JANUARY 2025

Morningstar Industry Landscape

Defense

Geopolitical tensions are driving a new supercycle for global defense markets.

Table of Contents

Morningstar Equity Research

Loredana Muharremi, CFA
Equity Analyst, European Defense & Aerospace

Nicolas Owens
Equity Analyst, US Defense & Aerospace

Andrea Burigana
Associate Equity Analyst

The Defense Industry Features Numerous Multitiered Supply Chains Functioning Simultaneously

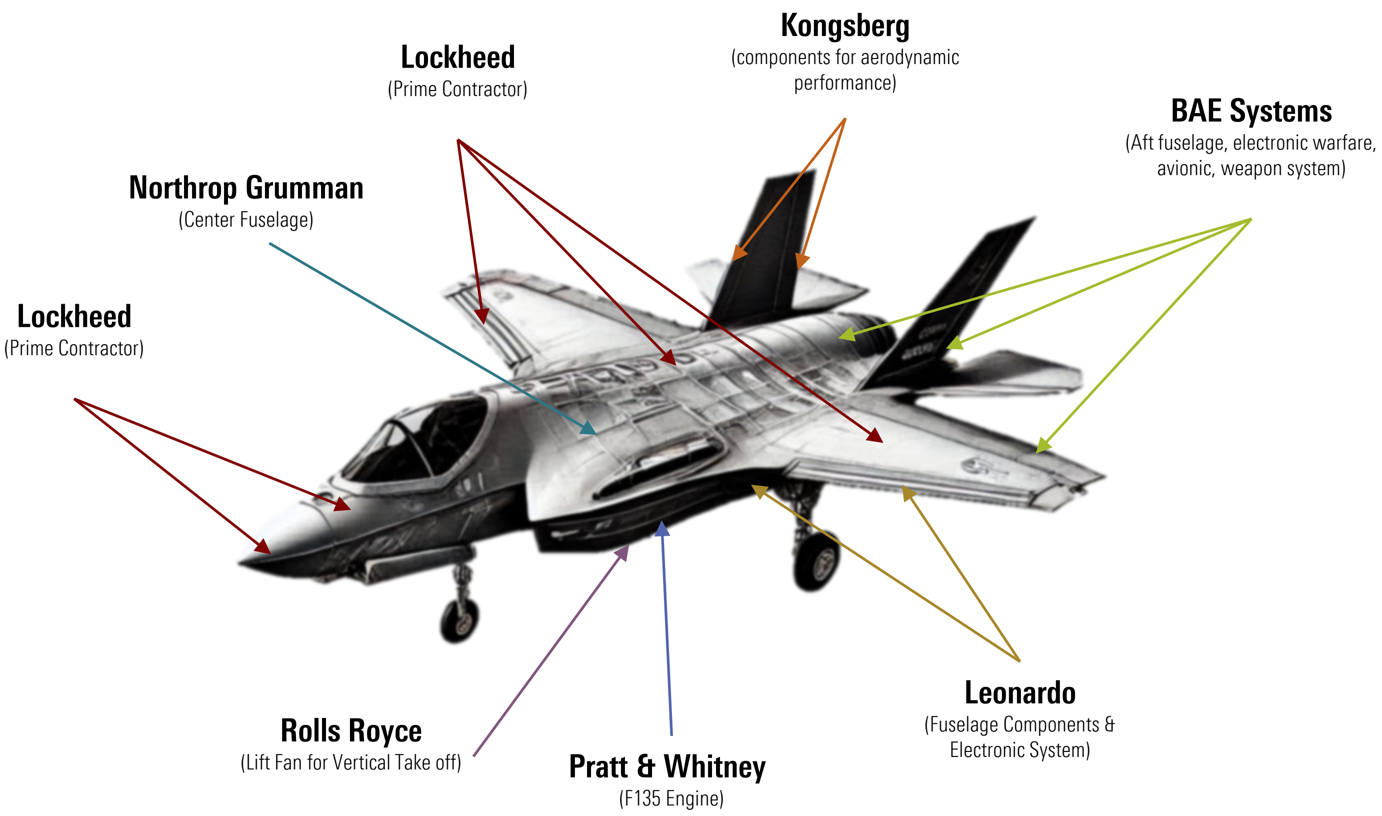
The defense industry utilizes complex, multitiered supply chains tailored by technology and scope. The procurement structure involves numerous suppliers at each tier, each specializing in distinct components or processes, increasing complexity. Prime contractors oversee the overall design, development, and assembly of the final product. They are central to the network, collaborating with government entities and engaging lower-tier suppliers under risk-sharing agreements to manufacture defense equipment.

US and European Defense Supply Chain Structure and Relationships of Industry Players by Tier

Source: European Parliament, Morningstar.

Supplier Interconnections and OEMs' Limited Oversight Beyond Tier 1 Create Supply Chain Complexity

F-35 Program: Led by Lockheed Martin, With 1,650 High-Tech Suppliers, Including Six OEMs as Tier 1 Partners



The Complexity of the Supply Depends on the Domain
Technological requirements and scope of the project drive the complexity of the supply chain. Air domain has the highest complexity and most international footprint. International subcontractors frequently leverage local expertise to comply with the political and economic agreements between the purchasing country and the supplying countries.

OEMs Can Act As Either Prime or Tier 1 Contractors
While Tier 2 and Tier 3 contractors have defined roles, original equipment manufacturers, while typically serving as prime contractors, can also operate as Tier 1 subcontractors, depending on project specifics and strategic partnerships.

Risk-Sharing Is Becoming Increasingly Significant
These partnerships are strategic agreements in which the parties involved—typically government entities, prime contractors, and sometimes lower-tier suppliers—share the financial, technical, and operational risks associated with developing and producing defense equipment.

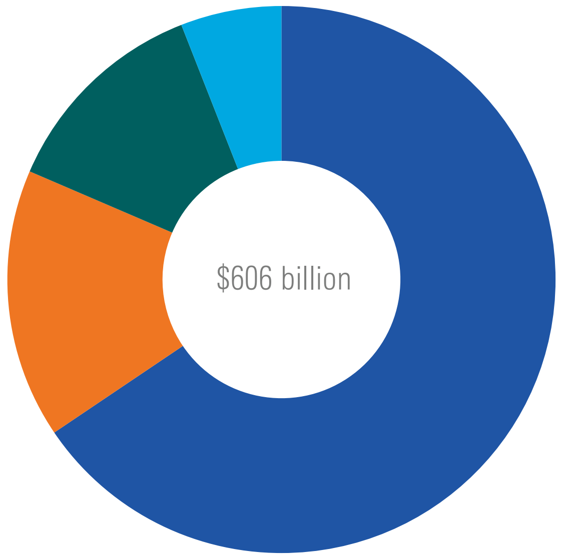
Source: Morningstar.

Top 15 Contractors Dominate Market, With US Companies Holding the Largest Share

Global Top 100 Defense Contractors by Revenue Share, 2023

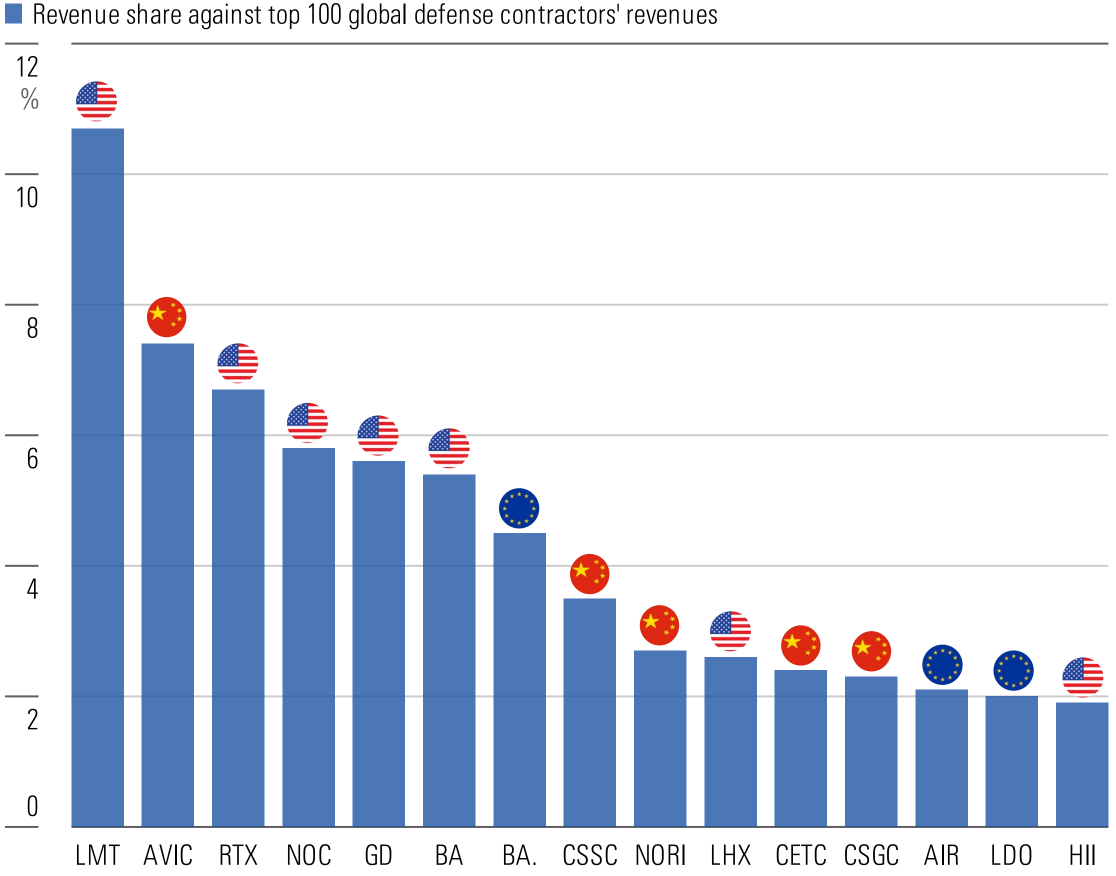
A few OEMs with expertise across multiple segments dominate the defense industry.

Category	%
Top 15 Global	65.55
Other US	15.92
Other Europe	12.58
Other RoW	5.95



Top 15 Defense Contractor Revenue Share, 2023

US companies make for 59% of The top 15 by revenue.

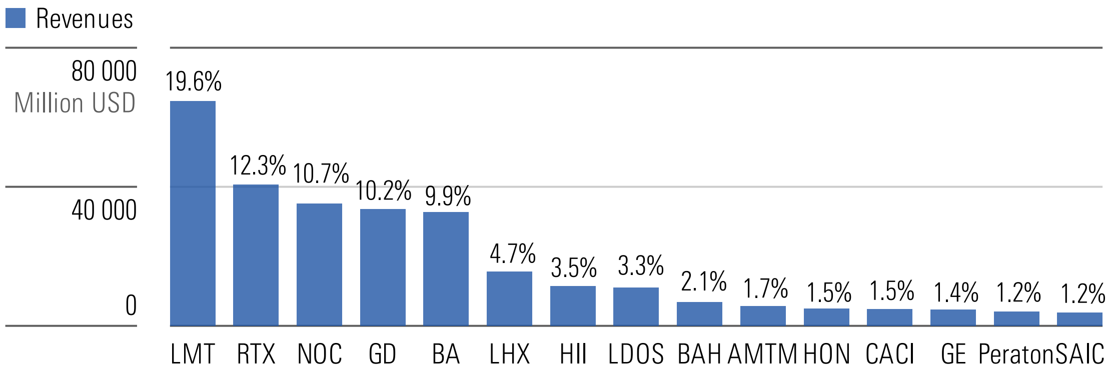


Source: Stockholm International Peace Research Institute (SIPRI), Morningstar.

Top 15 Contractors Largely Unchanged, and Strengthening Their Grip in the Past Decade

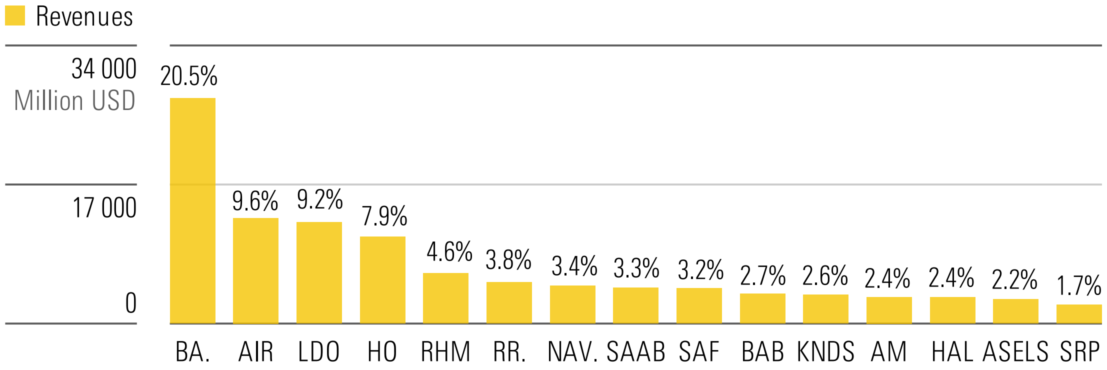
Top 15 US Companies' Revenue and Market Share 2023

The regional top five hold more than 60%.



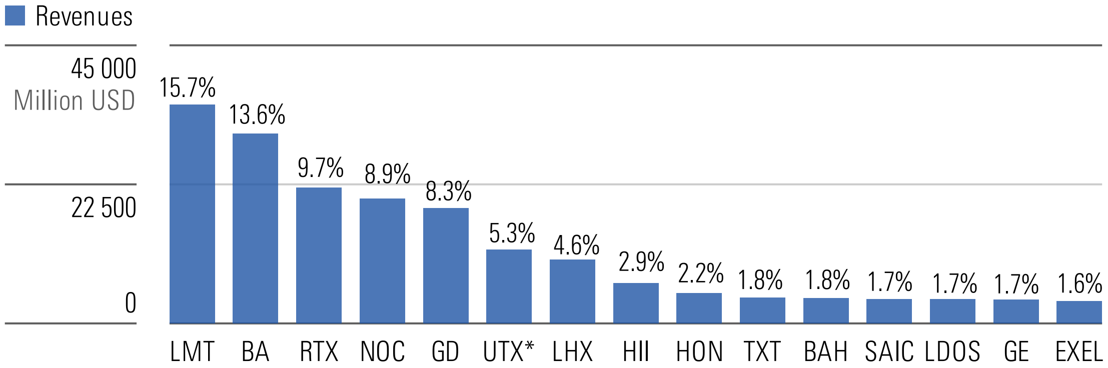
Top 15 EU Companies' Revenue and Market Share 2023

The regional top five hold more than 50%.



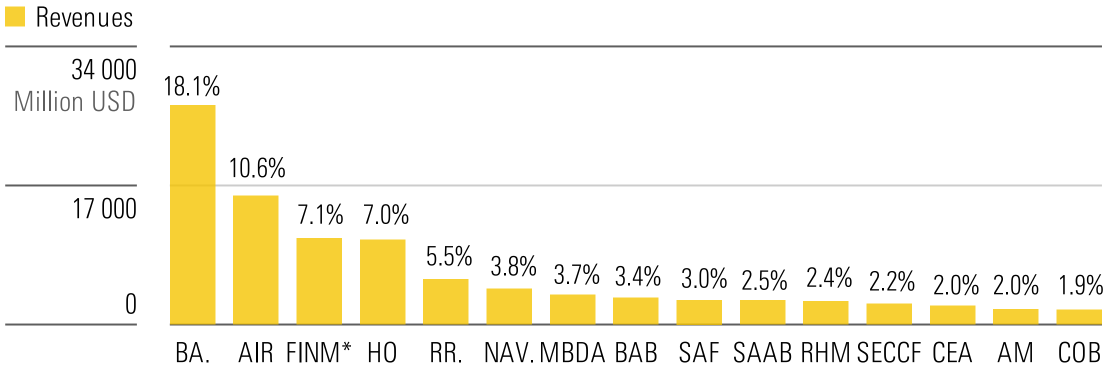
Top 15 US Companies' Revenue and Market Share 2013

The regional top five hold more than 50%.



Top 15 EU Companies' Revenue and Market Share 2013

The regional top five hold more than 50%.



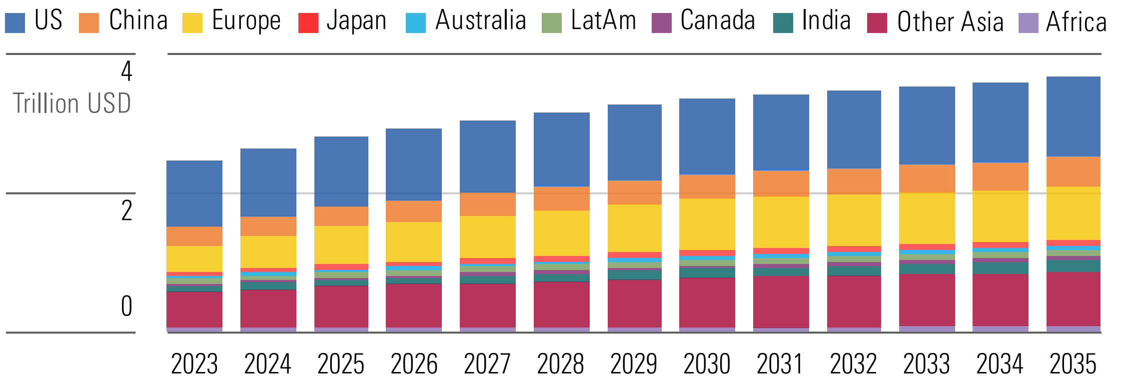
Source: SIPRI, Morningstar.
Note: Finmeccanica changed its name to Leonardo as of Jan. 1, 2017. United Technologies merged with Raytheon in April 2020.

Key Industry Themes

Geopolitical Tension Driving a New Defense Supercycle

Geopolitical tensions, including Russia's invasion of Ukraine and Indo-Pacific conflicts, are fueling a new global defense Supercycle. European defense budgets are set to grow 6.1% annually from 2023 to 2035, outpacing the US (1.7%), Russia (3.2%), and China (3.1%) as Europe addresses decades of underinvestment and seeks greater autonomy from the US. Europe's share of global defense spending is projected to increase from 16% to 21% by 2029, stabilizing through 2035. Meanwhile, the US, having steadily increased defense spending since 2017, is projected to increase its budget in line with GDP, reaching 3.3% by 2035, down slightly from 3.5% in 2024. In the midterm, both regions will prioritize munitions and off-the-shelf equipment to meet near-term needs.

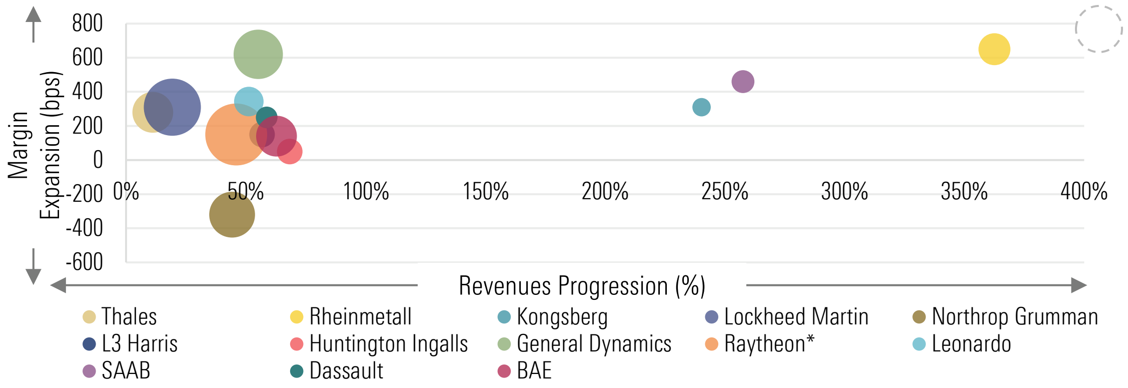
Global Defense Spending 2023-35 (in $ Trillions)



Larger Equipment Fleet to Boost Future Profits Through Scale and Aftermarket

The increase in defense spending is expected to boost revenues and profitability for US and European companies, driven by economies of scale from increased production and higher-margin aftermarket services like maintenance and upgrades. In the US, the market share of the top four contractors is expected to decline slightly from 2023 record levels, creating opportunities for smaller OEMs as the US Department of Defense seeks greater diversification. In Europe, the emphasis will be on consolidating fragmented procurement by aiming to source at least 50% of defense equipment from within Europe. Additionally, Europe plans to unify its fragmented national technological and industrial base through collaborative efforts among governments and leading national defense companies.

US and European Contractors Revenue and Margin Evolution, 2021-29



Source: Thunder Said Energy, NATO, Morningstar.
Note: Includes Civil Business.

Industry Value Drivers

Simplified Financial Statement: Thales (Fiscal Year 2023)

Pro Forma Income Statement (EUR Millions)	2023	% of Sales	
Revenue 1	18,428		
Cost of Goods Sold 2	12,460	*68%*	*of Sales*
Gross Profit	**5,968**		
Selling, General & Administrative Expenses	621		
Advertising & Marketing Expenses	1,384		
Research & Development 3	1,108	*6%*	*of Sales*
Depreciation & Amortization	1,045		
Adjusted Operating Income	**1,810**	*10%*	*of Sales*
Irregular Cash (Gains)/Losses	388		
Operating Income 4	**1,422**		
Net Interest Expense	141	*20%*	*Tax Rate*
Income Tax Expense	252		
(Minority Interest)	(5)		
Net Income	**1,024**		

1 Revenue: Defense contractors operate in a unique market where their primary customer is the government, leading to a limited customer base and revenue that is closely tied to fluctuating domestic defense budgets and policies. International sales are feasible but subject to strict regulations. Additionally, contractors' revenue is affected by demand surges during conflicts, supply chain disruptions, and the long lead times required for specialized components.

2 Cost of Goods Sold: Material costs account, on average, for 45%-60% of operating expenses, increasing during production ramp-ups because of higher work-in-progress inventory. To mitigate supply chain challenges, firms are strategically maintaining larger raw material inventories. Moreover, US and European procurement of some critical raw materials is highly dependent on non-allied countries, adding risk. Personnel costs, including specialized labor and security clearances, make up the second-largest operating expense, ranging from 20% to 30%

3 Research & Development: Investment in R&D is substantial, at about 20% of sales, but most is capitalized, not expensed. Defense contractors benefit from a unique R&D funding model in which governmental clients subsidize most of it.

4 Operating Income: Profitability in defense contracting is significantly influenced by the structure of the contracts, which can be either cost-plus or fixed price. Cost-plus contracts reimburse the contractor for expenses plus a profit, with the government bearing the most financial risks. Fixed-price contracts set a predetermined price for the entire project, placing most of the risk on the contractor, but potentially leading to higher profitability.

Source: Company report, Morningstar.

Coverage List and Ratings

Morningstar's Defense Coverage

Company (Ticker)	Market Cap (Billions)	Moat Rating	Uncertainty Rating	Currency	Last Close	Fair Value Estimate	Star Rating	P/FVE	Yield	1-Year Return
Huntington Ingalls Industries (HII)	7 USD	Wide	Medium	USD	190.02	326.00	★★★★★	0.58	2.8%	-23.3%
BAE Systems (BA.)	35 GBP	Wide	Medium	GBX	1192.00	1550.00	★★★★	0.77	2.6%	+2.8%
Northrop Grumman (NOC)	67 USD	Wide	Medium	USD	458.69	580.00	★★★★	0.79	1.8%	-3.0%
Rheinmetall (RHM)	28 EUR	Wide	Medium	EUR	650.00	730.00	★★★★	0.89	0.9%	+107.6%
General Dynamics (GD)	71 USD	Wide	Low	USD	259.38	302.00	★★★★	0.86	2.2%	+4.0%
Saab (SAAB B)	123 SEK	Wide	Medium	SEK	230.35	262.50	★★★★	0.88	0.7%	+37.1%
Dassault Aviation (AM)	16 EUR	Wide	Medium	EUR	206.20	227.00	★★★★	0.91	1.6%	+10.5%
L3 Harris Technologies (LHX)	38 USD	Narrow	Medium	USD	208.28	253.00	★★★★	0.82	2.2%	+2.5%
Leonardo (LDO)	16 EUR	Narrow	High	EUR	27.70	33.00	★★★★	0.82	1.0%	+62.0%
Thales Group (HO)	30 EUR	Wide	Medium	EUR	144.15	156.00	★★★	0.92	2.4%	+4.1%
Lockheed Martin (LMT)	111 USD	Wide	Medium	USD	468.05	510.00	★★★	0.92	2.8%	+3.8%
RTX Corp (RTX)	153 USD	Wide	Medium	USD	115.11	119.00	★★★	0.97	2.2%	+36.2%
Kongsberg Gruppen (KOG)	219 NOK	Wide	Medium	NOK	1247.00	1230.00	★★★	1.01	0.6%	+145.6%
Aerospace and Defense (Median)								**0.88**	**2.0%**	

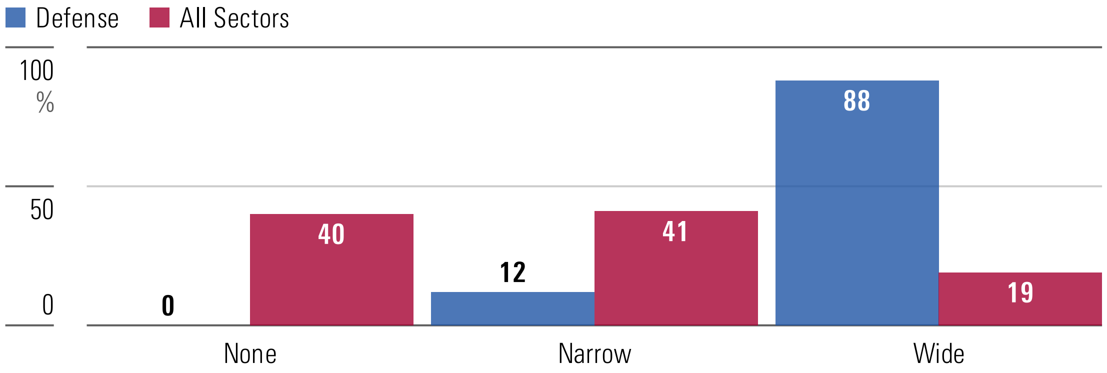
Source: PitchBook.

Economic Moat

Most Companies Have Wide Moats From Intangible Assets and Switching Costs

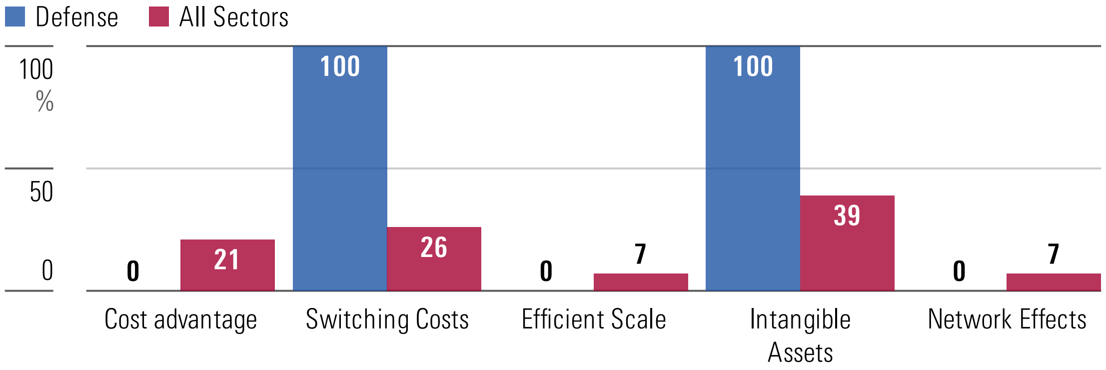
All Companies in Morningstar's Defense Coverage Have a Moat, With Most Boasting Wide Ratings

Defense Has the Highest Concentration of Wide-Moat Companies



Morningstar's defense industry coverage features the highest concentration of companies with economic moats, with predominantly wide moat ratings. Notably, all companies in our defense coverage possess a moat, with 88% (14 out of 16) classified as wide moat—significantly higher than the 19% average across all sectors in our coverage. Wide moats are particularly prominent among large defense contractors, driven by substantial intangible assets and high switching costs. Additionally, we believe the industry is at the early stage of a new decade-long defense budget upcycle, which is poised to reinforce the intensity of these competitive advantages.

Intangibles, Complemented by High Switching Costs, Underpin Strong Moats



All defense companies in our coverage benefit from intangible assets and switching costs shaped by the industry's unique structure. Government regulation and product complexity serve as significant barriers to entry, reinforced by decades-long product cycles and contract structures that reduce risks for incumbents while effectively excluding alternative suppliers. Moreover, switching costs are considerable for risk-averse customers, who face significant time, costs, and uncertainty when making the transition to new products or suppliers. The strength of these competitive advantages varies, based on regional defense structures, platform characteristics—such as complexity and product life cycle—and the potential for aftermarket revenue generation.

Source: Morningstar.

Defense-Industry Structure and Requirements Foster Intangible Assets and High Switching Costs

Defense System Lifecycle: Leveraging Intangible Assets and Switching Costs

Concept and Technology Development

In this phase, government and military officials define requirements and provide the regulatory and strategic framework within which the project must operate. Defense contractors go through an intense bidding process, developing innovative technologies and conducting preliminary studies to assess feasibility and technology readiness.

Intangible Assets:

Stringent Regulatory Requirements
Stringent government regulations create high barriers to entry, demanding substantial resources and a deep understanding of legal frameworks, which pose challenges for new entrants.

Need for Advanced Technological Expertise
Companies must have a team with specialized skills and the ability to innovate continuously to keep up with fast-evolving technological requirements.

Development and Prototyping

Prime contractors proceed with the advanced development of the system design and technology demonstration. Governments select and award contracts for detailed development and prototyping.

Intangible Assets and Switching Costs:

Development Risk Sharing
Most R&D expenses are borne by clients and partners, minimizing the risk of unproductive R&D and safeguarding returns.

Production and Deployment

Low-rate initial production of the new system begins to test the manufacturing process, resolve any potential production issues, and prepare for full-rate production. Government gives the green light for full-scale production after successful demonstration and testing.

Intangible Assets and Switching Costs:

Intangible Assets From Contract Structures
Initial contracts are often cost-plus, minimizing financial risk for contractors by covering cost overruns. Over time, contracts transition to fixed-price agreements, enhancing profitability as production scales up and efficiencies of scale are realized.

Switching Costs From Contract Structures
The substantial capital and time investments made by defense customers in the early stages of a program make it unlikely for military forces to switch contractors mid-program.

Support and Maintenance

Ongoing maintenance and logistical support are provided to ensure operational readiness. Systems are periodically upgraded and modernized to maintain operational effectiveness and adapt to new challenges.

Switching Costs:

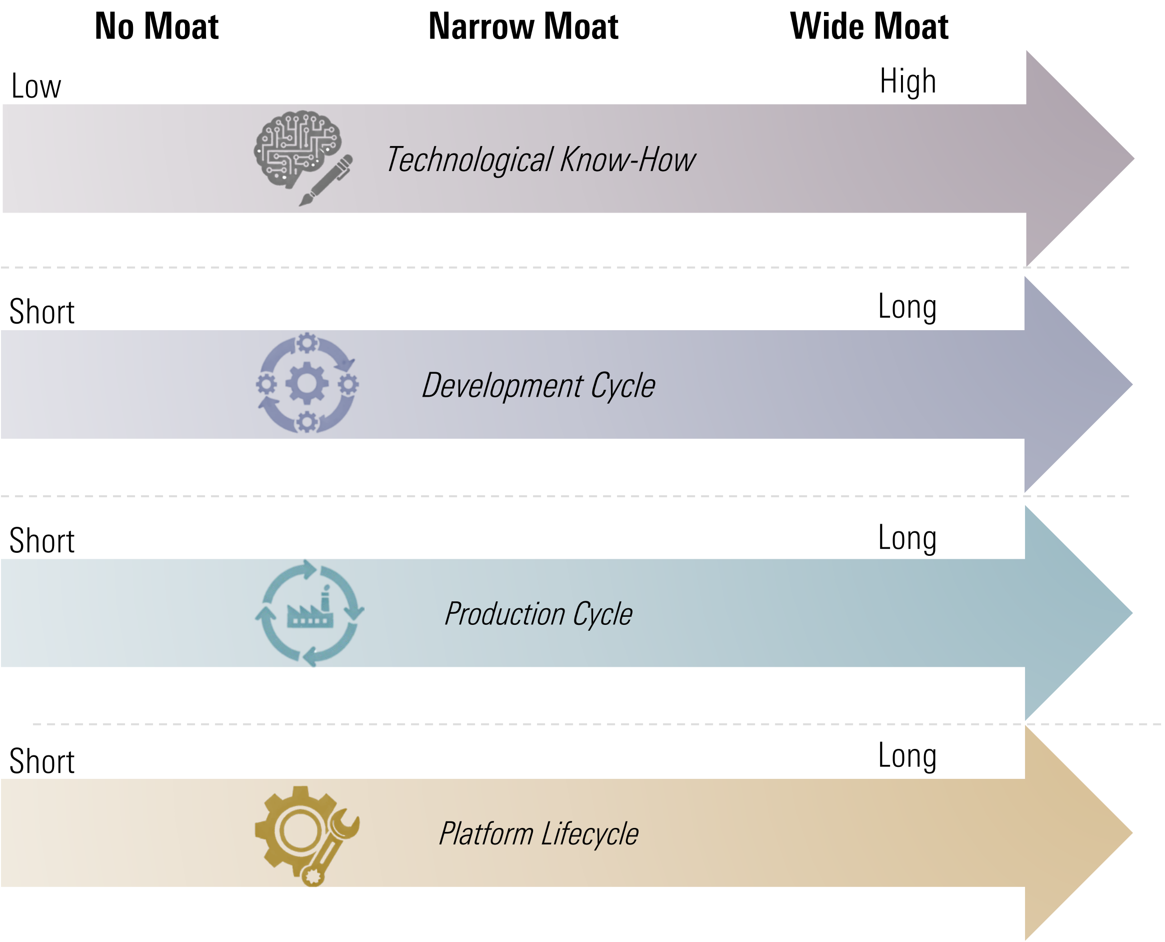
Switching Costs From Proprietary Rights
Due to proprietary rights in spare parts and services such as training, prime contractors secure recurring revenue from maintenance and upgrades required over the extended lifecycle of defense platforms.

