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Reforming European Defence Procurement to Boost Military Innovation and Startups

The war in Ukraine has demonstrated how battlefields are evolving rapidly, with new technologies shaping military strategy and tactics. Increasingly, these technologies are being provided by startup firms, rather than by established contractors. To incorporate these new firms into the defence ecosystem, procurement practices around the world need to be adapted, including in Europe. We show that defence procurement in selected European countries is primarily directed at their ten largest contractors, with typically less than 30% of total order volume going to other firms. This contrasts with the United States, where the largest “prime contractors” take up a substantially smaller share of the market. Israel and Ukraine also have robust policies in place to ensure the inclusion of young, innovative firms in military procurement. European defence ministries must show greater willingness to enter into contractual arrangements with new players within and outside their territories, as only contracts can lead to the necessary growth and scaling up of new technologies and the competition that is needed to reduce prices for defence products.

The experience in Ukraine of real-time battlefield innovation and rapidly changing defence technologies has generated a stream of lessons for military forces. The armament strategies of the United States, the United Kingdom and France, among others, are starting to reflect these lessons. The US Department of War (2025), for example, issued an Acquisition Transformation Strategy to accelerate delivery of high-tech weaponry in November 2025, while the UK Strategic Defence Review 2025 shows a substantive doctrinal shift characterised by the integration of conventional forces with digitally enabled and increasingly autonomous systems such as drones (Ministry of Defence, 2025).

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But is Europe’s defence-industrial base ready to supply sufficient unmanned aerial systems and other weaponry of the sort deployed and tested in Ukraine (Andrianijc, 2025; Thomas, 2025)? Béraud-Sudreau et al. (2026) showed a substantial increase in the number of startup defence firms active in Europe, many specialising in new defence technology. Despite the emergence of these firms, actual procurement, especially within European Union nations, remains focused on established military systems and large incumbent defence manufacturers.

Transaction costs and information asymmetries tend to favour established procurement relationships. A deliberate effort is needed to include new tech firms in the order process. Otherwise, defence procurement may miss significant innovation that exists outside the traditional defence industrial base. Failing to benefit from such innovation would have implications for both security and growth (Gazzani et al., 2025). A basic question for European governments updating their military strategies is therefore how procurement processes can be reformed to strengthen innovation and facilitate the entry of new firms. Ukraine has already successfully transformed its military procurement into a highly decentralised and digitalised system, sometimes described as an “Amazon for weaponry” (Kuzan, 2025).

This paper goes beyond the benefits of deeper defence market integration (Mejino-Lopez & Wolff, 2025; Wolff et al., 2025b) to argue that national acquisition practices

impede the introduction of new firms in many European countries. Using data from the Kiel Military Procurement Tracker (Wolff et al., 2025a), the paper shows that most contracts still go to large incumbent firms and established technologies. The paper then analyses procurement reforms aimed at improving access for new firms, and offers recommendations for European policymakers.

European rearmament: Slow and focused on old-tech and incumbent firms

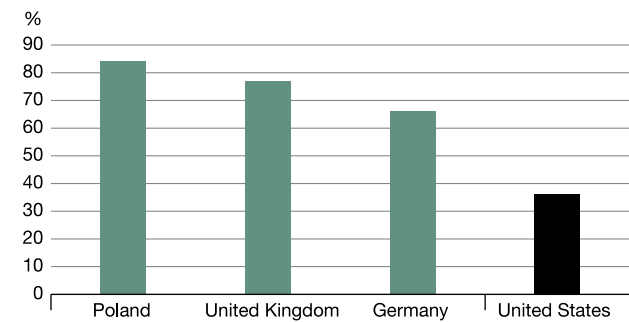
It has proved difficult to address lengthy military procurement processes in Europe and the biases European procurement agencies have in favour of established players. Wambach et al. (2023), in a report to Germany's Federal Ministry for Economic Affairs and Energy, emphasised the need to reform military procurement to enable experimentation and much faster acquisition. They argued that current procurement rules are ill-suited to rapid technological change and high-intensity conflict and that the Bundeswehr should integrate innovation at operational speed, rather than through lengthy, risk-averse programmes.

