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Economic Principles for European Rearmament

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Overview

- We present five guiding principles for European rearmament. Europe's rearmament should be (i) innovation-driven to support European technological capabilities, competitiveness, and productivity growth; (ii) aim for a rapid increase in production capacities for a high-low mix of military capabilities; (iii) rely on quantitative goalpost for R&D expenditures and an unmanned autonomous systems; (iv) build on independent European capabilities alongside NATO to reduce dependence on increasingly unreliable American assets; (v) substantially increase military support for Ukraine as the cost-efficient way towards European security in the short-run.
- The central steps are the creation of a European defense single market, the reduction of national fragmentation, and the development of joint European defense capabilities.

Keywords: Europe, defense, single market, procurement

- In diesem Papier formulieren wir fünf Leitprinzipien für die europäische Aufrüstung. Die europäische Aufrüstung sollte (i) innovationsgetrieben sein, um die technologischen Fähigkeiten, die Wettbewerbsfähigkeit und das Produktivitätswachstum Europas zu stärken; (ii) auf einem schnellen Hochfahren industrieller Kapazitäten sowohl im Hoch- als auch im Niedrigtechnologiebereich abzielen; (iii) auf quantitativen Zielvorgaben für FE-Ausgaben und den Ausbau unbemannter autonomer Systeme beruhen; (iv) unabhängige europäische Fähigkeiten neben der NATO aufbauen, um die Abhängigkeit von zunehmend unzuverlässigen amerikanischen Ressourcen zu verringern; (v) die militärische Unterstützung für die Ukraine substanziell ausweiten, da eine siegreiche Ukraine kurzfristig der günstigste Weg für mehr Sicherheit in Europa darstellt.
- Zentrale Schritte dorthin sind die Schaffung eines europäischen Verteidigungsbinnenmarktes, der Abbau nationaler Fragmentierung und der Aufbau gemeinsamer europäischer Verteidigungskapazitäten.

Schlüsselwörter: Europa, Verteidigung, Gemeinsamer Markt, Beschaffung

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Economic Principles for European Rearmament

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Europe is facing a fundamentally changed security landscape, driven by Russia's aggressive war and a decline in confidence in transatlantic security guarantees. Europeans must prepare for adverse scenarios, including fighting alone in a high-intensity war. This highlights the importance of European rearmament, bringing an increase in military and industrial capacities. At the same time, technology is changing rapidly. Artificial intelligence (AI), autonomous systems, hypersonic weapons and military space are decisive factors for geopolitical power and hard security, changing fundamentally how defence works. A dramatic change in European rearmament strategy is needed to improve the military and technological capabilities of European armies and respond to the challenges raised by the war in Ukraine. This policy brief outlines the priorities and key economic principles that should guide the European defence efforts going forward in this new environment.

1 Core principles

(i) Europe should pursue an innovation-driven defence strategy that combines investment in security with technological innovation to spur economic growth and European competitiveness. Such a "dual" strategy would rely heavily on high-tech and R&D investments that can be expected to yield considerable economic spillovers to the civilian sector, as laid out recently in Enders et al. (2025). This includes autonomous systems and robotics, artificial intelligence and advanced software, as well as space capabilities, rocket and missile technologies and satellite constellations. Europe will have to innovate on procurement strategies to fund risky high-tech development, and understand rearmament as part of an industrial strategy to overcome Europe's technological backwardness. European security and technological leadership are ultimately two sides of the same coin.

(ii) The war in Ukraine has shown that Europe also needs a greater number of affordable systems at the lower end of the technological spectrum to wage an attrition war. Europe thus needs to aim for a "high-low" mix of military and industrial capabilities. Europe has to rapidly increase industrial production capacities and secure the corresponding industrial supply chains. There is a pressing need to reduce high unit costs through standardization, building a European defence market, achieving economies of scale and promoting joint procurement in order to make the

most of increased budgets. Appropriate contract and market design are key to incentivize producers to increase capacity and bring unit costs down. To maximize economic impact, the overwhelming share of future purchases should be from European production, reducing future dependence on non-European supply chains.

