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Research Article

Fit for War by 2030? European Rearmament Efforts Vis-à-Vis Russia

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Abstract

This research article presents new data on military procurement in Germany, the United Kingdom (UK), Poland, and France, and uses these data to analyse procurement patterns, delivery timelines, and force-generation constraints against the background of a deteriorating security situation and rising Russian capabilities. We show that procurement has substantially increased since 2022 with Germany and Poland focusing on land forces, while the UK's spending is focused on maritime forces. However, we show that procurement needs to accelerate and be front-loaded to be prepared for a possible Russian attack assessed to occur as early as 2030, as delivery delays of three years or more persist. Military strategy and technology are evolving rapidly, particularly with the growing role of unmanned systems, artificial intelligence, and multi-domain integration. Military planners must modernise weapons and strategy while simultaneously scaling existing and effective systems. We show that sustained investment in European technology is essential for modernisation. European weapons tend to be expensive due to low production volumes in a fragmented market, and a focus on cost-effectiveness is vital to ensure the EU's planned €800 billion defence spending is sufficient and fiscally sustainable.

Keywords: European rearmament, strategic autonomy, defence industrial base, military procurement, military readiness, deterrence, defence economics, geoeconomics, Europe, Germany, United Kingdom, Poland, France
JEL Classification: D74, F51, H56, L64, O33

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1. Introduction

Europe's security situation remains challenging. Four major security developments call for an assessment of Europe's rearmament process in this research article. First, a new United States (US) administration has created substantial uncertainty among European countries as to the transatlantic security partnership. Among the triggers of the uncertainty were the changing US position at the Munich Security Conference, direct US negotiations with Russia, the disregard for European countries, and the interruption of US intelligence sharing with Ukraine. The aggravating transatlantic trade relations further heighten European concerns: weak security capabilities constrain the EU's willingness to retaliate against unjustified tariffs. Meanwhile, the US has become the biggest source of geopolitical and geoeconomic uncertainty. While European countries are actively considering a European rearmament strategy to replace US forces in Europe, a systematic, publicly available assessment of ongoing efforts and progress is lacking. This research article provides such an assessment.

Second, the war in Ukraine continues with its attritional and positional character, while Russia's war economy is large compared to Europe and growing. The war consumes large amounts of military equipment on both sides and exhibits heavy casualties. Russia's war economy has further increased the production of military goods and enabled access to Western advanced technology despite sanctions (Hilgenstock et al. 2025; Bilousova et al. 2024). Meanwhile, Russia remains Europe's largest economy in purchasing power parity (Figure 1) and has devoted substantial resources to its military production. Russia spends almost 7% of its GDP on its military and more than 35% of its federal budget. The comparison of military spending in PPP shows that Russia remains at least on par with European countries collectively (Figure 2). In Wolff et al. (2024), we showed that Russia's military production across key weapon systems has increased by more than 200% over the last few years. Russia's military industry is still outproducing the European one.

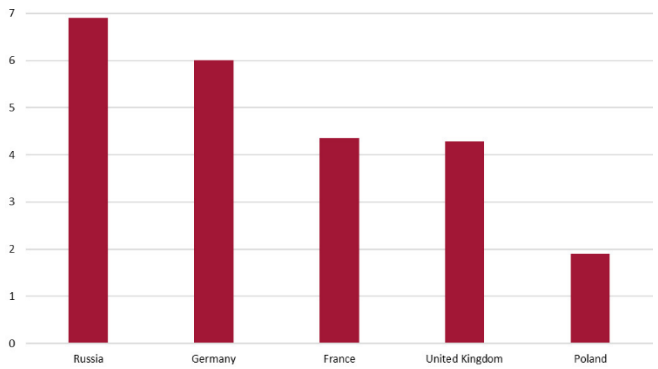

Figure 1. Gross domestic product at purchasing power parity (PPP), trillions of USD

Source: Authors', based on IMF, World Economic Outlook.

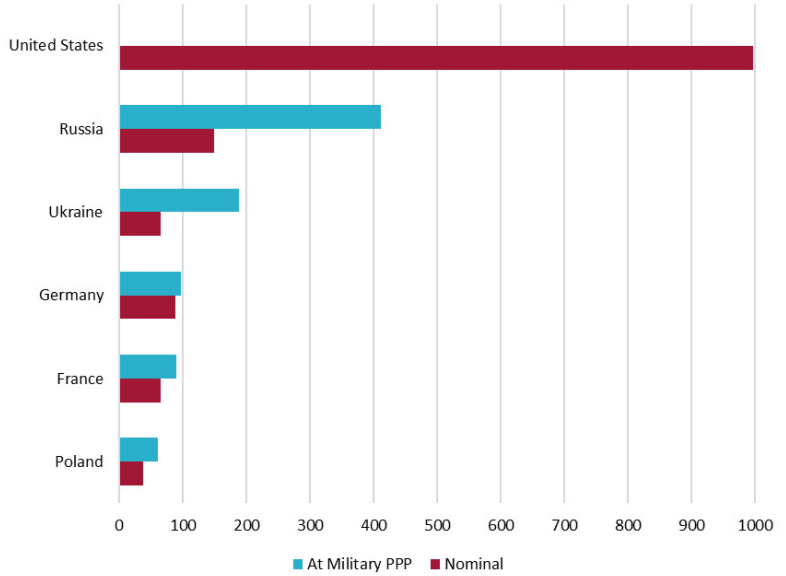

FIGURE 2. Defence spending (military PPP), billions of USD: major NATO countries, Ukraine, and Russia, 2024

Source: Authors', based on Robertson (2022).

Russia has made significant advances across much of the front, especially in the southern Donbass, but it has not managed to return to manoeuvre warfare and large-scale breakthroughs. Figure 3 shows that Russia initially occupied a large area of Ukrainian territory. Following Ukraine's subsequent liberation of much of this territory, further territorial changes have become gradual.

Third, the technology and strategy of modern warfare are changing rapidly, requiring European rearmament efforts to focus not just on acquiring mass but also on accelerating modernisation. Drone warfare has become extremely powerful in Ukraine's war of resistance against Russian aggression. The Ukrainian capacity to attack airfields deep in Russian territory with truck-based drones highlights not only new approaches causing significant damage[1] but also how relatively cheap technology can be used effectively in audacious military operations. It raises far-reaching questions on the protection and security of civilian and military infrastructure across Europe against state and non-state actors.

Fourth, there is a wide-ranging and highly consequential debate on the preconditions for Europe to achieve military advantage over Russia. The key question

[1] For example, see: https://www.ft.com/content/132e4327-11da-4412-b36b-7363604879e6

is whether Russian combat mass should be matched symmetrically, or whether airpower (NATO's traditional approach) can asymmetrically offset Russian mass. In a conflict scenario, this would occur through the rapid suppression or destruction of Russian integrated air and missile defences, thereby opening the possibility of European air superiority to asymmetrically offset Russian ground forces.

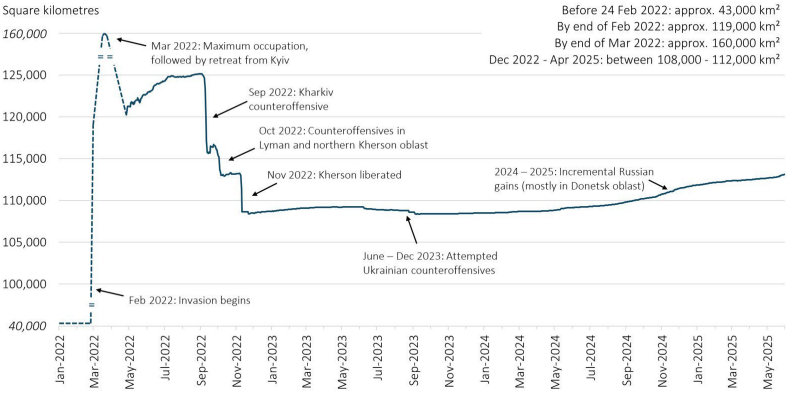

FIGURE 3. Ukrainian territory occupied by Russia, 2022–2025 (km²)

Note: Reliable data unavailable February-April 2022. Ukrainian incursions into Russian territory are not accounted for. In the initial phase of the war, manoeuvre warfare was still possible for Russia, which explains why there were rapid increases and losses of territory. It also needs to be highlighted that territorial definitions of occupied territory are somewhat uncertain in the initial period, therefore estimates for that time are presented as *dashed* due to definitional uncertainty.
Source: Authors', based on Deep State UA (2025).

