD trade, industry and contracts 2022", Ministry of Defence, 2023, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

58. "Annual Report and Accounts 2023", QinetiQ, 2023, https://www.qinetiq.com/en/investors/results-reports-and-presentations

59. "The privatisation of QinetiQ", National Audit Office, https://webarchive.nationalarchives.gov.uk/ukgwa/20170207052351/https://www.nao.org.uk/wp-content/uploads/2007/11/070852es.pdf

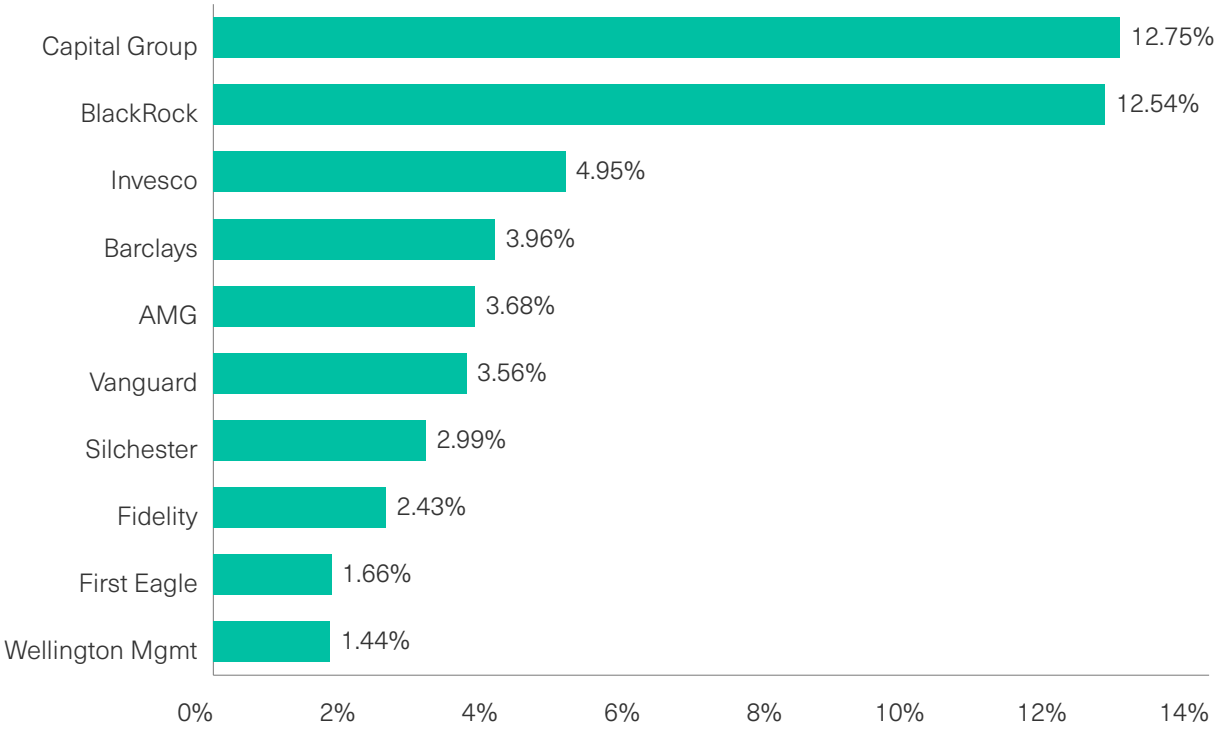
60. Ibid.

61. Ibid.

Commercial Manager Hal Kruth's shares grew in value by £13.81 million.[62] QinetiQ is notable for the extent to which former DERA officials made personal profits from the privatisation process, but the company itself is emblematic of the MOD's top suppliers: returns are guaranteed to investors at low risk due to high levels of state support. In its present form, as a publicly listed company, QinetiQ's top shareholder retains close political connections: Klear Kite LLC has one member, Christopher Harborne, who in November 2022 made the largest donation to a Member of Parliament's office in history (£1 million to Boris Johnson).[63] Investors, as well as the UK's geopolitical allies, are the primary beneficiaries of state guarantees provided to arms production.

BAE Systems: the UK's prime supplier

Figure 3 The Top Ten Shareholders in BAE Systems



Source Common Wealth analysis of the Refinitiv Database

In one of its first major privatisations in 1981, the Thatcher government listed majority shares in British Aerospace, which at the time was owned by the British public.[64] The remaining government shares in British Aerospace were sold in 1985 except for a "golden share" worth £1 to prevent control by a foreign government. BAE Systems

62. Andrew Massey and Gil Shidlo, "Privatization, private equity and executive remuneration: privatizing QinetiQ", *Public Money & Management*, 2010, 30, pp.339-346.

63. For Klear Kite LLC's membership see "Statement of Changes in Beneficial Ownership", United States Securities and Exchange Commission, 30 September 2022, https://www.sec.gov/Archives/edgar/data/836690/000089534522000729/xslF345X03/form4.xml. For Harborne's donation to Boris Johnson MP, see "Johnson, Boris (Uxbridge and South Ruislip)", The Register of Members' Financial Interests, 2023, https://publications.parliament.uk/pa/cm/cmregmem/230530/johnson_boris.htm

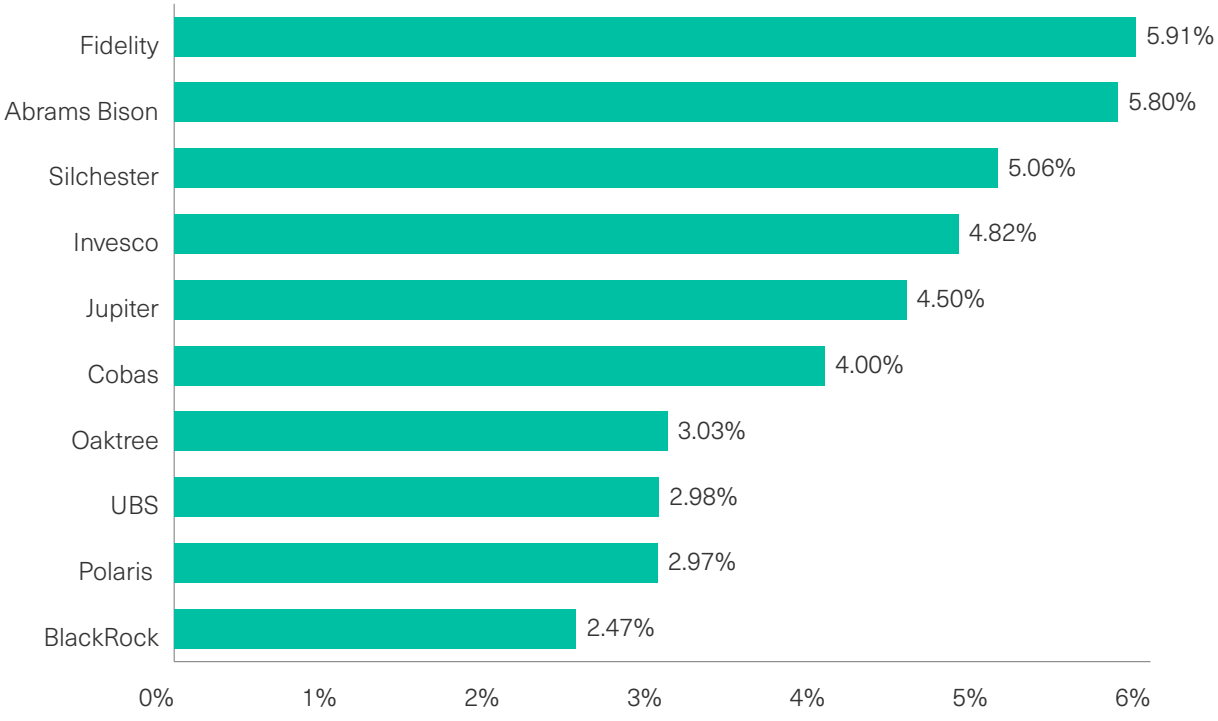
64. David Edgerton, "The British military-industrial complex in history: the importance of political economy", *The Economics of Peace and Security*, 2008, 3, pp.6-10.

was eventually formed in 1999 through the merger of British Aerospace with Marconi Systems. As Figure 3 demonstrates, despite its role as the MOD's prime supplier — and, as explored below, its close ties to the Saudi Arabian state — BAE Systems' top shareholders are now investment firms. The leading asset managers BlackRock and Capital Group control more than a quarter of the company's shares between them.

The MOD provides 20 per cent of the company's global revenue, although revenue from MOD procurement is strongly supported by its export business and international operations.[65] Moreover, research and development costs are mostly funded by a combination of BAE's government customers. In 2022, BAE spent £2 billion on research and development, of which only 14.35 per cent was funded by the company itself.[66] BAE therefore offers an enticing prospect for investors: with state customers expected to provide much of the investment necessary for production, returns on invested capital averaged 13.8 per cent between 2013 and 2020.[67] This is typical of the UK's arms industry: as a result of the strategic prioritisation of arms production by government, private shareholders are able to draw value from production founded on public subsidy, procurement and support for export contracts.

Babcock International and the management of public assets

Figure 4 The Top Ten Shareholders in Babcock International



Source Common Wealth analysis of the refinitiv database

65. "MOD trade, industry and contracts 2022", Ministry of Defence, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

66. "Annual Report 2022: BAE Systems plc", BAE Systems, 2023, https://investors.baesystems.com/~/media/Files/B/Bae-Systems-Investor-Relations-V3/PDFs/results-and-reports/results/2022/bae-ar-complete-2022.pdf

67. According to analysis of the Refinitiv database by Common Wealth. See annex for more information.

Babcock International — the MOD's second largest supplier — has developed over the last twenty years from an engineering and manufacturing firm into an engineering services company that primarily manages public assets, such as naval bases and nuclear submarine infrastructure. This pattern of service provision matches other leading MOD suppliers such as Leidos, which "provide[s] essential services such as storage and distribution for the MOD's materiel".[68]

While Babcock still has a major shipbuilding and design business, 69 per cent of its revenue in the 2022 financial year came from its service, support and training divisions in nuclear, land and aviation.[69] As a result of its current operating model, Babcock received 56 per cent of its global revenue in payments from the MOD in 2021/22.[70] The company acknowledges that this close relationship is a risk, noting their "significant reliance on the UK MOD" in their most recent annual report.[71] Yet when this relationship is profitable — losses during the Covid-19 pandemic aside — returns from public procurement flow through the investment firms that own Babcock (see Figure 4 for a map of the company's top ten shareholders) and to their clients. According to analysis of the Refinitiv database, between 2013 and 2020, Babcock saw average returns on invested capital of 12.3 per cent. Babcock's shareholders profit primarily from the management of public assets rather than from new production. This further captures the dynamics of the UK's arms industry as one that produces to the benefit of shareholders and export partners in part through public guarantees and subsidy.

Exporting the Asset Manager Arsenal

Beyond funding from the MOD for domestic production, the UK arms industry draws significant revenue from exports. As with arms produced for the UK military, exports are backstopped by MOD procurement and extensive institutional support, part of a symbiotic relationship that encourages production for the UK's military and political allies. Between 2012 and 2021, the UK was the world's second largest defence exporter by value.[72] Exports provide a stream of revenue to the industry — albeit one dependent on a relatively small customer base — but state support for

68. "Doing Business with Defence", Ministry of Defence, https://www.gov.uk/guidance/mod-procurement-an-overview

69. "Annual Report and Financial Statements 2022", Babcock International, 2022, https://www.babcockinternational.com/investors/annual-reports

70. "MOD trade, industry and contracts 2022", Ministry of Defence, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

71. Annual Report and Financial Statements 2022", Babcock International, https://www.babcockinternational.com/investors/annual-reports

72. "MOD trade, industry and contracts 2022", Ministry of Defence, https://www.gov.uk/government/statistics/mod-trade-industry-and-contracts-2022/mod-trade-industry-and-contracts-2022

export production is driven by the maintenance of geopolitical relationships. Since the Cold War, Gulf monarchies have emerged as the UK's primary customers for arms export, providing one means for Gulf sovereign wealth to be "recycled" through the UK economy, a dynamic explored further below.[73] Through geopolitical alliances founded in part on arms export, the UK military and its allies have been involved in attacks on civilian infrastructure, civilian deaths and internal repression.[74]

