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THE EUROPEAN DEFENCE FUND

A Game Changer for European Defence Industrial Collaboration

By

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*The information and views set out in this article are those of the author alone
and do not necessarily reflect the official opinion of the European Commission.*

Policy Paper

ABSTRACT

The European defence industry and market remain highly fragmented along national borders. A decade of reductions in the defence spending of the Member States of the European Union (EU), in particular as regards research and development (R&D), has nevertheless failed to bring progress in increasing the levels of cross-border collaboration. Despite budget pressure, collaborative procurement and research expenditure levels remain low and far below the targets set. Cost escalation is at the same time increasingly putting the development of new major defence systems beyond the individual funding capacity of even the largest EU Member States. Such a situation is not sustainable and challenges the capacity of the European defence industry to compete in the medium and long-term. This article will first assess such key challenges faced by the European defence industry. It will then analyse the response recently brought up by the EU Institutions through the establishment of the European Defence Fund (EDF) and look into the Fund's prospects of becoming a genuine game changer by effectively incentivising defence collaborative projects and opening the defence industries supply chains in Europe.

Keywords: *defence industry, collaboration, research and development, European Defence Fund, European Union.*

INTRODUCTION

The European defence industry counts amongst the most technologically advanced defence industries in the world. According to the AeroSpace and Defence Industries Association of Europe (ASD)¹, in 2016 it employed almost 450,000 persons and generated an annual turnover of approximately EUR 90 billion.

24 defence companies from Member States of the European Union (EU) are present on the SIPRI top 100 largest arms-producing and military services companies list for 2017, with arms sales representing almost a quarter of the total arms sales realised by the top 100 companies. This performance is second only to companies from the United States (US), who dominate the top 100 list. Also, according to SIPRI data *“the combined arms exports by European Union (EU) member states accounted for 27 per cent of the global total in 2014–18”*². Here again the EU defence industry ranks second after the US (36% share) and before Russia whose share is 21%.

The EU defence industry however operates under conditions and faces challenges that question the sustainability of its current level of performance in the medium and long terms. Section 2 below will look at the conjunction of negative trends affecting defence spending in the EU, in particular as regards defence Research and Development (R&D) expenditures, with the continuous increase in the unit costs of defence systems and equipment. Section 3 will demonstrate that despite the challenges resulting from the trends outlined in section 2, the EU defence industry and markets remain highly fragmented along national borders with levels of cross-border collaboration that are very low and way below the targets set. The resulting wasteful duplications and inefficiencies are no longer sustainable and question the capacity of the EU defence industry to maintain its competitiveness and to deliver the next generation of high-end defence systems. Finally, section 4 will look at the response recently brought forward by the EU institutions through the establishment of a European Defence Fund to provide financial support for collaborative defence R&D projects from the budget of the Union. The section will particularly look into the Fund’s prospects of becoming a genuine game changer by effectively incentivising defence collaborative projects and opening the defence industries supply chains in Europe.

¹ ASD (2017).

² SIPRI (2019), p.5.

A DIFFICULT CONTEXT: DEFENCE SPENDING CUTS AGAINST RAISING COSTS

Defence spending by EU Member States has been affected by significant cuts over the last ten to fifteen years. According to the data published by the European Defence Agency (EDA)³, real defence expenditures by EU Member States⁴ fell by approximately by 12% between 2006 and 2013. Despite an upward trend since 2015, the estimated level of real defence expenditures for 2017 is still below the levels of the 2005-2009 period.

The different components of total defence expenditures are however not identically affected. Nominal defence procurement expenditures continued to follow a slight upward trend between 2006 and 2010 before abruptly decreasing from EUR 34.3 billion to EUR 25.9 billion in 2014, and they have been increasing again since 2015.

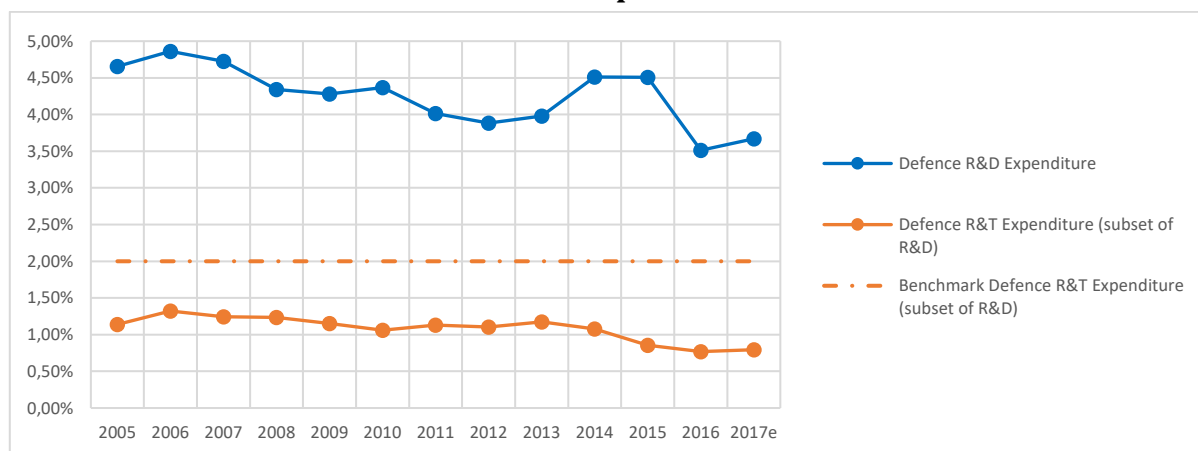
The most negative trends are however found in relation to defence Research and Development (R&D) expenditures. Graph 1 shows the spending on defence R&D and on defence Research and Technology (R&T being a subset of R&D) by EU Member States as a percentage of their total defence expenditures. It shows an overall downward trend over the 2005-2017 period. By the end of the period, defence R&D expenditures represent slightly more than 3.5% of total defence spending against almost 5% in 2006. Despite the increase in overall defence spending over the last three years, spending on defence R&T is falling in both absolute value and as a percentage of total defence spending. Its share is currently well below 1%, the lowest level reached over the entire period being 0.77% in 2016. Such trends and levels represent a failure to near the 2% share collective benchmark agreed at the EDA's Ministerial Steering Board in November 2007, and subsequently integrated in the binding commitments undertaken by EU Member States in the framework of the Permanent Structured Cooperation (PESCO)⁵ launched in December 2017.