The report also called for greater military uptake of dual-use, civilian-derived technologies and private-sector R&D, allowing commercially developed systems to be tested, adapted and deployed iteratively. In the past, similar concerns about delays and inefficiencies have prompted repeated discussions about reforming Germany's Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw, Bundesamt für Ausrüstung, Informationstechnik und Nutzung der Bundeswehr), the authority responsible for defence procurement (see KPMG, 2016).

Germany's court of auditors, the Bundesrechnungshof, has reported years-long delays in implementing capabilities. For example, 16 years after commissioning the first K130 corvette for the German navy, five corvettes are in use, but there is still no capacity to fly drones from these vessels, though this is considered essential (Bundesrechnungshof, 2025). This example illustrates both slow procurement processes and the difficulty German procurement faces in integrating modern and by now standard technology into its rearmament efforts. Similar examples can be found in the US and most other European countries (Kapstein & Oudot, 2009).

An analysis of Wolff et al. (2025a) shows that up to 2024, the list of defence contractors in the United Kingdom, Germany and Poland contained only two startups. The UK contracted the American firm Anduril Industries for £17 million in 2023 to explore the implementation of its command-and-control software across the country's defence plat-

Figure 1
Military procurement share of the ten largest contractors in Europe and the US, 2020-2025



Source: Bruegel based on Wolff et al. (2025a) and US General Services Administration.

forms (Ministry of Defence, 2023), and in 2021, Germany ordered four armoured vehicles as a proof of concept from Dutch startup Defenture (Geiger, 2021). In 2025, German defence startups Quantum Systems, Helsing and Stark Defence received significant orders for drones (Nienaber & Kyriasoglou, 2025).

Defence procurement in Europe is strongly geared towards large and established players. The top 10 contractors account for between 67% and 90% of military procurement in Germany, Poland and the UK, while the top 10 contractors in the US account for less than 40% of spending (Figure 1, Tables 1 and 2). Therefore, we take a deeper look at how the US has changed its procurement strategy in the following section.

US-European comparisons should be interpreted cautiously because US public spending on defence R&D is much higher than in European countries (Figure 2). The US also has 469 more defence startups than European countries (Figure 3). Beyond defence, Europe (including Ukraine and the UK) has roughly one-third of the startups of the US (European Investment Bank, 2019, 2020), and these European startups attract less venture capital funding and are more likely to rely on public support.

How US military procurement has changed to improve access for new firms

During the 1990s, US defence procurement became more concentrated, with mergers reducing competition (Carril & Duggan, 2020), while standard acquisition rules tended to favour firms with prior government contracting experience over smaller and more innovative entrants (National

Table 1

Top 10 defence contractors in selected European countries' procurement, billion euros, 2024 prices