Higher Earning Quality
Aftermarket revenue strengthens the moat as it increases the long-term stability and profitability of the division.

Source: Morningstar.

Moat Strength Is Tied to Platform Attributes

Determinants of Economic Moat for Defense Platforms



Technological Know-How Is a Formidable Barrier to Entry

The defense industry is characterized by lengthy sales cycles involving securing government contracts, followed by protracted and expensive product development and testing phases. The costs associated with research and development, testing, and gaining the necessary certifications can be prohibitively high, deterring new entrants.

Long Development Cycles Increases Switching Costs

Development programs in the defense industry can last from two years to several decades. Longer development cycles typically create a stronger economic moat due to high switching costs, making it more practical and cost effective for military clients to continue with existing contractors for modifications rather than initiating new programs.

Long Production Cycles Create Monopolistic Advantages

We view short-cycle products like software less favorably than long-cycle products like defense hardware. Securing a contract for defense hardware often grants a company an effective monopoly over the product for the contract's duration due to the specialized requirements and complex nature of defense contracts, which limit the availability of viable alternatives.

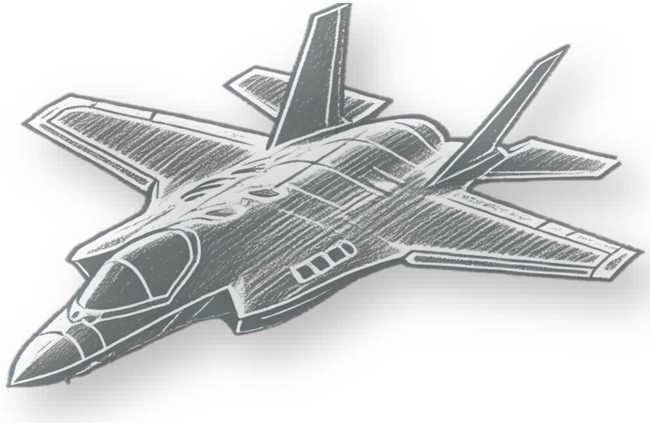
Platforms With Long Lifecycles Generate Aftermarket Opportunities

Some defense platforms can last for more than 20 years, generating aftermarket revenues that increase the division's long-term stability and profitability. This enduring advantage stems from significant switching costs due to the lack of alternatives and proprietary parts and services.

Source: Morningstar.

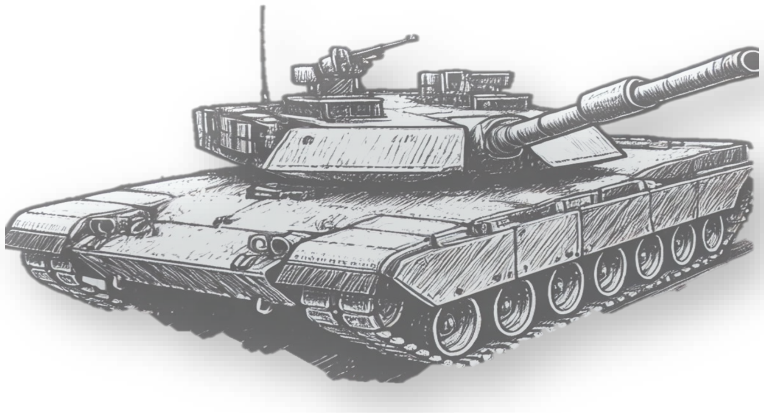
Moat Strength Sources for Selected Platforms

Air Platforms Support Wide Moats



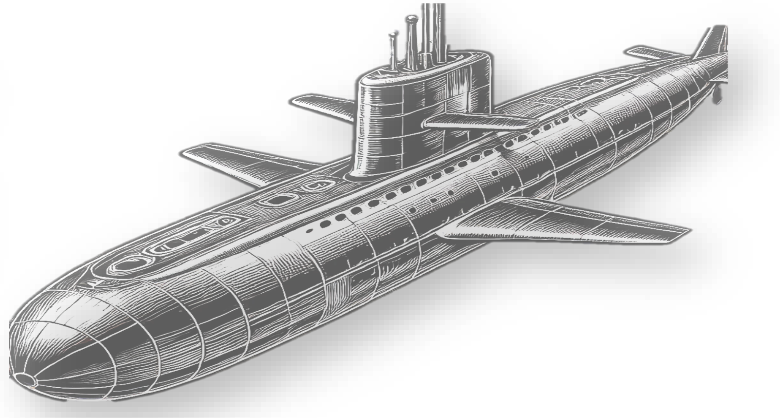
- Very high technical requirements
- Lengthy development cycles of up to 20 years and substantial associated costs drive high switching costs.
- Monopolistic advantages from production cycles of up to 40 years. Very high switching costs due to the potentially lethal cost of product failure and difficulty of developing a suitable alternative.
- Long platform lifecycle of 35 years. Planes are sold in combination with support packages that generate high-margin recurring revenue over the plane's lifespan.

Land Vehicle Platforms Support Wide Moats



- Very high technical requirements
- Lengthy development cycles around 10 years and associated costs drive high switching costs
- Monopolistic advantages from production cycles of up to 20 years. Very high switching costs due to the potentially lethal cost of product failure and the difficulty of developing a suitable alternative
- Long platform lifecycle of 45 years, which are sold in combination with support packages that generate high-margin recurring revenue over the plane's lifespan

Submarine Platforms Support Wide Moats

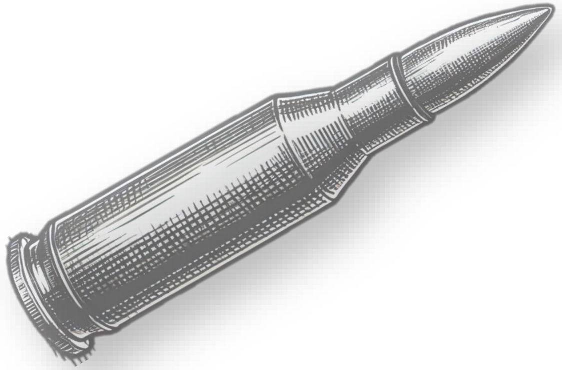


- Very high technical requirements
- Lengthy Development cycles as long as 10 years and associated costs drive high switching costs
- Monopolistic advantages from production cycles of up to 20 years. Very high switching costs due to the potentially lethal cost of product failure and the difficulty of developing a suitable alternative
- Long platform lifecycle of 40 years, which are sold in combination with support packages that generate high-margin recurring revenue over the plane's lifespan

Source: Morningstar.

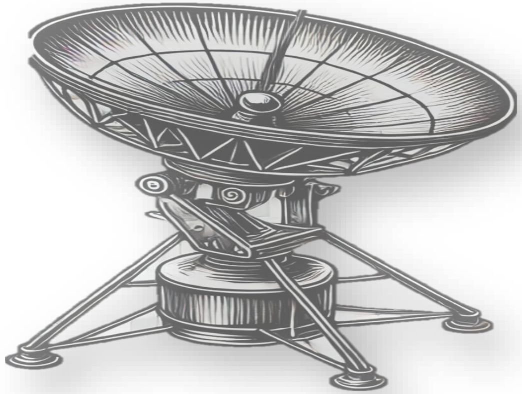
Moat Strength Sources for Selected Platforms

Munitions Support Narrow Moats



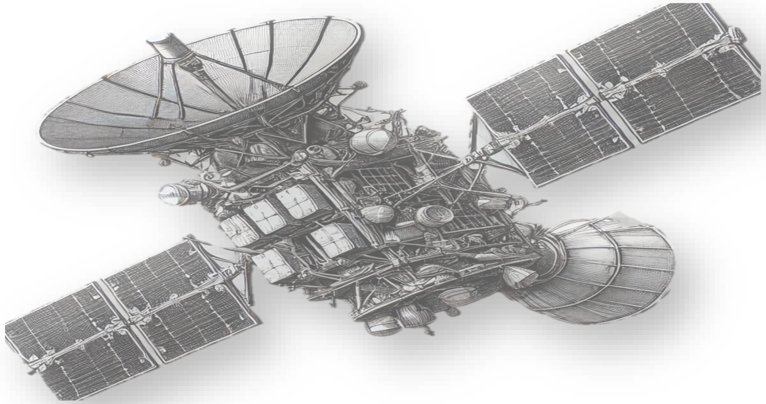
- Medium to high technical requirements
- Short development cycles that range from one year to five years for entirely new systems.
- Short production cycles, as they require frequent replenishment due to regular use and detonation.
- The segment lacks aftermarket revenue. However, integration with long-life platforms as a sole-source provider provides recurring revenue streams as munitions are detonated, as well as opportunities for upgrades.

Electronic Systems Support Narrow Moats



- High technical requirements
- Development cycle ranges from three to 10 years, depending on technology and its application
- The segment is product dominated. However, securing a role as a sole-source provider of electronic warfare equipment for long-life platforms creates high switching costs
- The segment lacks recurring aftermarket revenue. However, integration with long-life platforms provides opportunities for upgrades.

Cybersecurity Solutions Support Narrow Moats



- High technical requirements
- Short development cycles of one to three years
- The segment is highly fragmented and fiercely competitive, driven primarily by product differentiation. There are some switching costs associated with established relationships and classified work for the government.
- Short product lifecycle due to constantly evolving technological landscape. Segment lacks aftermarket revenue.

Source: Morningstar.

Morningstar's Defense Coverage

The Defense Sector Has the Highest Concentration of Wide-Moat Firms Thanks to High Barriers to Entry and High Switching Costs

Percentages in the table represent the contribution of each market to the total company EBIT. The strength factor is based on segment characteristics and the portfolio composition within it.

	Moat Strength Factor								
Companies	Air	Electronic Systems	Maritime	Platforms and Services	Cyber and Intelligence	Weapons and Ammunition	Helicopters	Space	Average
Lockheed Martin (LTM)	40%	22%				22%		16%	Wide
RTX Corp (RTX)	62%					21%		17%	Wide
Northrop Grumman (NOC)	24%	32%				14%		30%	Wide
General Dynamics (GD)	35%		19%	20%	26%				Wide
Huntington Ingalls (HII)			85%	10%	5%				Wide
BAE Systems (BA.)	39%	29%	12%	15%	5%				Wide
Leonardo (LDO)	24%	63%					38%		Narrow
Thales Group (HO)	20%	51%			29%				Wide
Dassault Aviation (AM)	70%*						30%*		Wide
Rheinmetall* (RHM)		14%		35%	7%	45%			Wide
Saab (SAAB B)	14%	32%	12%		41%				Wide
Kongsberg Gruppen (KOG)	60%		34%		1%				Wide

Strength of factor: Strong ↔ Weak

Unserved Segment

Source: Morningstar, company filings.
Note: Dassault Aviation's percentages are calculated based on revenue. Rheinmetall's percentages do not add up to 100% as part of the EBIT is realized in its material and composite civil segment.

Industry Basics

Geopolitical Tensions Drive Defense Spending, Despite Inflationary Pressures

National Defense Strategies Shaped by Deterrence Needs, Alliances, and Modernization Efforts

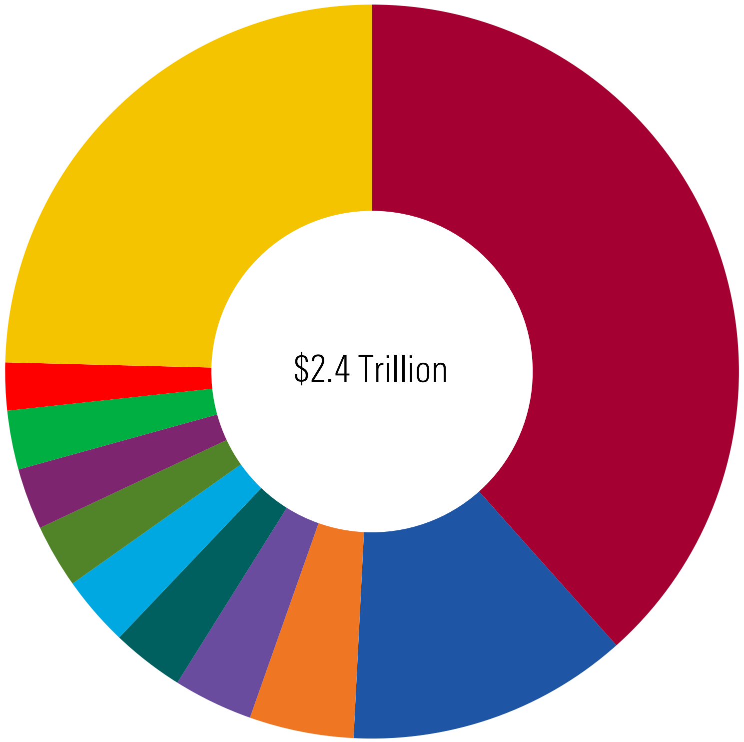
Top 10 Global Spenders Account for 75% of Total Spending
Military expenditures are concentrated within a small group of countries. The United States and China are the top two military spenders, accounting for approximately half of global military spending.

Deterrence Policies Driving Higher Spending in Defense
Nations invest in defense to deter potential adversaries through a credible threat of retaliation. Ongoing or escalating conflicts in specific regions often prompt nations to increase their defense budgets to ensure readiness and deter potential threats.

Alliances Are Pivotal in Shaping Defense Spending
Many international alliances have specific defense commitments. Each member country must maintain a certain level of military capability to fulfill these obligations effectively.

Military Modernization Programs
As military equipment ages, countries must replace or upgrade their arsenals, which involves significant expenditure on new technologies and platforms.

Top 10 Global Defense Spenders in 2023

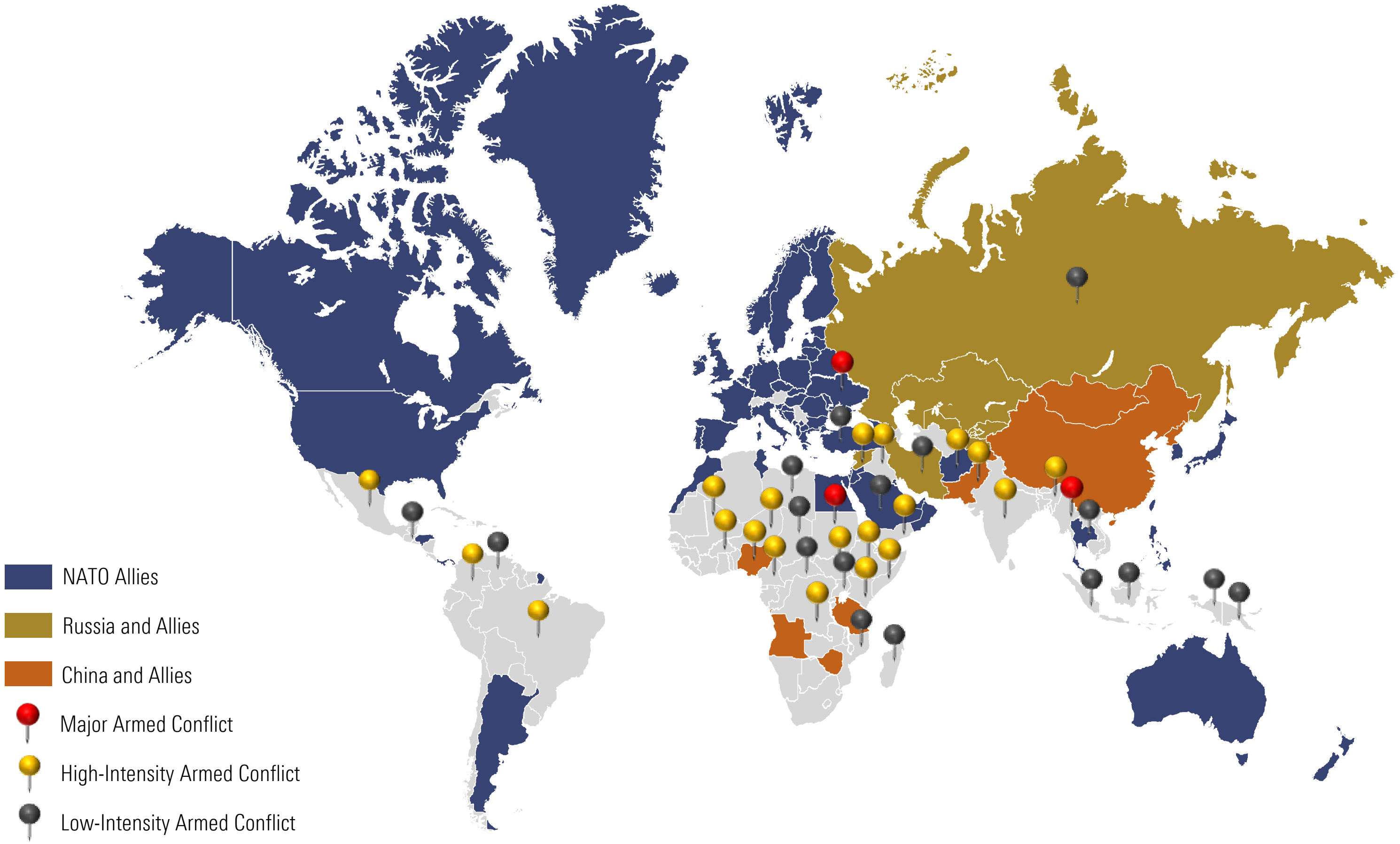


Country	%
United States of America	38.40
China	12.40
Russia	4.60
India	3.50
Saudi Arabia	3.20
United Kingdom	3.10
Germany	2.80
Ukraine	2.70
France	2.60
Japan	2.10
Other	24.60

Source: SIPRI, Morningstar.

Geopolitical Tensions and Security Threats Drive Defense Spending

Current Global Alliances and Ongoing Conflicts



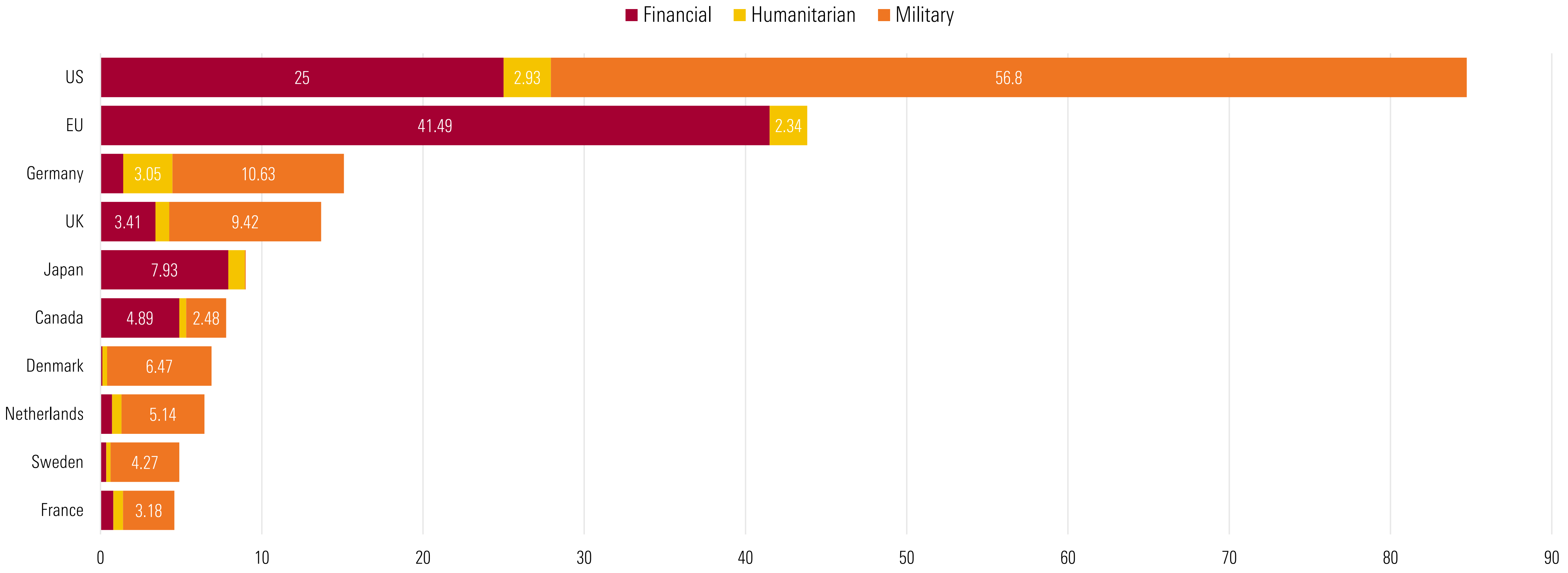
Source: SIPRI, Morningstar.

Strategic Alliances and Cooperative Defense Projects
Russia's invasion of Ukraine and rising tensions in specific regions, such as the Indo-Pacific, due to increasing assertiveness by China, prompted countries to form alliances to ensure regional balance and enhance collective security.

NATO Expansion and Reinvigoration
Finland and Sweden's entry into NATO expanded the alliance's presence along Russia's border, enhancing security in the Baltic and Nordic regions.
In response to growing security threats, NATO members have significantly raised their defense budgets. Most European NATO allies are expected to meet the 2% GDP spending target in 2024.

Alliances Shape Defense Budget Decisions: US, Germany, and UK Are Ukraine's Top Supporters

Support to Ukraine by Country, 2023 (EUR Billion)

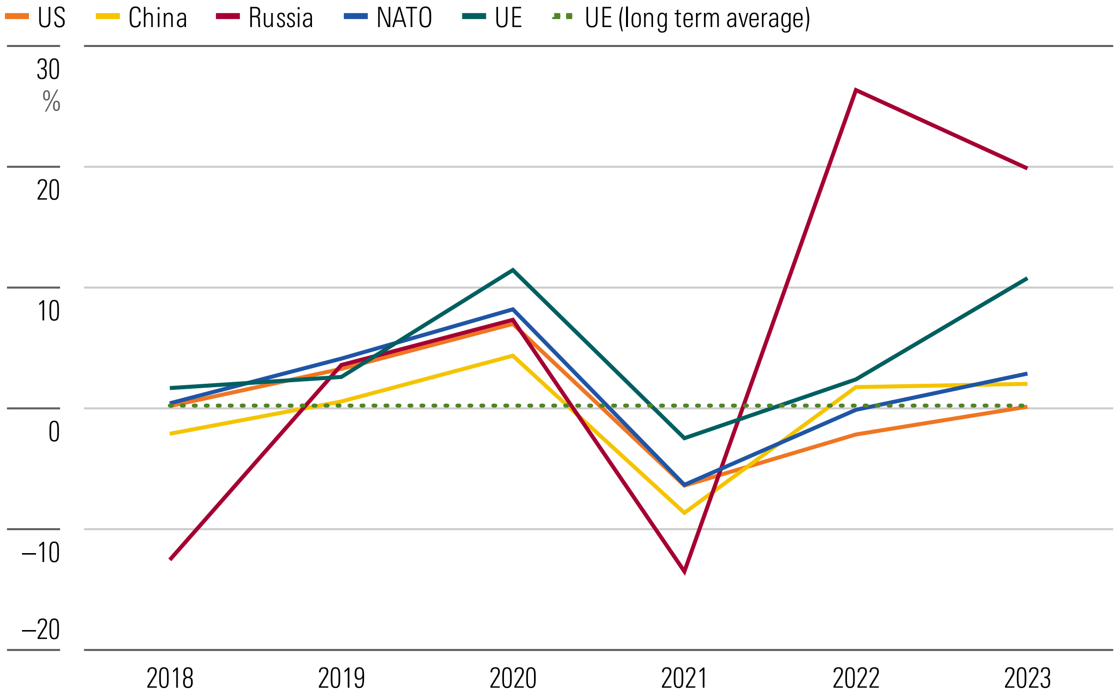


Source: Kiel Institute: Ukraine Support Tracker.

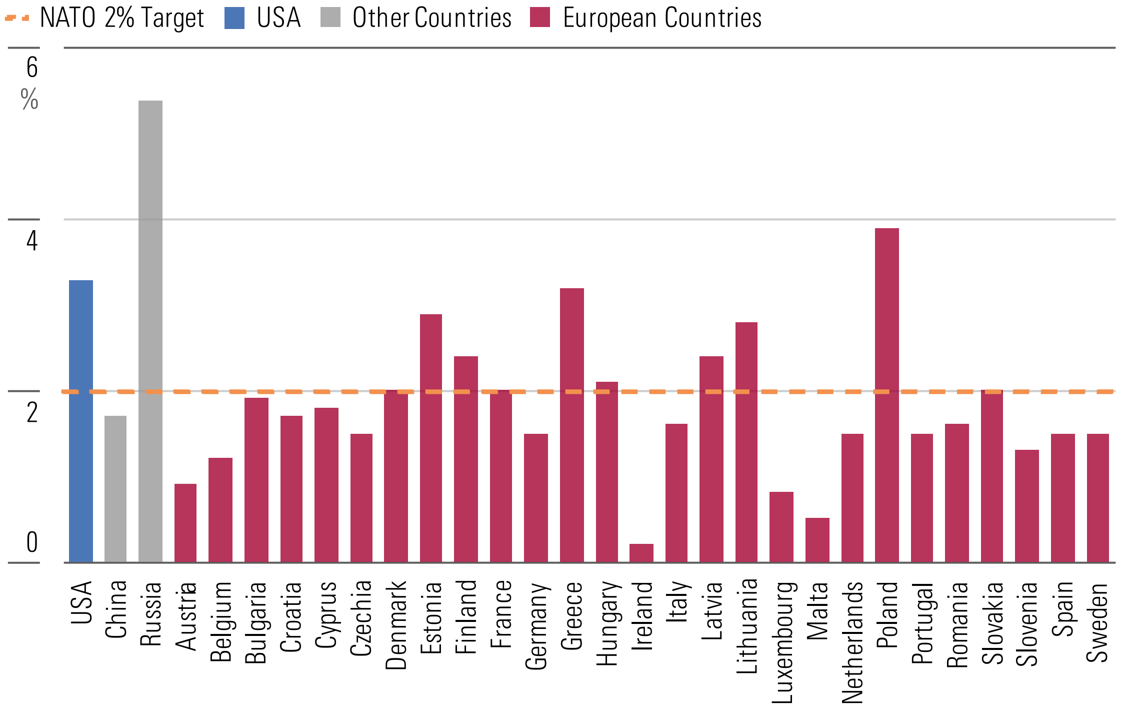
Defense Budgets Are Tied to Economic Cycles, but Are Shaped by Strategic Priorities

Defense budgets fluctuate with the GDP, rising in prosperous times but often constrained during downturns. However, strategic and geopolitical needs can override economic pressures. Over the past three years, European countries have significantly increased defense spending as a percentage of GDP, growing faster than China and the US. Despite this, in 2023, all EU countries remained behind Russia and the US (except for Poland), with only 10 of 27 reaching NATO's 2% threshold.

Growth in Defense Spending as Percent of GDP



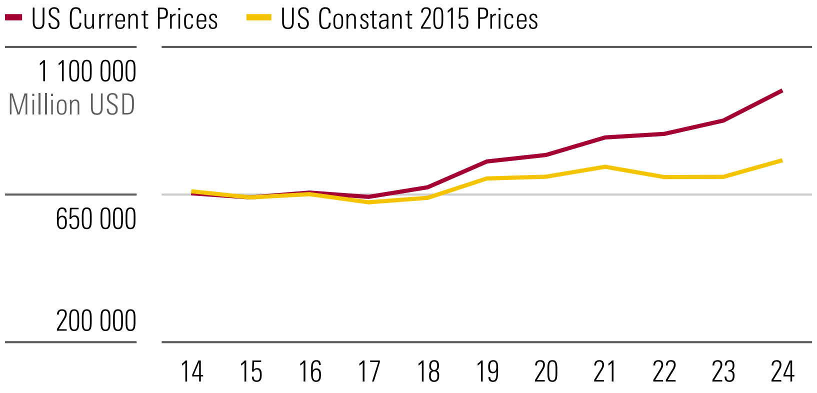
Defense Spending by Country as Percent of GDP, 2023



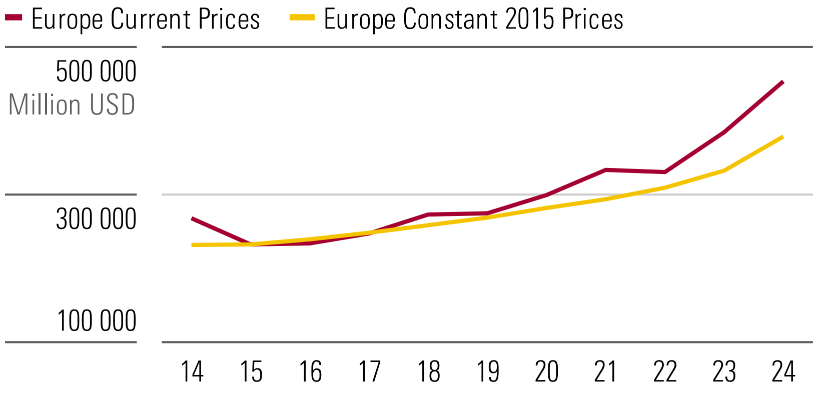
Source: SIPRI, Morningstar.

Inflation Strains Governments' Budgets and Real Spending

Inflation Impact on US Defense Spending, 2014-24



Inflation Impact on EU Defense Spending, 2014-24



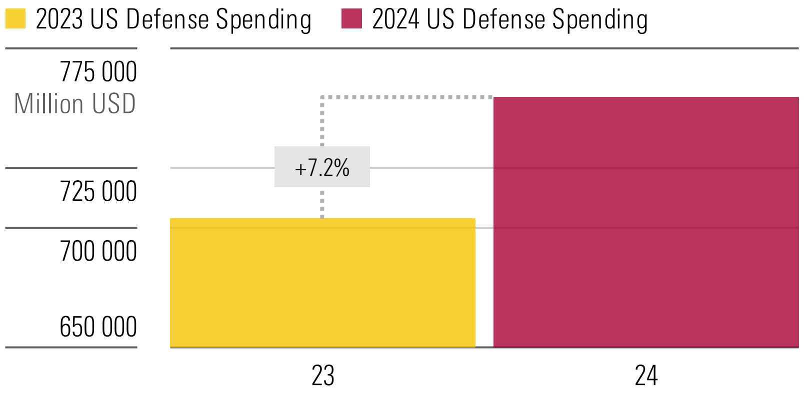
Inflation Pressures Defense Budgets

Inflation reduces spending power and the impact of budget increases. Russia's invasion of Ukraine further affected global supply chains already weakened by covid-19 effects. Real defense spending from 2021 to 2024 is 22% lower than nominal in the US, and 13% lower in Europe.

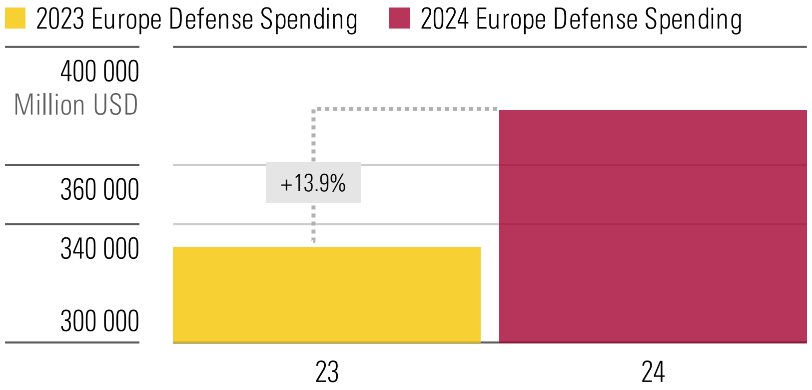
Inflation Drives Higher Interest Rates

High interest rates limit economic growth.

US Defense Spending 2024 Versus 2023, in Real Terms



Europe Defense Spending 2024 Versus 2023, in Real Terms



Global Tensions Offset Inflation Pressure

Despite inflationary pressures on government deficits and budgets, European defense spending is projected to grow by 13.9% in real terms between 2023 and 2024, while US defense spending is expected to increase by 7.2%

Source: SIPRI, Morningstar.