This is a vital question in European rearmament, as it fundamentally dictates future force structure and, therefore, procurement and force generation. Should airpower be sufficient, then expanding aircraft inventories and deepening magazines of munitions, especially for the suppression of air defence, would be sufficient, and large increases in European ground forces would not be called for. Conversely, should the prospect of gaining air superiority early in a conflict with Russia be unlikely, then large increases in European ground forces would be called for to symmetrically match Russian combat mass and prevent Russian breakthroughs.

Can suppression and destruction of Russian air defence be conducted speedily enough to achieve air superiority? The potential answer to this can be teased out through the performance of the Russian Air Force (VKS) in Ukraine. Despite shortcomings in organic air support, battlefield interdiction, suppression of air defence, and a likely inability to face the best of Western air superiority head-on, the VKS has achieved an exceptional level of performance in two missions: long-range precision strikes and integrated air and missile defence (Bronk 2023).

Layered Russian air defences have extracted a terrible toll on Ukrainian air assets. Meanwhile, Russian long-range precision strikes have continued through 2025 at a high, sustained tempo and have demonstrated a substantial degree of accuracy. Especially if allowed to regenerate in a post-conflict scenario, such strikes would be serious threats to European bases not protected by resilient and layered air defence, especially larger, more concentrated bases, as became the post-Cold War norm (Boulègue and Bronk 2024), which in turn would degrade the European ability to conduct the suppression of Russian air defences necessary for air superiority. Furthermore, Kaliningrad and St. Petersburg are formidable, fortified bastions from which Russian air defence and long-range precision strikes would be deployed in any conflict scenario (Hooker 2024).

Finally, Russia itself does not need to achieve air superiority to emerge victorious in a Baltic scenario. The Russians can exploit their air defence and long-range precision strikes – missions the VKS is most adept at – to keep NATO airpower at bay just long enough to allow massed Russian artillery and electronic warfare effects to achieve their objectives. European investments in the suppression of enemy air defences and air superiority are both necessary and overdue. However, their strategic effect will remain limited unless integrated into a broader multi-domain posture that strengthens European land forces to hedge against unforeseen developments in Russian force generation and sustainment.

Europe's deterrence and defence posture would benefit from more options for conducting conventional deep precision strikes against Russia (Burilkov and Wolff 2025). Assuming such capabilities, the likelihood of war should be lowered, other things equal, as deterrence would be more credible and Russia's ability to leverage superior mass would come under greater challenge. Further analysis would be needed to assess the full effect of such capabilities and their potential availability by 2030. However, we choose to leave the question of Europe's optimal capability mix to other researchers. Our chosen focus in this research article is to assume that European governments will pursue a wide spectrum of capabilities, including many legacy capabilities, so as to be able, if need be, to oppose significant mass against a potential Russian armed attack. Our purpose is to apply a Defence Economics lens to recent and foreseeable patterns in European defence procurement, leading to a scenario-based analysis of overall force requirements and to additional considerations regarding new technologies.

European defence budgets have gone up and are set to increase further. In NATO Europe, defence spending has reached 2%. European NATO countries have committed to increasing their defence spending to 3.5% while strengthening other investments by 1.5% to reach a new overall NATO target of 5%. Spending has been rising, particularly in the North-East of Europe. With European defence budgets rising, spending on military equipment has also increased, reaching 0.7% of GDP. However, more military spending does not automatically and immediately translate into military capabilities, especially if the defence industrial base is strained. First, price increases for military

equipment might absorb a large share of budget increases, particularly if supply is constrained (i.e., the equipment supply elasticity is low). The top US general in Europe recently stated that "this question of the elasticity of our defence industrial base, again, on both sides of the Atlantic, is one of the great strategic questions of the next 10, 15 years."[2] Burilkov et al. (2024) document that the US military defence industrial base is currently facing substantial strains, as evidenced by delayed deliveries and relatively low production output. Second, spending and delivery do not automatically correspond, as many complex products are paid for over several years until the final operational product becomes available. Third, the equipment spending might be focused on the wrong type of equipment. Modernisation needs to challenge traditional procurement processes. For example, purchasing 3D printers for mass drone production might be more effective than developing advanced new weapon systems, but it will require breaking with traditional procurement norms.

Finally, equipment spending might only just compensate for the depreciation of existing equipment stocks. After decades of underinvestment during which stocks rapidly depreciated and equipment spending did not sustain capacity levels, it is crucial to go beyond fiscal headline numbers that have been the focus of the NATO summit in The Hague and assess actual equipment purchases and deliveries.

Europe's rearmament strategy has set itself a tight five-year timeframe, and given the high security concerns, this strategy may need to raise its ambitions. European leaders have endorsed 2030 as the year in which Europe must be able to defend itself in a peer conflict.[3] NATO findings suggested that Russia might be ready to attack within the next four to five years.[4] German defence minister Boris Pistorius has endorsed this warning.[5] Yet, the timeline might need to be compressed further. Negotiations between Russia, the US, and Ukraine may lead to an end to hostilities.[6] At that point, Russia will be able to regroup its substantial existing capacities, which could very quickly represent a direct threat to EU states. Moreover, Russia's war industry will likely build additional capacities at a rapid pace based on its strong military industrial output. Achieving military readiness earlier than 2030 might therefore be warranted.

In Wolff et al. (2024), we have summarised International Institute for Strategic Studies (IISS) data showing that stocks of military equipment have fallen dramatically since the end of the Cold War across key European countries. Burilkov and Wolff (2025) show that stocks of key components have not increased substantially since 2021.

[2] General Cavoli, SACEUR, in a US senate hearing. https://www.armed-services.senate.gov/imo/media/doc/4325fulltranscript.pdf

[3] See for example: https://www.eeas.europa.eu/eeas/white-paper-for-european-defence-readiness-2030_en

[4] https://www.nato.int/cps/en/natohq/opinions_231348.htm

[5] https://www.politico.eu/article/vladimir-putin-russia-germany-boris-pistorius-nato/

[6] It has not, however, translated into a reduction of the intensity of the fighting. Until settlement, both combatants have very strong incentives to fight on all the harder until the end of hostilities, as the final outcome of territorial control is highly likely to freeze alongside the demarcation line at the conclusion of hostilities.

But Europe's military weakness goes beyond standard military equipment. Figure 4 illustrates European dependence on the US in military satellites. Assessing military procurement, therefore, must go beyond standard equipment purchases and consider broader European initiatives for space cooperation.[7]

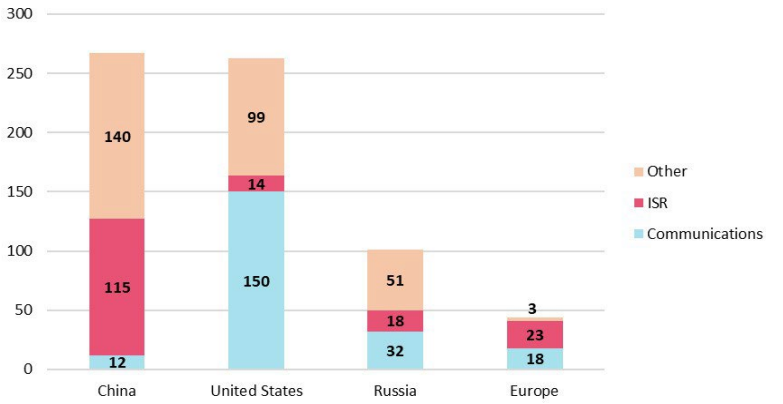

FIGURE 4. Number of military satellites deployed by country in 2024

Note: Europe includes France, Germany, Italy, the United Kingdom, Spain, and Luxembourg. ISR stands for "intelligence, surveillance and reconnaissance".

Source: Authors', based on IISS (2025).

This research article therefore focuses on European military procurement and delivery delays, as well as the need to upgrade and modernise the European rearmament strategy. The next section analyses our new data from a procurement tracker. We then discuss scenarios for rearmament, and the last section concludes.

2. What Do European Nations Order?

Defence expenditure has constantly increased in recent years, and the share of the defence expenditure dedicated to equipment has increased substantially. To better understand the weapons European governments have purchased in recent years, the military expenditures related to these weapons, and when these purchases were made, we have compiled a detailed procurement database. The *Kiel Military Procurement Tracker* systematically and comparatively tracks the military procurement of key European countries.[8] The analysis covers four countries in varying levels of detail, determined by data availability: Germany, the United Kingdom, Poland, and, to a more limited extent, France.

Our database tracks information on the item ordered, the company from which it is ordered, the number of units ordered, the earliest and latest expected delivery dates,

[7] See Alkire (2025) for a discussion of Chinese space capacities.

