CHAPTER 2



THE ECONOMICS OF DEFENCE SPENDING

Rising geopolitical tensions have put an end to the post-Cold War "peace dividend", and defence spending is now rising in many EBRD economies. While increased spending on defence can raise debt levels and draw resources away from welfare spending, it can also raise output, spill over to civilian industries and boost R&D. However, most EBRD economies depend on imports for their military goods. State ownership, limited domestic demand and weak access to capital all constrain domestic production and innovation. Economies with spare industrial capacity can repurpose civilian production for military use and pool demand through joint procurement to reach efficient scale, while production under licence can support domestic manufacturing and employment, as well as facilitating a transfer of knowledge.



INTRODUCTION

After the end of the Cold War, governments around the world reduced the share of public resources that they allocated to defence. In Europe, the resulting "peace dividend" averaged about 0.9 per cent of GDP a year in 1992-2025 relative to defence spending in 1986-89. With defence spending now on the rise again, that peace dividend has been completely eroded.

Following Russia's full-scale military invasion of Ukraine in 2022 and the ensuing rise in geopolitical tensions, governments in Europe and beyond have committed to substantial, sustained increases in defence spending. NATO's new annual spending target has been set at 5 per cent of GDP. Several economies in the EBRD regions are at the forefront of this shift.

While the size of defence spending is determined primarily by security considerations, comparable military objectives can be met and financed in different ways, with implications for economic output, knowledge creation and citizens' welfare. Defence budgets cover personnel and operating expenses, military infrastructure, the procurement of equipment, and military R&D. This chapter focuses on equipment purchases and R&D, as choices made in these areas can directly translate into demand for domestic industries and a transfer of knowledge. How the additional spending is financed – by borrowing, taxation or reallocation from other budget lines – is beyond the scope of this research.

Military equipment can be imported, manufactured domestically under licence or produced independently. Likewise, knowledge can be generated domestically or acquired through licensed production or collaborative programmes. These choices are shaped by the size and structure of the industry, technological capabilities and any international agreements in place.

Globally, the defence industry is highly concentrated, with eight countries accounting for more than 80 per cent of the world's arms exports. With the exception of Poland and Türkiye, arms exports from the EBRD regions are limited. Ukraine, however, has rapidly expanded its domestic defence production, particularly for drones and electronic warfare, since Russia's full-scale invasion.

Where domestic defence industries exist in the EBRD regions, they have a disproportionate tendency to be state owned. These state-owned firms are less productive than their private counterparts. Defence-technology startups rarely raise capital beyond the earliest funding round.

While higher spending on defence can raise debt levels and draw resources away from welfare spending, it can also increase demand for metals, electronics and the output of other civilian industries, and boost R&D. Defence spending shocks propagate through the production network and reach civilian industries, particularly electronics and metals. Publicly funded R&D can have substantial knowledge spillovers, but these typically rely on large-scale R&D spending. Economies in the EBRD regions that do not reach such scale have gleaned productivity gains from defence research in the United States through channels that do not require domestic research capacity.

Overall, an increase in defence spending in the EBRD regions totalling 1 per cent of GDP is associated with an estimated 1.47 per cent increase in GDP in the medium term – a multiplier comparable to that of advanced economies and towards the upper end of the typical range for government spending.

Firms specialising in drone production are emerging in the EBRD regions. Poland and Türkiye both command a significant share of global military drone exports, although the military drone market is considerably smaller than the commercial equivalent. While defence innovation capability remains limited in the EBRD regions, firms can build on licensed technology obtained from elsewhere.

This chapter begins by documenting the rise in defence spending in recent years. It then characterises the defence industry in the EBRD regions and discusses economic returns to defence expenditure, before examining the potential to redirect civilian production to defence and looking at the emerging drone industry.

In EBRD economies in the EU, defence spending has risen from **1.3%** of GDP in 2013 to **2.7%** in 2025

RISING SPENDING ON DEFENCE

For a quarter of a century after 1989, defence spending declined almost everywhere. The global average halved from about 3.9 per cent of GDP in 1991 to less than 2 per cent by the mid-2000s. Scarce resources were reallocated to other uses, with economies enjoying a "peace dividend".

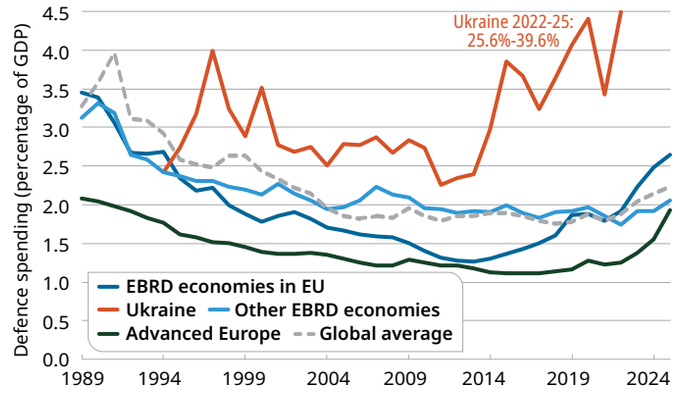
That peace dividend has now come to an end (see Chart 2.1). Globally, military expenditure has been rising since 2021 and NATO defence spending targets have been revised upwards.

Defence spending tends to be higher in economies located closer to violent conflicts (see Chart 2.2). In EBRD economies in the EU, defence spending has risen strongly, increasing from just 1.3 per cent of GDP in 2013 (the year before Russia's illegal annexation of Crimea) to 2.7 per cent in 2025. In 2019, it exceeded the global average for the first time since 1989. Since the start of Russia's full-scale invasion in 2022, Ukraine's defence spending has ranged from 25.6 per cent to 39.6 per cent of GDP. In the rest of the EBRD regions, such spending has remained broadly stable, after declining in the 1990s.

CONCENTRATION IN DEFENCE MARKETS

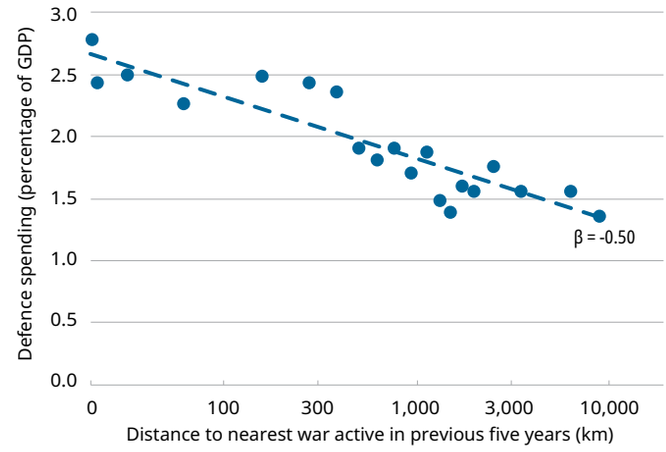
National security is a public good. The protection extended to one individual does not diminish the protection available to others and, once security is provided, no one can be denied its benefits. The provision of such non-rival, non-excludable goods

CHART 2.1 Defence spending is on the rise again after a 20-year decline



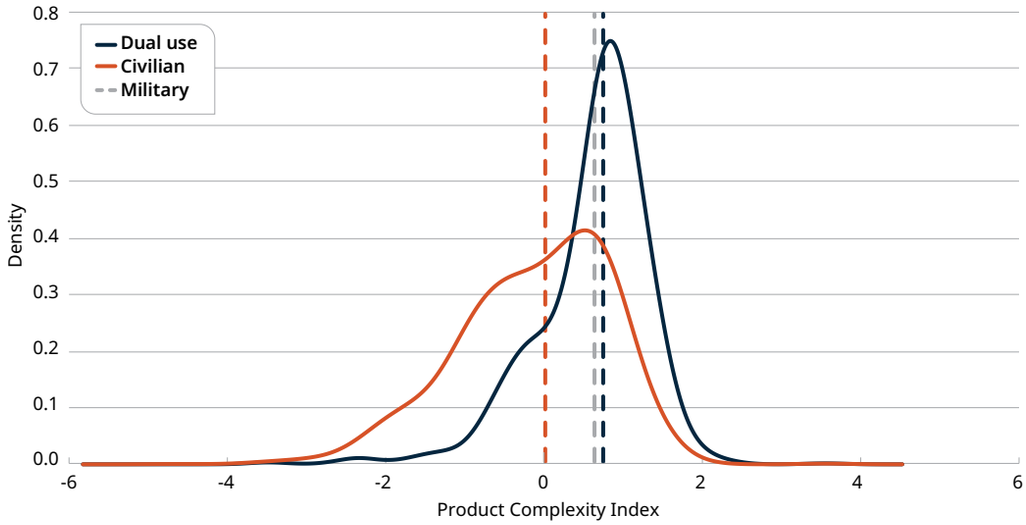
SOURCE: SIPRI (2026a), Müller et al. (2025) and authors' calculations.
NOTE: "Other EBRD economies" does not include Ukraine. All averages are unweighted. Ukraine's defence spending (truncated) reached 39.6 per cent in 2025.

CHART 2.2 Defence spending tends to be higher as proximity to conflicts increases



SOURCE: SIPRI (2026a), Müller et al. (2025), Davies, Pettersson and Öberg (2026) and authors' calculations.
NOTE: Binned scatterplot of defence spending as a percentage of GDP, demeaned by year, against distance to the nearest fighting involving at least 1,000 combat deaths per year in any of the preceding five years. Sample comprises non-belligerent economies in 1992-2025.

CHART 2.3 Dual-use goods are more complex than civilian goods



SOURCE: Harvard Growth Atlas (2026), Alekseev and Lin (2026) and authors' calculations.
NOTE: This chart shows kernel densities for the Product Complexity Index across 975 dual-use goods and 4,039 other traded goods. See Chapter 1 for a discussion of complexity scores. Dashed lines correspond to median complexity scores for each type of good.

falls to the state, which often becomes the only buyer of weapon systems. Consequently, while firms compete for procurement contracts, once a contract has been awarded, the price is negotiated rather than set in a competitive market. In addition, the government sets the performance requirements the equipment must meet.

Weapon systems are technologically sophisticated (see Chart 2.3) and a technological lead is a source of military advantage. This is true for finished military products and their components, for components also used in civilian goods, and for dual-use goods (that is, goods that have both civilian and military uses).

