



Aerospace and Defence Newsletter

November 2023

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Introduction

It is hard to write any form of summary reflecting the state of play in global security at this time. As well as the live conflict in Ukraine and the shadow of a possible future conflict in Asia, centered around Taiwan, or the south China sea, we now have the re-emergence of substantial violence in the Middle East. It is certain that by the time you are reading this events will have moved on in some or all of these situations.

What is clear is, having suffered from a lack of capital investment over the last decade since Afghanistan, the defence and military aerospace sector has seen significant growth in interest, mirroring both increased security risk and more immediately, the very real use of munitions in Ukraine.

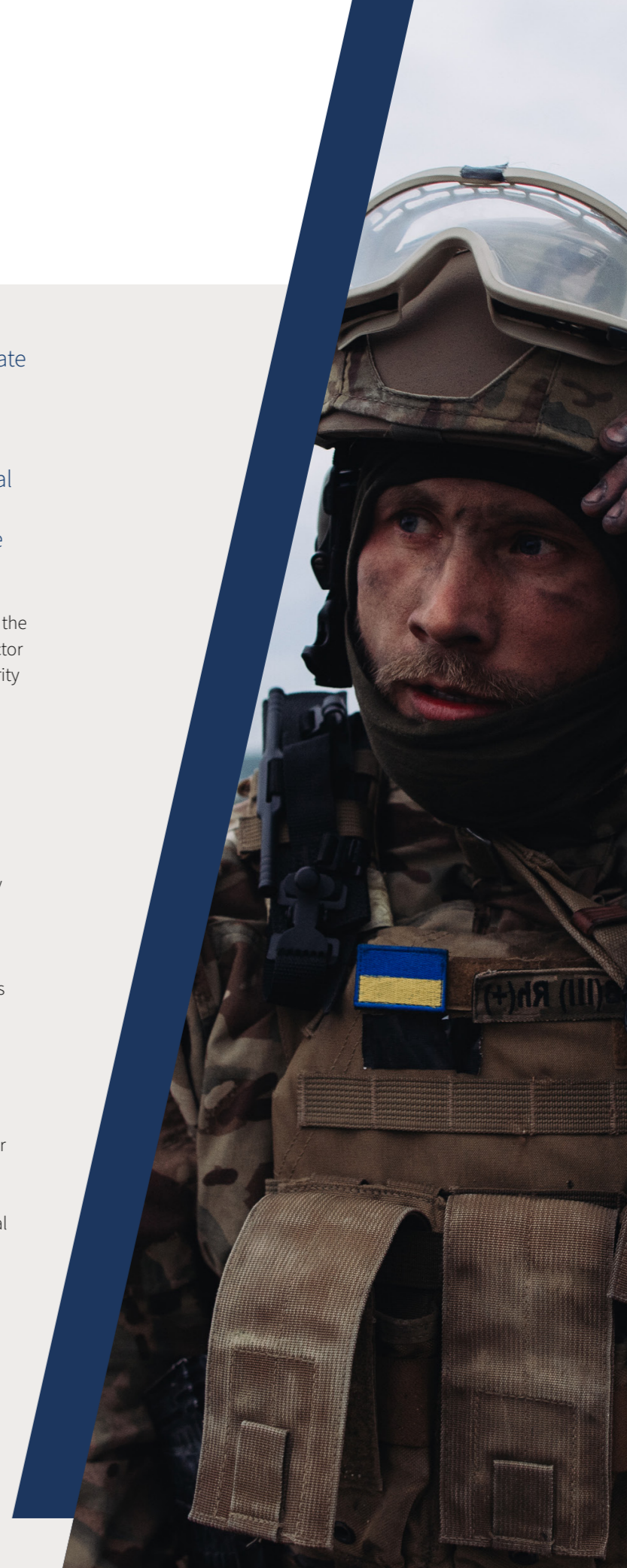
In recent years many governments have looked to tighten up merger controls around national security-related assets and while this will continue, we will also see increased focus on the real world supply chains that support governments' ability to protect themselves, project influence and provide security to allies. Earlier this year, Rothschild & Co launched its geopolitical risk advisory practice, led by Lord Mark Sedwill, former Head of the UK Civil Service and Security Adviser.

Increasingly, national security concepts are being extended to address wider economic concerns, as illustrated by President Biden's recent Executive Order (currently subject to consultation) on outbound investment controls, which seeks to limit investment flows by "US persons" wherever they are located into China and Hong Kong in the following sectors: AI systems, quantum information technologies, semiconductors and microelectronics. The broad framing of this order could have second order effects for any Boards with US persons and for supply chains. Allies are also being encouraged to consider similar provisions; the EU and the UK are both actively reviewing the potential for outbound investment controls, with the latter having committed to do so as part of the recent US-UK Atlantic Declaration.

At the same time, civil aerospace continues to experience a steady recovery following the Covid period with interest in the service or supply of aircraft remains solid amongst investors. The space is itself handling the need to adapt to the climate emergency with areas such as sustainable aviation fuel rapidly moving into the main stream.

We hope this snapshot of market conditions across aerospace and defence proves of value to you and would be delighted to discuss any of this or assist you should you see value in our services.

Graham Carberry, Managing Director



Increase in defence spending with common priority spend areas



World military expenditure rose by 3.7 per cent in real terms (i.e. when adjusted for inflation) to \$2.2 trillion (c.£1.8 trillion) in 2022 - the highest level ever recorded in SIPRI data. The five biggest spenders in 2022 were the United States, China, Russia, India and Saudi Arabia, who together accounted for 63 per cent of world military spending.

