

Security of Supply Challenges and European Defence Technological and Industrial Base : Debates & Dilemmas (II)

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The forthcoming December 2013 European Council on defence and security appears as a unique opportunity to foster European defence and capabilities as Heads of States and Governments have had no chance of a dedicated discussion in five years. In this context, preserving and fostering the European Defence Technological and Industrial Base (EDTIB) is a widely shared objective in times of fiscal austerity, as massive cuts in defence budgets threaten Europe's military capabilities and defence industry.

As many different initiatives unfold including from the European Commission and the European Defence Agency (amongst others), this second series of short papers aims to examine industrial defence issues from the viewpoint of security of supply and strategic autonomy. It follows on from the first volume published in July 2013, *Defining the "European Defence Technological and Industrial Base": Debates & Dilemmas (I)*, focusing on the scope and defining aspects of the EDTIB.

In this effort, the *Fondation pour la recherche stratégique* (FRS) has gathered a wide group of senior European experts to encourage some out-of-the-box thinking on major and sometimes non-consensual issue: the Security of Supply in defence equipment, services and technology. This "food for thought" exercise intends to shed light on the multi-dimensional nature of Security of Supply. Five different viewpoints and approaches attempt to address this complex and challenging subject:

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Security of Defence Supply in EU Countries : some Critical Aspects

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One of the harshest realities for all member countries of the EU is the erosion of certain levels of sovereignty that have traditionally been in national hands. Building a strong Europe seems to be the main cause. In the field of defence giving up the control of certain national industrial capabilities is a growing reality today and will be most important in the future, particularly in cross-border defence procurement within the EU. The EU countries are aware of at least two premises :

- The superiority of the U.S. defence industry in both its industrial and technological fields relating to the EU ones in some important fields. This situation requires a thorough analysis of how European defence industry should be in order to compete with the U.S. and what changes are needed in its structure to achieve the desired competitive position.
- The need to promote the productive efficiency of the EU defence industry as well as to reorient the fragmented demand towards a situation of convergence among member countries.

The current situation is not sustainable in the long term. The reduction of defence budgets and, therefore, the lower demand for weapons systems and other military products and the increase in costs and prices, implies the existence of a significant overcapacity-sizing of the European defence industry. This situation brings out significant sunk costs that are the result of major national investments carried out for decades. In recent years, the EU has promoted the creation of a common defence market but has encountered major problems: first, the cooperation between countries through "national champions" is very inefficient; second, the development of joint programs has not evolved as initially expected and transaction costs and the bargaining power of some partners relative to others have increased delays, costs, and provoked some other problems; third, countries are unwilling to give up a domestic industry that has been supported and protected during decades; fourth, the pursuit of efficiency and survival through consolidation processes within countries, which tends to delay the effective birth of European defence industry and finally, export support to maintain a certain level of demand, which reduces idle resources.

Some questions about the process

A broad definition of security of supply is given by the Directorate General Internal Market and Services *"In general terms, Security of Supply can be defined as a guarantee of supply of goods and services sufficient for a Member State to discharge its defence and security commitments in accordance with its foreign and security policy requirements"*. The debate about the relationship between security of supply and stra-

tegic autonomy of countries involves conducting an analysis from different perspectives and does not guarantee an optimal solution. Thus, there is a direct relationship between the two concepts, so a lesser security of supply implies less autonomy and control on materials and weapon systems. This situation means the existence of significant risks for countries. Thus, the waiver of certain industrial and technological capabilities implies a transfer of sovereignty that may affect the very integrity of the country in the long run. However, it is necessary this waiver for the emergence of an European defence industry, but how an acceptable level of autonomy can be ensured in critical capabilities in both peace and crisis times? The answer to this question requires an analysis of a wide range of issues, among which are:

- The identification of the main risks and common threats.
- The search of military/security capacities deemed necessary to deal with threats.
- To be able to reach a consensus among Member States about the main weapon systems, intelligence systems, communication equipments,... (harmonization of demand).
- Generate / promote an adequate industrial structure (prime contractors, tier I, II, SME's, subcontractors...), that would be able to meet a wide European demand.
- Analyze the possible effects on domestic industries (on employment, industrial networks, technological capabilities, international trade,...) and their geographical locations.
- What defence industrial and tech capabilities the country wishes to maintain and what is the cost of these capabilities?

This situation implies the existence of behaviors that are out of the general trend of competitive markets, generating significant risks related to price increases, monopoly / oligopoly power, bargaining power against certain (smaller) countries by big firms and countries, offshoring of businesses. These factors are an incentive for new entrants of foreign capital (non-European), which may imply the reduction in the security of supply, the expansion of the supply chain as well as an increase in risks. Another factor that negatively affects the supply security is the use of dual technologies and products, as they may present problems of reliability given particularly those primarily generated and oriented to the civilian market. And finally, the role of SME's can also be problematic, because of its greater focus on the civilian market and the lower survival rate they show against the military oriented firms.

A major problem associated with this situation is the incentive to invest in R&D. The European Commission excludes R&D investments from open procurement to stimulate it. However, production contracts resulting from R&D activities are open, so there are significant risks that no national based company will win the contract. This situation is all the more serious

the lower the number of programs that a country can develop, so it can be a stimulus to undertake collaborative programs. However, to achieve significant efficiencies in this type of programs it is necessary to modify the basis for collaboration through the reduction of high transaction costs.

How to defend strategic autonomy

Therefore, the long-term trend will be towards building a European defence industry in which the oligopoly and monopoly are the dominant structures, and a myriad of smaller firms mainly clustering around a prime contractor. Ultimately national structures are partially replaced by other European organizations whose main advantage is better able to reduce costs through economies of scale. This is basically because they may meet wider demands and not for a use of a more efficient productive system, *a priori*. What instruments countries have to control over these companies? How can they ensure their security of supply? Part of the answer to these questions depends on who control these companies. Consolidation processes taking place in the EU primarily through M&A, take place both between European companies and European companies with firms of third countries. In the first case the control can be simpler, but the second is much more complex. Even in the case that a Member Country uses the Article 346 TFEU to control critical goods and services, many of the inputs needed currently can not be controlled. How will they do in the future in the described panorama?