In 2022, the UK ratified £8.6 billion of military export orders accounted for by Standard Individual Export Licenses (SIELs).[75] These are licenses for a specific quantity of items to a named user. This figure excludes Open General Export Licences, for which numbers of goods are not published, and which account for the majority of exports to Saudi Arabia.[76] The leading destination for UK arms exports over the past 20 years has consistently remained Gulf Cooperation Council (GCC) countries, in particular Saudi Arabia.[77] Between 2006 and 2015, Saudi Arabia accounted for 34 per cent of the total value of UK arms exports and between 2012 and 2021, 51 per cent of arms exports went to countries in the Middle East.[78] In 2022, 47 per cent of the value of SIEL exports went to GCC countries and 45 per cent to Qatar and Saudi Arabia alone.[79] While the UK has been a leading arms donor to Ukraine since the Russian invasion in 2022, these arms transfers operate distinctly from export orders: the MOD provides direct military support to Ukraine through donations from existing stockpiles, whereas export orders are contracts facilitated by the MOD between nation state customers and private arms companies.[80] Other than the GCC countries, the leading customers for the UK arms industry since the early 2000s have been the US and India.[81]

73. See Adam Hanieh, *Money, Markets, and Monarchies: The Gulf Cooperation Council and the Political Economy of the Contemporary Middle East*, Cambridge University Press: 2018.

74. See, for instance, the targeting of civilians and civilian infrastructure by the Saudi-led coalition during the war in Yemen. Jeannie Sowers and Erika Weinthal, "Humanitarian challenges and the targeting of civilian infrastructure in the Yemen war", *International Affairs*, 2021, 97, pp.157-177. Further, for instance, see estimates of civilian deaths in Afghanistan, Iraq and Yemen: Neta C. Crawford and Catherine Lutz, "Human Cost of Post-9/11 Wars: Direct War Deaths in Major War Zones", Watson Institute and Frederick S. Pardee Centre, 2021, https://watson.brown.edu/costsofwar/files/cow/imce/papers/2021/Costs%20of%20War_Direct%20War%20Deaths_9.1.21.pdf. On indirect civilian deaths as a result of wars in Afghanistan, Iraq and Yemen (for example) see Stephanie Savell, "How Death Outlives War: The Reverberating Impact of the Post-9/11 Wars on Human Health", Watson Institute, 2023, https://watson.brown.edu/costsofwar/papers/2023/IndirectDeaths

75. "Strategic export controls: licensing statistics, 2022", Department for Business and Trade, 2023, https://www.gov.uk/government/statistics/strategic-export-controls-licensing-statistics-2022

76. For an explanation of Open General Export Licenses see Esme Kirk-Wade, "UK arms export: statistics", House of Commons Library, 2023, https://researchbriefings.files.parliament.uk/documents/CBP-8310/CBP-8310.pdf

77. The other members of the GCC are the United Arab Emirates, Bahrain, Oman, Qatar and Kuwait.

78. On exports to Saudi Arabia see Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain*. On overall arms exports to the Middle East see Kirk-Wade, "UK arms exports: statistics", House of Commons Library, https://commonslibrary.parliament.uk/research-briefings/cbp-8310/

79. "Strategic export controls: licensing statistics, 2022", Department for Business and Trade, https://www.gov.uk/government/statistics/strategic-export-controls-licensing-statistics-2022

80. Ibid.

81. Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

Exports provide a different revenue stream for arms producers to direct MOD procurement. However, the two streams are connected: the industry relies on the MOD to backstop deals and maintain production in the UK. In 2003, for instance, the BAE Systems factory in Brough was kept open through a MOD deal to purchase Hawk aircraft from BAE instead of equivalent Italian aircraft which were available for £1 billion less.[82] The intention of the deal was to help BAE close an export agreement with the Indian government.[83] MOD support for export indicates the extent to which the state subsidises private arms companies and encourages export production for the UK's allies.

While direct subsidy and procurement decisions support export production, state institutions also facilitate export deals. The Department for Business and Trade employs at least 127 civil servants through the in-house organisation UK Defence and Security Exports, in part to provide marketing services for UK arms companies to secure export deals.[84] By contrast, the department employs an estimated 140 staff dedicated to all other export sectors despite defence providing only three per cent of the value of UK exports in 2021.[85] The MOD also runs two projects operated by British staff and personnel (although funded by the Saudi government) to facilitate arms sales to Saudi Arabia. The MOD Saudi Armed Forces Project (MODSAP) oversees Tornado and Typhoon contracts while the Saudi Arabian National Guard Communications Project (SANGCOM) provides communications equipment for internal security forces.[86] In 2019, SANGCOM employed 55 civilian staff between the UK and Saudi Arabia, while MODSAP employed 107.[87] BAE Systems also provides technical support and training to the Saudi Air Force and Navy under the terms of the Saudi British Defence Co-operation agreement.[88] Although these programmes are staffed by a combination of public officials and contractors, and on occasion are funded by export customers,

82. Sam Perlo-Freeman, "Special Treatment: UK Government Support for the Arms Industry and Trade", Stockholm International Peace Research Institute and Campaign Against the Arms Trade, 2016, https://www.sipri.org/publications/2016/other-publications/special-treatment-uk-government-support-arms-industry-and-trade

83. Ibid.

84. "About UK Defence and Security Exports", Security and Policing, 2023, https://www.securityandpolicing.co.uk/about/uk-defence-and-security-exports/

85. The estimate of civil service staff providing equivalent services to other export sectors is from Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.* Export data is taken from "UK defence and security export statistics for 2019", UK Defence & Security Exports, 2020, https://www.gov.uk/government/statistics/uk-defence-and-security-export-statistics-for-2019/uk-defence-and-security-export-statistics-for-2019#introduction and related to overall goods export data from "UK Overseas Trade in Goods Statistics Summary of 2019 Trade in Goods", HM Revenue & Customs, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/865366/OTS_2019_Annual_Summary.pdf

86. Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

87. "Ministry of Defence: Saudi Arabia", UK Parliament: Written Questions, Answers and Statements, 2019, https://questions-statements.parliament.uk/written-questions/detail/2019-09-03/286284

88. "Annual Report 2022: BAE Systems plc", BAE Systems, 2023, https://investors.baesystems.com/~/media/Files/B/Bae-Systems-Investor-Relations-V3/PDFs/results-and-reports/results/2022/bae-ar-complete-2022.pdf

they reflect the degree to which the state prioritises export deals and maintaining the geopolitical relationships that underpin them.