[8] It is available on https://www.ifw-kiel.de/publications/kiel-military-procurement-tracker-33232/

the monetary amount of the order, the budgetary vehicle providing funding, and whether the order is part of a framework agreement. It also records the country where the company responsible for fulfilling the order has its headquarters, as well as the physical production or manufacturing country of the order, when available. The database includes only items mentioned as military orders or expenses on official government news and press release pages.

We classify orders into 15 general item types: tanks, armoured vehicles, artillery, ammunition, air defence systems, missiles (further differentiated into land, naval, and air variants), drones, infantry, mines, helicopters, aircraft, naval, modernisation (refers to the improvement of the armed forces as a whole), and other. Each general item type contains a corresponding subcategory dedicated to research and development activities. More details on the dataset can be found in Wolff et al. (2024).

For Germany, between January 2020 and April 2025, we captured 213 orders containing nearly 300 items with a total value of €170.5 billion. For the UK, between January 2020 and April 2025, we captured 140 orders and 151 items with a total value of £59.5 billion. For Poland, the monetary amount we identify totals €66 billion. For France, we merely summarise the main orders of the French Ministry of Defence since 2020, but with much less detail being publicly available.

Germany

From January 2020 to April 2025, the *Kiel Military Procurement Tracker* identifies 213 orders totalling 291 items worth €170.5 billion for Germany. Figure 5 shows the pattern of these orders. Five main results stand out. First, Germany placed no substantial orders between July 2021 and April 2022. This period includes the lead-up to the federal

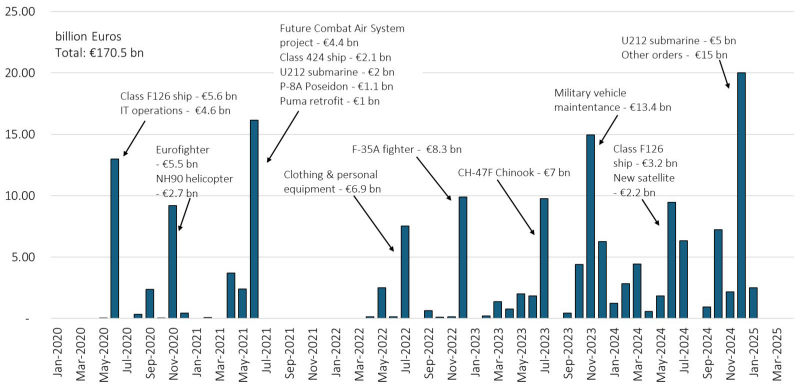

FIGURE 5. Germany's total military orders, January 2020–April 2025, billion EUR

Source: Kiel military procurement tracker – second release, G. B. Wolff et al. (2025).

election in September 2021 and the appointment of the new government in December 2021. However, there was no noticeable increase in procurement activity during the year and a half after the invasion began. On the contrary, order volume fell further. The war, therefore, does not seem to have initiated a rapid increase in items ordered in its first year.

Second, a substantial increase in order volume and frequency began in late 2023. Annual procurement is now at around €55 billion, up from just above €20 billion. Over the entire period since the war started (from March 2022 to April 2025), 148 orders totalling 218 items were placed, for a total volume of €122.7 billion.

Third, there is significant heterogeneity in monthly order volume. In some months, there are substantial spikes, which are usually associated with purchases of expensive equipment such as ships or aircraft. The three largest specific items were a military vehicle maintenance contract in November 2023 (€13.4 billion), 35 F-35A fighters in December 2022 (€8.3 billion), and 60 CH-47F Chinook helicopters in July 2023 (€7 billion). No items were ordered from February to April 2025.

The federal election in February 2025 was followed by a government formation process that was completed only in May, with the ascension of the new cabinet under Chancellor Merz. We reasonably expect a high volume of orders in the coming months, as delayed procurement activity accumulates and normalises.

Fourth, German investment in land capabilities has become more important. While it was slow to pick up after the war began, a clear shift in procurement priorities towards land forces is now visible. We observe a clear overall reorientation towards land forces pre- and post-invasion (Figure 6).

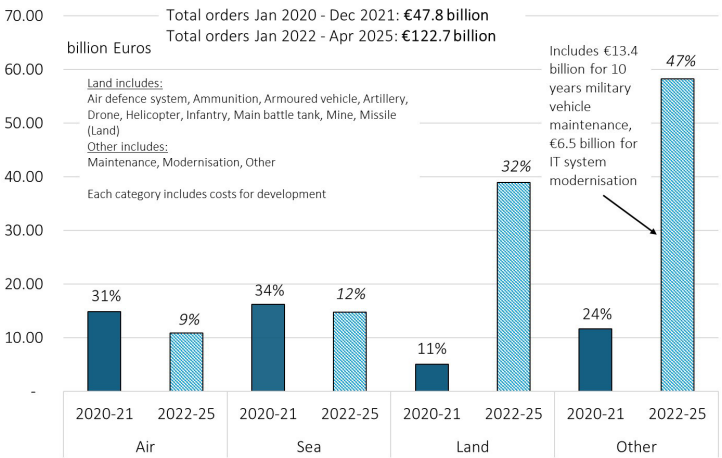

FIGURE 6. Germany's shift in procurement priorities since the start of the Russia–Ukraine war

Note: This figure compares the monetary amounts Germany ordered for military procurements in each category (Air, Sea, Land, Other) for the periods from January 2020 to December 2021 and from January 2022 to April 2025. It also shows the percentage of total orders for each category for each time period.
Source: Kiel military procurement tracker – second release, Wolff et al. (2025a).

Land orders represent a third of overall orders between January 2022 and April 2025 (32%), up from 11% between January 2020 and December 2021. The fall in the share of air orders (31% to 9%) and naval orders (34% to 12%) reflects this.

Fifth, a significant portion of German military procurement has gone towards replacing weapon commitments to Ukraine, and, accordingly, the increase in German capacities is less than the procurement data suggest. Figure 7 documents the estimated change in 2021 stocks resulting from new equipment orders expected to be delivered, as well as weapon commitments to Ukraine, assuming that ordered items arrive.

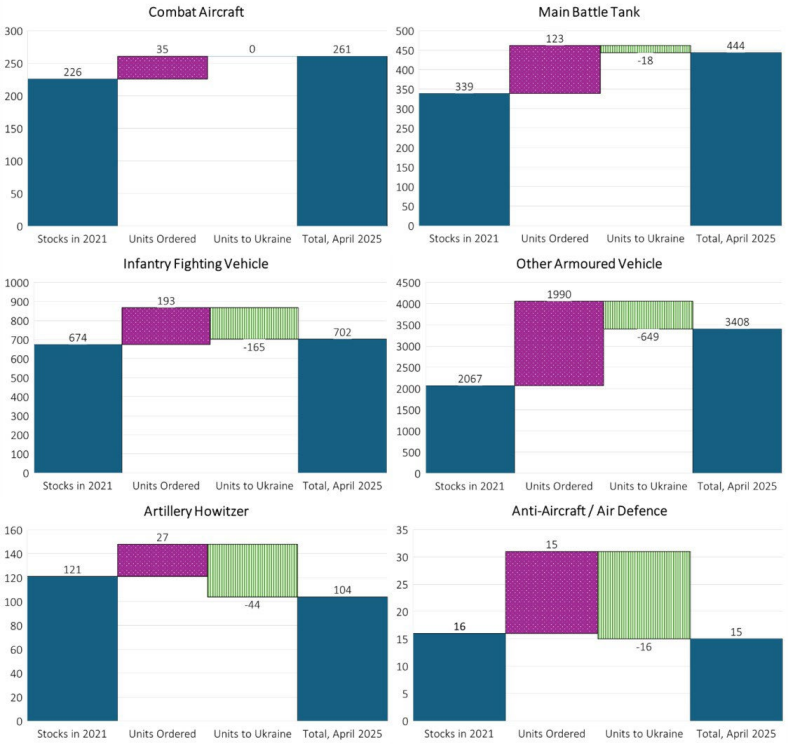

FIGURE 7. Impact of orders of new weapons and commitments to Ukraine on the stock of six major weapon categories in Germany

Note: This figure shows the comparison between German key weapon stocks in 2021; units ordered (February 2022 to April 2025); units promised to Ukraine (February 2022 to April 2025); and the remaining number available (or to be delivered) to the Bundeswehr as of April 2025. The key weapon categories are: (1) combat aircraft; (2) main battle tanks (MBTs); (3) infantry fighting vehicles (IFVs) (orders include both new vehicles and retrofits of existing vehicles); (4) other armoured vehicles (stocks and orders exclude infantry fighting vehicles, light and main battle tanks); (5) artillery howitzers; and (6) anti-aircraft, air defence weapons (stocks include long-range anti-aircraft systems, and orders include long- and medium-range systems). In this figure, we assume that providing units to Ukraine is the only outflow of German stocks.