The diversity of issues to be verified by countries in order to defend its strategic autonomy is very wide, some of them are:

- The control of property rights and technology transfer to third countries, through licensing agreements.
- The stability of the supply chain. In this case, two aspects can be highlighted: the origin of the capital of companies and the implementation of commitments when they expand internationally the number of suppliers.
- Reputation as a signal. Consider the record company contracts and their performance.

- The analysis of industrial and technological capabilities, and time / quality responds to the demands.
- Safeguard clauses in contracts requiring companies to strict compliance with the commitments. Otherwise use of financial penalties related to actual contracts or linked to future contracts.
- The creation of a supranational agency devoted to price monitoring, evaluation of costs and meeting deadlines and quality of products and services for the MOD's.

In short, it opens the way to what could be called "sovereign dependency". From this perspective, it is necessary to redefine the operational advantage and autonomy of action of a country. Until now these were the main features characterizing the defence industrial policy but with the creation of a single market for defence it would will be necessary to make some adjustments in the scope of these concepts. The first implies that each country will play a different role in that market. The current big five producers get higher profits but also have to make painful adjustments in their domestic industries. The second involves applying the infant industry argument to the European level in order to compete with the U.S. It means to keep protectionism against its main competitor. And finally persuade all member countries that the European nationalism in the defence industry is more profitable than the acquisition to third countries.

The challenge facing the construction of this market is to demonstrate that it is feasible from both the technological and industrial perspectives, and that it is sustainable along the time. This implies that, through the generation of competitive advantages, a European industry can be financed in the long term. This is essential to eliminate duplicated facilities, to stimulate the improving of efficiencies, to allocate international collaborative production contracts based on the capabilities of each country and not by the percentage of capital contribution to the program or the derivative from the *juste retour* rule.◊

EDTIB Challenges and Options: Security of Supply and Key Strategic Activities

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This article firstly outlines the Italian approach to DTIB. Then it discusses the effects of budgetary constraints in Italy and other European countries with respect to the pooling of demand in defence procurement. Thirdly, it addresses the crucial challenge of Security of Supply (SoS). Finally, it focuses on the concepts of “defence economic operator in Europe” and “European key strategic activities”, particularly in relation with SoS.

Italian approach to DTIB

The Italian DTIB is the 4th largest in Europe in terms of employees. It can be described as a pyramid. At the highest, level there are few large players such as Finmeccanica, Fincantieri and Iveco acting as prime contractors on domestic or foreign markets, and/or as partners or subcontractor of other European or American primes. At the intermediate level, there is a number of companies specialized on certain systems or technologies, while the basis of the pyramid is constituted by a large number of Small and Medium Enterprises (SMEs), often very agile and innovative. Part of the DTIB is also able to provide dual-use technologies and is present in the security and civilian markets. Finmeccanica, the 3rd largest European defence industry after EADS and BAE System, represents roughly two-thirds of Italian DTIB and owns subsidiaries specialized in different sub-sectors of the defence market such helicopters, electronic systems and avionics.

Italy has traditionally supported European procurement programmes and the constitution of related industrial joint ventures and consortia. Examples regards mainly air capabilities like Tornado, EH101, Eurofighter, NH90, FSAF, Meteor, but also naval capabilities such as the FREMM frigates. Italy has also joined transatlantic procurement programmes such as F-35. However, in absolute terms - and particularly in the case of the Army - procurement has mainly relied on national supplies. Today, the Italian approach has to adjust to the fact that the budgetary constraints likely to remain in place in the next years, coupled with the implementation of the EU directives, pushes the Italian DTIB to seek more exports in foreign markets because the domestic one is both limited and increasingly open to international competition. For example, in 2012, only 18% of Finmeccanica revenues came from Italian defence procurement.

The state-industry relations in Italy are multi-faced because, at the same time, the government defines the regulatory framework, is one of the main buyer of DTIB products, and is a major shareholder of Finmeccanica and Fincantieri. With regards to the regulatory role, the law regulating exports of defence items has been modified by implementing EU directives part of the 2009 defence package. Moreover, a law on controlling investments in companies dealing

with Key Strategic Activities (KSA) in the security and defence sector has been approved. It identifies both the criteria to define KSA and a list of them. It also gives to the government the power to establish rules to be followed by investors – both domestic and foreigners – in companies managing KSA, including the right to cancel decisions taken by these companies if they are deemed against national security, and to veto the acquisition of companies’ stocks by certain investors.

Budgetary constraints and pooling of demand

It has been argued that cuts to European defence budgets put national militaries under pressure to pool&share assets and procure jointly - at least at bilateral or multilateral level. Indeed, in the medium-long term stagnation of defence budget means that certain costly capabilities either will be pooled at European level or they will be lost at national one. However, so far the budgetary constraints experienced by many – but not all - EU Member States (EU MS) have not resulted in international cooperation’s significant steps forward on defence procurement, Research & Development (R&D), maintenance or logistics. Some European countries have rather chosen to reform their military to make it more sustainable, for example by reducing the personnel and/or by rationalizing the legacy military infrastructures. This is the case of Italy, whereby the law approved by the Parliament on December 2012 envisages a cut of 33.000 military personnel and 10.000 civilian personnel of the Ministry of Defence, as well as a 30% reduction of military real estate, to be completed by 2024.