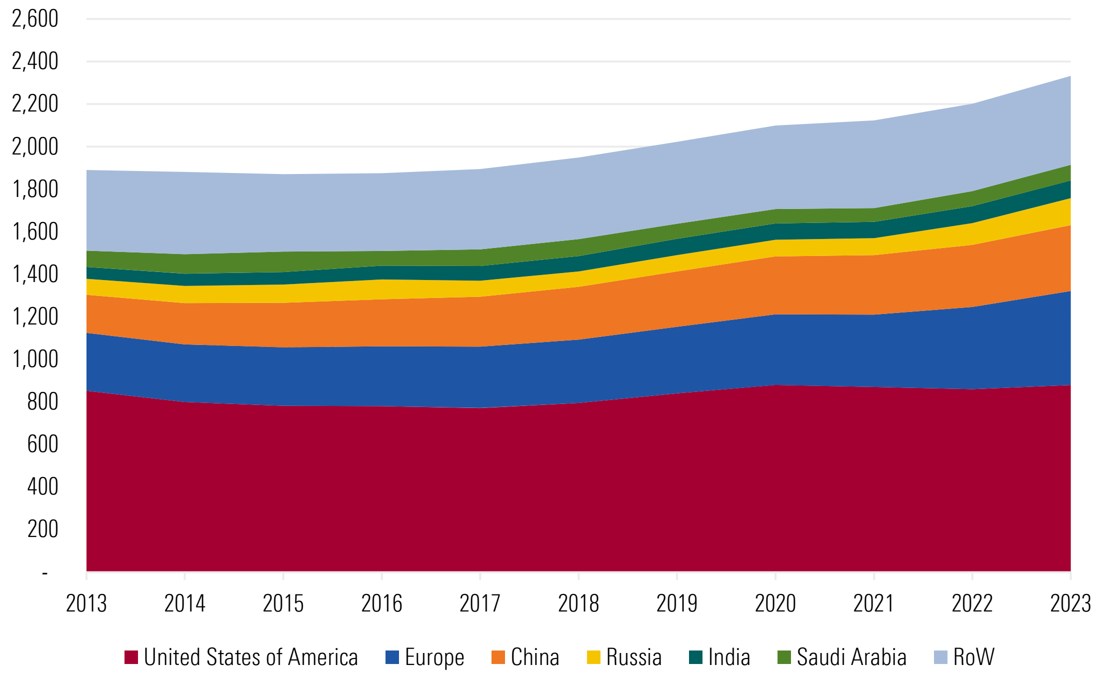
Industry Basics

U.S. Defense Led By Top Exporters; European Defense Faces Sustained Underinvestment

Global Real Defense Spending Expected to Increase by 12% Between 2022 and 2024, Driven Mainly by Europe and Russia

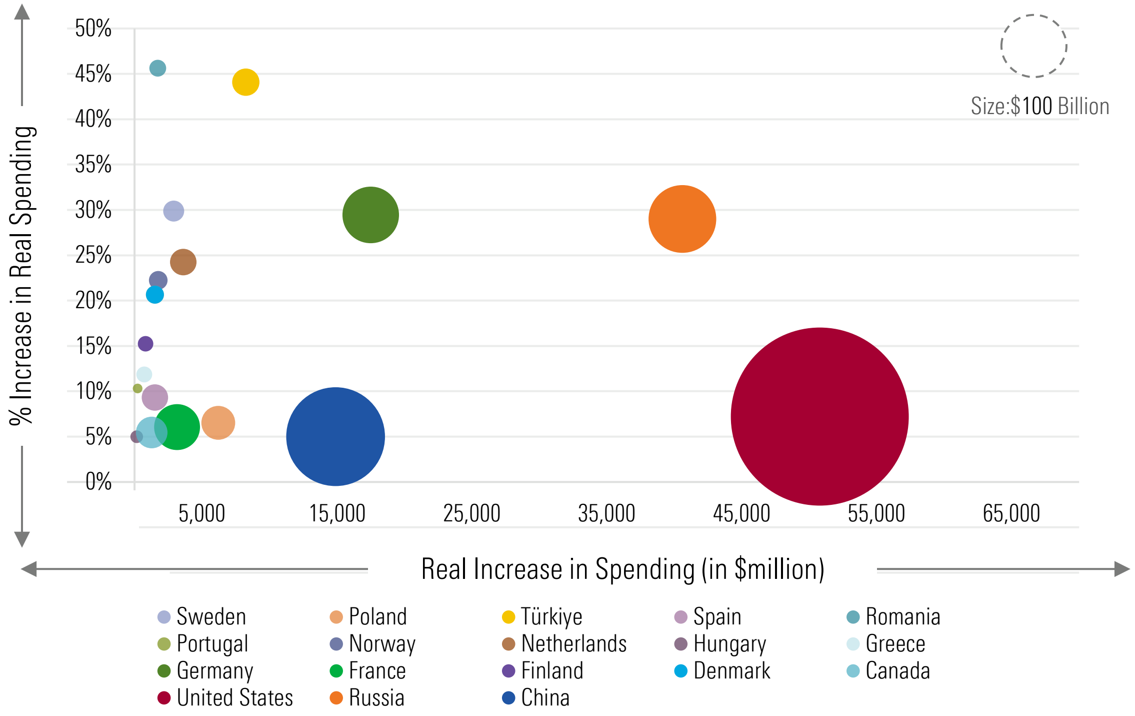
In 2023, global defense spending stood at around 2.4 trillion US dollars. The main contribution came from the US (38.4%), followed by the EU and China (with 13.2% and 12.4% respectively). As for individual countries, all the top 15 contributors increased their spending between 2022 and 2023, with the largest change recorded by Poland (a 106% increase) and Ukraine (a 57.2% increase). From 2021 to 2024, defense spending rose by 278 billion, with the US being the largest contributor to this change (51.6%) followed by Germany and Poland (12.8% and 7.1%, respectively).

Global Defense Spending 2013-23 (in USD Millions Constant Prices and Foreign Exchange)



2024 Defense Spending and Growth Projections for Selected European Countries

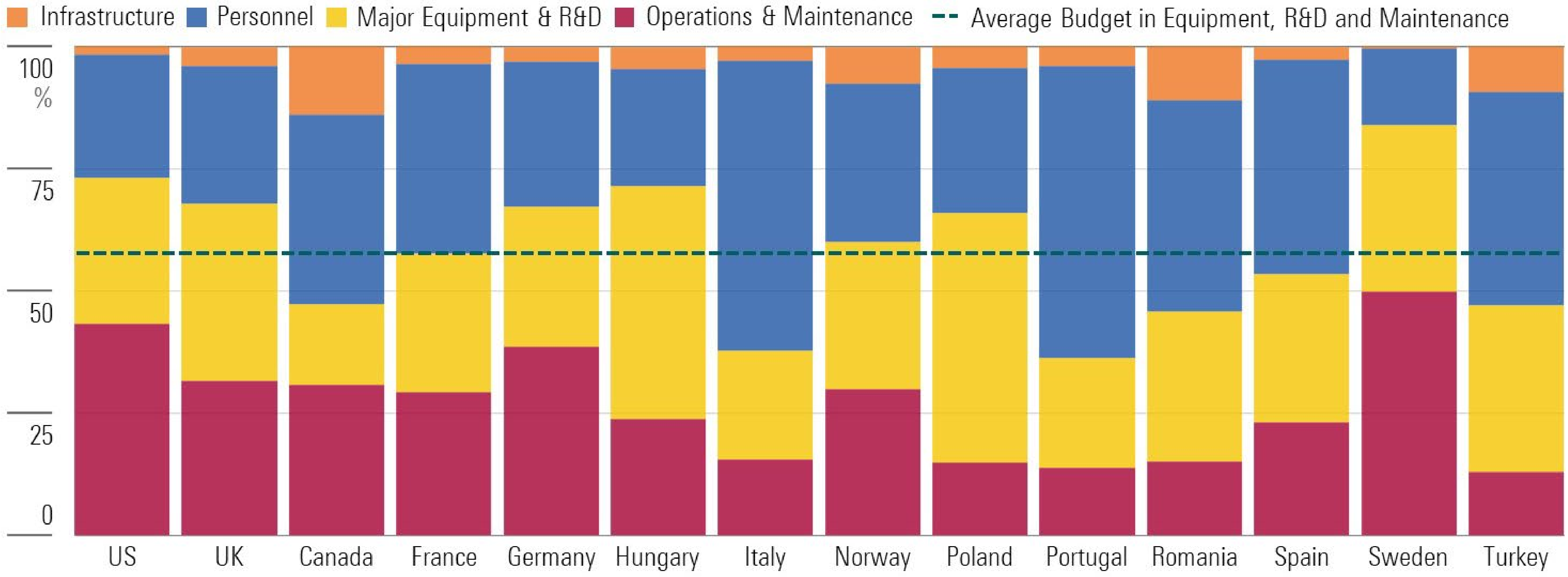
Bubble size represents total expected spending in 2024.



Source: SIPRI, Top 100 arms-producing and military services companies, 2022.

NATO Countries Allocate on Average 58% of Their Total Defense Budgets in Equipment, R&D, and Maintenance

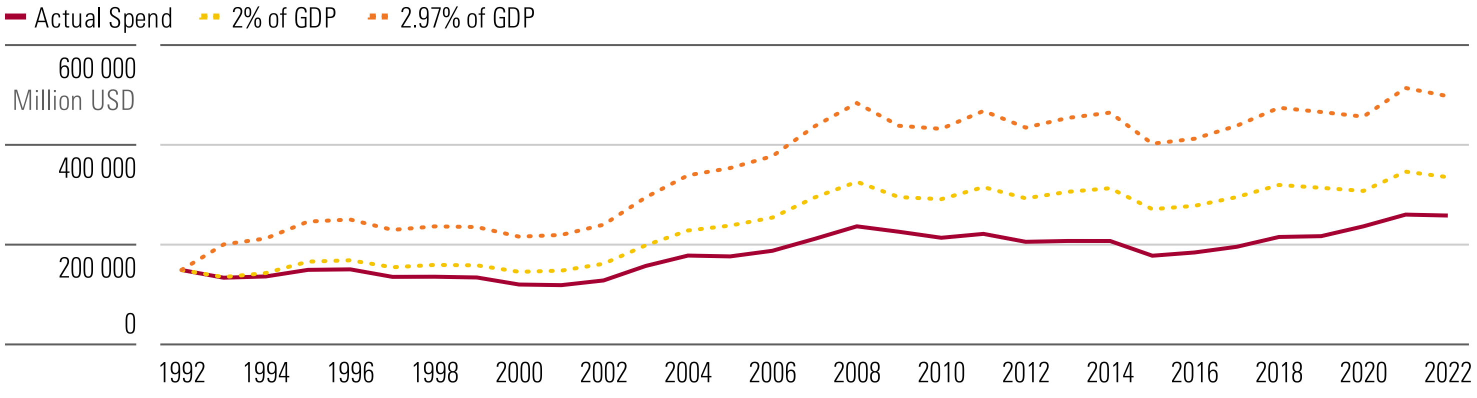
Main Categories of Defense Expenditure as a Percentage of Total Defense Budget for Selected NATO Countries in 2024



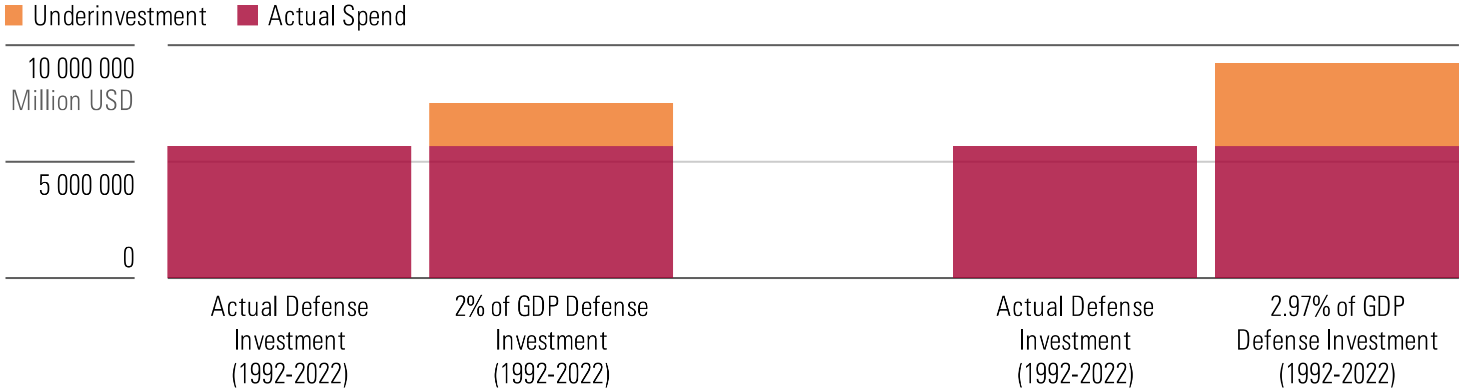
Source: NATO.

Europe's Current Investments Might Still Fall Short for Past Underinvestment

European Defense Underinvestment From 1992 (USD Millions)



Cumulative Investment Gap From 1992 to 2022 (USD Millions)



European Defense Underwent 30 Years of Underinvestment

During the Cold War, European nations typically spent about 3% of their GDP annually on defense. This changed in 1992, when the perceived threat decreased with the Soviet Union's collapse, leading many countries to significantly cut their defense budgets and reallocate funds to social programs.

In 2014, following Russia's annexation of Crimea, NATO allies committed to spending at least 2% of their GDP on defense and dedicating over 20% of their defense budgets to new equipment and R&D. Despite this commitment, most countries have consistently failed to meet these requirements.

Peace Divided Has Resulted in $1.8 Trillion Underinvestment

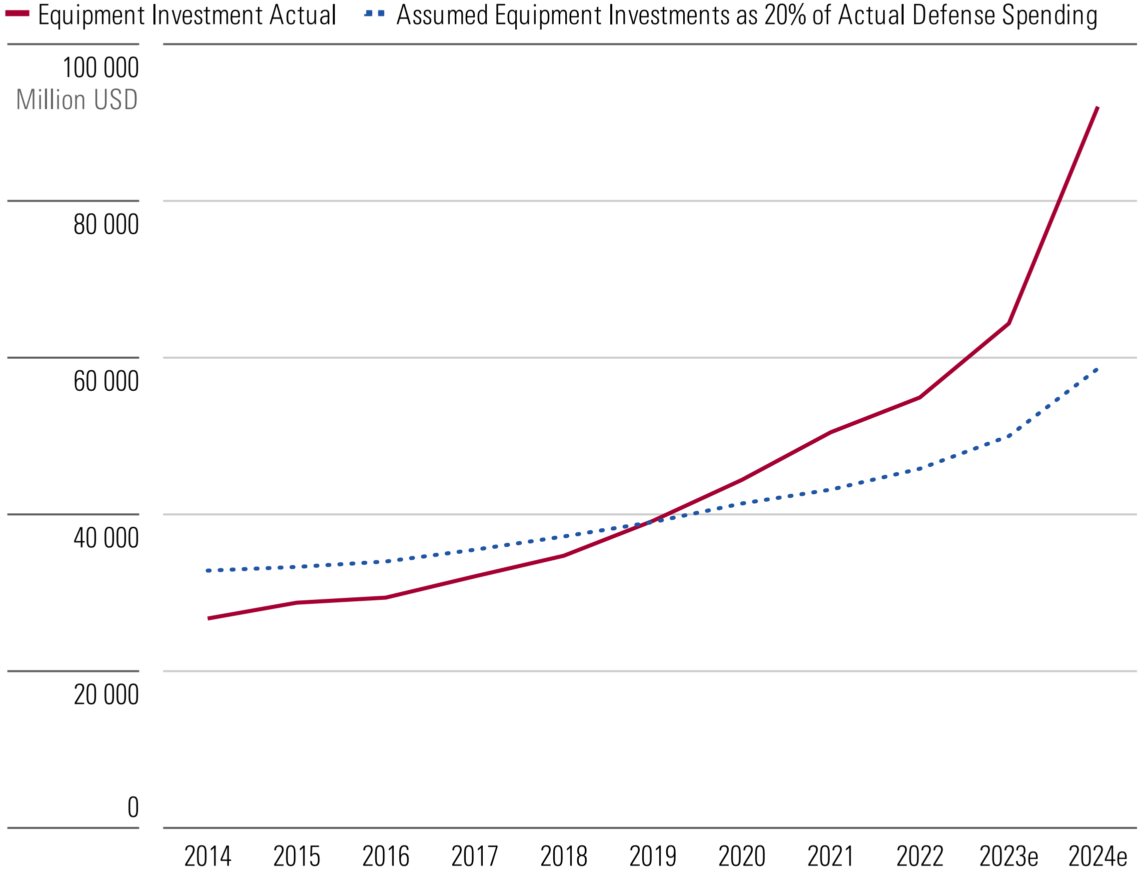
The historical underinvestment in defense is formally known as the Peace Dividend. From 1992 to 2022, European countries spent approximately $5.7 trillion on defense, 49% less than what would have been spent if they had maintained their average Cold War expenditure rates. When comparing this actual expenditure with a scenario where 2% of GDP was consistently spent on defense, the resulting peace dividend totals $1.8 trillion, marking a 25% reduction.

Source: NATO, July 2023, SIPRI, Morningstar.

European Defense Spending Exceeds 20% Equipment Allocation, Yet Insufficient to Mitigate Peace Dividend Effects

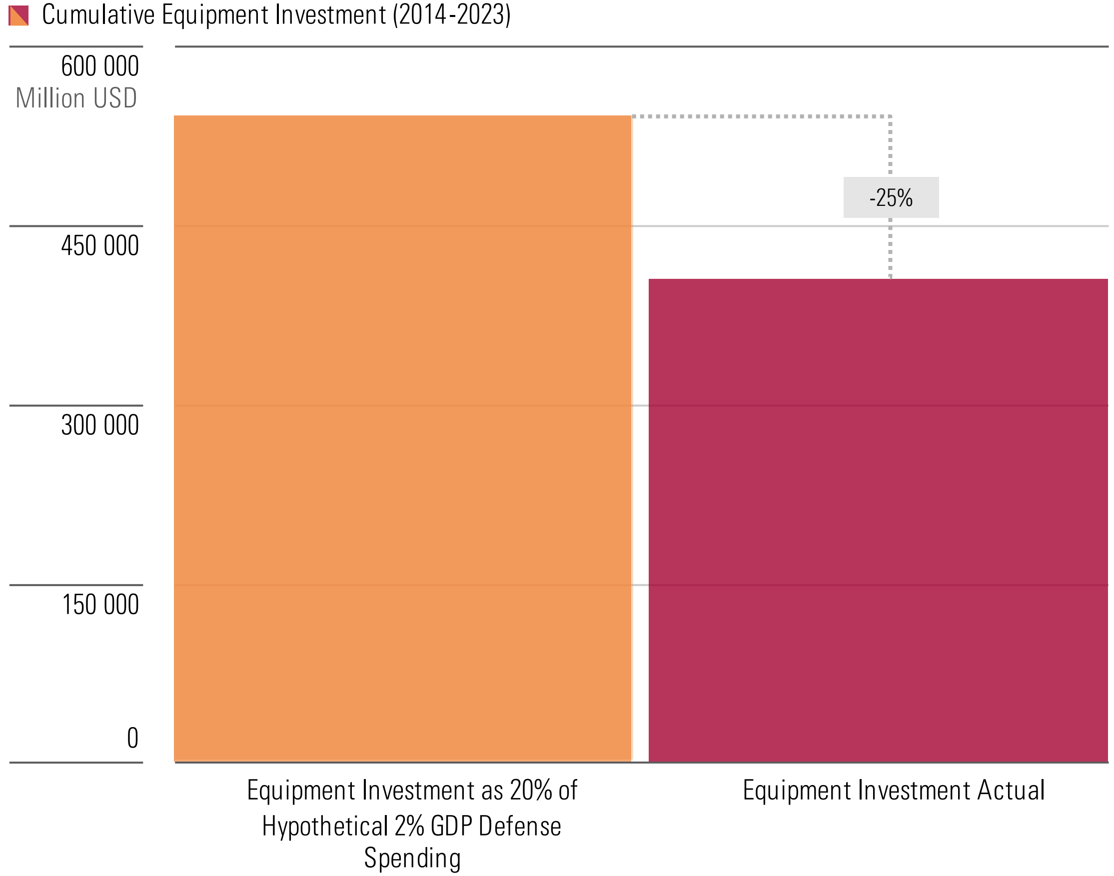
European Equipment Defense Investments (Constant 2015 prices)

European equipment spending has averaged 28% of total budgets in the past four years.



Equipment Investment: Actual Versus Assumed Without Peace Dividend Since 2014

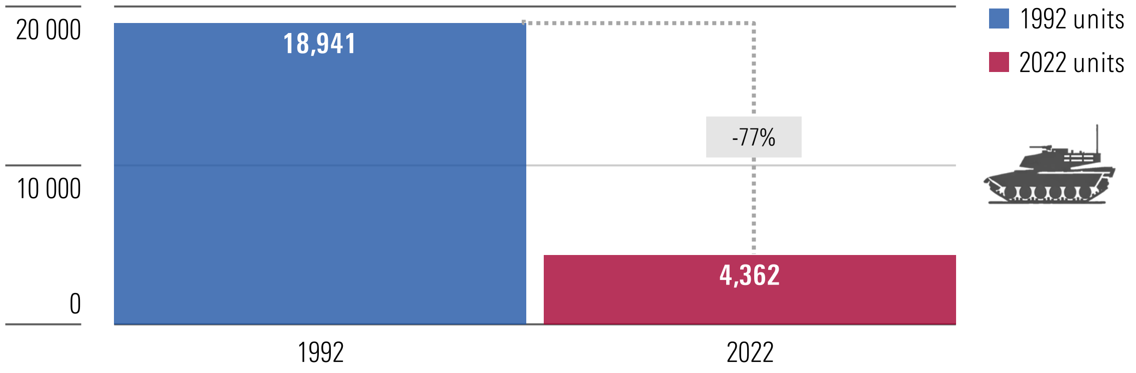
Cumulative equipment gap amounts to $136 billion (in constant 2015 prices).



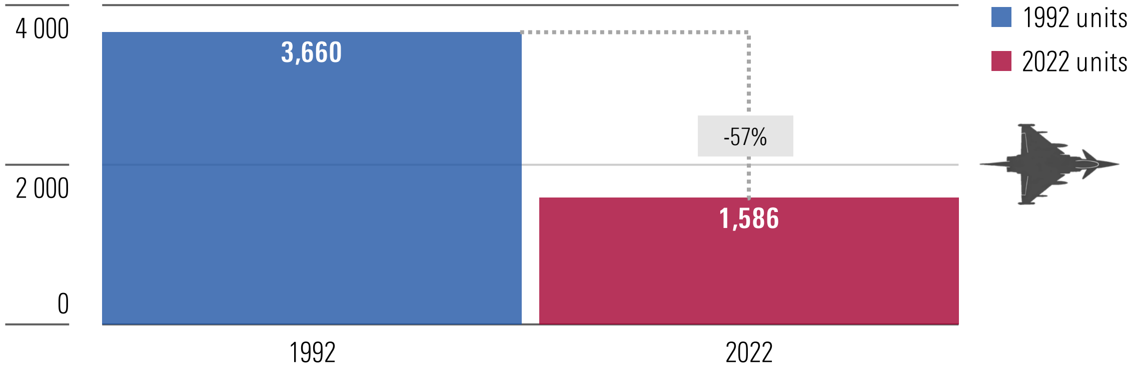
Source: SIPRI, NATO, Morningstar.

Peace Dividend Led to Substantially Lower Inventory in European Defense Platforms, Compared With Cold War

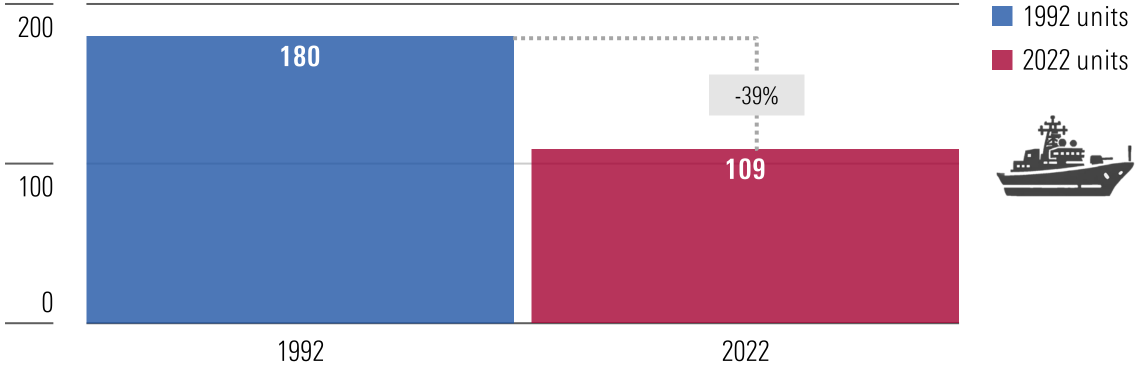
Main Battle Tank Inventory Levels in Selected European Countries (in Units)



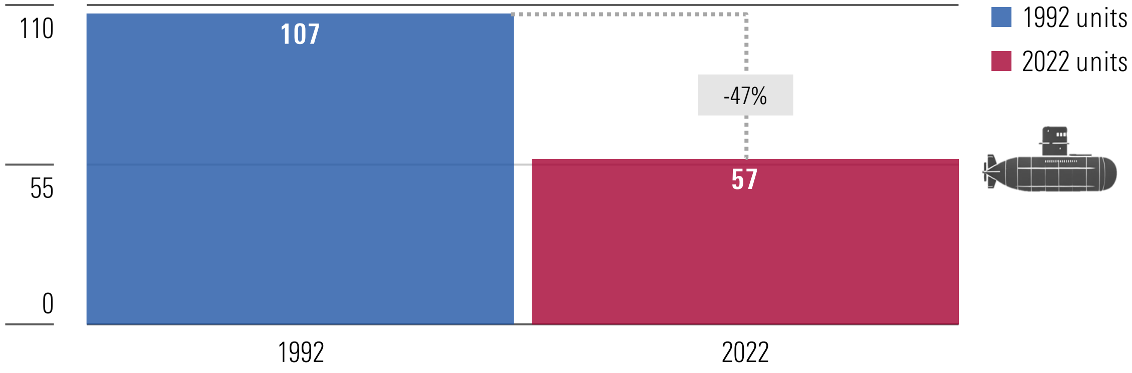
Fighter Aircraft Inventory Levels in Selected European Countries (in Units)



Large Surface Combatant Inventory Levels in Selected European Countries (in Units)



Submarine Inventory Levels in Selected European Countries (in Units)



Source: McKinsey's analysis of data from The Military Balance 2023 by The International Institute for Strategic Studies.

US Technological, Industrial Base Concentrated Among Few Companies; European Base Concentrated Across Few Countries

Comparative Analysis of Defense Industry Policies and Market Dynamics Across US and Major European Countries

The top seven EU countries hold about 80% of the relevant DTIB[1] capacities. We estimate US government absorbs about 80% of national production, compared with about 45% for EU governments.

	Country	🇺🇸	🇬🇧	🇩🇪	🇫🇷	🇵🇱	🇮🇹	🇪🇸	🇸🇪
Demand	Procurement policy	Buy domestic	Domestic preferred	Buy domestic	Buy domestic, but build European supply chains	Buy domestic	Buy domestic	Domestic preferred	Selective buy domestic
Demand	Average market absorption rate[2]	75%-85%[3]	57%	40%	40%	40%	30%	>80%	50%
Demand	Government influence over industry	Very High	Medium	Very High	Very High	Very High	High	Medium	High
Demand	Equipment Turnover 2023 (Euro Billions)[4]	274	27	19	17	16	8	6	3
Supply	Capabilities range	Very High	High	Very High	Very High	Medium	Medium	Low	Medium
Supply	DTIB structure	Concentrated, few prime companies	Dispersed, many major companies, highly internationalized	Dispersed, many medium companies, national duopolies	Dispersed, many major national champions	Concentrated, one prime contractor, highly internationalized	Concentrated, few prime companies	Concentrated, few prime companies	Concentrated, one prime contractor, many medium companies
Supply	National primes/distribution	Lockheed Martin RTX Northrop Grumman General Dynamics L3Harris Technologies	BAE 40%-46% of national procurement	Rheinmetall, Airbus KMW, Diehl, TKMS	Thales, DCNS, Dassault, Airbus, Nexter	Bumar	Leonardo	Navantia INDRA	Saab 60%-65% of national procurement
Supply	Export ranking SIPRI[5]	1	7	5	2	13	6	9	14

Very High | High | Medium | Low

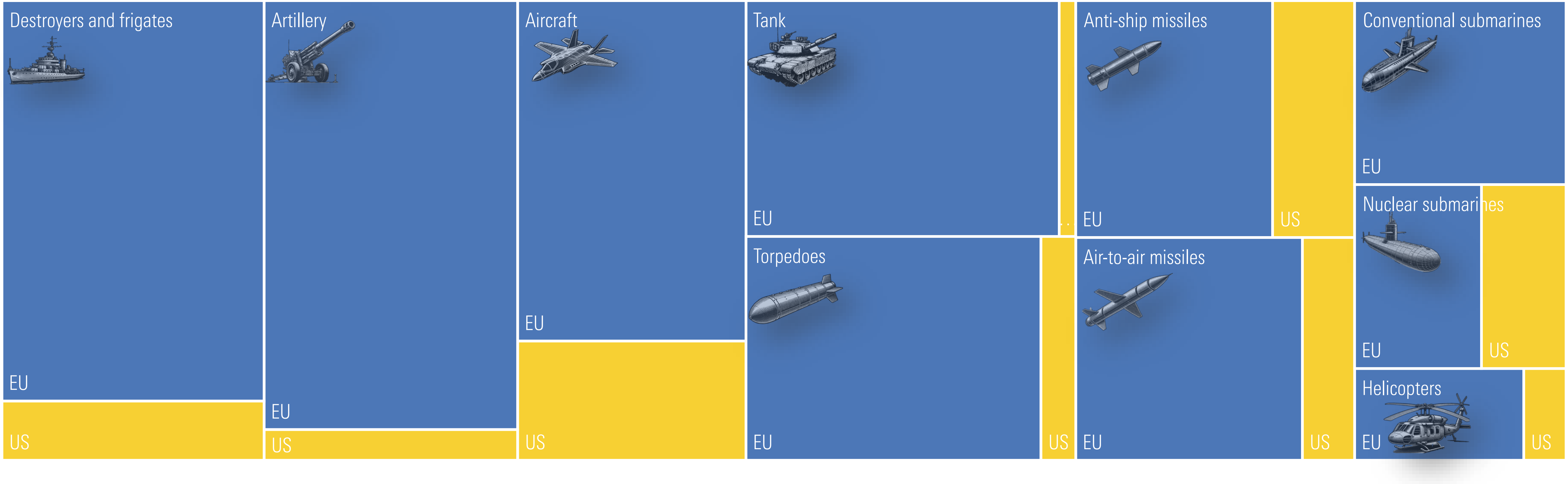
Source: Directorate-General for External Policies, Morningstar.

Notes: (1) DTIB: Defense Technological Industrial Base. (2) Percentage of national production absorbed by the national market, indicating the dependency of the national industry on it. (3) Morningstar estimates. (4) Equipment Turnover: Morningstar estimates based on SIPRI data. (5) SIPRI: Stockholm International Peace Research Institute.

However, National Armament Industries and Procurement Strategies Lead to Fragmented Platform Landscape in Europe

Europe's defense spending is highly fragmented, with 179 weapon systems compared with just 33 in the US, which increases complexity and cost. Despite spending half of what the US does on defense, fragmentation dilutes the impact, making it less efficient and less effective in achieving cohesive strategic objectives. In US, the number of defense prime contractors had shrunk from 51 to fewer than 10 Since the Cold War. Many segments of the US defense market are controlled by companies with monopoly or near-monopoly positions.

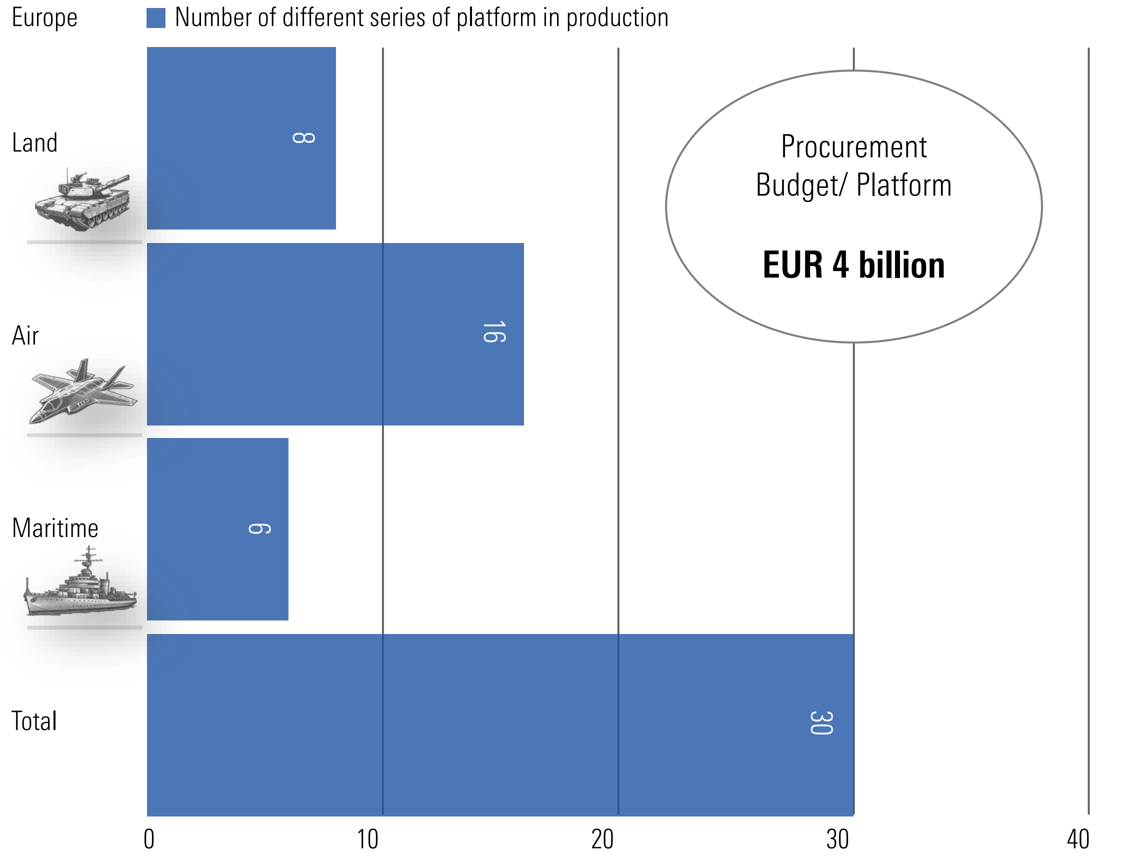
Different Weapon Systems for Selected Platforms, US Versus Europe (Box Size Represents Total Number of Systems)



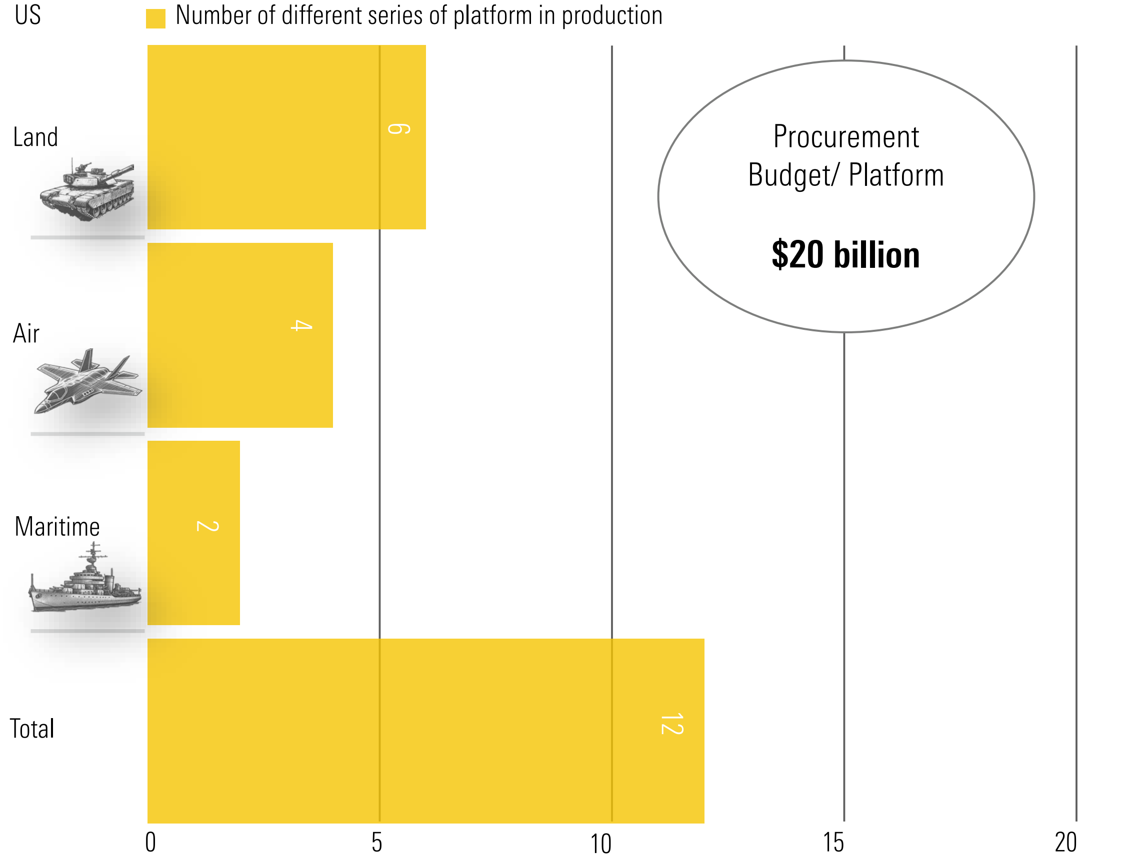
Source: McKinsey analysis leveraging The Military Balance 2023 Report; Morningstar.

