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Human capital formation as a key component in Europe's defence build-up

Manuel Trajtenberg | May 14, 2025

Government spending on defence, particularly defence R&D, can have significant economic spillovers. This column argues that the forthcoming European defence build-up must include a long-term strategy to develop high-quality human capital. Military human capital development serves a dual-purpose role: it is crucial for the modern (largely non-combat) battlefield, and also valuable for long-run productivity growth. Israel provides a good example of how military service can become a driver of innovation, by giving recruits intensive technical training and providing an open intellectual property environment. Economists can contribute by designing effective procurement systems and helping address collective action problems.

As Russia's war in Ukraine drags into its fourth year and US commitment to NATO grows increasingly uncertain, the debate over Europe's security has become both urgent and existential. While most of the attention has focused on military procurement and fiscal commitments, a critical dimension remains under-emphasised: the skilled human capital needed to develop modern defence capabilities.

Economic research dating back to the Cold War era has shown that government spending on defence - particularly defence R&D – can have significant economic spillovers. Those earlier findings have been amplified by recent work by Antolin-Diaz and Surico (2024) who, based on over a century of US data, find that increases in defence spending crowd in private investment, boost innovation, and generate multipliers well above one, especially when R&D is involved. Similarly, Moretti et al. (2025) document that in OECD countries, a 10% increase in publicly financed defence R&D leads to an over 4% rise in private R&D – more than double the impact of tax credits.

These findings reinforce the view that military investment, if well-designed, can do more than deter aggression; it can also contribute to economic growth. However, these studies largely emphasise the fiscal aspects of increases in defence spending and in defence R&D, with little attention paid to the formation of military

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human capital. This column, drawing on a new CEPR Policy Insight (Trajtenberg 2025), argues that Europe's defence build-up must include a long-term strategy to develop, train, and help circulate high-quality human capital. Indeed, when designed to facilitate skill development and the flow of spillovers, military service can significantly contribute to economic growth, thus dampening the traditional 'guns versus butter' trade-off, particularly in this era of dual-use technologies. A compelling case study in that respect is Israel, where elite military intelligence units serve as de facto incubators for innovation and tech entrepreneurship.

Beyond hardware: The human dimension of defence

Europe is set to vastly increase its fiscal allocation to defence. Germany's recent lifting of its long-held 'debt break' to accommodate a military build-up, on top of the €100 billion defence fund of 2022, as well as other countries moving in that direction across the EU are clear signs of a strategic awakening. Yet most plans prioritise procurement: fighter jets, tanks, and missile systems. These are necessary but surely insufficient. Without parallel investments in human capital – engineers, cyber specialists, AI operators, and systems analysts – Europe risks ending up with underutilised (and even prematurely obsolete) technologies in the hands of overstretched forces.

The modern battlefield is increasingly shaped by digital systems: drones, satellites, cyber tools, and autonomous platforms. These require technical proficiency, rapid adaptation, and interdisciplinary knowledge. Moreover, over 80% of military roles in advanced countries are now non-combat in nature, involving tasks with clear civilian analogues. This makes human capital development a dual-purpose investment — essential for defence, but also valuable for long-run productivity growth.

Yet attracting top talent into military roles is challenging. The same promising recruits Europe needs in its modern forces – be it in AI or in data sciences – are eagerly sought after by private firms. Europe must therefore craft military careers that build skills, foster networks, and enhance future employability; service must be seen not as a professional detour, but as a launchpad.

Israel's experience: A case of structured spillovers

Israel offers a compelling example of how military service can become a potent driver of innovation. Since the early 1990s, Israel has evolved into one of the world's leading high-tech hubs, consistently displaying the highest R&D-to-GDP ratio (now at 6%), one of the world's highest per capita rates of patenting in the US, as well as the world's highest share of the workforce in the high-tech sector.