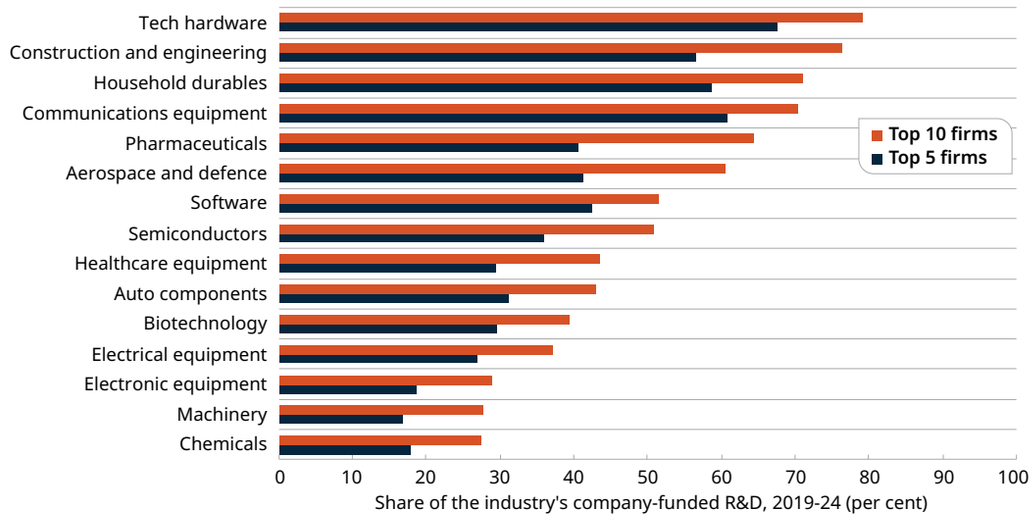
Defence production is also R&D intensive. Defence firms spend roughly as much on R&D as they do on physical capital outlays. R&D spending per US dollar of capital expenditure in the aerospace and defence industry averaged 1.1 in 2015-24, according to Compustat data,[1] compared with 0.72 in other machinery industries and 0.77 in semiconductors. Indeed, company accounts probably understate this intensity, as customer-funded development, much of it paid for by governments, is recorded as a cost of sales rather than an R&D expense.[2] Governments typically fund a large share of defence R&D, with defence absorbing a substantial share of public research budgets at the technological frontier. For example, in the United States, more than 50 per cent of government-funded R&D goes to defence, according to government budget allocations for R&D (GBARD) data.[3]

The high concentration of military goods production reflects the industry's high barriers to entry: sunk costs in both R&D and specialised capital, and economies of scale.[4] In addition, suppliers must meet qualification and security requirements, while buyers put a premium on the proven capability of military systems.[5] Cross-border supply is also constrained by security considerations and export controls.[6] Lastly, new military equipment must often be interoperable with systems already in service, giving incumbents a further advantage.[7] In 2014-25, the Herfindahl-Hirschman Index (HHI) of supplier concentration for the European aerospace and defence industry was twice as high as the equivalent for high- and medium-tech manufacturing, based on data from Orbis.[8]

As a result, a small number of firms account for most of the industry's global aerospace and defence R&D (see Chart 2.4). Notably, the five largest spenders account for 41 per cent of all aerospace and defence R&D, while the top 10 firms account for 60 per cent.

[1] See S&P Global Market Intelligence (2026).
[2] See Nindl et al. (2025).
[3] See Eurostat (2025a).
[4] See Rogerson (1995).
[5] See Dunne (1995).
[6] See Hartley (1995).
[7] See Dunne (1995).
[8] See Bureau van Dijk (2026).

CHART 2.4 A small number of firms undertake most aerospace and defence research



SOURCE: S&P Global Market Intelligence (2026) and authors' calculations.
NOTE: The industries shown are the 15 Global Industry Classification Standard (GICS) industries with at least US$ 150 billion of company-funded R&D and at least 250 R&D reporting firms in the 2019-24 period. Customer-reimbursed R&D (which accounts for most US government-funded defence R&D) is excluded.

This concentration is higher than the equivalent for software and comparable to that of the pharmaceuticals industry, although it falls short of the levels observed for communications equipment.

The supply of finished weapon systems is also geographically concentrated in a small number of countries and firms. Among the global top 100 arms producers, US firms account for nearly half of revenue, Europe for 22 per cent and China for 12 per cent.[9] The 20 largest firms, 14 of which are American or European, account for about 65 per cent of total revenue.

Eight countries supply more than 80 per cent of global arms exports. In the EBRD regions, Poland and Türkiye are the top exporters of military goods, together accounting for about 3 per cent of global exports based on data from the Stockholm International Peace Research Institute (SIPRI) Arms Transfers Database.[10]

EBRD ECONOMIES AND TRADE IN MILITARY GOODS

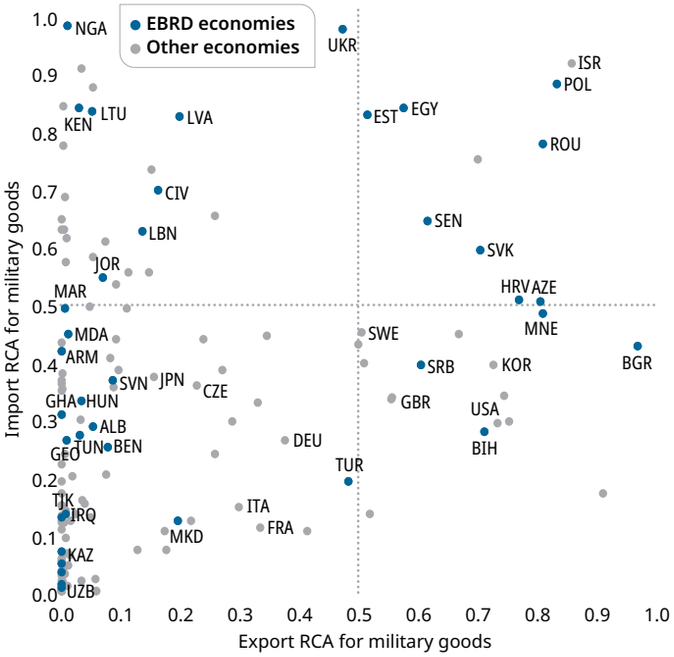
Most economies in the EBRD regions do not specialise in the production and export of military goods, importing relatively large amounts of them (see Chart 2.5). As discussed in Chapter 1, an economy is considered to specialise in exports of a product when that product's share of the economy's exports exceeds the product's share of world exports. Normalised revealed comparative advantage (RCA) values of more than 0.5 indicate a specialisation in exports of a certain product. Import specialisation is defined in the same way.

A few economies, including Bosnia and Herzegovina, Bulgaria and Serbia, are net specialised exporters of military goods. Romania and Türkiye both have a significant comparative advantage in exporting warships, while Poland and Croatia have RCAs in artillery and armoured vehicles, respectively.

Egypt, Poland and Romania specialise in exporting military products while simultaneously purchasing large quantities of military goods. Estonia, Poland and Romania import military goods worth between 0.27 per cent and 0.53 per cent of GDP each year. (By way of comparison, Israel imports military goods

[9] See SIPRI (2026a).
[10] See SIPRI (2026b).

CHART 2.5 Many EBRD economies are import dependent when it comes to military goods



SOURCE: CEPII (2026) and authors' calculations.
NOTE: Based on data for 2022-24. Export RCAs are calculated as defined in the text; import RCAs are calculated as a product's share of an economy's imports relative to the product's share of world imports. Both are normalised to range from 0 to 1, with values of more than 0.5 indicating specialisation.

worth 0.32 per cent of GDP annually, on average.) In Ukraine, imports of military goods in 2024 were estimated at 2.16 per cent of GDP,[11] as the war both increased demand for military equipment and weighed on output.

In some cases, import data partly reflect domestic production under a foreign licence. This accounts for about 90 per cent of arms imports in Türkiye, around 50 per cent in Poland, approximately 47 per cent in Egypt and about 34 per cent in Bulgaria.[12] The two arrangements have very different economic consequences. Producing under licence contributes to domestic employment and output, and may facilitate the transfer of knowledge under certain circumstances, as discussed later in the chapter.

[11] See SIPRI (2026b).
[12] Ibid.

THE DEFENCE INDUSTRIAL BASE

The EBRD regions' reliance on imports for military hardware reflects small domestic industrial bases in many economies. With defence spending on the rise again, some economies have the potential to expand their industrial bases and build the necessary ecosystems of firms and researchers.

In the United States, the world's largest economy and defence market, the defence sector is made up of three intersecting parts: (i) a state-owned industrial base that produces ammunition, shells, propellants and explosives; (ii) large, multi-domain prime contractors (Lockheed Martin, General Dynamics, Northrop Grumman, Boeing and RTX) that research, develop and manufacture established weapon systems, with R&D and investment in specialised capital benefiting from economies of scale across multiple programmes; and (iii) a defence-technology sector that has emerged over the past decade with a focus on frontier software and hardware technologies, such as uncrewed vehicles and AI-enabled systems.

Advanced Europe's ecosystem is more fragmented, combining multi-domain groups (such as BAE Systems, Thales, Leonardo, Airbus Defence and Space, Rheinmetall and KNDS) and national champions (such as Dassault Aviation, Naval Group, SAAB, Kongsberg and Fincantieri). National procurement markets limit scale. Where consolidation has occurred, it has mainly taken the form of joint ventures, such as MBDA and the European space businesses of Airbus, Thales and Leonardo. The defence-technology sector is less mature than in the United States, where firms have strong ties to Silicon Valley, are backed by venture funds and sell into a larger market.

Türkiye produces about
90%
of its arms imports
domestically under licence

The defence ecosystem in EBRD economies in emerging Europe combines legacy incumbents and defence-tech startups. Incumbent firms are largely state owned, such as Romarm in Romania, VMZ Sopot in Bulgaria and PGZ in Poland. State ownership of firms that used to produce equipment for the Warsaw Pact forces has largely persisted through the transition to open market economies. As Russia's war on Ukraine has shifted procurement towards drones, defence-tech startups have emerged, drawing on the software and technology developed in ICT services (see Box 2.1 for a discussion of the Ukrainian defence industry, from its Soviet legacy to its wartime shift towards unmanned systems).