Europe's per Platform Budget Is Only One Fifth of the US', Despite Investing Half as Much in Total Defense Equipment

Europe Procurement: Number of Platforms and Budget per Platform in 2023
Total equipment budget in 2023 was around EUR 110 billion.



US Procurement: Number of Platforms and Budget per Platform in 2023
Total equipment budget in 2023 was around $250 billion.



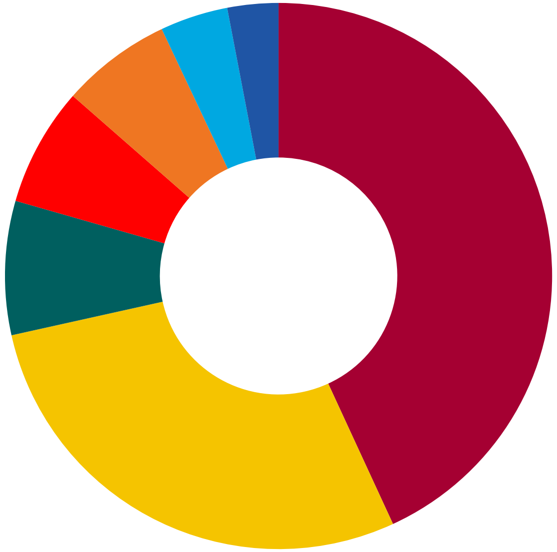
Source: Leonardo capital market day, 2023.

US Is Highly Self-Sufficient in Hardware Procurement; Europe Exports Are Slightly Higher Than Imports

The United States is the largest global exporter, with export volumes about 20 times the volume of military hardware it imports. Europe is the second largest region for exports, with few countries dominating the market.

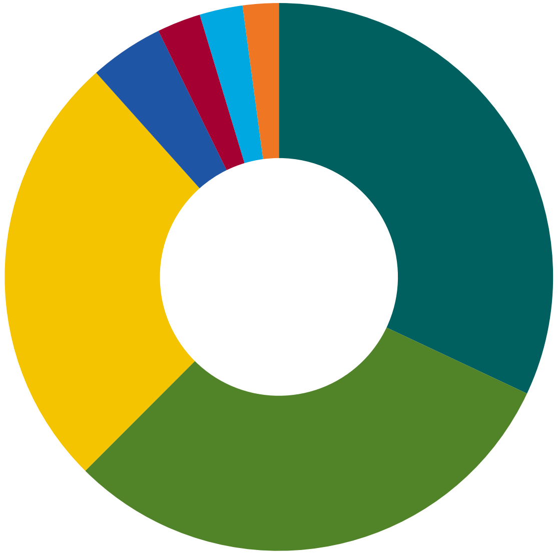
From 2021 to 2023, the Middle East and Asia were the primary importers of arms, predominantly sourcing from the US and European nations. Europe was the third largest importer, with most of the imports from the US.

Share of Global Arms Exports by Region, 2021-23 (Volumes in Billions, SIPRI TIV)



Country	%
US	43.13
EU	28.39
RoW	7.92
Russia	7.02
China	6.52
UK	4.01
Israel	3.01

Share of Global Arms Imports by Region, 2021-23 (Volumes in Billions, SIPRI TIV)

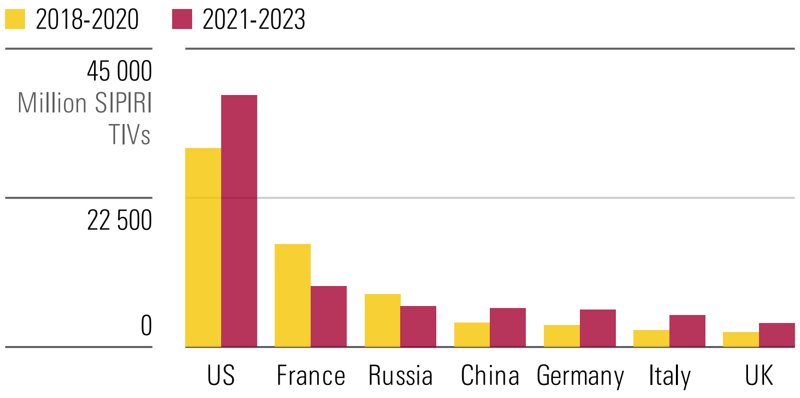


Country	%
Asia and Oceania	32.00
Middle East	30.48
Europe	25.91
Africa	4.37
United States	2.58
Americas	2.54
China	2.12

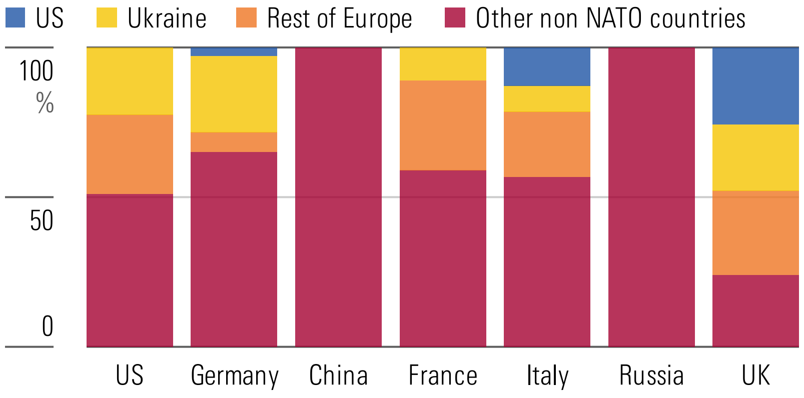
Source: SIPRI, Morningstar.
Note: Figures expressed in millions of SIPRI trend-indicator values, which is a measure of the volume of international transfer of major arms.

Exports Concentrated Among Few Countries and Growing Share of US Off-the-Shelf Equipment

Top Six Exporters of Major Arms, 2018-20 Versus 2021-23

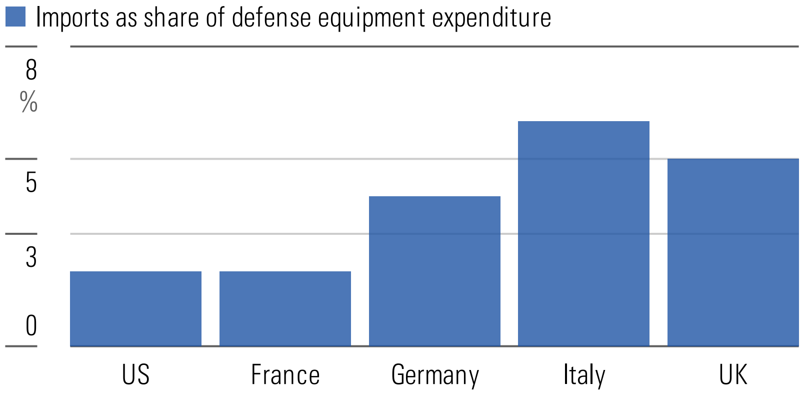


Distribution of Exports of the Top Six Exporters in 2021-23

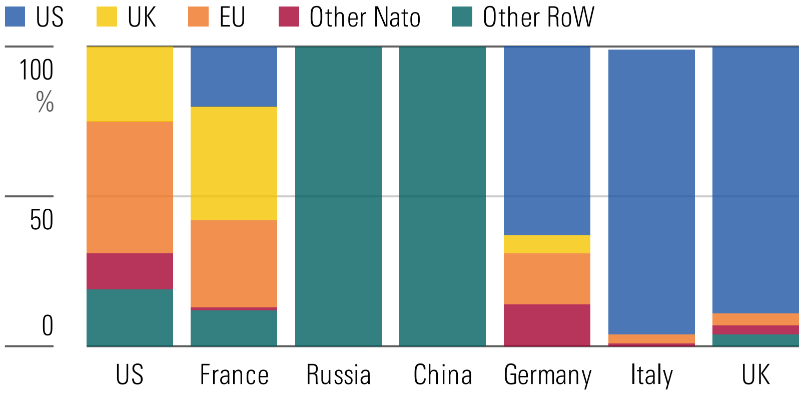


- The Top 6 Regional exporters account for around 80% of total Global exports
- Around 50% of US exports are to Europe, including 24% to Ukraine. The top four European DTIB*, dominate the European export market
- Most of exports from European countries were to non-European destinations
- China and Belarus are Russia's top importers; Pakistan is China's largest.

US and European DTIB Share of Equipment Imports



Import Distribution of Leading Global Exporters (2021–23)

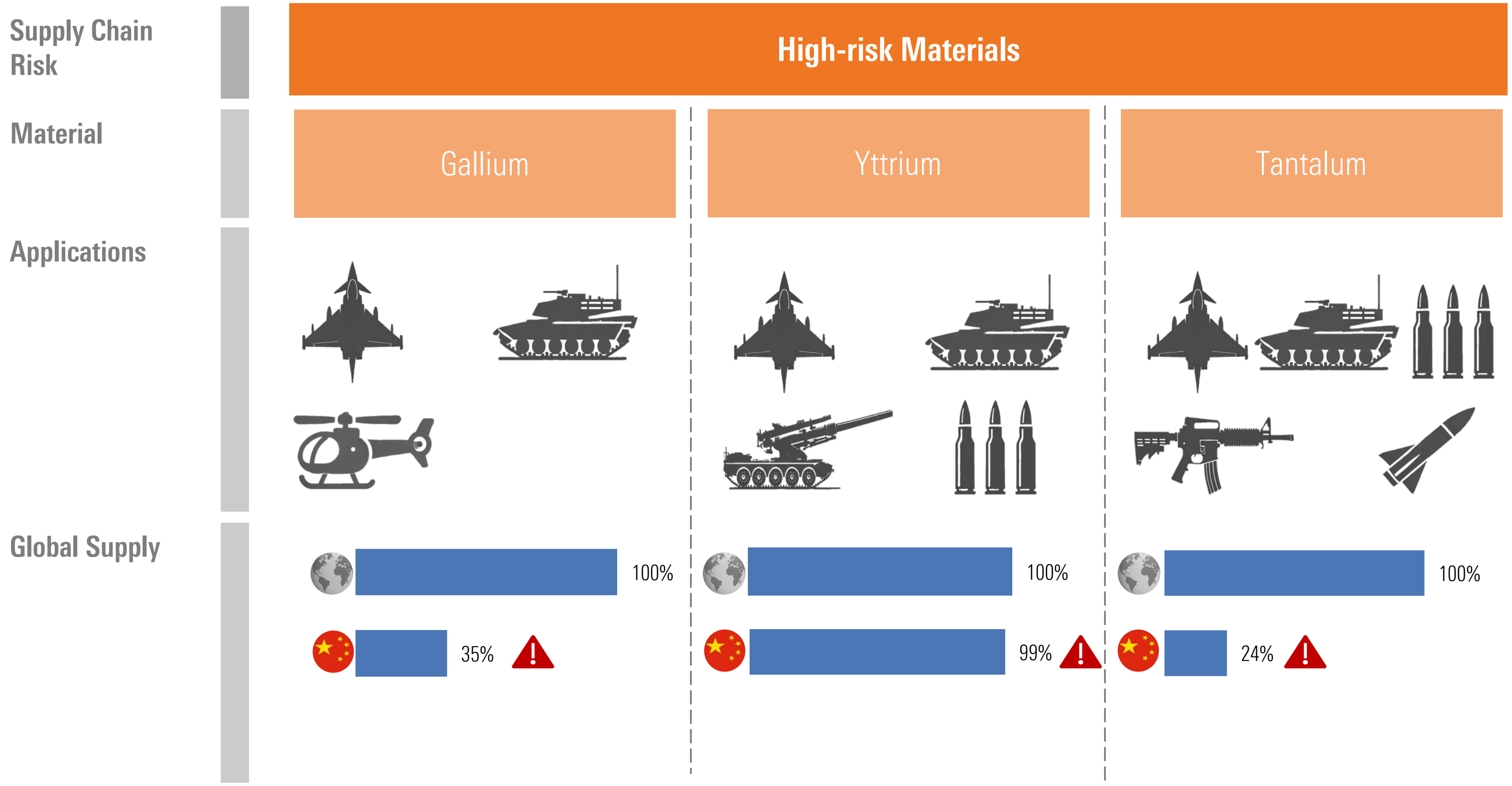


- Except for France, the other European DTIB* relied on US imports for more than 60% of their imports. Imports from other European countries represented only 3% of total imports for Italy, 4% for U.K., and 23% for Germany, with only France achieving the EDIS suggested threshold of 50% intra-Europe procurement

Source: EDIS: European Defence Industrial Strategy, SIPRI, Morningstar.
Notes: DTIB: Defense Technological Industrial Base.

US Supply Chain, While Self-Reliant on Equipment, Faces Dependency Risks for Critical Raw-Material Imports

Material Identified as High Risk in the US Defense Supply Chain



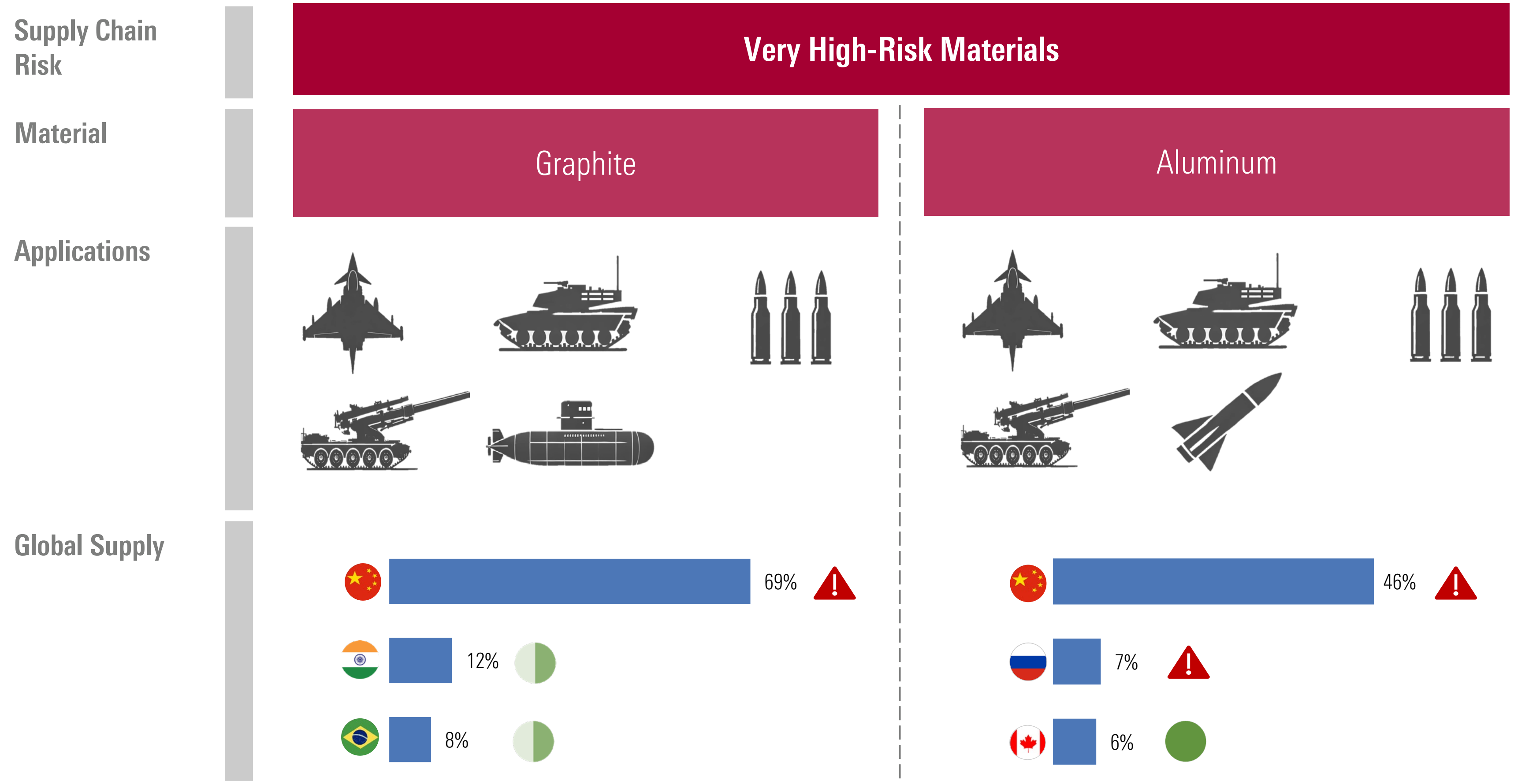
Dependency on China, Single-Source Suppliers
The US is highly reliant on imported critical materials, creating vulnerabilities in its supply chain, especially given China's dominance in production. This dependency gives China leverage to disrupt supply in case of geopolitical tensions. Additionally, relying on single-source suppliers heightens the risk of shortages.

Defense Preparedness, Stockpile Concerns
In emergency scenarios, the demand for critical materials spikes, exacerbating shortages and limiting the defense sector's ability to respond. The National Defense Stockpile (NDS) is designed to buffer these potential shortages but is underfunded and unable to hold adequate reserves of certain critical materials.

Source: Worldbank Comtrade, Morningstar.

European Supply Chain Faces Very High Dependency Risks for Critical Processed Material Imports

Material Identified as Very High Risk in European Defense Supply Chain



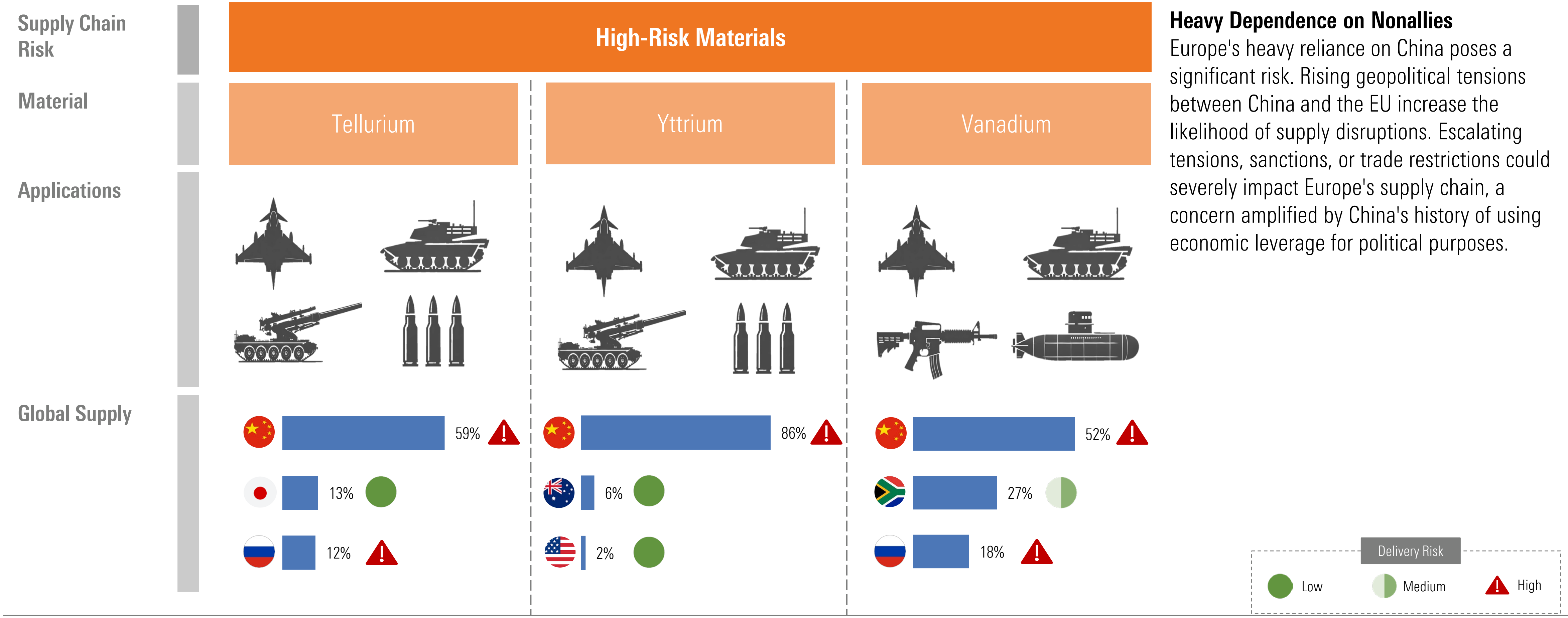
The air domain is the most vulnerable
Air domain, including aircraft, missiles, and air defense systems, rely heavily on all the identified high-risk materials, making this domain particularly exposed to geopolitical risks and supply chain disruptions.

Aluminum and graphite identified as "Very High-Risk" These materials are the only two considered "Very high-risk" due to the likelihood and impact of supply chain disruptions. Supply shortages and price volatility risk due to rising global demand driven by defense needs and the energy transition. Additionally, aluminum's energy-intensive production process makes it highly sensitive to energy price fluctuations, further threatening supply stability.

Source: The Hague Center for Strategic Studies, European Union European Defence Industrial Strategy, Morningstar.

There Are Also High Dependency Risks for Critical Raw-Material Imports in European Supply Chain

Material Identified as High Risk in the European Defense Supply Chain



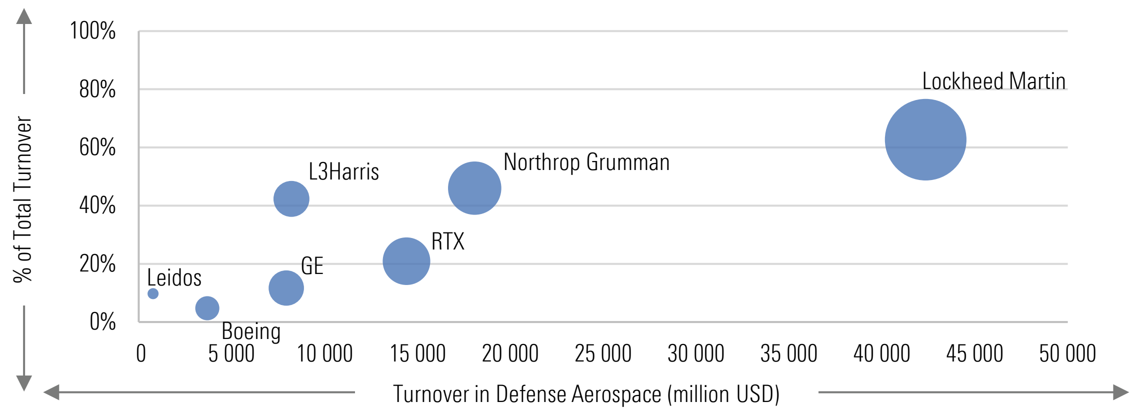
Heavy Dependence on Nonallies

Europe's heavy reliance on China poses a significant risk. Rising geopolitical tensions between China and the EU increase the likelihood of supply disruptions. Escalating tensions, sanctions, or trade restrictions could severely impact Europe's supply chain, a concern amplified by China's history of using economic leverage for political purposes.

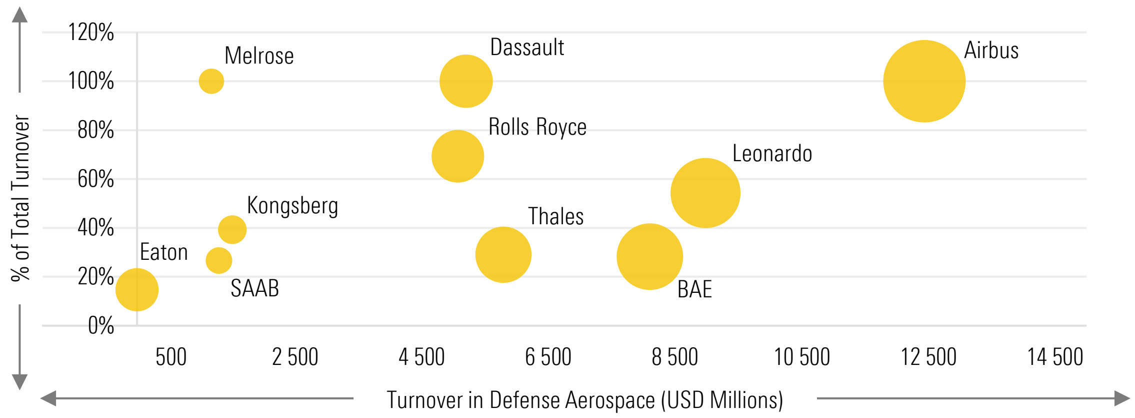
Source: The Hague Center for Strategic Studies, Strategic raw materials for defence: Mapping European industry needs, January 2023, European Union Defence Industrial Strategy, Morningstar.

Defense Aerospace Sector Leads in Turnover and Is Dominated by Few Diversified Key Integrators

US Aerospace: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Aerospace: Contractors' Relative Sector Size and Cross-Sector Diversification



The aerospace sector's industrial capabilities are considered essential for national security. Aerospace leads in turnover among US and European defense sectors, with $108.6 billion generated by the top US firms in 2023, and USD 59.6 billion generated by the top companies in Europe

Aerospace Sector Organized Around Few Key Integrators

Major Integrators are supported by a network of specialized manufacturers. In the US, there are 3 major integrators, including Lockheed, Northrop, and RTX. In Europe, the main contractors are BAE, Airbus, Dassault, Leonardo, and SAAB, primarily based in the UK, Italy, and France. Major European integrators such as BAE, Airbus, and Leonardo closely compete with their US counterparts regarding size and revenue. However, the most influential and largest aerospace players remain in the US.

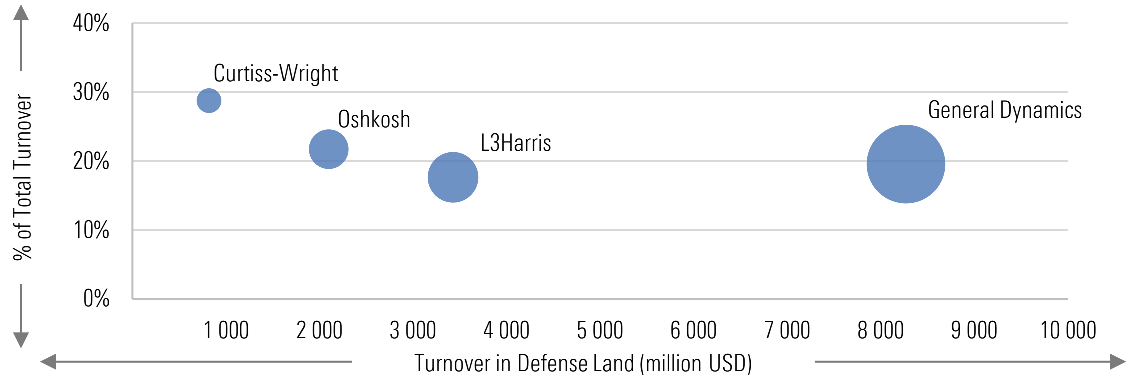
High Cross-Sector Diversification and Average Defense Dependence

In Europe and US defense companies participating in aerospace activities, have high cross-sector differentiation, with Airbus and Dassault as notable exceptions focused almost entirely on aerospace. The sector also boasts considerable portfolio diversification, averaging involvement in 4 subsectors, reaching up to 7, contrasting with US firms that typically cover 3.5 subsectors. Regarding defense dependence, European companies rely on defense, for about 50% of turnover is defense-related. Excluding Airbus and the engine OEMS Safran and Rolls Royce, the percentage increases to around 70%, with Saab and BAE Systems primarily focused on the military. The US sector is even less defense-dependent, with defense contributing 41% to total aerospace turnover

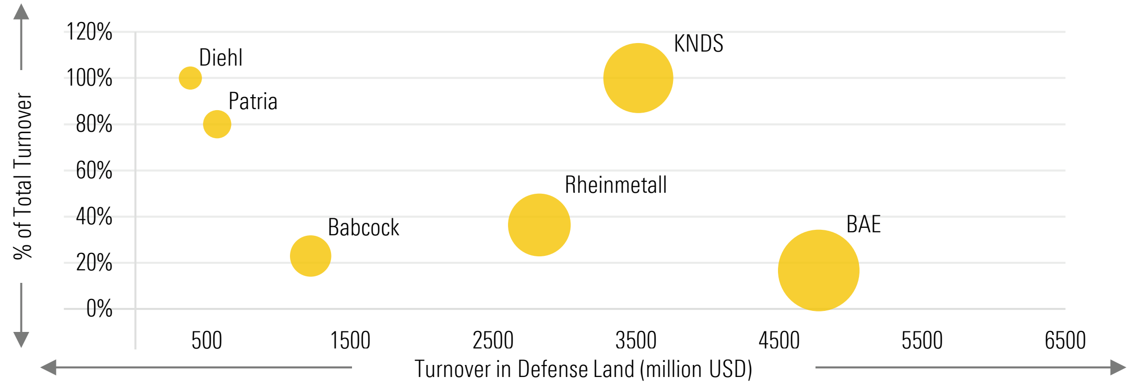
Source: European Parliament, Company reports, Morningstar

Land Sector Is Concentrated in US and Nationalized in Europe, With Limited Civil Applications and Low Player Diversification

US Land: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Land: Contractors' Relative Sector Size and Cross-Sector Diversification



The top US firms in this sector had a combined turnover of about USD 11 billion in 2023 with General Dynamic accounting for 74% of it. Top European firms' turnover was around USD 9 billion, with BAE Systems accounting for 54% of it

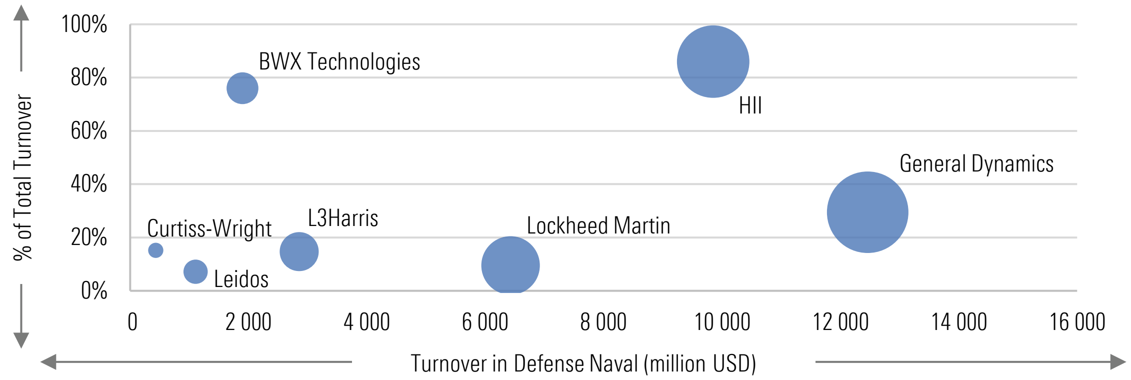
The Sector Is Highly Consolidated in US, while in Europe Remains Nationalized
The high fragmentation in Europe leads to a landscape of many companies that specialize in similar products but often do not compete directly due to national protections for domestic suppliers. The European land armament sector includes around a dozen key companies, mainly based in the UK, Germany, and France, with major players like BAE Systems, Rheinmetall, and KMW. Smaller companies, such as Patria contribute as system integrators.