(iii) Quantitative goal posts on the composition of spending and the share of R&D in defence budgets should serve as an orientation for policy makers. A first orientation point is the recent UK Defence Review that proposes an overall goal of army spending of 20% on traditional crewed systems and platforms; 40% on reusable controlled autonomous systems, and 40% on "consumables" like attack and defence drones, missiles, and rockets. The second goal post is a significant increase in the share of research and development in the French and German defence budgets, coupled with the integration of civilian research into the military. Currently, France spends about 3.5% and Germany only 2% of its military budget on R&D, while the U.S. share is five times higher at about 15%, equivalent to EUR 120 billion annually. Europe has to overcome an entrenched status quo bias to leapfrog to the next generation of defence technologies and develop innovation systems that promote constant innovation at wartime pace.

(iv) While integrated NATO defence planning remains the baseline, the parallel development of independent European capacities and deterrence is an urgent political priority. The two key requirements outlined above – investing in cutting-edge technology and reducing unit costs of existing systems as part of a "high-low" strategy – highlight the need for a robust European-level initiative. There are substantial legal, political and industrial constraints, as well as the vested interests, that hinder the development of a European defence pillar within NATO. However, given the major shifts underway in the geopolitical landscape and the level of threats, a European initiative is needed to (i) launch large-scale technological programs to increase interoperability and substitute U.S. strategic enablers, (ii) create a single European defence equipment market and joint procurement, (iii) pool resources and raise funds on debt markets under the governance of a European entity if needed.

(v) In the short run, financial and military support for Ukraine as well as scaling up Ukrainian production of autonomous systems is the most cost-efficient way to safeguard security in Europe. A closer industrial integration of Ukrainian production is an opportunity for European producers to participate in real time in the rapid advancement of defence technologies. Europe's industrial and economic capacities by far outstrip Russia's, but Europe has not managed to leverage its economic strength to support the Ukrainian war effort in a meaningful way. Overall

military support for the Ukrainian war effort has remained at a meagre level of around 0.1% of European GDP per year. Earmarking a far larger amount for immediate Ukrainian defence needs should be an important part of the European strategy.

2 The next years: a roadmap for European rearmament

Translating these principles into a roadmap for the next three years, the key challenges that Europe faces are the following:

(i) Harmonizing and scaling up production of existing weapon systems such as artillery, cruise missiles, air defence systems, manned aircraft, air lift capacity. The core diagnostics of the Draghi report apply here. Lack of scale and interoperability means higher unit costs and less defence capability per Euro spent. Europe must overcome the "juste retour" mentality and embrace specialization, pooled production and concentration. Dual sourcing principles from two member states can help build an integrated European defence market.

(ii) Creating a common European defence equipment market, both to increase competition among existing major defence players, and to encourage entry by increasing the scale of the potential market. Europe must take the necessary measures in market design to ensure competition within a future European market for weapons to bring down costs. European countries should open national procurement to use monopsony power to compress markups where competition remains limited and to raise scale.

(iii) Provide funding for risky high-tech development to close our capabilities gap in AI, autonomous systems, in space and hypersonic systems. Those high-tech initiatives will have high failure rates, necessitating a shift rules and regulation to incentivize more risk-taking in R&D funding. The economic approach must be outcome oriented, i.e., public money should reward outcomes to fulfill the critical missions instead of subsidizing inputs in complex and slow ways. Private sector involvement and an emphasis on defence tech is key to overcoming long-standing national barriers. Long-term purchase agreements for satellites, launchers, etc. can spur start-up development and allow private companies to tap financial markets.

(iv) Making rapid progress in integrating and scaling Ukrainian defence production through the European internal market to counterbalance increasing reliance of Russia on foreign production of drones, including fibre optic materials and other equipment. By funding local production, the model allows for quicker delivery of critical equipment to Ukrainian forces and reduces training and logistical challenges, as the systems are already well known to Ukrainian troops.

