

Part V, Chapter 2: Defence Industrial Cooperation

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Abstract

This chapter examines to what extent Europe's governments and defence contractors cooperate to provide European armed forces with military capabilities. Today, defence industrial cooperation has evolved as almost the default policy option for European powers to develop large military platforms. Yet, there is no uniform trend, but variation across country groups (i.e. major vs. medium vs. lesser powers), across sectors (i.e. land vs. air vs. sea), and with regards to the sources of cooperation (i.e. government-induced vs. investment-driven). After a brief literature review, our chapter shows that while the European major powers largely can be observed to be in the driver's seat of defence industrial cooperation both at the government and the corporate level, medium and lesser powers follow the trend towards more collaboration. The defence-industry is still a highly politicized sector. Yet, private European defence champions have developed and companies are increasingly taking over the initiative in cooperation. Whereas the aerospace sector is already highly consolidated and subject to various cooperation projects, less collaboration can be observed in the land and naval systems. Even though cooperation is economically promising from a theoretical perspective, often-times only few of these benefits are realized. This is why the chapter, finally, addresses the question of whether cooperation or competition represents the most promising strategy towards a capable European Defence Technological and Industrial Base.

Keywords

Defence industries; cooperation; competition; consolidation; defence procurement; military platforms; security of supply; European Defence Technological and Industrial Base (EDTIB); France, United Kingdom, Germany.

1. Introduction¹

When Europe's governments provide their armed forces with defence industrial and technological capabilities, they have three ideal-typical options: (i) procurement from domestic firms; (ii) import from foreign sources; and (iii) defence industrial cooperation as a combination from the two previous options. Indeed, many military platforms are, today, based on defence industrial cooperation rather than on national designs. Political science has developed a number of alternative approaches to account for a government's decision in this regard. Power constraints in a self-help system, the economic interests of arms producing firms or opportunity structures induced by international and domestic institutions provide hypothetical answers to the origin of defence industrial cooperation. While most scholars had initially stressed the obstacles to give up national autonomy in this sensitive domain, the empirical record largely challenges this widespread expectation.

Europe's major powers, in particular, have been the drivers behind enhanced defence industrial cooperation either in terms of intergovernmental collaboration or delegation to an international organization, such as the *Organisation Conjointe de Coopération en Matière d'Armement* (OCCAR). Since the medium and lesser powers gradually follow this general trend, convergence among European armed forces can be undoubtedly observed. Yet, variation and even divergence can be found at the same time. For instance, defence industrial cooperation is much more widespread in the aerospace sector and increasingly in defence electronics than with respect to land systems. Finally, the question arises of how to sustain the European Defence Technological and Industrial Base (EDTIB). Given escalatory budgetary constraints and increased competition on global markets by consolidated US firms, European-wide cooperation was one potential response. Yet, over time and induced by the European Union's (EU) supranational institutions, competition increasingly supplemented collaborative approaches to reduce industrial overcapacities and to strengthen European industries in the long-term.

This chapter is structured as follows: The next section introduces the scholarly debate on defence industrial cooperation by addressing its causes and effects. Sections three and four provide empirical evidence of defence industrial cooperation among European armed forces. While the former describes the general trend over time and across countries, the latter briefly addresses exemplary collaboration projects. The empirical analysis is followed by discussing the governance of European defence industries in terms of cooperation and competition. The final section concludes with some brief prospects.

2. Explaining and understanding defence industrial cooperation

Before we turn to the empirical record of defence industrial cooperation among European armed forces, we briefly provide an overview of how political science has addressed this empirical phenomenon. Two distinct sets of research foci have predominated the literature. First, what are the *causes* of (non-)cooperation? Here, scholars approach variation of cooperation (i) over time, (ii) across countries, and (iii) across sectors. Second, what are the *effects* of cooperation? This strand of research primarily investigates those factors, which contribute to the success or failure of defence industrial cooperation.

As of the *causes of cooperation*, the existing literature may broadly be grouped according to the predominant research programs in International Relations.² Structural realism serves as the point of departure for most analyses. Determinants of state behaviour, such as anarchy, self-help and the

¹ We would like to thank our research assistants, Tim Heinkelmann-Wild and Johanna Trittenbach, for their great support. We gratefully acknowledge financial support by the research grant WE 3653/4-1 of the *Deutsche Forschungsgemeinschaft* (DFG).

² Alrik Thiem, "Conditions of intergovernmental armaments cooperation in Western Europe, 1996-2006", *European Political Science Review* 3:1 (2011), 1-33; Marc R. DeVore, "The Arms Collaboration Dilemma: Between Principal-Agent Dynamics and Collective Action Problems", *Security Studies* 20:4 (2011), 624-662.

distribution of power, constrain – rather than enable – defence industrial cooperation. “States do not willingly place themselves in situations of increased dependence. In a self-help system, considerations of security subordinate economic gain to political interests”³. Hence, structural realism defines governments with political – rather than firms with economic – interests as the pivotal actors and addresses variation of defence industrial cooperation across countries. While governments are generally sceptical towards arms collaboration, the relatively weaker states often lack the option of self-sufficiency and are, therefore, more likely to cooperate in the defence industrial domain.⁴

In contrast, liberalism emphasizes “the economic interests of arms-producing firms” which “reflect the position of the firm in oligopolistic global export markets”⁵. Hence governments behave according to the interests of their defence companies, which are the predominant actors. Independent from geopolitical considerations, governments with competitive defence industries promote cooperation, whereas governments with non-competitive firms rather oppose it. From a liberal perspective, this explains the complete range of variation of defence industrial cooperation.⁶

Finally, institutionalist approaches to defence industrial cooperation combine either with constructivist thought or with political economy approaches. Ulrich Krotz in his study of Franco-German weapon collaboration underlines the initial importance of institutionalized bilateral relations (i.e. regularized intergovernmentalism), which are supplemented by symbolic practices and parapublic underpinnings.⁷ In contrast, Marc DeVore and Moritz Weiss build on the varieties of capitalism literature to argue that the domestic institutions of a political economy determine a government’s decision on whether to collaborate.⁸ These institutions, in turn, empower distinct stakeholders, who either induce their cooperative or non-cooperative preferences. As a consequence, domestic institutions represent opportunities and constraints for policy-makers and thus account for the full range of variation of defence industrial cooperation.

As of the *effects of cooperation*, scholars are primarily interested in a better understanding of the success or failure of collaborative weapon programs.⁹ There is vast literature on the economic and military advantages of cooperation, which should result in successful projects. Compared to a national approach to arms production, defence industrial cooperation is expected to result in better products at a lower price per unit. The reasons are manifold: research and development costs can be shared; economies of scale decrease the production costs per unit; and a division of labour facilitates the use of

³ Kenneth Waltz, *Theory of International Politics* (Reading, Mass.: Addison Wesley, 1979), 107.

⁴ Stephen Walt, *Taming American Power: The Global Response to US Primacy* (New York: W. W. Norton, 2005); Thiem, “Intergovernmental armaments cooperation,” 8-10.

⁵ Andrew Moravcsik, “Armaments Among Allies: Franco-German Weapons Cooperation, 1975-1985”, in *Double-Edged Diplomacy: International Bargaining and Domestic Politics*, ed. Peter Evans et al. (Berkeley, University of California Press, 1993), 130; see also Jonathan B. Tucker, “Partners and Rivals: A Model of International Collaboration in Advanced Technology”, *International Organization* 45:1 (1991), 83–120. Another liberal strand stresses public opinion as a domestic determinant of defence policy. See, for instance, Richard C. Eichenberg and Richard Stoll, “Representing defense: democratic control of the defense budget in the United States and Western Europe”, *The Journal of Conflict Resolution* 47:4 (2003), 399–422.

⁶ Thiem, “Intergovernmental armaments cooperation”, 11-12.

⁷ Ulrich Krotz, *Flying Tiger: International Relations Theory and the Politics of Advanced Weapons* (Oxford: Oxford University Press, 2011).

⁸ Marc R. DeVore and Moritz Weiss, “Who’s in the cockpit? The political economy of collaborative aircraft decisions”, *Review of International Political Economy*, 21:2 (2014), 497-533.

⁹ Ron Matthews, *European Armaments Collaboration: Policy, Problems and Prospects* (Abington: Routledge, 1992); Mark Lorell and Julia Lowell, *Pros and Cons of International Weapons Procurement Collaboration* (Santa Monica, CA: RAND, 1995); Keith Hartley, “Collaboration and European defence industrial policy”, *Defence and Peace Economics* 19:4 (2008), 303–315.

comparative advantages of the cooperation partners. Yet, cooperation provides substantial military gains, too. Given that multilateral operations have become the rule rather than the exception, defence industrial cooperation significantly improves the interoperability of military systems and the standardization process. Ultimately, increased cooperation may enhance mutual identification and socialization and, by this, strengthen trust among governments.¹⁰

In contrast, several studies focus on the failed effects of collaborative armaments programs. Reviewing this literature, three sets of essential problems can be identified. Governments have jointly been incapable of specifying the technical requirements, because their military needs may extensively differ. Delays, cost overruns and insufficient capability may be the consequence.¹¹ In addition, defence firms, which implement the political decision to cooperate, may be unwilling to effectively cooperate. For instance, those firms, which normally have a competitive and adversarial relationship, may find it impossible to simultaneously pursue cooperative projects in an efficient way.¹² Rather than focusing on actors with divergent interests, Marc DeVore has demonstrated the importance of governance structures. In particular, defence industrial cooperation is necessarily caught between principal-agent and collective action dynamic, the so-called “arms collaboration dilemma”¹³.

In sum, literature has provided numerous analytical tools, which help us to better understand and explain defence industrial cooperation. