

the original Land Rover, for example, was initially designed as a vehicle to traverse farmland, but it was built on the chassis (and used the mechanical running gear) of a Jeep – a four-wheel drive car used by the United States Army in the Second World War. The Land Rover was subsequently developed for use in the British Army, and even the distinctive green paint used on the prototype derived from Royal Air Force surplus stocks. Other historical examples abound: the horseshoe, semaphore telegraph, radio, rocket propulsion technologies, jet engines and even the duffel coat, all bear dual-use hallmarks.

Yet the words ‘dual’ and ‘use’ do not sufficiently explain the complexity surrounding the interaction between the commercial and defence sectors. The only meaning contained in the two words is that ‘dual’ must refer to two constituent parts, actors or processes involved in the development of a product or service; whereas ‘use’ clearly refers to end-users and the purpose for which a product or service is to be employed. At face value, the term also loses the nuances involved in how dual-use technologies are produced. Such technologies are either ‘intrinsically dual-use’ (nuts, bolts, gaskets) or ‘dual-use after adaptation’ (GPS, vehicles, computer systems).

Even if dual-use is defined as the interaction of commercial/defence technologies for a given purpose, it is important to note that the commercial and defence spheres remain distinct. The civilian sector overwhelmingly operates on a commercial rationale whereby research, product design and production proceed on the basis of profit and market competition. For the defence sector, profit and competition are not the dominant (or only) factors. True, defence firms still pursue contracts on the basis of a market rationale (competition, innovation, marketing, etc.), but they must also take into consideration the strategic objectives of their most important, and unique, customers: governments and their armed services.

To talk of dual-use technologies as items that can be easily adapted or applied for the purposes of defence overlooks the sociological aspects of civil-military interaction. In many cases, commercial and defence actors must negotiate the terms on which a product and/or technology is developed based on factors such as commercial viability or

strategic relevance. This is especially so for dual-use items that must adapt to the demands of the military. Dual-use technologies may therefore eventually create an environment in which defence contractors engage in a more commercially-driven rationale for capability development, and commercial operators learn how to accommodate the needs of governments and their militaries.

The changing face of defence firms

The interface between civil and defence actors for the development of dual-use technologies is affecting European defence in three major ways.

The first effect is the increase in importance of the commercial sector relative to the European defence-industrial sector. SMEs that had previously operated solely in the commercial domain are increasingly looking to sell products to governments and militaries. In turn, governments are encouraging SMEs to bid for defence contracts. These same governments are also supporting SMEs, as crucial sources of innovation, to initiate dual-use R&D programmes under EU structural funds and the EU budget. Yet, the relevance of dual-use is not just influencing the types of contracts SMEs will bid for, as the growing significance of the commercial sector is also altering the business models of larger defence companies. Indeed, firms such as Airbus Group (formerly EADS) are

increasingly reliant on the success of their civil arm to remain internationally competitive.