Source: IISS (2025); Trebesch et al. (2023); G. B. Wolff et al. (2025).

United Kingdom

For the UK, our Tracker identifies 139 orders containing 151 items worth £59.5 billion total.[9] Figure 8 shows the pattern of these orders.

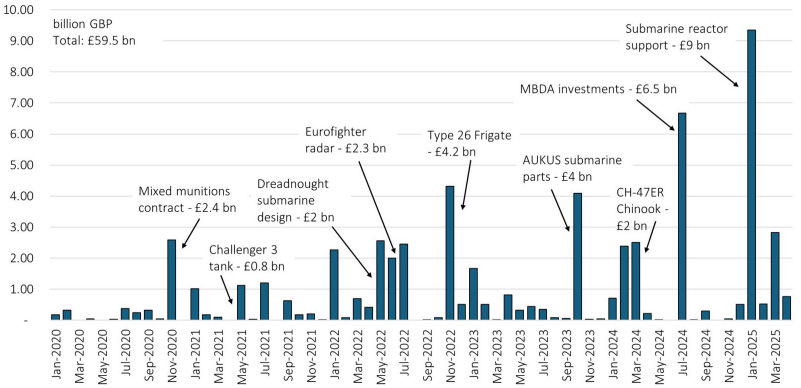

FIGURE 8. UK total military orders, January 2020–April 2025 (billion GBP)

Source: Kiel military procurement tracker – second release, G. B. Wolff et al. (2025).

A noticeable increase in order volume is apparent after the invasion began in February 2022. Order volume grew from £5.8 billion in the twelve months preceding the invasion to £15.2 billion across March 2022 to February 2023. While this was followed by a fall in procurement, annual procurement is now around £20 billion. Unlike in Germany, elections do not seem to have left a strong impact on procurement activity.

Sea power is by far the main priority in procurement, with nearly half of all recorded spending going towards the Royal Navy. The £26.7 billion total of naval orders, almost all from January 2022 onwards, is spread over multiple strategic directions, but submarine orders make up the bulk of naval spending, including £9 billion for nuclear reactors and £1.9 billion for sonar and sensor support. Orders have been made for new attack submarines (as with £4 billion in October 2023 for AUKUS submarine parts, the class to replace the current Astute-class) and new ballistic nuclear missile submarines. British investment in land capabilities is around half of navy spending, while air procurement is relatively insignificant both pre- and post-invasion. Over £700 million was spent by the UK on drone orders or drone development.

The UK leads selected multilateral procurement mechanisms and funding vehicles through which over £1 billion in orders have been placed. The main example is the

[9] Including orders from the UK-administered and partially funded International Fund for Ukraine ('IFU') and Drone Capability Coalition ('DCC') brings this to 150 orders containing 176 items worth a total of £60.5 billion. IFU/DCC orders are not included in UK data but are discussed at the end of this chapter.

International Fund for Ukraine (IFU), a funding mechanism administered by the UK on behalf of five partner countries and six additional donors, with a total reported size of approximately £1 billion. These multilateral procurement mechanisms have a focus on the needs of the Ukrainian armed forces, especially drones. The largest single procurement item with a publicly disclosed price was a July 2024 order of 120,000 152 mm howitzer rounds, valued at £300 million. At least 40,000 first-person-view (FPV) drones have also been ordered through the IFU and DCC at a cost of £170 million, as well as a minimum of 150 surveillance drones for £40 million. Most orders are given as packages with multiple items in unknown quantities, and many such packages include additional orders for drones, air defence systems, missiles, and other items.

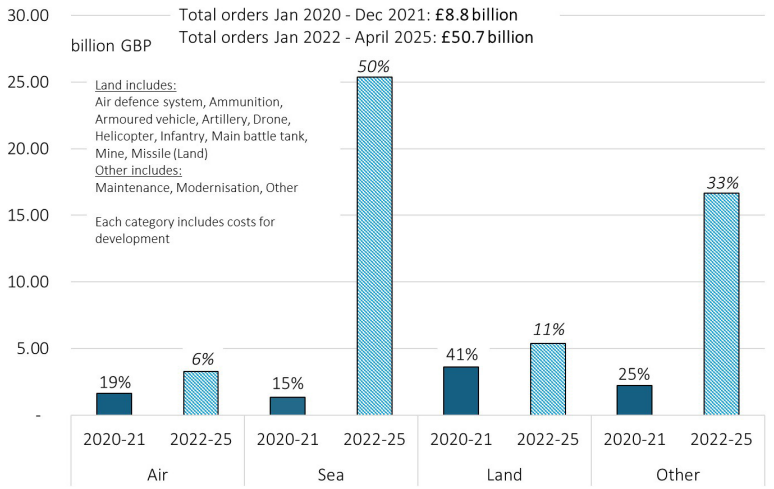

FIGURE 9. UK shift in procurement priorities since the start of the Russia–Ukraine war

Source: Kiel military procurement tracker – second release, Wolff et al. (2025a).

Poland

In the case of Poland, we have identified 97 orders totalling 109 items for the period from January 2019 to May 2025, with a monetary value of around €66 billion. Polish stocks are likely to increase in the coming years (Figure 10). The substantial increase in purchases occurred in 2022 due to the war. It will refill Polish stocks from 2025 onwards until 2032, with some of the products being currently delivered and the others to be delivered in the coming years. Deliveries will replace some of the equipment donated to Ukraine and renew stocks of outdated Polish equipment. Investment in land capabilities is the main priority in the Polish procurement (Figure 11).

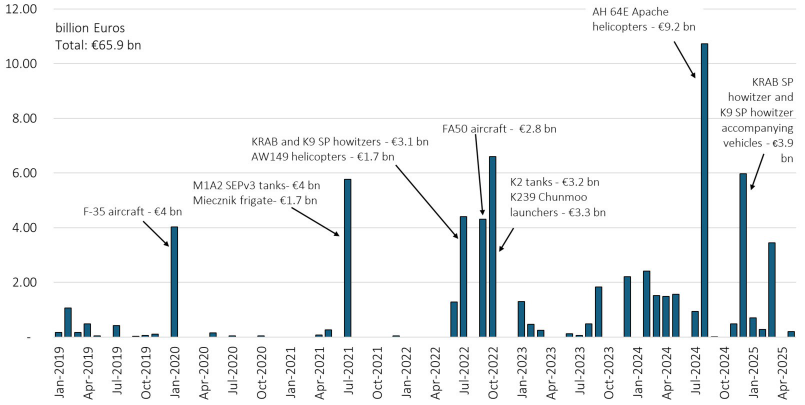

FIGURE 10. Polish defence procurement by equipment category (billion EUR)

Source: Kiel military procurement tracker – second release, G. B. Wolff et al. (2025).

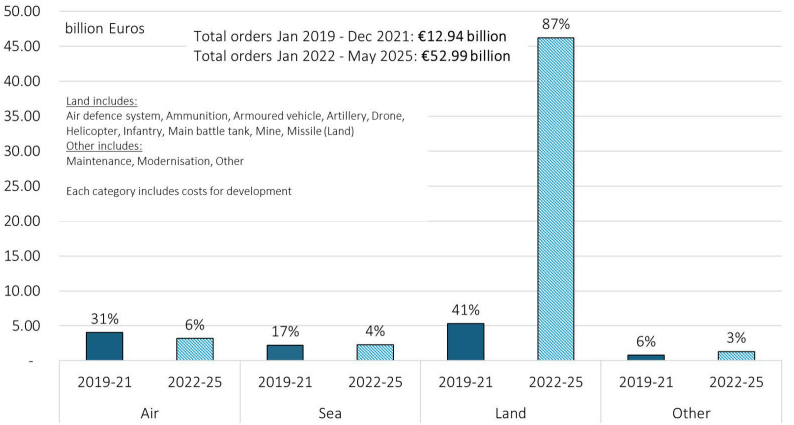

FIGURE 11. Poland shift in procurement priorities since the start of the Russia–Ukraine war

Source: Kiel military procurement tracker – second release, G. B. Wolff et al. (2025).

We can highlight the purchase of MLRSs (around 300 HOMAR-Ks and a framework agreement for almost 500 units of HIMARSs), MBTs (more than 300 Abrams, and 180 K2 tanks, with 800 more yet to be purchased as part of a framework agreement). The acquisition of South Korean howitzers is similarly remarkable, with more than 350 purchased between 2022 and 2024. For air defence, Poland has purchased six PATRIOT systems as part of the WISŁA air defence programme. Also remarkable is the purchase of 96 AH 64E Apache attack helicopters in 2024. In the case of the air force, two major acquisitions stand out: the purchase of 48 FA-50 South Korean aircraft in 2022 and the purchase of 32 F-35 aircraft in 2020. In the case of the sea forces, three frigates and two naval missile units constitute the major investments.

