NATO Foundation
Defense College

Strong and Gusty Winds for the Defence Industry

Raffaele Esposito

Chief Defence Industry Analyst, NATO Defense College Foundation

Honorary Chair NATO Industrial Advisory Group

NATO Defense College Foundation Paper

Summary

The present complex and turbulent geopolitical situation, coupled with a rapid and at times disruptive technology evolution, is creating a new and potentially difficult predicament for the defence industry worldwide. A problematic scenario notwithstanding the increase in some defence budgets that may yield new opportunities. The purpose of this paper is to produce a brief analysis of the drivers for change in this situation, the risks and opportunities, and some recommendations on possible actions to reduce risks and enhance opportunities. The main conclusion, however, is that the role of governments and, occasionally, international institutions, remains pivotal and is actually increasing in some parts of the world.

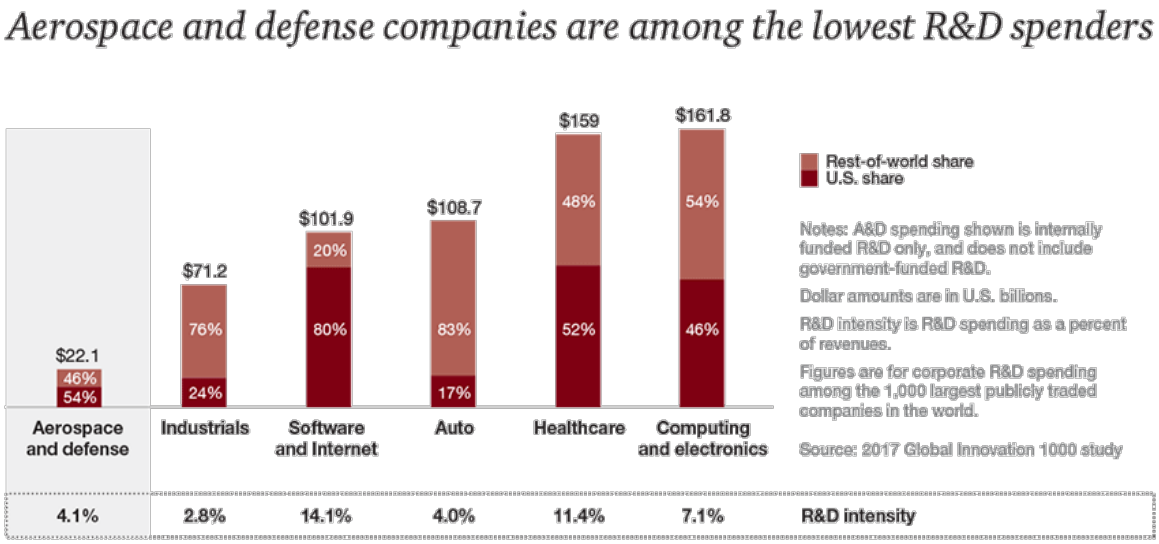
It is common knowledge that the world situation is characterised by increasing geopolitical tensions, local wars, a somewhat unpredictable behaviour of the three superpowers (US, China and Russia) and the ever present, even if discontinuous, terrorist threat. Most countries are therefore facing a raising number of real or perceived threats, while the continuous technological evolution, occasionally disruptive, makes those threats even more difficult to predict and counteract.

This geopolitical quandary has generated a bigger attention to defence and ~~s~~security issues and an increase in the demand for military equipment. The response given by each nation defence spending has been different, however it is safe to say that we are witnessing a spotted increase in defence budgets. (Incidentally since almost all reliable data sources report only the total of defence and ~~s~~security expenditures, term defence will be used, from now on, as a short hand with the understanding that ~~s~~security is included).

The defence industry is strongly affected by the complex situation described above; therefore it is critical to understand the risks, the changes and the opportunities that such an industry is facing, in order to both analyse the current situation and express some possible suggestions.

The dynamics just mentioned stem from three main drivers: the geopolitical situation with its associated threats, the rapid and often unpredictable technological evolution, and the size, distribution and trends of the defence budgets.

Starting with the first driver, a useful observation is that almost always defence industry will be equally affected by the uncertainties of the geopolitical situation as the national government. An outstanding example is that the somewhat erratic present foreign policy and export licence US regulations have caused several countries (Turkey for instance) to reconsider their make-or-buy policy for military equipment. The US also tries to affect in other ways European defence policies (see for example "Europe must open military projects to foreign firms, says US envoy" Financial Times 11/3/2019, p. 2). Even if the US is certainly the principal actor by far, by no means it is the only one: as shown by the sudden decision of Germany to stop arms delivery to Saudi Arabia after the killing of Mr Kashoggi. In the same vein changes in trade agreement changes are likely to disrupt, or at least alter, the various supply chains, thus increasing costs and hampering the security of supply. Governments are often led by unexpected events to modify aspects of their defence policy and/or review alliances and partnerships. Important examples are the non-proliferation treaties: if the Intermediate-Range Nuclear Forces (IRNF) Treaty will really be abrogated, NATO, its partners and the industries will have to face a difficult decision on how to manage this new situation. The same may happen in 2021 if the Strategic Arm Reduction Treaty (START) will not be renewed as it seems likely.