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Multiple factors contribute to this success: world-class universities, effective public support for R&D, and a vibrant venture capital industry with strong ties to the US. Yet one often overlooked component is the role of the Israel Defense Forces (IDF) — particularly its elite technology and intelligence units, such as Unit 8200. This unit, akin to the National Security Agency (NSA) in the US or the Government Communications Headquarters (GCHQ) in the UK, is responsible for signals intelligence and cyber operations. Its alumni populate the ranks of Israeli tech startups, serving as founders, Chief Technology Officers (CTOs), and key engineers.

The process is systematic. Through a universal draft, the IDF can identify top talent from across the population. Recruits to Unit 8200 undergo intensive technical training, are entrusted with real responsibility, and operate in flat, innovation-oriented teams. They work on mission-driven tasks, often with cutting-edge tools, and are encouraged to develop creative solutions. By the time they exit their service – typically in their early to mid-20s – they have acquired the equivalent of years of high-level, high-tech experience.

Importantly, Israel does not restrict the use of non-classified intellectual property developed during military service. Alumni are free to draw on their ideas and networks when founding civilian ventures. This open intellectual property (IP) environment enhances the spillover potential and preserves the unit's collaborative culture.

Rethinking spillovers: From R&D to human capital circulation

The economic literature on defence spillovers has traditionally focused on the transfer of key military technologies to civilian applications – from radar to GPS to the internet. While these are highly significant cases, they are only part of the story. No less important are human capital spillovers, which unfold as individuals move from public service to private enterprise, carrying with them skills, tacit knowledge, and connections.

Saxenian (2006) coined the term 'brain circulation' to describe how mobility within innovation clusters like Silicon Valley has sustained the tremendous surge of technological creativity and entrepreneurship in those hubs. Israel's experience shows that military-to-civilian mobility can play a similar role. Europe could emulate this by designing military service as a high-skill, high-prestige pathway that feeds into its innovation ecosystem.

This would also support a key goal of the EU: improving labour mobility and integration across borders. A coordinated effort to develop shared training

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standards, modular career pathways, and inter-operable systems could make service in national forces part of a pan-European human capital strategy.

Designing for the long term: Avoiding premature obsolescence

Despite the mounting pressure to speed up Europe's defence build-up, there are good reasons to proceed with strategic patience. The US military footprint in Europe remains substantial – over 84,000 personnel across dozens of bases – and cannot be unwound overnight. Russia, though dangerous, has been weakened by the war in Ukraine and will require time to rebuild its offensive capabilities.

This gives Europe a few years to act wisely. A rushed procurement binge risks locking in legacy systems that might soon become technologically obsolete. The rapid pace of AI, autonomous platforms, and cyber systems requires flexibility and long-term planning. More importantly, the development of human capital – through education, training, and structured career trajectories – takes time.

Rather than a one-shot fiscal stimulus, Europe should thus commit to a gradual, sustained reallocation of fiscal resources towards defence, with an emphasis on talent development. This will not only enhance deterrence but also deliver long-term returns through increased productivity and innovation.

Coordination challenges and the role of economists

Building a coherent European defence strategy will also require solving collective action problems. Countries differ in geography, threat perception, and fiscal capacity. Free-riding is a persistent risk, as is fragmentation in procurement, command structures, and R&D priorities.

These are not just political challenges, but issues familiar to economists from other realms. Indeed, the provision of public goods, game theory, and institutional economics all offer insights into how to structure incentives, ensure burden-sharing, and enhance effectiveness in the context of a coordinated European defence strategy. Economists can also contribute to designing efficient procurement systems and evaluating the impact of human capital policies.

Conclusion: Seizing the strategic moment

More than a century ago, John Maynard Keynes warned of the dangers of mistaking temporary geopolitical stability for permanence. In *The Economic Consequences of the Peace* (1919), he described the illusion of a secure European order built on unstable foundations. That warning resonates again today.

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Europe must not only build anew its defence capabilities but must do so in a way that turns a dire geopolitical predicament into an opportunity. By treating human capital as a core component of its military strategy, Europe can strengthen its security in tandem with its economic renewal. Economists have a central role to play in this conversation—bringing tools, evidence, and historical awareness to ensure that Europe meets the moment wisely.

References

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