While further investment may be needed, we can expect major deliveries of equipment to Poland over the next five years, including considerable increases in MLRSs, MBTs, and self-propelled howitzers. If other major European countries do not increase their stocks accordingly, this would make Poland the largest European army by size across several key categories of land-force equipment.

France

To our knowledge, in the case of military procurement in France, there is no comparable level of transparency to that of Germany, the UK, or Poland. Specific budget allocations to the different purchases are not always made available. While we can sometimes track procurement orders for certain items using Ministry of Defence news announcements, in many cases, the data is not publicly available on a consistent basis. This is especially true for data on the monetary amounts of orders. What we can find, however, is an overview of the quantities of different military items ordered and delivered in a given year from the annexes of the military equipment budgets published by the French Ministry of Defence. Over the last six years, the French military placed major orders for a number of weapon types (Table 1).

TABLE 1. France orders by weapon types from 2020 to 2025 (units)

Weapon Type	2020	2021	2022	2023	2024	2025	Total
Combat Aircraft	0	0	0	42	0	0	42
Other Aircraft	13	1	2	0	0	0	16
Main Battle Tank	0	50	50	0	100	0	200
Armoured Vehicle	677	120	564	442	515	120	2438
Artillery Howitzer	0	0	0	127	0	0	127
Missile	0	59	418	320	3	0	800

Note: This table shows the main orders ("principals commandes") of main weapon types by France from 2020 to 2025, contained in the annexes of the military equipment budgets published by the French Ministry of Defence and summarised by the Kiel military procurement tracker. 'Missile' relates to all types of missiles (Land, Air, Naval). All vehicles ('Main Battle Tank' and 'Armoured Vehicle') orders include both new purchases and refurbishments of existing vehicles. Other aircraft include aircraft orders for both the Air Force and Navy.

Source: Projet annuel de performances Annexe au projet de loi de finances pour 2020, 2021, 2022, 2023, 2024, 2025. Programme 146/147 Équipement des Forces; Kiel military procurement tracker – second release, G. B. Wolff et al. (2025).

For the Air Force and Navy, France ordered several transport and surveillance aircraft, such as the A330, before the start of the Ukraine War, as well as a large order of

Rafale fighter jets in 2023. Also notable is the number of orders for new armoured vehicles and Leclerc tank refurbishments for the Army (almost 2700 combined) and the regularity with which these orders were made. Finally, France ordered a large number of CAESAR 155 mm howitzers and 800 missiles, over 300 of which are surface-to-air missiles. In all but one of these orders (an order for three Hawkeye surveillance aircraft in 2020) France purchased from either French or trans-European companies with French participation.

Overall Increase in European Defence Spending Driven by Germany

On the whole, Figure 12 summarises the procurement efforts of Germany, Poland and the UK. While in 2023 the UK and Poland were increasing their procurement so substantially that they bought weapons in comparable amounts to Germany, it is only since 2023 that a substantial increase in German procurement has driven the overall increase in spending. As it appears today, Germany procures more than Poland and the UK combined. Should the current German government's budgetary plans materialise, Germany's dominance in European procurement will increase even further.

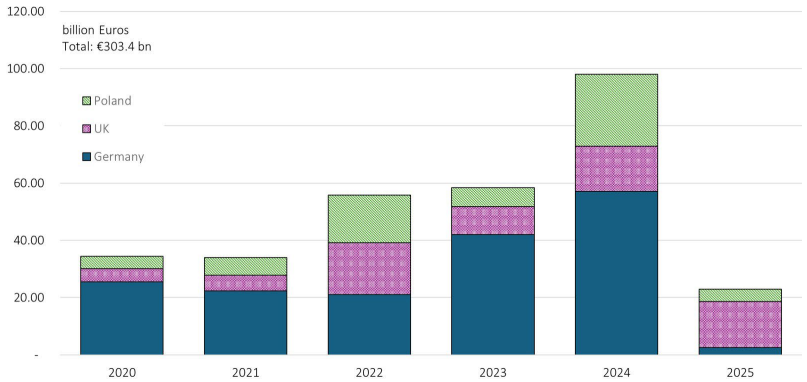

FIGURE 12. Procurement value from January 2020 to April 2025 in Germany, Poland and UK (billion EUR)

Note: This figure shows a summary of the Kiel military procurement tracker for Germany, the UK, and Poland for the years 2020–2025, in € billion. We exclude France because there is insufficient monetary data to conduct a comparable analysis with the other countries. For all countries, there is no way to verify how much military procurement spending we are missing, and we are not aware of a viable method of benchmarking the data. Hence, our results should be interpreted cautiously and as a lower bound.
Source: Kiel military procurement tracker – second release, G. B. Wolff et al. (2025).

3. The Long Road Towards Readiness – And Why More Ambition Is Still Needed

Procurement does not mean effective capacities are in place. To come to effective capacities, equipment needs to be delivered, but it also needs to be the right equipment.

Finally, it must be embedded within a broader strategy that commands public confidence and sustains citizens' willingness to bear substantial fiscal burdens.

Our procurement dataset allows us to assess expected delivery dates of procured equipment. While there is considerable heterogeneity across weapon systems, we find that the average time between procurement and expected delivery is around three years in Germany, the UK and Poland. This offers an important message: if the 2030 timeline is to be met, procurement must occur in the next two years, as otherwise deliveries will be too late. Our data also suggests that more and more equipment is ordered without having a clearly defined delivery date. This suggests that companies, even with full order books, may still not have invested sufficiently in production capacity. The question thus arises whether production can be meaningfully accelerated.

It should be noted that this study adopts a position in favour of prioritising European industrial development. There is a debate here between the urgency of the threat requiring procurement from the US defence industrial base, balanced against the advantages of autonomy and risk reduction presented by investing in European industrial development. Procurement from the US is likely to continue for systems where there is no clear alternative available to European countries, such as in 5th-generation fighter jets. However, where procurement is or could be in the short term more competitive, there are reasons for emphasising the nurturing of European capabilities.

Our analysis suggests that European policymakers need to urgently engage in the debate over the trade-offs between relying in US technology and domestic alternatives. As Mejino-López and Wolff (2025) discuss, even the unlikely possibility of political exploitation by the US of Europe's dependence on US defence technology could have major implications for policy areas beyond security. It is no coincidence that the EU-US trade deal was heavily influenced by that one-sided security dependence.[10] In that context, especially the most immediate risks resulting from Europe's heavy dependence on US software and its updates, for example in the context of F-35 fighter jets and the Aegis anti-missile software for frigates, should be considered a risk that needs to be weighed against faster delivery and possibly greater technological performance.

But the case for greater investments in domestic technological alternatives extends beyond the leverage the US holds over Europe via technology. Evidence is increasingly available that the US defence industrial base is experiencing delays in deliveries. This is due in part to Washington's own geopolitical context. For instance, Taiwan faces a

[10] For example, the European Commission's director general for trade, Sabine Weyand, has argued that the unfavourable trade deal concluded between the US and the EU was a direct result of Europe's security dependence, a view later echoed by President of the European Council, Antonio Costa. See Sarah Wheaton, "Trade truth and consequences." Politico, 29 August 2025, https://www.politico.eu/newsletter/brussels-playbook/trade-truth-and-consequences/, and Seb Starcevic, "Costa breaks ranks on EU-US trade deal, fires warning shot at Trump", Politico, 1 September 2025, https://www.politico.eu/article/antonio-costa-eu-us-trade-deal-warning-shots-donald-trump/.

backlog of more than $20 billion in US arms sales[11] despite being a major US ally and being seriously exposed to rapid growth in Chinese capabilities. This includes critical capabilities like F-16 jets and precision munitions. Meanwhile, the US-Australia submarine deal under the AUKUS aegis has had a fraught history, with delays, cost overruns, and US insistence on operational control over the submarines, although Washington eventually relented on this last point.[12] In part, this is also due to objective production limits at a time of substantially increasing global defence budgets.

The question is thus not whether Europe should increase its domestic military-industrial production and assume greater responsibility for producing technologies that are currently manufactured predominantly in the United States. The real question is how quickly production and technological development can scale. The economic history literature shows that sharp production increases have been possible in actual wartime (see a short review in Mejino-López and Wolff 2024). According to Rapping (1965), the monthly aircraft production in Nazi Germany increased from 30 to 425 between 1933 and 1936, and in 1939 it further increased by 60% with respect to these levels. By the end of 1939, German production of tanks per month was placed around 70. Harrison (1990) finds similar patterns for the UK, with the output increasing by a factor of four between the first quarter of 1942 and the end of 1939. During the peak of production in 1944, the UK was producing more than 500 aircraft and 1.5 million artillery shells *per week*. Rapping (1965) studies American shipbuilding output during the Second World War as well, finding a productivity increase of 122%, and an annual increase in production of 40% between the end of 1941 and 1944, both possibly being explained by the effects of cumulative learning and adaptation. Historical evidence, as well as the evidence in Ukraine, shows that rapid technological advancements are also possible when the need is high and demand is directed to domestic producers as we discuss further below.

Production increases for many established systems

The documented evidence, however, builds mostly on exceptional wartime, and mainly on the Second World War – a situation different to today on many dimensions. We therefore compile production data for specific military equipment looking at the production rates before Ukraine's invasion, and the production rates expected to occur before 2027. As Table 2 shows, the increase in production capabilities since 2022 has been substantial across all the items we examine.

[11] See https://tsm.schar.gmu.edu/taiwan-arms-sales-backlog-march-2025-update-new-sipri-data-sheds-light-on-partial-deliveries/?utm_source=chatgpt.com

[12] See https://www.afr.com/world/north-america/us-guarantees-australian-aukus-submarine-sovereignty-20231220-p5esn8

TABLE 2. Increase in production of selected military equipment since 2022.

Equipment	Company	Production by 2022	Expected production (by Year)	Increase %
Artillery shells	Rheinmetall	70,000	1,100,000 (2027)	1471%
Artillery shells	CSG	–	300,000 (2026)	
Artillery shells	Nexter	–	400,000 (2027)	
Artillery shells	Mesko	–	150,000 (2027)	
Total European artillery shells production			***1,950,000***	
CAESAR, SP howitzer	KNDS	72	144 (2025)	100%
Zuzana-2, SP howitzer	Konstrukta	20	40 (2025)	100%
Archer, SP howitzer	BAE Systems AB	4	12 (2025)	200%
Panzerhaubitze 2000, SP howitzer	KNDS, Rheinmetall	–	6 (2025)	–
2S22 Bohdana, SP howitzer	Kramatorsk	72	240 (2025)	233%
Total European SP howitzer production			***202 (442 including Ukraine)***	
Leopard 2A8, MBT	KNDS	-	50	
Total European MBT production			***50***	
Abrams M1A2, MBT	General Dynamics	57	135 (2025)	137%
Taurus missile	MBDA/ SAAB	60	60 (2025)	
PAC-3 missiles	Lockheed Martin	380	650 (2027)	71%
HIMARS, MLRS	Lockheed Martin	48	96 (2024)	100%
Javelin missiles	Lockheed Martin	2,400	3,960 (2026)	65%

Note: While other manufacturers for artillery shell production exist in Europe, such as BAE Systems or Nammo, we could not gather numbers on the production data. Estimates should be interpreted with caution, given the uncertainty about actual production capacities.

Source: Authors' based on company reports and specialised press.

The most notable increase has occurred in artillery shell production. Artillery shell production in Europe is now substantially larger than that of the US, but still somewhat smaller than the combined Russian-North Korean production. Moreover, self-propelled howitzer production has increased substantially, with various European producers (including Ukraine) now producing 442 units per year (with the most expensive German system playing virtually no quantitative role). These numbers are now close to Russian production numbers.

When it comes to main battle tanks, European production is concentrated on the Leopard 2A8, with an annual expected production of 50 units. In the US, the reported production of Abrams tanks has increased substantially, reaching 135 units per year. These numbers are substantially smaller than Russian production numbers.

When it comes to fighter jets, no clear increase in production output is visible for the four most prominent Western combat aircraft (see Table 3).

TABLE 3. Deliveries and orders for military combat aircraft/fighter jets, 2020–2024.

Deliveries & (Orders)	**2020**	**2021**	**2022**	**2023**	**2024**
Eurofighter	1 (38)	2 (0)	11 (20)	19 (0)	6 (25)
F-35	120 (102)	142 (16)	141 (256)	98 (126)	110 (145)
Rafale	13 (0)	25 (49)	14 (92)	13 (60)	21 (30)
Gripen	1 (0)	6 (0)	2 (0)	1 (4)	0 (4)

Source: Authors', based on companies' annual reports and Bloomberg.

Developing new technologies to lead

Europe lacks some top-tier military technologies, and development timelines are often extended over decades rather than short-term horizons. G. Wolff et al. (2025) provide estimates of current time horizons for the development of weapons, assuming continuity from the past. These estimates are based on standard planning horizons, excluding any major urgencies.

A reduced or even completely missing technological lead in warfare is becoming an increasing concern across Western militaries, and is particularly an issue for Europe. Both Russia and China have substantially advanced their production capacities as well as technological heft. For example, during a recent confrontation between Pakistan and India, Chinese-made J-10 fighter jets reportedly downed several French Rafale aircraft on May 7. Although no conclusive evidence has emerged regarding the precise

circumstances of the incident, the share prices of both manufacturers reacted immediately (Figure 13).

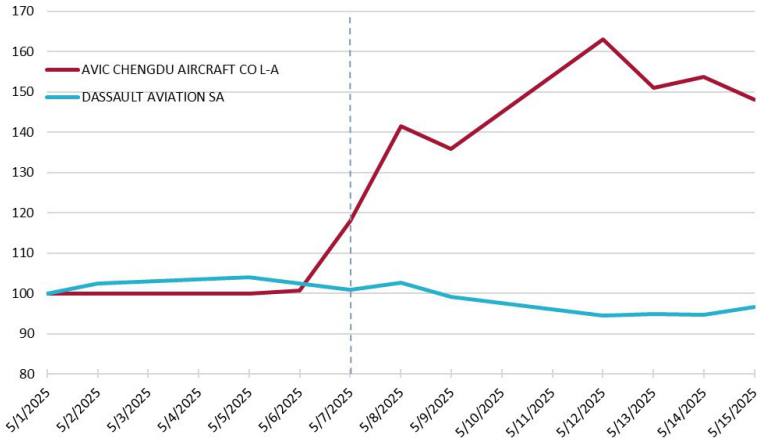

FIGURE 13. Stock price evolution of Dassault and Chengdu companies

Note: May 1, 2025 = 100.

Source: Authors', based on Bloomberg.[13]

Rapid technological change presents a central challenge for Europe's rearmament efforts. Defence technologies are advancing at unprecedented speed, with new classes of weapon systems increasingly shaping operational outcomes. Although the F-35 fighter jet may still represent the world's most advanced multirole aircraft, technological advantage is becoming more transient, contested, and context-dependent.

The usefulness of manned fighter jets is increasingly put into question, and alternative technologies can have much shorter development times, offering new opportunities for Europe. While drones cannot replace or stop fighter jets,[14] they can serve as platforms from which air-to-air missiles can be fired, possibly reducing fighter jets' military effectiveness. More effective air-based or ground-based anti-aircraft capacities will increasingly challenge the role of fighter jets, further eroding the technological lead of Western militaries. Unmanned systems will play an increasing role in all domains: land, sea, air, and cyber. Increasingly, these systems will also be autonomous or semi-autonomous. European armies (other than Ukraine) appear to be further behind on such developments compared to the US.

[13] https://www.reuters.com/world/pakistans-chinese-made-jet-brought-down-two-indian-fighter-aircraft-us-officials-2025-05-08/

[14] However, some drone proponents, including prominent voices in the technology sector such as Elon Musk, have argued that large swarms of drones may constrain the operational effectiveness of fighter jets.

Increasing use of drones

The use of drones in the invasion of Ukraine was rather modest at the beginning of the conflict, but it has steadily increased. The use of UAVs by Russia has increased by a factor of eight between September 2023 and March 2025.[15] To keep up with the extensive use, drone production has experienced sharp increases both in Russia and Ukraine. For instance, the target for production of first-person-view (FPV) drones in Ukraine for 2025 is around 4.5 million, while that for Russia is between 3 and 4 million,[16] with the levels of production at the beginning of the war being much more limited. Drones appear critical, and according to reports, are now responsible for 60-70% of damage currently caused to Russian equipment.[17] At the same time, military analysts in Ukraine stress the complementary nature of drones, artillery, and armoured vehicles.

Scale leading to lower prices

Increased manufacturing scale has led to substantial reductions in unit costs. As production capacity has expanded, the price of individual systems has declined, with Ukrainian manufacturers now capable of producing basic drones at extremely low cost.[18] Similarly, increased competition within the defence industrial base can compress corporate margins, improving affordability and lowering procurement costs for states (see footnote 5).

