Chapter 2. Security at what cost? Defence spending, growth, and the fiscal arithmetic

Key takeaways

Europe has embarked on a major defence build-up. This chapter shows that the effective cost of higher defence spending can, in the long term, be substantially lower than the headline numbers suggest. This requires that spending is designed to meet defence objectives in ways that also maximise positive spillovers to the broader economy and is embedded in a credible fiscal framework.

The defence sector is a source of innovation, not just a recipient of public demand.

- Defence firms tend to be more productive and more capital-intensive than comparable firms engaged in purely civilian production.
- Firm-level evidence points to productivity spillovers from defence investment to upstream civilian suppliers, particularly among civilian firms closer to the productivity frontier.

Higher defence spending can partly pay for itself in the long term.

- Up to 53 cents of every euro in additional defence spending is eventually recovered through higher economic activity and tax revenues when procurement is sourced from euro area suppliers and economy-wide productivity spillovers materialise.
- Without productivity spillovers, demand effects and sectoral reallocation recover around 25 cents, less than half the expense.
- These figures reflect current NATO plans to increase spending, initially debt-financed, and a gradually phased in fiscal adjustment.

Four conditions determine the extent of the fiscal payback.

- Procurement sourced within the euro area and directed towards capital and R&D-intensive activities unlocks the full productivity channel.
- Composition matters as much as scale: spending on personnel, maintenance, or imported equipment delivers markedly smaller macroeconomic returns.

- Financing choices are critical: expenditure reallocation preserves self-financing, while reliance on labour tax increases can deteriorate it.
- Anchoring the defence build-up in a credible medium-term fiscal framework enhances the growth dividend.

Cross-border security benefits and supply-chain spillovers span across EU Member States. Greater EU-level coordination in procurement and financing can reduce costs, mitigate fragmentation, and reinforce the scale effects that underpin productivity gains and fiscal payback.

2.1 Introduction: Europe's changing geoeconomic landscape

Europe is rewriting its security contract. Russia's full-scale invasion of Ukraine in February 2022 brought the post-Cold War 'peace dividend'[1] to an end, triggering a broad reappraisal of the European defence position. At the North Atlantic Treaty Organization (NATO) Summit in The Hague in 2025, Allies committed to raising defence spending to at least 3.5% of gross domestic product (GDP) for core defence requirements,[2] well above the long-standing 2% benchmark. Governments have already begun adjusting their fiscal frameworks. Germany has overhauled its constitutional borrowing rules to free up defence funding, France has proposed further expanding its major multi-year military programming law, and at the European level the activation of national escape clauses for defence spending has provided flexibility. The Security Action for Europe (SAFE) programme creates a common borrowing instrument to support a coordinated expansion in defence investment.

The fiscal implications of this shift are substantial. For the euro area, raising defence spending towards 3.5% of GDP would imply additional annual expenditures in the order of €45 billion until 2035. In many cases, these increases coincide with already elevated public debt levels and competing fiscal demands, making the fiscal arithmetic appear daunting. A defence build-up could be financed through higher deficits in the short run, but debt sustainability ultimately requires a corresponding fiscal adjustment through either expenditure cuts or tax increases.

A narrow focus on fiscal constraints captures only part of the picture. It abstracts from the macroeconomic effects of defence spending, including its impact on aggregate demand in the short term and on productivity over the medium term, particularly when expenditures are directed towards investment and innovation. These channels can support output and generate additional fiscal revenues, thereby offsetting part of the initial budgetary cost. Historical evidence from major military build-ups confirms that the fiscal impact of defence spending depends critically on its composition, financing, and economic context (see Box 2.1).

This chapter examines the conditions under which such macroeconomic feedback can reduce the effective fiscal cost of defence spending, with the focus on how much the composition of spending matters and how fiscal financing choices shape the outcome. It combines novel firm-level evidence of productivity spillovers in defence-related sectors with a structural macroeconomic framework to estimate the degree of 'self-financing', defined as the share of additional spending ultimately recouped through higher economic activity and tax revenue (in present value terms). The main finding is that up to 53 cents of every additional euro of defence spending can be offset by macroeconomic feedback, reducing the effective fiscal cost from €1 to 47 cents in the long-term.

The analysis proceeds as follows: Section 2.2 documents the defence spending gap. Section 2.3 presents firm-level evidence on productivity dynamics in defence-related industries and spillovers to civilian production. Section 2.4 incorporates these findings in a macroeconomic model to estimate self-financing under alternative scenarios. Section 2.5 concludes with policy implications.

2.2 The defence spending gap

European defence spending has been structurally low for decades. After the end of the Cold War, NATO members gradually reduced military budgets in what became known as the 'peace dividend'. Among European Union (EU) Member States, for which comparable fiscal data are available from 1995, average defence spending fell from 1.6% of GDP in 1995 to a trough of 1.1% in 2014, the year Russia annexed Crimea and NATO formally adopted its 2% spending guideline. By 2025, all EU NATO members had reached the 2% threshold, a significant turnaround. But the challenge has shifted: most still face substantial gaps relative to the 3.5% core defence target agreed at the Hague Summit (Figure 2.1).[3]Only the Baltic states and Poland, the countries most directly exposed to the threat on NATO's eastern flank, are close to or exceeding that higher bar.

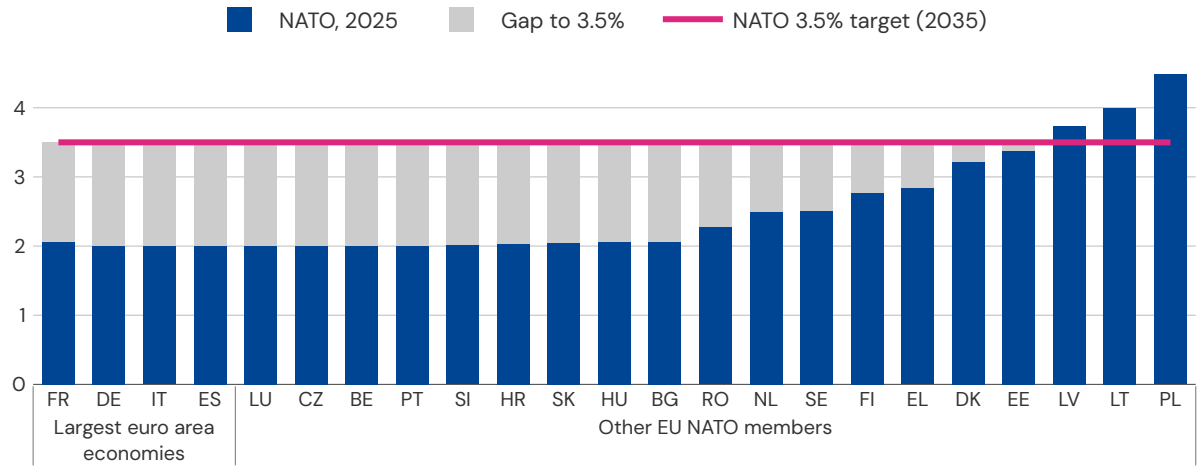
The issue is not only how much Europe spends on defence, but what it spends the money on. Over 40% of the EU defence budget goes to salaries and one-third to goods and services, with investment accounting for around 20% of total expenditure. Yet, within that investment envelope, research and development (R&D) remains chronically underfunded at roughly 3% of total defence expenditure. This compares to 12% in the United States (US). The consequences of this gap extend well beyond defence capabilities. Limited defence-related R&D investment contributes to Europe's continued reliance on non-European suppliers for critical high-technology components, constraining both strategic autonomy and the scope for domestic productivity spillovers (Demertzis et al., 2025).