With the exception of some positive but small examples, there has not been a significant advancement, in economic and military terms, of intra-European cooperation. Even well-established regional cooperation such as NORDEFECO has not resulted into a shift of national procurement of Scandinavian countries towards multinational solutions. The bottom-up approach of pooling and sharing pursued in recent years, although positive, has its own limits. At the same time, much-heralded bilateral agreements such as the Lancaster House Treaty have experienced difficulties and setbacks, for example with the UK choice not to make next British carrier able to host French combat aircrafts - but rather US ones. What is needed is a real, concrete political mandate from the Heads of State and Government in liaison with EU institutions – particularly European Defence Agency (EDA) and European Commission (EC) - to push cooperation among willing and enable European countries both on pooling of demand and defence industrial policy. That mandate should come from the next December European Council. It should aim to set up new European Military Headline Goals and Industrial Headline Goals focused on the mid-long term, to establish a constant monitoring and assessment of EDTIB in order to improve policy-makers awareness on ongoing changes, and to maintain the political focus at European level through an annual defence council.

Towards a European Security of supply

It has been rightly argued that criticalities and dependencies have increased within EDTIB because of the growing internationalization and outsourcing experienced by defence industry – coupled with an increased need to penetrate non-EU markets. Today certain technologies, components and raw materials can be supplied only by few, non-European companies in the world, and/or by civilian companies not bound to military SoS. This reality has to be carefully managed from a security and an industrial point of view. A platform used or required by Armed Forces of EU Member States may seem to ensure the necessary SoS because it is assembled and delivered by a European prime contractor. Yet, in reality, it will depend on components or technologies or raw materials from non-EU suppliers. In other words, the European supplier can run out of supplies. This may be the case of certain satellite technologies, high-quality carbon fibre, advanced semi-conductors, as well as spare parts of military platforms already in use. A full national SoS is becoming nearly impossible for EU MS.

Such reality requires a comprehensive and in-depth monitoring of the industrial SoS. This monitoring should be carried on not only by the prime contractors but somehow shared with EU authorities through EDA. At the same time, as mentioned before, a constant, systematic and comprehensive monitoring of EDTIB, based on publicly available data and sources is needed to raise the awareness of status quo and eventual changes in the EDTIB in order to have a better-informed decision-making.

Beside the monitoring, since national industrial SoS is becoming un-achievable, European SoS represents a better option than just relying on the global supply chain. Indeed, security of supply can be better ensured by companies based in the EU because they already experience a level of interdependency unmatched in the world, and because they operate in a market much more regulated than outside the Union. The Europeanization of national DTIB – and the support to EDTIB – is therefore key to ensure an adequate European SoS to national armed forces. To this end, a common evaluation of the criticality of supplies as well as of the characters of European SoS could and should be developed. This would pave the way to the inclusion of European SoS as relevant criteria in the procurement programmes, both national and multinational. The growing EU-wide integration of defence market and industry requires to take into account the European SoS, in order to pursue two goals: on the one hand, to ensure a real level playing field; on the other hand, to prevent risks for European SoS deriving from un-coordinated national approach to SoS, for example concerning foreign investments in key strategic activities.

European key strategic activities to be identified and supported

In relation to SoS, it is worthy to reflect whether the idea to identify a “defence economic operator in Europe” to be protected and supported by European and national institution does fit or not the reality of

EDTIB. First, civilian industries may enter the defence market to provide some dual-use technologies because in certain sectors the innovation is more advanced in the civilian field than in the defence one. At the same time, some large European defence industries are active in the civilian market, and may even generate the majority of their turnover through civilian activities. Dual-use technologies connect defence, security and civilian markets worldwide in an unprecedented way. The very same radar component may be sold to the Qatar navy, the Indian coast guard, the EU Frontex agency, and a US aerospace industry. Finally, the aforementioned internationalization of national DTIB implies that European defence companies may delocalize industrial and/or R&D activities outside the EU, and may rely on non-European suppliers. As a result, a rigid approach based on the entity – the “defence economic operator” – may result ineffective both because it is difficult to identify which are those entities and because the issue of their SoS is not addressed by an entity-based approach.

In contrast, to focus the on KSA may be relatively effective. A working definition of KSA refers to those activities necessary to enhance state’s capacity to operate autonomously against risks and threats likely to undermine its own security and integrity. Often – but not always – KSA are predominantly high-tech and are crucial to maintain EDTIB technological edge over non-EU competitors. The understanding of KSA varies through the European countries with major national DTIB, but it is possible – and desirable – a convergence of national views towards a European understanding of KSA. Indeed, the European SoS can be better protected if activities “key” to maintain European “strategic” autonomy are identified within the broader spectrum of EDTIB. To this end, a list of European Key Strategic Activities (EKSA) should be defined jointly by EU institutions - including EDA - and member states, regularly monitored and updated.

An EKSA approach is likely to be more comprehensive than an approach based on the identification of an “operator”, since the concept of activity considers also those suppliers necessary to act: in other words, it helps to identify the supply chain beyond the prime contractor/system integrator which is more clearly recognizable as a defence economic operator. Secondly, such approach is more able than a narrow definition of “defence operator” to fit the current - and growing - reality of industries developing dual-use technologies crucial for European security. Thirdly, by focusing on the activity rather than on the operator this approach is more flexible and adaptable to a defence market where industries may change their portfolio of activities as well as their shareholders.

In any case, it is worthy to develop such reflection in order to define the perimeter of industries able to bid for EU research funds related to the security and defence field – also to prevent European funding to be used, de facto, by non-EU entities. ♦

A Small State Perspective on the European Military Security of Supply: Finland needs to further boost its International Defence Cooperation

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This paper offers a small state perspective on the European military security of supply dynamics by focusing on the Finnish stance on the issue. The Finnish case is an instructive example for two specific reasons. First, it illustrates how security of supply considerations can vary considerably within Europe, and secondly, it illuminates how the on-going European defence sector integration may affect some traditional ways of understanding the notion of security of supply.

The Finnish threat scenarios and security of supply considerations

Expeditionary crisis management operations have become armed forces' core task in the majority of Western countries. Although threat scenarios in the Finnish defence policy white papers are strongly convergent with other Western strategies, Finland has certain special characteristics that distinguish it from the majority of other Western countries, including focus on the territorial defence, military non-alignment and military conscription. Finland's geopolitical positioning as "an islet isolated by the Baltic sea" with a long land border with Russia, the experiences from the Second World War and the Cold war, the Russian military capability developments and Russia's uncertain internal development, all set the premises for the Finnish defence planning.