³ EDA (2018a).

⁴ Data made available by the EDA does not include figures for Denmark, which does not take part in the EDA. We will use the data on the EDA-27 Member States as a proxy for the European Union.

⁵ PESCO is a framework for reinforced defence cooperation in the EU framework. 25 EU Member States currently participate in PESCO. More information can be found on the dedicated website <https://pesco.europa.eu/>.

Figure 1: Defence R&D and R&T by EU Member States as percentage of total defence expenditure



Source: EDA (2018b); (EDA 2018a) for data for R&T expenditures for 2015-2017e⁶.
Data for 2017 is an estimate.

While the EU defence industry remains highly competitive today, its success is to a large extent rooted in technologies developed over the past decades. The above trends are a challenge for its future capacity to develop cutting-edge defence technologies and to successfully strive in a global market that is becoming increasingly competitive. The inherent risks of a lasting deficit in defence R&D also go far beyond the issues of industrial competitiveness and touch at the very core of the security of the EU and of its Member States. Defence R&D, with its R&T component deserving a particular emphasis, is a key enabler of the future capacity of EU armed forces to match or outperform the capabilities of potential adversaries, to provide an effective answer to new emerging threats and to ensure their capacity to act together. The security consequences of a failure to achieve this would be disastrous, particularly when emerging developments in fields such as cyber or artificial intelligence have the clear potential of causing a revolution in defence technologies.

Moreover, the negative impact of cuts in R&D spending may not be linear: critical mass effects are also potentially at play rendering limited investments ineffective. Setter and Tishler (2006) demonstrate this in the case of integrative technologies⁷. They show that below a certain threshold “it is not optimal to invest any money”⁸. When such critical mass effects are present, the technologies affected can only be effectively developed and

⁶ The most recent data available is contained in EDA (2018b). However, data for defence R&T expenditures for years 2015-2017 is not provided in this source because of confidentiality. We have therefore used data previously made public in EDA (2018a) for these years.

⁷ Integrative technologies encompass “the information and communication technologies that enable separate individual systems to work in a joint, coordinated, and synergistic fashion as a single system” (Setter and Tishler (2006), p. 134).

⁸ Setter and Tishler, (2006), p.150.

deployed by States that can afford the necessary critical investment levels, which is not necessarily the case for many EU Member States taken separately.

Fragmentation of defence R&T also leads to underinvesting in disruptive technologies, which are key for the superiority of armed forces. Considering the level of risk involved and the limited scale of most Member States' defence R&T budgets, priority is usually given to capability driven research instead of disruptive research. The potential negative effects of underinvestment in disruptive defence research can even reach beyond the defence sector as such: because of its strong focus on the pursuit of technological superiority and lesser attention given to short term profitability, such activities can also be at the origin of major technological breakthroughs with important spin-off effects in the civil economy.

In the defence sector, private investments cannot be expected to compensate for limited public spending. Demand comes almost exclusively from State clients. The industry is subject to strict regulation by the host State, which also controls sales and technology transfers outside of its territory. Unlike civil industries, the defence industry cannot rely on the possibility to freely address a large pool of independent customers in order to recover R&D investments. Self-funded R&D will thus remain very limited and investment in R&D will be driven by public spending⁹. Low public defence R&D spending thus represents a genuine threat to the innovative capacity and future competitiveness of the EU defence industry. This challenge is further magnified by the well-documented long-term trend of cost escalation that affects defence equipment.

Defence equipment unit costs' growth rates substantially exceed general inflation levels. The available literature provides strong empirical evidence of this trend, with estimates often showing cost escalation rates over 5% or even 10% per year in real terms¹⁰.

Defence equipment cost escalation is a long-term structural trend. It is particularly linked to the acute technological competition and to the key importance of relative performance in defence ("tournament good") which is a distinguishing feature compared to most civil activities. As a result, innovation needs to take place at the technology frontier resulting in high cost and risk levels. Raising costs reduce the purchase power of defence budgets

⁹ "The defence market is unique and does not follow the conventional rules and business models that govern more traditional markets, such as those for consumer goods. A clear example is that the prevailing worldwide model of product development for large defence systems involves national governments funding almost 100% of the R&T costs" (EUISS and European Commission (2016), p.43). Moura (2011) assesses the origin of R&D funding of French companies and shows that State funding is significantly more important for companies who receive defence State R&D funding (37% against 8% for all enterprises performing R&D) while their level of self-funding is much lower (20% against 73%).

