Analysis

Will higher defence spending boost euro area growth?

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Defence spending is expected to increase significantly in the euro area in the coming years. Until now, euro area defence spending has mainly consisted of consumption expenditure, such as personnel costs. If the spending increases to be made now are also of this kind, their growth effects would likely remain temporary and would support a number of specific manufacturing industries. However, the magnitude of the macroeconomic effects will depend on, for example, the domestic content of procurements and the allocation of the spending. If allocated to investment and research and development (R&D), the spending would improve growth in the economy. With moderate economic effects, higher defence spending – without fiscal adjustments – will also raise public debt. The impact on inflation, in turn, will remain moderate.



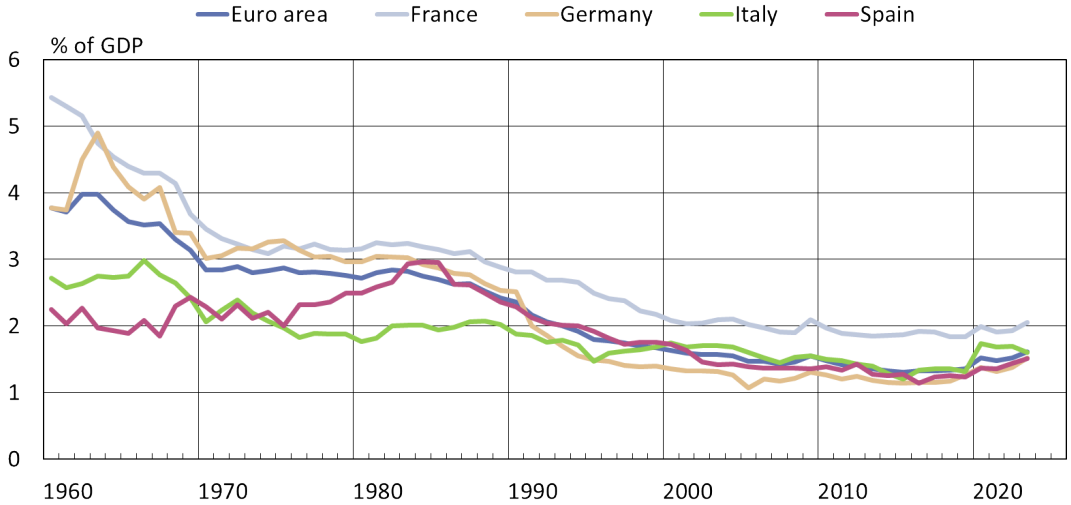
Strong growth in euro area defence spending

Russia's war in Ukraine has given rise to a need to boost Europe's defence capabilities. Various analyses (e.g. Burilkov et al., 2025) show that enhancing security would require a substantial increase in defence investments and the development of the defence industry. The June 2025 NATO summit agreed on a defence spending target of 3.5% of gross domestic product (GDP) by 2035. It was further agreed to set a target of 1.5% of GDP for defence-related infrastructure projects. In principle, any increases in defence spending should be allocated so that they enhance the region's security in the most efficient way possible.[1] In addition to strengthening security, defence spending, like any other significant public expenditure increases, has aggregate economic effects, which are analysed in more detail in this article.

Defence spending as a share of GDP in the euro area countries had declined by 2020 to around just 1.5%, from approximately 3% in the early 1980s (Chart 1).[2] Defence spending decreased markedly after German reunification and the end of the Cold War.[3] In the United States, too, defence spending fell over the same period from about 6% to just over 3%. A global comparison shows that since the global financial crisis of 2008, defence spending in Europe has been stable, while at the same time it has grown considerably in Asia. In 2024, Europe's share of global defence spending was at the same level as in 2008 (18%), whereas Asia's share grew from 17% to 25% (International Institute for Strategic Studies, 2024). The United States' share has, in turn, fallen from 50% to approximately 40%.[4]

Chart 1.

Defence spending as a share of GDP fell significantly between the end of the Cold War and the end of the 2010s



The calculations are based on a slightly different definition of defence expenditure than the NATO definition, for instance in regard to the defence administration's pension expenditure and the timing of procurements.
Source: World Bank. 42692@Chart15
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Defence spending has grown again in Europe since 2022, and increases are expected particularly for 2024 and 2025. This is due both to the strengthening of national defence capabilities and the increased need to replenish national stocks as a result of assistance to Ukraine. The preliminary statistics of the European Defence Agency (EDA) show that EU countries' defence expenditure grew in real terms by over 15% in 2024 (EDA, 2024). Defence spending was about 35% higher in 2024 than in 2021. Defence investments – in practice, procurement of defence equipment – have almost doubled since 2021. Similarly, according to recent data compiled by the Kiel Institute for the World Economy (Wolff et al., 2025), defence procurements by Poland, Germany and the United Kingdom have also been considerable in 2025.

The EU's ReArm Europe Plan has also bolstered increases in defence spending. The EU has urged Member States to increase their defence budgets and to activate the national escape clause of the Stability and Growth Pact (SGP). This will allow Member States to ramp up their defence spending by as much as 1.5% of GDP without automatically breaching the EU fiscal rules and triggering an excessive deficit procedure (EDP). The escape clause is currently expected to be available for four years.

The EU's new Security Action for Europe (SAFE) instrument, amounting to EUR 150 billion, underpins Europe's own defence industry and the aim of reducing reliance on external suppliers. It will finance the procurement of armaments by Member States and Ukraine if at least 65% of this

production takes place in the EU, the EEA EFTA States or Ukraine. SAFE is based on financing in the form of loans: the European Commission will issue EU bonds to finance loans to Member States. The use of the funds will be monitored every six months. As the strengthening of defence capabilities is seen as a matter of great urgency, Member States may initially also apply for funding for their own procurements. Going forward, however, funding will primarily be granted to common procurements by partner countries that are aimed at achieving economies of scale and reducing the fragmentation of European defence systems.[5]

The strengthening of defence has been widely discussed particularly in the largest euro area country, Germany, which has decided on substantial increases in defence investments. In 2024, Germany reached the previous NATO defence expenditure target of 2% of GDP. Germany has since adopted a constitutional reform of its fiscal rules so that, by the mid-2030s, there will cumulatively be as much as EUR 500 billion more funds available for defence.[6] Relative to GDP and spread over 10 years, this would mean an increase of over 1 percentage point of GDP in Germany's defence spending.

Multiplier effect of defence spending likely to be moderate

Defence spending is also part of fiscal policy, and changes in its level have an impact on the economy. In economics, the effectiveness of fiscal policy depends on the multiplier effect, i.e. the sum of all the direct and indirect effects. The magnitude of the multiplier effect is typically measured by the fiscal multiplier, which indicates how much GDP changes over a given period as a result of a change in public expenditure. The focus of this article is on the long-term cumulative multiplier, which best illustrates how much total output grows over time in relation to spending.[7]

A cumulative multiplier of less than 1 implies that each euro of public spending stimulates total output over time by less than one euro. This means that an increase in public spending may partly focus on imported goods or may crowd out private demand. In other words, the public sector competes with the private sector for the same resources, which may drive up prices and interest rates and shift production factors away from private production. If the multiplier is greater than 1, one euro of public spending raises total output by more than one euro. In such a case, public spending generates positive multiplier effects and crowds in private investment or private consumption, strengthening the initial fiscal effects.

The analyses of defence spending multipliers have often focused on the United States, with the typical result being that the multiplier is below 1 (Ramey, 2011, 2016 and 2019). For example, Ramey and Zubairy (2018) show that fiscal multipliers involving military spending typically range between 0.5 and 0.8. Hence, these studies imply that increases in public defence spending

generally crowd out private demand. Overall, the research consensus is that average fiscal multipliers are less than 1.

However, in the literature there is also evidence of fiscal multipliers that are close to or slightly above 1. According to Fisher and Peters (2010) and Ben Zeev and Pappa (2017), average defence spending multipliers would not be statistically significantly different from 1. Higher, short-run multipliers of around 1.5 have been found both during deep economic recessions and when interest rates have approached the zero lower bound (Auerbach and Gorodnichenko, 2012; Ramey and Zubairy, 2018).[8] Similarly, multipliers for permanent or very large expenditure increases, such as those during the Second World War, for example, may also be higher.[9]

Fiscal multipliers are also affected by the way expenditure is financed. If additional expenditures are financed directly through tax increases, this will weaken their expansionary effect, whereas by allowing the debt level to rise, the expansionary effect of the expenditure increase can be amplified in the short term. In the longer term, however, debt-financed spending increases will pose potential challenges to debt sustainability, and this can already push up long-term interest rates and financing costs at the implementation phase. There is also evidence suggesting that spending multipliers are small or even negative when public debt-to-GDP ratios are exceptionally high (Ramey, 2019).

Based on research evidence, the multipliers for the current increases in European defence spending are likely to remain smaller than the largest multipliers observed for the United States. The domestic content of defence procurements is higher in the United States than in Europe.[10] The euro area economy is currently not in recession and monetary policy is not operating at the zero lower bound of interest rates. Moreover, the expenditure increases are not comparable in size to those during the Second World War.

In the best case, however, the long-term economic effects of defence spending may be greater than is usually estimated. In the most positive assessments, fiscal multiplier values even exceeding 2 have been observed for the United States in cases where military spending has supported private R&D and spurred innovation (Gross and Sampat, 2023; Moretti et al., 2025; Antolin-Diaz and Surico, 2025).[11] In addition, wartime situations and the related capacity constraints may increase incentives for innovation.[12] On the other hand, higher defence spending may initially entail frictions that slow production growth, as economic resources are elsewhere than in the production of military equipment (Antonova et al., 2025).

Despite the research literature findings, it is worth noting that the positive effects on innovation are not automatic consequences of increases in defence spending. To support innovation, the

spending needs to be allocated to investment or on products that utilise new technologies, while consumption-based spending is unlikely to lead to similar dynamics. For example, the substantial multiplier effects measured by Antolin-Diaz and Surico (2025) seem to be attributable to the impacts of the exceptionally large public expenditure increases during the World Wars and the Korean War, which means that the expenditure increases should not only be sufficiently large but also of long duration to yield positive externalities.[13] It should also be noted that the effects of wars may differ from the effects of purely higher defence spending, as wars in themselves have, among other things, raised labour force participation rates, shifted part of the population out of the labour supply to military service, changed demand through, for example, rationing, and stimulated innovation in general.[14]

The emergence of positive, long-term productivity effects in Europe in the way described in the studies referred to above would also require the private sector to be able to respond and make use of the greater investment in technological development. This would require a more effective innovation ecosystem that could be established by a dynamic and extensive EU internal market. More extensive coordination of defence spending within the EU could create necessary economies of scale for the development of new technologies. Productivity benefits could be gained through economies of scale from the increase in defence spending, and through the R&D externalities to other companies and civilian applications, as well as learning-by-doing (Ilzetzki 2025).

Larger R&D share and greater domestic content of procurements would strengthen the economic impact of defence spending

The majority of the defence spending in European countries is defence-related consumption rather than investments that increase production capacity. The long-term economic impact of higher defence spending may therefore remain moderate. On the other hand, it is important to note that the key purpose of defence spending is to enhance security, not to create the largest possible economic impact.

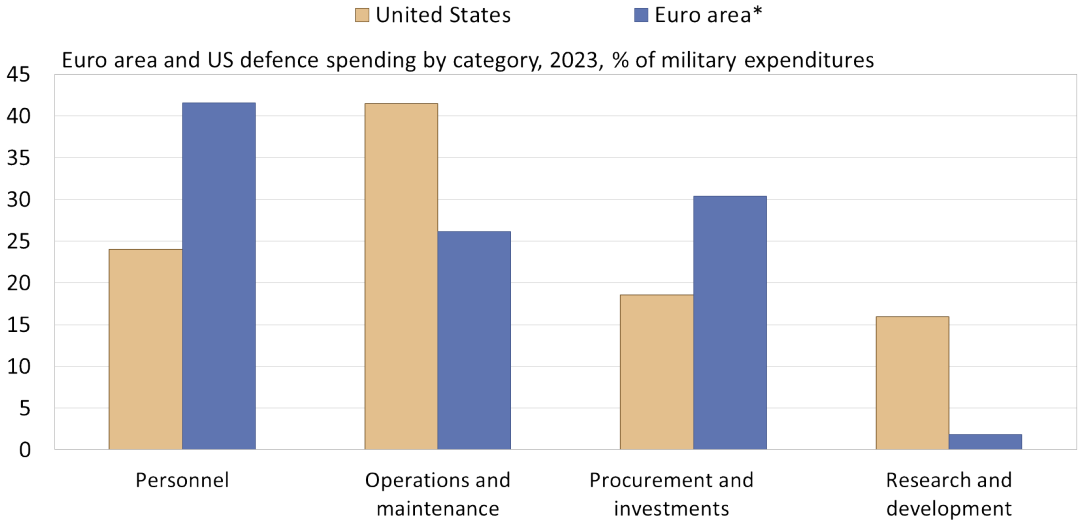
Currently, the defence spending of European countries consists mainly of personnel costs, which in 2023 still accounted for on average nearly half of all defence spending in the euro area (Chart 2). These personnel costs, together with maintenance and operational costs, constitute the largest expenditure item, some 70% of total spending.