While any major military conflict in the Finnish geographical proximity is considered to be highly unlikely, Finland as a non-aligned country has an interest to maintain credible territorial defence system. The Finnish national defence mindset has traditionally been focused on preparing for the worst, and has presumed that Finland needs to "cope by itself" if the worst occurs. Following this, Finland has traditionally stressed the importance of indigenous, self-sufficient security of supply more than many other nations. For instance for France, with different threat scenarios and defence policy focuses than Finland, the military security of supply might be a more multi-dimensional concept mixed with major industrial interests. For states with different geopolitical situation, the concept of security of supply might signify that the supply base must be situated in Europe instead of the United States, whereas NATO's own security guarantees define the notion of security of supply in the NATO states.

The traditional notion of security of supply challenged

The Finnish military security of supply considerations has traditionally endorsed the strong role of the national defence industry. Of course, as military defence is highly dependent on the security of supply of the

rest of the society, the security of supply considerations cannot be reduced to the defence industry issues alone. The Finnish emphasis on the security of supply is comprehensive in a sense that it covers a wide range of national and international activities by governmental authorities, business sector and non-governmental organizations in safeguarding the critical functions of society. The general security of supply could be impaired by the continuous Finnish dependence on energy import, by more widely used commercial systems as well as by increase in foreign ownership in certain strategic sectors of the Finnish industrial base. Military security of supply, on the other hand, is impaired by the smallness and fragmentation of the Finnish defence industrial base and its inability to produce all the necessary defence material for the crisis times' needs.

The traditional Finnish notion of security of supply is facing many challenges, stemming from three interconnected dimensions. First is the aforementioned change in the European military capability requirements towards capabilities needed in expeditionary crisis management operations. The capability requirements related to the Finnish territorial defence may require different characteristics when compared to the needs of many European armies. Balancing between the domestic and foreign customers' requirements can lead either to a situation where the Finnish industry products are differing from the European requirements when based on the Finnish requirements, or to a situation where products are in accordance with the European requirements but are lacking sufficient market value due to the lack of a national client. Secondly, following the Finnish defence reform, the defence budget has deteriorated with direct effects also on the procurement budget. Thirdly, the opening of European defence market combined with new legal limitations in offset arrangements works in many ways against the Finnish defence industry's interests. Also increase in material and life-cycle costs, more rigid cost-efficiency requirements, more complicated procurement procedures and increased technological complexity in defence material increases the challenges for the Finnish defence material policy.

In addition to the financial pressures, the most significant force of change for the Finnish military security of supply is perhaps related to the offset arrangements becoming more difficult. Offsets are important for a country such as Finland which doesn't have a comprehensive national defence industrial base, and which acquires a large portion of defense material from abroad. Offsets balance national economy, support and develop national industrial competitiveness, promote export and support military security of supply. Direct military offsets are very important for the Finnish national defence system because they create life cycle management, damage repair and maintenance capabilities for the national industry. Most importantly, offset arrangements can still be done under the article 346 TFEU, but more restrictively than before, well argued and explicitly directed to military activities.

Finland needs to further internationalize its defence sector

The accelerating consolidation of the global defence industry will further raise the importance of large industrial groups in international competition. The Finnish defence industry is fragmented and relatively small. The new international market environment will most likely lead to an increased international competition for the Finnish defence forces' procurements, which may pose a severe threat to the companies who were until now protected against international competition. Although the strategically most important companies can succeed as strategic partners of the defence forces, it is realistic to predict that the future for many Finnish small and medium-sized defence enterprises will entail being bought by large foreign companies, trying to find new markets, or quitting the business altogether. This, in turn, further reduces the domestic security of supply base. That being said, small and medium-sized enterprises are rarely vital for the national security of supply.

In this multi-dimensionally challenging situation, the Finnish defence industry cannot cope just by relying on the domestic market. Finnish military security of supply objectives can only be achieved by reliable international arrangements and closer networking with international partners. As the Finnish military industrial complex is incapable of producing all the necessary capabilities, national defence material policy emphasis must be put on international defence material cooperation, on reliable contractual arrangements and on strategic partnerships. As a part of safeguarding the national security of supply, the Finnish defence industry needs to internationalize, get into the global value chains and find new business areas. However, this may be more difficult in a situation where the offset arrangements have become more problematic and where the industry cannot rely on automatically derived references from the domestic customer.

Today, the Finnish international military networking takes place bi- and multilaterally (e.g. NORDEFCO), as well as within the framework of NATO and the EU. In practice, the Finnish military capability development is done in accordance with NATO's STANAG-standards in NATO's PARP process, and under the selected partnership objectives guided by the OCC (Operational Capabilities Concept) and in the E&F programme (the Evaluation Feedback Programme). However, since Finland is not a NATO member state, the possibilities to increase international cooperation in the NATO context has its limits. This is somewhat problematic, given that the core of interoperability in NATO is not in the material compatibility. Instead it lays in the common practices, exchange of information and in common language and concepts. The material interoperability only complements these.

It is likely that the future will bring more integrated and planned international cooperation in the field of European defence. Being part of that cooperation is also the lifeblood for the Finnish military security of supply. In addition to enhancing the security of supply, international military networking makes it possible, inter alia, to receive military aid (Host Nation Support), and to be interoperable in crisis management operations, and cost effective defence material policy and research and development (R&D) efforts. Networking also promotes Finnish industry's international contacts. Finland needs to increasingly deepen and diversify its international networking in every relevant international forum, including NATO.