In contrast to conventional aid models that rely on donating surplus weapons or procuring arms from donor countries, the Danish approach supports Ukrainian manufacturers directly to produce military equipment that aligns with the Ukrainian Armed Forces' most urgent needs.

(v) Rapidly developing joint defence assets that allow interoperability and operational efficacity of European forces without U.S. strategic enablers. This means investing in and deploying shared European capabilities that entail high fixed costs and are defensive by nature such as satellite-based intelligence, surveillance, and communication infrastructure, strategic airlift (heavy transport aircraft and aerial refueling systems), military mobility and air defence systems. Joint command and control structures can be useful as a back-up to NATO capabilities. By pooling resources and coordinating procurement, these systems offer economies of scale and ensure that their benefits are widely distributed across EU member states. This strengthens Europe's ability to act independently in crises, supports NATO burden-sharing, and reinforces the credibility of European defence commitments.

3 Agenda 2030: European moonshots to close technological gaps

To close the acute capability gaps in high-tech, Europe needs to launch large-scale European "Manhattan Projects" to catch-up with the U.S. and China. While the size of the gap differs, Europe is currently behind in either technology or scale in the core areas that will define European security. The focus on new technologies, private capital and new companies in the defence tech space will be a major advantage to overcome entrenched national procurement systems and the influence of legacy producers. For these missions, traditional procurement processes should not apply, and efforts should be concentrated on the outcome. They should be framed as European moonshot missions with a 2030 due date. The focus should be on four central technology areas:

(i) Autonomous systems and robotics

Autonomous systems are transforming the modern battlefield through the synthesis of advanced technology, software and AI. They bring mass to the battlefield while augmenting the scarce manpower of the armed forces. Technological leadership can overcompensate for other capability gaps and thus create advantages. The development of these systems' capabilities is largely driven by software. Extensive capabilities that used to be "hard-wired" into hardware are increasingly shifting to software. It also enables consumer electronics, e.g. camera systems or data links, for military use. These components can be mass-produced inexpensively using civilian production resources. Europe needs to become a world leader in autonomous systems and robotics, and it currently lags in scale production and software capabilities.

(ii) Applied AI and advanced software

The strategic importance of AI and software in modern defence technology is growing rapidly. Algorithms, machine learning and data-driven systems for automation, analysis and decision support are of great importance on the battlefield. In combination with electronic warfare and crewed and uncrewed systems, they enable a networked system for modern warfare. The US are trying to expand its leading position in a targeted manner. Software companies such as Palantir are becoming key players in the global defence industry through large-scale procurement contracts. Europe will have to develop alternatives and provide the necessary energy supply and infrastructure to enable large-scale military and civilian AI research and development. Europe's gap in the area of advanced software is large, and Europe lacks a hyperscaler to drive the development of AI.

(iii) Sovereign European access to space, protective shields, and secure communication

Sovereign access to space, a rocket defence shield and Europe's own satellite-based communication capabilities are indispensable components of national security and strategic autonomy for increasingly digital warfare. With Starlink, as US company has created the first global, high-performance constellation with investment cost of roughly 10 billion. China is currently following suit with its own capability. European countries are far behind in terms of launch capacities and satellite constellations. With OneWeb, consisting of 600+ satellites, Europe has an operational system that could offer similar communication capabilities to Starlink, but still needs to be modernised and further expanded. Secure access to space is to be ensured by launch systems such as Ariane 6, as well as new medium and (new) micro launchers. Germany alone already has three micro-launchers under development (RFA, Isar Aerospace, Hyimpulse). A joint European approach would now be advisable in order to pool all resources. With the appropriate incentives, the private sector could establish a robust satellite constellation within the next three to four years. While Europe has a long space tradition, Europe lacks launch capacity and has not developed reusable rockets that have helped SpaceX drive down cost. Launching costs per kilogram with SpaceX are an order of magnitude lower than on European systems.