Average Cross-Sector Diversification and High Defense Dependence
The sector is less diversified, with some companies like KNDS in Europe focusing solely on land systems, including land warfare equipment such as vehicles, small arms, and ammunition, while larger firms like General Dynamics, BAE and Rheinmetall cover a broader defense spectrum. This sector is not highly R&D-intensive, and civilian applications of military technology are limited, often involving adaptations of civilian platforms for military use rather than the other way around. In terms of dependency on defense contracts, the sector relies for almost its totality on defense spending

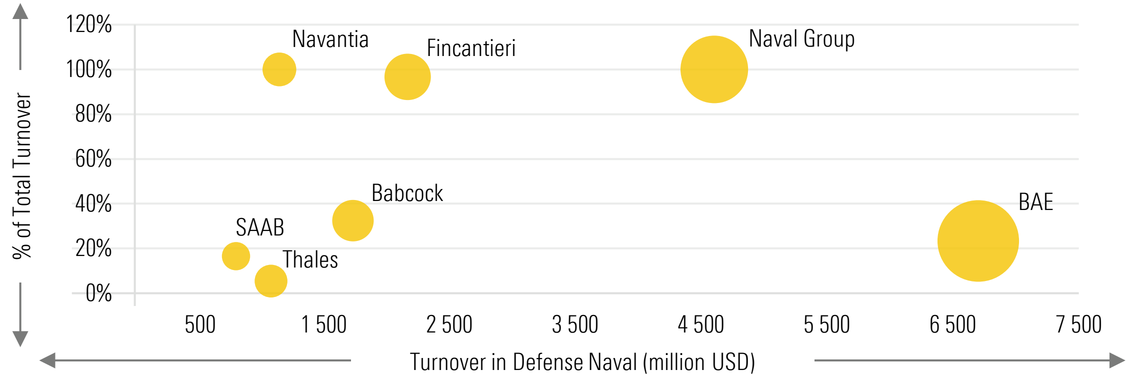
Source: European Parliament, Company reports, Morningstar

Naval Sector Features High Defense Dependence and Reliance on Smaller Specialized Suppliers

US Naval: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Naval: Contractors' Relative Sector Size and Cross-Sector Diversification



The naval sector is a critical part of a nation's defense infrastructure and is characterized by significant consolidation and specialization. Overall, the top US firms had a total turnover of USD 41.9 billion in 2023 , while the top European naval sector, had a turnover of USD 14.4 billion

High Cross-Sector Diversification and High Defense Dependence

The US has three major shipbuilders including General Dynamics and Huntington Ingalls Industries. Among the major players only Huntington Ingalls derives more than 50% of its revenues from naval, with the other highly diversifying across multiple subsectors. European naval majors, despite their influence, are relatively smaller compared to their global counterparts. These major firms are highly specialized in the naval sector, with most, like Naval Group, Navantia, and Fincantieri, dedicating 100% of their military activities to naval operations. BAE Systems, Kongsberg and Babcock are an exception, significantly diversified beyond the naval sector. Both the US and European naval defense contractors are heavily reliant on defense for almost the totality of their revenues, with few exceptions like Fincantieri in Europe.

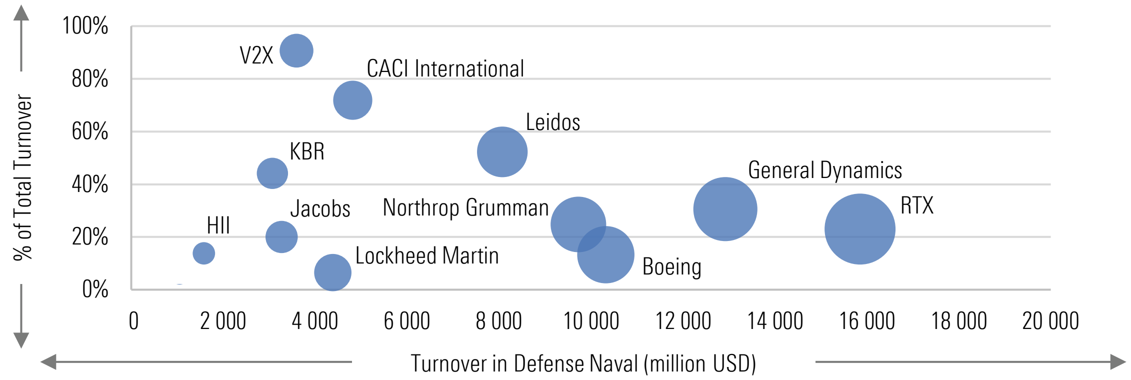
Military Ships Are Heavily Reliant on Smaller Specialized Suppliers

A distinctive aspect of the sector is the reliance on a diverse range of suppliers, including SMEs from various industries like electronics, weapons, and radars, which are integral to the construction of military vessels. For instance, combat systems—comprising electronics, navigation, and weapons—account for 60-70% of the total cost of military ships, as opposed to 20% on commercial ships.

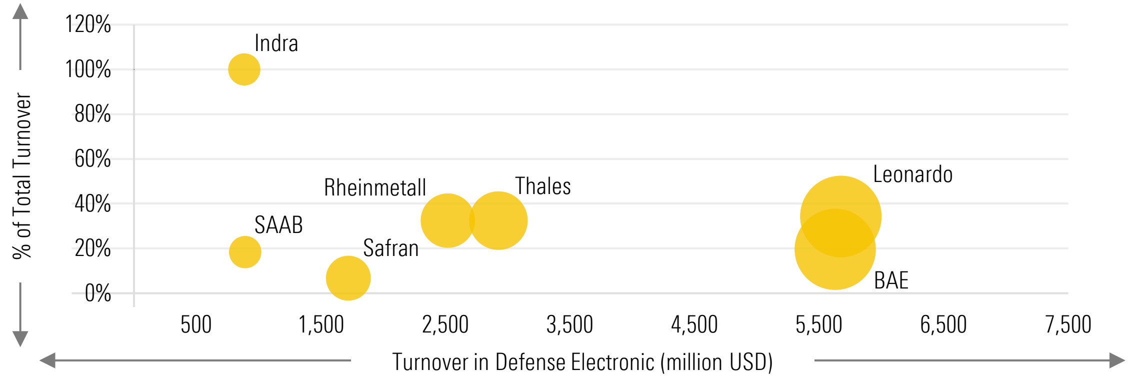
Source: European Parliament, Company reports, Morningstar

Electronics Sector Features Extensive Cross-Platform Diversification and Significant Dual-Use Opportunities

US Electronic: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Electronic: Contractors' Relative Sector Size and Cross-Sector Diversification



The European electronics sector is crucial within the defense industry due to its extensive use across all air, land and naval platforms, delivering high-quality products, including air defense systems, radar, sonar, avionics, and C4I systems

High Cross-Sector Diversification and Low Defense Dependence.
The major companies in this sector are not solely focused on military electronics but have diversified interests across different sectors, which helps them mitigate risk and stabilize revenue. Moreover, the electronics sector exhibits a low dependence on defense contracts compared to other areas, like naval or land systems, due to the significant dual-use potential of electronic products used in civilian and military applications. In Europe, defense revenues account for only 50% of the electronic segment revenues, while in the US, they account for around 40%

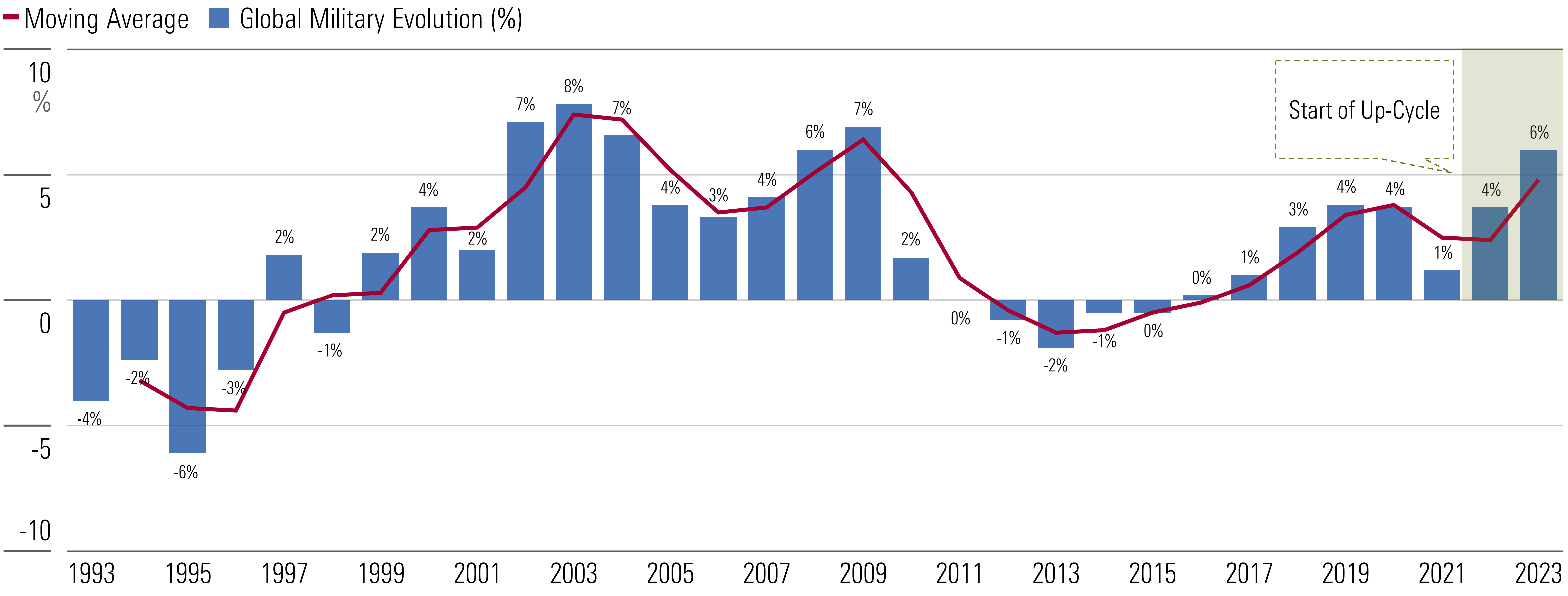
Source: European Parliament, Company reports, Morningstar

Industry Outlook

New Defense Supercycle Will Boost Revenue and Profitability in US and Europe

Defense Markets Are at the Initial Stage of a New Supercycle

Global Military Spending Evolution (%)



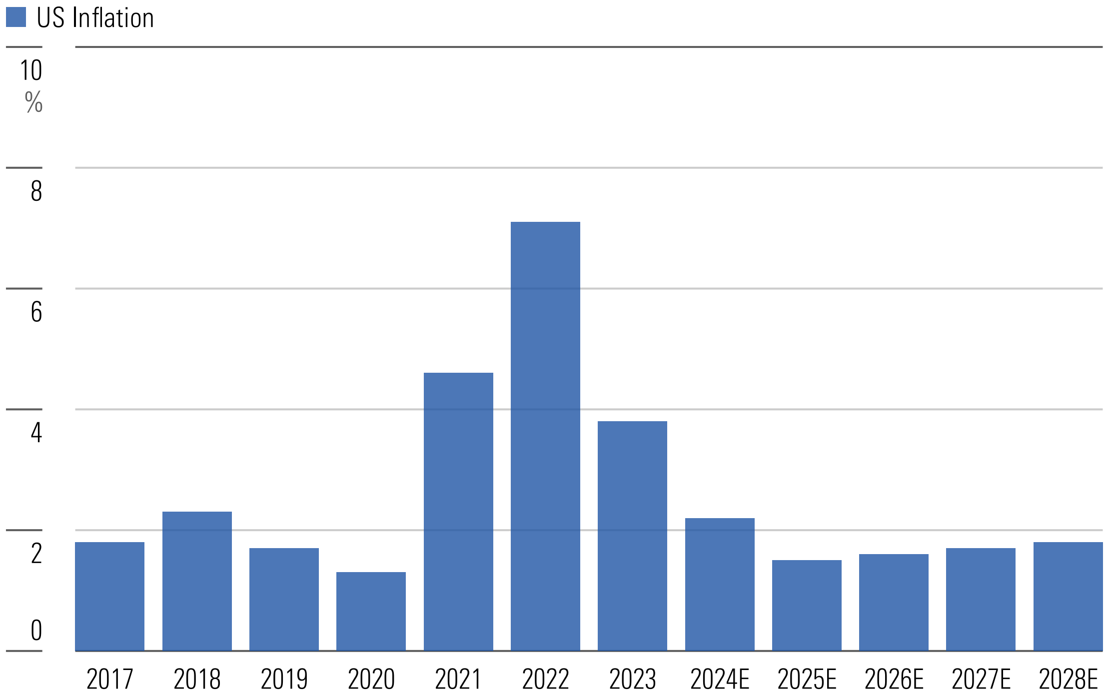
Source: NATO, Morningstar.

US Macroeconomic Drivers: Even as Inflation Stabilizes, GDP Growth Expected to Slow Down in the Midterm

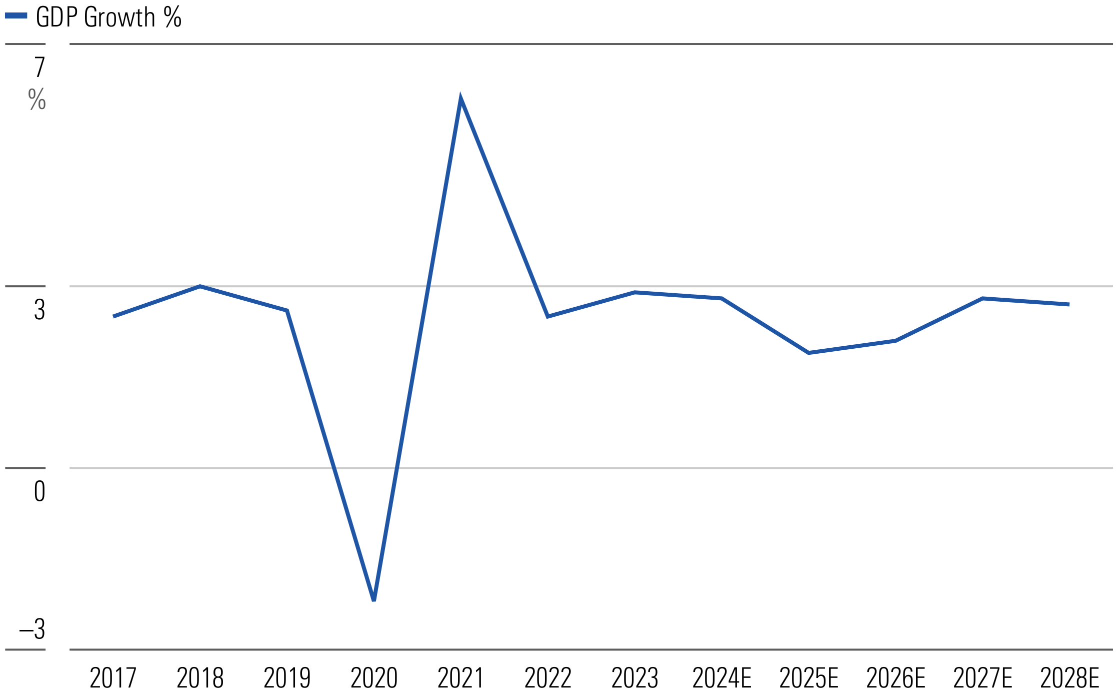
Inflation's peak in 2022 driven by strong consumer demand, tight labor supply, and disruption from Covid pandemic. High inflation puts pressure on defense spending and reduces its effectiveness. We expect Inflation to decrease as the global supply chain heals

Government spending is slowing as state and local surpluses have been spent down, and the boom in spending on manufacturing structures is leveling off. We expect GDP growth to slow to 1.6% by Q4 2025, with Fed's aggressive rate cuts spurring recovery by late 2025

US Inflation — Data From 2024 Are Morningstar Estimates



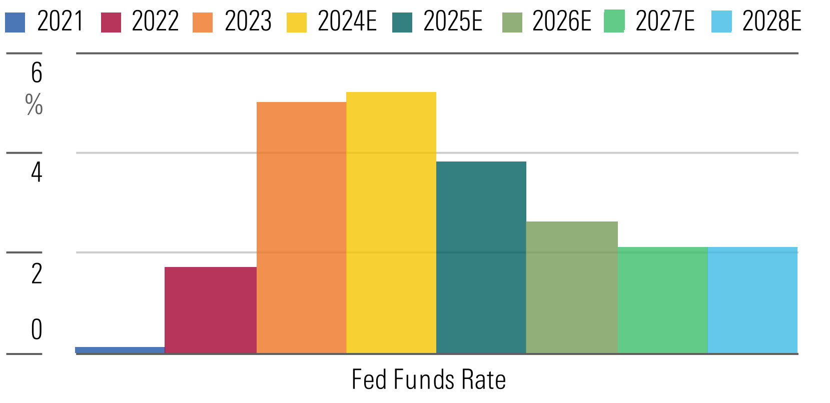
US Real GDP Growth — Data From 2024 Are Morningstar Estimates



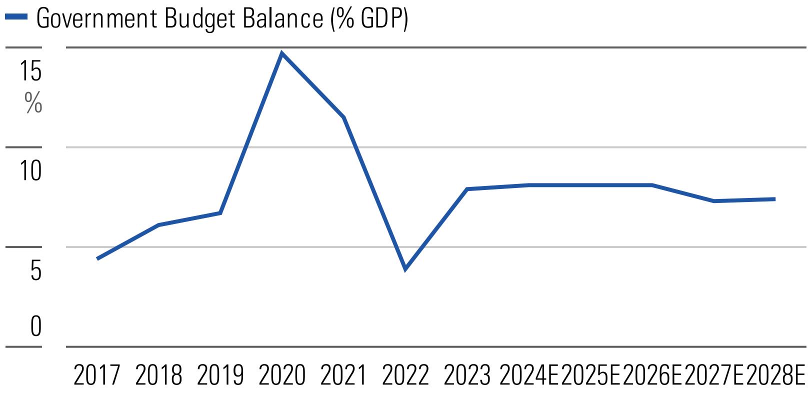
Source: Morningstar macro forecast.

We Anticipate Minimal Impact From Interest Rates and Shifts in Government Budgets on US, European Defense Spending

Fed-Fund Rate Projected to Fall 325 Basis Points by 2026-End

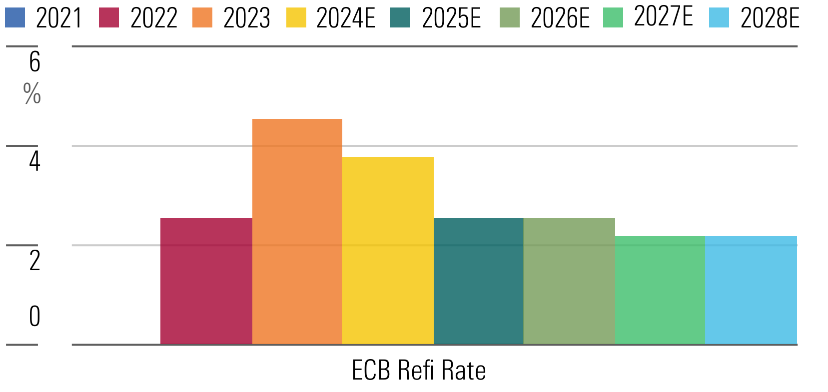


US Deficit Share of Real GDP Is Expected to Decrease

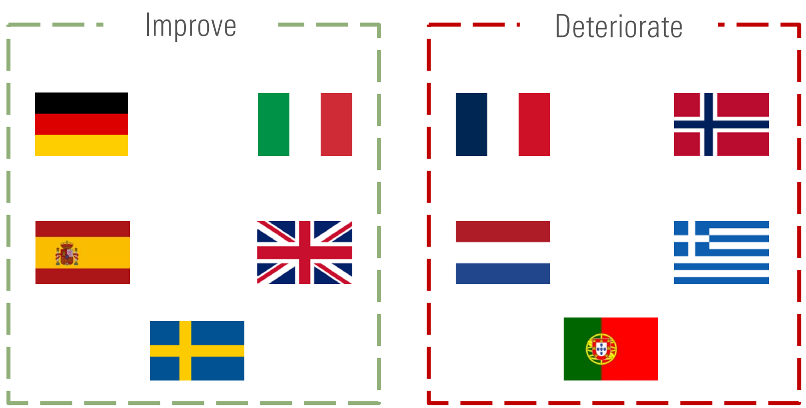


Despite rising national debt costs due to high interest rates, US defense spending has exceeded GDP growth since 2022. While we expect lower interest rates and reduced deficits, defense budgets will likely stabilize, aligning with GDP growth. Strategic priorities to enhance readiness in response to China's increasing assertiveness will likely sustain current spending levels. However, further significant increases are improbable due to fiscal constraints and already high defense allocations

ECB Refinance Rate Likely to Assess Around 2.15% by 2026



Mixed Outlook for European Budget Deficit



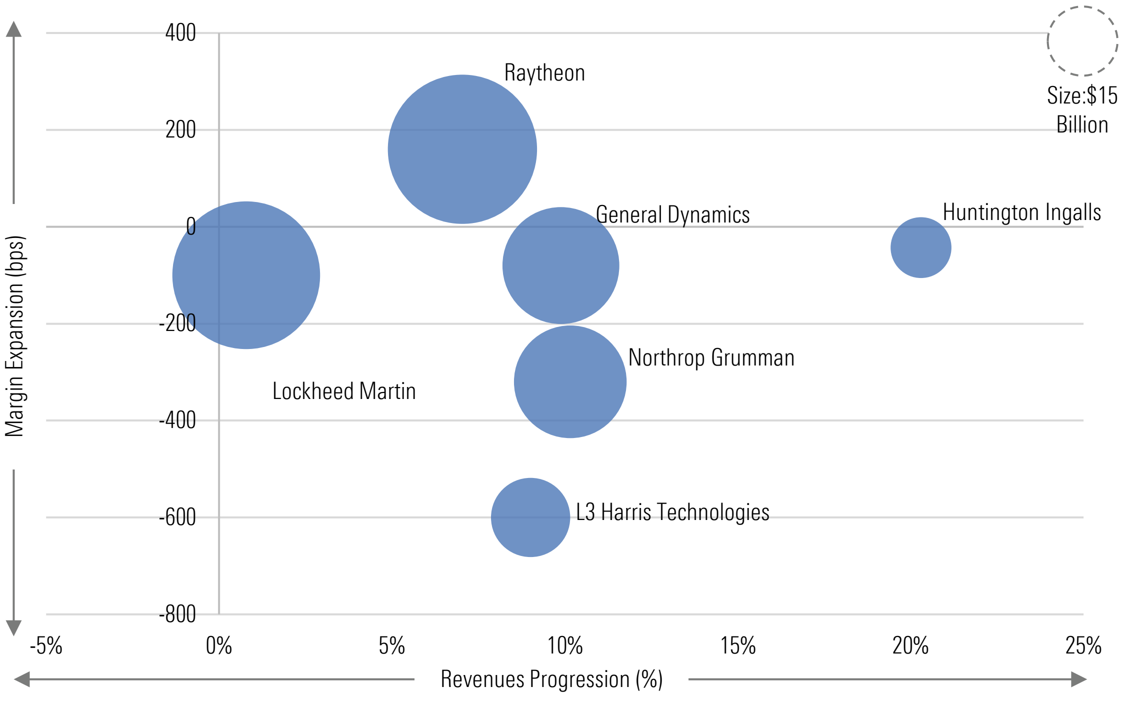
Given the urgency of the current geopolitical situation and the historical underinvestment in the European defense industry, we anticipate that defense budgets in Europe will remain insulated from cuts despite a mixed outlook for budget deficits.

Source: Morningstar macro forecast, International Monetary Fund.

European Contractors Already Benefiting From Defense Upcycle; Benefit for US Companies Are Materializing From 2024

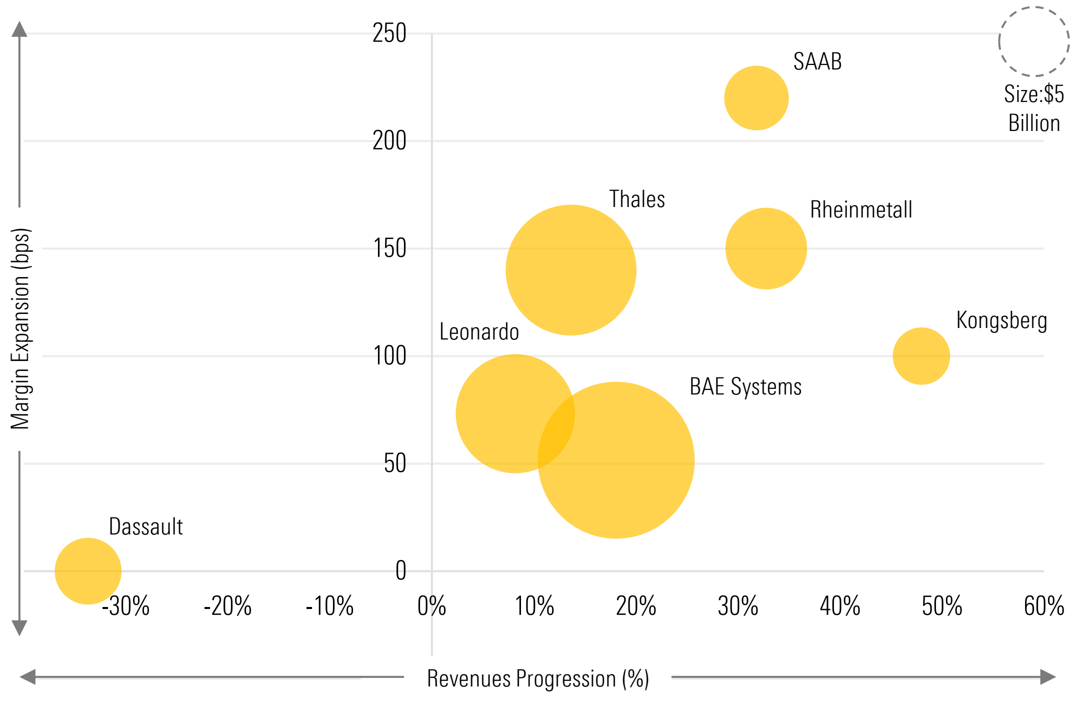
US Contractors Revenue and Margin Evolution, 2021-23

Bubble sizes represent 2023 revenue.



European Contractors Revenue and Margin Evolution, 2021-23

Bubble sizes represent 2023 revenue.



Defense spending increases made their way into prime contractors' top line, but a combination of cost growth and a high proportion of lower-margin development work in large programs muted margins in the period.

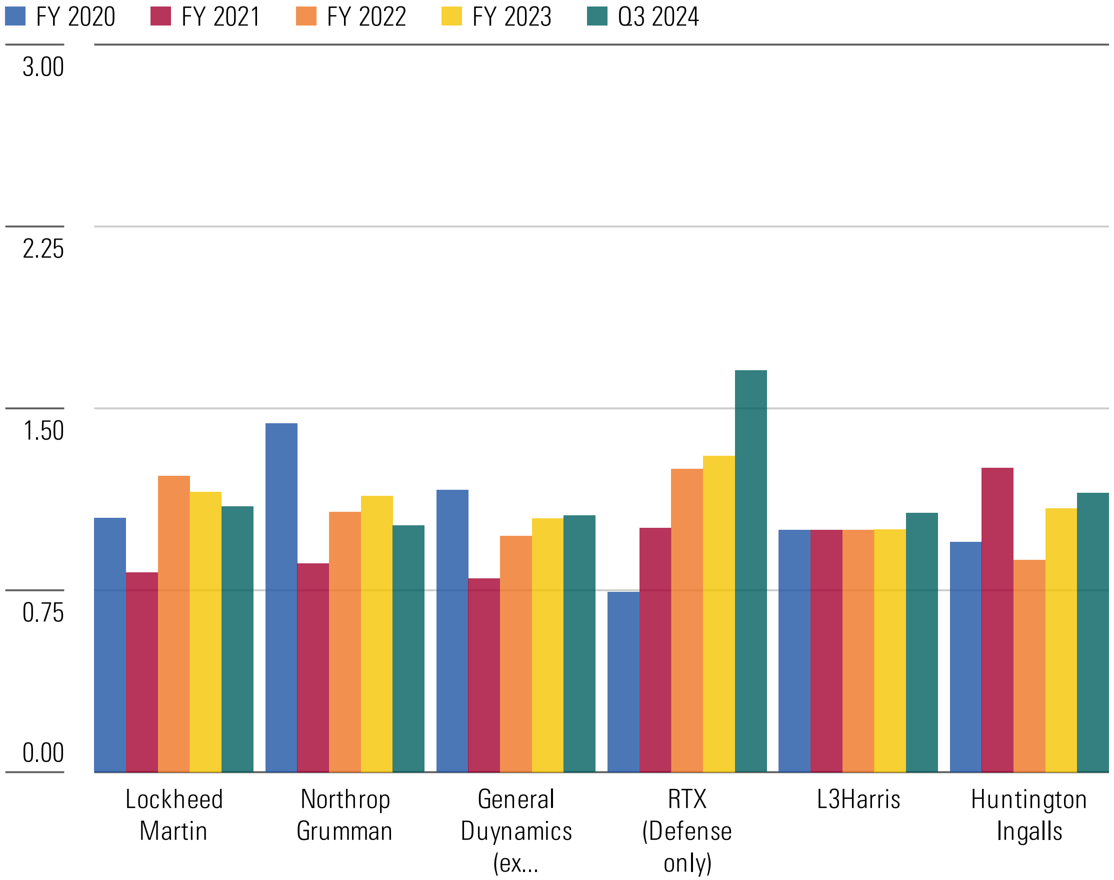
Spending increase has highly benefitted European contractors with sales increasing by 20% on average from 2021 to 2023. Margin expansion was, on average 120bps as high defense spending supports profitability with economies of scale as production ramps up

Source: Morningstar.

Record Backlogs Confirm Further Revenue Expansion Supported by the Easing of Supply Chain Issues

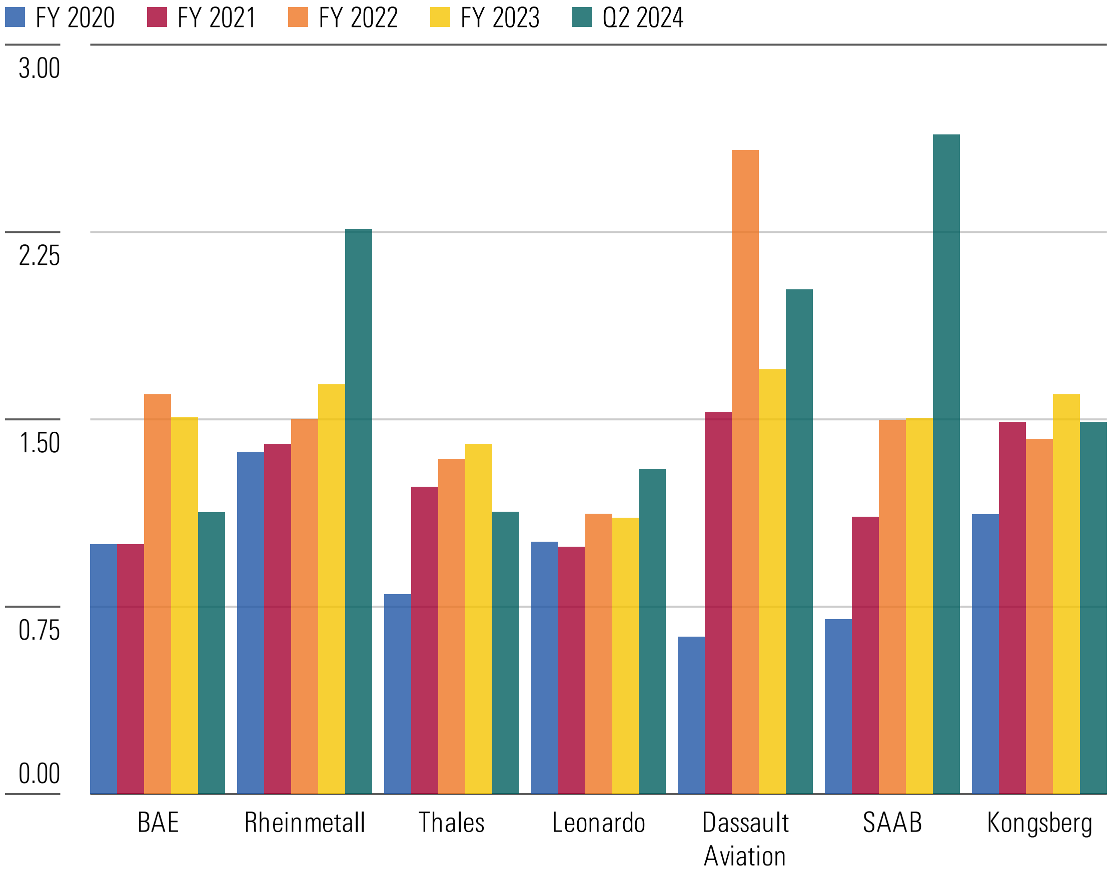
US Contractors Book/Bill, 2020-Q3 2024

US defense book/bill ratios have all surpassed 1 times after some dips in 2020-21.



European Contractors Book/Bill, 2020-Half-Year 2024

As revenue is increasing at double/high-single digits, backlog remains well above 1 times.