	2020	2021	2022	2023	2024	2025	Total
Germany	31.2	26.6	23.0	43.1	57.1	75.2	256.3
Bw Bekleidungsmanagement	0.3	0.1	10.1	0.0	3.0	20.5	34.1
Rheinmetall	0.8	1.7	1.0	2.3	8.5	12.7	27.0
Airbus	10.1	9.1	0.1	2.8	3.8	0.2	25.9
BWI	7.7	2.6	0.1	0.6	6.6	1.5	19.1
HIL GmbH	0.0	0.0	0.0	13.7	0.0	0.0	13.7
RTX	0.0	0.0	0.0	3.4	3.9	4.3	11.5
Damen Group	6.9	0.0	0.0	0.0	3.5	0.0	10.4
Boeing	0.0	1.3	0.4	8.5	0.0	0.0	10.2
Lockheed Martin	0.0	0.0	9.1	0.0	0.0	0.0	9.1
General Dynamics	0.0	0.0	0.0	0.0	0.0	8.5	8.5
All other companies	5.4	11.8	2.3	11.8	27.8	27.6	86.8
Equipment spending	13.2	11.9	10.5	13.2	19.8	n.a.	68.6
Poland	5.2	7.3	18.1	6.9	25.1	10.0	72.6
PGZ	0.2	2.3	2.1	0.6	6.2	3.3	14.7
Hanwha Group	0.0	0.0	6.2	2.3	1.5	0.0	9.9
Boeing	0.0	0.0	0.0	0.1	9.3	0.3	9.7
Lockheed Martin	4.9	0.0	0.0	0.0	1.6	0.0	6.5
General Dynamics	0.0	4.8	0.0	1.3	0.0	0.0	6.1
RTX	0.0	0.0	0.0	0.2	1.3	2.4	3.9
Hyundai Group	0.0	0.0	3.5	0.0	0.0	0.0	3.5
Korea Aerospace Industries	0.0	0.0	3.1	0.0	0.0	0.0	3.1
Leonardo	0.0	0.0	1.9	0.0	0.0	0.0	1.9
Kongsberg	0.0	0.0	0.0	1.8	0.0	0.0	1.8
All other companies	0.1	0.3	1.3	0.5	5.3	4.1	11.5
Equipment spending	4.7	5.4	4.6	10.9	13.7	22.0	61.3
United Kingdom	5.7	6.5	19.7	10.0	15.8	25.6	83.3
BAE Systems	3.3	0.9	11.9	6.1	0.1	0.4	22.6
Rolls-Royce	0.0	0.0	0.1	0.0	0.0	10.9	11.0
MBDA	0.0	0.8	0.4	0.0	8.2	0.6	9.9
Thales	0.7	0.6	0.0	0.2	2.6	1.6	5.7
Boeing	0.0	0.8	1.0	0.0	2.4	0.0	4.1
Lockheed Martin	0.3	0.3	0.2	0.3	0.0	1.4	2.5
Babcock	0.0	0.1	0.0	0.5	0.0	1.8	2.5
QinetiQ	0.4	0.0	0.0	0.0	0.0	1.7	2.2
BMT	0.0	0.0	0.0	1.9	0.0	0.0	1.9
Leonardo	0.4	0.0	0.6	0.1	0.0	0.4	1.6
All other companies	0.6	3.0	5.6	0.8	2.6	6.7	19.2
Equipment spending	18.0	22.5	20.4	22.0	25.9	29.7	138.5

Note: Includes the "main company" in procurement orders recorded in Wolff et al. (2025a). "Equipment spending" is based on NATO data, which provides estimates for 2024.

Source: Bruegel based on Wolff et al. (2025a) and NATO.

Table 2

Top 10 defence contractors in US procurement, US\$ billions, 2024 prices

	2020	2021	2022	2023	2024	2025	Total
United States	699.2	508.8	409.0	456.9	445.9	450.3	2970.1
Lockheed Martin	124.0	52.6	45.2	68.7	41.5	48.9	380.9
RTX	23.9	26.9	25.4	30.0	24.3	30.0	160.4
Boeing	36.0	29.4	14.5	22.2	19.5	19.9	141.4
General Dynamics	36.4	22.7	21.3	22.6	3.4	0.7	107.0
Northrop Grumman	20.1	16.2	13.2	15.2	11.5	8.9	85.1
Huntington Ingalls	12.9	7.9	5.3	9.2	5.4	10.0	50.7
L3Harris	10.5	7.7	6.1	6.5	6.1	5.5	42.6
Humana	11.5	9.4	7.6	7.8	3.1	0.0	39.3
Pfizer	0.0	17.5	16.5	1.9	0.0	0.0	35.8
BAE Systems	10.8	4.8	5.0	7.5	2.5	0.0	30.5
All other companies	413.2	313.8	249.0	265.3	328.8	326.3	1896.4
Equipment spending	294.3	271.3	231.0	251.9	271.0	287.6	1607.1

Note: "Equipment spending" is based on NATO data, which provides estimates for 2024 and 2025.

Source: Bruegel based on US General Services Administration.

Research Council, 2014). To address these barriers to entry, the Department of Defence (DoD) introduced three reforms aimed at widening access for new suppliers.