Figure 2.1

Euro area spending gap and chronic underinvestment

Defence spending

(in % of GDP)



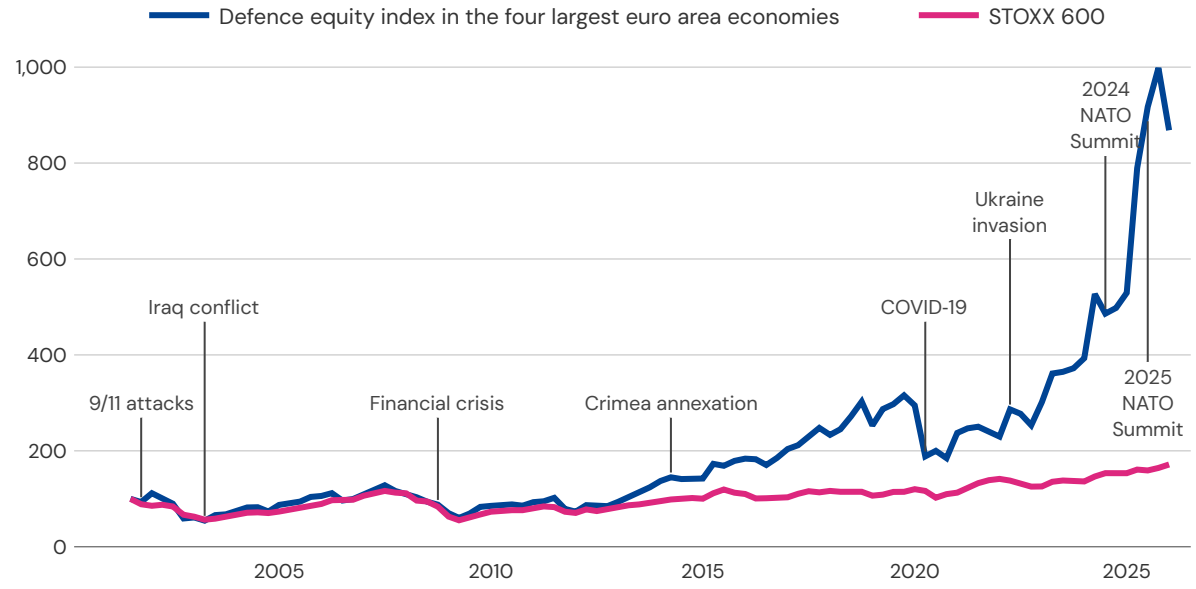
Source: ESM calculations based on NATO data

Financial markets have already reacted to Europe's defence build-up, anticipating sectoral growth. European defence equity indices have surged since Russia's invasion of Ukraine in February 2022, with a further sharp acceleration following the European Council's ReArm Europe announcement in March 2025 (Figure 2.2). This repricing has been broad-based across major listed defence firms, consistent with market expectations of a sustained increase in procurement volumes, which may extend along defence-related supply chains such as engines, electronics, and specialised materials. Whether this expansion translates into broader and more durable economic growth, however, depends on whether higher defence spending generates productivity gains and innovation spillovers beyond the defence sector itself.

Figure 2.2

Markets have already priced in the shift

(Q1 2001=100)



Notes: The quarterly defence equity index represents the stock prices of nine companies across the four largest euro area economies (France, Germany, Italy, and Spain), weighted by their market capitalisations. A company is included only once it has valid price data.
Source: ESM calculations based on ESM firm-level database and Orbis (Moody's Analytics) and STOXX Limited/Haver Analytics data

2.3 Defence firms, supply chains, and productivity spillovers

Defence spending can expand productivity beyond the defence sector through supply-chain linkages. A key question is whether the defence sector acts solely as a recipient of public demand or also as a source of innovation and learning for upstream firms. When defence contractors require stringent technological standards, demand customised inputs, and operate at scale, they can induce suppliers to improve production processes, adopt new technologies, and reorganise their operations. Empirical work on multinational firms shows that these vertical relationships generate supplier productivity gains through knowledge transfer, standard-setting, and "learning by supplying" (Javorcik, 2004 and Fons-Rosen et al., 2017). Historical evidence suggests that similar dynamics can arise in the defence context. During World War II, when surging government demand for aircrafts drove rapid productivity gains at the production-line level (Ilzetzki, 2024), manufacturers improved their methods and reorganised supply chains under capacity pressure.

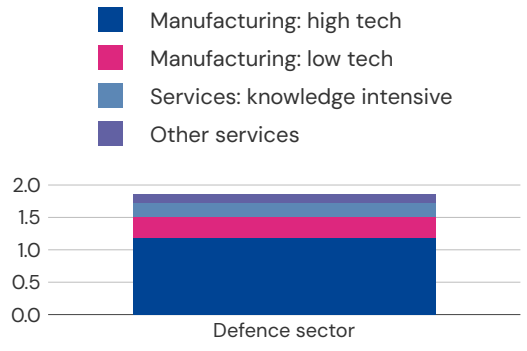
The defence industrial base is broader than final weapons production. The analysis draws on a novel dataset for France, Germany, Italy, and Spain – the four largest euro area economies, which together account for around 75% of euro area GDP and the vast majority of European defence production – matching firms with documented defence-related business to Orbis balance-sheet data.[4] This approach captures firms that conduct direct business with the public defence sector as their main line of activity, including both pure defence and dual-use firms, rather than focusing solely on weapons and ammunition production. In practice, this includes firms supplying key inputs and services to the defence sector, such as specialised electronics, advanced materials, engineering services, and maintenance and logistics. The resulting sample covers more than 1,300 defence firms and roughly 1.2 million non-defence firms from 2006 to 2022. Despite its relatively small share of total operating revenues (around 1.9% overall and more than 4.5% in manufacturing), the defence sector represents a disproportionately important high-tech segment of the euro area economy, based on the Organisation for Economic Co-operation and Development (OECD) classification of industries by technology intensity (Figure 2.3a).