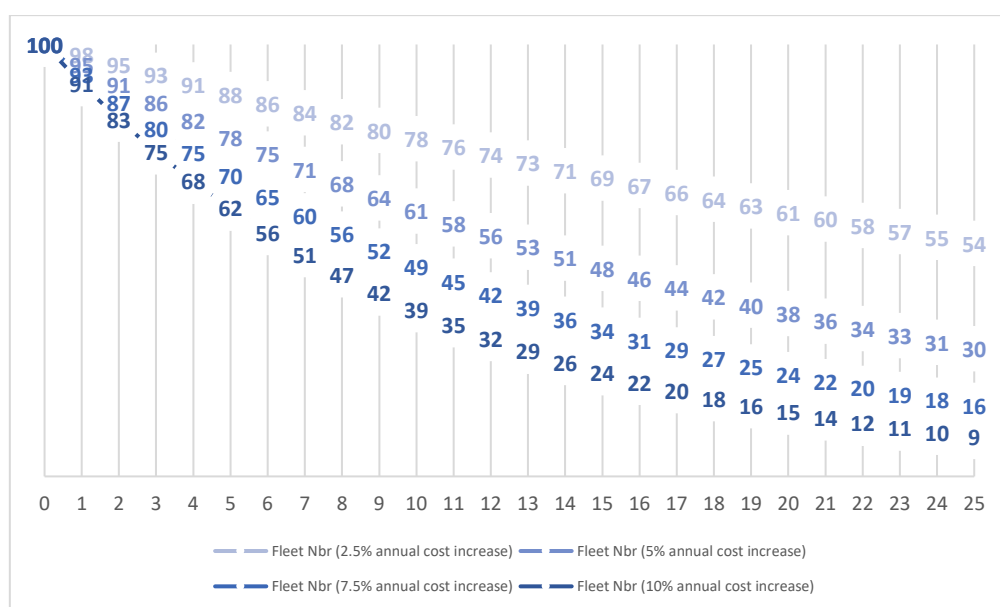
¹⁰ Estimates can vary across studies and equipment categories. For more information see in particular Kirkpatrick (1995) and (2004); Pugh (1986), (1993) and (2009); Arena et al. (2006a) and (2006b), Arena et al. (2008), Hove and Lillekvelland (2016); and Nordlund (2016).

leading to larger time spams between development projects, making the necessary leap forward even greater, and further increasing costs¹¹.

Cost escalation has major impacts on both armed forces and defence industries. As noted by Pugh (1993), “... the resulting rate of cost escalation, being much faster than any peacetime budget growth (or decline), has been the primary determinant (via changing ratios of budget to unit costs) of the numbers and types of equipment procured and, thence, of both military and industrial roles and structures”¹².

Figure 2 provides a simple illustration. It depicts the number of equipment units that a constant budget (adjusted for general inflation level) can purchase over time considering cost escalation. It starts from an initial situation in year 0 where a fleet of 100 units can be procured and shows the variation in the affordable fleet size over 25 years for four levels of real unit cost escalation. The real estimates of unit cost escalation can vary significantly across studies and across weapon system categories. The four levels used in Figure 2 are consistent with different estimates that can be found in the relevant literature. They are used here to illustrate the general impact of defence equipment cost escalation.

Figure 2 – Effects of defence cost escalation on budget purchase power: number of fleet units a constant budget¹³ can buy for different levels of annual cost escalation



The consequences are immediately visible. If a fleet has to be replaced after 25 years, even with a mild 2.5%, annual cost escalation a constant budget will only be able to afford

¹¹ Hove and Lillekvelland (2016).

¹² Pugh (1993), p. 179.

¹³ Adjusted for general inflation level.

approximately half of original number of units. With an annual cost escalation of 5%, the affordable fleet numbers will be cut by half in less than 15 years. With a 10% increase rate, this will take slightly more than 7 years. Alternatively, the original size could only be maintained if budget means are reallocated to a specific type of equipment at the expense of the procurement of other defence systems. The above provides a clear illustration of the crucial impact that cost escalation has on the number and type of defence equipment procured. The unavoidable reduction in the length of the series produced implies also lower economies of scale and, as previously noted, less frequent development programmes. In a vicious circle this further exacerbates the cost escalation.

In addition to the fact that costs are increasing, the weight of R&D costs in relation to recurring costs is considered as being significantly higher on average in the defence sector than in civil ones¹⁴.

The factors described above jointly concur in creating a situation where it becomes increasingly difficult for individual EU Member States to launch major defence R&D projects and to develop, on a national basis, the next generations of major defence systems. With raising costs, cuts in spending, and a high magnitude of R&D costs, the key future defence programmes are increasingly beyond the funding capacity of individual EU Member States.

This challenge is not a new one, and the risks for the industry had already been clearly noted over ten years ago: "*static defence budgets and low equipment spending means that a competitive defence industry is not sustainable on a national basis anymore*"¹⁵. An obvious response is to reinforce cross-border collaboration in the EU. As the next section will however demonstrate, no progress has been made in this respect.

LACK OF COLLABORATION AND FRAGMENTATION ALONG NATIONAL BORDERS

Collaborative defence programmes allow sharing the R&D costs and overcoming the budgetary constraints binding at national level. Collaboration will also reduce fragmentation and would be expected to achieve higher production volumes and economies of scale and learning (see examples provided later in section 3). Further improvement in efficiency can be expected from pooling the experiences of partners from different countries, in particular when the division of work is based on their comparative strengths and capabilities. It can also help overcome the constraints resulting from the

¹⁴ European Parliament (2016), p. 33.

¹⁵ EUISS (2007).

existence of critical mass investment effects as mentioned in section 2. Finally, collaborative programmes improve interoperability and enable further substantial savings if collaboration is pursued in later life cycle stages such as maintenance, repair and overhaul.

Experience with past defence collaborative programmes in Europe has also shown that certain factors can lead to cost increases and delays and diminish the net benefits of collaboration. Such negative factors include notably the following: additional transactions costs, including as a result of an increased complexity of programmes' governance; lack of clear industrial leadership by one main system integrator; difficulty for participating Member States to agree on common requirements and development of different versions with limited degree of commonality; lack of synchronisation of the budgetary procedures of participating Member States¹⁶, absence of common defence planning and non-alignment of capability procurement calendars; reliance on "juste retour" practices with allocation of workshares between partners based on the corresponding financial contributions (also often involving political bargaining over work allocation) leading to outcomes not based on efficiency or experience, inducing additional costs and maintaining some level of duplication¹⁷.