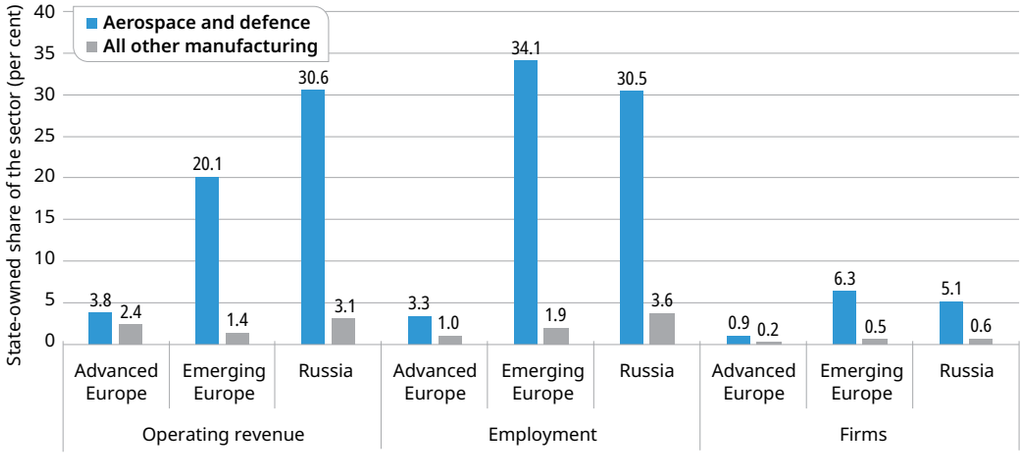
This chapter takes a closer look at the region's defence firms using detailed data on ownership, employment and revenues from Orbis.[13] In this analysis, the aerospace and defence sector is considered to encompass weapons and ammunition, explosives and military combat vehicles, as well as a considerably larger dual-use segment comprising measuring and navigation instruments, ships and floating structures, air and spacecraft, and optical instruments.

By this definition, the sector is relatively small in both advanced and emerging Europe, accounting for around 2-3 per cent of manufacturing firms, employment and revenue. In Russia, by contrast, the aerospace and defence sector accounts for almost 9 per cent of manufacturing employment and 5 per cent of manufacturing revenue.

While state-owned enterprises (SOEs) in advanced Europe account for just 4 per cent of revenue and 3 per cent of employment in the aerospace and defence sector, in emerging Europe they account for 20 per cent of the sector's revenue and 34 per cent of its employment (see Chart 2.6). This level of state ownership is more akin to Russia than it is to advanced Europe and is specific to defence; in the rest of the manufacturing sector, state ownership accounts for 1-2 per cent of revenue and employment in both advanced and emerging Europe.

In emerging Europe, SOEs account for
34%
of the aerospace and defence sector's employment and
20%
of its revenue

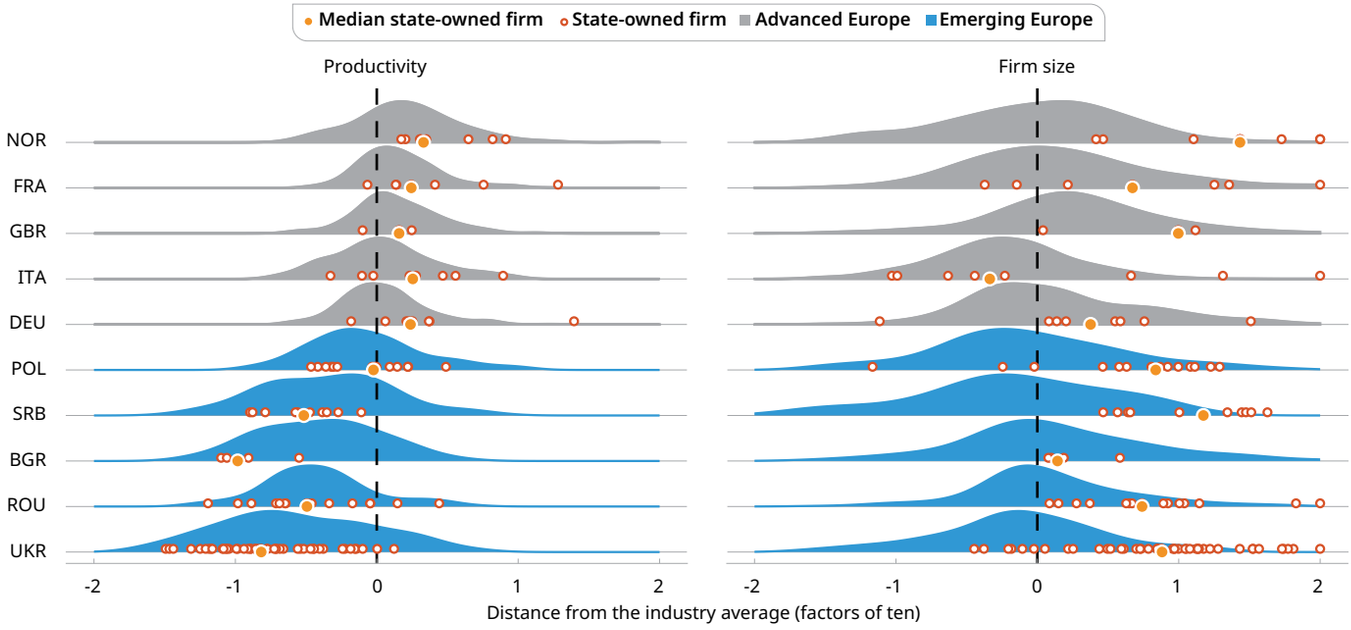
CHART 2.6 SOEs are more prevalent in emerging Europe and Russia than in advanced Europe



SOURCE: Bureau van Dijk (2026) and authors' calculations.
NOTE: Shares are within each sectoral-regional cell. Ownership is defined as the global ultimate owner of the firm. Listed firms and those with unknown ownership count as private, so estimates of state-owned shares are lower bounds. "Advanced Europe" comprises Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom; "Emerging Europe" comprises Bulgaria, Croatia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, the Slovak Republic, Slovenia and Ukraine.

[13] See Bureau van Dijk (2026). The Orbis panel is cleaned per Ayerst, Nguyen and Restuccia (2024).

CHART 2.7 State-owned defence firms in emerging Europe are larger but less productive than the typical private firm



SOURCE: Bureau van Dijk (2026) and authors' calculations.
NOTE: This chart shows the distribution of the productivity and size of private firms in the aerospace and defence sector in each country. State-owned firms are shown as markers along the distribution. The data point for each firm corresponds to the latest year in the 2015-24 period for which positive revenue and employment are recorded. All economies shown have at least 30 privately owned firms in the sample.

Those shares imply that state-owned defence firms in emerging Europe employ, on average, about eight times as many workers as private firms and generate roughly half the revenue per employee. While, in theory, large firms can generate economies of scale, the effective productivity of large state-owned defence contractors in the region is low (see Chart 2.7).

The median private defence firm in advanced Europe is around 2.5 times as productive as the equivalent in emerging Europe. For state-owned firms, this differential rises to 6.6 times (productivity being measured here as revenue per employee).[14] In emerging Europe, the median state-owned firm tends to fall below the private median when it comes to productivity but sit towards the upper end of the distribution in terms of firm size. In advanced Europe, SOEs tend to be both large and relatively productive.

Dealroom data shed further light on defence-tech startups.[15] Between 20 per cent and 28 per cent of defence firms in emerging Europe, advanced Europe and the United States have raised funding in at least one private-equity venture round during their lifecycle (see Chart 2.8). Venture-backed firms in emerging Europe are younger, with 35 per cent having been founded in or after 2022, compared with fewer than 20 per cent in the United States and advanced Europe. They are also far more concentrated in drone technology, where barriers to entry are lower than in established defence technologies. Lastly, firms in emerging Europe are lagging in terms of knowledge production: fewer than 2 per cent hold patents, against around 12 per cent and 13 per cent in the United States and advanced Europe, respectively.

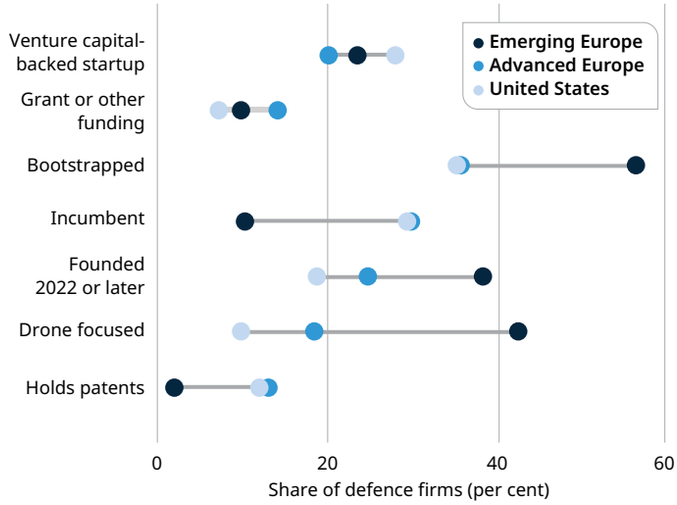
[14] Productivity is measured as revenue per employee in logs (base 10), as a deviation from the average of the same industry in the same year.

[15] See Dealroom (2026).

The share of venture-backed defence startups in emerging Europe is similar to those in the United States and advanced Europe, but these firms raise little capital and seldom advance beyond the earliest funding stage (see Chart 2.9). A startup's progress can be traced through its successive venture-capital funding rounds (pre-seed and seed funding, followed by Series A, B, C and so on), with each representing a step up in terms of capital raised and the scale of the business as it matures (see Chapter 4). Among defence firms in emerging Europe that have raised funding at pre-seed or seed stage, only 18 per cent go on to a Series A funding round or beyond, compared with 42 per cent in advanced Europe and 50 per cent in the United States. Just 4 per cent reach Series B or beyond, against 22-28 per cent in advanced economies. For Series C or beyond, the differential is similar: 4 per cent versus 18-21 per cent. Thus, a new defence industry is emerging in the region, although limited progression through venture equity rounds suggests that access to growth capital remains a constraint.

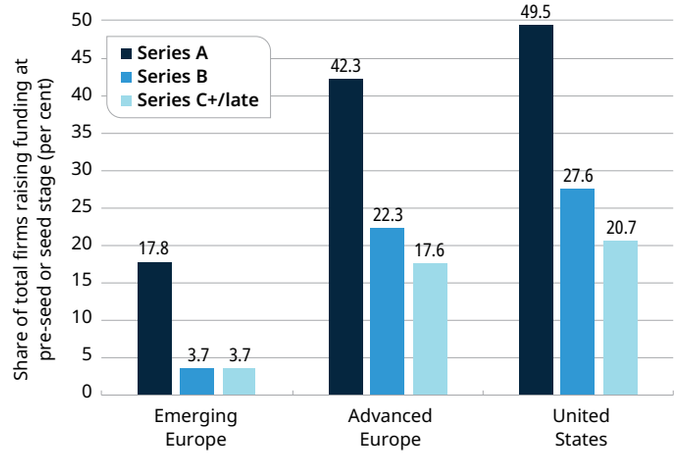
Only
18%
of defence firms in emerging Europe that raise funding at pre-seed or seed stage go on to a Series A funding round or beyond

CHART 2.8 Emerging Europe's new defence firms are young and focused on drones, but hold fewer patents than firms in the United States and advanced Europe



SOURCE: Dealroom (2026) and authors' calculations.
NOTE: The first four categories are mutually exclusive and cover every firm: venture capital-backed startups (disclosed funding or venture ownership); firms funded only through grants and other funding; bootstrapped firms (no disclosed funding, privately held); and incumbent firms (mature firms, listed or founded before 1990). "Emerging Europe" comprises EBRD economies in the EU and the Western Balkans, plus Moldova, Ukraine and Türkiye.