Source: PWC, Randy Starr, Larry Jones. Aerospace and Defense Trends 2018-19, https://www.strategyand.pwc.com/trend/2018-defense#nav.

The second driver of change for industry is the evolution of technology with its occasional accelerations in unexpected directions. Quite often in recent years, the evolution has taken the form of a potential game changer in war technology. Here are some examples:

1. Quantum Technology with its recent application on totally secure transmissions, on extremely rapid computations and quantum sensors for much better detection of submarines even at the maximum depth (with evident implications on the most protected leg of the nuclear deterrence triad);

2. Artificial Intelligence and Big Data for better and faster military decision making (shortening considerably decision loops, possibly excluding any previous human intervention);

3. Hypersonics with applications to missiles. President Putin has recently announced an almost operational hypersonic missile that he has called Invincible. It is indeed something to reflect upon: a new generation of hypersonic missiles with speeds from Mach 5 to Mach 20 will clearly change the offensive-defensive equation and completely redefine the requirements for missile defence.

4. A final point in this list of disruptive technologies is cyber with its many facets: here we only want to mention one aspect, namely threats to intellectual property [New York Times, David Brooks, How Chinese Bring Americans Together" 16-17 Feb. 2019, p. 11]. After reporting massive Chinese investments in Artificial Intelligence and Quantum Computing, as well as a considerable advantage in technologies like facial and speech recognition, Mr Brooks writes: "*All this would be fine if China was simply competing, but it is not. It's stealing. A commission led by retired Adm. Dennis Blair and former US Ambassador to China Jon Huntsman estimated in 2017 that the loss to the US economy from Chinese intellectual property theft was between 225 and 600 billion*". Interestingly enough, there was no rebuttal from China.

Other momentous changes that change the actual strategic picture regard the Global Commons, particularly space after the US announcement of a Space Command (if it becomes in time a Space Force, it would violate the treaty of demilitarisation of space itself) and the systematic use of hybrid warfare, one of the pillars of Russia official military strategy now used by several other countries.

The third driver that influences the dynamics of the defence industry is the size, changes and distribution of the defence budgets among the various nations. The purpose here is to present some numerical values, trends, and geographical allocation of such budgets. The main sources of such data are the SIPRI (Stockholm International Peace Research Institute) and the IHS-Markit (Information

Handling Services-Markit). We have chosen to use data from the second source since their format seems more appropriate for the scope of this paper. Although the data presented here are to be understood as the best available approximation with a delay of one year, a caveat regards their reliability. As the same sources caution, the reliability varies according to countries and regions, and in general data from Western countries seem to be more reliable; in the Chinese case, for example, there is a discrepancy between IHS-Markit and SIPRI data since estimates by SIPRI et al. put total Chinese military expenditures to be at least a third higher than the official given that it does not include the People's Army Police, R&D, and other expenditures of military nature.

The data available, mainly estimates of late 2017 for the year 2018 indicate that in 2018 the worldwide expenditures are expected to be around 1,7 trillion dollars (from now on all expenses are denominated in dollars unless otherwise indicated). This value represents an increase of 3,3% with respect to 2017. The component earmarked for military equipment is expected to grow by about 20 billion (6,8%) from 295 to 315 billion. The main contribution to the 3,3% in absolute value comes from the USA (4,7% equivalent to 664,2 billion) while the main contribution in percentage comes from China (8,1% equivalent to 174,6 billion). Some increases were expected and have taken place in Europe and more are expected in the near future. Starting with the NATO Summit in Wales (2014), all NATO countries have agreed to a commitment to reach within a decade the well-known goal of 2% of their GDP. The commitment has been reiterated at the 2016 Warsaw Summit. In 2018, however, only 7 countries (including the US) have achieved that goal, but many others are approaching it. Notable counterexamples are the Czech Republic, Italy and Spain, stuck at around 1%, possibly to be followed by Germany.

Aside from the commitment to NATO, Europe has created a potentially important development with the EU European Defence Action Plan (EDAP). This Plan includes a Research Window (90 million euro till 2020 and 560 m/year afterwards) and a Capability Window of 5 billion/year from 2021 to 2027. While the Research Window is supposed to be part of the EU budget, the Capability Window is just a catalyst for joint programmes paid by the nations with a possible very small contribution by the EU. A similar approach is PESCO (Permanent Structured Cooperation) where nations are invited to spend together to achieve common capability goals. An EU fund dedicated to innovation is the recently approved EDIDP (European Defence Industrial Development Programme) funded with 500 billion for two years and dedicated to the development of defence equipment and technologies as a bridge between the Research and the Capability Windows.