The war in Ukraine led to an immediate surge in military expenditure, with many Central and West European countries announcing major increases in spending in the wake of the invasion, Eastern Europe as a region increased by 58% from \$76 billion to \$120 billion.

Global defence budget priority spend areas

There are several priority spend areas that are consistent across defence budgets globally, these are:



Technology advancements — unmanned systems or unmanned aerial vehicles (“UAVs”) such as drones, autonomous systems and artificial intelligence (“AI”). They have seen a significant rise in use in Ukraine and associated press coverage.

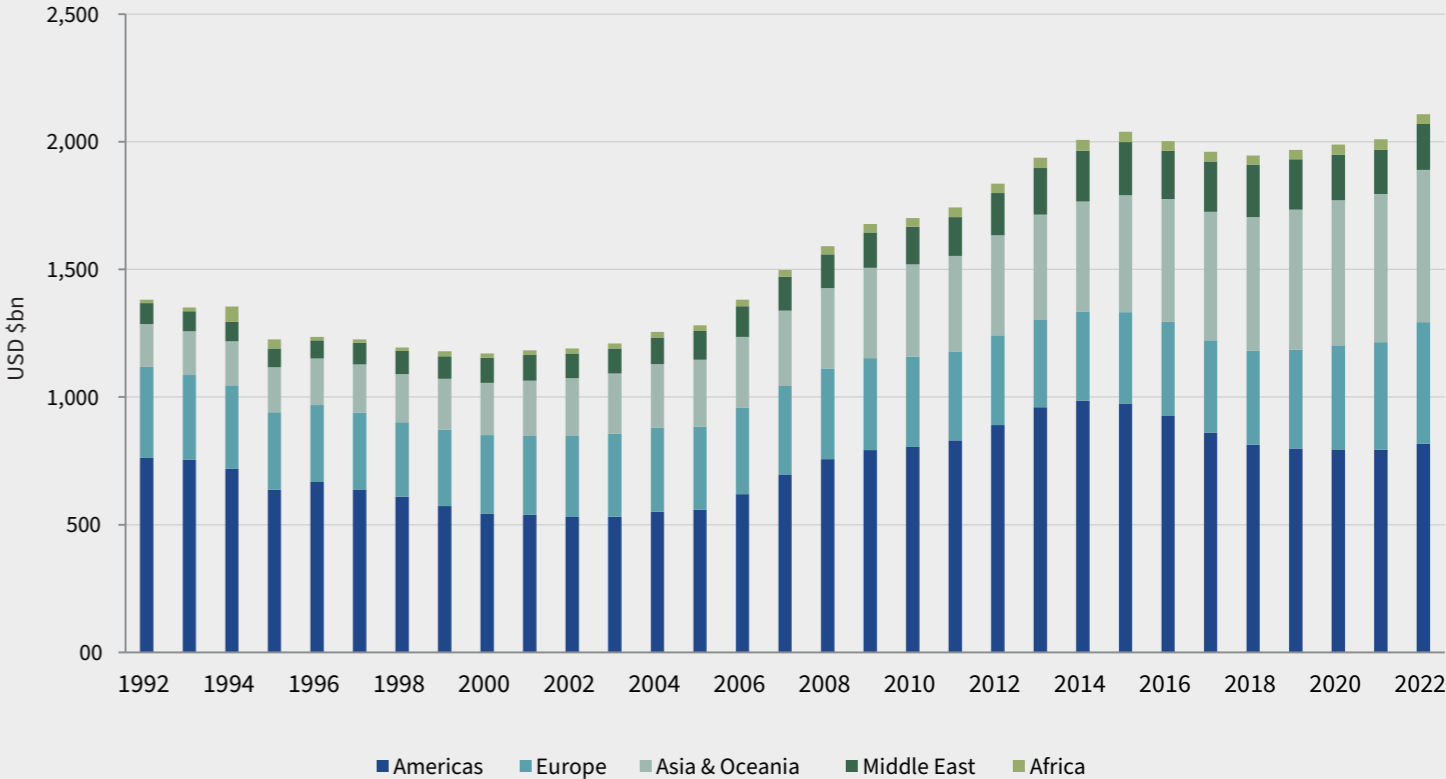


Cyber security / cyber warfare — bolstering cyber defence capabilities and preparing for cyber warfare scenarios as cyber threats became a critical aspect of national security.



Space domain — militarisation of space and the race to secure space assets for communication, navigation and reconnaissance. India’s major entry into the space race have intensified the focus on this market.

Military expenditure by region in constant US dollars (2002-2022)