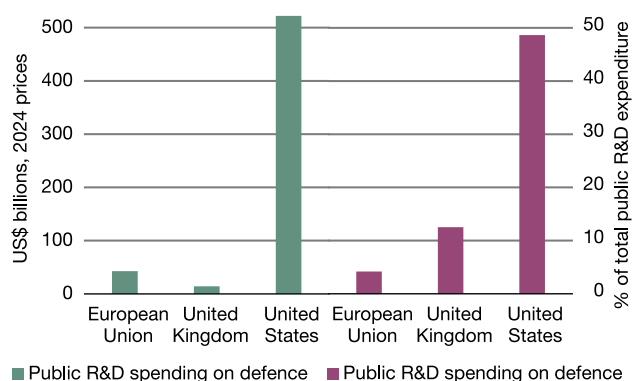
Small Business Innovation Research/Small Business Technology Transfer

The Small Business Innovation Research/Small Business Technology Transfer SBIR/STTR programme allows gov-

ernment departments to fund R&D in small businesses.¹ The US Air Force reformed its SBIR programme in 2018 by introducing an "open topic" solicitation mechanism (Government Accountability Office [GAO], 2025b) that allows small businesses to suggest technologies for fund-

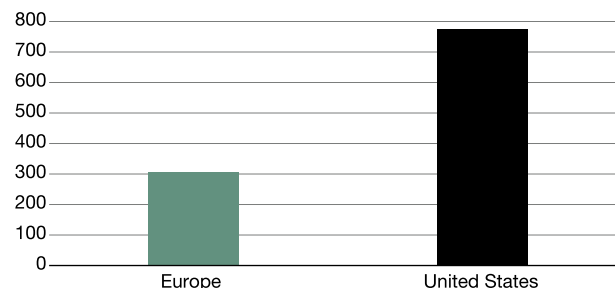
1 The US Congress increased the funds set aside for SBIR contracting through the 2011 SBIR/STTR Reauthorization Act, which required the DoD to allocate larger shares of its budget to SBIR and STTR (National Research Council, 2014).

Figure 2

Public R&D spending on defence, 2020-2024

Source: Bruegel based on OECD.

Figure 3

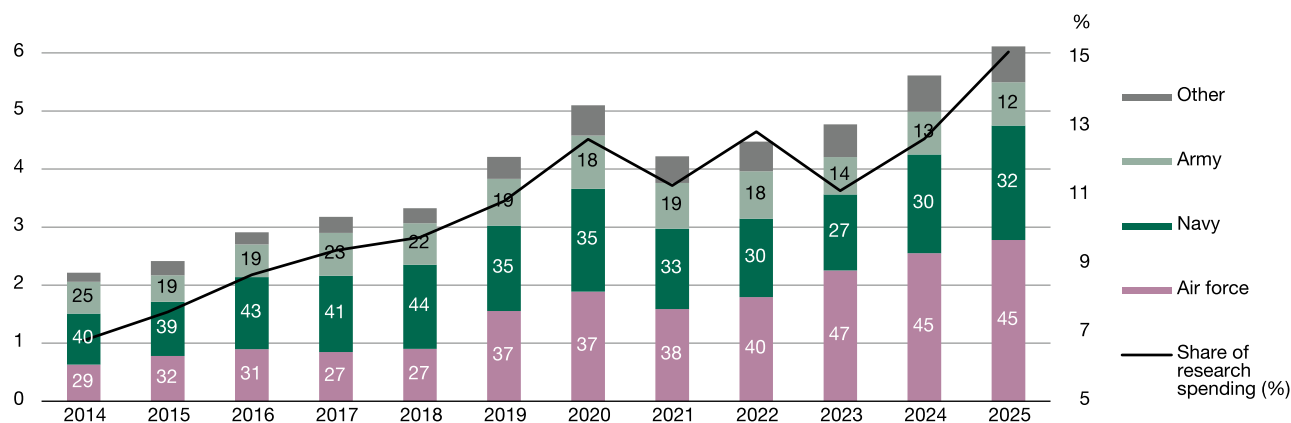
Numbers of defence startups, as of January 2026

Notes: While most of the listed firms are defence startups, a small number of established or non-defence firms may have entered this data as well. We do not believe this changes the overall picture of a much larger number of defence startups in the US. Here, Europe includes EU countries, UK and Ukraine.

Source: Bruegel based on Preqin data.