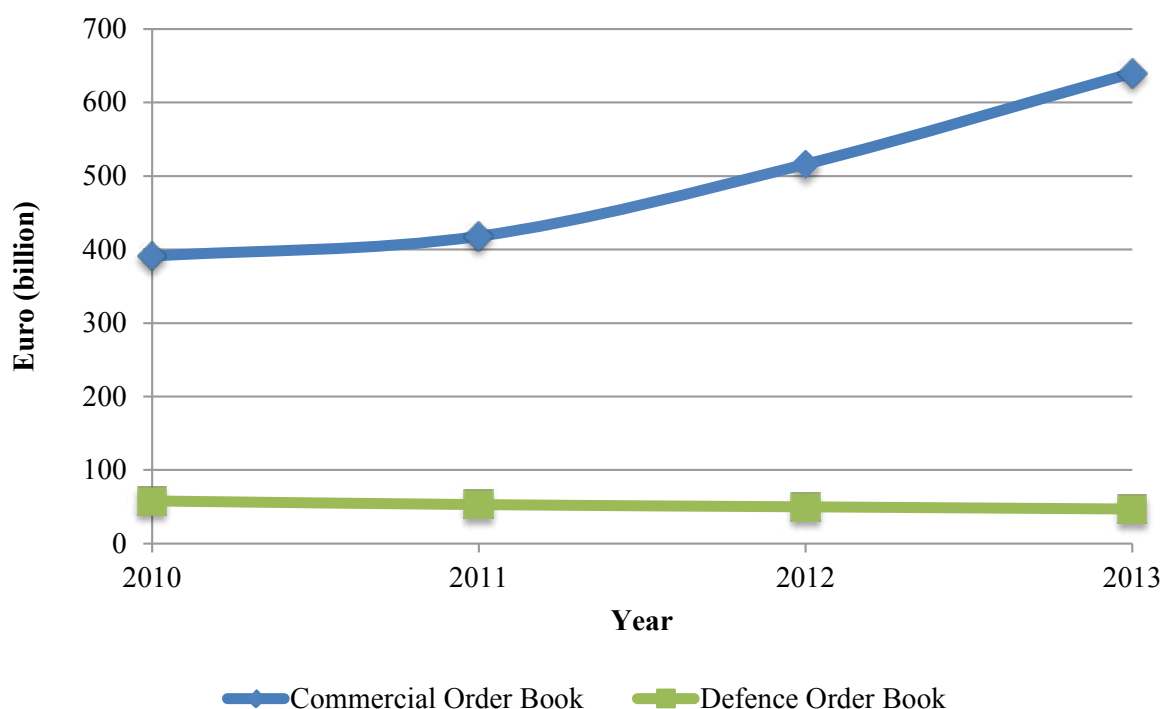
As the graph on page 3 shows, Airbus Group experienced an overall year-on-year increase in orders for the 2010-

2013 period. What is telling, however, is the gap between the commercial and defence order books. While the company’s commercial book increased 64% from €391 billion in 2010 to €640 billion in 2013, the defence book witnessed a 19% drop from €58 billion to €47 billion over the same time period. The same trends are also reflected in Airbus Group’s revenues: over the same three-year period, defence revenues stood at €12 billion, whereas commercial revenues experienced a 38% increase, rising from €34 billion to €47 billion.

With the defence arm of Airbus Group no longer as lucrative as it once was, the company’s civil arm now takes precedence. But this general trend

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Airbus Group order book totals (2010-2013) in Euro (billion)



Source: Airbus Group annual investor reports, various.

may potentially have two long-term effects. First, a prioritisation of commercial business (or a decision to leave the defence market altogether) may lead to defence-industrial and workforce redundancies. And with increasing numbers of firms betting on the success of their commercial business, defence ‘market consolidation’ may be achieved through the back door as firms leave the sector – though not all of the remaining dominant players will necessarily be European.

Second, this prioritising of commercial business could mean that high-tech solutions will nevertheless eventually find a way into the defence sector. In many cases, it is simply more cost effective for such firms to invest in civilian R&D efforts and to see what ‘spin-in’ products can be adapted for use by the defence sector, rather than to invest solely in defence-specific R&D programmes. Dual-use technologies allow a firm to sell to commercial and/or defence customers, and so shrinking defence budgets can be offset by increasing sales in the commercial sector. This is especially true in certain domains: surveillance, cyber, intelligence, electronics and IT systems are all witnessing commercial advances which benefit the defence sector.

For defence firms to take full advantage of this shift, however, healthy communication between the commercial and defence arms of a given firm developing defence-relevant technologies is paramount.

Capabilities for security and defence

The second effect of dual-use can be seen in the types of capabilities being developed for European security and defence. When looking at the range of security issues facing the EU – particularly in places such as Libya, the Sahel, the Horn of Africa, Syria, and possibly eastern Europe – it is evident that specific capabilities need to be developed. For example, addressing the flows of people, narcotics and arms traversing the Sahel requires surveillance technologies such as satellite imagery and communication. Yet, it is commercial rather than defence firms that are paving the way with these technologies in Europe. Since 2013, the EDA has been working with Astrium Services (of Airbus Group) to provide a pay-per-use system whereby EU governments can draw on commercial satellite communication capabilities for military communication, intelligence, surveillance and reconnaissance tasks. Making use of these capabilities costs governments roughly 20% less than if they were to develop their own systems.