Figure 2.3

Defence sector exhibits relatively high-tech intensity

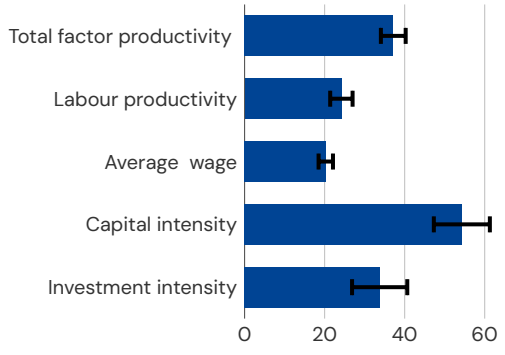
a) Turnover concentration in high-tech sectors

(in % of turnover)



b) Differentials between defence and other firms

(in %, whiskers denote 95% confidence intervals)



Notes: In Panel a), the bar represents the turnover of defence firms as a percentage of total turnover across all firms in the sample. The sample comprises the four largest euro area economies (France, Germany, Italy, and Spain) and includes more than 1,300 defence firms with non-missing operating revenue (average over 2019–2022). The division of sectors into technology- and knowledge-intensive categories follows the OECD classification at the NACE 2-digit level. In Panel b), bars report, for each firm characteristic, the estimated percentage differential between defence firms and non-defence firms operating in the same country-sector. A positive value indicates that defence firms exhibit higher levels of the corresponding characteristic. Further details are provided in Annex A9.
Source: ESM calculations based on ESM firm-level database and Orbis (Moody's Analytics) data

Defence firms tend to be more productive, more capital-intensive, and pay higher wages. Compared with civilian firms operating in the same industries, defence firms tend to be larger in terms of employment, invest more per worker, and exhibit statistically significant premia of around 40% in total factor productivity (TFP) and 35% in investment intensity, defined as investment as a share of total assets (Figure 2.3b). The defence

sector, therefore, stands out as disproportionately composed of firms closer to the upper end of the productivity distribution, rather than a low-productivity enclave. From the perspective of upstream suppliers, exposure to the defence sector can be economically meaningful for overall productivity. This has direct implications for fiscal arithmetic: spending directed towards more capital-intensive and innovation-focused firms is likely to generate materially different macroeconomic returns than expenditure on wages, maintenance, or imported off-the-shelf equipment.

Upstream suppliers constitute the main channel of productivity spillovers. The defence sector is deeply embedded in domestic supply chains, with around 85% of civilian firms' intermediate inputs originating within the euro area (Figure 2.4a). The FREMM[5] programme, a major Franco-Italian naval frigate initiative, illustrates how defence investment propagates through upstream supply chains. While prime contractors handle design and final assembly, hundreds of specialised suppliers provide key components such as radar systems and electronic modules. To meet demanding defence standards, these suppliers invest in new capital equipment and upgrade their technology and processes, generating productivity gains that extend beyond the defence sector. Consistent with this, the analysis suggests that a 10% increase in total defence investment intensity, weighted by input-output linkages, is associated with an approximately 0.08% increase in TFP of individual upstream civilian suppliers (Figure 2.4b). Although identified at the firm level, the magnitude of these effects implies relevance for aggregate productivity dynamics. The effects are concentrated among suppliers with higher ex-ante productivity,[6] pointing to a relevant role for absorptive capacity. Defence-related demand and technology transfer mainly raise productivity where civilian suppliers already possess the capabilities needed to internalise it. Breaking down total investment, both tangible components, such as machinery, and intangible components, such as R&D, contribute to these spillovers among suppliers with higher ex-ante productivity.

Spillovers between defence and civilian firms operating within the same sector appear more limited.[7] A complementary analysis explores the productivity effects among civilian firms operating in the same sector as defence producers, such as whether military truck programmes improve productivity in civilian vehicle production. The results suggest that, while defence firms invest more intensively and exhibit higher productivity, these gains do not systematically translate into productivity improvements for civilian firms in the same sector. Productivity remains largely firm specific, making within-sector spillovers smaller than those transmitted through upstream supply-chain relationships.

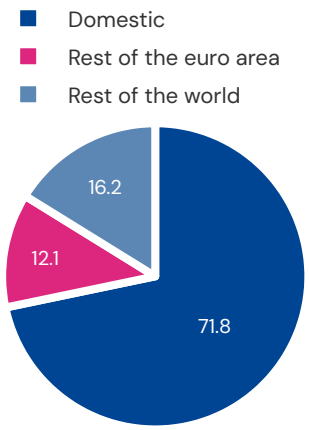
The overall picture is therefore one of conditional opportunity. The growth impact of higher defence spending depends not only on its scale but on the structure of domestic production and the ability of upstream civilian firms to absorb and diffuse new technologies – conditions that vary considerably across the euro area and that policy can influence. These spillovers do not materialise automatically; they require deliberate choices about procurement design and domestic sourcing.

Figure 2.4

Defence investment as a catalyst for economy-wide productivity gains

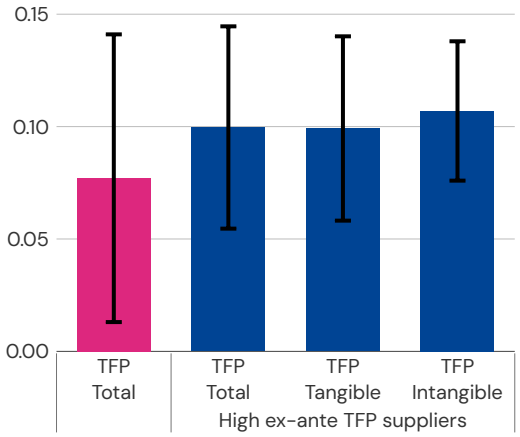
a) Dependence on euro area supply chains

(in %, share of total intermediate inputs)



b) Defence investment spillovers to upstream suppliers' TFP

(in %, whiskers denote 95% confidence intervals)



Notes: In Panel a), for the defence sector, each upstream sector is weighted by the share of total material costs incurred by defence firms operating in that sector. Upstream suppliers are drawn from sectors other than those in which defence firms operate. The resulting weighted average is then shown for the defence sector as a whole and broken down into selected NACE33 two-digit sectors. In Panel b), the bars show the response of upstream suppliers' TFP to a 10% increase in defence-investment intensity. The first bar (in pink) reports the coefficient from a baseline firm-level regression of log TFP on lagged upstream total defence investment intensity, weighted by input–output linkages. The remaining bars (in blue) report coefficients from specifications that isolate spillovers for "ex-ante high-TFP suppliers" using interaction terms, shown separately for total, tangible, and intangible defence investment intensity. Further details are provided in Annex A9.