Actual defence procurement accounts for only about 30% of defence spending in the euro area,

while R&D expenditure, which is important for the long-term growth potential of the economy, has thus far accounted for only a very small share (less than 5%). By contrast, a considerable share of the defence budget in the United States is for R&D expenditure, accounting for about 15% of defence spending (Chart 2). The figures are not necessarily fully comparable, however.[15]

Chart 2.

Defence spending composition in euro area differs from that in United States

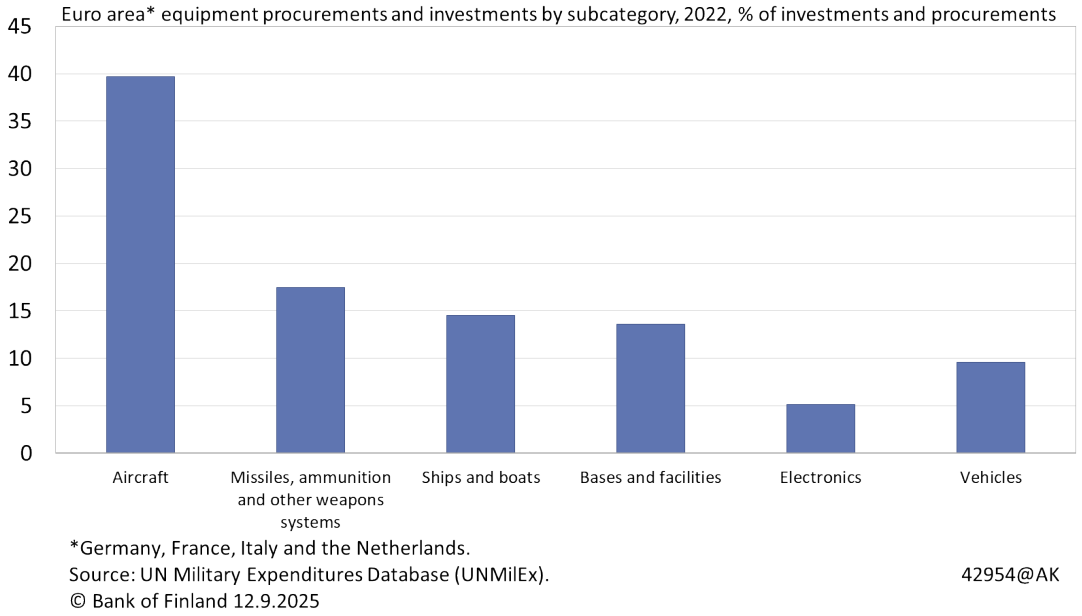


* Germany, France, Italy and the Netherlands.
Source: UN Military Expenditures Database (UNMilEx). Data for the United States are based on a simplified reporting form and are therefore not fully comparable. 42954@PK
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The procurement of defence equipment in the euro area has focused on existing weapons systems, such as aircraft, vessels and vehicles (Chart 3). These still constituted nearly 60% of procurement and construction expenditure in the euro area in 2022.[16] By contrast, only a small share of investments was in more modern weapons systems, such as those using advanced electronics. This was also a considerably smaller share than in the United States where, due to the higher defence spending, the volume was significantly larger. The small share of R&D activity in European defence spending may be partly explained by the narrow focus of investments.

Chart 3.

European procurements have focused on traditional weapons systems



Regarding the economic effects, the other key factor is the domestic content of procurements.[17] The higher the share of procurements that are produced domestically, the larger the positive multiplier effects via, for example, growth in employment and income. Domestic production may also generate positive spillovers that foster R&D activity and thereby productivity growth in the economy overall (Ilzetzki 2025). On the other hand, it may also be justifiable to procure some of the weapons systems from abroad.[18]

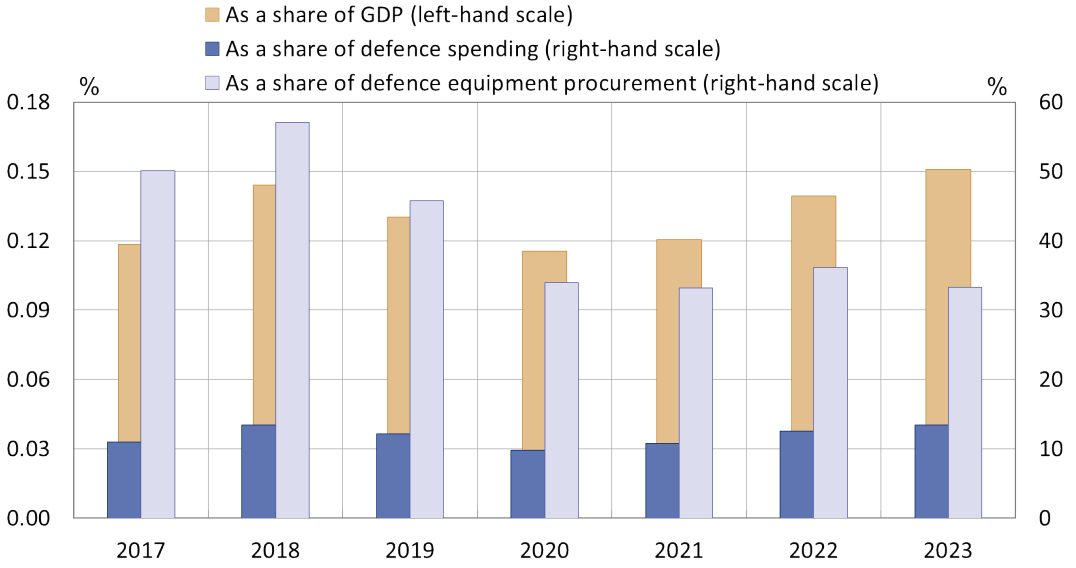
As recently as 2022–2023, a large proportion of the GDP boost from euro area defence spending is estimated to have flowed to the United States, from which Europe's procurement of defence equipment increased in that period (EDA 2024). More recently, however, defence investments in Europe have focused on vessels, aircraft and vehicles (Chart 3) in which the domestic industrial production is strong. For example, a large share of Germany's current military procurement has so far been from the EU, as shown by recent data compiled by the Kiel Institute for the World Economy (Wolff et al., 2025).

Estimates of the import content of procurement vary considerably in Europe. There are no detailed statistical data on import shares, because no separate statistics on the defence industry or on the production or import of equipment intended for military purposes exist. In addition to direct procurements, an increase in the share of imports can be due to the procurement of

intermediate goods needed in the manufacture of defence equipment. Mejino-López and Wolff (2024b) estimate that the share of imports from outside the EU is fairly small, and significantly less than 50% of total defence procurement. However, the European Commission (2024a), the International Institute for Strategic Studies (IISS, 2024) and Draghi (2024) present considerably larger figures.[19]

Chart 4.

Import statistics show that defence equipment imports account for about one third of defence procurements in the EU



Sources: Eurostat, NATO, U.S. International Trade Administration and calculations by the Bank of Finland.
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A rough estimate based on Eurostat's import statistics and US export statistics shows that the EU's imports of defence equipment (excl. intermediate goods) relative to total defence expenditure has remained fairly stable in recent years (Chart 4).[20] Relative to total defence spending, the share of imports is fairly moderate, at between 10% and 15%. This is explained by the large share of personnel costs in defence spending. In contrast, the share of imports in the total procurement of defence equipment has in recent years been over 30%, although in 2017–2018 it even exceeded 50%. For the national economy as a whole, the share of defence equipment imports has not been very large, accounting for between 0.10% and 0.15% of GDP. A rough assessment based on these import statistics therefore supports more moderate estimates of the share of defence equipment imports relative to GDP.

Preliminary statistics from the European Defence Agency (2024) show that the share of investments and R&D in total defence expenditure has risen slightly in recent years. There may

indeed be an increase occurring in the share of defence spending allocated to investments that support GDP growth. Defence investments could reach over 30% of total defence expenditure. In 2024, defence R&D increased by 18%. Similarly, according to an IISS assessment, the average share of European NATO members' defence budgets accounted for by defence equipment procurement and R&D has increased from 15% in 2014 to 32% in 2024, with growth since 2022 being particularly strong. The IISS also estimates that in the same period the average share of defence budgets spent on personnel and military pensions has fallen from over 60% to 40%. Nevertheless, R&D expenditure has grown at a considerably slower rate than, for example, the procurement of equipment, and its share of the defence budget is still markedly smaller than in the United States.

Spillovers from the increase in defence expenditure would be more likely if the composition of defence expenditure shifted more towards investments, as in the United States. Higher defence spending over a longer horizon would also increase this likelihood, as the development of complex defence industry products typically takes longer than increasing the production volumes of the conventional defence industry.[21]

ⓘ Higher defence spending may increase industrial production

Defence procurement can have a positive impact on industrial production and more broadly on the entire economy – particularly if the domestic content of procurement is large. The procurement of defence equipment thus increases production and the demand for intermediate goods, which may generate economies of scale but may also raise costs and crowd out other industries.[22] This information box examines how higher defence spending passes through to the various sectors of industrial production.

According to various estimates, the EU's defence equipment industry has a turnover of about EUR 110 billion to EUR 140 billion, and the industry employs around half a million people in Europe (ASD, 2024; Draghi, 2024; European Commission, 2024b). Currently, the strengths of Europe's defence companies are in, for example, the manufacture of vehicles, naval shipyard technology, rotorcraft and transport aircraft (Draghi, 2024). In addition to traditional defence equipment, the companies produce various dual-use products that are used in, for example, intelligence operations, navigation and measurement.

The size and macroeconomic importance of the defence industry and the wider impact of defence procurement on the economy are, however, difficult to estimate overall, as there are no separate statistics on the defence industry, and the defence industry is not separately classified nor its products classified as separate items. An individual item can thus include products for civilian use and for military use. Moreover, defence spending impacts the wider economy with a considerable lag. According to Burilkov et al. (2025), the time lag between procurement decisions and estimated delivery is around three years.

However, the increase in defence procurement – due to both structural increases in defence expenditure and military support delivered to Ukraine – is already reflected in certain economic indicators. Firstly, the market capitalisation of publicly listed European defence industry companies has risen since 2022 at a considerably higher pace than the market value of all listed industrial companies (Chart 5).[23] Many defence industry companies are state-owned, but the robust market situation of the publicly listed companies is probably an indication of the overall situation in the defence industry. Since January 2022, i.e. since before the start of Russia's full-scale invasion of Ukraine, the market value of defence industry companies has nearly tripled, whereas that of the total manufacturing sector has risen less than 70%. Based on market prices, expectations concerning defence sector production and profits have thus increased considerably more than in the other sectors of industrial production.

Secondly, an increase in the production of defence equipment is indicated by the fact that the manufacture of product items that most probably have a high content of defence products (Chart 6) has increased at a higher rate than total industrial production. Of these, the most obvious is the manufacture of weapons and ammunition, which in the euro area has increased since 2022 by over 50%. The manufacture of other transport equipment for military and civilian purposes – another relevant product item – has also increased rapidly since the beginning of 2022. The item includes combat vehicles, vessels and aircraft.[24]

How extensively does the increase in defence industry production pass through to the various other sectors of industrial production? One way of estimating the scale of this is to examine fluctuations in the market value of the defence industry as referred to above (Chart 5). When the market value of the defence industry rises more than that of industrial production as a whole, the outlook for defence industry companies improves

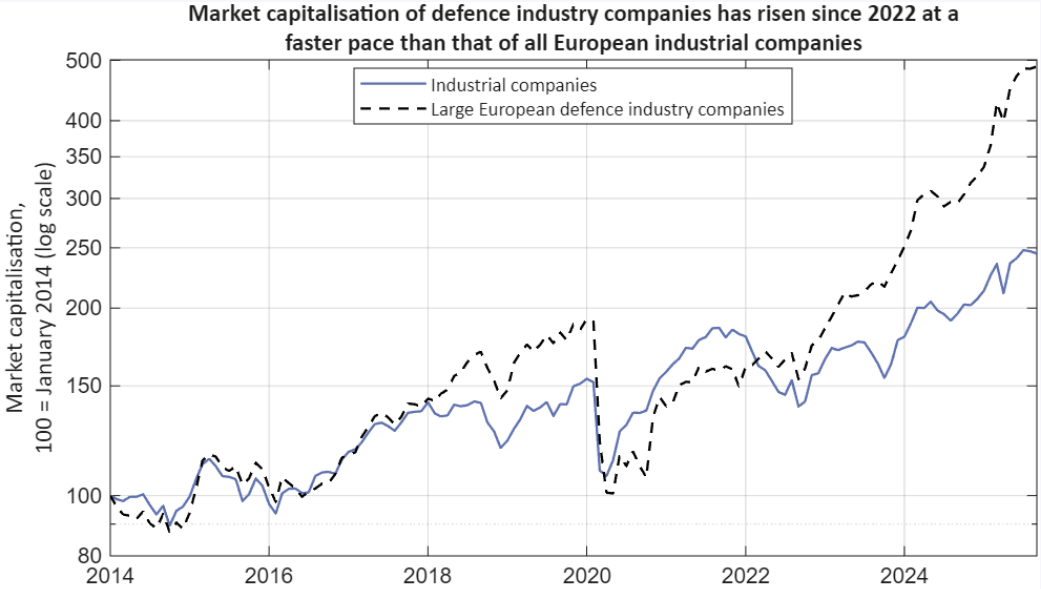
more in relative terms.[25] Econometric methods can then be used for estimating how the improved outlook for the defence industry has thus far affected the production of various goods.[26]

The purpose of this estimation is to assess how extensively the higher demand for defence products passes through to other sectors of industrial production. The empirical method used here measures the effects stemming from factors that cause the returns on defence industry shares to deviate from the returns on other industrial company shares. Such deviations may have been caused by, for example, an increase in the exports of defence products, an improvement in the market position of defence industry companies, or on the other hand, higher demand for domestic defence procurements. The impacts of the permanent expenditure increases now being implemented may differ somewhat from past developments.

Chart 7 illustrates changes in the production of various items of industrial goods, calculated using an empirical model, two years after the unexpected rise in the returns on defence industry company shares to a level 10% higher than the returns on other industrial company shares. The increase in the market value of the defence industry is related to the higher manufacturing volumes in the case of many goods. This connection is clearly strongest in the production of ammunition, which increases in a two-year period by over 3%. In contrast, total industrial production increases only slightly[27]. On the other hand, the increase in the production of machinery and equipment, other transport equipment and manufactured goods as well as electronic goods is statistically significant. In many industrial goods, however, such as chemicals, basic metals and electrical equipment, the impact is close to zero.

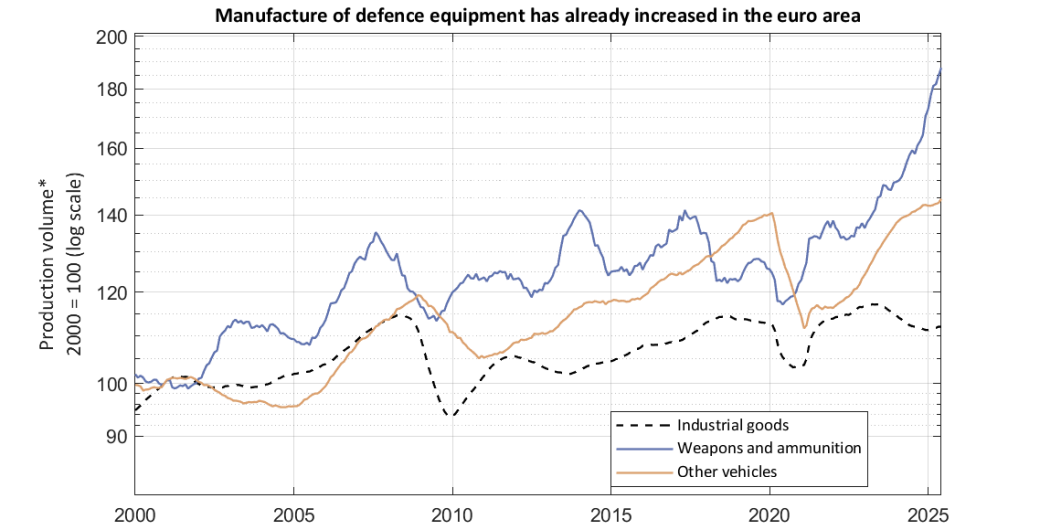
Based on historical evidence, an improved outlook for the defence industry may have indirect effects on the various sectors of industrial production, particularly on industries other than basic industries. If the domestic content of defence procurements is successfully increased, the effects of higher demand for defence equipment could in future spread more widely than now estimated to other sectors.

Chart 5.



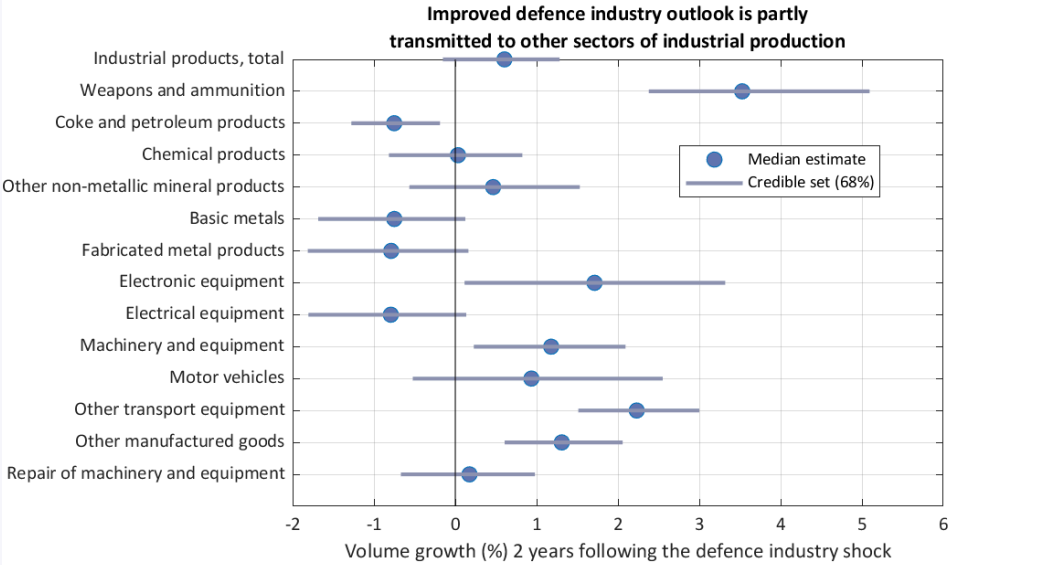
Sources: Macrobond, STOXX and calculations by the Bank of Finland.
*12-month moving average

Chart 6.