Figure 4

Value of Department of Defence Small Business Innovation Research/Small Business Technology Transfer awards by agency, US\$ billions, 2024 prices



Note: "Share of research spending" refers to SBIR contracting over total DoD spending on research. "Other" refers to the remaining DoD agencies, including the Missile Defense Agency, US Special Operations Command, the Defense Logistics Agency, the Defense Health Agency, the Defense Threat Reduction Agency, and the Defense Advanced Research Projects Agency (2025).

Source: Bruegel based on US GSA.

ing (GAO, 2025a). Since the reform, the DoD has increased its spending via this programme (Figure 4).

Howell et al. (2025) provide rigorous causal evidence that winning open-topic SBIR awards increases small businesses' sales to the DoD, along with their numbers of patents and venture capital funding, while conventional SBIR awards have no significant effect. National Academy of Sciences (2026) finds that open-topic competitions expanded SBIR participation. Firms receiving SBIR/STTR awards account for roughly one third of all companies conducting R&D for the DoD, though they receive only 11% of its research spending.

Multiple-award contracting

The DoD uses indefinite-delivery, indefinite-quantity (IDIQ) framework contracts to make purchases without specifying quantities or delivery times at the time of the award (Congressional Research Service, 2024). An IDIQ may be awarded either to a single company or to multiple vendors. When these contracts are awarded to multiple firms, vendors compete for subsequent orders, and some orders can be reserved for small businesses (GAO, 2021).

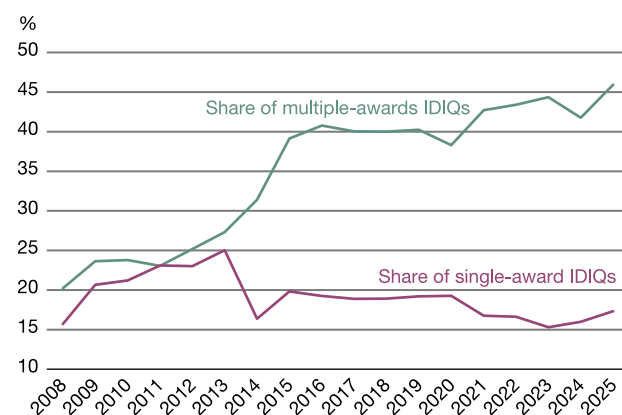
The 2013 Better Buying Power Initiative (BBP 2.0) promoted the use of multiple-award IDIQ framework contracts (Under Secretary of Defense, 2013). This reform

seems to have expanded small business opportunities (see Figure 5)² and multiple-award IDIQs are associated

² In 2025, orders from small businesses placed through multiple-award IDIQs amounted to US \$37 billion, while small-business orders placed through single-award IDIQs were US \$24 billion.

Figure 5

Share of Department of Defence awards to small businesses by contracting vehicle



Note: IDIQ: indefinite-delivery, indefinite-quantity contracts. "Share of multiple IDIQs" is the ratio of awards to small businesses over total multiple awards, while "share of single IDIQs" is the ratio of awards to small businesses over total single awards.

Source: Bruegel based on US GSA.

Table 3

Percentage change in small business sales to the Department of Defence following inclusion in indefinite-delivery, indefinite-quantity framework contracts (IDIQs)

	Central estimate	95% CI (low)*	95% CI (high)*
Multiple-award IDIQs	456%	298%	678%
Single-award IDIQs	168%	116%	233%

Notes: Percentage changes are calculated relative to small businesses that received other types of contracts (e.g. definitive delivery or definitive quantity contracts). Estimates are derived from log-point coefficients and converted to percentages using $(e^{\beta} - 1) \times 100$, where β denotes the estimated log-point association. Results show trends following the first inclusion of a small business in an IDIQ contract and should not be interpreted as causal effects. * The 95% confidence intervals show the highest and lowest values consistent with the data. Results show trends following the first inclusion of a small business in an IDIQ contract and should not be interpreted as causal effects.

Source: Bruegel based on US GSA.

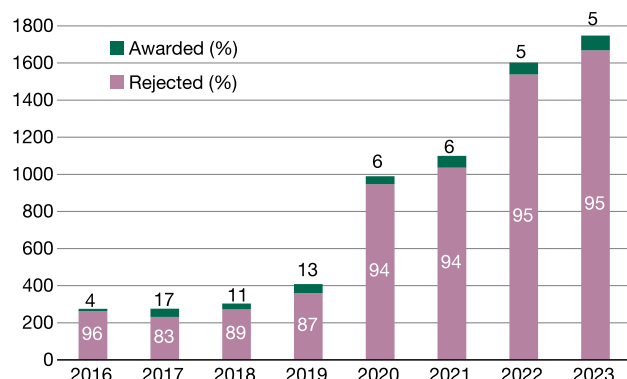
with larger subsequent DoD sales than single-award IDIQs (see Table 3).

The Defence Innovation Unit

The Defence Innovation Unit (DIU) was created in 2015 to hasten the take up of commercial technologies in the DoD (DIU, 2024). Based in Silicon Valley, it sets out a defence challenge, invites innovative companies to submit short proposals and funds the development of prototypes (GAO, 2025a). Successful products are then made available for procurement through the DIU's Commercial Solutions Catalog.³ In 2020, the DIU received 1,016 proposals, more than double the previous year (Figure 6). Even though few of these proposals became operational

3 <https://www.diu.mil/solutions/portfolio/catalog>

Figure 6
Number of proposals received by the Defence Innovation Unit



Note: "Awarded" refers to other transaction agreements (OTAs) granted to commercial companies, while "rejected" means that a proposal was received but an OTA was not granted.

Source: Bruegel based on DIU.

products,⁴ government reporting has found that the DIU has demonstrated the military application of commercial technologies (U.S. Department of War, 2020).

Beyond the US: Policies for defence innovation and small business in four countries

France

In 2018, France's defence ministry issued a broad policy framework to improve access to defence procurement (Ministry of Armed Forces, 2024). The Agence de l'Innovation de Défense (AID) was created to support innovation at small businesses and startups through grants, project-based funding and the opportunity to test prototypes in Ukraine (AID, 2024; Ministry of Defence of Ukraine, 2026). Policy reforms also took place at the procurement agency (Direction générale de l'armement) to simplify procedures and shorten timelines. These changes appear to have increased the role of smaller firms, with the share of defence spending reaching small and mid-sized firms rising from 14% in 2022 to 25% in 2024 (Direction générale de l'armement, 2024).⁵

Germany

In February 2026, Germany inaugurated a new armed forces innovation centre (Innovationszentrum Bundeswehr) that expands earlier pilot projects, such as the Innovation Lab System Soldier (Innovations Labor System Soldat; Westhöfer, 2025) into a centrally coordinated innovation hub. The centre's goal is to accelerate innovation by hosting soldiers, planners, researchers, procurement experts and industry partners, including startups and dual-use technology firms (Henckel, 2026). However, Ger-

4 Of all proposals submitted since 2016, about 6% have been awarded a contract for prototype development (Figure 6).

5 The 2024 figure includes startups.

many's main military procurement authority is ultimately responsible for orders, and an institutionalised innovation centre does not in itself guarantee procurement funds (Rolofs, 2026).

Ukraine

Following Russia's full-scale invasion in 2022, Ukraine reformed its procurement to speed up the deployment of new military technologies. A decree allowing the battlefield use of new or experimental systems⁶ reduced deployment times from one or two years to as little as two weeks (Bondar, 2025), while digital procurement created faster routes from development to military order (Government of Ukraine, 2025). In 2023, Ukraine launched Brave1, a platform to provide financial and organisational assistance to defence technology projects.⁷ Following the launch of Brave1 Market on 28 April 2025, Ukrainian military units have been able to purchase defence technologies directly from manufacturers (Digital State UA, 2025).

Israel

Israel's Directorate of Defense, Research and Development (DDR&D) works to incorporate startups in defence procurement. Between October 2023 and September 2024, the defence ministry placed orders worth US \$189 million with 86 startups and small companies, five times more than in the previous year (Elmas, 2024; DDR&D, n.d.-a). The DDR&D provides startups and innovative organisations with administrative support, contractual benefits (DDR&D, n.d.-b), field testing opportunities and funding for research and the development of prototypes.⁸

Reforming defence procurement to favour innovation

EU countries can learn how to build a more innovative defence-industrial ecosystem from the experience of other countries. Innovation and new technologies need to play a larger role in procurement if Europe's armed forces are to be equipped for modern warfare, with potential spillovers to the wider economy.