It is however important to stress that most of the elements listed above are not intrinsically and inextricably linked to collaborative programmes but rather pertain to particular modalities through which such programmes have been implemented. As such, they are avoidable if more efficient implementation modes are implemented, and this should be one of the focus points for policy development in the future¹⁸.

Existing literature is also not really conclusive on collaborative projects experiencing higher costs and delays than national ones. First, there is never a possibility to compare absolutely identical projects developed nationally and in collaboration. Second, comparisons of samples of projects do not necessarily demonstrate that national ones are systematically less affected by cost overruns and delays. These phenomena are frequent in defence programmes and affect both national and collaborative projects¹⁹.

¹⁶ This has led on some occasion to situations where some Member States had to provide advances on behalf of other participants who faced difficulties and delays with national budget approval (EUISS 2007).

¹⁷ The Eurofighter Typhoon for instance has four separate assembly lines (Hartley 2008).

¹⁸ EUISS (2007) for instance provides a rich collection of examples and lessons learned from past collaborative programmes.

¹⁹ Hartley (2008) shows that the Eurofighter Typhoon's cost and time escalation is not abnormal in comparison with other contemporary national defence projects. Looking at a sample of projects Hartley (2018) concludes that it shows "national projects with higher cost increases compared with collaborative projects and similar delays". Heuninckx (2008) observes that once collaborative defence procurement has been launched the cost overruns and delays of collaborative projects and similar national projects appear comparable.

What is nevertheless certain is that even if collaborative projects may incur additional costs, notably because of more complex governance structures and of the additional transactions costs needed to support collaboration, the sharing of the R&D that they enable results in a financial burden falling on each separate participant that is significantly lower than for an equivalent national project²⁰. Collaboration generates budgetary savings for the participating states and enables the realisation of projects that are not affordable at a national level.

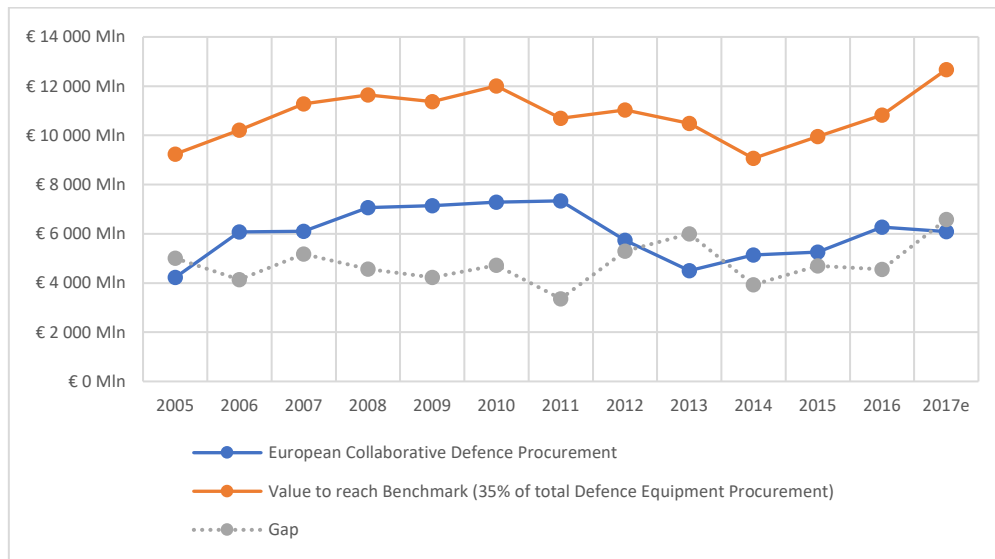
European defence industrial collaboration nevertheless remains extremely limited and far from the benchmarks that EU Member States have agreed upon in 2007. Two of these explicitly target EU defence collaborative spending:

- European collaborative defence procurement should reach 35% of total defence procurement
- European collaborative R&T should reach 20% of total defence R&T

Figure 3 provides a comparison between the actual level of European collaborative defence procurement expenditure and the level required to reach the 35% benchmark. The dotted line corresponds to the resulting gap in European collaborative defence procurement. The data shows no positive trend. Falling levels of defence spending have limited the resources available to launch new programmes and Member States have often prioritised the short-term objective of supporting their industries through national spending. After 2014, procurement expenditures went up, increasing significantly faster than their European collaborative component, and leading to an increase in the value of the gap. The latter is expected to reach a record value of more than EUR 6.5 billion in 2017. The fact that launching new collaborative programmes is a lengthy and complex process, and even more so in the absence of dedicated financial incentives, may also be a relevant factor.

²⁰ See for instance Hartley (1993), Cour des Comptes (2018).

Figure 3 – European Collaborative defence procurement

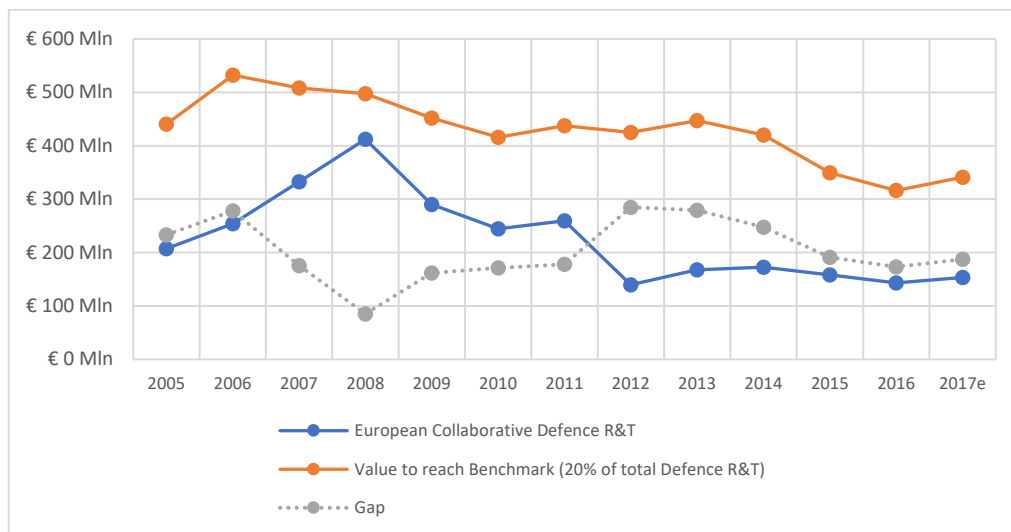


Source: EDA (2018b). Data for 2017 is an estimate.