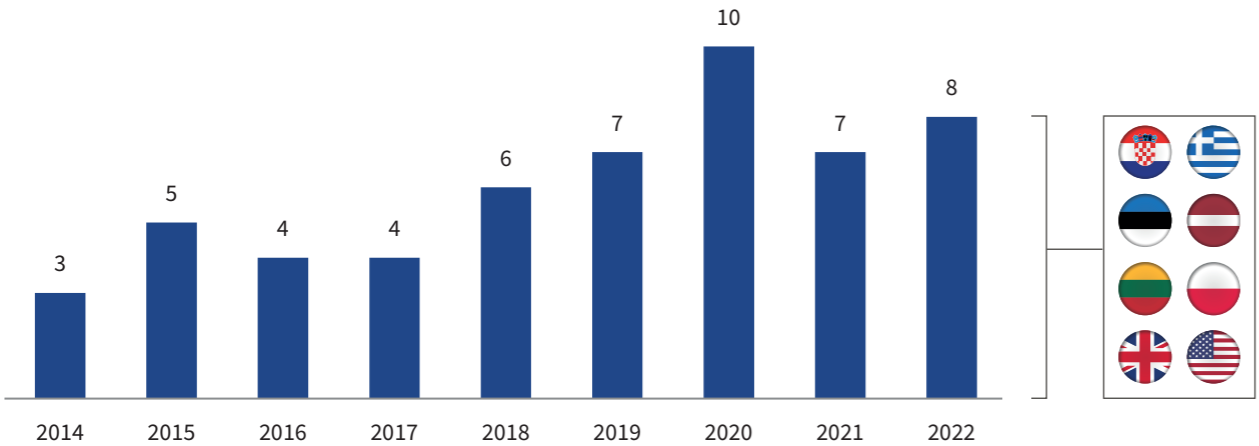
Source: SIPRI Military Expenditure Database, April 2023

Growth of NATO and focus on spend commitments

After its founding in 1949 with 12 founding members, NATO membership has swelled with the accession of Finland in April 2023, bringing the count to 31 countries.

Despite all NATO members agreeing to commit 2% of their GDP annually on defence, few countries have adhered to the guideline historically. In response to Russia's annexation of Crimea and the crisis in eastern Ukraine since, NATO allies have significantly stepped up their support.

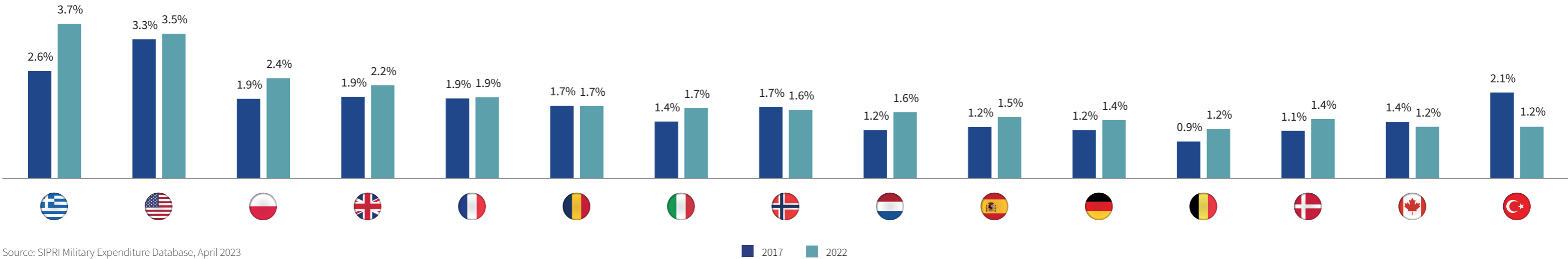
Number of countries that achieved the 2% NATO target



Sources: Defence Expenditures of NATO Countries 2014-2022 (NATO), SIPRI Military Expenditure Database, April 2023

As shown below the largest NATO countries are predominantly increasing their allocation but only four of the Top 15 spenders were above 2% in 2022 plus a handful of smaller countries not shown. However, of those failing to, 10 have pledged to meet this commitment but the timelines for implementation differ with some pledges scheduled to come into effect immediately and others stretching until 2033. It is furthermore evident that US frustration with European under-spending has continued under the Biden Administration, with the expectation that the 2% be spent on capability, exclusive of general running costs.

Top 15 NATO Countries - Defence Spend as % of GDP 2017 vs. 2022



Source: SIPRI Military Expenditure Database, April 2023

Germany defence outlook and National Security Strategy

Following the Ukraine invasion, Germany set out plans to boost defence spending to over 2% of GDP through a EUR100 billion (£85 billion) special fund for military equipment modernisation, to be spent over several years. This was seen as a historic shift in Germany's foreign and defence policy following years as a notable pacifist. Germany has never met the 2% target, and until recent events it had not been expected to by the 2024 deadline.

However, since the original news of this major shift in policy, expectations around the level of this increase has slightly dimmed following several announcements such as the country's first-ever National Security Strategy document released in June 2023. Instead of a clear commitment to spending 2% of GDP annually on defence, the document states that Germany will "allocate two percent of its GDP, as an average over a multi-year period, to reaching NATO capability goals, initially in part via the newly created special fund for the Bundeswehr". Nonetheless, it remains a material step change in German policy and a sign of countries re-arming in response to heightened global tensions and conflicts.

Battlefield innovation and IP development

The war in Ukraine is relatively unique in the sense it is a war between two industrially developed nations. While sustained attrition has been a key characteristic of the conflict of surprisingly evenly-matched combatants, greater access to technology has led to Ukraine becoming a testbed for Western weapons and battlefield innovation. It has offered the United States and its allies a rare opportunity to study how their own weapons systems perform with several first-ever engagements between attack and defence systems.

Some notable examples of this are:

- ◆ Ukraine shot down a Russian Kinzhal hypersonic missile with a US-supplied Patriot Air Defence System, the Patriot Air Defence system was specifically designed to defeat hypersonic weapons but it was unproven in real warfare until Ukraine
- ◆ 3D printed parts are allowing weapons and machinery to be repaired at a much faster rate than previously
- ◆ Lockheed Martin's High Mobility Artillery Rocket System ("HIMARS") multiple rocket launcher has proved critical to Ukraine's success with its long-range accuracy demonstrating its position as one of the world's most advanced rocket artillery systems

Drone Usage

The war in Ukraine is not the first 'drone war'. However, the use of drones in Ukraine represents a step change. Never before have so many drones been used in a military confrontation. The Royal United Services Institute estimates that Ukraine is losing 10,000 drones per month, giving an indication of how many are in use. With aerial defence systems largely neutralising manned aviation, unmanned systems have become particularly important.