The need to maintain domestic repair and integration capabilities

Despite the need for stronger internationalization, the domestic industry still has strong role to play in safeguarding the Finnish security of supply. Finnish companies are familiar with the national defence system, regime and culture. In Finland, military capabilities are developed in the defence forces' development program's projects, which may contain a number of individual domestic or foreign procurements. When buying defence material from abroad, the defence forces put emphasis on the military-off-the-shelf (MOTS) products which are ready to use and tested in practice, while procurements including R&D-work are directed to the national industry. The Finnish defence material policy strategy stresses the domestic industry's ability to integrate, maintain and repair the defence forces' key weapon systems. Strategic emphasis here is clear. In the case of ready-made off-the-shelf-products, it is essential to guarantee the security of supply of the goods from the selling company/state, while the domestic integration and repair capability of the purchased material must be safeguarded. This, in turn, increasingly requires changes in the Finnish industry from a component supplier role to a service provider role.

Thus, credible defence deterrent requires also sufficient and capable home-grown defence sector and certain level of strategic autonomy, especially when it comes to the domestic repair and integration capabilities. As elsewhere in Europe, also in Finland, the domestic defence industry's opportunities and international competitiveness must be ensured in order to guarantee the critical security of supply and defence industrial know-how. However, as the possibilities for self-sufficient actions are increasingly thinner, it is essential for Finland to determine which are the critical capabilities upheld by indigenous actions, which capabilities are possible to get from the network partners and which capabilities are purchased from the outside partners. ♦

The Autonomy Imperative revisited? Polish Economic Policy towards the Defence Industry in changing

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When defence industry is concerned, Poland clearly stands out in the EU. Its defence industrial and technological base is much smaller than this of European top-6 arms producers, the Letter of Intent countries (UK, Germany, France, Spain, Italy, Sweden), but at the same time, much bigger than this of small players, like Finland, Austria, the Netherlands or the entire group of the post-communist EU member states. A specific position of Poland has widespread implications on its approach towards national defence sector and the European defence industrial issues. Poland remains skeptical about its chances to benefit from joining trans-European supply chains, as it has been involved in neither any of the collaborative weapon investment programmes run in the EU over the last decade, nor in the subsequent waves of transnational mergers and acquisition in the defence sector. This exclusion is at the same time both the result of the technological and organizational gap between Polish and Western European defence sector, and the reason of Polish troubles in catching up with the EU defence industrial leaders. Caught in this vicious circle, Poland seeks ways of improving its defence technological and industrial base in partnership with defence giants from Europe and elsewhere. Lured by protectionism and offsets, as proven and convenient tools to promote growth of national industries, it is at the same time increasingly dependent on technologies developed by foreign entities. These contradictory drivers are likely to generate a new economic policy towards the Polish national DTIB, what would require, however, a clear declaration of goals and a series of strategic decisions.

The Polish Defence Industrial and Technological Base

Polish defence sector is largely lagging behind the Letter of Intent countries in almost all terms: sales, profits, portfolio of offered products, capital and organizational structure, market position etc. The general business competitiveness of particular companies varies, however, dependently on the branch. The aerospace branch, which has been almost completely privatized, enjoys the most optimistic business perspectives: individual firms are parts of European and global supply chains (Sikorky, Pratt&Whitney and AgustaWestland have invested in so-called aviation valley in the South-Eastern Poland) and benefit from orders put elsewhere in the world. The land systems, electronics and naval branches remain, however, state-owned and concentrate their business activities on meeting the demands of Polish internal market. Further, there are few enterprises, able to serve as prime contractors or integrators of the most sophisticated weapon systems (armored platforms' producers HSW and WZM Siemanowice and the shipyards in Gdynia/Gdańsk are leaders in this regard). At the

same time there are many small centers of excellence, scattered around the country. These entities develop state-of-the-art technologies, with R&T cost often being covered from internal funds or, e.g, the European Defence Agency.

The capital and organizational structure of the Polish defence sector is about to undergo a significant change. While aerospace branch is a set of largely private companies, the land systems (including small arms and munitions' producers) and electronics branches, which have been organized around a Polish Defence Holding (PHO), an amalgamate of almost 30 different companies, and two completely separate entities – the HSW and WZM Siemanowice. This is soon to change with a new consolidation strategy, aiming to create a single national defence champion, having all assets of now separate companies at its disposal. The exact timeline of the strategy and the detailed steps to be taken to establish a single national defence leader remain, however, still to be determined. Meanwhile, the industry is adopting advance strategies – a number of consortia agreements have been recently announced between different Polish as well as Polish and foreign companies to bid for certain contracts, foreseen by the armed forces modernization programme 2013-2022, worth around EUR 25 bln.

Armed Forces Modernization Programme and the Security Dilemmas

It is the national armed forces modernization programme, that is likely to shape the Polish defence industry's strategy and structure. Enjoying a multi-partisan support and relatively stable financing mechanisms thanks to a legal anchor, guaranteeing 1,95% of GDP to be spent each year on defense, it will decide in practice which companies will develop and survive, and which will have to either find a new place in the supply chain (most likely at the lower tiers than they were used to) or convert to civilian production.

Currently, the policy with regards to the acquisition of key weapon systems planned to be brought into service until 2021, assumes that the least sensitive tenders will be conducted in a fully competitive manner, pursuant to the provisions of the defence procurement law adopted as a transposition of the Directive 2009/81. At the same time, the most sensitive tenders will enjoy the art 346 TFEU derogation clause. The example of the former case is the acquisition of jet trainers for Polish air force, the illustration of latter are the tenders for the Air and Missile Defence system or the new vessels for the Navy.

One distinctive feature of the Polish approach towards the armed forces modernization programme is a strong resolve to make national defence companies benefit from this investment as much as it is only possible. A level of involvement of Polish-produced components in the final product, or the readiness of foreign defence corporations to locate production/integration of the final product in Poland is openly presented as one of the key criteria of choosing the winning offer. The baseline idea behind this policy is

that following the transfer of state-of-the-art technologies, Polish defence companies might be finally able to make a quantum leap and catch up with their Western European counterparts. Next, Polish companies should be also allowed to join global supply chains of their foreign partners, or even export complete systems produced in Poland under agreements with parent companies, thereby increasing the export volume of Polish defence sector. Eventually, civilian businesses are expected to benefit from spill-overs in the military domain too.