CHART 2.9 Defence-technology firms in emerging Europe rarely scale up beyond the earliest funding stage



SOURCE: Dealroom (2026) and authors' calculations.
NOTE: Based on firms with at least one equity round (from pre-seed through to late-stage and growth equity), including those that raised equity only at pre-seed stage. Grants, debt, and mergers and acquisitions are excluded. Bars show firms reaching each funding stage or above as a percentage of total firms raising funding at pre-seed or seed stage. "Emerging Europe" comprises EBRD economies in the EU and the Western Balkans, plus Moldova, Ukraine and Türkiye.

ECONOMIC RETURNS TO DEFENCE SPENDING

HOW LARGE IS THE DEFENCE MULTIPLIER?

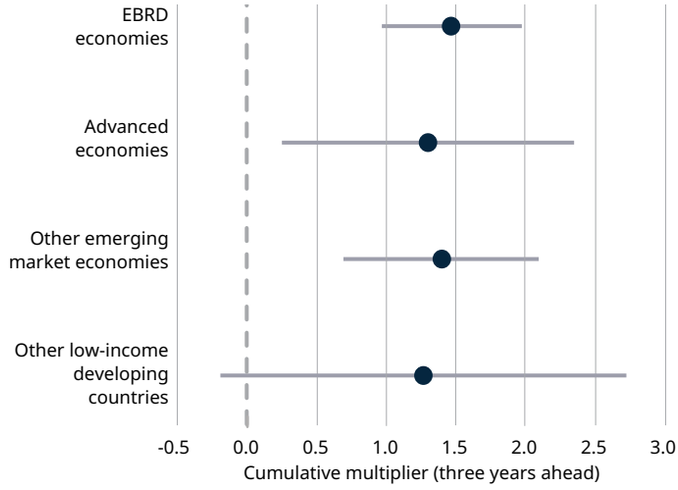
Higher spending on defence can raise an economy's output. Early research into the magnitude of these effects relied mainly on US data, using military build-ups as spending shocks in order to identify their effects on output.[16] Subsequent cross-country research has shown that the size of the multiplier varies depending on country circumstances.[17]

The following analysis estimates the cumulative defence multiplier by applying panel local projections to changes in detrended GDP and defence spending in 133 economies over the 1991-2025 period (see Box 2.2 for details).[18] In the EBRD regions, it is estimated that increasing defence spending by 1 per cent of GDP is associated with a 1.47 per cent increase in output in the medium term (see Chart 2.10). This multiplier effect is broadly in line with estimates for advanced economies.

DEFENCE MULTIPLIERS AND LOCAL CIRCUMSTANCES

Defence multipliers tend to be smaller where imports are higher and extra demand associated with increased defence spending is met by producers abroad. Higher levels of government debt also tend to be associated with smaller multipliers, as higher debt increases the likelihood of concurrent or future tax rises or expenditure cuts to accommodate higher spending on defence.[19] Debt-funded increases in defence spending have nearly twice the output effect of defence spending increases financed by the reprioritisation of other expenditure or higher taxes.[20] Such local circumstances vary greatly from economy to economy. In Türkiye, for instance, where the domestic industrial base is large and public debt is relatively modest, the defence multiplier can be expected to be higher than in economies that rely more heavily on imports to meet additional defence demand or have higher levels of public debt.

CHART 2.10 In the EBRD regions, increasing defence spending by 1 per cent of GDP is associated with a 1.47 per cent increase in output in the medium term

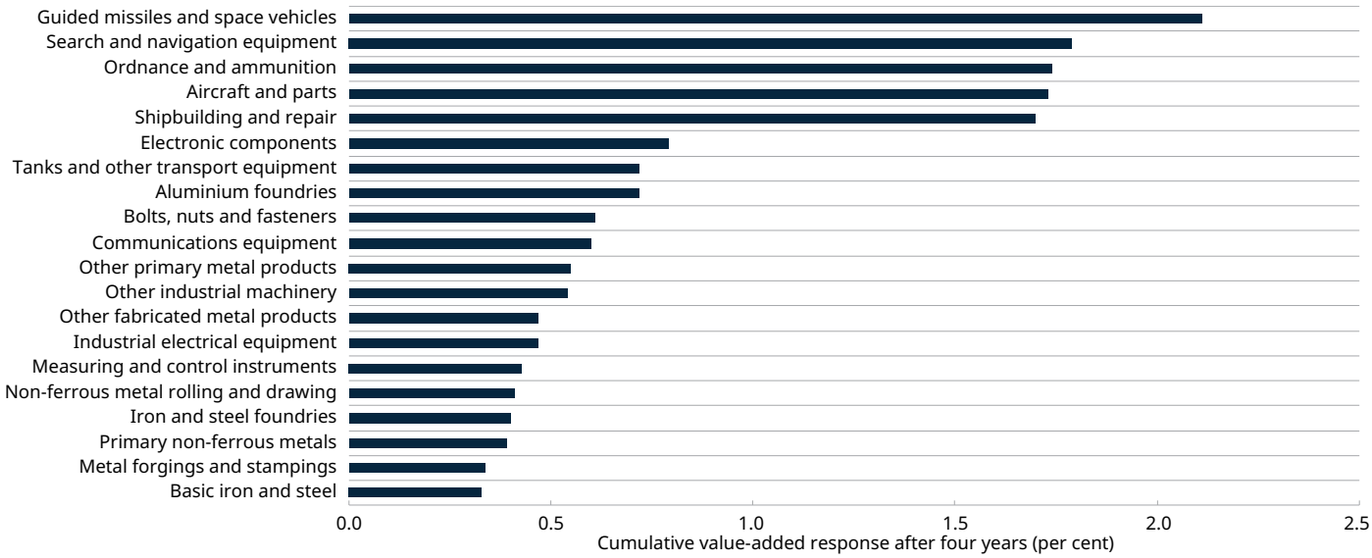


SOURCE: SIPRI (2026a), IMF (2026) and authors' calculations.
NOTE: Multipliers estimate an increase in output in response to an increase in defence spending totalling 1 per cent of GDP based on data for 1991-2025, excluding fragile and conflict-affected states (see Box 2.2 for details). Data for "advanced economies", "other emerging market economies" and "other low-income developing countries" are based on IMF classifications excluding EBRD economies. "EBRD economies" comprises Albania, Armenia, Azerbaijan, Benin, Bosnia and Herzegovina, Bulgaria, Côte d'Ivoire, Croatia, Egypt, Estonia, Georgia, Ghana, Hungary, Jordan, Kazakhstan, Kenya, the Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Morocco, North Macedonia, Poland, Romania, Senegal, Serbia, the Slovak Republic, Slovenia, Tajikistan, Tunisia, Türkiye, Turkmenistan and Uzbekistan. Bars denote 90 per cent confidence intervals.

The composition of defence spending is also central to its effects on output. Recent evidence, for example, suggests that defence spending on equipment has a significantly higher multiplier than defence spending on personnel.[21] While NATO members as a whole allocated around 43 per cent of their 2022-25 increase in defence spending to equipment, members in the EBRD regions allocated 56 per cent of their increase to equipment (with such expenditure accounting for 72 per cent of the increase in Montenegro, 68 per cent in Poland and 62 per cent in Lithuania). Multipliers also depend on the structure of the industry, as discussed in the next subsection.

[16] See, for instance, Barro (1981) and, more recently, Ramey and Zubairy (2018).
[17] See, for instance, Ilzetzki, Mendoza and Végh (2013), Sheremirov and Spirovska (2022) and Furceri et al. (2026).
[18] See Jordà (2005) and IMF (2026) for a discussion of the methodology.
[19] See Ilzetzki, Mendoza and Végh (2013).
[20] See IMF (2026).
[21] See Sarasa-Flores (2025).

CHART 2.11 Defence demand shocks extend well beyond the defence industry



SOURCE: Becker, Gray and Marvakov (2021), Acemoglu, Akcigit and Kerr (2015) and authors' calculations.
NOTE: Bars show the predicted cumulative four-year response of real value added to a 1 per cent increase in defence demand by three-digit SIC industry group for the top 20 manufacturing groups. Estimates are based on local projections for 1991-2018.

THE TRANSMISSION OF DEFENCE DEMAND ACROSS SECTORS

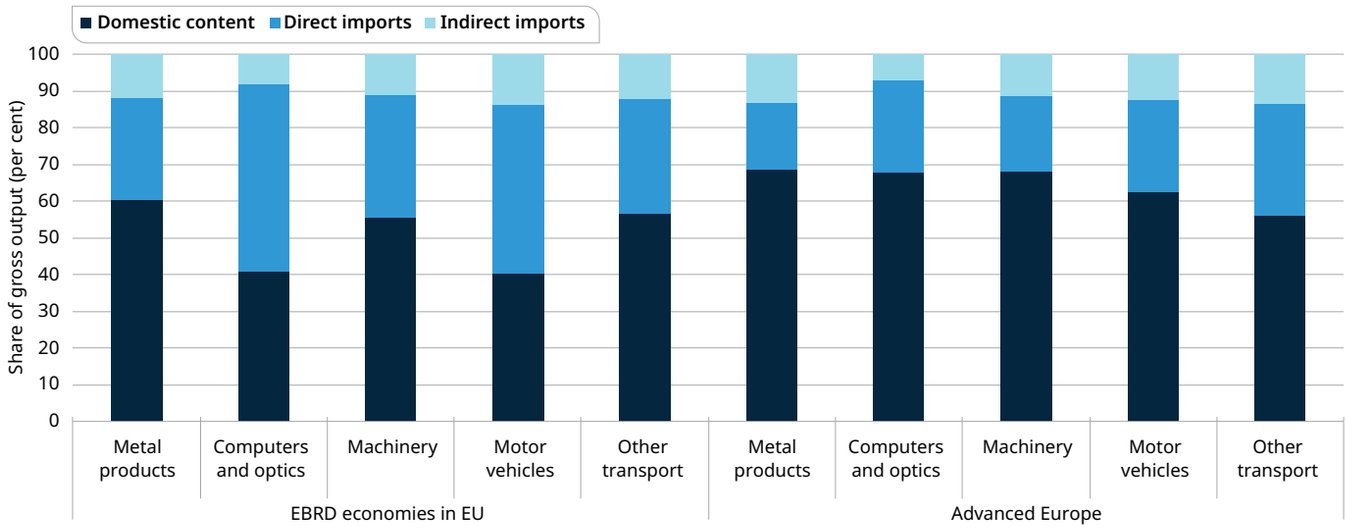
The production of complex goods relies on intricate production networks. Shocks associated with increased demand for defence goods propagate through these networks.[22] The analysis in Box 2.2 sheds light on this propagation.[23] By way of example, an industry facing additional demand increases its purchases of intermediate goods from suppliers, which, in turn, increase their own input purchases. Higher defence spending is typically a demand shock that can spread upstream. Likewise, a competitive industry that becomes more productive (due to, say, increased economies of scale) sells output at lower prices. This supply shock reduces costs for the industries that buy from it and, in turn, for customers of those industries, with the shock transmitting downstream.