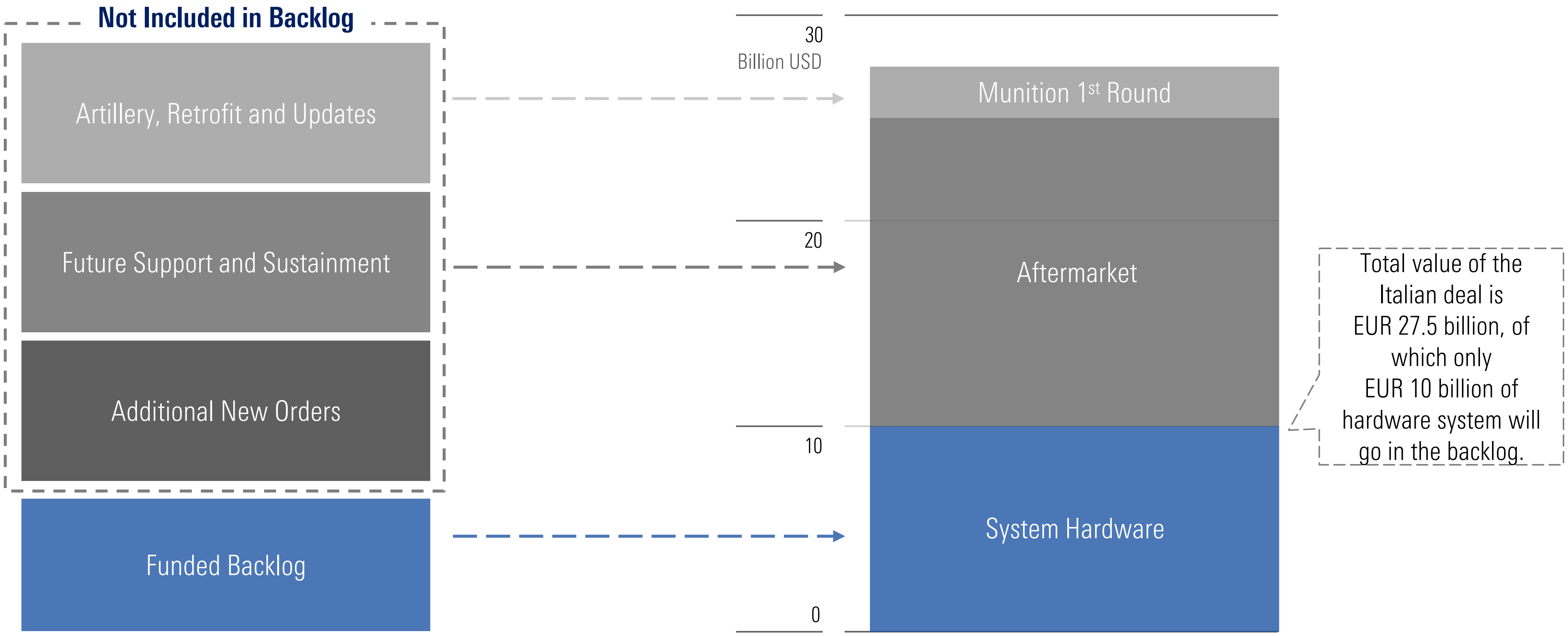


Source: Company reports, Morningstar. Data as of Nov. 24, 2024.

Record Backlogs, However, Fail to Capture Additional Potential From Post-Sale Activities of Long-Life Platforms

Backlog Doesn't Include Opportunities From Aftermarket and Retrofits
Defense company typical backlog shown below.

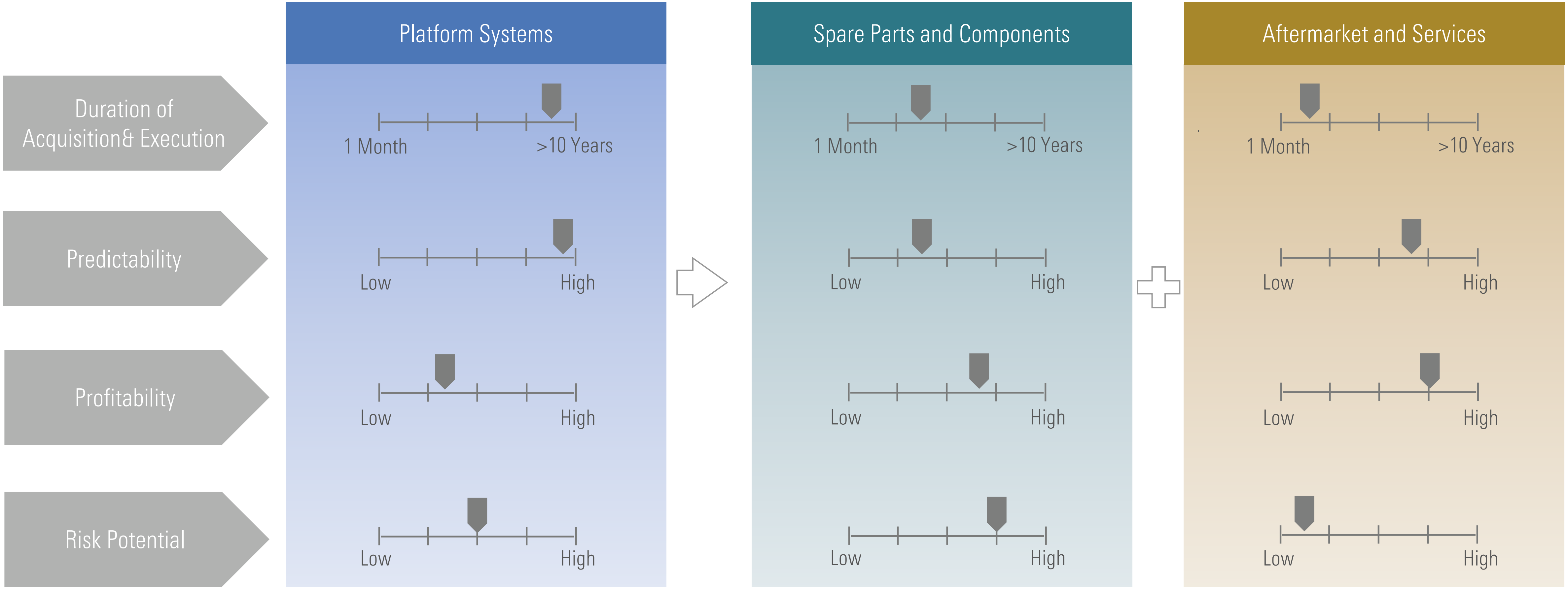
Total Value of Long-Life Platforms May Be More Than Twice the Reported Backlog
Rheinmetall- Leonardo JV backlog shown below.



Source: Morningstar, Rheinmetall.

Increased Platforms Drive Higher Spare Parts and Aftermarket Revenue, Improving Mid- and Long-Term Profitability

Recent Platform Acquisition Unlocks Long-Term Multidecade Opportunities for High-Margin and Low-Risk Spare Parts and Aftermarket Revenue



Source: Rheinmetall capital markets day.

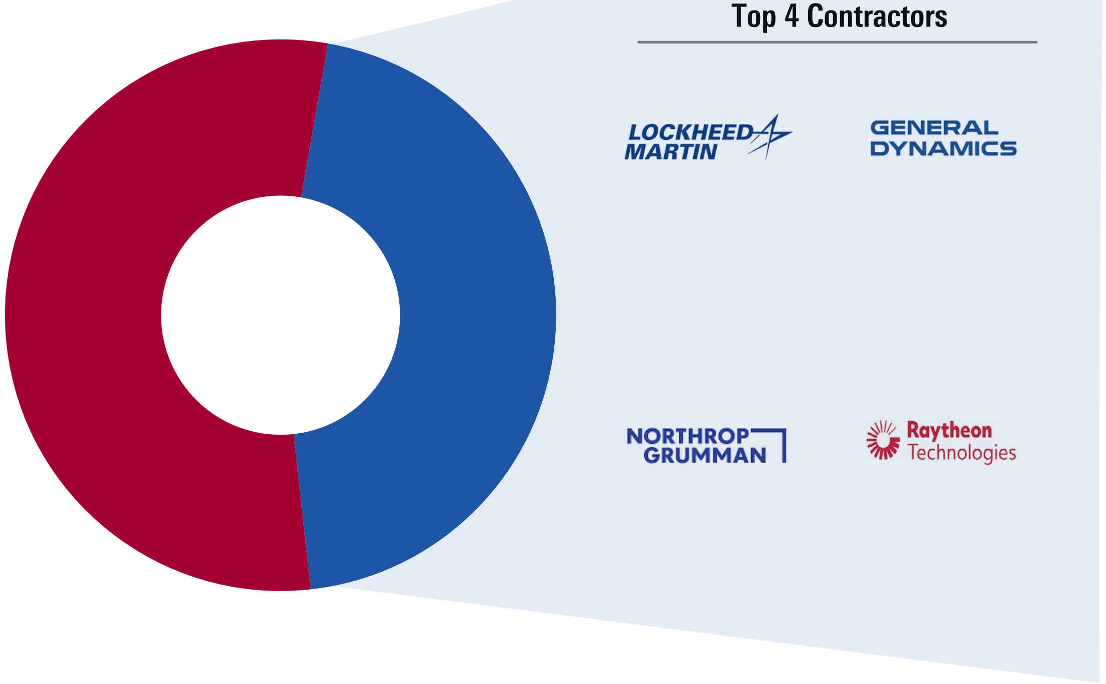
Industry Outlook

US Defense Budget to Increase, Benefiting Smaller Contractors

US Procurement Concentrated Around Four Contractors

The DoD Budget Accessible to Contractors Ranges 40%-46%

Competed/Not Competed	%
Competed	45.50
Not Competed	54.50



The Top Four Accounted for 53% of Total Available Contracts for the FY 2024 Budget

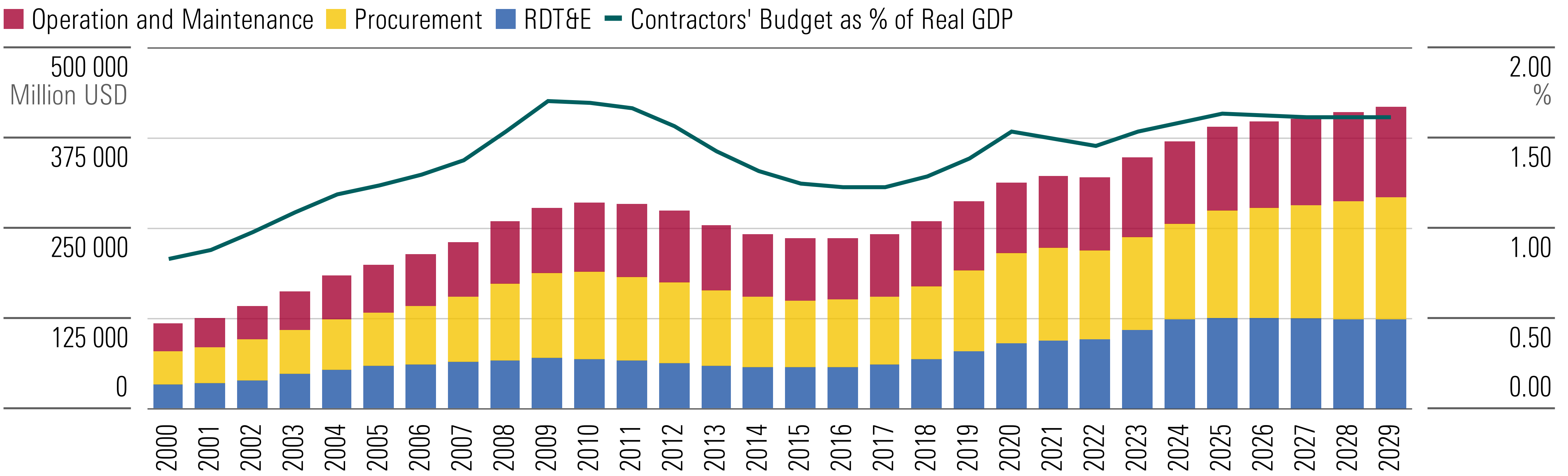
Company	%
LMT	19.00
GD	12.00
NOC	11.00
RTX	11.00
Other	47.00

Source: DOD reports, company reports, Morningstar.

We Expect Available Contractors' Budget to Increase in Line With GDP, With a Higher Share of Procurement

The war in Ukraine has spurred efforts to revitalize US manufacturing, with approximately $68 billion of the $113 billion in aid allocated by Congress directed toward domestic defense companies. This funding aims to boost production capacity and replenish stockpiles. While procurement is expected to grow, R&D funding may see a slight decline from current record levels, though it will remain above historical averages to support ongoing modernization. Maintenance represents the largest DoD investment area, of which contractors capture only around 35%.

US Defense Outlays Accessible to Defense Contractors Over Time

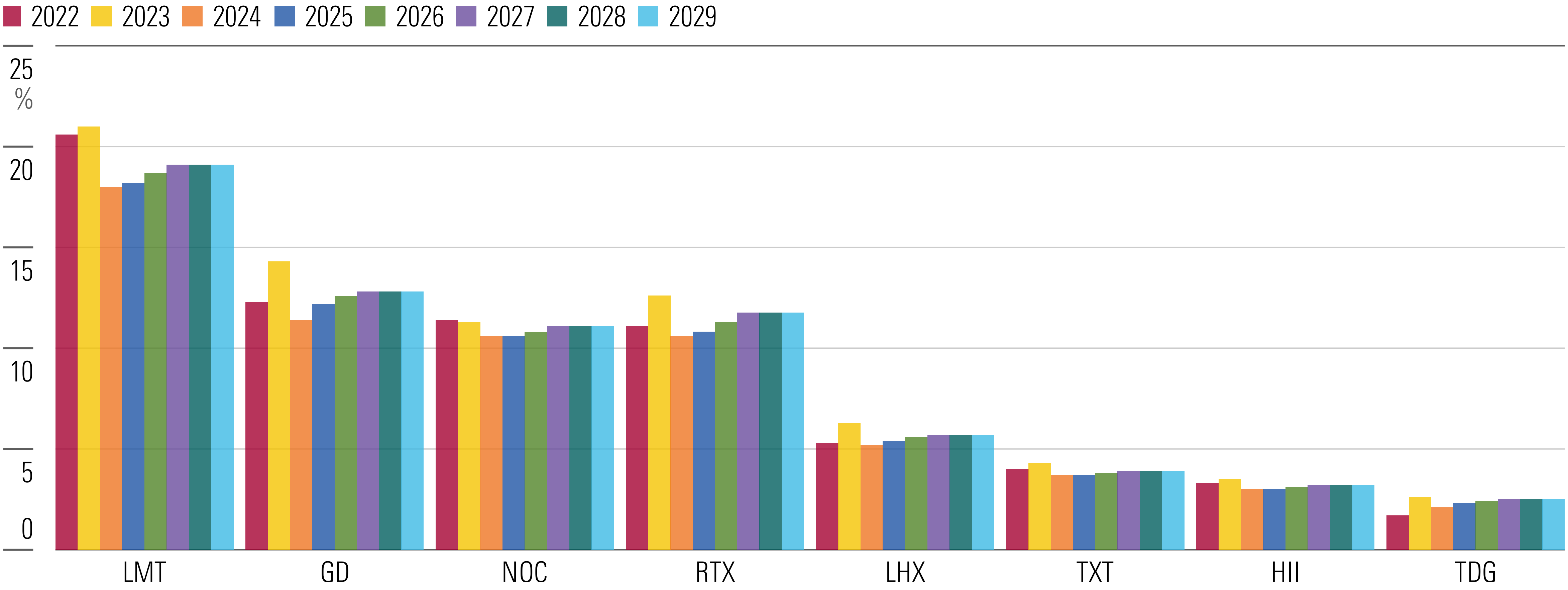


Source: DOD reports, Morningstar.

Revenue Share for the Top 8 Contractors Expected to Decline From 2023 High Levels, With Relative Share Mainly Unchanged

US Defense Outlays Accessible to Defense Contractors Over Time (%)—Data From 2025 Based on Morningstar Projection

In the long-term there is upside potential for smaller contractors to capture a higher relative share of the budget as the DoD focuses on decreasing concentration of the top four contractors.



Source: DOD reports, company reports, Morningstar.

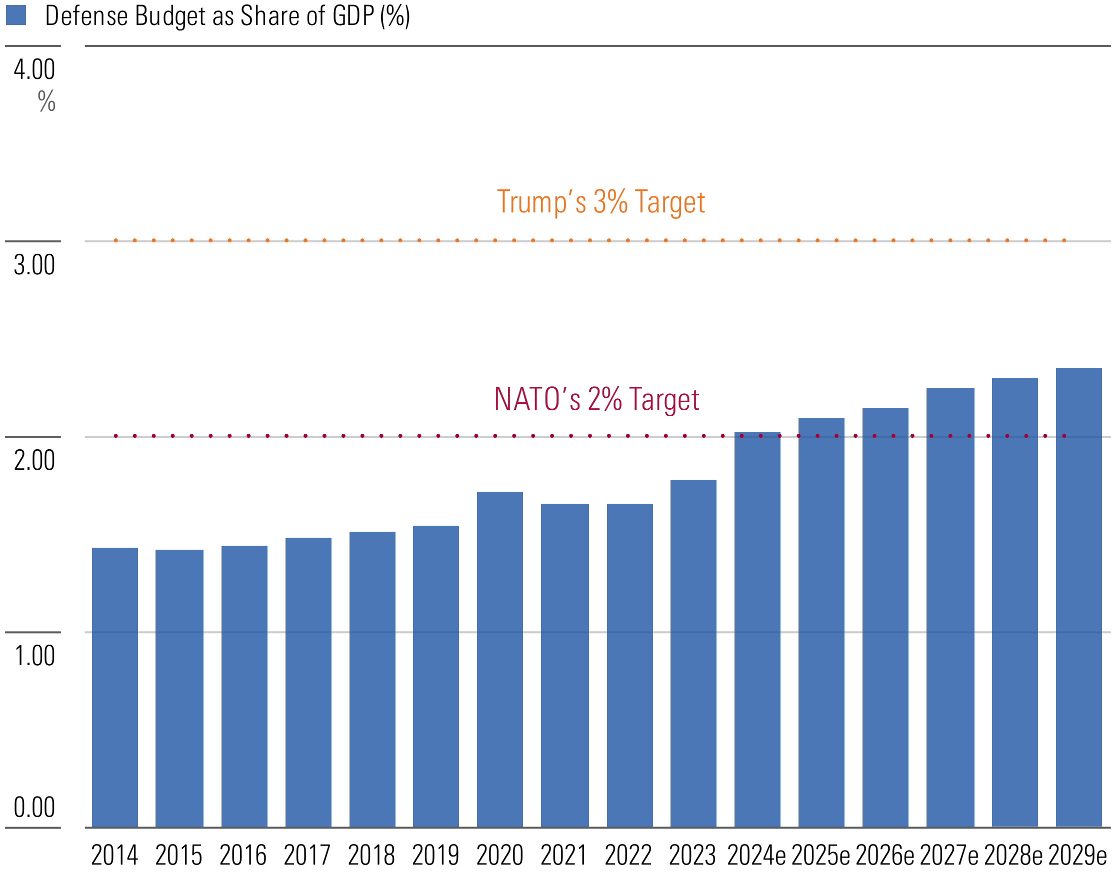
Industry Outlook

European Defense Budgets to Top 2% of GDP, Focusing On Eu-sourced Equipment

European Defense Budgets to Outpace GDP Growth, With Potential Upside Driven by US Pressures

European Countries' Defense Budget, as Share of GDP, Expected to Surpass 2%

If Europe reaches 3% of GDP spending by 2030, it will add another $200 billion opportunity.

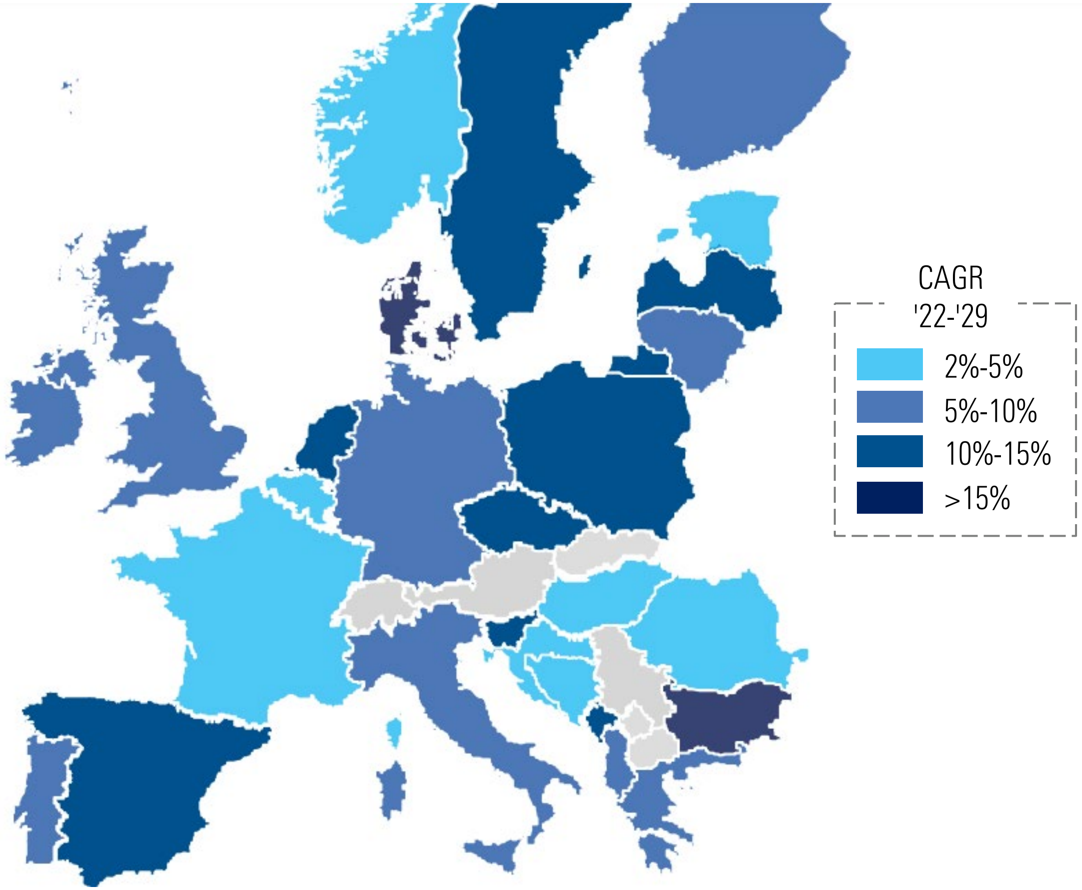


- European defense companies experienced a favorable market response Following Trump's re-election.
- Trump's campaign hinted at a transactional approach to military aid and called for increased NATO defense spending to align more closely with US contributions. We believe this stance could drive higher EU defense spending, benefiting European contractors, who have expressed optimism about these outcomes in a recent earnings call.
- Most European nations already meet or exceed the NATO guideline of 2% of GDP on defense, with some increasing this commitment in anticipation of US policy changes encouraging greater European independence and support for Ukraine. Trump has previously stated he would aim to quickly end the Ukraine conflict through negotiations with Russia. Nonetheless, we believe the outlook for European defense firms remains strong, largely unaffected by immediate geopolitical shifts. The Ukraine conflict has underscored Europe's need for military rearmament, prompting European arms producers to focus on restocking—a process that could span a decade for some nations like Germany. The resulting platform sales promise long-term revenue through maintenance, training, and upgrades over lifespans exceeding 20 years.
- Finally, we do not expect Trump's "America First" policies to hinder US revenue for European defense firms, as most of them have established operations and substantial employment in the US Additionally, over 65% of total European equipment imports are from the US, and Trump's transactional approach could view this trade favorably, potentially balancing adverse impacts from his policies.

Source: Rheinmetall capital markets day 2024, International Monetary Fund, NATO defense spending data, Morningstar.
* The 3% GDP Target does not reflect Trump's most recent proposal of 5% of GDP,

EU Defense Spend Expected to Outpace GDP Growth in the Midterm, as the It Pursues Greater Autonomy

European Defense Spending Is Expected to Increase at 9% CAGR From 2022 to 2029



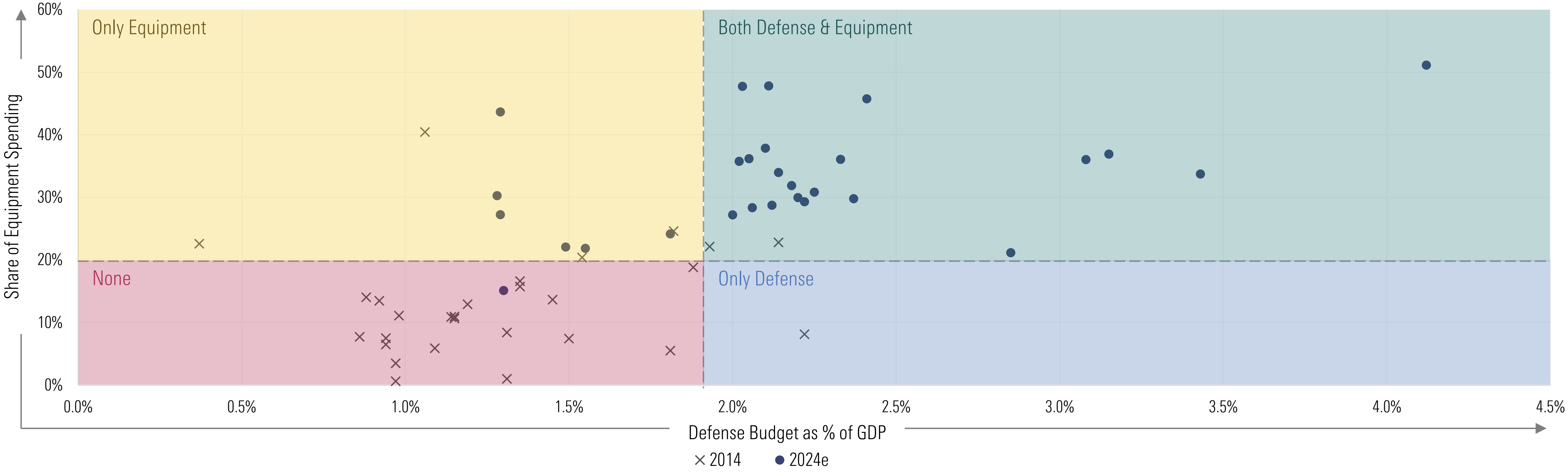
Source: International Monetary Fund, NATO defense spending data, Morningstar.

- **Germany is set to meet NATO's 2% GDP defense spending goal in 2024, with plans to exceed this by 2028.** The defense budget is bolstered by a EUR 100 billion special fund dedicated to military modernization. Once the fund is exhausted after 2027, sustaining the 2% target will require an additional EUR 20–25 billion annually from the regular budget. Rheinmetall is poised to capture around 20% of special budget
- **France has reached the NATO defense spending target of 2% of GDP in 2024 and is expected to sustain this level in the midterm despite rising budget deficits**, with national champions Thales and Dassault set to benefit significantly
- **The UK plans to raise defense spending to 2.5% of GDP by 2030**, up from the current 2.3%. We expect this increase to benefit national champion BAE Systems, which we projected to capture approximately 45% of the defense budget
- **Italy is one of the few European countries with 2024 defense budget below NATO's 2% target** at 1.57% of GDP. Spending is projected to rise to 1.6% by 2027 and 2% by 2029. Key priorities include the procurement of 350 Lynx vehicles and 200 Panther tanks through the Rheinmetall-Leonardo joint venture, as well as 25 F-35s and 24 Eurofighters, where Leonardo will benefit from its Tier 1 role in both programs
- **Sweden has committed to significantly increase defense spending, aiming to exceed NATO's 2% GDP benchmark**, with projections of 2.6% by 2028. A $16.2 billion defense allocation for 2025–2030, supported by special funds, positions national champion SAAB to capture an estimated 60% of the budget. Additionally, BAE Systems is also poised to benefit from it with Sweden's combat vehicle upgrades

European Nations Are Increasing Overall Defense Spending While Allocating a Greater Share to Investments

In 2024, only seven EU countries, including Italy and Spain, missed the 2% GDP benchmark for defense spending, while the EU collectively exceeded the 20% investment target for the fourth year, reaching 24.2%. Despite record-high spending, R&D investment has declined in favor of off-the-shelf equipment, with only Germany and France meeting the 2% R&D benchmark. Collaborative initiatives like the EDA and European Defence Fund are crucial for addressing this gap and fostering future growth.

Comparison of European Countries Defense and Equipment Spending in 2014 Versus 2024, Categorized by Compliance With NATO Spending Commitments

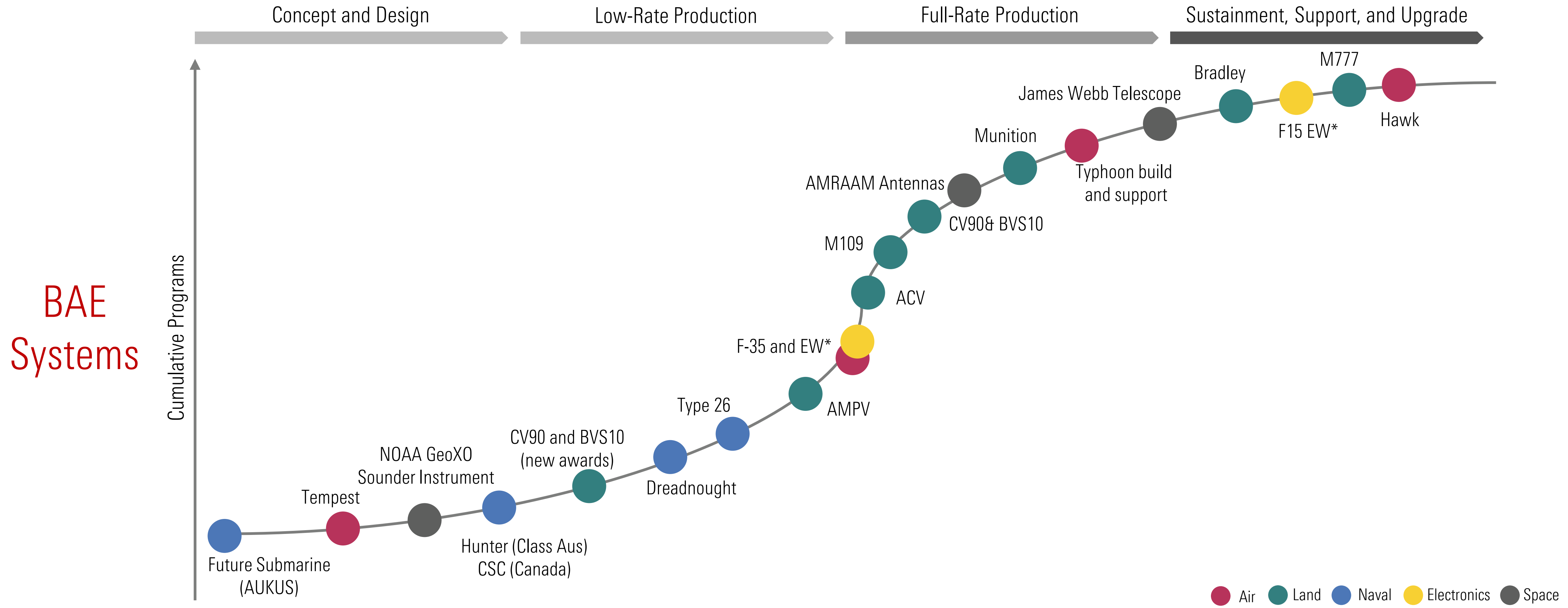


Source: Bruegel, A European Defence Industrial Strategy in a Hostile World, NATO, Morningstar.
Note: EDA: European Defence Agency.

Accelerated Procurement of Off-the-Shelf Purchases Drives Scale Efficiencies From Programs' Shift to Full-Rate Production

Budget Increases Are Driving Multidecade Programs to Move From Low-Rate Production to Full Rate, Increasing Efficiency With Installed Base Supporting Future Aftermarket

Below is a BAE illustrative example, from 2023.

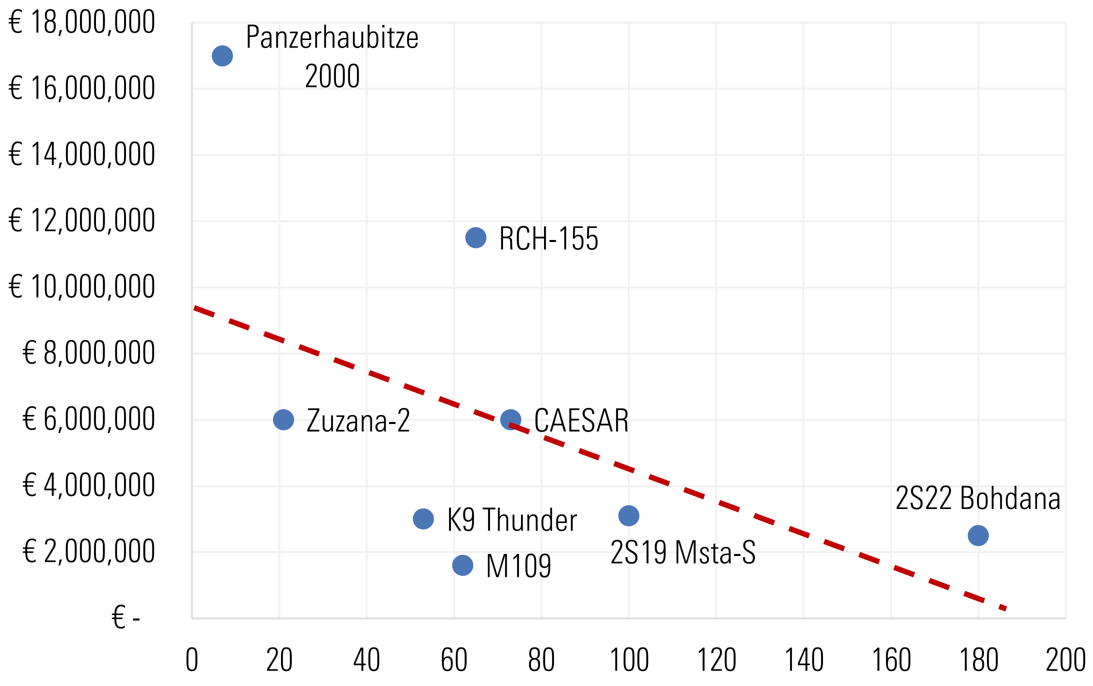


Source: BAE 2023 half-year earnings presentation.
*Electronic warfare.

Collaborative Defense Projects Could Boost Efficiency and Sales for Contractors While Reducing Costs for Governments

The EU estimates EUR 500 billion in defense investment needs over the next five years, prioritizing efficiency through collaborative projects and interoperability among national armies. The EDIS aims to consolidate systems, requiring 40% of equipment purchases to be pooled by 2030 and mandating that 50% of equipment be manufactured in Europe, increasing to 60% by 2035. Pooled procurement could save up to 30% annually on defense spending. Multiple cross-border joint ventures are underway for the development of next-generation platforms.