(iv) Development and integration of modern missiles and hypersonic weapon systems

Hypersonic technology is defining the next generation of strategic weapon systems and changing the balance of power in modern warfare. Their extreme speed and maneuverability make them a relevant factor in deterrence and defence capabilities. Russia, China and the US have recognized the strategic potential and are already investing billions in this area. Hypersonic

systems can be equipped with nuclear and conventional warheads, guaranteeing appropriate military performance depending on the situation. Europe is dangerously far behind in this technology.

4 Creating a defense single market for Equipment and developing European-wide defence assets

The previous section has highlighted the need to invest in "dual use" technological programs to close the innovation gap identified in the Draghi report. This section focuses on removing the constraints and exceptions that hinder the development of defence assets across Europe.

(i) The status quo: common threats, individual answers

Traditionally, defence strategies have been the responsibility of each European nation under NATO's coordination processes. The European Union does not play a significant role at either of these levels.

- Objectives and budgets are set at the national political level. The process of aligning objectives, methods and resources to create a coherent national strategy involves an interaction between top-down (based on political objectives) and bottom-up (based on military needs) approaches.
- Each nation can choose to produce its own arm systems, cooperate in common programs, or buy equipment off the shelf. There is no single market for defence equipment.

This process ensures a high degree of freedom of action and potentially a high level of strategic autonomy for each country. However, there are three significant limitations:

- The addition of national strategies can lead to a lack of coordination and military interoperability between European armies.
- The fragmentation of production results in lower economies of scale and higher unit costs.
- Given the level of threats, the immediate focus on existing military capability gaps and requirements tends to overshadow the need to invest in innovation and 'dual' breakthrough technologies.

There have been longstanding efforts to encourage common procurement and more defence coordination in the EU, including with the creation of the European Defence Agency in 2004, and Permanent Structured Cooperation (PESCO), a framework for collaborative defence capability

development anchored in the Treaty on the European Union (since 2007). A 2023 European Defence Industry Reinforcement through Common Procurement Act (EDIRPA) created a small fund (EUR 300 million) to subsidy common procurement. Most recently, the European Commission announced SAFE, the 'Security Action for Europe', which offers up to €150 billion in loans to members states to finance joint procurement projects. The Commission has also proposed a relaxation of EU fiscal rules by activating the fiscal rules' escape clause to allow for higher defence spending. These efforts do not go far enough. Financial incentives for common procurement are unlikely to go far enough to break with the national fragmentation and home bias that currently characterizes defence procurement in Europe. While the EDIRPA funds were committed by late 2024, they either subsidised the joint purchases of ammunition fitting an array of national artillery systems or purchasing consortia for French or German weapons systems led by France or Germany, respectively. The financial terms of SAFE are attractive only to countries whose borrowing cost exceed those of the EU, and the financial advantage is modest (10-45 basis points). Borrowing via SAFE has the same impact on national debt levels as borrowing from the market. Furthermore, while the incentives created by SAFE seek to expand joint procurement relative to national procurement, they do not address the home bias of national procurement – that is, discrimination by procurement authorities against defence contracts located in other jurisdictions.

(ii) Establishing a single European market for defence equipment

Unsurprisingly, the only area in which single market rules do not apply is the defence industry, which is fragmented and does not deliver sufficient military production at the European level. Common programmes focusing on high-spectrum platforms and traditional defence industry actors are part of the answer: they lower the cost per participant and provide scale. There are certainly new opportunities to foster Franco-German collaboration, notably on dual space capabilities – including both satcom constellation and launchers. However, we should recognize that these programs are notoriously difficult to implement, given the need to agree on military requirements, cost-sharing, intellectual property rights and the location of industrial plants. They are no substitute for creating an open European defence equipment market for new technologies, new entrants and higher scale. Two elements make the case for a single market compelling:

- The need to reap the benefits of both economies of scale and competition, lowering the fiscal costs of rearmament;
- The need to integrate into military platforms, applications and operations, new digital

technologies born in the civil sector. Innovation needs to circulate between military and civil actors – a circulation currently being hindered by the fragmentation of defence markets.