This exercise distinguishes the direct effect of increased defence spending, where an industry supplies military goods to the government, from the upstream effect, where an industry supplies a customer that is expanding production in response to increased government demand. Such indirect effects can span multiple stages of production beyond first-tier suppliers. The analysis uses data from the United States, a large, diversified economy for which sufficiently detailed data are available (in smaller economies, in contrast, many supply links may lie outside the domestic enterprise network).

The largest responses are found in industries that supply the military directly: guided missiles and space vehicles, search and navigation equipment, aircraft and parts, shipbuilding, and ordnance and accessories (see Chart 2.11). In each case, value added increases by 1.5-2 per cent in response to a 1 per cent increase in defence spending. However, the defence demand shock also propagates further, extending to electronic components and communications equipment, foundries and metal forgings, and industrial machinery and electrical apparatuses – industries that primarily serve civilian customers.

[22] See Gabaix (2011) and Acemoglu et al. (2012).
[23] See Acemoglu, Akcigit and Kerr (2015).

CHART 2.12 In EBRD economies in the EU, defence-related sectors rely more on imported inputs



SOURCE: Eurostat (2025b) and authors' calculations.
NOTE: "Direct imports" are imported intermediate goods. "Indirect imports" are embodied in domestically sourced inputs through the Leontief inverse.

In economies with shallower domestic networks than the United States, the propagation of defence shocks to other industries can be expected to be weaker while working similarly across a multitude of civilian sectors. In EBRD economies in the EU, the import content of production tends to be higher – almost 60 per cent in the case of electronics, for instance, compared with about 30 per cent in advanced Europe. In such cases, the share of the demand shock that is captured by domestic suppliers tends to be lower.

Likewise, domestic producers can benefit from increases in military spending abroad if they supply foreign defence contractors. Defence procurement contracts often seek to impose local content requirements, a common industrial policy that pursues growth, employment and national security objectives. Under EU defence funding and joint-purchasing instruments, such as Security Action for Europe (SAFE) and the European Defence Industry Programme (EDIP), components from outside the EU perimeter may not exceed 35 per cent of the end product's estimated cost. In other cases, market access depends on agreements between governments. Türkiye, for example, has access to US procurement procedures through a reciprocal defence procurement agreement, while its customs union with the EU does not extend to public procurement (see also Box 1.2 in Chapter 1, which examines government procurement as a possible area for deeper Türkiye-EU integration). Goods may also be subject to export licensing, security clearance and continuity-of-supply requirements. Dual-use goods, for example, circulate freely within the EU, but require authorisation to leave the single market.

EBRD economies in the EU import almost **60%** of the inputs needed for electronics production, compared with about **30%** in advanced Europe

Evidence from the United States indicates that large-scale military procurement can boost innovation among firms winning defence contracts and along their supply chains. The indirect response is about half as large as the direct response, but it reaches significantly more firms, raising the estimated aggregate effect of defence spending on innovation by at least 20 per cent. Defence build-ups can, therefore, affect innovation and, ultimately, productivity growth through such upstream linkages.[24]

IS PUBLICLY FUNDED DEFENCE R&D DIFFERENT?

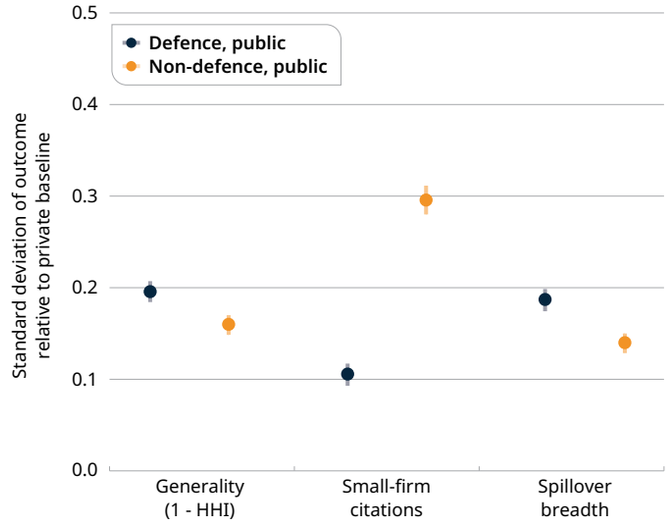
Several of the most transformative technologies developed since the 1950s have military origins. The jet engine, solar photovoltaics, nuclear power, integrated circuits, the laser, satellite navigation, the touchscreen, the computer mouse, the internet and the methods underlying modern AI, among other things, were all developed either through defence research budgets or through military procurement contracts that guaranteed a buyer for technologies too uncertain to attract private capital and justify investment. Thus, knowledge generated by defence research can extend far beyond the military purposes that it is initially meant to serve.

Advanced economies responsible for these inventions allocate a large share of public R&D funding to defence. In the United States, this share has been consistently above 50 per cent since the 1980s, based on GBARD data.[25] In contrast, defence R&D spending has averaged 2.5 per cent of total public R&D spending in EBRD economies in the EU in recent years and 6 per cent in Türkiye. Poland has raised defence's share of public R&D spending from an average of 5 per cent in 2005-21 to 10 per cent since Russia's military invasion of Ukraine in 2022.

Public R&D creates knowledge spillover effects, as it is disproportionately directed towards fundamental, basic science. Private firms underinvest in basic research because they cannot fully capture the associated returns, which trickle out to other firms and individuals. Spillovers from public R&D to the productivity of individual firms appear to be two to three times as impactful as private R&D spillovers. Grants to small firms have been shown to generate three spillover patents from other firms for every patent produced by the grant recipient.[26] There is also evidence that publicly funded R&D crowds in private R&D in the same industry and that this crowding-in extends to firms in the same industry abroad.[27]

US Patent and Trademark Office records identify the government agency behind each publicly funded patent. The related government-interest statements make it possible to separate research supported by defence agencies, such as the Defense Advanced Research Project Agency, from civilian agencies, such as the National Institutes of Health.[28] The regression analysis presented in Chart 2.13 distinguishes between patents

CHART 2.13 Publicly funded defence R&D produces patents that are more general and have broader spillovers



SOURCE: Dyèvre (2024), US Patent and Trademark Office (2025) and authors' calculations.
NOTE: This chart reports ordinary least squares (OLS) estimates of coefficients on indicator variables for publicly funded defence and non-defence patents and the respective 95 per cent confidence intervals, using US patents applied for in 1976-2020. Estimates are relative to the omitted category of privately funded patents. The dependent variables are shown on the horizontal axis. "Generality" is measured as 1 minus the Herfindahl-Hirschman Index of concentration of technology classes for citing patents; "small-firm citations" are the share of citations received from small entities; and "spillover breadth" is the number of distinct technology classes in which citing patents are located. All regressions include application-year and technology-class fixed effects and control for inventor and assignee productivity.

[24] See, for example, Carvalho and Draca (2017).
[25] See Eurostat (2025a).
[26] See Dyèvre (2024) and Myers and Lanahan (2022).
[27] See Moretti, Steinwender and Van Reenen (2025).
[28] This analysis follows the approach of Dyèvre (2024).

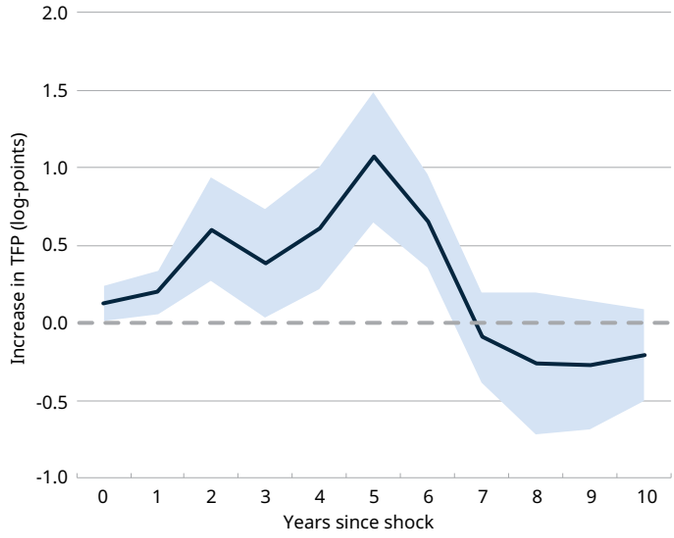
financed by defence budgets and those financed by other public budgets, while patents funded by private firms serve as a benchmark. It links various outcomes, such as measures of how widely patents are cited, to these patent characteristics.

Relative to privately funded patents, publicly funded patents in the United States are more general, are cited by patents in a larger number of other technology classes and are more frequently cited by small firms. Within publicly funded research, defence-funded patents are more general and are cited more broadly, but receive fewer citations by small firms than non-defence-funded patents. This suggests that research funded by defence agencies produces technologies that are more general and later serve as the basis for innovation across a wider range of technological fields, while civilian funding produces technologies that small firms are more likely to build on. It should also be noted that not all innovations are patented. Inventions that are considered militarily sensitive, for instance, can be withheld from publication.

Knowledge can benefit countries beyond those that fund or generate it. For instance, public research funded in the United States raises productivity in other countries, particularly in non-OECD economies and those with small stocks of R&D capital.[29] In these cases, foreign firms benefit from scientific results that are published and freely accessible, as well as from technology carried across borders embedded in traded capital goods (machinery that raises the productivity of its users).