What is even more important, the high level of involvement of Polish defence companies in the upcoming contracts for the new weapon systems, has much to do with the security of supply. It is widely understood that the contracts for the new weapon systems should be followed by maintenance and modernization agreements, in which Polish enterprises would play a leading role. In other words, Poland aims to have a maximal possible level of control over the new weapon systems' life cycle. Even more, an ultimate Polish aim is to have access to the source codes and blueprints of the procured systems, so that future modernization and upgrades could be done at home, without difficult negotiations with foreign companies having intellectual/trade property rights with regards to products in question.

There are already examples of this approach: post-German Leopard 2 main battle tanks were originally acquired (in 2003) without life cycle management agreements, which could involve Polish companies. Lengthy negotiations led, however, to certifying some Polish firms to service the tanks in facilities located in Poland. Next, the license agreement with Finnish Patria, under which WZM Siemianowice has manufactured the "KTO Rosomak" armored vehicles since as early as 2004, has been recently renegotiated to allow integrating newly developed Polish components in the upcoming production batches, as well as exporting ready vehicles to potential foreign clients.

Poland and EDTIB – what model of relations?

Although it seems that security of supply imperative will play a leading role in choosing the actual winners of the tenders, at the end of the day only the practice will show to what extent the principle of having a maximal level of Polish involvement in production/maintenance/upgrades will be possible to implement. In some cases the condition of locating the production of final systems in Poland will be met automatically. Like in the tender for support helicopters, in which two out of three competing machines are being already in the early stages of production in Poland (the Sikorsky S-76i Blackhawk and the AgustaWestland AW149), and the third one is likely to be manufactured by a newly-established consortium of some Polish partners and the Eurocopter (the EC725 Caracal), in case it wins the tender. There are, however, contracts, which will involve a significant level of foreign-made components by default, largely due to the lack of sufficient industrial base and know-how in Poland. A prominent example is the AMD system, parts of which (like missiles) will have to be manufactured outside of Poland, or – in the best case sce-

nario – assembled in Poland from ready components, at least in the initial phase of the life cycle.

Other weapon systems, planned to be procured by 2022, will use components delivered by foreign vendors, to a lesser extent than the AMD. Poland's land systems' technological and industrial base allows, for instance, to develop competitive platforms with use of indigenously developed technologies. This is also the case in the sensors and software domains. Nevertheless, a 100% technological autonomy will be impossible to achieve for the sake of cost-effectiveness and due to the complexity of modern weapon systems, which – like submarines, counter-mine ships, UAVs or C4ISR – integrate hundreds of differentiated components. It's needless to say that even countries with a much stronger defence technological and industrial base than Poland cannot be completely independent from foreign supply sources. The case of US weapons using off-shore made electronic chipsets is the most vivid illustration of today's defence industrial interdependencies.

Thus, Poland will eventually have to face an increasing dependence on trans-European and even global supply chains. Even if the issue of "European sourcing" is almost inexistent in the current debate on the future of Polish defence industry, the reality points to the fact, that such dependency is already growing. Both many weapons used by Polish army and Polish defence companies themselves do rely on international supply chains. The latter case is the aerospace branch, which – being a part of global supply chains – is prone to volatility of foreign markets, changes in business strategies of their parent firms, or political frictions. The former case are F-16s and the C-130s aircrafts, the OHP-class frigates, or the Kobben submarines, which all largely need foreign-provided parts and components.

The true challenge for Poland is, therefore, not to aim for a maximal level of technological independence from foreign companies, but to shape the contractual relations with the providers of technologies (and political relations with their home governments) in the way, which would assure a secure access to parts, components and service materials of the procured defence systems, as well as allow their upgrades and modernizations. There are various tools to achieve this goal, and a simple offset agreement, locating the production/assembly of weapons in Poland is probably the least effective in the long term. Slowly, it is being acknowledged by both Polish defence industrial leaders and political decision makers, that creating product-based consortia, joining multinational R&T projects, putting capital into business relations (e.g., by forming joint ventures), and involving the scientific community are the reliable tools to assure security of supply for Polish armed forces, and a create a tangible business perspective for Polish defence companies.

Conclusions

In the emerging Polish approach to the defence industrial policy, the concept of the EDTIB will inevitably play a growing role. Now reluctant to merge its

defence industrial base with European industrial leaders, Poland only tests its ability to cooperate with the industrial giants, mainly in R&T domain (see the EDA R&T projects, like the ESSOR, European Secure Software Defined Radio). The armed forces modernization programme, may, however, open door for a more multifaceted and mature partnerships in the future.

If Poland departs from the classic perception of security of supply through geographic location of factories and the absolute technological autonomy, it will be able to discard offsets/license production to the favor of a new generation of economic policy tools towards defence industry. Only then Polish defence companies will gradually become a part of EDTIB, finding place for their indigenous technologies in the trans-European and global supply chains. What may follow, is capital restructuring, which might even tighten the link of Polish defence companies with the EDTIB. In such a situation, security of supply will be defined in new terms, and assured by the level of mutual interdependencies – like it is the case in the LOI countries – rather than full control over a maximal number of assets and processes. ♦

Building Conditions of Security of Supply: a Prerequisite for Mutual Dependence

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Over the next 10 years, the climate of budgetary austerity in Europe is unlikely to create the conditions for growth in demand. The trend is more in the direction of downscaling of acquisition targets and production rates, delays in contract awards. All programmes, whether national or international, are impacted to different degrees by unstable budget trajectories. The majority of large programmes have entered the production phase and are moving forward under tight constraints.

In addition, as armed forces are engaged in theatres of operation, national acquisition strategies in recent years have been mainly characterised by the search for a suitable response to an urgent operational need. This urgent operational adaptation has made it necessary to find rapidly available solutions, an acceleration of timescales that proved unfavourable for the launch of equipment programmes based on a traditional approach. Hence, little or no prospect of launching new generation programmes. Capacity upgrades on mature platforms offer temporary support for the workload of design bureaus, with the launch of a demonstrator where necessary as an interim solution.