No benchmark for collaborative European defence development has been defined, and no corresponding data is currently available. It is nevertheless reasonable to expect that collaborative development will be followed by collaborative procurement with a certain time lag, particularly considering that an exception from the EU defence procurement rules is made for collaborative projects based on R&D, and that this exception applies to the entire lifecycle of the programme as long as procurement remains in the collaborative framework. The gap in collaborative procurement thus also implies low levels of collaboration in the development phase and the existence of an implicit European collaborative development gap²¹.

²¹ Mauro (2017).

Figure 4 – European Collaborative Defence R&T



Source: Source: EDA (2018b); (EDA 2018a) for data for European collaborative R&T expenditures for 2015-2017e. Data for 2017 is an estimate.

Figure 4 shows that a very significant gap is also present with relation to European collaborative defence R&T. The reduction in the gap since 2013 is not really the result of any significant raise in the actual value of collaborative R&T, but is rather the consequence of the decrease in the absolute value of non-collaborative R&T.

With low levels of collaboration, European defence markets are characterised by strong fragmentation along national borders and by high levels of duplication. EU Member States spend approximately four times less on defence equipment procurement and seven times less on defence R&D than the US²². The number of defence systems and platforms in production in Europe is however 36, while only 11 are in production in the US²³. In the land segment, the corresponding figures are 17 against 2, with 11 infantry vehicles and personnel carriers in production in Europe²⁴.

Fragmentation of demand is reflected by fragmentation of supply with “many but small producers which are specialized in similar areas but do not compete against each other for the first production lot due to markets with high barrier for non-domestic suppliers”²⁵. Dependence on national markets is high. A study²⁶ covering 32 major European companies found that a vast majority of 20 companies exhibits domestic sales shares varying between 20% and 50%, while for five of the companies the share exceeded 50%.

²² EDA (2013). See also Bellais (2018).

²³ Briani (2013).

²⁴ Ibid.

²⁵ European Parliament (2013) p.47.

²⁶ Masson (2015).

This is particularly problematic in view of the importance of economies of scale and learning in the defence sector. The cost reductions that can be achieved by increased productions levels are very substantial with estimates pointing at potential savings of 10 to 20%²⁷. With the current fragmentation levels in Europe, production scales remain very limited and represent a competitive disadvantage for EU producers, in particular in comparison with US competitors.

The European Commission (2018) provides a simple illustration by looking at the R&D costs of the three European combat aircrafts: the Eurofighter Typhoon, the Rafale and the Gripen. It shows that *“if only one of the three above-mentioned European aircrafts had been developed and had realised sales equivalent to those of the existing three programmes, the R&D cost per unit produced could have been reduced by 41 to 76%. This very simple comparison only takes account of the distribution of R&D costs over a larger production scale, but ignores the effects of the other sources of economies of scale and learning”*²⁸. The Cour des Comptes (2018) provides data for several collaborative programmes showing increases in unit costs ranging between 26% and 44% following reductions in the number of units procured under these programmes.

Even the formation of large international groups resulting from major cross-border mergers and acquisitions have not necessarily resulted in genuine industrial consolidation; Bellais & Droff (2013) argue that in many cases it has rather resulted in the emergence of “multi-domestic” companies.

European defence industry supply chains are also fragmented along national borders. Built predominantly on a national basis, supply chains exhibit limited levels of cross-border access, particularly in the EU Member States hosting the largest industrial players. Dependence on defence markets has been shown to negatively affect the propensity of industrial players to rely on foreign suppliers. Oudot (2017) shows that large French systems integrators entirely specialised in defence resort to domestic suppliers on average for 90% of their purchases, while for groups with dual specialisation the corresponding ratio is approximately 60%. Evidence of the existence of resilient barriers to the establishment of efficient cross-border industrial partnerships in the defence sector has also been derived from the study of defence offsets²⁹.

Past collaborative programmes also did not break up the domestic bias in supply chain management. The main reason for this is the allocation of work shares between participating countries based on their corresponding financial contributions rather than

²⁷ See for instance McKinsey (2013), National Audit Office (2001), Hartley (2006).

²⁸ European Commission (2018), p.15.

²⁹ Ianakiev (2005), Ianakiev & Mladenov (2008) and Ianakiev (2014).

on efficiency and competitiveness. The widespread reliance on such “juste retour” practices has effectively limited the potential benefits that collaborative defence programmes could bring in terms of efficiency gains and cost savings. It has also prevented a genuine opening of the supply chains with cross-border engagement remaining at best marginal, even when the use of slightly more flexible concepts such as the Global balance was attempted³⁰. Data for defence programmes managed by the Organisation for Joint Armament Cooperation (OCCAR)³¹ demonstrates the limited cross-border engagement in collaborative defence programmes: only 5.6% of the value of the work performed was cross-border, 2.4% between the 12 States participating in OCCAR programmes and 3.2% going to other States³².