This kind of cross-border boost to total factor productivity (TFP) in response to publicly funded R&D in the United States can be observed in post-communist economies in the EBRD regions (see Chart 2.14).[30] This analysis looks at legislated increases in the research budgets of federal defence agencies in the United States. Using a local projection method, the logarithm of TFP at each horizon is regressed on the defence R&D shock and its five lags, two lags of the dependent variable and real GDP per capita growth, two lags of US TFP, and country fixed effects.

CHART 2.14 TFP in post-communist economies in the EBRD regions increases in response to an increase in defence R&D in the United States

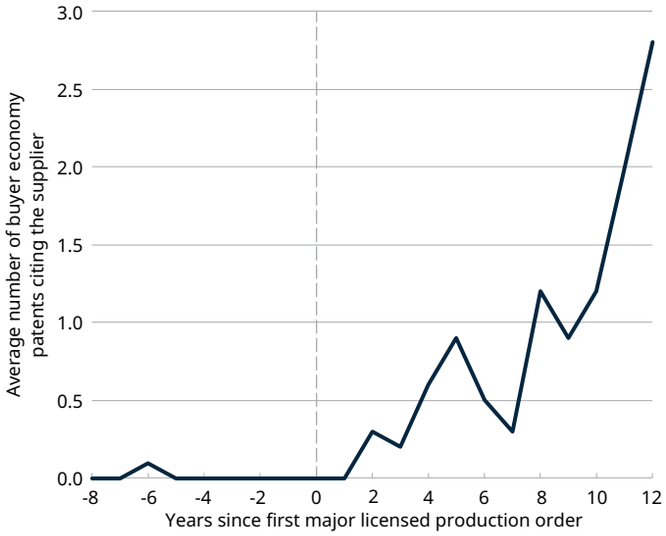


SOURCE: Feenstra, Inklaar and Timmer (2015), De Souza et al. (2026) and authors' calculations.
NOTE: The sample comprises Albania, Armenia, Bulgaria, Croatia, Estonia, Hungary, Kazakhstan, the Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Poland, Romania, Serbia, the Slovak Republic, Slovenia, Tajikistan and Ukraine in 1991-2019. The chart shows the response of TFP in these economies to an unanticipated increase in defence R&D in the United States, estimated by panel local projections based on the approach of De Souza et al. (2026). The shading indicates 95 per cent confidence intervals.

An increase in US defence R&D equivalent to
1%
of the existing R&D stock raises productivity in post-communist EBRD economies by as much as
1%
after five years

[29] See De Souza et al. (2026).
[30] Ibid.

CHART 2.15 After a licensed production deal, patenting in the buyer economy increasingly cites the technology of the supplier firm in the deal



SOURCE: European Patent Office (2022), SIPRI (2026b) and authors' calculations.
NOTE: This chart shows numbers of patents with buyer economy applicants citing the supplier, per supplier-buyer pair, around the pair's first US$ 1 billion-plus order with licensed local production. The sample consists of 10 deals between Türkiye and foreign defence firms. The first deal was in 1984 and the last deal was in 2003.

A budget increase equivalent to 1 per cent of the stock of prior defence research in the United States is associated with a 1 per cent increase in TFP in post-communist economies in the EBRD regions after five years. This effect builds gradually, peaks at five years and is no longer distinguishable from zero after seven years. The effects of non-defence R&D in the United States are similar, but somewhat larger in magnitude.

The response is partly driven by the composition of trade: knowledge comes inside imported capital goods, with industry in the EBRD regions a heavy importer of machinery, vehicles and electronics during the 1990s and early 2000s. In addition, many of these economies joined NATO between 1999 and 2004, which lowered restrictions on the transfer of defence-related technology.

There is also suggestive evidence that production under a foreign licence can help firms to build on foreign defence technology. The analysis presented in Chart 2.15 draws on 10 major licensing agreements under which the Turkish government acquired the right for domestic firms to produce weapon systems. Following each agreement, patents filed by Turkish firms cite patents held by the firm supplying the licensed technology. The effect builds over time, consistent with learning under the licensing agreement. While the sample is small, the patterns suggest that production under licence, in addition to generating local jobs, can help local firms to expand their knowledge base.

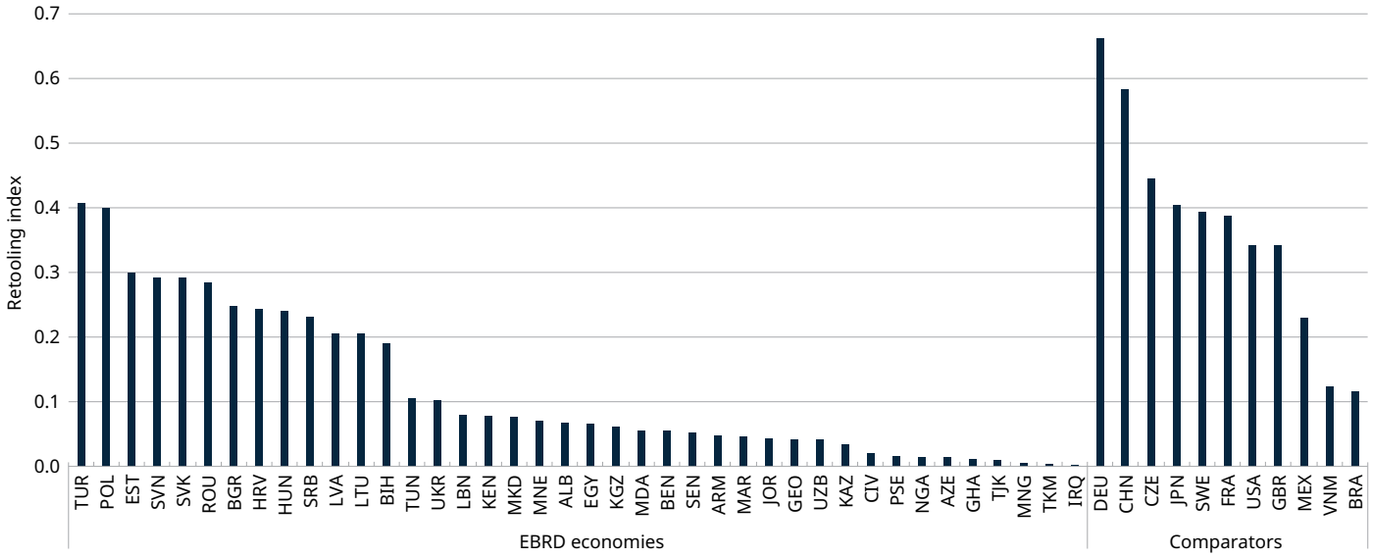
ACHIEVING SCALE IN RESEARCH AND DEVELOPMENT

The analysis does not necessarily imply that defence research is a more effective use of public funds than alternative uses. Nonetheless, it shows that public spending on defence R&D can boost productivity in civilian sectors, raising defence spending multipliers. However, such effects often rely on a scale of research spending that may not be attainable for small economies.

In such cases, collaborative programmes offer a route to achieving research and production at a viable scale. The European Defence Fund has €7.95 billion available for collaborative research and development, which is open to EU member states. NATO's Defence Innovation Accelerator for the North Atlantic is supported by all 32 allied nations (including those in the EBRD regions). The NATO Innovation Fund is available to a narrower set of 24 allies, including Türkiye.[31] Horizon Europe, the EU's key funding programme for R&D, has been amended to include dual-use research and extends to the EU neighbourhood, including Armenia, Georgia and Moldova, albeit on a smaller scale.[32]

[31] See NATO (2026) and NATO Innovation Fund (2026).
[32] See European Commission (2025 and 2026).

CHART 2.16 Potential to redirect civilian production to defence is relatively high in Poland and Türkiye



SOURCE: Fetzer et al. (2024), CEPII (2026) and authors' calculations.
NOTE: Readiness for retooling is calculated as the similarity-weighted share of military-related civilian goods for which an economy has an RCA. Higher values indicate greater potential to redirect existing export capabilities to defence production.

BUILDING MILITARY CAPABILITY

Higher military spending does not automatically translate into the required military capabilities. In many advanced economies, the industrial base that is needed to expand defence output quickly has been weakened by years of low demand for military equipment and because the overall manufacturing base has shrunk with production moving to China. Where the available industrial base is small, a larger part of any increase in spending is likely to be absorbed by higher prices for domestic outputs and imports.[33]

The potential for an economy to effectively redirect resources to defence production can be measured using a composite index of readiness for retooling, which builds on 450,000 technological input links between products, drawn from the AI-generated Production Network (AIPNET).[34] When combined with trade data for 2022-24, this produces relatedness scores ranging from 0 to 1. For the purposes of this analysis, two goods are treated as being related if they are assembled from the same components (rather than one being an input to the other). For instance, a passenger car has a relatedness score of 0.52 with respect to a tank, whereas a cotton shirt scores 0. Cars and tanks draw on similar components, such as transmissions, bearings, castings, mountings and heavy metalworking and, by extension, on similar production methods and factories.

The ability to convert civilian production to military use is, therefore, assumed to depend on the similarity of military supply chains and production to civilian equivalents, based on historical experience. For example, after the United States prohibited civilian automobile production in February 1942 and redirected the sector to war output, tank production rose from 331 units in 1940 to 29,497 in 1943.[35] In 2025, the Europe-based KNDS converted a former railway plant to produce components for tanks and artillery systems.[36]

Poland and Türkiye score relatively highly on the economy-wide retooling readiness index, which compares economies' industrial structures with relatedness scores for military goods (see Chart 2.16). Both have deep specialisations in automotive components, machinery

[33] See Antonova, Luetticke and Müller (2026).
[34] See Fetzer et al. (2024).
[35] See Hyde (2013).
[36] See KNDS (2026).

and fabricated metal products, supplying customers in Europe. Germany has the highest retooling index globally, followed by Italy and China, reflecting an industrial base centred on machinery, motor vehicles and electrical equipment.