Drones in Ukraine are primarily used for surveillance, intelligence gathering and, increasingly, strikes. One of the most remarkable aspects of drone use in this war is the large number of civilian drones with the most used drones being the Chinese DJI, Turkish Bayraktar and Russian Orion. Both Ukraine and Russia are adapting these civilian drones to fit their requirements.

With this increasing usage of drones the counter-drone market has become a multibillion business opportunity. There are two methods used for this, kinetically i.e. shooting down or electronically by

either jamming / interrupting or hacking to take over its command. This counter-drone technology has made some systems much less effective in warfare than expected, such as the US Switchblade 300. Ukraine initially used the Switchblade 300 when the war broke out, but the system's use gradually declined because the Russian improved its air defence and electronic warfare systems. Jamming technology is likely responsible for the majority of drone losses in the conflict.

The type of drones has also been extending with naval drones now playing a material role in Ukraine. Examples are surface vessels and submarine systems such as the drone boats used for the successful attack on Russia's Black Sea Fleet in Sevastopol.

The pressure of the war to innovate, the ingenuity of the Ukrainian people and the opportunity to work closely with experts from many Western countries have helped establish a robust industrial industry for drone production in Ukraine.



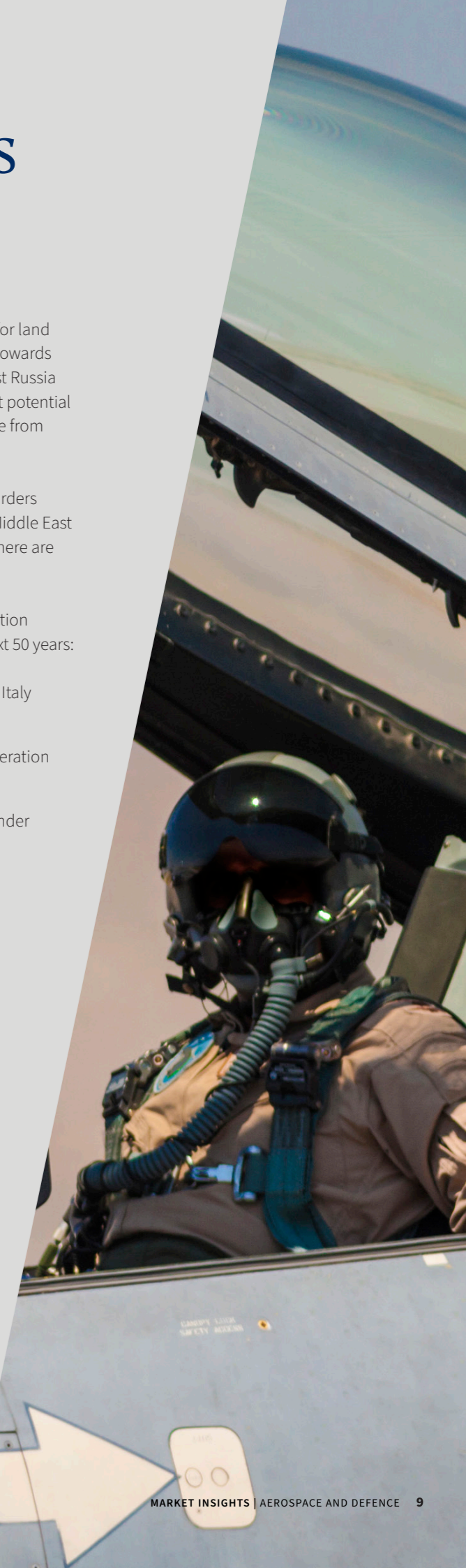
Focus on fighter jets

The first phases of the Ukraine conflict demonstrated, among other things, the need for land power and appropriate levels of ammunition inventory. The debate has now shifted towards air power, which should help Ukrainian forces to tilt the balance in their favour against Russia and regain lost ground. After months of hesitation (particularly due to concerns about potential escalation of the conflict), US has approved sending older generation F-16s to Ukraine from Denmark and Netherlands once pilots are appropriately trained.

These lessons from Ukraine around air power are expected to lead to further export orders worldwide as many countries rearm in reaction to recent events, in particular in the Middle East (a key market for fighter aircraft, in particular for European makers) and Asia (where there are concerns about China's ambitions).

Meanwhile, in recent months, key decisions have been made on Western next-generation Future Combat Air System (FCAS) programmes that will shape the industry for the next 50 years:

1. The launch of FCAS/GCAP (Global Combat Air Programme) in the UK, Japan and Italy in January 2023;
2. The start of Phase 1B of the French, German and Spanish FCAS/NGWS (Next Generation Weapon System) in April 2023; and
3. The launch of the US Air Force (USAF) NGAD (Next Generation Air Dominance) tender in May 2023



Consolidation of Tier 1 and limits of anti-trust

Meanwhile, Aerospace and Defence (A&D) companies are subject to keen public attention as heightened consolidation will be subject to antitrust regulations.

Last year, the U.S. Federal Trade Commission (FTC) blocked Lockheed Martin's US\$4.4 billion acquisition of Aerojet Rocketdyne, causing a termination of the deal by Lockheed Martin. The block by the FTC is a prime example that antitrust agencies view the A&D industry as highly consolidated — as from 1980 to 2015, the A&D industry has consolidated from approximately 85 companies to ~5 major players.