Alliances with Gulf monarchies help underpin flows of capital — primarily sovereign wealth from hydrocarbon production — into and through the UK economy that help to finance the current account deficit. In 2016, for instance, Saudi Arabia accounted for a fifth of the capital inflows financing the UK's deficit.[89] These flows of capital are grounded in close financial ties between the UK and Gulf states. While Gulf sovereign wealth accounts for an estimated 37 per cent of sovereign wealth fund assets under management globally, GCC deposits in UK banks — as well as investment in US securities and foreign direct investment — have grown since the nationalisation of fossil fuel assets in Gulf states in the 1970s.[90] By 2015, GCC deposits in UK banks alone accounted for a third of the global banking system's liabilities to the GCC and in 2014 UK net borrowing from Saudi Arabia accounted for more than 20 per cent of global net borrowing by UK banks.[91] Military exports to GCC countries are, on the one hand, another means through which Gulf sovereign wealth flows through the UK economy, but on the other hand they help safeguard political relationships that underpin close ties between the City of London and Gulf states.

State support for arms export is not delivered on purely economic grounds, however, but rather to facilitate military alliances from which private companies are able to profit. For instance, the UK has recently coordinated arms export deals to directly influence regional politics: in 2017, the £8.6 billion sale of 24 Eurofighter Typhoon fighter jets to Qatar was designed to encourage cooperation between Qatar and the GCC, from which the former had become isolated.[92] The industry further supplies wars that have resulted in mass civilian casualties, with the active support of the MOD. The war in Yemen — dominated by a Saudi-led coalition that the UK actively supports — has resulted in an estimated 377,000 deaths from both direct and indirect causes.[93] Moreover, deliberate targeting of civilian infrastructure, including hospitals, by the Saudi-led coalition has caused widespread starvation and disease.[94] For

89. David Wearing, "Beyond the Petrodollar Regime", Common Wealth, 2019, https://www.common-wealth.co.uk/publications/beyond-the-petrodollar

90. Hanieh, *Money, Markets, and Monarchies: The Gulf Cooperation Council and the Political Economy of the Contemporary Middle East*.

91. Ibid.

92. When the deal was announced, the defence secretary Michael Fallon said that "the security of the GCC, of all Gulf countries, is critical to the UK's own security" and that the government hoped the fighter jets would operate in tandem with other GCC states to "enhance security within the region across all Gulf allies". This was an explicit endorsement of GCC cooperation as Saudi Arabia, the UAE and Bahrain had all imposed sanctions including airspace restrictions on Qatar three months before. See Thomas Seal, "BAE Gains Surprise Win for Typhoon Fighter Jet with Qatar Deal", *Bloomberg*, 18 September 2017, https://www.bloomberg.com/news/articles/2017-09-18/qatar-to-buy-24-typhoon-jets-to-beef-up-u-k-defense-partnership?leadSource=uverify%20wall. For further description of the deal see Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

93. "Assessing the Impact of War in Yemen: Pathways for Recovery", UN Development Programme, 2021, https://www.undp.org/publications/assessing-impact-war-yemen-pathways-recovery

94. Sowers and Weinthal, "Humanitarian challenges and the targeting of civilian infrastructure in the Yemen war", *International Affairs*, 2021, 97, pp.157-177.

instance, in 2020 the World Health Organisation (WHO) reported that there had been 2.3 million cases of cholera in Yemen since the war triggered an outbreak in 2017.[95] The United Nations (UN) estimates that 4.5 million people are internally displaced as a result of the war and that 17 million people will have faced food insecurity in 2022, 3.5 million of whom face acute malnutrition.[96] As the close relations between the MOD and its GCC allies — as well as between BAE Systems and the Saudi government — demonstrate, the UK and its arms industry have played a critical role in the war.

Close ties between the arms industry, the MOD and the UK's export partners also provide the resources for repression within states, including Gulf monarchies. Alongside the SANGCOM project, which equips the Saudi national guard, the UK has helped train security forces deployed in other internal conflicts: some of the Saudi troops involved in the GCC's "peninsula shield" force that took part in an intervention to repress the 2011 uprising in Bahrain were trained in the UK, for instance.[97]

Arms exports are critical to the architecture of the industry: exports subsidise domestic production and are in turn subsidised by the MOD. The shareholders of major arms companies are one of the few beneficiaries of these alliances between arms companies, the UK and its export partners, which are prioritised to serve military interests.

The Economic Costs of Arms Production

State procurement and subsidy, including support for exports, facilitate a mode of arms production that benefits private shareholders and export customers. This pattern of arms production further creates a set of pernicious economic dynamics that threaten the future of the industry. First, the twentieth century trend of rising arms production costs has continued, with defence projects suffering from significant overspend compounded by well-documented patterns of corrupt practices within the industry (detailed below).[98] Second, the UK's military industry is a major source of greenhouse gas emissions both through production and consumption. The industry does not yet have clear mitigation pathways or targets, jeopardising overall

95. Ibid.

96. "UN Yemen: Country Results Report 2022", United Nations Yemen, 2023, https://yemen.un.org/sites/default/files/2023-04/UN%20YEMEN%20Country%20Results%20Report%202022%20-%20FINAL%20-RCO.pdf

97. See "UK's relations with Saudi Arabia and Bahrain", Foreign Affairs Committee, 2013, https://committees.parliament.uk/work/2825/uks-relations-with-saudi-arabia-and-bahrain/, p.47. See also Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

98. On rising costs see G.C Peden, *Arms, Economics and British Strategy: From Dreadnoughts to Hydrogen Bombs*, Cambridge University Press: 2009. On corruption see for instance: Lustgarten, *Law and the arms trade: weapons, blood and rules*; RT Naylor, *Patriots and Profiteers: Economic Warfare, Embargo Busting, and State-Sponsored Crime,* McGill-Queen's University Press: 2008 and Andrew Feinstein, Paul Holden and Barnaby Pace, "Corruption and the arms trade: sins of commission" in *Stockholm International Peace Research Institute Yearbook*, 2011 https://www.sipri.org/sites/default/files/SIPRIYB1101.pdf

industrial decarbonisation processes and presenting future costs that could be borne by the public. Third, despite state support for production, workers in the industry face persistent insecurity as a result of their exposure to geopolitics and reliance on both domestic procurement and export contracts. This combination of factors raises questions around the prioritisation of state support for arms production over other sectors, such as green industries, and whether repurposing some existing industrial capacity in the arms sector could provide greater security for workers.