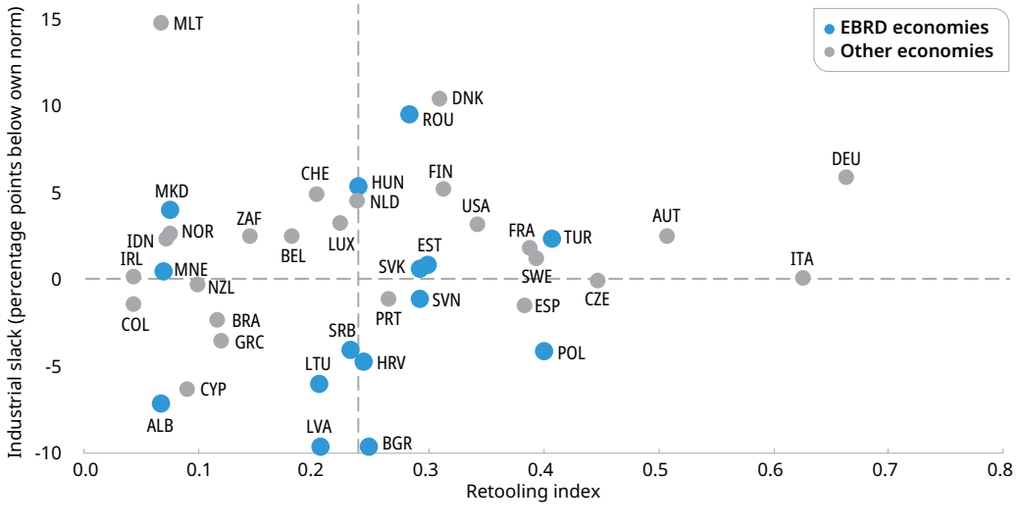
While Poland's retooling potential is high, its industrial capacity utilisation is also relatively high, leaving more limited scope to increase military production in the short term without exacerbating inflationary pressures (see Chart 2.17). More generally, where capacity utilisation is already high and relatively little slack is available in an economy, an increase in defence expenditure is more likely to draw resources away from civilian production and generate upward pressure on prices.

The choice between contracting defence production domestically or internationally also depends on whether domestic production can reach an efficient scale, the adjustment costs of converting civilian production to military use, such as retraining workers and reconfiguring capital for a different product, the output lost while doing so and the strategic value of ensuring domestic supply.

The necessary scale can sometimes be achieved through joint procurement. European programmes such as the Global Combat Air Programme (GCAP), the Eurofighter Typhoon, the Panavia Tornado and the MBDA Meteor missile have pooled participating countries' demand to achieve production at scale. At the same time, cross-border programmes tend to be more expensive and slower. A rule of thumb in defence economics approximates the development cost of a collaborative programme using the square root of the number of partner nations. Thus, a four-nation project could cost twice as much as a comparable national programme.[37] As a result, the savings from multinational procurement may not be fully realised.[38]

Pooling demand internationally also requires a strong governance framework. Partners must agree who leads the programme, which may involve multiple "national champions", and how intellectual property rights are assigned and upheld.[39] GCAP and the Future Combat Air System (FCAS), both three-nation efforts to build a next-generation fighter aircraft, illustrate the importance of thinking through governance arrangements. GCAP (established by the United Kingdom, Japan and Italy) decided on its organisation and leadership before the industrial phase, while FCAS (established by France, Germany and Spain) left work-sharing and leadership issues unresolved and its joint fighter element was abandoned in 2026.[40]

CHART 2.17 Some EBRD economies have both the potential to redirect civilian production to defence and spare industrial capacity



SOURCE: Fetzer et al. (2024), CEPII (2026), Federal Reserve Bank of St. Louis (2026), Eurostat (2026), OECD (2026) and authors' calculations.
NOTE: Industrial slack is defined as each economy's average manufacturing capacity utilisation in 1972-2019 (subject to data availability) minus its latest four-quarter average, in percentage points. The vertical dashed line indicates the sample median for retooling readiness.

[37] See Hartley (2008).
[38] See Lorell and Lowell (1995).
[39] See Clapp, Höflmayr and Vambrie (2025).
[40] See Petrie (2024) and Euronews (2026).

Various existing instruments seek to pool demand for military products across borders. EDIP has €1.5 billion in grants available for 2025-27 for common procurement and industrial capacity, while SAFE has up to €150 billion available for loans conditional on joint procurement and has been extended to Ukraine. This includes large allocations for Poland (€43.7 billion), Romania (€16.7 billion) and Hungary (€16.2 billion). EU Security and Defence Partnerships also open up common procurement to Moldova, North Macedonia and Albania, although access to EU funding for their suppliers requires a further agreement. Outside Europe, firms in EBRD economies with qualifying country status under US defence procurement rules – including Egypt, Estonia, Latvia, Lithuania, Poland, Slovenia and Türkiye – can compete for US programme subcontracts on the same terms as domestic suppliers.

The nature of military conflict has changed, with drones (unmanned, uncrewed and autonomous systems) becoming central, as Russia's war on Ukraine has shown. Barriers to entry in this sector are lower than for traditional defence equipment with high fixed production costs. Consequently, smaller economies in the EBRD regions have established strong positions in markets for drone inputs and finished systems. Four

FOUR

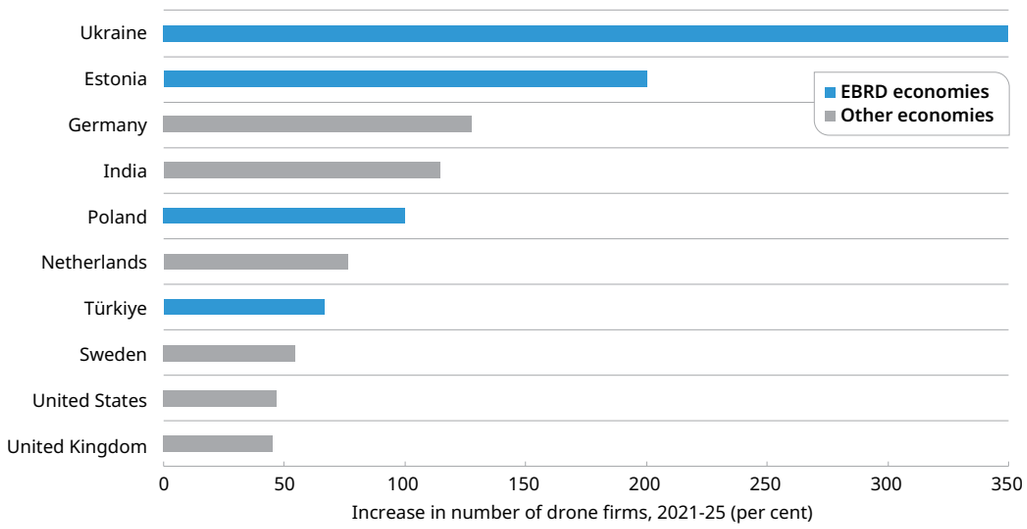
EBRD economies are among the world's 10 fastest-growing hubs for drone firm creation since 2021

economies in the EBRD regions are among the top 10 economies globally in terms of drone company growth since 2021 (see Chart 2.18).

As a result, in July 2026, firms specialising in drones accounted for 40.1 per cent of domestic defence firms in emerging Europe, compared with 15.0 per cent in advanced Europe and 8.6 per cent in the United States (see Chart 2.19).

Exports of drones by EBRD economies have also grown rapidly. Serbia's exports of drone inputs grew 3.2-fold between 2019-21 and 2024, while Bulgaria's doubled, and Morocco's, Slovenia's and the Slovak Republic's grew 1.6-fold.[41] Türkiye is the world's largest exporter of finished military drones, with 41 per cent of global

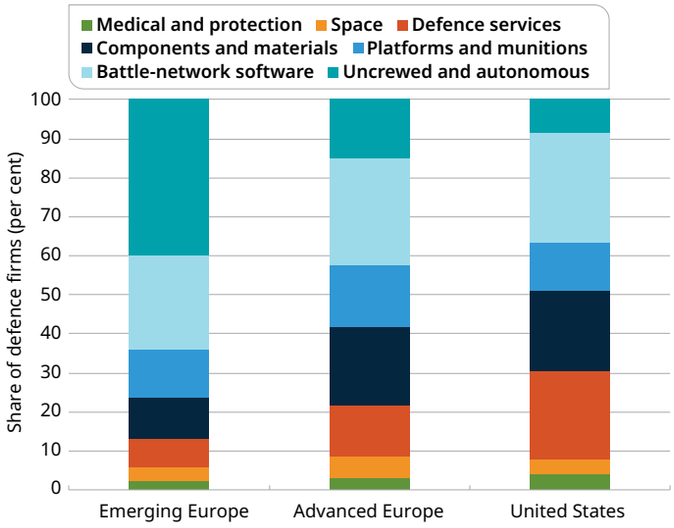
CHART 2.18 Four EBRD economies are in the top 10 globally for post-2021 drone company growth



SOURCE: Dealroom (2026) and authors' calculations.
NOTE: Drone companies are defined as firms whose recorded activities involve unmanned systems, such as the development or manufacture of aerial, ground or underwater drones, or of related components, software and services (including counter-drone technology). Firms are grouped together on the basis of the country in which they are headquartered.

[41] Authors' calculations based on CEPII (2026).

CHART 2.19 Defence firms in emerging Europe often specialise in drones



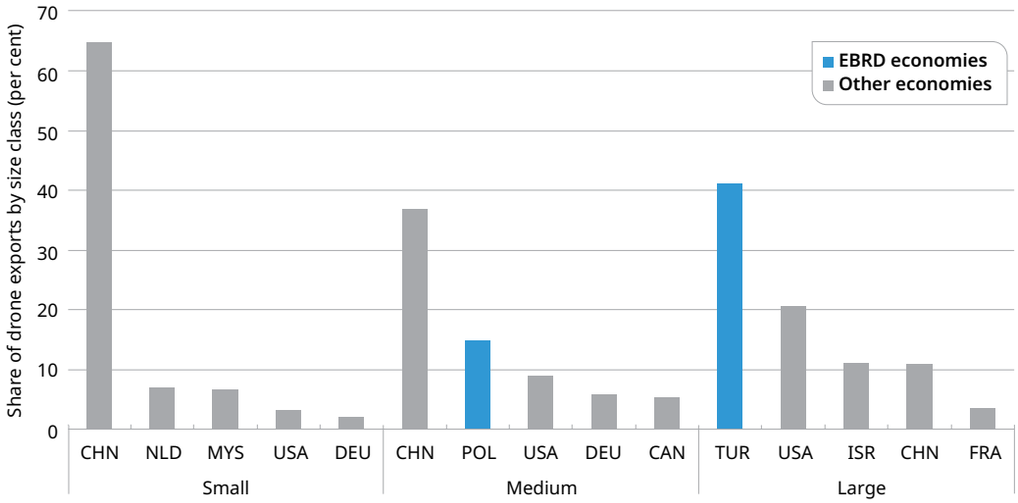
SOURCE: Dealroom (2026) and authors' calculations.
NOTE: Sample includes all firms where a primary product domain could be assigned. "Battle-network software" covers cyber and electronic warfare and sensing. "Platforms and munitions" spans weapon systems and aviation. "Components and materials" encompasses semiconductors, photonics, advanced materials, propulsion and manufacturing. "Emerging Europe" comprises EBRD economies in the EU and the Western Balkans, plus Moldova, Ukraine and Türkiye.

exports in the heavyweight class, ahead of the United States (at 21 per cent) and Israel and China (at 11 per cent each; see Chart 2.20). Poland is the second-largest exporter of drones in the medium-weight class. (In trade data, drones are classified by weight, with the overwhelming majority of small drones having commercial uses and large drones mainly being used for military purposes.)