Expansion of national security focus in M&A including impact of NSIA

With the recent geopolitical landscape, Governments are paying increased attention to national security and any foreign direct investment that may affect this. The UK National Security and Investment Act 2021 ("NSIA") came into force on 4 January 2022, this essentially expanded the UK government's ability to scrutinise investments.

In the first year of the NSIA there were five prohibitions. Of the five prohibitions, four related to investors from China or Hong Kong, whilst the most recent, the Upp decision, concerned the acquisition of UK broadband firm Upp by a subsidiary of LetterOne, which is Russian-backed.

2020

Advent International
GLOBAL PRIVATE EQUITY



COBHAM

Advent acquired Cobham
in January 2020

leidos



Dynetics

Leidos acquired Dynetics
in January 2020

RTX



Raytheon

RTX acquired Raytheon
in April 2020

LEONARDO



kopter

Leonardo acquired Kopter
in April 2020

BAE SYSTEMS



Collins Aerospace

BAE Systems acquired Collins Aerospace
in July 2020

CURTISS-WRIGHT



PacStar

Curtiss-Wright acquired Pacific Star
in September 2020

2021

VERITAS CAPITAL



EVERGREEN CAPITAL

CUBIC

Evergreen and Veritas acquired Cubic
in May 2021

2022

FINMECCANICA



HENSOLDT

Leonardo-Finmeccanica acquired Hensoldt
in January 2022

amentum



PAE

Amentum acquired PAE
in February 2022

CURTISS-WRIGHT



ENGINEERED ARRESTING SYSTEMS CORPORATION

Curtiss-Wright acquired EASC
in July 2022

COBHAM



ULTRA

Cobham acquired Ultra Electronics
in August 2022

Parker



MEGGITT

Parker Hannifin acquired Meggitt
in September 2022

CARLYLE



ManTech

Carlyle acquired ManTech
in September 2022

RHEINMETALL



EXPAL

Rheinmetall acquired Expal
in November 2022

LEONARDO DRS



RADA ELECTRONIC INDUSTRIES LTD.

Leonardo DRS acquired RADA
in November 2022

2023

RHEINMETALL



EXPAL

Rheinmetall acquired Expal
in February 2023

LOCKHEED MARTIN



SINTAVIA

Lockheed Martin acquired Sintavia
in June 2023

THALES



COBHAM AEROSPACE COMMUNICATIONS

Thales acquired Cobham Aerospace
in July 2023

THALES



IMPERVA

Thales acquired Imperva
in July 2023

L3HARRIS



AEROJET ROCKETDYNE

L3Harris acquired Aerojet Rocketdyne
in July 2023

SAAB



Helsing

SAAB acquired Helsing
in September 2023

Consolidation in Europe and Hensoldt as a consolidator



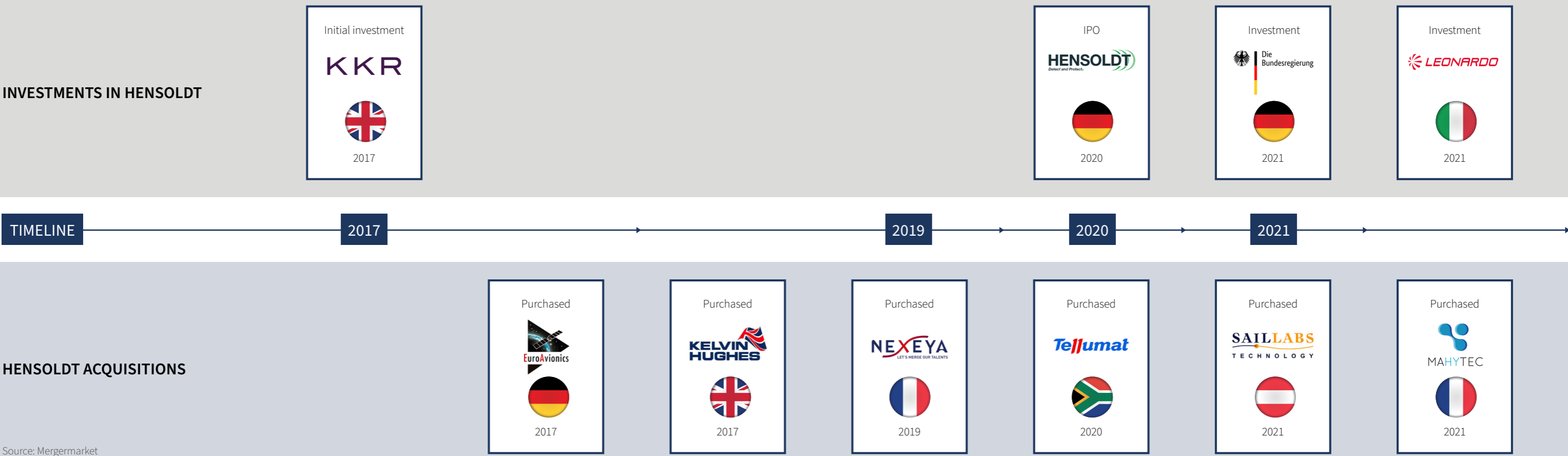
While a small number of defence companies dominate the market in the United States, the European defence sector – which has entered a boom phase after Russia’s invasion of Ukraine – is still highly fragmented at the lower end in certain areas and this has historically allowed for well managed vehicles to buy and build their way to prominence.

An example of a European consolidator is Hensoldt, acquired by Private Equity firm KKR from Airbus in 2017. Under KKR’s ownership Hensoldt then made six acquisitions in Europe and South Africa covering defence, security, surveillance and AI. Following this, KKR listed Hensoldt in 2020 and subsequently sold two 25.1% minority stakes to the German State and Italian defence leader Leonardo, with KKR continuing to hold a minority stake.

This has not slowed down Hensoldt’s appetite for acquiring new technologies and platforms as its name has been linked to asset purchase opportunities across western Europe, most recently proactively engaging on discussions to acquire German system integrator ESG.



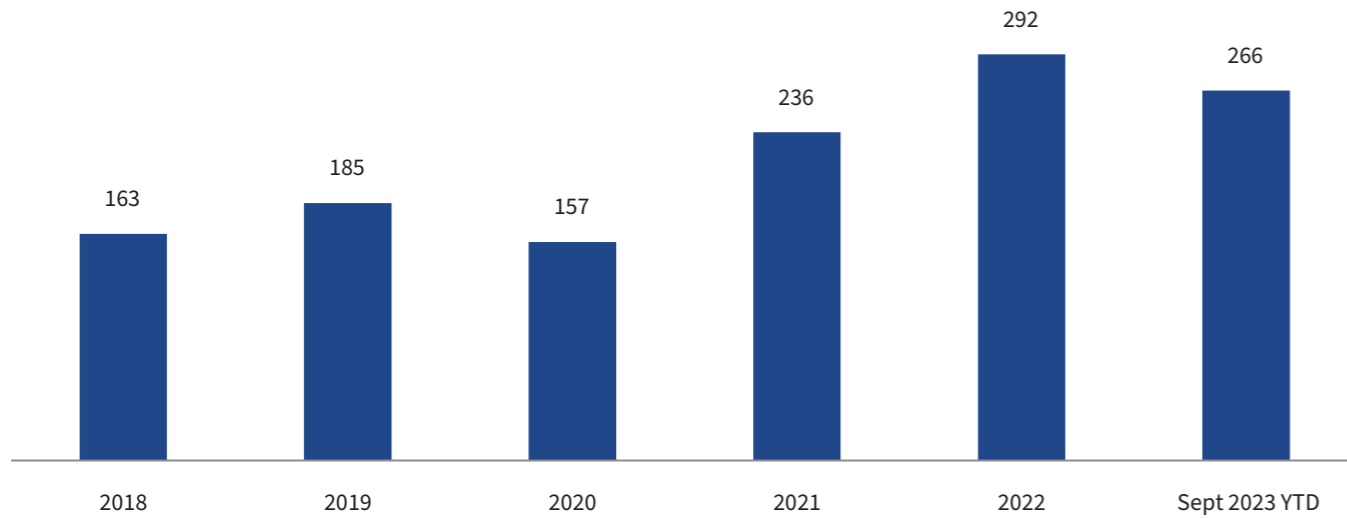
Hensoldt as a PE-backed consolidator



Source: Mergermarket

Aerospace M&A and trends

Number of deals in Aerospace (2018 – September 2023)



Source: Mergermarket

Clean propulsion and sustainable fuels

More than any other industry, aviation enables us to travel and connect globally. But it's also among the biggest contributors to global warming – currently estimated to account for 2.5% of human-caused CO2 emissions and 5% of all emissions of greenhouse gases (GHGs). This is driving increased attention and investment to reducing the carbon footprint of aviation for which alternative fuel sources such as hydrogen and sustainable aviation fuel ("SAF") are seen as a vital solution.

SAF is a carbon-reduction solution that is available for use in aircraft and helicopters operating today. It is a "drop-in" fuel blended with conventional jet fuel, requiring no aircraft modifications and can reduce lifecycle CO2 emissions by up to 80% compared to conventional fuel.

A key benefit of SAF is it offers a bridge for existing fleets with certain Airbus and Boeing planes able to use 50% SAF blends today and with stated intentions to reach 100% SAF by 2030. The key drawbacks are that SAFs are low or net-zero for CO2 emissions but not CO2-free and can currently cost over twice the price of traditional jet fuels, depending on the type of SAF.

The other favoured fuel source is hydrogen. Hydrogen offers a carbon-free solution and beats other fuels on gravimetric efficiency, the energy-to-weight ratio crucial in aerospace. However, the drawbacks are the need for aero-engine retrofitting, the level of new logistics and infrastructure required and, for long haul flights, the volume demands of hydrogen make it less feasible.