Dual-use capabilities are also becoming increasingly important in the development of an EU Maritime Security Strategy, especially with regard to immigration, sea pollution and coastguard tasks. The March 2014 Joint Communication on the maritime strategy already points to the fact that Copernicus – the (civilian) European Earth Observation programme – is supporting the efforts of Frontex,

the European Maritime Safety Agency and the EU Satellite Centre to focus on space-based surveillance of the EU's surrounding waters. This is not in any way to diminish the continued importance of defence assets such as naval vessels and/or air capabilities, which are of course crucial elements of any maritime strategy. The point, however, is that tapping into dual-use technologies not only reduces costs, but also that, in many cases, commercially developed technology is simply more effective.

Another example of where dual-use technologies have added-value is in the domain of cybersecurity. Indeed, the very objective at the heart of the EU's Cyber Security Strategy – making sure the cyber sphere is 'open, safe and secure' for European citizens – lends itself to dual-use technologies. The cyber domain – despite being a vitally important defence matter – is one in which IT specialists and systems (rather than traditional military capabilities) often provide the answers. Yet again, this is not to diminish the importance of the defence sector: even if Remotely Piloted Aircraft Systems (RPAS) play a critical function in civil security (border surveillance, environmental protection and search and rescue), EU efforts to develop RPAS by 2020-2025 will build on technological advances already made in the defence sector.

By drawing on the commercial sector, the hope is that not only will the costs of providing security be reduced, but also that security and defence providers can tap into leading technologies. For example, key enabling technologies such as nanotechnologies/electronics, photonics and advanced materials and manufacturing technologies greatly improve the effectiveness of existing capabilities. There will then always be a need to have land, air and naval assets, but the onboard components of such capabilities increasingly derive from technological advances made in the commercial sector. It is for this reason that 'hybrid standards' have become crucial in efforts to ensure that defence and security actors can freely and effectively use commercially developed technologies.

Governance of Europe's defence industry

The third effect relates to designing and implementing a policy framework at an EU-level that effectively promotes dual-use technologies and supports the firms that produce them. Although there was a time when defence firms in Europe were overwhelmingly wedded to national governments and administrations, such firms are now decoupling from governments in search of a market framework that fosters certainty in procurement

procedures and helps facilitate international exports (this is especially true of SMEs). Large parts of the defence industry also increasingly look to the Commission as a market regulator, especially for those firms that place a greater emphasis on commercial activities. As dual-use technologies are blurring the line between the commercial and defence sectors, the Commission finds itself in the fortunate position of being able to use internal market policies and financing mechanisms (from the civilian sector) to increasingly shape defence markets for the benefit of SMEs. In this respect, defence firms may now need the Commission more than ever before.

Yet there are important restrictions on the role that the European Commission can play in the European defence-industrial sector. As the EU treaties stand, defence-industrial matters are still overwhelmingly treated as an intergovernmental domain, even if the defence sector is increasingly enmeshed with the internal market. Indeed, the Commission can challenge the member states' recourse to Article 346 TFEU (this provides the member states with a derogation from internal market rules for defence goods on the basis of national security), and it is the steward of the Directives on intra-EU transfers and defence procurement. Even if the EU's structural funds and budget cannot be used to fund purely defence initiatives and projects, the growing importance of these instruments – and the support they can lend to developing dual-use technologies – makes the Commission, along with the EDA, an even more crucial interlocutor for industry.

All of this is to say that the governance of the European defence-industrial sector is evolving with technological developments. Dual-use is a product of technological change, of the quest for cost effectiveness and human necessity, which in turn responds to an evolving defence and security landscape. However, these important developments are raising serious questions about how firms and policy institutions can ensure the effective translation of commercial technologies into usable defence and security capabilities. There is no doubt that technological developments are leading to a change in the structure of defence markets in Europe. This is already occurring *within* defence firms. However, the changing face of these firms and the capabilities they develop will no doubt give food for thought about how EU policies can best respond to – and capitalise on – the challenges and opportunities embodied in dual-use technologies.

Daniel Fiott is an Associate Analyst at the EUISS.