The commercial market for drones is larger than the military market and worth in excess of US$ 5 billion annually, compared with US$ 1.6 billion for large and medium-sized drones. It is dominated by China, which accounts for 65 per cent of all exports (with the second-largest exporter, the Netherlands, accounting for 7 per cent of the market, followed by Malaysia with 6.7 per cent). Looking at EBRD economies, Poland, with a market share of 1 per cent (on a par with France), is one of the 10 largest exporters.

New drone producers in the EBRD regions face constraints in their attempts to increase their share of the global market. Capital remains scarce and such firms rarely progress beyond the earliest funding stage. In the market for small commercial drones, China's leading position is particularly strong.

CHART 2.20 Türkiye is the world's largest exporter of finished military drones



SOURCE: CEPII (2026) and authors' calculations.
NOTE: Drones are defined as HS2022 code 8806, "unmanned aircraft". Size classes are based on maximum take-off weight, combining subheadings from the remotely piloted (8806.2) and autonomous flight (8806.9) categories. The three panels show the top five exporters in 2024 for the three size classes.

CONCLUSIONS AND POLICY IMPLICATIONS

Rising geopolitical tensions have put an end to the peace dividend of the past three decades. Defence spending is rising globally, with a number of economies in the EBRD regions at the forefront of that increase following Russia's full-scale military invasion of Ukraine in 2022.

An increase in defence spending totalling 1 per cent of GDP in economies in the EBRD regions is associated with a 1.47 per cent increase in output in the medium term. Multipliers of defence spending tend to be smaller where imports are higher. The composition of defence spending matters: large-scale, publicly funded defence research often generates general-purpose technologies that have broad spillovers into technological fields. The resulting productivity gains can be transmitted across borders: economies in the EBRD regions have enjoyed productivity gains as a result of increased spending on defence research in the United States, for instance.

Military and dual-use goods are complex and technologically advanced, and sunk costs, economies of scale, qualification requirements and incumbent lock-in keep defence production concentrated in a small number of countries and firms.

In many economies in the EBRD regions, the defence industry is disproportionately state owned. State-owned defence firms are less productive than private firms, while defence-tech firms rarely raise capital beyond the earliest funding round. Policies that support firms in accessing growth capital can help new entrants in these industries to establish themselves as national and global players.

Where a domestic production base and spare industrial capacity exist, further economies of scale could be achieved through participation in joint procurement programmes, such as those led by the EU. Participating in a shared programme can also give a smaller country's industry access to know-how. When such programmes are established, governance arrangements require early and careful consideration. Production under licence is another way to support domestic activity and can also facilitate some degree of knowledge transfer.

Economies with little or no defence industry can provide inputs to defence production and benefit from increased global demand for defence products, although participation in such supply chains may be limited by local content requirements, export controls or requirements for security clearance and reliable supply.

BOX 2.1 UKRAINE'S DEFENCE INDUSTRY: FROM WARTIME NECESSITY TO EXPORT INDUSTRY?

In 1991, Ukraine inherited about 30 per cent of the Soviet defence-industrial base, with around 700 enterprises, including Pivdenmash, a rocket manufacturer, and Antonov, an aircraft manufacturer, employing a million people. These enterprises were regarded as the most advanced and technologically sophisticated segment of Ukraine's manufacturing sector. Capabilities were concentrated in missiles, transport aircraft, tanks, surface ships and turbine engines.[42] Despite this, the Ukrainian defence industry never managed to move up the value chain and establish itself as a major supplier of advanced weapon systems. Three constraints limited the sector's development over subsequent decades.

First, Ukraine's supply chains relied on foreign inputs, and re-establishing domestic production of inputs required large-scale investment. In 2013, Russia supplied 25 per cent of critical inputs for Ukraine's military production.

Ukraine inherited about
30%
of the Soviet defence-industrial base

Second, domestic demand was weak. Ukraine depended on Russia for final demand. It absorbed 16 per cent of Ukraine's military exports and 52 per cent of its dual-use and strategic exports. Force reductions mandated under the 1990 Treaty on Conventional Armed Forces in Europe, nuclear disarmament under the 1994 Budapest Memorandum and fiscal constraints meant that state procurement was limited to essential maintenance. The number of arms-producing enterprises fell by nearly two-thirds to 267 by mid-1993 and domestic military procurement totalled just US$ 62 million in 2014.[43]

Producers resorted to exports as a substitute for domestic demand, selling modernised Soviet-era systems and establishing joint ventures in Africa, Asia, Latin America and the Middle East. This gave rise to the third problem. While Ukraine was one of the world's 15 largest arms exporters for most of 1993-2013 and was the fourth largest in 2012, little attention was paid to upgrading technology.[44] Clientelism and corruption remained a problem in state-owned enterprises such as UkrOboronProm, a state conglomerate that oversaw more than 100 companies and was the armed forces' principal supplier, deterring Western investment.[45]

Following Russia's illegal annexation of Crimea and the outbreak of conflict in the Donbas region, a rapid increase in domestic defence procurement coincided with the severing of Russian supply chains, as the share of inputs from Russia fell to 14 per cent. This forced partial reshoring and the reorientation of the remainder of external sourcing to Western suppliers. State-owned enterprises were slow to adapt. As a result, private firms' share of military procurement rose from 25 per cent in 2015 to 54 per cent in 2020.[46]

The full-scale military invasion of Ukraine in 2022 prompted rapid battlefield innovation, shifting priorities from the legacy defence sector to unmanned systems and electronic warfare, a segment worth an estimated US$ 6.8 billion in 2025, comprising drones (US$ 6.6 billion) and electronic warfare (US$ 220 million).[47] Brave1, the state coordination platform established in 2023, has been central to this shift, linking developers, military end-users, budget holders and investors, and disbursing over US$ 60 million in grants to more than 600 companies in 2025. Publicly disclosed private investment in Ukrainian defence-tech firms rose from US$ 1.1 million in 2023 to over US$ 105 million in 2025.[48]

CONTINUED

[42] See Kuzmuk and Scarazzato (2025).
[43] Ibid.
[44] Ibid.
[45] See Bukkvoll and Solovian (2020).
[46] See Kuzmuk and Scarazzato (2025).
[47] See KSE Institute (2026).
[48] See Crebo-Rediker (2026).

BOX 2.1 CONTINUED

Capability has grown nonetheless, to the point that Ukraine authorised its first wartime exports in February 2026 and announced 10 European export centres.[49]

While the sector is now larger, more diversified and more technologically capable than at any point since 1991, major constraints on scaling up production remain. Supply chains in the defence-tech sector remain dependent on external suppliers, with China accounting for 71 per cent of Ukraine's imports of key drone inputs. Leveraging the country's capability in drones in the post-war period will depend on managing and phasing out that reliance, as potential export markets will place a greater premium on secure supply chains that do not rely heavily on any single supplier country.[50] With defence spending running at 39.6 per cent of GDP in 2025, export demand is likely to play a far greater role in peacetime.

Amid limited global capability in drones, counter-drone systems and electronic warfare, there is scope for establishing joint ventures in future. The United Kingdom signed a licensing agreement in November 2025 to produce the Ukrainian-designed Octopus interceptor drone at scale, making it the first Ukrainian combat system to be serially manufactured in a NATO country.[51]

While Ukraine has considerable export potential, realising it will require compliance with demanding certification standards, including those of the EU and NATO, which few Ukrainian firms currently satisfy. Moreover, competition is on the rise, with Türkiye, South Korea and well-capitalised private entrants such as Helsing and Anduril rapidly gaining share in the higher-end segment of the drone market.

[49] See Crebo-Rediker (2026).
[50] See Dee et al. (2025).
[51] See Ministry of Defence of Ukraine (2025).

BOX 2.2 METHODOLOGY

ESTIMATING DEFENCE SPENDING MULTIPLIERS

The defence spending multipliers presented in this chapter are estimated using the approach set out in IMF (2026). Cumulative multipliers are obtained from panel local projections, where the cumulative change in the real GDP of a country between years t and $t+3$ is regressed on the cumulative change in defence spending over the same time horizon.

Output is measured by real GDP, and both output and defence spending are normalised by potential GDP. Potential GDP is estimated as the exponentiated fitted value of a sixth-order time polynomial in log real GDP. Controls comprise one- to four-year lags for output, defence spending and non-defence spending as shares of potential GDP, a contemporaneous onsite conflict indicator, and country and year fixed effects. Standard errors are clustered at the country level. The sample comprises all economies with available data, excluding the 26 countries on the World Bank's list of fragile and conflict-affected states, and spans the post-Cold War period from 1991 to 2025. Each country-group estimate comes from a separate regression, estimated by ordinary least squares.



ESTIMATING THE PROPAGATION OF DEFENCE SHOCKS

The analysis of predicted sectoral responses to US defence spending shocks draws on an annual panel of 392 four-digit manufacturing industries from the Manufacturing Industry Database compiled by the National Bureau of Economic Research (NBER)[52] and the US Census Bureau's Center for Economic Studies (CES) for the period 1991-2018.[53] Each industry's exposure to defence demand is measured as its defence-related sales as a share of total sales in 1992, derived from US final defence demand. The industry's own shock is constructed as a shift-share term that interacts this exposure with the change in the logarithm of aggregate national defence expenditure. The shock is then propagated through the 1992 input-output network to obtain an upstream shock (capturing demand reaching an industry from its customers) and a downstream shock (capturing the input-cost channel operating through its suppliers). The input-output network and the defence exposures are held fixed at their 1992 values, so that variations in the shocks reflect movement in aggregate defence spending as opposed to the endogenous evolution of industry linkages.

The own, upstream and downstream effects are estimated using cumulative local projections on a four-year time horizon. The log-change in real value added, cumulated from t to $t+4$, is regressed on the three lagged defence shocks, controlling for lagged value-added growth and year fixed effects. Standard errors are clustered at the industry level. For each industry, the fitted value is evaluated at that industry's realised own and upstream shocks, and averaged over its estimation sample years, isolating the component of predicted growth that is attributable to defence demand. Four-digit estimates are then aggregated to the three-digit level.

[52] See Becker, Gray and Marvakov (2021).
[53] This analysis is based on Acemoglu, Akcigit and Kerr (2015).

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