Sources: Eurostat and calculations by the Bank of Finland.
*12-month moving average.

Chart 7.



Source: calculations by the Bank of Finland.

Macroeconomic effects will depend on how expenditure is allocated

One way of measuring the macroeconomic effects of higher defence spending is to assume they are similar to the effects of any other public expenditure and to estimate the public expenditure impact using a general equilibrium model. This is done below using the Global Integrated Monetary and Fiscal Model (GIMF model) developed by the International Monetary Fund (Kumhof et al., 2010). In the model, the expenditure effects differ on the basis of whether the spending constitutes public consumption or is composed of investments that boost production capacity. As discussed above, the domestic content of procurements will be one of the factors affecting the magnitude of the economic effects.[28] However, the assumption made in the model is that the domestic content of defence procurements is similar to that for other public sector procurements.

Public consumption has mainly a short-term impact on the economy by raising aggregate demand, whereas investment can improve productivity and the economy's growth potential in the long term. Defence spending generally includes elements of both consumption and investment.

The precise allocation of the increased defence spending between consumption items and investments that will boost future output is not known. As stated above, much also depends on the capacity of European industry to produce new technological innovations in response to the

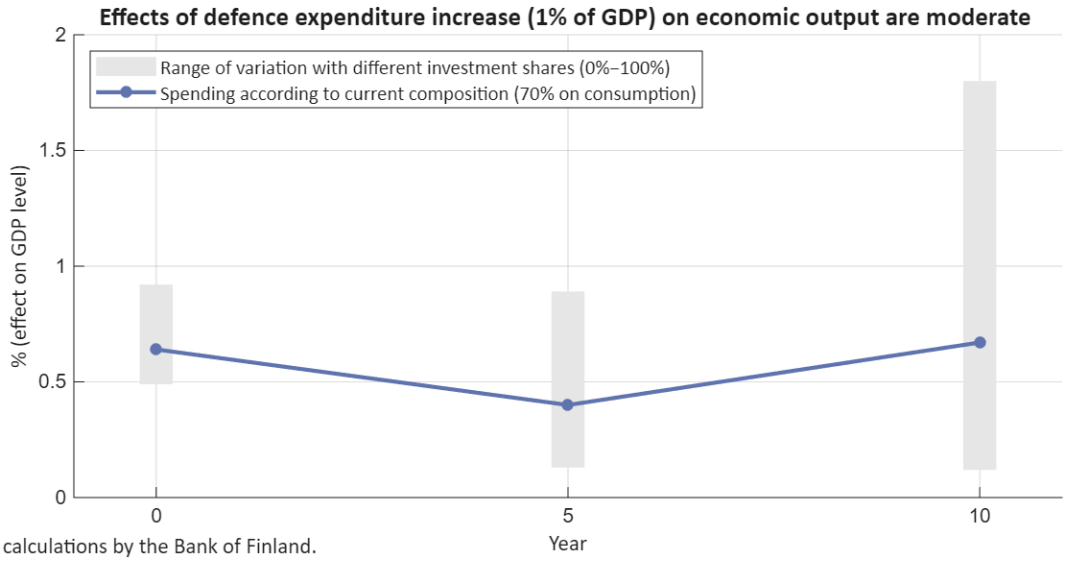
increased demand. Defence spending in the euro area up till now was observed above to have been about 70% on consumption items and the rest on investments. The composition of the new expenditure increases may nevertheless diverge from this in the future and could well be allocated more towards new technologies and items that support investment. There are indications of such developments in, for example, the report by the International Institute for Strategic Studies (2024).

The baseline in the model simulation examines a situation in which spending is allocated in line with the pattern observed so far, which is 70% consumption-based and 30% investment-based. In addition, a range of variation regarding the significance of the investment element is calculated around the baseline, in which the investment share of the defence spending varies between two extremes. At one extreme, all the additional expenditure is allocated to public capital and thus contributes to increasing potential output. At the other extreme, the additional spending only increases public consumption. In practice, it is unlikely that the defence expenditure increases would include solely investment or consumption. Nor does the range of variation for different variables indicate the likelihood of the different cases.

The model calculations look at the effects of growth in defence spending in a situation where there is a permanent expenditure increase of 1 percentage point of GDP. This spending growth corresponds quite well with estimates of the magnitude of the additional spending already decided in Germany. However, the extra spending to accord with the new NATO objectives would mean a larger increase in expenditure over the next 10 years than that presented here.[29] In the calculations the increased spending is financed by greater public borrowing. If the expenditure increases are partially or fully implemented through fiscal consolidation, the GDP effects will be smaller than presented here.

The growth in demand will raise GDP significantly and immediately (Chart 8). The immediate first-year growth impact would be in the range 0.5%–0.9%, and in the long term (10 years) the GDP impact of the permanent expenditure increase would be between 0.1% and 1.8%. If the spending increase were to be allocated in the same way as the observed pattern of defence spending, i.e. 70% on consumption, then the GDP impact in comparison with a situation where there would be no additional spending would be 0.6% in the short term and about 0.7% in the long term.

Chart 8.



Source: calculations by the Bank of Finland.

If the expenditure increases are allocated more to investments, the impact on GDP becomes longer lasting and the immediate effect is also greater (Chart 8). This is due to the effect on private demand: investments that support production will, in the long term, boost the entire economy's potential output and the prospects for household consumption, and thus also private investment. With permanent expenditure increases, it is possible in this case to achieve effects that will boost economic activity.