Scale Economies Example: EU Howitzer Unit Cost and Annual Production Capacity



Multiple Collaborations Are Underway in Air, Land, Missile, and Electronics Systems

FCAS

Aims to develop next-generation fighter aircraft to replace Eurofighter Typhoons and Rafales by 2040.

GCAP

Focused specifically on next-generation combat aircraft. Not as comprehensive as FCAS, which is a complete ecosystem.

MGCS

Aims to develop next-generation land platform and systems, including gun, turret, and ammunition, by 2040.

MBDA

Leading European missile manufacturer. The JV also involves developing the Future Cruise/Anti-Ship Weapon program.

RHM-LDO

Strategic partnership between Leonardo and Rheinmetall, to develop military combat vehicles in Europe.

ESSI

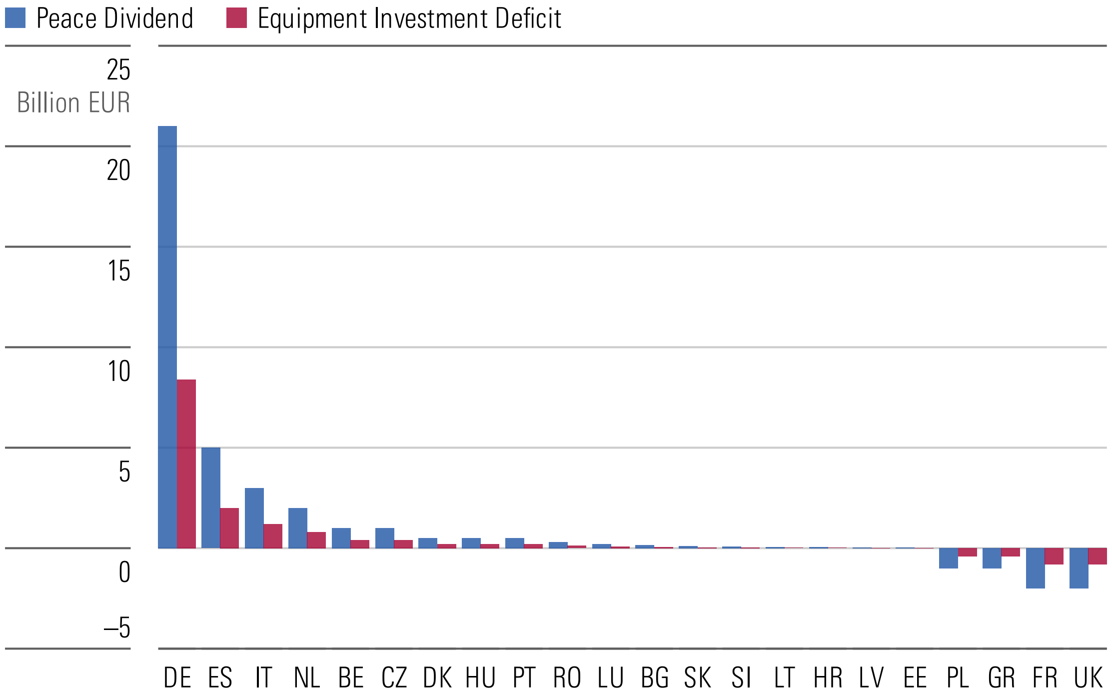
(Led by Germany; 21 nations)

The project aims to create an integrated European air defense system with shared procurement and operational capabilities.

Source: Bruegel, Morningstar.
*EDIS: European Defense Industrial Strategy.

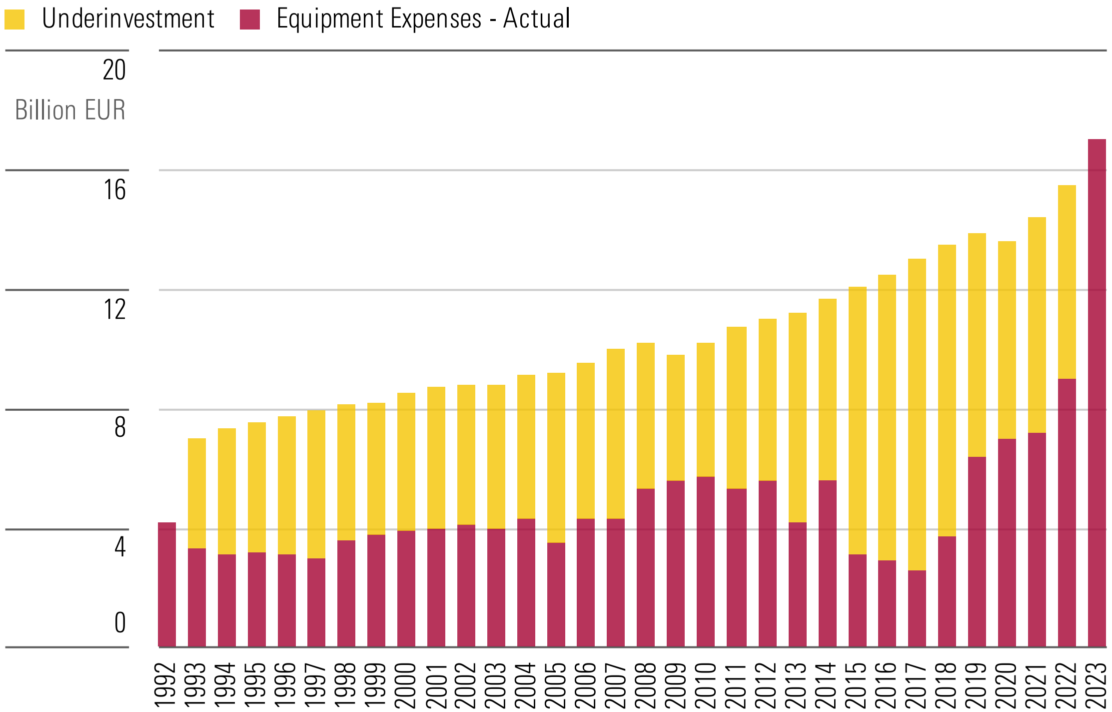
Germany Will Need to Increase Defense Spending More Than Other European Countries

Annualized Peace Dividend and Investment Deficit Since the End of the Cold War



Due to decades of underinvestment, Europe's military spending remains insufficient to address current challenges. Coupled with inefficient procurement, it could take countries like Germany nearly a century to restore its military inventory to levels seen 30 years ago

Germany's Underinvestment in Equipment Since the End of the Cold War

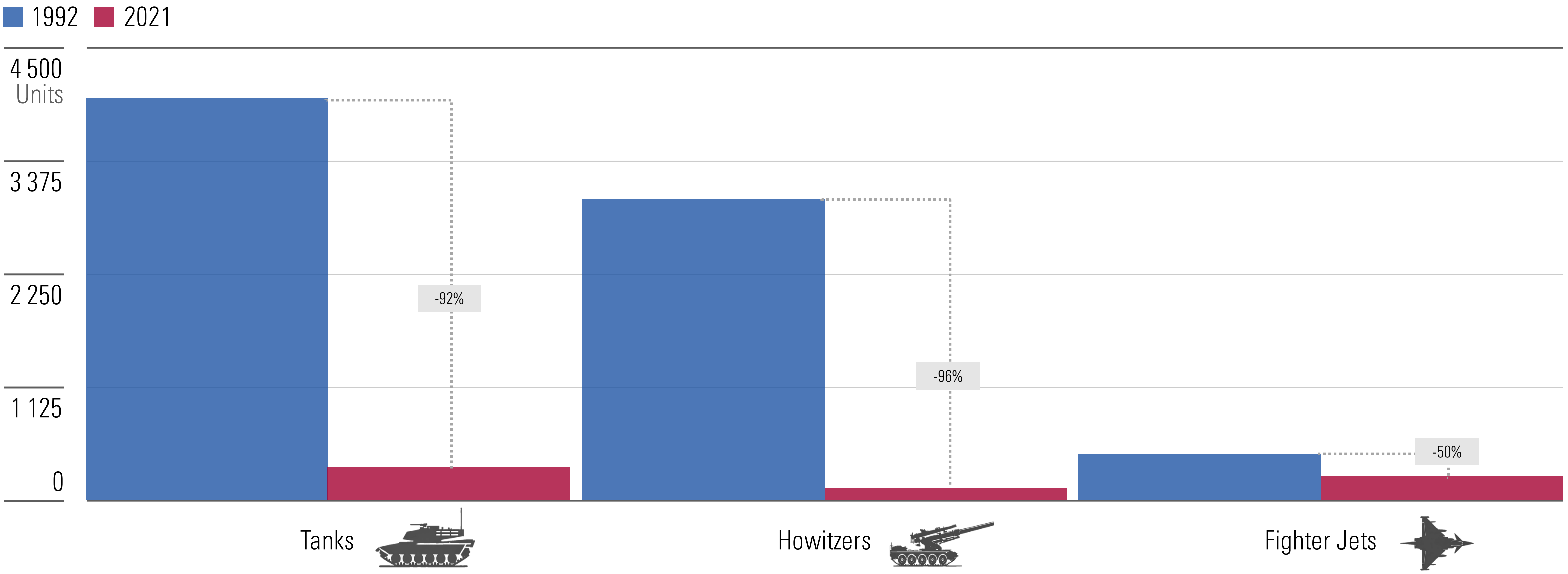


Germany has historically allocated only 13% of its defense spending to military equipment, lower than the NATO required 20%. Significant increases occurred in 2022 and 2023, and Germany is set to surpass the UK in 2024, although remaining below US, China and Russia

Source: Kiel Institute, SIPRI, Morningstar.

German Government Struggles to Replenish Weapons Sent to Ukraine With Critically Low Inventories Even Before the War

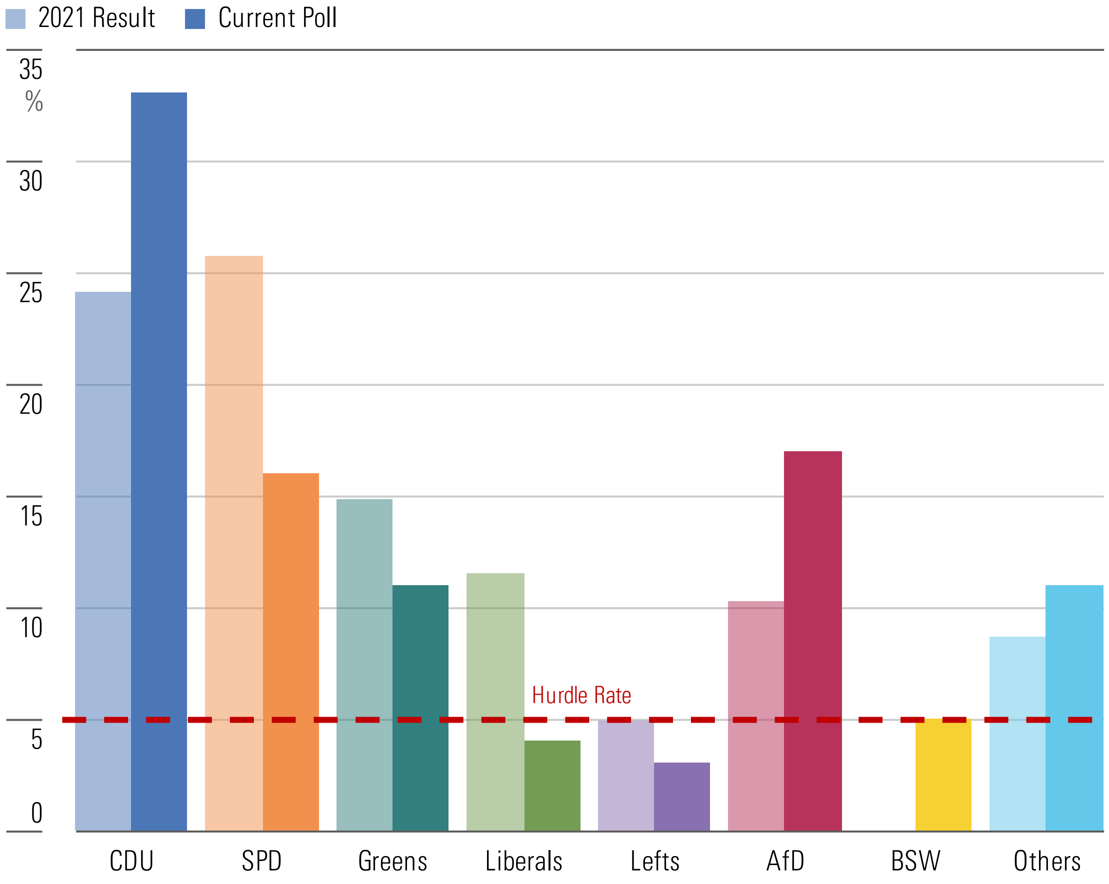
Germany Inventories Levels for Selected Key Platforms, 1992 Versus 2021



Source: Kiel Institute.

We Don't Expect Germany's Upcoming 2025 Elections to Have a Significant Impact on Defense Budget Spending

German Electoral Shift: 2021-24 Party Support Comparison



Source: Rheinmetall capital markets day 2024.

The Dismissal of Finance Minister Triggered the Collapse of Germany's Coalition
Chancellor Olaf Scholz dismissed Finance Minister Christian Lindner in November 2024, causing the three-party coalition government to collapse. A vote of confidence took place in Dec. 16, 2024, with chancellor Scholz losing the vote. This outcome was actually anticipated and desired by Scholz, as it paved the way for early elections likely to follow in February 2025.

Germany's Constitution Ensures Government Operations During Budget Delays
The government can spend one thirteenth of the previous year's budget monthly, ensuring essential functions continue. The Bundeswehr is further secured by the remaining EUR 50 billion of its original EUR 100 billion special budget, operating independently of the annual budget.

Low Risk of a Far-Left Coalition With the Likely Outcome Assuring Budget Continuity
German political parties show varied stances on Ukraine and defense spending. The ruling coalition supports aid and minimum budget spending of 2% of GDP but differs in intensity. The Greens are the most hawkish, backing weapons deliveries and higher defense spending, the SPD (Social Democrats) shows growing hesitation about long-term aid, and the FDP supports Ukraine while emphasizing fiscal discipline. Among the opposition, the AfD (Alternative for Germany) supports increased defense spending but opposes aid to Ukraine. In contrast, BSW opposes military support, blames NATO and the US for the conflict, and advocates for dialogue with Russia.

Industry Outlook

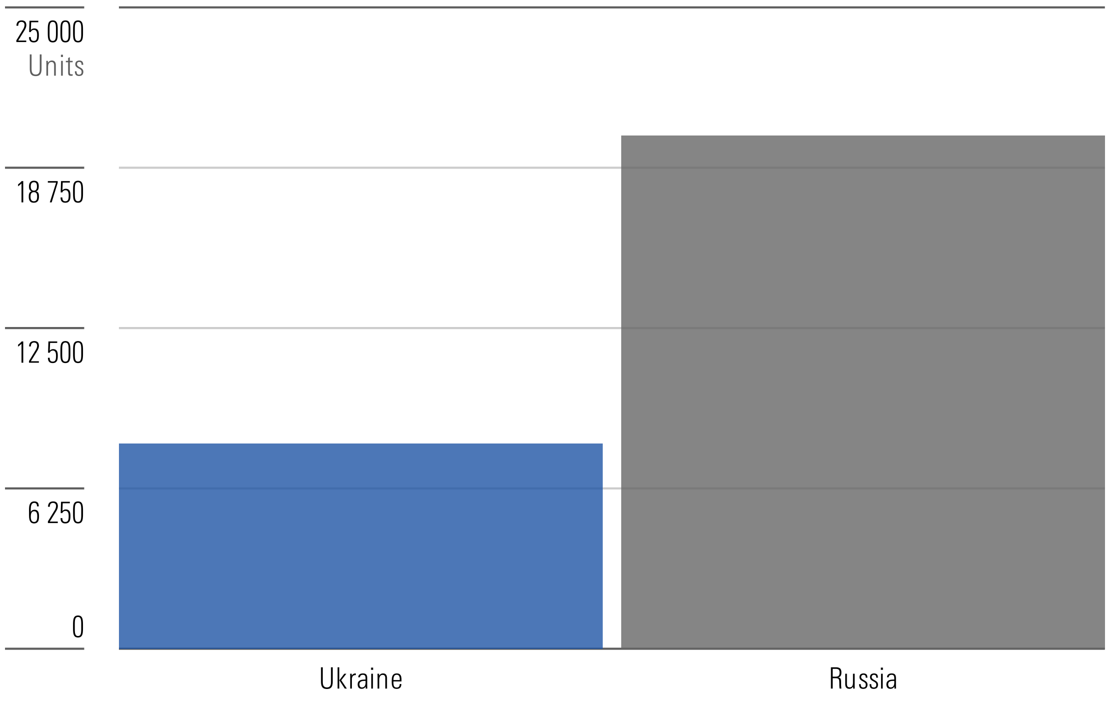
Focus on Selected Segments: Artillery, Air, Land, and Naval

Artillery Demand Results in Double-Digit, Multibillion Opportunity in the Midterm Even Without Ukraine War

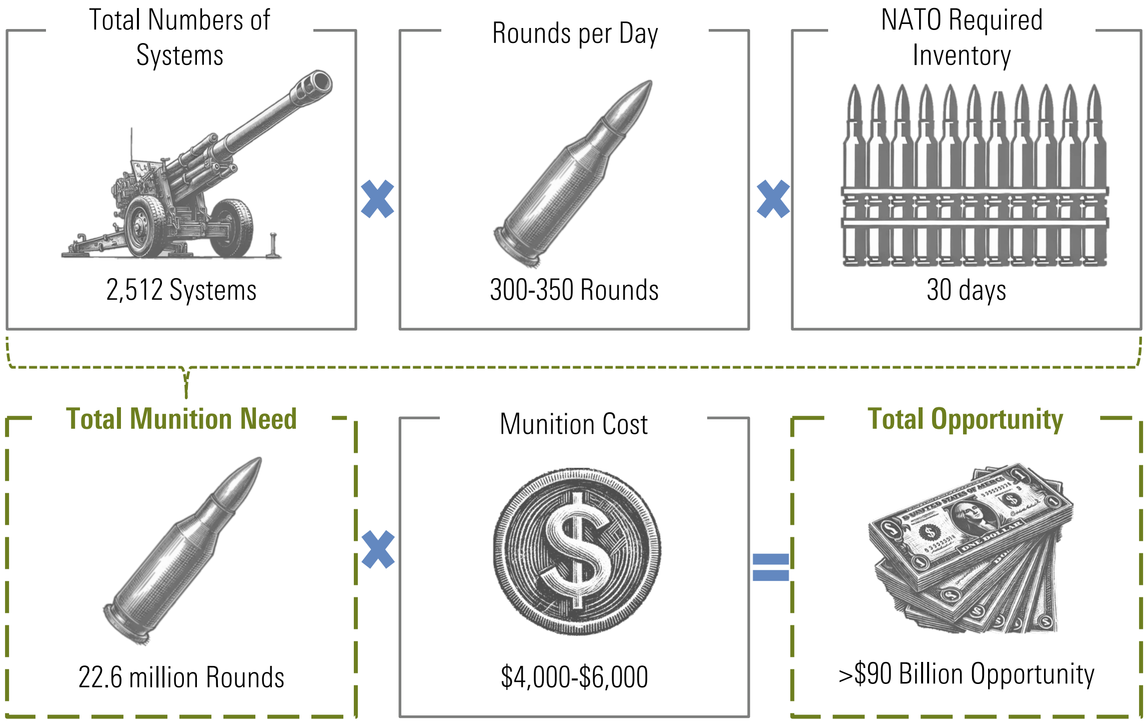
Ukraine uses 110,000 artillery shells monthly but needs up to 600,000 for optimal operations. Assuming the war will continue for another six months, this demand could cost more than $14.4 billion. Each shell costs between $4,000 and $6,000.

Even without the Ukraine conflict, Western nations must restock depleted ammunition, with NATO mandating a 30-day stockpiles for intense combat. Assuming a need for 300 rounds per day per system for high-intensity warfare, this would generate a minimum of $90 billion in sales

Ukraine and Russia 155mm Daily Round Consumption



US and European 155mm Ammunition Requirement Based on High-Intensity Conflict

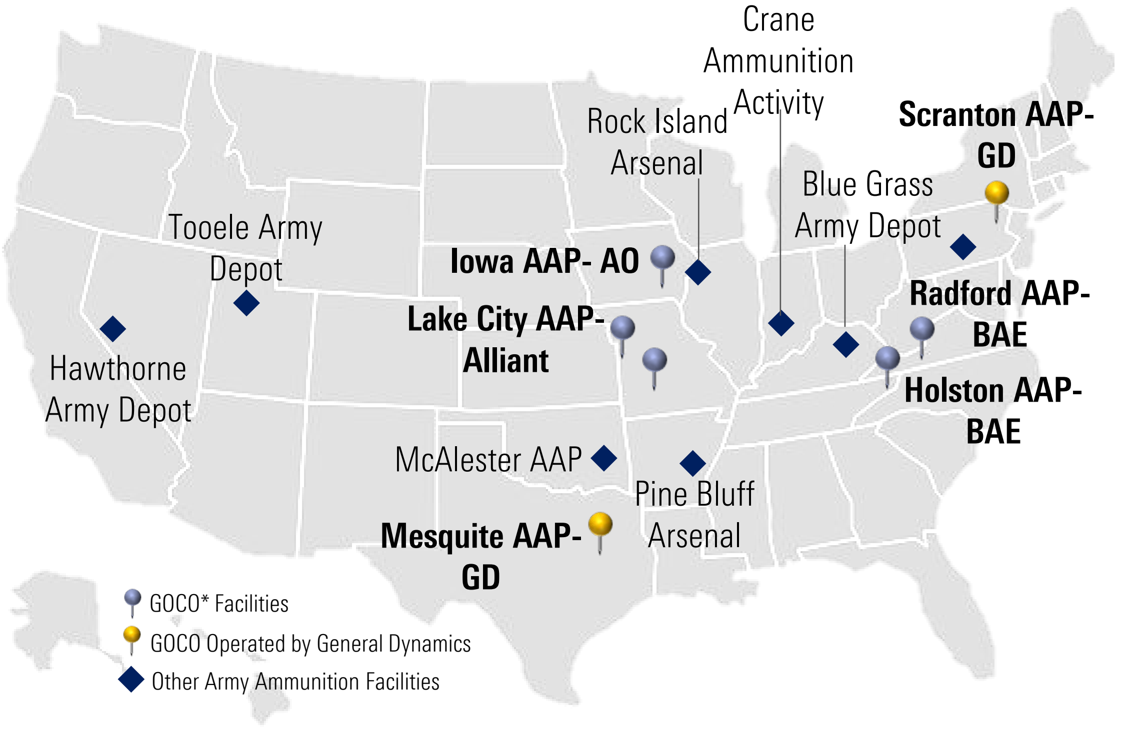


Source: Morningstar.

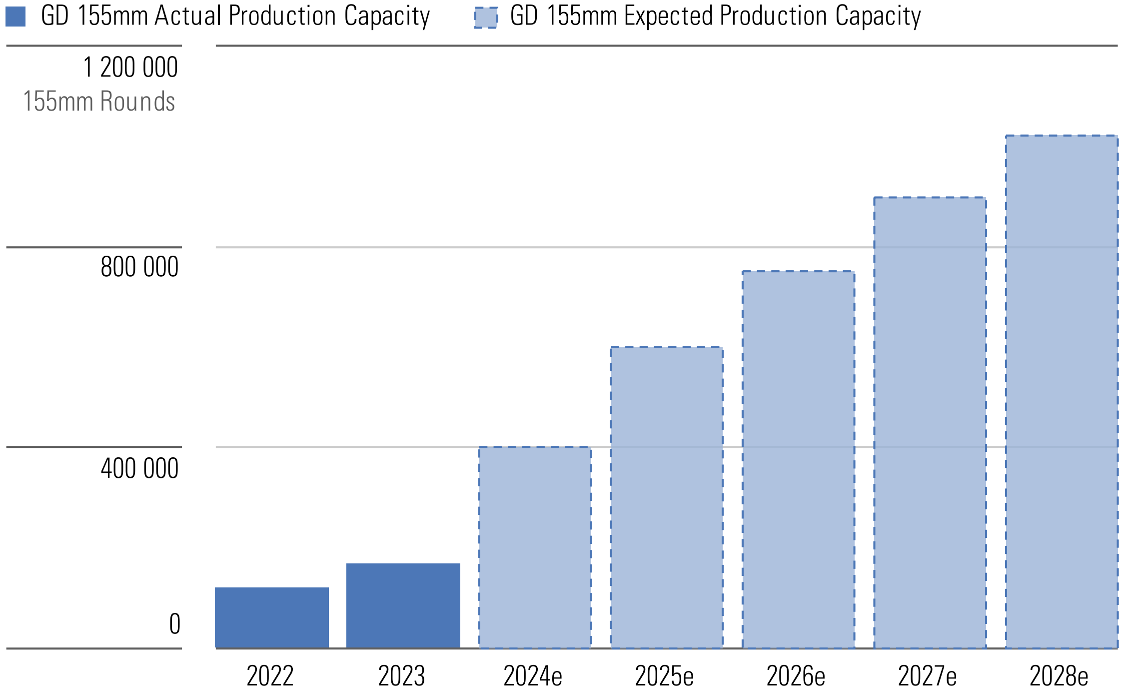
In the US, There Are Around $40 Billion in Opportunities in the 155mm Artillery Ecosystem

To meet NATO's 30-day stockpiles requirement, we expect the US will need 11 million 155mm artillery shells for its 1,100 systems in service. Key beneficiaries of this surge include General Dynamics (shell production), American Ordnance (propellant), and Day & Zimmermann (assembly). Production has risen from 168,000 rounds in 2023 to 400,000 by late 2024, with plans to hit 600,000 by 2025 through General Dynamics' Texas facility. By 2028, the DOD aims to exceed 1 million rounds annually, incentivizing capacity expansion by introducing framework contracts.

US 155mm Ammunition Production Sites



General Dynamics Production Capacity Increase



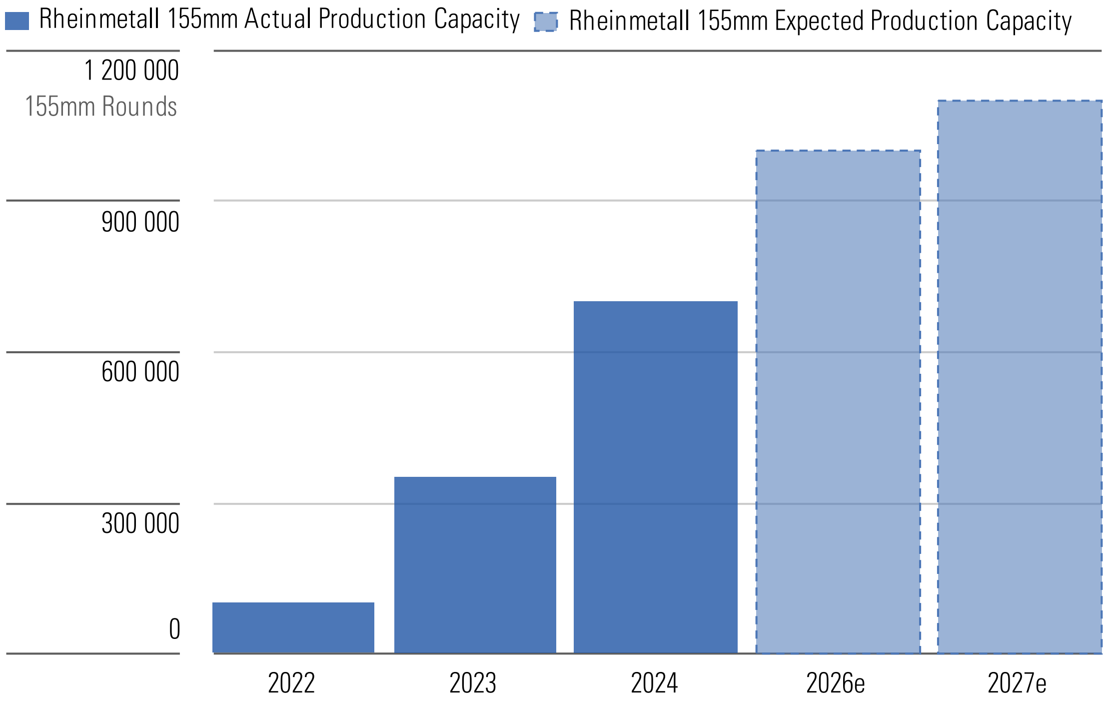
Source: General Dynamics; Morningstar.
Government Owned Contractor Operated facilities: The GOCO facilities are specifically designed for ammunition production, while the other facilities serve various purposes including storage, distribution, and demilitarization of ammunition.

Europe Faces a $50 Billion Opportunity in 155mm Artillery Inventory Replenishment Alone

The EU pledged to deliver 1.5 million 155mm shells to Ukraine by the end of 2024, with 980,000 delivered as of November. While officials claim a 1.7 million annual production capacity, we estimate actual output is closer to 960,000 shells, including 700,000 from Rheinmetall. The 2025 delivery goal underscores a multibillion-dollar market, while replenishing NATO-level inventories for the 1,500 systems in service presents more than $50 billion opportunity. Rheinmetall, the largest global and fully vertically integrated producer, stands to benefit the most.

European 155mm Ammunition Production Sites

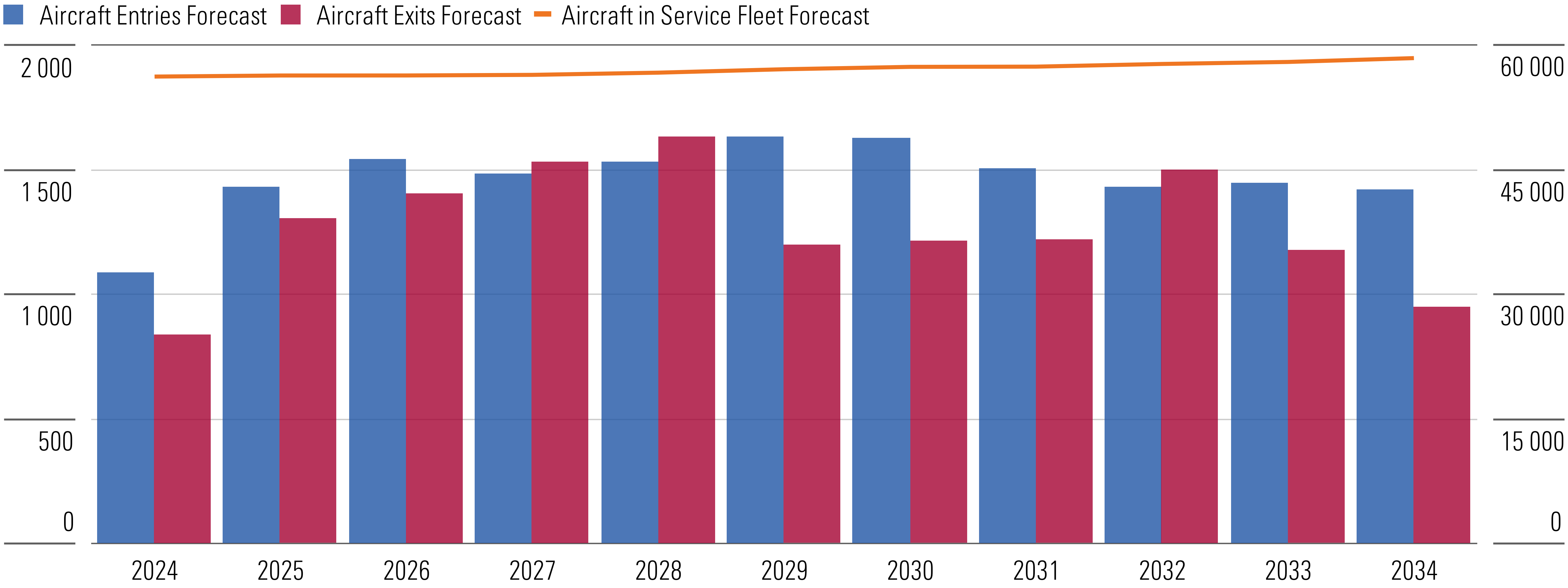
Rheinmetall Production Capacity Increase



Source: International Institute for Strategic Studies, Morningstar.