Sources: ESM calculations based on ESM firm-level database and Orbis (Moody's Analytics) data

2.4 Macroeconomic and fiscal impacts of the defence build-up

Building on the firm-level evidence presented in the previous section, this section examines the implications of defence-related spillovers for growth and fiscal sustainability at the euro area level. A two-sector model, comprising a defence sector and a civilian sector, is used to capture how military spending interacts with the broader economy. The model incorporates three key features. First, defence and civilian production[8] compete for the same workers, capital, and intermediate inputs, so a build-up in one sector affects resource allocation in the other. Second, defence investment generates technological knowledge that diffuses gradually to civilian suppliers, consistent with the supply-chain spillovers documented in Section 2.3. Third, government borrowing affects private demand: households with finite planning horizons do not fully offset higher public debt with additional saving (Blanchard, 1985; Yaari,

1965), so deficit-financed defence spending raises output, but also puts upward pressure on interest rates and partially crowds out private investment.

Our simulations consider a permanent increase in defence spending by 1.5 percentage points of GDP, phased in over 10 years, broadly consistent with reaching the NATO Hague Summit target by 2035. One-third is allocated to government consumption (personnel) and two-thirds to the investment and procurement of specialised military equipment. [9] This includes policies aimed at maximising the spillover by directly supporting higher investment in the defence sector.[10] The build-up is initially debt financed, followed by a gradual fiscal adjustment that returns the debt-to-GDP ratio to its initial level over 20 years.[11] This adjustment is assumed to take place through expenditure reallocation rather than tax increases.

Two scenarios are considered. In the first, productivity spillovers are absent, and the dynamics are driven solely by the demand impulse and the associated supply-side adjustments stemming from the reallocation of capital and labour towards the defence sector. In the second, spillovers are calibrated to match the firm-level productivity estimates from Section 2.3, leading to a long-run cumulative productivity gain of around 1.15% in the civilian economy, within the range of estimates in the broader literature on defence R&D spillovers (Moretti et al., 2025). The model assumes a closed euro area economy, so all procurement is treated as domestically sourced – an upper bound that holds if European suppliers capture the bulk of the additional demand. At the country level, procurement from other euro area Member States would shift spillovers geographically rather than eliminate them at the euro area level.

The model is calibrated to reflect average conditions across the four largest euro area economies (France, Germany, Italy, and Spain). This aggregation abstracts from cross-country differences in defence sector size, civil-military integration, and cross-border spillovers, but is designed to capture the core mechanisms linking defence spending, productivity, and fiscal dynamics.

Importantly, productivity gains are not confined to larger economies: what matters is the relative importance of defence-related activity and its integration into supply chains. In principle, the analysis is most directly applicable to economies with an established defence industrial base. However, smaller economies can benefit by specialising in upstream segments of European production networks, where stronger defence demand supports investment and technological upgrading. In this context, exports of intermediate goods can partly offset imports of final equipment. Productivity gains are likely to be more broadly shared across the euro area depending on national industrial structures and on deliberate policy choices to integrate into European defence supply chains.

2.4.1 Growth and multipliers

The output response to the defence build-up reflects the interaction of short-run demand effects and longer-run supply-side adjustments. In the near term, higher government spending raises output above potential as stronger demand translates into

higher production and employment. The initial expansion is positive but moderate. In the absence of productivity spillovers, the fiscal multiplier.[12] peaks at about 0.7 after two years and remains broadly stable over the build-up period. With spillovers, it rises to around 1.0 after two years and keeps increasing gradually.

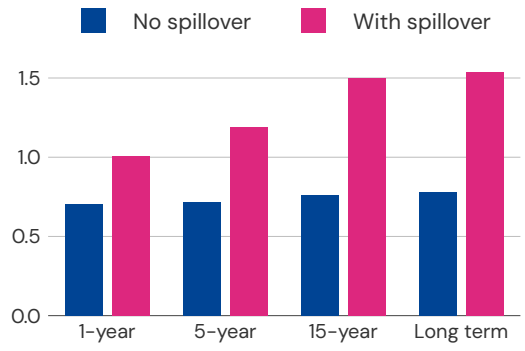
As the initial demand impulse fades, supply-side adjustments drive the dynamics. The build-up of the defence sector increases demand for labour and capital, leading to a reallocation of resources away from civilian production. While employment rises overall, this reallocation constrains the expansion of the civilian sector, [13] limiting the output gains in the absence of productivity spillovers. Output remains durably above its initial level, but the long-term multiplier stays below 1.0, implying a reduction in private consumption.

Productivity spillovers can drive the multiplier above 1.0. As defence-related investment expands, technological knowledge diffuses along supply chains, raising TFP in the civilian sector, consistent with the mechanisms discussed in Section 2.3. This relaxes supply constraints and allows both the defence and civilian sectors to expand simultaneously. Output growth is then supported not only by higher input use but also by more efficient production, which in turn sustains a stronger expansion in capital. In this scenario, GDP rises to nearly 2.5% above baseline after two decades (Figure 2.5b). The cumulative multiplier increases to around 1.5 over longer horizons, compared with about 0.8 without spillovers (Figure 2.5a).

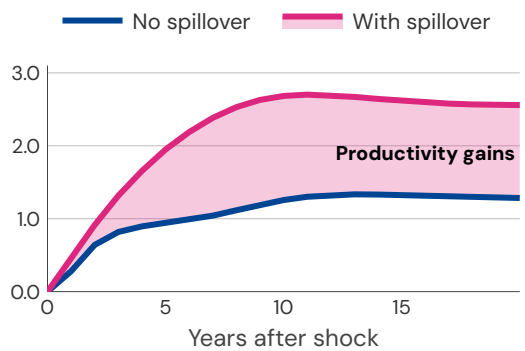
Figure 2.5

Spillovers drive persistent gains but take time

a) Cumulative multiplier
(ratio)



b) Impact on GDP level
(in %)



Source: ESM calculations

Estimates of multipliers in the literature span a wide range, underscoring their conditional nature. The multipliers generated by our model are broadly consistent with recent European Central Bank[14] and European Commission studies. Suites of models to assess military ramp-ups typically find values below 1.0 in the short to medium term. This is in line with empirical evidence available for the US, where short-run defence

spending multipliers are generally estimated between 0.4 and 1.0 (Hall, 2009; Barro and Redlick, 2011; Ramey, 2011; Ramey and Zubairy, 2018; Antolín-Díaz and Surico, 2025). By contrast, our estimates are more conservative than several recent euro area-focused empirical studies reporting multipliers in the range of 1.5 to 2.0 (Furceri et al., 2026; García-Serrador et al., 2025; Ben Zeev and Pappa, 2017). The authors suggest that higher multipliers could be driven either by the presence of economic slack in the sample or by the weaker responsiveness of monetary policy in a monetary union, where area-wide interest rates are less sensitive to country-specific developments. In our framework, the transmission of fiscal policy operates through a relatively strong interest rate response, which implies more pronounced crowding-out effects on private investment and, therefore, more moderate short-run multipliers. At the same time, the higher long-run multipliers implied by calibrating productivity spillovers to microeconomic evidence are consistent with US estimates in Antolín-Díaz and Surico (2025), who report values between 1.7 and 2.0, and with the findings of Moretti et al. (2025) on R&D spillovers.[15]

2.4.2 The fiscal arithmetic

How much of the defence build-up can pay for itself? Debt sustainability requires that a permanent increase in defence spending is ultimately matched by either higher revenues or lower spending elsewhere. However, the necessary fiscal adjustment may be smaller than the headline increase in defence spending suggests. Macroeconomic feedback effects can improve fiscal outcomes, allowing part of the additional spending to be financed automatically, without the need for future consolidation.