The rising costs of arms manufacturing

The political economic architecture of the arms industry has partly guided growing production costs over recent decades. Military industrial projects are prone to cost increases and rising production costs are compounded by a pattern of "commission payments" in the arms trade that present further cost pressures to firms. Over the twentieth century, new weapons systems produced in the UK grew in complexity and cost.[99] Part of these increased costs stemmed from expenditure on research and development, despite a degree of reliance on US technology, but the later consolidation of the industry over time has further allowed suppliers to set prices.[100]

A recent NAO assessment of the MOD's current Equipment Plan (which sets overall military procurement needs over a ten year period) suggests that a sample of projects in the plan could face costs £5.2 billion higher than stated.[101] Other than the Dreadnought nuclear submarine programme (which accounts for £1.6 billion of the possible cost increase) these projects do not have contingencies specified in the MOD budget.[102] The NAO assessment states that "the Department is facing increasing risks in delivering equipment projects to budget and schedule, including constraints relating to the capacity of contractors and available skills".[103] This indicates the significant capacity for military procurement projects to grow in cost over time — often to the benefit of the privately owned producers — especially given the focus of arms procurement on high cost aerospace programmes.[104] In part, this is also due to

99. Peden, *Arms, Economics and British Strategy: From Dreadnoughts to Hydrogen Bombs.*

100. See ibid for increasing production costs before the later consolidation of the industry. On consolidation see Louisa Brooke-Holland, "Defence procurement reform", House of Commons Library, 2022, https://researchbriefings.files.parliament.uk/documents/CBP-9566/CBP-9566.pdf

101. "The Equipment Plan 2022 to 2023", National Audit Office, 2022, https://www.nao.org.uk/reports/the-equipment-plan-2022-to-2032

102. Ibid.

103. Ibid.

104. For instance, the Tempest fighter jet programme is estimated to cost up to £25 billion to develop. The MOD announced an initial £2 billion investment in the early development stage between 2018 and 2025. See Rob Davies, "UK unveils new Tempest fighter jet to replace Typhoon", *The Guardian,* 16 July 2018, https://www.theguardian.com/uk-news/2018/jul/16/uk-tempest-fighter-jet-typhoon-farnborough-airshow

the limited number of firms that supply the MOD: with a consolidated and specialised playing field, there is little incentive to deliver cheaply.[105]

In addition to rising costs associated with the production process, UK arms companies have been subject to scrutiny over their use of bribery, and spending on "commission payments" in the arms trade.[106] Most famously, BAE Systems was investigated by both the UK and US governments over the al-Yamamah arms deal — still the UK's largest ever arms sale yielding a net £43 billion in revenue for BAE between 1985 and 2007.[107] Commission payments totalling £600 million were revealed in MOD documents made temporarily available by mistake while an estimated £1 billion was paid to accounts controlled by Prince Bandar al-Saud (a key figure in the deal) alone.[108]

In 2006, the Serious Fraud Office (SFO) abandoned its investigation into bribery in the al-Yamamah deal under pressure from the Saudi government and after concerns were raised by senior UK politicians.[109] After the Saudi government suspended negotiations on a follow up arms deal to al-Yamamah in protest at perceived scrutiny from the SFO, the British prime minister, foreign secretary and defence secretary all expressed the view that the SFO investigation endangered the UK's relationship with Saudi Arabia.[110] The SFO's decision was criticised by the US government but also by F&C Asset Management — one of BAE's shareholders — due to concerns that a failure to address bribery could cause damage to the financial system as a whole.[111] Corruption creates reputational risk for the investors that own the arms industry, providing them the space to demand compensation or the incentive to withdraw their investment, as well as adding to the costs associated with arms companies that rely on public customers for revenue.[112]

105. Brooke-Holland, "Defence procurement reform", House of Commons Library, https://researchbriefings.files.parliament.uk/documents/CBP-9566/CBP-9566.pdf

106. See Feinstein, Holden and Pace, "Corruption and the arms trade: sins of commission" in *Stockholm International Peace Research Institute Yearbook,* 2011, https://www.sipri.org/sites/default/files/SIPRIYB1101.pdf

107. On the estimated total revenue for BAE Systems see David Leigh and Rob Evans, "Secrets of al-Yamamah", *The Guardian,* [undated], https://www.theguardian.com/baefiles/page/0,,2095831,00.html

108. On the MOD files made available by accident see David Leigh and Rob Evans, "Kew's al-Yamamah files", *The Guardian*, 7 June 2007, https://www.theguardian.com/world/2007/jun/07/bae.nationalarchives. See on the payments to Prince Bandar al-Saud: Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.* For further detail, see Andrew Feinstein, *The Shadow World: Inside the Global Arms Trade*, Hamish Hamilton, 2011.

109. See Stephen Fidler, "Blair Bows to Pressure on Jobs", *Financial Times,* 14 December 2006, https://www.ft.com/content/064c92b2-8bb4-11db-a61f-0000779e2340; Christopher Adams, "Pressure for Blair Over Corruption Probe", *Financial Times,* 14 January 2007, https://www.ft.com/content/68ded2ec-a413-11db-bec4-0000779e2340. For a narrative account see Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

110. See Fidler, "Blair Bows to Pressure on Jobs", *Financial Times,* https://www.ft.com/content/064c92b2-8bb4-11db-a61f-0000779e2340; for a narrative account see Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

111. Ibid.

112. The use of commission payments by BAE Systems, for example is covered in Sam Perlo-Freeman, "Arms, corruption and the state: Understanding the role of arms trade corruption in power politics", *The Economics of Peace and Security*, 2018, 13, pp.37-46.