The impact of public spending on economic output can be examined not only by looking at the output effects, but also by assessing the cumulative fiscal multiplier.[30] The cumulative multiplier indicates by how much GDP will grow altogether over time in relation to the higher public spending – i.e. the extent of the growth in GDP in euros for every euro spent. The 10-year cumulative multipliers in our calculations are well in line both with recent estimates of euro area effects and with the research literature referred to earlier.[31] The multiplier for public investments is about 1 in our calculations, which means that each euro spent on investments increases economic output by about one euro over a 10-year period. By contrast, the multiplier for defence spending resembling public consumption is clearly lower, at about 0.2.[32]

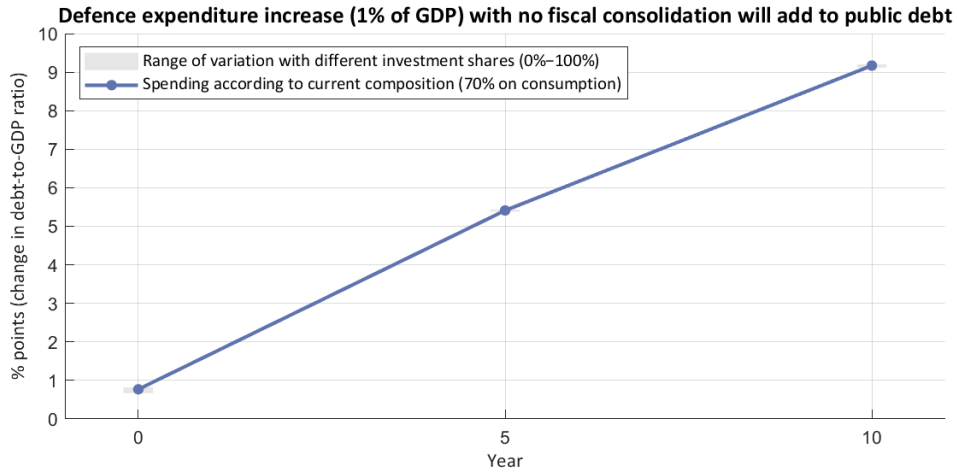
According to the calculations, the inflationary impact of the expenditure increases is moderate but persistent. Monetary policy would then be tightened when the central bank raises short-term interest rates in response to higher inflation. The effects of higher inflation and higher interest rates are nevertheless just a few tenths of a percentage point in each case. In contrast to the calculations presented here, academic research (Ilzetzki, 2025) has found that the US expenditure increases due to the Korean War and the Vietnam War had significantly pushed up inflation. In

these wartime situations, the expenditure nevertheless grew by considerably more than the current increases in defence spending. The effects of war are many and varied – price pressures can be caused for various reasons, such as hoarding.

Defence spending will increase pressure on public borrowing

Long-term growth in defence expenditure will increase public debt accumulation in the euro area. Even if the higher defence spending is focused on public investments, the level of debt would rise in our simulations by about 9 percentage points over 10 years (Chart 9).

Chart 9.



Source: calculations by the Bank of Finland.

Similarly, the historical experience of the United States demonstrates that long-term increases in defence spending have led to significant growth in public debt. Hall and Sargent (2020) analysed the financing of eight wars engaged in by the US and found that although some spending was covered by tax increases, a significant proportion was financed through debt and through monetary growth. During the Vietnam War, for example, taxes covered approximately 41% of the increased spending, while the remainder was covered through debt financing and by higher inflation.[33]

The Council of the European Union has approved an annual deviation in general government deficits of a maximum of 1.5 percentage points for defence purposes for the next four years due to the exceptional conditions caused by Russia's war in Ukraine. This flexibility in the Stability and Growth Pact is sufficient to cover higher spending on defence over the next four years.

Elevated borrowing will nevertheless create pressure on the public finances in the longer term. The need for higher defence spending will probably persist for longer than four years, and this will

also push up public debt beyond the 60% threshold in the Stability and Growth Pact. In the longer term, economies will therefore face greater consolidation needs.

Besides fiscal consolidation, the spending pressures on the public finances could be partially contained if the growth in defence spending were to support innovation in the private sector. However, these effects appear to occur very slowly, with a lag of more than 10 years, and they would probably require strong and sustained growth in defence spending in order that production capacity could meet the higher demand in time.[34]

In national budgets it is important to prepare for the increased spending pressures, as there is uncertainty over the materialisation of positive impacts, and current indications are that defence expenditure will have to be increased over a long period, above all for the purpose of enhancing security. It has been proposed that defence projects could be supported through a European defence mechanism (EDM), which could make common defence procurement more efficient and reduce, at least temporarily, the pressure in individual Member States to raise spending on arms procurement (Zettelmeyer, 2024). An EDM-type system would nonetheless not remove the pressure on public finances brought by increased defence expenditure.

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Notes

1. For example, too rigid adherence to percentage-of-GDP targets is not necessarily optimal, as spending may then not coincide with security needs and is also procyclical in nature, meaning that it strengthens cyclical fluctuations. See also Ilzetzki, E. (2025). ↑
2. Defence expenditure includes the direct costs of defence, but not, for example, the indirect costs of compulsory military service (conscription). All the major euro area countries ended conscription after the Cold War: France and Spain in 2001, Italy in 2005 and Germany in 2011. According to the statistics, however, the shift from conscription to professional armed forces does not appear to have increased defence spending as a share of GDP. ↑
3. Unlike the other major euro area countries, France's defence spending has remained at around 2% of GDP since the turn of the millennium. ↑
4. When making comparisons in monetary terms, it should be noted that, in Asia and other emerging economies, where price levels are lower, the same amount of money will enable a larger amount of defence procurements than in advanced economies. ↑
5. For example, the Munich Security Report 2017 states that there are 178 different defence systems in Europe, compared to only 30 in the United States. According to the Draghi (2024) report, there are 12 European types of battle tanks, while in the United States there is only one. Although there can also be advantages in having a diversity of defence systems, such as risk sharing between the different systems, more uniform systems have been seen to promote various economies of scale in production and operational use. See e.g. Mejino-López and Wolff (2024a). ↑
6. The German constitutional debt brake was first amended in 2022, when the Bundestag approved a temporary defence fund worth EUR 100 billion. Once the fund has been exhausted (estimated by 2027), expenditure covered by it will once again fall within the scope of the federal budget. The debt brake was revised again in spring 2025, when it became possible to also exclude from it budget-funded defence expenditure in so far as this exceeds 1% of GDP. Hence, expenditure up to 1% of GDP will be financed from budget without additional borrowing, while the portion in excess of this will be debt-financed without this breaching the debt brake. The aim is therefore to retain the fundamental principle of the debt brake but at the same time safeguard a long-term increase in defence expenditure. The 2025 reform will bring – in addition to the 2022 reform – about EUR 400 billion extra funds for defence in cumulative terms by the mid-2030s. ↑
7. The cumulative multiplier is equal to the cumulative increase in GDP (calculated at present value) relative to the cumulative increase in spending over a given period. Hence, the cumulative multiplier takes into account dynamics and also allows for an easy comparison of fiscal impacts estimated in different studies. For more details, see Ramey (2016). ↑
8. The nature of a recession may also be of relevance (Jo and Zubairy, 2025): multipliers are larger in deep recessions and in recessions that coincide with low inflation. It is also of relevance whether the recession is driven by demand-side or supply-side shocks and what types of policy measures are used (Ghassibe and Zanetti, 2022). At the zero lower bound, the monetary policy response is more subdued than usual due to low interest rates. ↑

9. See e.g. Fornaro (2024), who argues that increases in spending must be persistent to generate multiplier effects. Ilzetzki (2024) emphasises the nonlinear effects of large expenditure increases. Kilponen et al. (2013) employ different structural models and find that short-run fiscal multipliers can be greater than 1 if interest rates are at the zero lower bound and if a change in fiscal policy is implemented in the euro area as a whole. Similarly, short-run fiscal multipliers decrease if higher spending leads to higher taxes in the future. ↑
10. Ilzetzki et al. (2013) show that the United States is to some extent a representative case for the estimation of multiplier effects in advanced economies; in emerging economies, by contrast, the multiplier effects appear to be significantly smaller. ↑
11. For example, according to Moretti et al. (2025), an increase of 1 percentage point in the ratio of defence R&D to value added has raised the annual growth rate of total factor productivity (TFP) in the United States by about 0.08 percentage points, representing a total increase in TFP of some 8.3%. For productivity effects and the effects of wartime R&D investments, see also Gross and Sampat (2023) and Ilzetzki (2025). ↑
12. According to Ilzetzki (2024), the upward impact of public expenditure on private R&D can be attributable to production capacity constraints. Based on data on aircraft production in the United States during the Second World War, companies are induced to improve productivity in respect of products that are subject to capacity constraints due to increased public demand. ↑
13. This conclusion is also supported by the analyses by Fornaro (2024) and Ilzetzki (2024). ↑
14. Additionally, during the Korean War, the world in general was recovering from the Second World War, and economic growth was rapid regardless of the Korean War. See e.g. Ramey and Zubairy (2018) for the impacts of war on labour supply, and footnotes 11 and 12 for the effects related to R&D. ↑
15. According to e.g. Draghi (2024), R&D expenditure on defence is ten times higher in the United States than in the EU, while the European Commission (2025) concludes that defence R&D spending as a percentage of GDP is approximately 50% higher in the US than in the EU. Comparison is hampered by the fact that the wage costs of R&D personnel are not included in all the statistics as R&D expenditure. ↑
16. Defence spending statistics are updated slowly, and therefore this section is based on 2022 and 2023 data. ↑
17. In the calculations by Sariola et al. (2025), domestic content plays a significant role in the economic impacts of defence spending. ↑
18. The manufacture of high-technology products requires the use of advanced components, and it is not necessarily profitable to produce all of them domestically. In terms of cost-effectiveness or defence capabilities, it makes more sense to source some of the procurements from outside the euro area. Defence equipment deals also often involve counter purchases and industrial cooperation, in which case value added may also be created in the domestic economy. ↑
19. The IISS, in turn, concludes from its data that since February 2022, 52% of the total cost of NATO Europe's platform procurements was sourced from European firms, and only 34% was sourced from the United States. ↑

20. This assessment is calculated from data on euro area imports of armoured fighting vehicles, aircraft, helicopters, spacecraft and weapons and ammunition from countries other than the United States, plus figures derived from US exports statistics on exports of defence equipment to the euro area. The magnitude of defence spending and the share of defence equipment procurement in total spending are based on NATO and Eurostat statistics. The assessment does not include the import of intermediate goods and raw materials needed in the production of defence equipment or arrangements for industrial cooperation that may be related to the procurements. ↑
21. This is also suggested by results estimated by Antolin-Diaz and Surico (2025) on the United States, in which the positive effects on GDP are triggered by strong and long-term increases in defence spending. ↑
22. Growth in the defence industry may have an impact on wages and competitiveness in the other industries. On the other hand, the income flows may bolster the economy via consumption and investments, which would support the demand for industrial goods in a more broad-based manner. ↑
23. The index presented in the chart includes Europe's largest defence industry companies: Rolls-Royce, Rheinmetall, Leonardo, Bae Systems, Thales, Saab, Fincantieri, Safran, Kongsberg and Mtu Aero Engines. Airbus has been excluded from the index because civil aviation accounts for a large share of the company's total business. ↑
24. The product class 'other transport equipment' includes combat vehicles, vessels, railway locomotives, aircraft and spacecraft that may be for civilian or military use. ↑
25. The difference in the increase in market values can be referred to as excess return. Here, excess return refers to growth in the market value of the defence industry relative to the entire industrial sector. The examination does not include risk adjustment, and therefore the difference in return has not been adjusted for the various risk profiles of the industries or companies. This is therefore a comparison of gross returns, not risk-adjusted performance. ↑
26. In other words, in this case we estimate how defence industry shocks are transmitted to various variables. The defence industry shock is estimated for euro area monthly data covering 1999–2025, using a Bayesian vector autoregressive (BVAR) model. The following variables are incorporated into the model: cumulative excess return on defence company shares, total industrial production, production of weapons and ammunition, and each product item separately. The outcomes of the model should be considered more as an illustration of correlations than a measure of causalities. ↑
27. The effect on industrial production is not statistically significant either. ↑
28. See Sariola (2025). ↑
29. Because the estimated effects are close to linear, the impact of the spending increase to meet these NATO objectives would be greater than the impact presented here by a factor of 1.5–3.0, depending on the precise amount of the expenditure increase. The expenditure increase would nevertheless be spread over a number of years. ↑
30. Fiscal multipliers are calculated in different ways in the research literature. The cumulative multiplier used here calculates the growth in discounted economic output over time in ↑

relation to the discounted expenditure increase made over time. It depicts better than the other multipliers how much money goes on defence spending over time and how much additional economic output is achieved.

31. Ilzetzki (2025) estimates that the fiscal multiplier would be roughly between 0.6 and 1.0, while the European Commission's (2025) calculations give an estimate of 0.1–0.4. The Commission's lower estimate is due to the additional spending being financed by tax increases. ↑

32. The immediate multiplier effects of the fiscal policy in the model calculations in the same year are 0.9 for investments and 0.5 for public consumption. ↑

33. According to Hall and Sargent, post-war inflation was a way of reducing the debt ratio, but at the same time it weakens real investment returns and creates uncertainty on the financial markets. ↑

34. See e.g. Fornaro (2024) and Ilzetzki (2024). ↑

Keywords

economic growth, euro area