Covid recovery in Civil

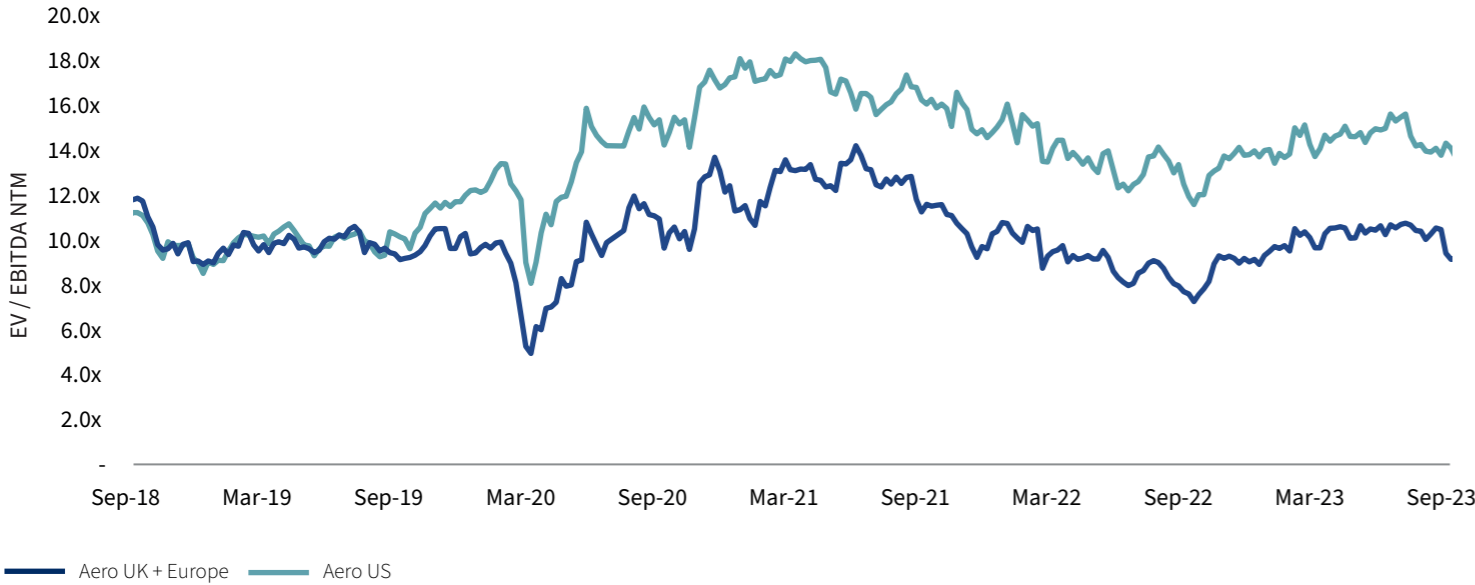
At the same time, the overall civil aerospace market has seen a sustained recovery following the disruption of the Covid-19 period, with global passenger volumes going from a low of 2.2 billion in 2021 to 3.8 billion in 2022. This is still a long way shy of the 4.5 billion achieved in 2019 (Statistic 2023) but the trend is upward. This has seen an uplift to investment in both the primary supply chain and the MRO market, which has historically proven attractive to both strategic buyer and financial investors. There is however a valuation gap between the US, with its large domestic air travel market, and valuations in Europe, which are more exposed to the operating issues that come with international travel both generally and in the specific circumstances of security or pandemic.