These dual dynamics of corruption around export contracts and overspend in arms production are particular to the political economic model in which the arms industry is afforded significant privileges over and above other manufacturing sectors.

Emissions

Beyond the rising economic costs faced by the arms industry, environmental costs are tied to both the production and consumption of military goods. Emissions from the production of arms and the use of UK-made military goods are not subject to official disclosure requirements. Further, there are no regulatory targets for decarbonisation of the military industry and technological pathways to decarbonise the sector are limited. This risks industrial decarbonisation in the UK and creates further potential for future costs that may be borne by the public.

The military and arms industry produce an estimated six per cent of global greenhouse gas emissions.[113] Exact figures are not easily available, however, as military emissions were exempted from the Kyoto protocol and later made an optional disclosure within the Paris agreement.[114] Military operations further produce long-term "path dependencies" that create "lock-in" for greenhouse gas emissions both through industrial production to supply arms and direct fuel consumption by armed forces.[115] This is most notable for the US military — which through its fuel consumption alone produces equivalent greenhouse gas emissions to Romania.[116] In fact, the US military is the largest institutional consumer of petroleum in the world.[117]

The UK's military industrial carbon footprint is smaller than the US but still significant. In 2017-2018, the military industrial sector directly emitted 6.5 million tonnes of CO2 equivalent and in 2018 UK military spending produced 11 million tonnes of CO2 equivalent: more than a quarter of the entire aviation sector.[118] In 2021, the MOD published a fifteen page "Climate Change and Sustainability Strategic Approach" but set no targets for emissions reduction.[119] The decarbonisation of existing military

113. Mark Akkerman, Deborah Burton, Nick Buxton, Ho-Chih Lin, Muhammed Al-Kashef and Wendela de Vries, "Climate Collateral: How military spending accelerates climate breakdown", Transnational Institute, 2022, https://www.tni.org/en/publication/climate-collateral

114. Ibid.

115. Oliver Belcher, Patrick Bigger, Ben Neimark and Cara Kennelly, "Hidden carbon costs of the 'everywhere war': Logistics, geopolitical ecology, and the carbon boot-print of the US military", *Transactions of the Institute of British Geographers*, 2020, 45, pp.65-80.

116. Ibid.

117. William Nuttall, Constantine Samaras and Morgan Bazilian, "Energy and the military: Convergence of security, economic, and environmental decision-making" Cambridge Energy Policy Research Group, 2017, https://api.repository.cam.ac.uk/server/api/core/bitstreams/483e81e7-ed89-428a-83cf-b69587fb70d9/content

118. Stuart Parkinson, "The Environmental Impacts of the UK Military Sector", Scientists for Global Responsibility, 2020, https://www.sgr.org.uk/sites/default/files/2020-05/SGR-DUK_UK_Military_Env_Impacts.pdf

119. "Climate Change and Sustainability Strategic Approach", Ministry of Defence, 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/973707/20210326_Climate_Change_Sust_Strategy_v1.pdf

capacity remains technologically challenging with no alternative fuels for fighter jets or for naval propulsion yet available.[120] This reflects a significant challenge and future cost for the military industry that could yet be conferred to the public: both production and end use are carbon-intensive with little prospect for mitigation.

Insecurity

Although the military industry receives levels of state support above any comparable manufacturing sector, the reliance of production on both domestic and export contracts creates insecurity for workers. This insecurity is compounded by three factors explored below: first, multinational companies with overseas headquarters play a disproportionate role in the UK arms industry; second, the UK is increasingly an importer of arms, creating the possibility of domestic work being shifted offshore, and third, the UK's arms export base has become more concentrated over time, increasing its reliance on a smaller number of geopolitical partnerships. Combined, these factors raise the long-term prospect of jobs currently based in the UK moving overseas, despite high levels of military spending at present. The long-term insecurity of work in the arms industry further raises the question of whether some industrial capacity and public investment could be repurposed to meet social challenges and provide security for workers.

Compared to other European countries, the UK hosts a significant proportion of global arms companies with headquarters elsewhere, with a third of all foreign subsidiaries of multinational arms companies operating in Europe based in the UK.[121] This is partly a result of the privatisation of much of the industry in the 1980s and a policy approach that sought to reduce costs for the MOD while increasing foreign investment.[122] Regardless, state support for the arms sector has remained relatively high and the role of multinationals in the arms industry raises the prospect of production moving if the state and its export partners do not preserve procurement agreements and the favourable economic conditions that underpin production.

The growing stature of the UK as an arms importer also reflects how future procurement decisions might reshape domestic production. The UK's share of global arms imports grew by 74 per cent in the 2017-2021 period compared to 2012-2016.[123] At the same time, arms export customers have become more concentrated: after

120. Akkerman, Burton, Buxton, Lin, Al-Kashef and de Vries, "Climate Collateral: How military spending accelerates climate breakdown", Transnational Institute, https://www.tni.org/en/publication/climate-collateral

121. Béraud-Sudreau, Marksteiner, Lopes Da Silva, Tian, Kuimova, Wezeman and Wezeman, "Mapping the International Presence of the World's Largest Arms Companies", Stockholm International Peace Research Institute, https://www.sipri.org/sites/default/files/2020-12/sipriinsight2012_mapping_the_international_presence_of_the_worlds_largest_arms_companies.pdf.

122. Ibid.

123. Pieter Wezeman, Alexandra Kumova and Siemon Wezeman, "Trends in International Arms Transfers, 2021", Stockholm International Peace Research Institute, 2022 https://www.sipri.org/sites/default/files/2022-03/fs_2203_at_2021.pdf

2007, the value of arms transfers from the UK to the GCC grew rapidly, outstripping sales to the rest of the world by 2013.[124] In 2022, 45 per cent of the value from the issue of SIELs for arms exports went to Qatar and Saudi Arabia alone.[125] Procurement decisions made by a few customers thus shape the UK's military industrial base and, given the nature of many of the arms companies operating in the UK, these decisions create instability for workers while large firms remain secure; production moving overseas reshapes the lives of workers and local communities, but multinational firms can readily adapt.