This 'self-financing' operates primarily through the expansion of the tax base. Stronger economic activity raises revenues without changes in tax rates, while higher employment and income reduce transfer payments. A second channel works through valuation effects, which reduce the real burden of outstanding public debt: higher economic activity tends to raise inflation in the short term while the maturity structure of debt delays the pass-through of higher interest rates to borrowing costs.[16]

Automatic fiscal recovery is measured through the self-financing ratio. While the multiplier captures how much output each euro of defence spending generates, the self-financing ratio measures how much of that spending is automatically recouped through the resulting increase in economic activity, without any change in tax rates. It is defined as the present value of all future automatic fiscal gains expressed as a share of the spending increase (Angeletos, Lian, and Wolf, 2023). A self-financing ratio of 25% implies that 25 cents of every euro of additional defence spending is ultimately recovered, reducing the net fiscal cost to 75 cents. The remaining 75 cents corresponds to the fiscal adjustment still required through expenditure or revenue measures, but it is significantly smaller than the initial outlay.

Three key factors determine the extent of self-financing: the presence of productivity spillovers to civilian sectors, the composition of any additional fiscal adjustment, and

whether public debt is stabilised or allowed to rise persistently. The following subsections examine each of these dimensions in turn.

Defence productivity spillovers amplify the fiscal payback

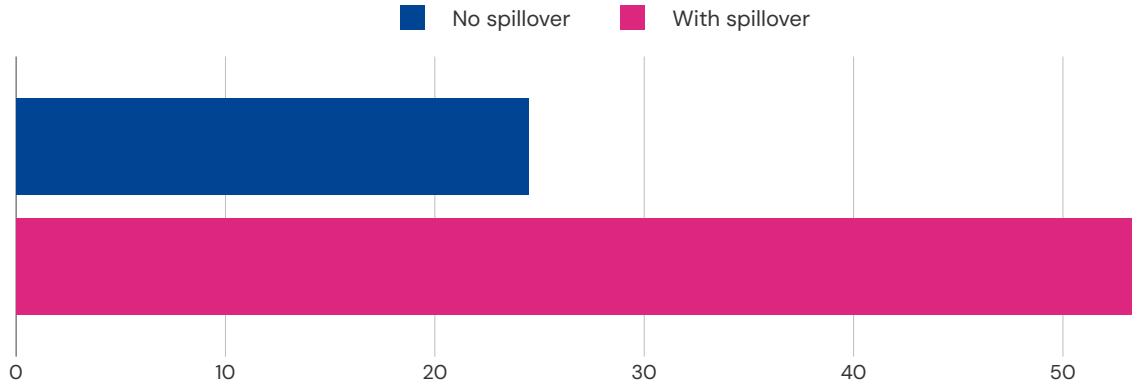
Productivity spillovers can bring the self-financing ratio to 53%. In the absence of spillovers, governments recover roughly 25 cents per euro of defence spending, primarily through a higher tax base driven by employment and capital accumulation. This payback is relatively stable over time, as the output expansion is limited by the reallocation of resources away from civilian production, keeping the multiplier broadly constant. When productivity spillovers to civilian suppliers are calibrated to empirical evidence, the ratio more than doubles, with 53 cents recovered per euro spent. In net terms, the effective fiscal cost of a €1 increase in defence spending falls from 75 cents to 47 cents (Figure 2.6). The additional recovery reflects a structural change in the economy that unfolds over time: when spillovers materialise and defence and civilian production expand together, almost doubling the output gains and generating multipliers that rise over time. The share of spending recovered therefore increases gradually over the long run, reflecting the permanent improvement in the economy's productive capacity.

Figure 2.6

A defence spending increase can partially pay for itself in the long run

Self-financing with and without productivity spillover

(in % of defence spending recovered)



Source: ESM calculations

Labour income expansion emerges as the dominant fiscal channel. Across both scenarios, most of the additional tax revenue comes from higher employment, defined as an increase in hours worked, which expands the wage bill. Capital income taxes and automatic stabilisers contribute but play a secondary role (Figure 2.7a). With productivity spillovers, gains in value added propagate through supply chains, reinforcing all fiscal channels. Labour income alone accounts for around 40 percentage points of the 53% self-financing ratio (Figure 2.7b), as productivity gains raise real wages, expanding

employment income. Inflation effects remain limited and valuation effects on public debt are negligible.

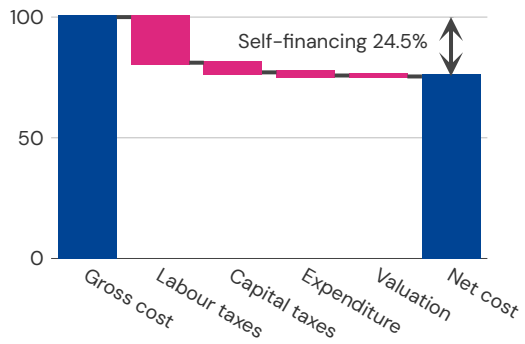
These gains depend critically on the composition of defence spending. Productivity effects are driven by investments in applied research, as well as the domestic development and retention of high-technology production, particularly dual-use technologies. Accordingly, the 53% self-financing estimate should be interpreted as contingent on a strong domestic supply chain and innovation-intensive procurement. If, instead, defence investment relies heavily on off-the-shelf imports, as has often been the case in the past, the productivity channel weakens and self-financing is likely to revert to, or even fall below the 25% baseline.

Figure 2.7

Labour income is the main driver of self-financing

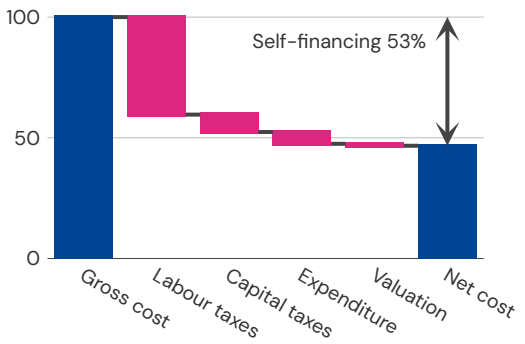
a) Decomposition of self-financing without spillover

(in % of defence spending recovered)



b) Decomposition of self-financing with spillover

(in % of defence spending recovered)



Source: ESM calculations

Financing composition: spending reallocation or tax increases?