Valuations

Aerospace

Public Valuations – Through the Cycle



Source: Factset as at 30 September 2023, Mergermarket

Public Valuations – Current

11.7x

Global Aerospace Sector
EV/EBITDA NTM multiple

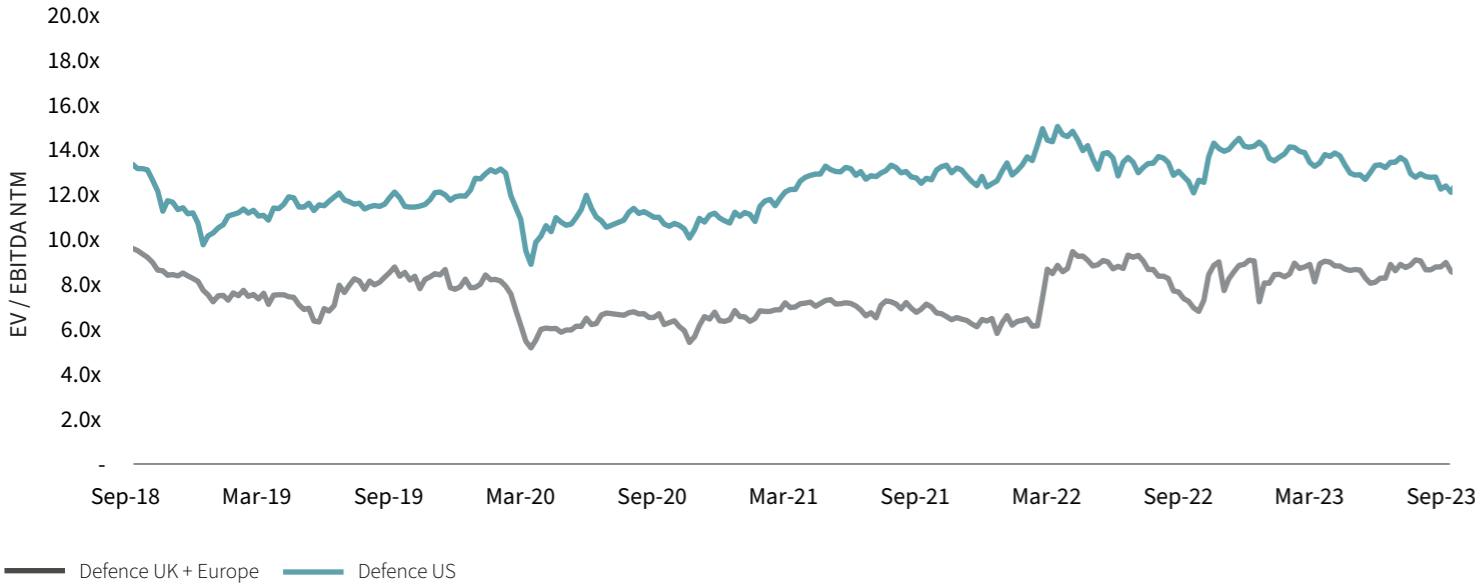
Precedent Transactions

13.3x EBITDA
2.2x Revenue

Global Aerospace
Transactions L5Y

Defence

Public Valuations – Through the Cycle



Source: Factset as at 30 September 2023, Mergermarket

Public Valuations – Current

10.4x







Global Defence Sector
EV/EBITDA NTM multiple

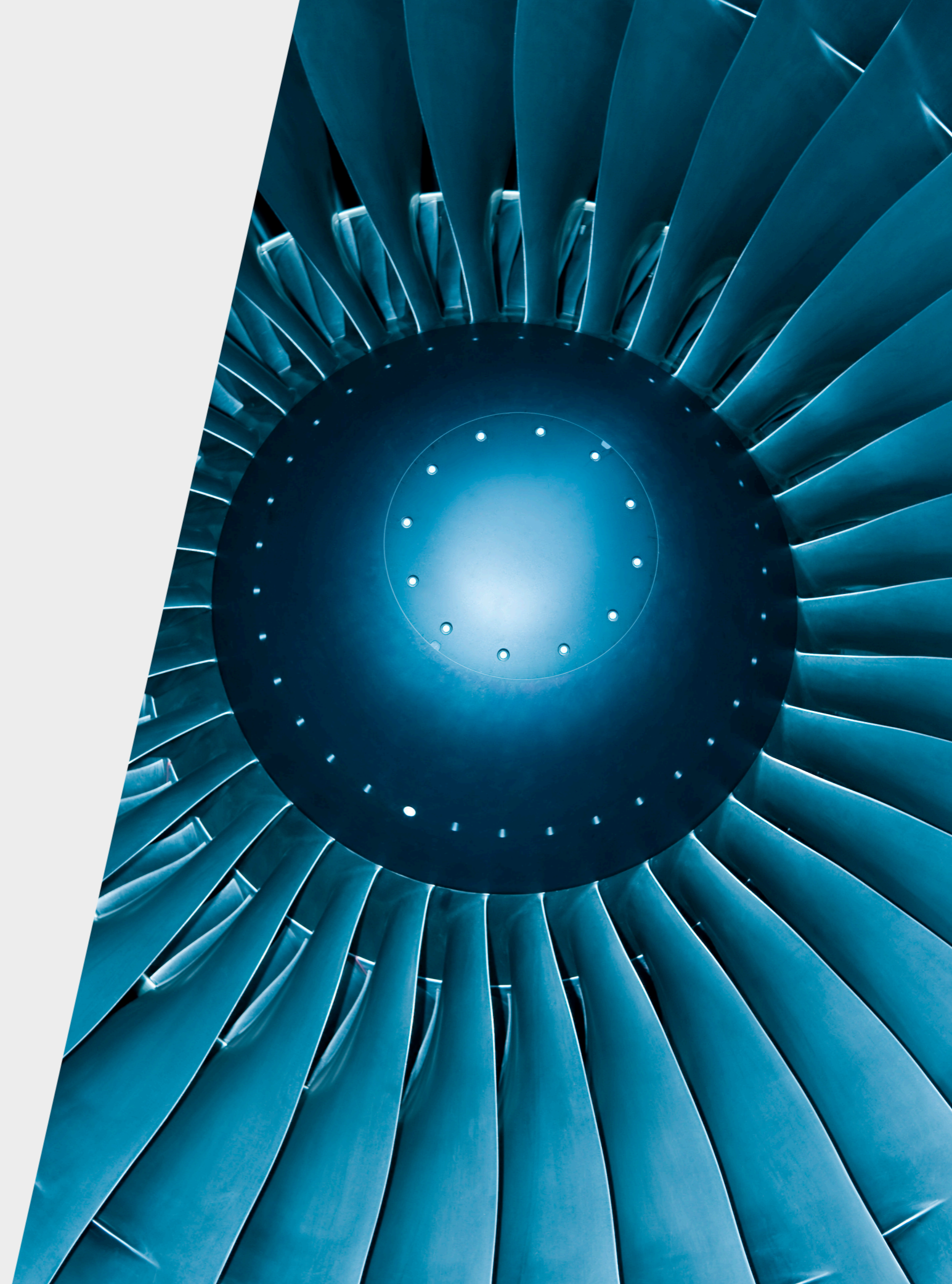
Precedent Transactions

16.7x EBITDA
2.1x Revenue

Global Defence
Transactions L5Y

Our recent sector experience

<p>Advent</p>  <p>Financial adviser on US\$1.1bn Cobham Aerospace Communications disposal to Thales</p> <p>Current</p>	<p>Hivest Capital Partners</p>  <p>Acquisition of a majority stake in Cabin & Cargo Equipment Group – CCE Group</p> <p>2023</p>	<p>Advent and Cobham</p>  <p>£2.6bn recommended cash offer for Ultra Electronics</p> <p>2022</p>	<p>Meggitt</p>  <p>£6.3bn recommended cash offer from Parker Hannifin</p> <p>2022</p>
<p>Bain Capital</p>  <p>Acquisition of ITP Aero for an implied EV of €1.8bn</p> <p>2022</p>	<p>Cavotec</p>  <p>Carve-out and disposal of 100% of its Airports business to Fernweh Group</p> <p>2022</p>	<p>Skyroot</p>  <p>US\$51m Series B raise by GIC and LKA</p> <p>2022</p>	<p>CNIM</p>  <p>Disposal of CNIM Airspace to Hemeria</p> <p>2022</p>





We would welcome the opportunity to discuss your strategic goals and requirements in confidence.

Whether you are looking to sell, acquire, raise or manage debt, or resolve a special situation, we can help your business to succeed.



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