Though the December 2013 European Council on the Common Security and Defence Policy (CSDP) will therefore get under way in the midst of a period of turbulence, it represents **a window of opportunity** to set a course, to agree on concrete pragmatic measures, particularly in the equipment domain.

Looking back at the past ten years: national retention, no mutual dependence

In general, equipment for the armed forces involves three dimensions: military, budgetary and industrial. A weapon system meets operational needs linked to strategic commitments on the international scene. Since budgetary resources are not limitless, equipment spending reflects both political choices and the constraints of the macroeconomic situation. For armaments-producing States, public choices of equipment for the armed forces are also guided by the desire to retain or develop national technological and industrial capacities. Since the fundamental purpose of a defence industrial sector is to produce defence materiel and therefore to act as an instrument for the defence and security policy, this industry will thus never be an “ordinary” industry. It is the response to a major and decisive issue, that of security of supply; a real prerequisite, a *sine qua non* condition that must be fulfilled to ensure that the armed forces can operate, adapt and maintain their equipment without third party constraints.

In the early 2000s, at the peak of the industrial consolidation movement, the defence ministers of the six main European armaments producers (Germany, UK,

France, Italy, Spain and Sweden) considered in the *Letter of Intent (LoI) Framework Agreement*, that industrial restructuring would lead to the “*creation of Transnational Defence Companies, possible abandonment of national industrial capacity and thus the acceptance of mutual dependence*”. This industrial situation required agreement on measures to guarantee the security of supply of defence equipment and services, particularly in cases of emergency, crisis or armed conflict. The 6 LoI nations agreed on the fact that “*Transnational Defence Companies are free to use their commercial judgement to distribute industrial capabilities according to economic logic*”, but they recalled that “*they may exceptionally wish to retain certain defined key strategic activities, assets and installations on national territory for reasons of national security*” (FA-Part.2 Security of supply). These “*key strategic activities*” were defined as “*certain limited areas of technological capability considered necessary by the participants of the essential interests of their security*”.

This arrangement was tailored to the needs of the signatory States and involved only groups whose head office and main facilities (design bureaus and production sites; and their joint ventures) were located on their territory. Above all, the text reveals a tension between two objectives: acceptance of mutual dependence and retention of key strategic activities on the national territory. Over the last 10 years, the second objective has clearly taken precedence over the first –even completely eclipsed it. States had the resources [or in any case gave themselves the resources] to remain at the half-way point (the missile sector is a good example). Today, budget pressure combined with competitive pressure has placed the first objective back at the top of the agenda. In order for this mutual dependence to become reality, and thus shift the focus away from retention/location of activities, it is necessary to create **conditions for security of supply: political, legal, industrial and technological conditions**. The aim is not to approach this major issue from a defensive angle, but on the contrary, to bring it into alignment with changes in supplier profiles and the signals of the international market.

Supplier diversity, a wider sourcing footprint

Within the space of just a few years, the profiles of suppliers to the armed forces have become diversified as a result of acquisition choices by European States and commercial strategy of the companies. Thus a number of European States have seen the creation on their territory of subsidiaries of international groups, headquartered in other European countries or third party States. Establishment of subsidiaries (*ex nihilo* or through the acquisition of a local company), and where necessary joint ventures, could have been part of a purely commercial strategy and/or the result of offset agreements linked to a contract award. This explains the presence of Thales, Lockheed Martin or Boeing in the UK, Eurocopter and General Dynamics in Spain, etc.

Furthermore, in response to UOR, States more often resorted to off-the-shelf acquisitions intended to ensure rapid insertion of the system into the forces, with negotiations in some cases to allow adaptation of certain systems and payloads to national requirements. Tactical and MALE UAV systems are an excellent illustration of this trend, with the influx of Israeli and US competitors.

In addition to the **nationality of the suppliers/contractors**, the profile of their **activities portfolio** is no longer quite the same, due to the demand for new technologies and the use of innovative types of contract. Today contracts cover not only product/system acquisition, but also the provision of services (leasing, fly-by-the-hour contracts, etc.), including contracts providing support to the armed forces on operations and exercises, and other outsourcing contracts (IT systems, training, logistics and outsourced functions, etc.). These demands represent opportunities for new entrants, producers and operators from the civil sector (IT, electronics, cyber).

The contractor profile is evolving while at the same time the **sourcing area is changing dimension**, from national to international. Until now, this extension of the supply chain has primarily affected raw materials, electronic components, structural assemblies, cabling and non-complex stabilised products, etc. However, pricing pressure (competitiveness imperative) and the need to establish a local presence to penetrate export markets (Latin America and Asia in particular) can only reinforce this international trend, extending it to cover complex products with higher added value that are part of a company’s core business, as well as delocalised production or subcontracting operations. Against this backdrop, contractual clauses covering guaranteed supply must address an ever-broader spectrum of situations: tenderers located in other States, elements of the supply chain located in other States, cross border movement of goods and services.

Export markets and internationalisation of R&D : future trends and challenges

Another challenge relates to the creation of the technological and industrial conditions for security of supply, which involves the **control of critical key technologies**. In this respect, it is important to distinguish so-called “dual” and “non-dual” or defence-specific technologies. For dual-use technologies, Defence can benefit from synergies with the civil sector. However, the latter must offer a sufficient level of activity to maintain competences through a minimum level of R&D and production. Some technologies are specific to the defence sector. In this case, the level of activity is directly related to the evolving needs of defence ministries and export customers.

And, precisely, the **technology demands of export customers** are constantly increasing. Nowadays buyer States (“emerging” States that have achieved a certain level of industrialisation such as Brazil and India) are looking to acquire technology, expertise in order to create a 100% local industry with a view to eventually achieving technological independence. These transfers can take the form of local

subcontracting or patent sales. This means that companies must not only anticipate these demands but also support the transfers, by investing in a joint venture with a local partner (in some cases, in response to legal constraints) or by developing links with the scientific community. Production and design know-how – all of a company's resources and competences must be now available for internationalisation.