Because Article 346 of the Treaty on the Functioning of the European Union exempts the defence industry from the usual single market commitments that come with EU membership – including non-discrimination in procurement – a European defence industry single market backed by a such a commitment could only be created via intergovernmental treaty (like the ESM). This would bring together a coalition of most European countries. It need not include some smaller countries that are not comfortable joining for constitutional or political reasons. But importantly, it could and should include both Ukraine and the UK, whose defence industries are critical to European rearmament.

(iii) Common ownership of defence asset protecting all of Europe

Currently, there is no structure in place to facilitate the development, funding and management of expensive, common European defence assets, i.e., defensive assets that (i) protect all European democracies collectively or have high positive external effects and, (ii) entail high fixed costs which need to be shared among countries. At least three areas require the development of new assets that meet these three criteria: air-space systems, logistics assets, and air defence. Such assets should be developed and financed at the European level. It is politically impossible to develop and own these assets jointly while not sharing the fiscal burden roughly in proportion to country size. But the largest European countries have highly unequal fiscal space, even taking into account the proposed relaxation of EU fiscal rules for defence purposes (with fiscal space in Germany much higher than in France, Italy, or Spain). The solution is to fund common defence assets through debt issuance at the same – European – level owns the assets while asking all European countries that benefit from the assets to contribute to the debt service in relation to their GDP. Two institutional arrangements could be considered. First, ownership of common assets and the associated debt by the European Union. Second, a new international organization created by intergovernmental treaty, along the lines of the "European Defence Mechanism" (EDM) proposed by Wolff et al. (2025), Steinbach et al (2025) and Zettelmeyer et al. (2025)). This would perform three functions: (1) the creation of a single market for defence production among EDM members, governed by the EDM treaty; (2) joint procurement for its members; (3) development, funding and ownership of common defence assets paid for by service charges of the countries that are members of the EDM. The main advantage of the first option is that it would avoid the proliferation of new institutions,

and that the EU is already an established debt issuer, with a very good credit rating. The main advantage of the second option is that it would allow the inclusion of non-EU European democracies and NATO members – notably the UK and Norway – on an equal footing. This said, even in an EU-led model, the UK and Norway could participate in the sense of both benefitting from the services and contributing to the costs of the common defence assets. In either case, the operational control of the common defence asset would be delegated to an entity, or several entities, that have the military capacity to run them. These could include both national and joint control- and command systems (C2). Schemes, based on a separation between ownership and operational authority, have already been successfully tested, such as the EATC (European Air Transport Command): the system consists in pooling air mobility assets (planes for cargo missions, medical evacuations, refueling, ...), with Member nations owning the assets but transferring the authority to EATC based in Eindhoven. Based on this example, it could perfectly be possible to elaborate a specific solution depending on the asset concerned.

Summary of proposals

Proposal n°1: launch large-scale European "dual" programs in the following fields:

1. Autonomous systems and robotics.
2. Broad use of applied AI and advanced software.
3. Sovereign European access to space, protective shields, and secure communication.
4. Modern missiles and hypersonic weapon systems.

Proposal n°2: a European defence and procurement cooperation agreement that would:

1. Prohibit procurement discrimination against any countries that are members of the agreement.
2. Identify areas for common procurement. In these areas, members would commit not to undertake national procurement without the permission of a majority of members.
3. Task the EU or create a specific entity to develop and own common European defence assets (as well as the debt that is needed to fund them, with debt serviced through service charges).
4. Equip that institution with a funding capacity, along the lines of that of the European Stability Mechanism. The institution would be capitalised by its members and could raise funds in debt markets.

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