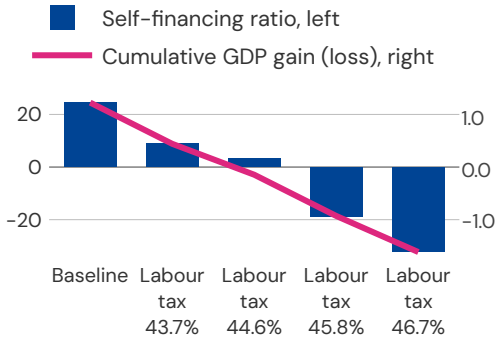
How governments finance the increase in defence spending is as important as the size of the increase itself. Under expenditure-based adjustment (our baseline) the self-financing ratio is broadly stable and the overall effect on GDP remains positive. By contrast, financing through distortionary taxation – particularly labour taxes[17] – substantially weakens the fiscal feedback. As the share of adjustment relying on labour taxation increases, self-financing declines sharply and can turn negative at high tax rates (Figure 2.7). The mechanism is straightforward: higher labour taxes reduce the after-tax return on work, weakening labour supply and compressing the tax base. Revenue gains are offset, or even reversed, by the contraction in economic activity (Furceri et al., 2026; Calò et al., 2026; Boullot et al., 2026). Importantly, the composition of future fiscal adjustment has ex-ante implications for the behaviour of economic agents, affecting labour supply, savings, and investment decisions already at the time expectations are formed.

Figure 2.8

Spending discipline reinforces self-financing, tax rises erode it

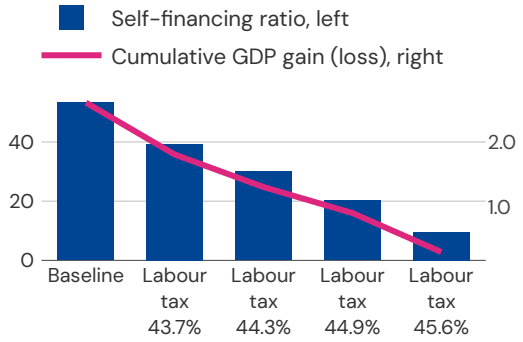
a) Self-financing and growth impact under different adjustment scenarios with no spillover

(self-financing in % of defence spending recovered; long-run GDP impact in %)



b) Self-financing and growth impact under different adjustment scenarios with spillover

(self-financing in % of defence spending recovered; long-run GDP impact in %)



Notes: The baseline labour tax rate (here defined as the average tax and social security burden) corresponds to the current average of 42.6% across the four largest euro area economies (France, Germany, Italy, and Spain), with fiscal adjustment assumed through expenditure reallocation only. The tax rate values shown across panels differ because the required adjustment varies with the degree of self-financing: where productivity spillovers materialise, a larger share of the spending increase is recovered automatically, reducing the labour tax increase needed to stabilise debt. The comparison across panels therefore reflects the fiscal benefit of higher self-financing, all else equal.
Source: ESM calculations

The cost of permanently higher debt

Debt dynamics further shape the long-term fiscal cost of a defence build-up. Higher government borrowing affects the economy because households and firms do not fully offset this expansion. As public debt competes for a limited pool of savings, it puts upward pressure on real interest rates[18] and crowds out private investment. In the baseline, this effect is temporary as the fiscal adjustment path brings debt to GDP back to its initial level, and interest rates revert. By contrast, allowing debt to remain permanently higher – equivalent to delaying part of the fiscal adjustment indefinitely – leads to persistently higher real interest rates (Figure 2.9), crowding out private investment and compressing non-defence expenditure as interest payments absorb an increasing share of fiscal resources. In net terms, the same defence build-up costs about 5% more if debt is stabilised at a higher level; the cost could be substantially higher if instead of following a fiscal rule, the debt is allowed to drift for longer.

The choice is therefore not just about how much to spend on defence, but within what fiscal framework. The same build-up costs materially more in net fiscal terms when debt is allowed to drift than when it is stabilised through a credible medium-term adjustment path. Countries that couple a defence build-up with multi-year fiscal plans and enforceable fiscal rules capture more of the growth dividend than those that do not. The

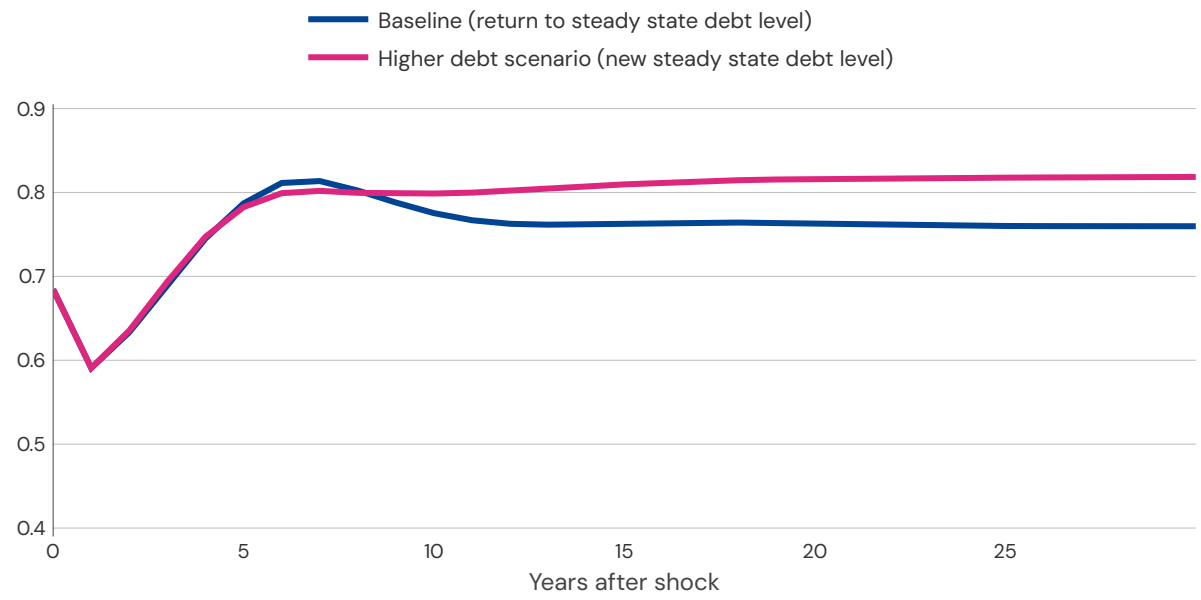
defence build-up and fiscal responsibility are mutually reinforcing, not competing priorities.