Drone manufacturing in Europe

European start-ups in the field are emerging, and their production of more sophisticated drones is increasing.[19,20] While growing, European start-ups still have a limited scale compared to American competitors (Wolff et al. 2025b), and in the case of long-established firms, joint ventures appear as a possibility to increase scale and market access.[21]

Contrary to other military equipment like artillery shells or armoured vehicles, stockpiling for small FPV drones is of limited use. The pace of technological evolution is now so rapid that drone platforms can lose operational relevance within months, as defensive systems adapt and improve. It is therefore important to think of drones in terms of production capabilities. Europe must build the capacity to remain at the

[15] https://www.iiss.org/online-analysis/military-balance/2025/04/russia-doubles-down-on-the-shahed/#:~:text=Russia's%20commitment%20to%20the%20use,increase%20these%20numbers%20through%202 025.

[16] https://www.forbes.com/sites/davidaxe/2025/03/12/45-million-drones-is-a-lot-of-drones-its-ukraines-new-production-target-for-2025/

[17] https://static.rusi.org/tactical-developments-third-year-russo-ukrainian-war-february-2205.pdf

[18] https://www.bloomberg.com/news/newsletters/2024-07-11/diy-bomb-carrying-drones-change-the-economics-of-war-big-take

[19] https://helsing.ai/newsroom/helsing-to-produce-6000-additional-strike-drones-for-ukraine

[20] https://www.ft.com/content/e085334b-8697-4824-80fe-a558b869ec5c

[21] https://www.ft.com/content/8f88276b-6194-4f43-80fd-71838b635700

technological frontier, alongside enhanced investment in personnel training and the effective integration of new technologies into military doctrine, strategy, and exercises.

Future-proofing European Defence: The Complementarity of Mature Capabilities and Future Technologies

An early indication of the kind of force generation that might be needed came from Commissioner Kubilius, who suggested that European forces should be increased by an additional 49 brigades (Kubilius 2024). This would translate to anywhere between 250,000 and 300,000 new troops. Earlier, Burilkov and Wolff (2025) suggested similar numbers by comparing the US presence in Europe as shown by specific war simulation games. Why the focus on land warfare? As outlined in the introduction, if there is one key lesson of the war in Ukraine, it is that the likelihood that peer conflict devolves into industrial warfare is high. In such a conflict, victory is decided by territorial control and production rates to sustain forces for attrition. While mature systems like tanks and artillery remain foundational to land warfare, they have been joined by new technologies such as drones and AI.

Unmanned systems are now indispensable across all domains of war. In Ukraine, drones now cause more casualties than artillery. That is not to say artillery is now obsolete: the combination of drones, precision munitions, and artillery - especially guided munitions – is significantly more potent than all three capabilities individually. This is further enhanced by AI-assisted battlefield management systems that increase reaction speed and survivability. The same can be said for other facets of ground warfare. Artificial intelligence will play an even more central role as agentic AI models are introduced, significantly expanding the speed of decision-making and the breadth of intelligence accessible to military commanders.

Mechanised infantry in Ukraine is increasingly augmented by unmanned ground systems (UGV) for additional firepower and logistics. Increasing the number and use of such UGVs not only enhances the traditional work of infantry mounted in IFVs or other armoured vehicles, but it also enhances the survivability of the infantry by replacing them in tasks with UGVs. The most common short-range drones used on the Ukrainian battlefield are significantly less effective against armoured vehicles than against unprotected infantry. This disparity will widen further as more effective counter-drone systems, such as directed energy weapons, become operational and are introduced at scale.

A future-proof European rearmament strategy must strike the right balance between investment in traditional "heavy metal" capabilities such as tanks, infantry fighting vehicles, and artillery, and sustained funding for training, research, and development. This approach must be supported by a robust industrial base capable of delivering emerging capabilities, including unmanned systems, sixth-generation aircraft, artificial intelligence, directed-energy air-defence weapons, space-based assets, hypersonic weapons, naval electromagnetic systems, and quantum computing.

The Russian Threat on the Eastern Flank

The most serious threat posed by Russia to Europe is that of a breakthrough by Russian land forces, managing to occupy and hold European territory. The Baltics are the obvious flashpoint. The Suwalki Gap scenario, in which Russian forces operating out of Kaliningrad and Belarusian territory link up to cut off the Baltic countries from the rest of NATO, is commonly invoked. However, there is also the Narva scenario, of Russian forces leveraging the Russian minority in eastern Estonia for an invasion and occupation. This scenario places the action even closer to Russian home bases, and without the need to rely on Belarusian compliance.

Russian mass, in number of units and in firepower, would be the key enabler of a breakthrough. The longer that coalition troops are able to sustain the defence and prevent a breakthrough, the less likely it becomes, as breakthroughs are reliant on mass, speed of action, and surprise. This requires matching conventional Russian land capabilities with those of Europe. Experience in Ukraine shows that the new technologies of the battlefield, such as drones and AI, are highly complementary to these older capabilities, and if integrated together, form a potent warfighting force fully capable of utilising the Reconnaissance-Strike-Complex that defines modern warfare.

It is also relevant to consider the impact of the Sino-American rivalry. The 2027 scenario of a Chinese blockade or invasion of Taiwan would place a very high load on American capabilities, given China's dramatic qualitative and quantitative growth in military capabilities and the size and sophistication of its defence industrial base. Such a possibility would have two consequences. One is that the US, regardless of political will, would find it difficult to commit to the European theatre. Second, this would potentially create a window of opportunity for further Russian aggression on a shorter timeline than typically predicted. The Kremlin is nothing if not strategically opportunistic.

Fusing Mature and Future Capabilities for Survivability

Experience from Ukraine and the Middle East also shows that whenever infantry, which remains critical for actually holding ground, operates without the "heavy metal" of armour, it sustains severe casualties. Armoured vehicles remain the best protection for infantry, and when deployed in bulk, can significantly mitigate attrition. The European experience in low-intensity interventions, such as Afghanistan, has been the gold standard of casualty evacuation by helicopter. For instance, France sustained 71 killed in action and 725 wounded in action, for a killed to wounded ratio of 1:10. Experience in Ukraine shows that the casualty ratio there, in a true peer conflict, is much closer to 1:3. The 1:3 ratio is also commonly accepted for conventional war, and matches US casualty ratios since 1990 in specific battles that were intense enough to approach peer conflict.

Another key lesson of the war in Ukraine is that casualty evacuation by helicopter near the frontline is nearly impossible in a contested airspace, where both sides have air

forces and integrated air defence. Helicopters are particularly vulnerable to long-range anti-air missiles. As outlined in the introduction, in a hypothetical conflict with Russia, European forces are unlikely to have air superiority, especially in the opening stages of the conflict, when the Russian Air Force and its extensive air defence network are intact. Therefore, casualty evacuation by helicopter, as was the case in Afghanistan, will not be possible at scale. As is the case in Ukraine, casualty evacuation will fall on IFVs and other armoured vehicles, which is the standard practice for both Ukrainian and Russian forces. Such vehicles have the best combination of speed, protection, carrying capacity, and widespread availability.

Any measure that can reduce potential European casualties in a conflict must be fully pursued. Further development and procurement of UGVs is critical. Their ability to provide expendable firepower and logistical support that partially replace troops in these roles is central to the Manned-Unmanned Teaming System (MUM-T), which is gradually being integrated into many militaries worldwide, including the US, Russia, Ukraine, and China, as well as in Europe.

Additionally, experiments are already underway to fully automate existing weapons systems, starting with artillery. Therefore, it can be expected that "legacy" systems such as tanks and IFVs can eventually be fully or partially automated as well. This would further reduce casualties and extend the life of these systems by reducing or even eliminating the crew.

Finally, as outlined above, a Russian breakthrough is the most serious threat to Europe, but it also requires mass, speed of action, and surprise. It is highly likely that Moscow is aware of this, especially given its experience in Ukraine. Therefore, generating European forces to provide that mass on the eastern flank is a very powerful deterrent, because it directly reduces the likelihood of a successful Russian breakthrough, and would therefore factor into Moscow's strategic decision-making. It is European mass, and therefore the willingness and capability to fight an industrial war and sustain the attrition needed to win such a war, that would best deter the Kremlin's designs.

European vs. Russian Future Force Generation

If deterring the Kremlin and ensuring European security require greater force generation and sustainment, what would that look like? On the one hand, we have estimates of an additional 250,000 troops for Europe in 50 brigade-equivalent units. On the other hand, our estimates show that Russian force generation through 2030 would likely add between 12 and 16 brigades to the already substantial number of Russian brigades.