Global Aircraft Fleet Expected to Grow by 4% in the Next Decade, With New Builds Amounting to Around 15,000

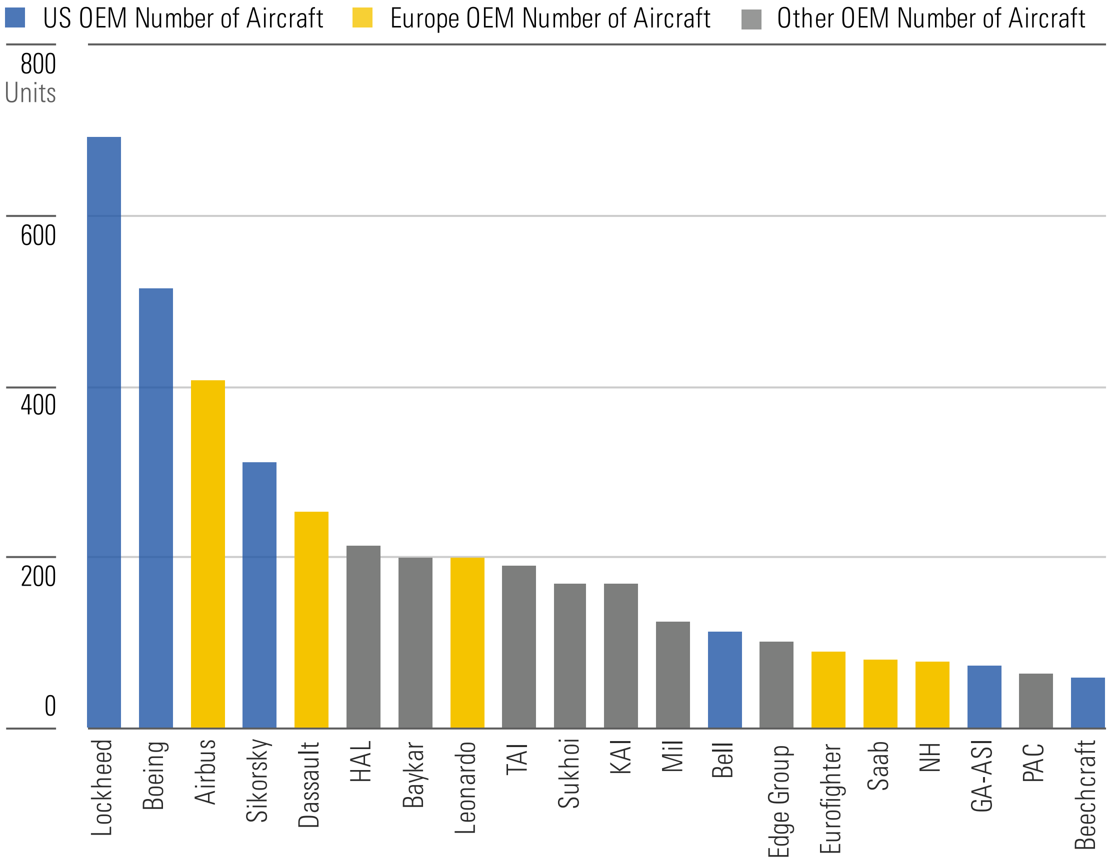
Projected Global Aircraft Fleet, Deliveries, and Exits 2024-34



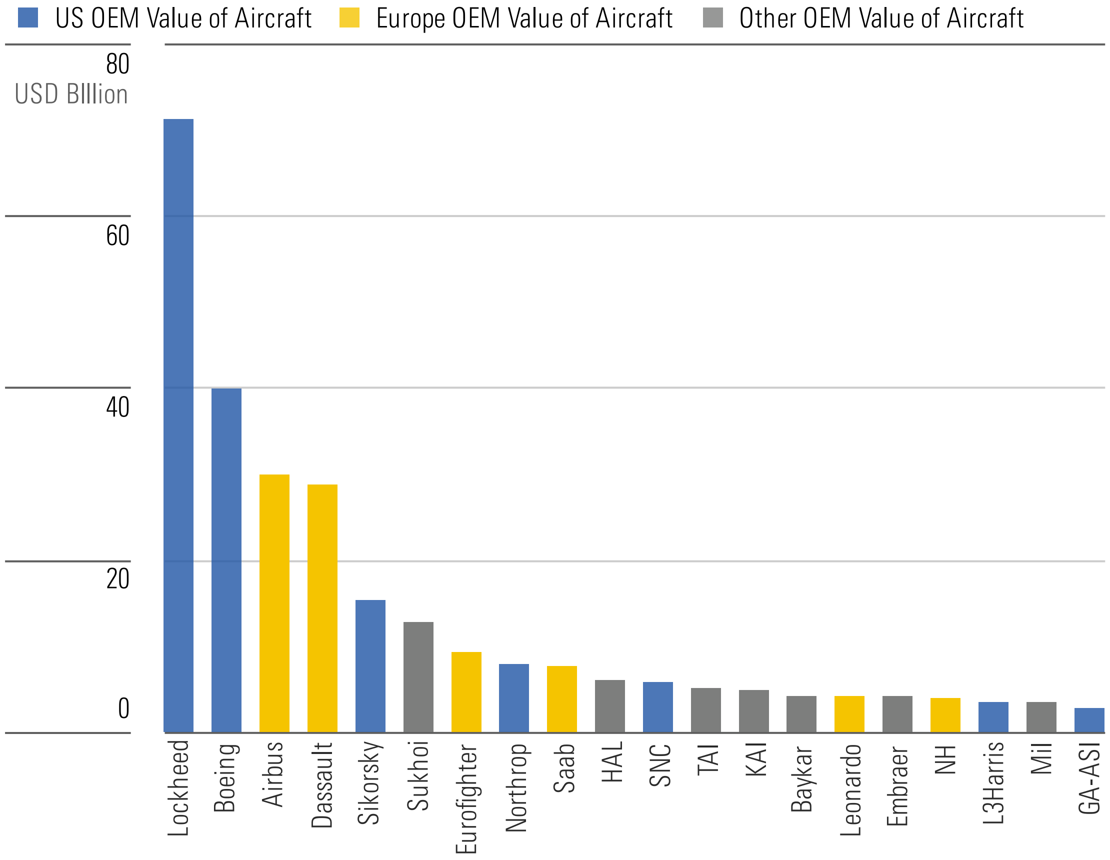
Source: Aviation Week.

7,000 Military Aircraft Under Contract in Next Decade; Top 20 Contractors Earning 84% of Total $300 Billion Opportunity

OEM Order Book 2024-34 Number of Aircraft



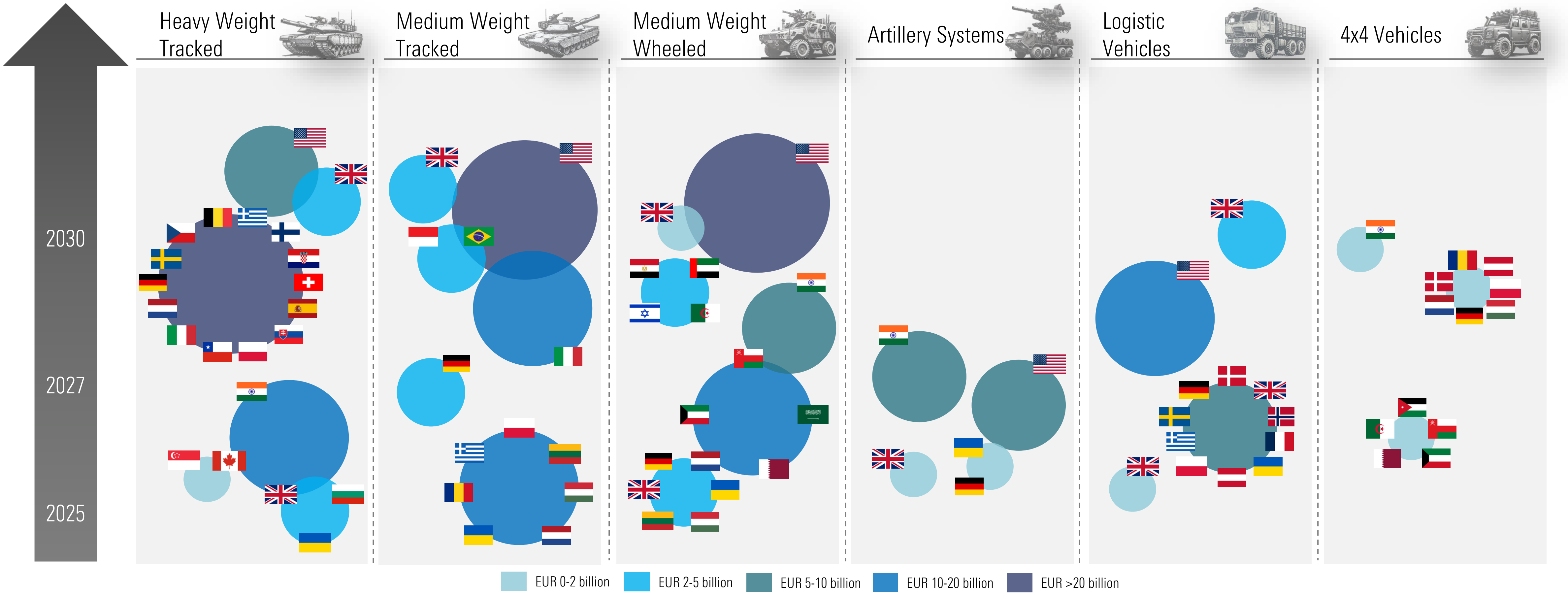
OEM Order Book 2024-34 Value of Aircraft (in USD Billions)



Source: Aviation Week.

Land Systems Represent Over $200 Billion Opportunity for Western Countries Through 2030

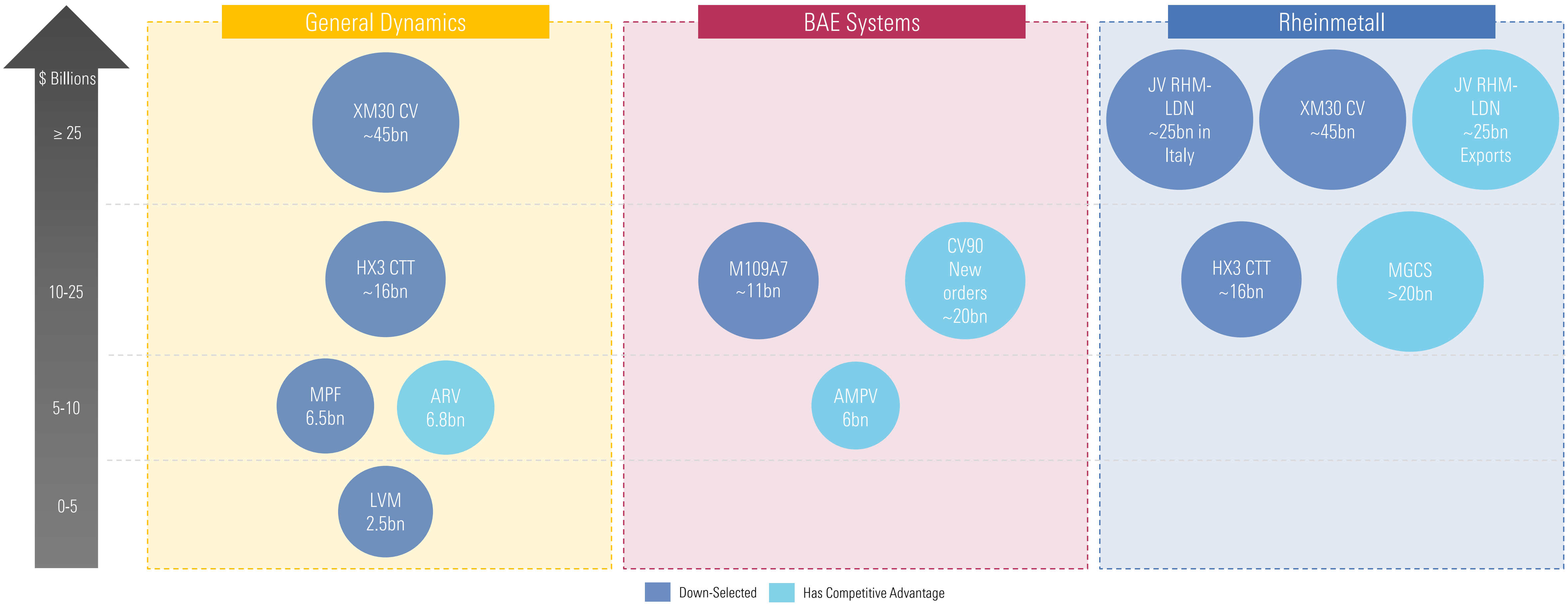
Land System Opportunities in Western Countries From 2025 to 2030



Source: Rheinmetall capital markets day 2024.

General Dynamics, Rheinmetall, and BAE Poised to Benefit Most From Rising Land Defense Spending

Midterm Growth Opportunities for Selected Land Defense Contractors



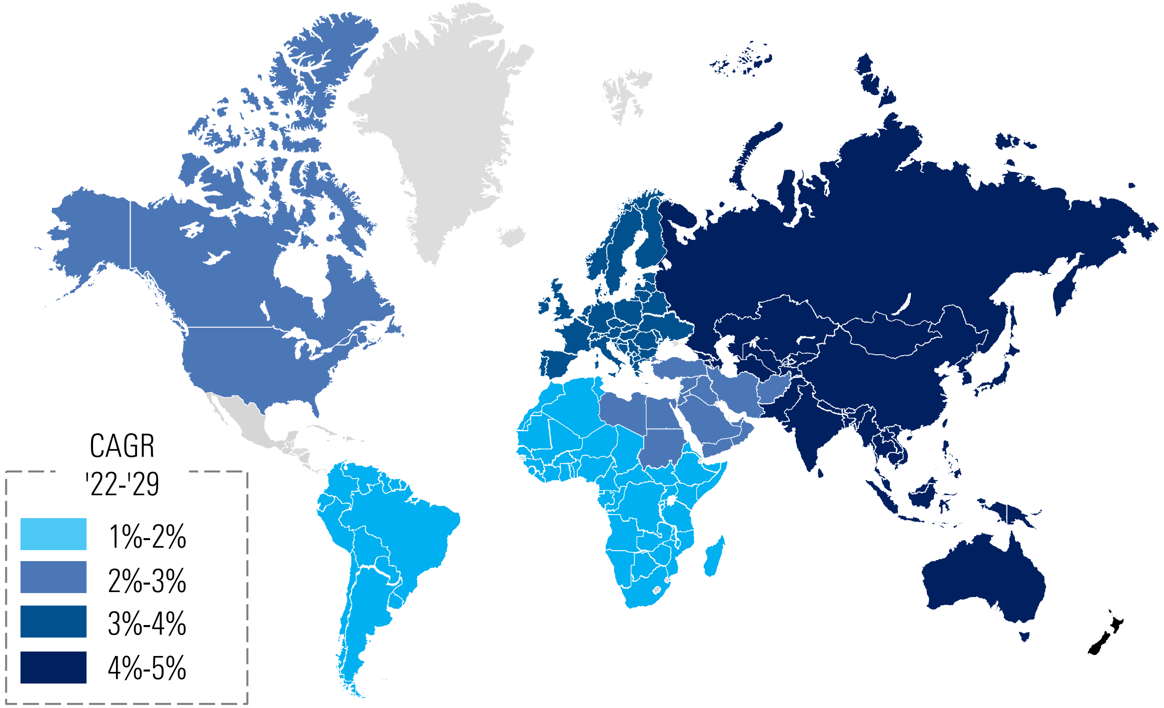
Source: Company filings, US Department of the Army, Congressional Research Service, Morningstar.
Note: Down-selected refers to the process where a contracting authority (for example, a government or defense agency) narrows down the pool of competing bidders to a smaller group of finalists to advance to the next stage of the bidding process.

Higher Defense Budgets Expected to Fuel Growth in Naval Defense Spending

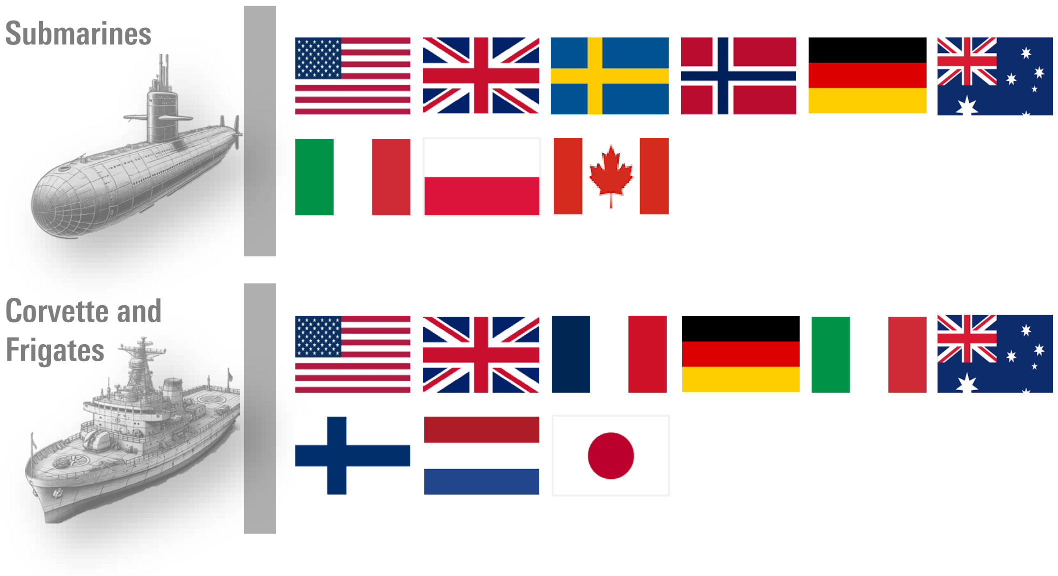
The expansion of defense budgets is anticipated to significantly boost naval defense spending. We expect the total global naval defense budget to increase at a CAGR of 2.9% between 2024 and 2030, increasing from $78 billion to around $101 billion. This growth is primarily driven by increased investments in the Asia-Pacific region (+4.2%) and Europe (+3.9%). Demand is driven by both Combat ships as well as submarines, with increased interest for advanced uncrewed underwater vehicles

Navy Procurement Budgets

CAGR 2024-30 by continent.



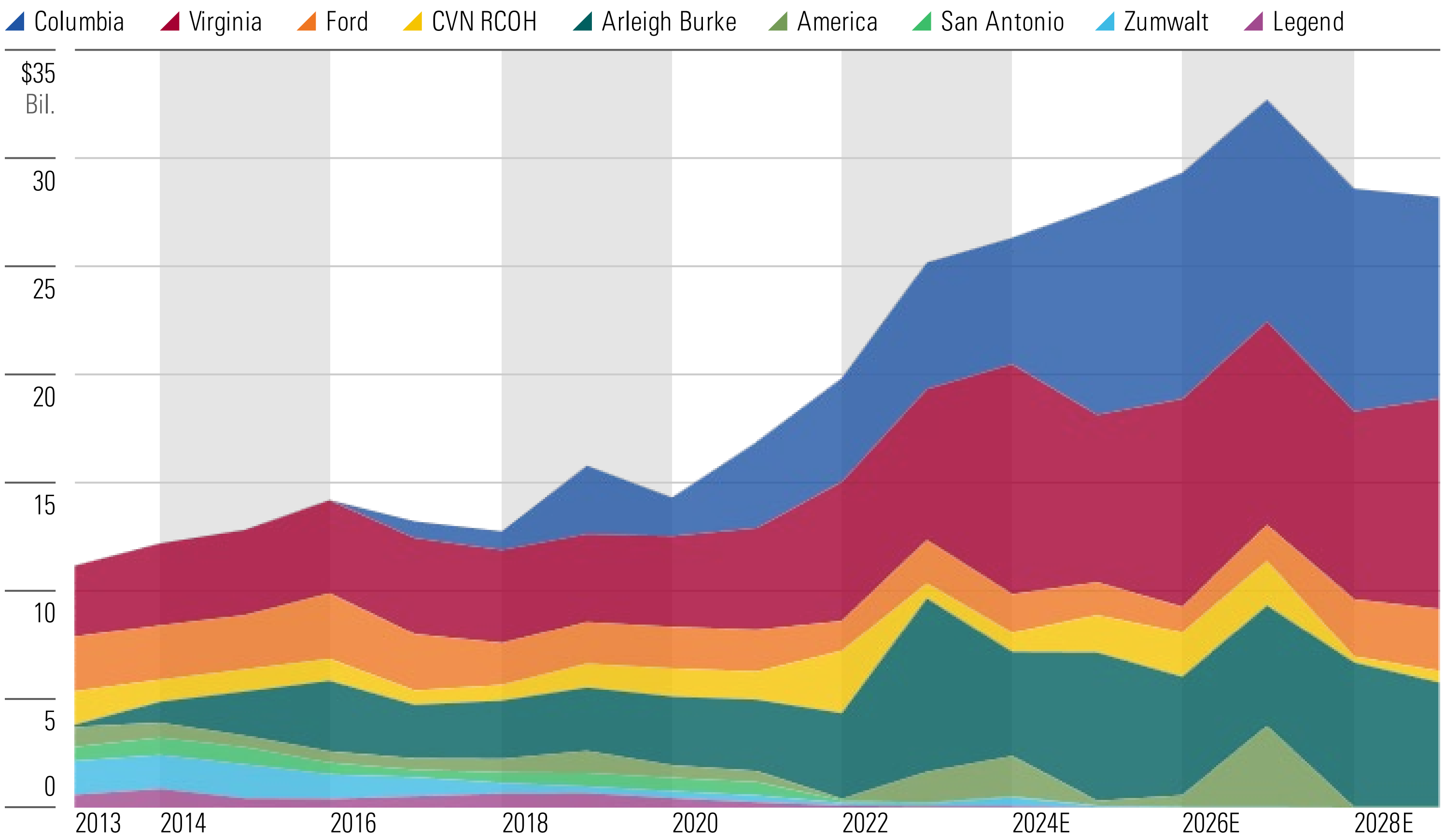
NATO Members' Submarine and Combat Ship Initiatives



Source: Morningstar (left).

We Project the US Naval Procurement Is an $180 Billion Opportunity Through 2030, With Submarines Accounting for 60%

Total Naval Opportunities for US Shipbuilders



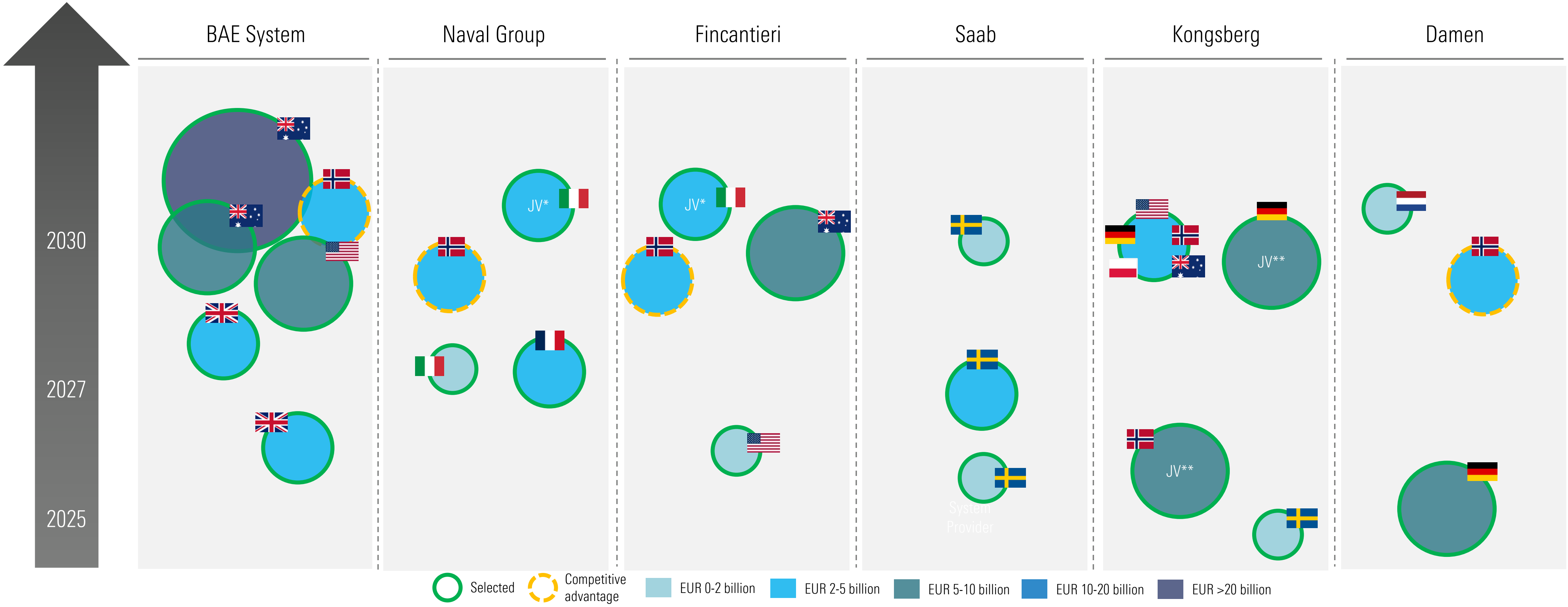
- In response to the pandemic's disruption of the labor force and the industrial supply chain, the US Navy began increasing its budgeted cost to acquire Virginia class submarines. The budgeted cost grew 1% between ship submersible submarine 784 and SSN 799 and is projected to grow 5.2% between boats 799 and 822, including additional funds for boats already under construction
- HII, General Dynamics, and the Navy are negotiating a contract for 17 submarines, including four Columbia class ballistic missile subs, the last two Block V and eleven Block VI Virginia-class submarines
- We estimate General Dynamics' Electric Boat shipyard and HII will each receive approximately 33% of the budgeted cost of each Virginia-class submarine as revenue; a cumulative similar share will go to the remaining contractors

Source: US Department of the Navy; Morningstar. Data as of Dec. 3, 2024.

We Project the European Naval Sector Is a More-Than $145 Billion Opportunity Through 2030

EU Shipbuilders' Opportunities 2025-30 Are Driven by Increased NATO Spending and Higher Allocation to Navy; Beyond 2030, Next-Generation Ships to Add Another $22 Billion

Top Six European shipbuilders; size of circle represents total project value.



Source: Company reports, Morningstar.
*Joint Venture between Fincantieri and Navantia. **Collaboration between TKMS and Kongsberg.

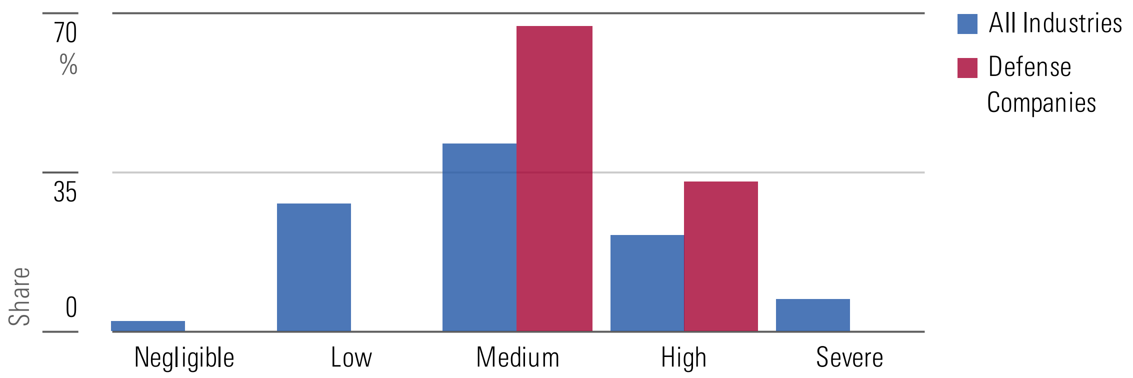
ESG Snapshot

ESG Clarity and Rising Defense Budgets to Drive Future Investability of Defense Stocks

Main ESG Risks for Defense Companies Are Connected to Carbon Footprint, and Product and Business Ethics Issues

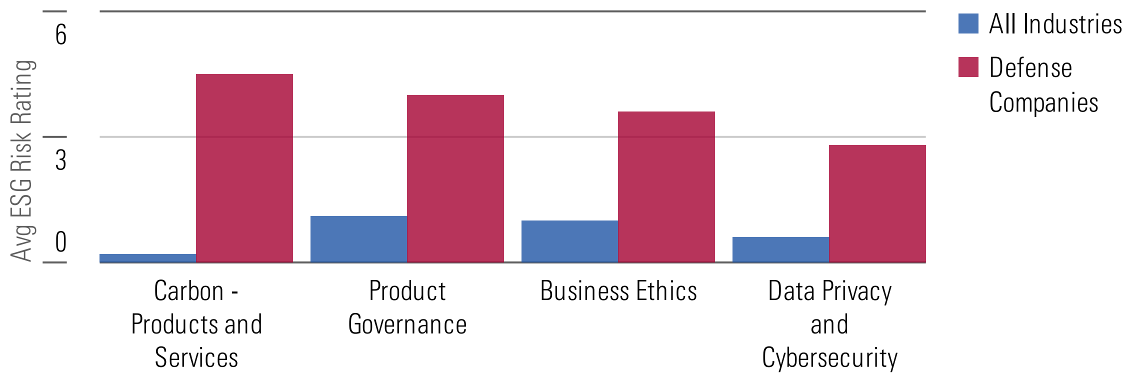
The portfolio has a Medium Risk Rating, with 67% of companies classified as medium risk and 33% as high risk. The defense sector faces heightened ESG risks due to its reliance on highly regulated markets, stringent government oversight, and the sensitive nature of its products. Quality and safety are critical, as failures can have severe human and operational consequences. Additionally, the sector's substantial environmental impact—from resource-intensive manufacturing to operational emissions—further elevates its risk profile. Managing human rights issues and ethical standards across complex, global supply chains is essential, given the industry's reliance on materials from regions with weaker labor protections.

ESG Rating Distribution



Defense companies have a significant impact on the environment, with equipment production and fossil fuel-dependent operations contributing more than 5% of global emissions. This figure is expected to grow as military spending increases amid rising conflicts. Product governance and safety are key ESG risks, driven by stringent regulatory standards and the high-risk nature of their products. Failures can result in significant financial losses, including billions in stoppages, recalls, and reimbursements. Business ethics is another major ESG risk, particularly in human rights, as complex supply chains often rely on raw materials from conflict-affected regions where forced labor and abuses are common. Finally, defense companies face rising cybersecurity risks from managing sensitive government data and adopting advanced technologies like AI-powered drones.

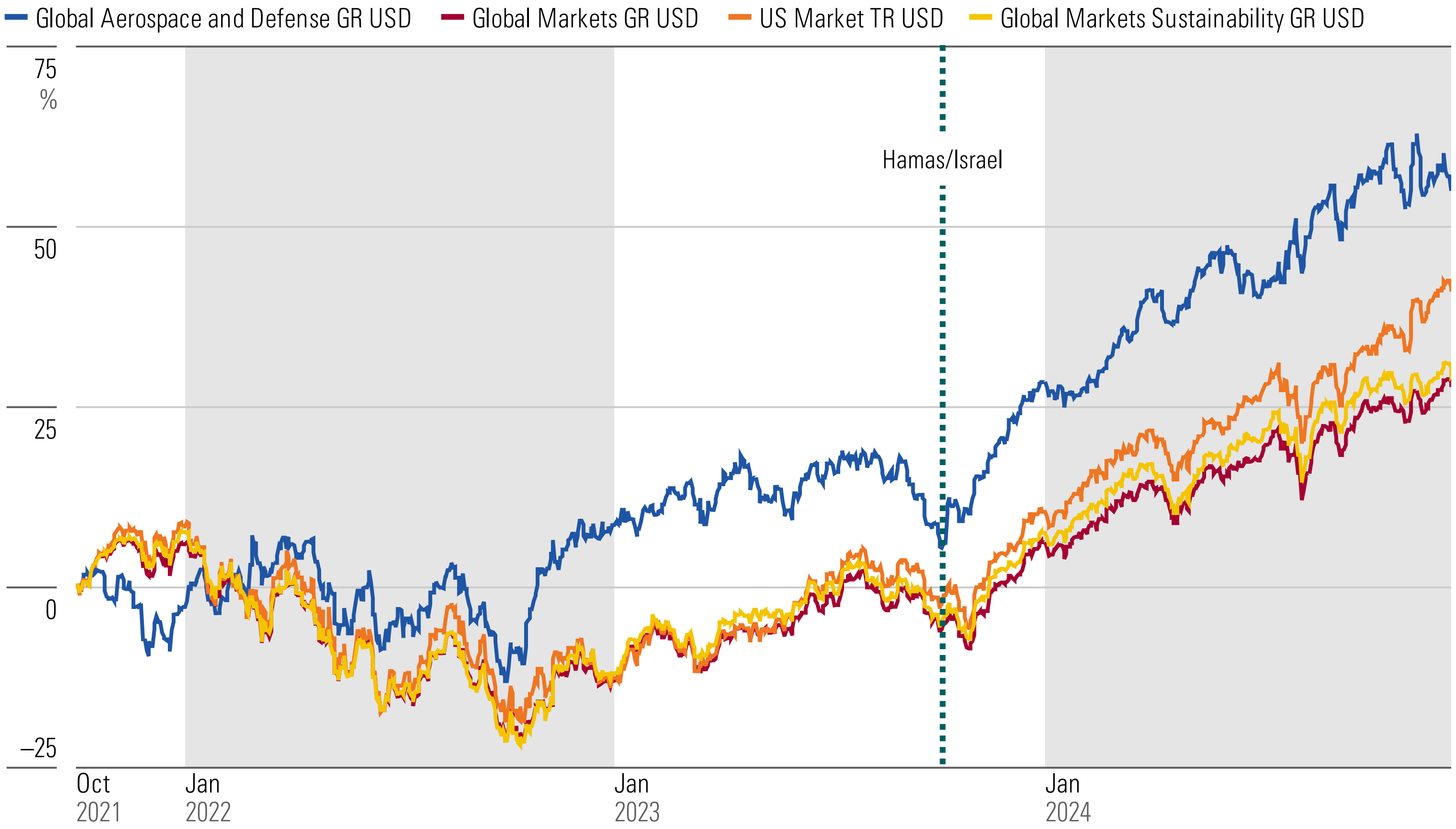
Carbon Footprint, Product, and Business Ethics Compose Primary Issues



Source: Sustainalytics. Data as of December 2024.

We Expect Enhanced ESG Clarity and Rising Defense Budgets to Drive Future Investability of Defense Stocks

Defense Companies' Recent Returns Outpace Global Market and Global Sustainability Benchmarks



Current geopolitical events are reshaping the traditional ESG stance on defense stocks, shifting from exclusion due to weaponry and conflict to recognizing their strategic importance in safeguarding a free society. In the past few years, we have seen no evidence that investors are shunning firms in the defense industry. On the contrary, in the three years through Sept. 30, 2024, the Morningstar Global Aerospace and Defense Index has returned 56.4%, the return of the Morningstar Global Market Index, and it has handily outperformed Global Sustainability and the US total market.

The shift in perception toward defense companies is bolstered by regulatory developments, such as the SFDR set for update in 2025, which defines socially sustainable investments. Crucially, SFDR and the EU taxonomy specifies that only controversial weapons (for example, nuclear, chemical, biological) are socially harmful, potentially excluding defense activities like aircraft, vehicles, ships, engines, electronics, and cybersecurity. Most European prime contractors have little to no involvement in producing these classified weapons, with BAE and Thales' limited exposure to white phosphorus (less than 0.1% of sales) already being phased out.

Source: Morningstar.
*SFDR: Sustainable Finance Disclosure Regulation

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