Figure 2.9

Tolerating permanently higher debt level comes with a cost

Real interest rate

(in %)



Source: ESM calculations

2.5 Conclusion: defence investment can partly pay for itself, if done right

The fiscal cost of Europe's defence build-up is real but not automatic. It depends on the macroeconomic feedback, the composition of defence procurement, and the way governments manage the associated fiscal adjustment. This chapter shows that the effective budgetary cost of higher defence spending can be substantially lower than the headline figures suggest, provided spending is well-designed and embedded in a credible fiscal framework. In the short term, deficit-funded defence spending has a positive multiplier, leading to higher GDP, which generates tax revenues that partially offset the deficit. The key long-term transmission channel operates through technology: when defence investment raises the technological frontier, productivity gains can diffuse along supply chains, increasing output and broadening the tax base. This generates revenues and reduces the net fiscal cost. However, these long-term gains are not automatic and depend on policy choices, such as procurement design, supply-chain integration, and European-level governance.

Four policy lessons emerge from the analysis:

First, well-targeted defence spending can generate meaningful fiscal payback, notably in the long run through growth. Higher defence expenditure raises output, employment, and tax revenues through demand effects and the compositional shift towards a higher share of defence-related activity. These effects can be significantly larger when procurement is directed towards capital – and R&D-intensive activities and euro area suppliers. In such cases, productivity spillovers to upstream civilian firms can bring self-financing up to 53 cents per euro spent. This payback materialises over the long term as productivity gains diffuse through the economy. Defence spending is therefore not merely a fiscal burden; it is a potential source of economy-wide productivity gains. This is not to say that it is the only or the most productive form of government investment. It should be driven first and foremost by security necessity, but efforts to maximise economic spillovers are a substantive side effect.

Second, composition matters as much as scale. Spending concentrated on personnel, maintenance, or imported equipment delivers much smaller macroeconomic returns than spending directed towards technologically advanced European firms embedded in integrated supply chains. Fragmentation of the European defence industrial base limits not only strategic autonomy but also fiscal efficiency, making deeper integration of European defence markets both a strategic and fiscal priority (Mejino-Lopez and Wolff, 2025).

Third, fiscal design is decisive. Financing the defence build-up through expenditure reallocation rather than tax increases avoids the additional economic burden of higher taxation and preserves fiscal payback. Heavy reliance on distortionary tax increases, particularly on labour, discourages work, eroding the tax base and weakening fiscal payback, potentially turning self-financing negative at sufficiently high tax rates.

Fourth, defence spending increases should go hand in hand with a greater anchoring of fiscal responsibility. Allowing debt to drift permanently higher could raise borrowing costs and eventually lead to compressed non-defence expenditure as interest payments absorb an increasing share of resources. It may also amplify sovereign risk and financial stability vulnerabilities. By contrast, countries that couple a defence build-up with credible medium-term debt stabilisation could capture more of the growth dividend as the credible fiscal anchor limits borrowing cost increases.

Greater coordination at the European level in defence markets could further amplify the benefits of positive growth.[19] Defence capabilities generate cross-border security benefits – a European public good justifying more security cooperation. Lack of cooperation and full reliance on nationally organised defence spending risks burden shifting and the under-provision of defence, since the cross-border nature of security benefits creates incentives to free-ride on others' spending. Here the vicinity to a country posing a security threat matters a lot. But defence-related supply-chain spillovers can also extend beyond national borders, creating positive growth dynamics. Defence spending exclusively directed at national suppliers perpetuates the inefficient fragmentation of the defence market, raising costs and limiting scale, particularly when overall expenditure increases. It may also mean that positive productivity spillovers are

missed, as innovative firms may remain constrained in their relatively small market instead of deeply integrating with firms across all of Europe. Pooling procurement and opening defence markets to competition would allow EU Member States to place larger combined orders, enabling longer production runs and substantially reducing unit costs (Wolff, Steinbach, and Zettelmeyer, 2025).

European coordination is essential to ensure that benefits reach all EU Member States. Countries with an established defence industrial base are best placed to activate productivity gains directly. However, smaller economies can benefit by specialising in upstream segments of European supply chains where they hold comparative advantages. Participation in integrated production networks allows these countries to gain both directly, through supplying advanced intermediate goods, and indirectly, by benefiting from stronger aggregate euro area growth. Building on the universe of European firms can also accelerate the production cycle.

Realising these gains requires a European defence industrial policy that integrates supply chains and directs procurement towards innovation. Reducing national fragmentation, increasing competition, and expanding the role of innovative firms are essential steps to strengthening the technological dynamism that underpins productivity spillovers (Kapstein, Ospital, and Wolff, 2026). Procurement requirements explicitly targeting advanced, innovation-intensive capabilities, including dual-use and artificial intelligence-enabled technologies, maximise the growth dividend from higher defence expenditure. Joint R&D programmes extending across borders can generate scale effects that no single EU Member State can achieve alone, as illustrated by the European Defence Fund. Common procurement frameworks such as the European Defence Industry Programme can further strengthen supply chains and reduce unit costs. Common financing instruments such as SAFE can ease national fiscal constraints and reinforce the growth dividend from higher defence expenditure. In this setting, European coordination carries both strategic and fiscal benefits.

Taken together, these findings reframe the fiscal debate around Europe's defence build-up. Done well, the effective cost of meeting NATO's 3.5% target is considerably lower than the headline numbers suggest. Done poorly, the macroeconomic channels that could make higher defence spending more fiscally sustainable are largely foregone. The design of Europe's defence build-up is therefore not a second-order implementation detail, but rather one of the central fiscal policy questions of this decade.

Box 2.1

Lessons from past build-ups

Historical experience suggests that the macroeconomic effects of defence build-ups in advanced economies depend on the speed and duration of the expansion, the composition of spending, and the initial macroeconomic and policy environment. Defence spending does not mechanically generate either sustained growth gains or macroeconomic instability. Outcomes vary depending on whether it primarily strains existing capacity, supports innovation-intensive investment, or occurs in economies with ample spare capacity and strong supply-side conditions. This box examines three episodes – the Korean War mobilisation, the Reagan-era build-up, and West German rearmament in the 1950s – which illustrate distinct combinations of inflationary pressures, innovation spillovers, and fiscal dynamics.

The Korean War mobilisation (1950–1953) was a rapid, large-scale defence expansion. US defence outlays surged from roughly 5% of GDP to over 14% in three years, reflecting an emergency mobilisation primarily oriented towards conventional procurement, troop expansion, and industrial scale-up. The literature characterises such wartime surges as relying on the acceleration and diffusion of existing technologies rather than generating sustained frontier innovation (Field, 2003). Consistent with this interpretation, the episode is associated with a strong but temporary increase in output, while evidence of productivity spillovers is limited.