As outlined, a future-proofed European force structure would fuse mature and future technologies. It does not need to match Russian capabilities one-to-one. However, in the interest of mass and resilience, it will be necessary to supplement the development and fielding of future technologies, such as unmanned systems and AI,

with mature systems, such as tanks and artillery, and to maintain a ratio of such capabilities with Russia so that Europe is not overmatched on the Eastern flank.

Two scenarios for European rearmament can be developed. In the minimum scenario, Europe procures sufficient materiel for an additional 25 brigade-equivalent units. This would be sufficient to match the growth of Russian forces and partly close the gap between Russian and European capabilities. In the maximum scenario, Europe commits an additional 50 brigade-equivalent units. This would nearly match Russian ground forces and provide, in conjunction with Ukrainian forces, a very serious deterrent to Russian aggression.

We can think of the two scenarios as also representing different needs in different geopolitical contexts. The minimum scenario may represent a scenario in which the war in Ukraine continues, and Russia does not have far-reaching success on the battlefield, while the US continues to remain engaged in Europe. In this scenario, Europe would gradually increase its defence contributions but would not be able to ensure its own defence by 2030. The maximum scenario would involve a sharp acceleration in the pace of weapon acquisition and would also entail a substantial increase in troops, enabling US troops in Europe to be replaced and the US to scale down its commitment to Europe.

Land force systems must increase by a factor of around three to six if the aim is to substantially decrease the force advantage of Russia relative to European countries in the next five years (see Figures 14 and 15). Production of other systems, such as air defence and other modern technology, would need to increase even further.

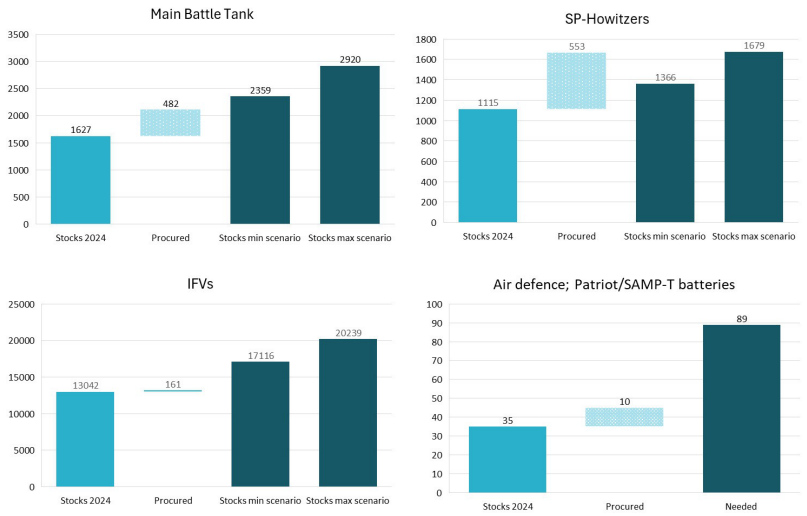

FIGURE 14. Stocks and needed increases for selected equipment in two scenarios

Note: procured equipment refers to the equipment ordered yet to be delivered.

Source: Authors' own elaboration.

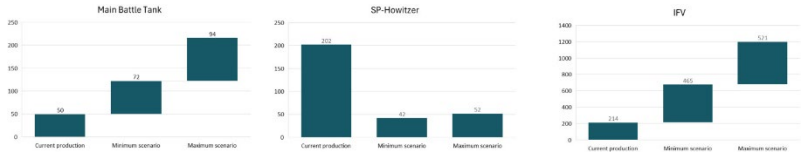

FIGURE 15. Additional production needed for main military equipment

Source: Authors' own elaboration.

4. Conclusions

Overall, our assessment indicates that despite measurable progress, significant capability and capacity gaps persist. While unlocking significant financing at the European and national levels is positive and welcome, the key step will be translating spending into real capabilities and sustained growth in European force generation, sustainment, and military modernisation. Put differently, Europe needs to shift its political debate from fiscal numbers to the actual military capabilities it purchases and delivers over the coming years. For military procurement to be truly effective, it is critical that European industry develops the capacity to produce and deliver items quickly and that equipment prices are reduced and kept low.

Maintaining broader societal support for the substantial increase in defence budgets is critical. This is not the place to discuss in detail questions of Keynesian and growth effects of military spending, let alone of broader societal support. Diaz and Surico (2025) find that defence spending has both short- and long-term positive effects on economic activity. We would only add that the political economy of spending domestically rather than in the US would likely be more favourable to voter support. Finally, as some of us have argued in G. Wolff et al. (2025), European policymakers need to develop a strategy to reduce costs through further market integration – another step that could increase voter support as the cost-effectiveness of public spending on defence becomes a growing concern.

Modernisation is another key point, as access to high-end capabilities and strategic enablers is the best path for Europe to become autonomous in defence and reduce its dependence on the US. This would also stabilise and future-proof the transatlantic relationship. This is crucial as both the current US administration and any future administrations, regardless of who holds the presidency, will operate under a strategic context where American attention will primarily be focused on the Indo-Pacific due to the increasingly rapid qualitative and quantitative growth in Chinese military capabilities and the potential for a 2027 scenario of a Chinese blockade or invasion of Taiwan. Additionally, should such a scenario materialise, Europe would be effectively left on its own, regardless of political will in Washington, as a Sino-American conflict would consume all of the US' military capabilities.

We are cautiously optimistic that the gaps for these "traditional" systems can be filled with political will. Historical evidence as well as European technological capacities, for example in car production, suggest that production numbers can be increased fairly rapidly, so that 2030 armament goals can realistically be reached. Given the current delivery times of around 3 years after procurement, procurement quantities will need to increase over the next 2 years to achieve targets. Time lags in the procurement process itself also need to be substantially shortened. Preventing an increase in corruption and misuse in this phase of military build-up is critical.

Military modernisation and access to European strategic enablers will be critical. These include a variety of systems that European militaries either have in limited numbers compared to the US or Russia, or not at all. These include rocket artillery such as HIMARS which can also fire ballistic missiles (highly effective in Ukraine), 6th generation aircraft including Combat Collaborative Aircraft (CCA; drone wingman capability), strategic lift,[22] integrated air and missile defence, airborne early warning and control (AEW&C), satellites, long-range missiles for ground and sea attack, and an integrated command and control structure. A substantial investment in missile production capacities is indispensable for Europe.

For Europe to reduce its still very high technological dependency on the US defence industrial base for key technologies, major investments into research and development efforts will be neded. In fact, Europe an deefnce R&D investment substantially lags that of the US. The DoD allocated $148.3 billion to defence R&D for FY2024.[23] In Europe, it was only €11 billion in 2023.[24] A major recommendation is therefore to increase public defence R&D spending. For example, a European DARPA could usefully complement corporate investments. At the national level, innovation agencies such as the German Agentur für Sprunginnovation are scheduled to move into the defence innovation space.[25] Defence R&D spending can also have positive growth effects (Antolín Diaz and Surico 2025) on the wider economy and could therefore help ease fiscal sustainability concerns of the European rearmament efforts.

European rearmament will be expensive, and cost-effectiveness is critical for achieving military targets. NATO leaders have agreed on a 3.5% target in defence spending, while the EU talks of €800 billion. These top-down numbers, however, do not allow an understanding of how and on what funds will be spent. Our bottom-up estimates of spending needs for selected weapon systems in the European Union across different scenarios highlight the importance of price effectiveness. Using our

[22] For the USAF, moving a single Patriot battery from the Indo-Pacific to the Middle East required 73 C-17 flights.

[23] https://www.defense.gov/news/releases/release/article/3326875/department-of-defense-releases-the-presidents-fiscal-year-2024-defense-budget/

[24] https://eda.europa.eu/docs/default-source/brochures/1eda—defence-data-23-24—web—v3.pdf

[25] https://www.spd.de/fileadmin/Dokumente/Koalitionsvertrag2025_bf.pdf line 129

procurement tracker, we can show that estimates range from €50 to €200 billion for the purchase of tanks, artillery howitzers, and infantry fighting vehicles alone.

Overall, we highlight the feasibility of making substantial progress through 2030, while remaining mindful of the challenges. Funding is available and likely to remain elevated, as the Russian threat is widely recognised and political consensus in favour of higher defence spending remains strong. However, translating funding into concrete capabilities will require a systematic, forward-looking, strategic, and operational plan. Defence spending in Europe must be directed towards concrete goals and timelines to increase European readiness through force generation, sustainment, and military modernisation – while focusing on cost-effectiveness. Deeper military integration across Europe, both at the procurement level and at the strategic level, would increase deterrence effectiveness and reduce costs.

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