Lack of collaboration, fragmentation along national borders and lack of cross-border collaboration in the defence industry supply chains are a serious challenge for the future competitiveness of the European defence industry and its capacity to develop the next generation of defence systems that will be needed in an increasingly challenging geopolitical context. The current trends are no longer sustainable, and the European defence industry can no longer afford the existing levels of fragmentation and the scale of efficiency gains foregone through wasteful duplications, incapacity to tap on scale and learning economies, and exclusion of efficient or innovative partners or suppliers because of a strong domestic bias. The EU defence industry is at a crossroads and only a strong and prompt response could break with past trends. The establishment of the European Defence Fund represents the latest ambitious attempt at providing such a response.

THE EUROPEAN DEFENCE FUND: A GAME CHANGER?

The idea of mobilising the budget of the European Union to support collaborative defence R&D through the establishment of a European Defence Fund (EDF) was mentioned for the first time by President of the European Commission Jean-Claude Juncker in his 2016 State of the Union speech. The European institutions immediately followed on the announcement by implementing precursor funding programmes with limited budgets under the 2014-2020 EU Multiannual Financial Framework (MFF) and by presenting a legislative proposal for an ambitious European Defence Fund for the 2021-2027 MFF with a budget of EUR 13 billion for the seven-year period.

³⁰ Unlike strict “juste retour”, the global “global balance” concept of the OCCAR does not pursue an equivalence between national cost and work shares on a programme by programme basis but rather a general equilibrium over the full basket of programmes managed by the organisation.

³¹ The data is based on OCCAR Global Balance data collection and covers contracts with a value of EUR 57.7 Billion.

³² European Commission (2018).

The two precursor funding programmes include the Preparatory Action on Defence Research (PADR), which supports collaborative defence R&T projects with a limited total budget of EUR 90 million for 2017-2019, and the European Defence Industrial Development Programme (EDIDP), which supports collaborative development projects with an overall budget of EUR 500 million for 2019-2020.

The EDF is not the first initiative at the EU level aimed at promoting enhanced cross-border collaboration in the defence sector. The Defence Package proposed by the European Commission in 2007 has led to the adoption of two important regulatory instruments including provisions to support collaboration. The EU Defence Procurement Directive³³ adopted in 2009 provides flexibility for defence R&D and collaboration, and includes in particular an exception from the public procurement rules for collaborative defence programmes based on R&D³⁴. The EU Defence Transfers Directive³⁵ adopted the same year aims at facilitating intra-EU transfers of defence products, including facilitating cross-border industrial collaboration. The promotion of defence collaboration in the EU, including in the field of defence R&D, is also one of the tasks of the European Defence Agency (EDA) established in 2004. However, as shown in section 3, these instruments have not been sufficient to trigger an effective increase in collaboration over the past decade.

The introduction of the EDF is an unprecedented initiative as it represents the first use of the budget of the European Union to support defence R&D activities. It will rely on financial incentives rather than on regulation to support collaborative defence R&D in Europe.

With the proposed EUR 13 billion budget for 2021-2027, the EDF has the potential to become a game changer. On average EUR 1.86 billion from the EU budget will be spent annually on defence R&D in addition to the spending of the EU Member States, divided in EUR 585.7 million for R&T and EUR 1.27 billion for development.

Figure 5 illustrates the share that the EDF annual spending will have compared to the levels of defence R&D expenditures by EU Member States in 2016³⁶. The United Kingdom,

³³ Directive 2009/81/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of procedures for the award of certain works contracts, supply contracts and service contracts by contracting authorities or entities in the fields of defence and security, and amending Directives 2004/17/EC and 2004/18/EC; <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02009L0081-20180101>.

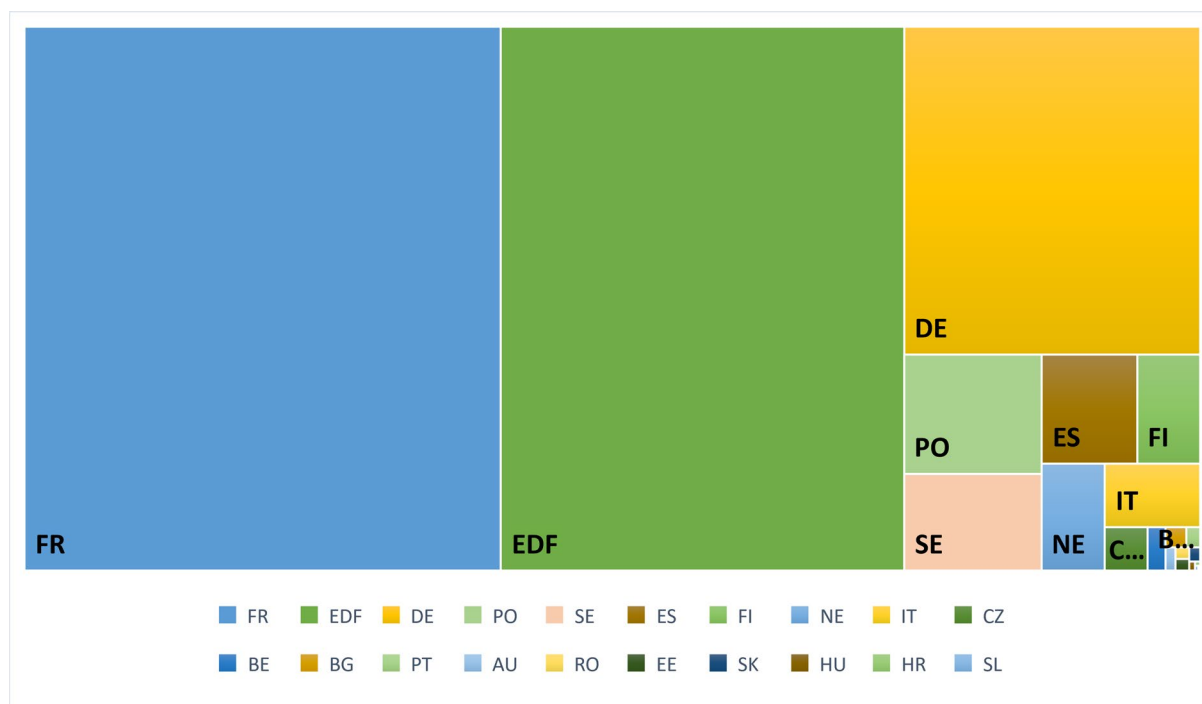
³⁴ For more details on EU defence procurement rules and collaborative procurement see the recently adopted Commission notice on guidance on cooperative procurement in the fields of defence and security (Defence and Security Procurement Directive 2009/81/EC); <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C.2019.157.01.0001.01.ENG&toc=OJ:C:2019:157:TOC>.