This trend is further reinforced by the difficult budget situation of European arms-producing States. Government authorities have clearly indicated to their main domestic suppliers that export orders will have to feed assembly lines and also contribute to R&D (design bureaus) activities in the longer term. European groups that are active in the defence sector will therefore have to **innovate to export, and export to innovate...** This linkup is complex and decisive for security of supply since, if it is poorly evaluated and controlled, it is likely to increase exposure to the risk of dependence on third party States (outside Europe), thus working de facto against the objective of strategic autonomy.

If it is necessary to look outside Europe, i.e. closer to export markets, for **new sources of R&D funding** in order to renew the technology base in certain areas, delocalisation of R&D activities cannot be excluded. Thus, R&D activities conducted abroad by European firms would no longer be limited to support production activities, i.e. adaptation of products and processes developed in Europe (commercial logic in responding to the needs expressed by the Customer State). Via access to R&D funding and new local knowledge networks, these installations could themselves become innovation-generators and develop specific and distinctive competences. This internationalisation of R&D activities and funding is positive as it helps to improve companies' technological capacities. The one drawback is that this R&D funding is under foreign control.

The challenge, therefore, is to increase the export capacity of European industry while retaining in Europe the competences required to develop the critical and differentiating technologies for defence equipment performance. Security of supply depends on meeting this challenge. Thus, security of supply concerns not only the group of LoI States, the primary producers of armaments in Europe, but all EU Member States. From this point of view, the December 2013 European Council can mark the starting point for an industrial, innovation-oriented dynamic in the defence arena, a dynamic shared by the EU Member States, the European Defence Agency, the European Commission, as well as by the suppliers of the armed forces.

[Technological dimension of SoS]

Key technologies for competitive advantage or how to keep control of one's own destiny

Preparation of a common list of defence-related scientific and technological domains (IT engineering and robotics, acoustic and radio waves, nanotechnologies, photonics, materials, energy, biotechnologies, etc.) broken down into R&T themes. The objec-

tive in this case would be to encourage synergies between civil and defence research in order to diversify the range of available financial resources.

This exercise would also be a chance to target emerging or breakthrough technologies on which funding efforts could be focused as a priority. The control of certain key technology building blocks represents a differentiator, particularly in technical domains like information and signal processing, autonomous systems, cyber defence, survivability/protection technologies, electronic warfare, new materials, electrical energy, platform/payload integration capacities, etc. The objective here would be to promote scientific and technological excellence by concentrating funding on the leaders in each domain, the best-in-class (whatever the size and location in Europe). The emphasis would be on pooling&sharing R&D facilities and teams (instead of current duplications). A concentration of resources that would likely encourage industrial specialisation, with – as a prerequisite – the acceptance by the States of situations of mutual dependence on an intra-European level. Here, each EU Member States will make explicit the technological areas for which activities / assets / installations remain in their territory, for reasons of national security; de facto, areas not opened to cross-border cooperation (intra-EU, or with non-EU States).

[Industrial dimension of SoS]

Monitoring of the supplier base, or how to preserve critical skills and competences

Sooner or later, companies in the sector, prime contractors and equipment suppliers, will have to solve a difficult equation related to the adaptation of manpower and the retention of critical skills and competences. Increased consultation between European member States concerning adjustments to programmes in progress (reduced orders, revised production rates, cancellations, etc.) could make it easier for industry to manage workload reductions and limit the impact on the supply chain. In addition, a common list of critical competences for each speciality, and for each industry segment, would facilitate the identification of potential weak points in the supply chain, leading where necessary to measures to maintain a critical level of activity. For emerging technologies, where there are clear needs for recruitment, a common approach could also be considered. This mapping effort will inform policy and R&T investments (joint R&T projects at systems/subsystems level, below platform).

Technical configurations, the search for more flexibility

Current and future operational evolutions are characterised by joint force and inter-allied operations, multi-platform situations and cooperative engagement. These evolutions thus give top priority to interoperability, modularity, adaptability of platforms and systems. In response, certain technical configurations should become prerequisites and facilitate industrial cooperation: use of common standards and open systems, adoption of the best civil technologies, incremental technology insertion, general architecture allowing industrial sharing.

On export markets, these technical configurations associated with new cooperative models should make it possible to shift from a purely reactive logic (constrained offsets) to a proactive logic based on industrial and technological cooperation.

[Regulatory dimension of SoS]

Opportunity to build momentum for cooperation and mutual assistance among EU member states

Information sharing, and the exchange of experiences and best practices should enable the EU member States to apply the directives 2009/43/EC *on transfers of defence-related products* and 2009/81/EC *on defence and security procurement* in a coherent manner, to evaluate the better solutions and to define common high standard criteria. The two directives are legislative tools that allow countries to apply it in different ways. This fact creates the biggest difficulties for companies, especially transnational companies, since they can be subject to different criteria, terms and conditions according to the country they operate from or they operate with.

The expected benefit depends on the field of application and on the percentage of exceptions. This is a question of regulatory stability and predictability, by harmonising in particular the specific clauses covering guarantees of supply.

- *2009/43/EC*: Harmonisation of the scope and of the conditions of General Licences (meaning better circulation of the most needed defence equipment, easier inter and intra-company transfers, optimisation of supply chains); Harmonisation of criteria for the certification of a company, considering the compliance with export restrictions and in order to build mutual trust; Exchange of best practices among European defence industry (reporting of their transfers, tracking of re-export limitations, effective internal compliance program).
- *2009/81/EC*: Establishment of a system of appropriate guarantees in order to reduce the risks to security of supply (article 23 of the directive) by harmonising contract conditions/requirements (obligations of the suppliers regarding the export/transfer/transit of goods, indication of any restriction which would result from export control or security arrangements e.g. ITAR); Exchange of information between EU member states relating to potential contractors guilty of grave professional misconduct; Exchange of best practices between companies in order to manage and anticipate “supplier risks”.

This is a technical approach to a very political process. ♦