Furthermore, in the current geopolitical circumstances, the share of European technology in European defence procurement should be increased to reduce one-sided dependence, since European defence procurement remains highly dependent on US technology (Mejino-López & Wolff, 2025).

6 Available at <https://ips.ligazakon.net/document/KP221097?an=1>.

7 See <https://brave1.gov.ua/en/>.

8 Depending on their project and type, organisations receive support ranging from US \$170,000 to US \$4.7 million, as well as assistance from DDR&D and the Israel Innovation Authority.

For defence startups, the problem of funding is the same as that faced by startups in other sectors (Philippon & Véron, 2008). However, new high-tech defence companies need access to actual orders – this is the main factor in ensuring their growth. In this respect, what sets defence startups apart from others are the barriers to entry into procurement systems and the difficulty in eventually receiving substantial government orders.

Military practices are changing rapidly and lessons must be learned. Many of the new types of technology being used in Ukraine will require changes in procurement processes and different types of suppliers. To open military procurement to new firms, four main changes should be made to procurement policy.

Bring innovative firms into the early phases of the defence acquisition process. The DIU in the US and Germany's new innovation centre can facilitate contacts between smaller firms and governments. However, procurement agencies will still tend to prioritise large companies as less risky in fulfilling defence contracts. Establishing innovation centres should thus eventually lead to contracts. This could be achieved, for example, by incentivising minimum levels of procurement from small and medium-sized companies.⁹ National legislators in Europe should consider mandatory minimum levels, as executive and procurement agencies do not have an incentive to make such changes.

Multiple players should be involved in the development of new technology. All things considered, it is socially beneficial to have competition in the marketplace. Governments should fund several different companies for the development of specific new technologies. While this means higher costs in the development phase, development costs can be recovered later thanks to greater competition and lower prices for the final products. One example is the UK's Project Nightfall. It aims to develop a new ballistic missile for Ukraine, with the UK government selecting three "industry teams" to develop this technology, rather than giving an upfront contract to one firm. The goal is to get better technology at lower cost (Government of the United Kingdom, 2026). Governments could make it a requirement to support efforts to develop new technology at more than one company.

Offer multiple vendor framework contracts. New high-tech companies that pass the development phase will need to compete for orders. Governments should give orders to multiple companies whenever possible, via framework

9 While the US has such a target in place (Government Accountability Office, 2021), this may be reviewed. See Gonzalez-Tablada (2026).

contracts. Multiple companies offering supplies can generate greater production capacity, as firms have to compete on the basis of credible offers to produce by deadlines. Variety in manufacturing could also contribute to military resilience by providing insurance against attacks on any one facility or site-specific production problems. Multiple companies in a framework contract also ensure competition and greater price effectiveness of procurement. Bureaucratic practices could be changed by introducing mandatory multiple framework contracts, at least for less-specialised products.

Increase procurement decentralisation for small-scale and fast-developing technologies. Ukraine offers important lessons for procurement reform under battlefield conditions. While some of the reforms Ukraine has implemented may seem too audacious for armies outside of battle, national policymakers should lay the foundations by building infrastructures for more decentralised procurement through a government-established marketplace. More decentralised procurement would create a double benefit for military commanders and for the ecosystem of defence companies. For example, Germany has not yet been able to find ways of procuring drones for its K130 corvette. Empowering and providing limited budgets to military leaders, such as captains of ships, to order directly from a marketplace, may be a way to foster military innovation and fix holes in military capacities that current procurement agencies and processes have been unable to fix.

The European market for defence products is fragmented with national procurement agencies and national markets. This means some markets may be too small to support the emergence of a new defence ecosystem. Fragmentation may also prevent the scaling up of companies into players that can innovate and produce at competitive prices. Opening up defence markets and deeper defence market integration are critically important if Europe is to build up an independent capacity for cutting-edge defence technologies.

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