³⁵ Directive 2009/43/EC of the European Parliament and of the Council of 6 May 2009 simplifying terms and conditions of transfers of defence-related products within the Community; <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CONSLEG:2009L0043:20120413>.

³⁶ The latest data available from the EDA is for 2016, only estimates are available for 2017.

which is expected to leave the EU before 2021, has been excluded from the figure. The magnitude of the financial intervention of the EDF is immediately visible. The Fund will account for approximately one third of the overall defence R&D expenditures in the EU³⁷. Its share will be second only to France's, and it will exceed the combined defence R&D spending of all remaining EU Member States.

Figure 5 – Proposed EDF budget and EU Member States' defence R&D spending



*Source: EDA defence data for defence R&D spending by EU Member States in 2016 (EDA 2018b).
European Commission (2018) for proposed EDF budget.*

Looking separately at R&T and at development does not show significant differences in the estimated share of the EDF funding, the latter being close to one third for both components. There is nevertheless one important difference. As regards R&T, the Fund can finance 100% of the eligible costs of supported projects. In the development phase it will however provide co-financing, the remaining funding being expected to come mainly from the EU Member States.

The EU funding rate for development projects can vary between 20% and 100% of the eligible costs depending on the particular phase that is supported and on the applicability

³⁷ The calculations presented in this section are dependent on the choice of 2016 as a point of comparison. For instance, differences exist between the figures presented here and similar calculations performed in the Impact Assessment of the European Commission (European Commission 2018), which relied on data for 2014 (which was the most recent data available at the moment when the impact assessment was drafted). The comparison with data for 2016 of course also does not take into account the changes in EU Member States' spending levels over the period when the EDF will be effectively implemented (2021-2027). No reliable forecast is however available to our knowledge limiting the possibilities to use an alternative approach.

of funding rate bonuses. For a yearly investment of EUR 1.27 billion from the EU budget, the amount of the necessary co-funding will range between 0 and more than EUR 5 billion. The EDF has thus the potential to also structure and guide a very significant part of the defence development spending of the Member States. The availability of this co-funding may also become a constraint for the spending of the Fund's budget unless the average EU funding rate is high. For example, using the data for 2016, for an average EU funding rate of 70% almost half of the overall EU defence development spending (EDF and Member States) would go to projects supported by the Fund. Approximately 23% of the Member States defence development expenditures would need to be dedicated to the co-financing of these projects. Together with the fact that the EDF funding comes from the EU budget, which has never been used for this purpose before, this will also limit significantly the risks that EDF funding crowds-out national spending.

Another key element is that the EDF will only support collaborative defence R&D projects³⁸. This will immediately and substantially impact the levels of European collaborative defence R&D spending. While no data is available for collaborative development, the overall share of European collaborative defence R&T would exceed 41%. The provision of substantial financial incentives from the EU budget combined with still depressed levels of defence R&D spending at national level can be expected to produce a powerful drive towards collaborative projects. At the same time, it may become more difficult to secure the necessary political agreement at the level of individual Member States to initiate national projects that would duplicate collaborative projects already supported through the EDF (compared to what is necessary to duplicate another national project). Considering the extreme levels of fragmentation currently present, the EDF has the potential of triggering a significant positive change having in mind the magnitude of the financial means that will be deployed.

The implementation modalities and specific provisions embedded in the Fund's legal base can also play a role in reducing the impact or overcoming some of the factors that have negatively affected past collaborative programmes (see section 3).

First, the Fund does not only support cross-border collaboration at the top of the supply chain, but also includes incentives for cross-border engagement at lower tiers. Two main mechanisms are foreseen. First, a dedicated award criterion that will provide an advantage to projects with higher levels of participation of small and medium-sized enterprises (SMEs)³⁹ and middle-capitalisation companies (mid-caps)⁴⁰, and in particular

³⁸ For projects to be eligible, they need to be undertaken in cooperation within a consortium of at least three eligible entities which are established in at least three different Member States.

³⁹ Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003H0361>

⁴⁰ Up to 3000 personnel.

of cross-border ones, in the process of evaluating the proposals submitted under competitive calls. Second, an EU funding rate bonus for projects with higher participation of SMEs and mid-caps, introducing in particular strong financial incentives for the inclusion of cross-border SMEs.

Such an approach is at odds with strict “juste retour” work allocation systems often used in defence collaborative programmes and which would generally limit to an absolute minimum the work allocated to companies from countries other than those funding the programme. It also provides a partial answer to another specific issue.

Previous research on defence offsets has pointed out the existence of strong barriers to the establishment of cross-border industrial partnerships in the defence industry in Europe and has argued that protectionist measures only partially explain these obstacles (Ianakiev & Mladenov 2008; Ianakiev 2005 & 2014)⁴¹. It has argued that additional non-regulatory barriers are also at play in the form of supplier search and switching costs.

The presence of supplier search and switching costs implies in particular that research for new suppliers will be limited to cases where the expected gains of the search would clearly outweigh the search and switching costs⁴². Starting from a situation where supply chains have been built on a national basis, shifts in the international division of work will then be further hampered by supplier search and switching costs. Relaxation of national protection measures will not necessarily lead to a reallocation of work to foreign suppliers even if those are more efficient in absolute terms: past protection has a hysteresis effect and continues to produce effects even when market openness increases.

In light of this, the introduction of incentives for cross-border participation in projects supported by the EDF will modify the willingness of system integrators to search for new suppliers, the impact of the search and switching costs being implicitly reduced.

The European Defence Fund also explicitly tackles the issue of collaborative projects not based on common requirements and technical specifications. Such a situation results in the multiplication of national versions, limits the efficiency gains of collaboration and the achievable economies of scale and learning, inflates costs and hampers interoperability. For instance, in the Tiger helicopter programme, two substantially different versions were developed respectively on French and German specifications⁴³. The NH-90

⁴¹ The starting point of this analysis is in particular evidence from the economic literature on offsets showing that offset obligations can lead to the discovery, by the exporting system integrators, of new partners or suppliers in the importing country that are more efficient than incumbent ones and with which sustainable working relations can be established.

⁴² Ianakiev (2005).

⁴³ European Union Institute for Security Studies (2007). According to the same source, UK's withdrawal from the Horizon frigate project was at least partially motivated by the impossibility to agree to common specifications with the other participating Member States. The same factor also played a role in France not participating in the Eurofighter Typhoon combat aircraft.

helicopter has 22 versions and 60 standards thus significantly reducing the benefits of collaboration⁴⁴. To limit this type of issues, the legal base of the European Defence Fund requires development projects beyond the feasibility study stage to be based on common requirements or common technical specifications in order to be eligible for funding.

The provision of funding by the EDF will not completely solve the obstacles stemming from the lack of synchronisation of the budgetary procedures of EU Member States but may still alleviate them to a certain degree, notably through the provision of pre-financing that can represent a sizeable proportion of the total value of the grant awarded to a project^{45 46}.

Finally, every year calls for proposals will be launched under the EDF based on a work programme adopted by the European Commission with the approval of a Committee of representatives of the EU Member States. Every call targeting a specific type of technology or system will need to be foreseen in the work programme for a specific year thus providing a chance to secure EU funding. This should motivate EU Member States to work towards overcoming potential divergences of defence planning and lack of synchronisation of capability procurement policies and calendars which in past have also happened to limit or prevent the possibilities for collaboration⁴⁷. In this respect the EDF will also be complementary with other initiatives recently put in place at the EU level such as the Coordinated Annual Review on Defence (CARD) and PESCO.

Finally, the Fund is also designed to ensure the buy-in by Member States, who will be the ultimate buyers of the systems and technologies that will be developed, notably through the need for co-funding in the development phase and by requiring the demonstration of an intent to procure by at least two Member States as an eligibility condition in the advanced stages of development.

CONCLUSION

The assessment presented in this article shows that the European defence industry is at a turning point where the continuation of past trends is no longer sustainable. The model

⁴⁴ Cour des Comptes (2018).

⁴⁵ The consortium applying for funding nevertheless has to demonstrate the viability of the project by showing that the costs that are not covered by the EU funding will be covered by others means, including Member States' co-funding.

⁴⁶ In parallel, the European Defence Agency cooperation with the European Investment Bank (EIB) is preparing the establishment of the Cooperative Financial Mechanism (CFM), a dedicated tool aiming at incentivising defence cooperation by overcoming issues with budgetary synchronisation between Member States hampering the launch of collaborative projects.

⁴⁷ In the 1980s, France and Germany considered the joint development of a new tank, but German plans required the tank to be made available quickly while France was planning for a decade later (European Union Institute for Security Studies 2007).

characterised by high fragmentation along national borders and limited cross-border collaboration is reaching its final limits, even more so when taking defence spending trends into account.

While previous attempts to trigger a leap forward in terms of collaboration have not been really successful, the introduction of the European Defence Fund appears as a major innovation that brings one particular component that was not used before: funding dedicated to collaborative defence projects. The amounts at stake are very far from being marginal, as shown in section 4, and come from a new source of funding that has never been mobilised for this purpose before. The architecture of the Fund also includes elements that are meant not only to incentivise collaboration, but also to increase its efficiency.

In view of these elements, the European Defence Fund has the potential to be the vector of a paradigm change in the European defence industry and market. It is however also a completely new instrument, and its functioning may need to be adjusted in order to maximise its positive potential. The realisation of its potential will also depend on its effective implementation in practice and on the uptake by industry and Member States. These aspects will need to be monitored over time and carefully assessed when sufficient practice is available to draw lessons learned based on experience. The wider policy and regulatory context is also important and can be considered in view of addressing possible obstacles to collaboration that financial incentives alone may not completely overcome.

In the years to come, the deployment of the European Defence Fund and of other initiatives aimed at supporting defence collaboration in the EU will also provide a fertile ground for the emergence of a rich research agenda in defence industrial economics in Europe. ■

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Policy Paper

THE EUROPEAN DEFENCE FUND

A Game Changer for European Defence Industrial Collaboration

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The information and views set out in this article are those of the author alone and do not necessarily reflect the official opinion of the European Commission.

ARES GROUP

The Armament Industry European Research Group (Ares Group) was created in 2016 by The French Institute for International and Strategic Affairs (Iris), who coordinates the Group. The aim of the Ares Group, a high-level network of security and defence specialists across Europe, is to provide a forum to the European armament community, bringing together top defence industrial policy specialists, to encourage fresh strategic thinking in the field, develop innovative policy proposals and conduct studies for public and private actors.

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