Over the last thirty years, different sections of the arms industry have faced this insecurity. Following the end of the Cold War, military spending in the UK fell by 20 per cent in real terms between 1990 and 2000.[126] Since then, the industry has continued to be shaped by procurement decisions: despite the 2003 deal to produce Hawk fighters at the BAE Systems factory in Brough, the company announced that it would close the plant — the world's oldest such site — eight years later putting 899 jobs at risk.[127] Although a £2.5 billion export deal with Oman temporarily extended the lifetime of the plant, aircraft production stopped in 2020 resulting in at least 200 workers leaving once the export contracts finished.[128] BAE Systems has since converted the factory into a digital engineering hub, at which the jobs and much of the workforce have changed, which indicates the insecurity of the aircraft manufacturing jobs originally at Brough.

Similar dynamics are evident at the Rosyth shipyard where a MOD contract for the Queen Elizabeth aircraft carriers led to short-term growth in the workforce to 6000 from an original core of 2200.[129] Although this contract temporarily produced new jobs in Rosyth, such variance in the employment base indicates the instability faced by workers in the UK arms industry. While global military spending is currently increasing — due in part to Russia's invasion of Ukraine — a longer term perspective on the

124. Wearing, *AngloArabia: Why Gulf Wealth Matters to Britain.*

125. "Strategic export controls: licensing statistics, 2022", Department for Business and Trade, https://www.gov.uk/government/statistics/strategic-export-controls-licensing-statistics-2022

126. Luca Pieroni, Giorgio d'Agostino and Marco Lorusso, "Can we declare military Keynesianism dead?", *Journal of Policy Modelling*, 2008, 30, pp.675-691.

127. "Defence Diversification Revisited: A history of defence diversification in the UK and elsewhere – lessons learned and ways forward", Unite the Union, 2016, https://www.unitetheunion.org/media/1108/unite-diversification-revisited.pdf

128. See "Defence Diversification Revisited: A history of defence diversification in the UK and elsewhere – lessons learned and ways forward", Unite the Union, https://www.unitetheunion.org/media/1108/unite-diversification-revisited.pdf. See also Grace Newton, "Aircraft manufacturing to end at BAE Systems in Brough after 104 years – but dreadnoughts, apprentices and remote working will secure its future", *Yorkshire Post*, 23 December 2020, https://www.yorkshirepost.co.uk/heritage-and-retro/heritage/aircraft-manufacturing-to-end-at-bae-systems-in-brough-after-104-years-but-dreadnoughts-apprentices-and-remote-working-will-secure-its-future-3077110

129. "Defence Diversification Revisited: A history of defence diversification in the UK and elsewhere – lessons learned and ways forward", Unite the Union, https://www.unitetheunion.org/media/1108/unite-diversification-revisited.pdf

industry demonstrates the relative insecurity of work despite high levels of public subsidy and procurement.[130]

The long-term insecurity of work in the UK arms industry calls into question the exceptional public sector support provided to it and the potential benefits of repurposing some existing industrial capacity in arms production toward other urgent challenges. The benefits of redirecting some public investment and productive capacity elsewhere may not be limited to increased job security, but also to employment opportunity overall: in the US, research comparing the effects of investment in green industry with investment in the defence sector shows that $1 billion of further investment on defence would create around 6900 jobs whereas equivalent investment in the solar and wind industries would create 9000.[131]

Conclusion: Coordinating the Future of the Industry

The distinct political economic rules that govern the UK arms industry operate to the benefit of shareholders and the countries selected by the UK as political and military allies. Beyond the political challenges presented by this flow of public money and the export of arms and military power, the economic costs of production raise the question of how far industrial capacity in the defence sector should be prioritised. Analysis of the relative value of military spending compared to spending on civilian production challenges the use of investment in the military to maintain aggregate demand in the economy.[132] Moreover, the frequent overspend associated with military industrial projects, the carbon-intensity of production and the insecurity of work in the sector all present questions for the future of the industry.

While in the US the scale of military spending has historically led to "military Keynesian" government strategies that use investment in the military industrial base to counter the business cycle, the relative scale of arms industries in the UK and other European economies means that spending cannot offer the same effect, nor should this be seen as desirable.[133] Moreover, modelling differs on whether military spending has a "crowding out" effect on private investment, but public investment in other areas of the economy is able to stimulate the opposite, positive effect and "crowd in"

130. Tian, Lopes da Silva, Liang, Scarazzato, Béraud-Sudreau and Carolina de Oliveira Assis, "Trends in World Military Expenditure, 2022", Stockholm International Peace Research Institute, https://www.sipri.org/publications/2023/sipri-fact-sheets/trends-world-military-expenditure-2022

131. Heidi Peltier, "Cut Military Spending, Fund Green Manufacturing", Watson Institute and Frederick S. Pardee Centre, 2019, https://watson.brown.edu/costsofwar/files/cow/imce/papers/2019/Peltier%20Nov2019%20Short%20GND%20CoW.pdf

132. Paul R. Blackley, "New estimates of direct crowding out (or in) of investment and of a peace dividend for the US economy", *Journal of Post Keynesian Economics*, 2014, 37, pp.67-90.

133. Peter Custers, "Military Keynesianism today: an innovative discourse", *Race and Class*, 2010, 51, pp.79-94.

private spending.[134] Given the demands from arms manufacturers for state support for research and development costs, limited private investment is not surprising.

Even arms companies themselves have historically recognised the potential of sustained demand in alternative manufacturing industries: HybriDrive buses were developed by Lockheed Martin in the 1990s, before Lockheed Martin sold its hybrid bus factory to BAE Systems in 1999.[135] The buses have been used as part of public transport systems in New York, London, Tokyo, Toronto, Houston and Philadelphia.[136] The prioritisation of industrial capacity in green manufacturing could also make use of materials that are currently used in arms production, with green industries offering the potential to provide a more sustained source of domestic demand for inputs such as steel.[137]

The Covid-19 pandemic also demonstrated how industrial production can be re-directed by government to meet demand for alternative goods: on 13 March 2020, the Cabinet Office announced a "ventilator challenge" to UK industry.[138] The government's aim was to increase the production of mechanical ventilators to meet a potential surge in demand for ventilation beds. During the challenge, several leading manufacturing firms formed consortia to redirect productive capacity towards ventilators: seven of the 31 companies involved in the most successful consortium (which produced 11700 new ventilators in 12 weeks) were normally involved in military production, including BAE Systems, Thales and Airbus.[139] These cases illustrate the potential of industrial conversion to meet social challenges like climate crisis even under urgent time pressure. Importantly, however, any process of repurposing industrial capacity would require careful long-term planning and the use of public investment and coordination to protect the interests of workers in supply chains and service sector jobs associated with the arms industry.