The rapid mobilisation placed intense pressure on industrial capacity in an economy already close to full employment. Labour force participation increased further and unemployment fell to levels as low as 2%, while production struggled to keep pace with both military and civilian demand, contributing to an initial surge in inflation. In response, the Truman administration combined the expansion with substantial tax increases and extensive administrative interventions under the Defence Production Act, including wage and price controls and credit restrictions (Rockoff, 1984).

The Reagan-era build-up (1981–1989) offers a contrasting case of a more gradual and innovation-intensive expansion. Defence spending rose from approximately 5.2% to around 6.6% of GDP over eight years, with a relatively larger role for technologically advanced systems and defence-related R&D. Historical and empirical studies document that US defence R&D during the period has contributed to the development of computing, aerospace, and telecommunications technologies, with subsequent diffusion into civilian applications over time (Fabrizio and Mowery, 2007; Ruttan, 2006).

From a fiscal perspective, the expansion coincided with large structural tax cuts and limited offsetting expenditure measures. This contributed to persistent fiscal deficits and a substantial increase in federal debt over the decade. Unlike the Korean War mobilisation, the episode did not generate inflationary pressures, reflecting tighter monetary conditions following the Volcker disinflation and weaker underlying demand conditions at the beginning of the expansion. However, the combination of sustained deficits and relatively high real interest rates contributed to persistent debt accumulation.

West Germany's rearmament in the 1950s provides a distinct European comparison. Following the establishment of the Bundeswehr – the West German armed forces – in 1955, defence spending increased rapidly from essentially zero. However, the military expansion occurred alongside a period of initial slack and rapidly expanding supply-side forces associated with West Germany's post-war economic boom, often referred to as the Wirtschaftswunder, including rapid productivity catch-up, export growth, labour force expansion, and institutional reconstruction (Eichengreen, 2007; Abelshauser, 2004). In this context, defence spending was absorbed into a rapidly expanding economy without being a primary driver of growth or innovation outcomes.

The West German case also illustrates how a macroeconomic context with spare capacity can absorb higher defence spending without causing instability. The build-up occurred in an environment characterised by low initial public debt, rapidly expanding industrial capacity, strong productivity growth, and rising fiscal revenues. As a result, rearmament did not lead to significant inflationary pressures or adverse debt dynamics.

Three lessons emerge from these episodes. First, rapid defence mobilisations in economies operating near full capacity – such as in the US during the Korean War – are more likely to generate inflationary pressures and necessitate fiscal tightening and administrative controls. Second, long-run productivity spillovers appear more likely when defence spending is concentrated in technologically advanced systems and R&D with civilian applications, as during the Reagan-era build-up. Third, the broader macroeconomic context is critical for debt sustainability: West German rearmament shows how strong supply-side growth and favourable fiscal conditions can facilitate the absorption of higher defence spending, whereas prolonged deficit financing as in the Reagan episode can lead to sustained debt accumulation even in innovation-intensive expansions.

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Footnotes

1 The peace dividend refers to the political choice to reduce defence budgets after the Cold War, not an assertion that lower spending generated economic benefits.

2 The Hague Summit commitment totals 5% of GDP: 3.5% to be allocated to core defence requirements and 1.5% to be accounted for across a broader range of activities, including critical infrastructure, civil preparedness, and innovation (NATO, 2025). This chapter focuses on the 3.5% component, which corresponds to the standard defence expenditure definition used in the fiscal analysis.

3 Data prior to 2025 are based on Eurostat/COFOG; 2025 data are based on NATO definitions, which may differ due to differences in accounting methodology including the treatment of military pensions and equipment downpayments. The broad trends are consistent across both sources.

4 The data covers both pure defence and dual-use firms, rather than focusing only on final weapons producers. Companies are identified through national defence-industry associations and ministry or contractor sources. Orbis is a comprehensive global database from Moody's (formerly Bureau van Dijk) containing financial and entity-level information on millions of private and public companies.

5 FREMM is the French abbreviation for *Frégate Européenne Multi-Mission* or Italian abbreviation for *Fregata Europea Multi-Missione*. The Franco-Italian family of warships is designed by Naval Group and Fincantieri.

6 Ex-ante high-TFP suppliers are defined as firms with relatively high productivity prior to the increase in defence investment.

7 See Annex A9 for further robustness exercises and data on whether non-defence firms operating in the same two-digit sector and country as defence firms experience systematic changes in productivity when defence firms' investment intensity increases.

8 Firms in the defence sector produce military goods procured by the government, while firms in the civilian sector produce consumption goods and services.

9 Investment and procurement of specialised military equipment include intermediate consumption and currently accounts for roughly 50% of defence spending in the four largest euro area economies (France, Germany, Italy, and Spain). New national defence plans point to a combined investment and intermediate consumption share of around 80%, with personnel accounting for only 15% (Checherita-Westphal et al.,

2025), suggesting that our two-thirds assumption reflects a conservative spending composition.

10 | In the model, these policies are captured in a reduced form through an investment subsidy that increases capital deepening in the defence sector. In the technical annex A10 an estimate of the self-financing with and without the subsidy is provided.

11 | In the model, these policies are captured in a reduced form through an investment subsidy that increases capital deepening in the defence sector. Annex A10 provides an estimate of the self-financing with and without the subsidy.

12 | The fiscal multiplier is defined here as the cumulative discounted increase in output relative to steady state divided by the cumulative discounted increase in spending.

13 | The strength of this response would depend on initial labour market conditions. The expansion is larger and the demand impulse stronger where slack exists and participation rates have room to rise. In economies near full employment, the response would be more muted and wage pressure more pronounced, consistent with evidence that fiscal multipliers vary with the state of the cycle (Ramey, 2011; Ilzetzki, 2025).

14 | European Central Bank Economic Bulletin, Issue 6/2025.

15 | Assuming fully Ricardian households in our setting would give higher multipliers (see technical annex), but this would imply counterfactual marginal propensity to consume.

16 | Assuming fully Ricardian households in our setting would give higher multipliers (see technical annex), but this would imply counterfactual marginal propensity to consume.

17 | The tax financing experiment assumes a permanently higher labour income tax rate. This is modelled as a shift in the steady-state tax rate, with the fiscal rule otherwise unchanged.

18 | The result follows from the Overlapping Generations structure of the model, which implies a break of Ricardian equivalence.

19 | A public good is non-excludable and non-rival in consumption. Defence meets both criteria at the European level: security benefits cannot easily be confined to the country providing them, and one country's security does not diminish another's. For the case for treating defence as a European public good, see Beetsma, Buti, and Nicoli (2024).