That said total expenditures of all European countries plus Canada are about a half of the US ones.

After the US, the countries that spend more are (2018 estimates in billion): China (174), India (62), UK (60), Saudi Arabia (55,9), France (52) and Russia (48). Note that the Russian budget (about 50 billion] is stable if not slightly decreasing. Significant but stable expenditures (30-50) are in South America, Australia, South Korea and Japan. Increasing budgets are seen instead in the Middle East, especially Saudi Arabia and the Emirates.

Although 2019 data are not yet available, it is known that the US budget request will reach 688 billion (+3,6%), increased for the fourth straight year. It has also been reported that China's budget for 2019 will grow by 7,57%, a steady raise over 25 years. (China lifts defence spending as costs rise, Financial Times, 6 March 2019, p.2).

Thus expenditures are on the rise, albeit in a spotted way with US, China, India and the Middle East playing the most important role. The case of NATO and Europe in general is worth considering: the US pressure on NATO nations and the rather recent about-face of the EU with respect to defence could yield an interesting situation of possible growth, although there is still a lot of resistance and differing priorities among several important European nations.

The environment described will create complex requirements for industry: those requirements are not necessarily new but speed and unpredictability are modifying their pace. A first requirement will certainly be a proper and timely understanding of the geopolitical dynamics and their resulting effects, while close attention should be given to the technological evolution as it will affect the strategy for the development of products, services and applications with the necessary features of modularity, scalability and interoperability. All these aspects must be compatible with fast delivery and fielding, the right quality and an acceptable life-size cost; moreover, they must be set within the envelope of an acceptable economic and financial performance according to the expectations of shareholders and stakeholders. Not a simple or comfortable task. However, Western defence industries have performed quite well in the last couple of years. Such performance is easily traceable thanks to the availability of economic and financial data in the West and the quotation of many defence industries in the stock market.

Like all high-tech industries, an additional risk is the present business climate giving priority to the economic and financial performance of the company vis-à-vis technical savvy, attention and investments necessary to maintain a technological edge, while at the same time public opinion tends

to be hostile to this industrial sector. Finally, one can certainly expect increased competition, often induced by political shifts. The increasing market share of the US and China is a case in point. Political shifts can also produce some real surprises Turkey's procurement (a NATO country) of the Russian air defence missile system S-400, not compatible with NATO standards.

The actions necessary to perform successfully in troubled waters can conveniently be divided into strategical (external and internal) and tactical. The concepts mentioned here are not new and they fall under the heading of "good management", although the requirement for speed is an additional fundamental feature.

The strategic actions of external nature can be resumed with the close cooperation between transnational companies and governments, shareholders, stakeholders and the financial community, including a continuous review of industrial alliances, partnerships etc.. Within the Western world a close contact with international organisations such as NATO, EU, EDA, etc. is strongly recommended.

The internal strategy should concentrate on a responsive organisation, flexible enough to react rapidly to varying demands, constraints and opportunities. Critical attention should be given to the supply chain with concern for the security of supply and the security of the hardware and software acquired. In the area of R&T (aside from a constant relation with the many opportunities of R&T funding generally available), attention should be given to the concept of Open Innovation in order to maintain the necessary flexibility between what is done in house and what is acquired externally. Civil technology should be followed especially in the ITC domain. It should be noted that the enterprises that include both a military and civilian component are able to leverage markets and technologies to smooth out oscillations in both areas. Aerospace companies are a good example.

All this means that it is vital to protect one's own intellectual property from cyber attacks. Moreover, for all companies, but especially for those in the West, special awareness should be developed for the increased attention of legislations on corrupt practices (US Foreign Corruption Practices Act and similar laws in Europe) and its entailed rigorous enforcement.

The tactical part of the strategy, always in the vein of good management, is just the constant monitoring of performance, guaranteeing that its implementation is on track and in line with its objectives, including milestones and times of the implementation roadmap.

In the end, governments are the essential actors that make the difference for defence industries through their policies. When they are, more often than not, significant stakeholders, they have more than a moral obligation to act, they have a political motivation. Countries like the USA, China and Russia consider their defence industrial base (DIB) base as the foundation of economic and national security and their considerable arms export as a fundamental tool for their foreign policy. They are not alone: Australia, Saudi Arabia, India, Japan, Turkey and others are following suit.

It is also fair to acknowledge the novel pivotal role played by the European Union with its European Defence Action Plan mentioned and its several related initiatives. The difficulties are well known but it an encouraging sign that Europe might finally start to play a role commensurate to its size and investments in the area of by pulling together all its considerable military capabilities, its technologies and human resources.

The water are troubled, the winds are uncompromising and navigating with the government is a lot more safer, than risking all alone, even using better materials, excellent skippers, first rate crews and often more entrepreneurship and courage. The race is long and few will arrive at the end.


NATO Foundation
Defense College