134. Blackley, "New estimates of direct crowding out (or in) of investment and of a peace dividend for the US economy", *Journal of Post Keynesian Economics.* The following analysis, for instance, provides evidence of a "crowd in" effect to military spending but acknowledges that other forms of public investment may be more effective: Moretti, Steinwender and Van Reenen, "The Intellectual Spoils of War? Defense R&D, Productivity and International Spillovers", National Bureau of Economic Research Working Paper, https://www.nber.org/system/files/working_papers/w26483/revisions/w26483.rev0.pdf

135. Miriam Pemberton, "From a Militarized to a Decarbonized Economy: A Case for Conversion", Watson Institute and Frederick S. Pardee Center, 2023, https://watson.brown.edu/costsofwar/files/cow/imce/papers/2023/Pemberton%20-%20Military%20Conversion%20Costs%20of%20War%20-Final.pdf

136. Ibid.

137. For further work on the potential of developing a green steel industry in the UK see: "Steel the Deal: The Race to the Top for European Green Steel", Common Wealth and Community, 2022, https://www.common-wealth.co.uk/publications/steel-the-deal-the-race-to-the-top-for-european-green-steel and "A Test of Mettle: Securing a Future for a Green UK Steel Industry", Common Wealth, 2021, https://www.common-wealth.co.uk/interactive/a-test-of-mettle

138. "Investigation into how government increased the number of ventilators available to the NHS in response to COVID-19", National Audit Office, 2020, https://www.nao.org.uk/wp-content/uploads/2020/09/Investigation-into-how-the-Government-increased-the-number-of-ventilators.pdf

139. Stuart Parkinson, "From arms, planes and racing cars to ventilators: industrial conversion during the COVID-19 crisis", *Responsible* Science, 2021, 3, pp.15-17.

The arms sector is a critical area of study for political economy: it at once reveals the practical possibility of public investment and active state support for production, yet the flow of money through the industry demonstrates the risks of public subsidy without public equity. The public coordination, investment and maximal industrial capacity necessary to respond to the existential risk of climate crisis raise the question of whether some industrial capacity in the arms industry can benefit from a state-led process of conversion and whether green industries would offer greater job security to workers in the long term.[140] If the necessary response to planetary crisis is, as Aaron Benanav suggests, to "democratise the investment function" to meet human needs, the current emphasis of public investment and industrial capacity on arms will need to shift.[141] Over the next two years, Common Wealth will collaborate with workers in the UK arms industry to reflect on the future of the sector and on whether some industrial capacity can best be redeployed to maximise job security and to meet urgent societal challenges, such as the transition to a decarbonised future.

Methodological Annex

The universe of companies which is analysed in this report as the UK arms industry is defined using the SIPRI database of the top 100 arms companies worldwide.[142] The companies in the SIPRI database that have UK operations were corroborated using Refinitiv and company reports. Companies that only have UK operations for marketing purposes or civilian production were excluded. Privately held companies, for which financial information is not available on the Refinitiv database, were excluded. The impact of this exclusion is minimal, as private firms only made up two companies within the universe. Parsons Corporation, Fluor Corporation, KBR and Mercury Systems were excluded due to data availability issues. While the universe does include firms that produce for both civilian and military customers (as in much of the sector), only companies that produce a minimum of £100 million of military goods or services per year are included which is consistent with the SIPRI database.

While the universe analysed here does not account for SMEs, SMEs represent a small part of the sector overall. Using the standard OECD and Cabinet Office definition of SME (businesses with a turnover of less than €50 million and fewer than 250 employees), only five per cent of MOD expenditure with UK industry was with SMEs

140. See Melanie Brusseler, "Transitioning Systems?", *Perspectives*, 18 May 2023, https://www.common-wealth.co.uk/perspectives/transitioning-systems-coordinating-the-green-transition

141. Aaron Benanav, "A Dissipating Glut?", *New Left Review*, 2023, 140/141, p.81.

142. "SIPRI Arms Industry Database", Stockholm International Peace Research Institute, 2022, https://www.sipri.org/databases/armsindustry. NB, on the use of UK in this report, defence is not a devolved matter and arms production takes place in all constituent nations of the UK.

in 2021/22.[143] As a result, the universe used here provides an illustrative sample for the UK arms industry. Further research and data availability is needed to account for SMEs and supply chain businesses in future analysis.

Return on Invested Capital (ROIC) is the measure used to analyse the average returns for the arms industry universe, case study firms and the FTSE100 index between 2013 and 2020. Return on Invested Capital measures return generated on all debt and equity invested in assets and provides a measure of the returns on past investments of firms.[144] Return on Equity does not account for debt-based investments.

143. "MOD regional expenditure with UK industry and commerce and supported employment 2021/22", Ministry of Defence, 2023, https://www.gov.uk/government/statistics/mod-regional-expenditure-with-uk-industry-and-supported-employment-202122/mod-regional-expenditure-with-uk-industry-and-commerce-and-supported-employment-202122#mod-expenditure-with-small-and-medium-sized-enterprises

144. For a definition of the measure see Aswath Damodaran, "Return on Capital (ROC), Return on Invested Capital (ROIC) and Return on Equity (ROE): Measurement and Implications", Stern School of Business, 2007, https://pages.stern.nyu.edu/~adamodar/pdfiles/papers/returnmeasures.pdf

The Asset Manager Arsenal: Who Owns the UK Arms Industry?

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Common Wealth is reimagining ownership for a sustainable and democratic future.

Working at all levels, from community and grassroots groups to national and international policymakers, we combine rigorous analysis and research with bold ideas for an economy that works for everyone.

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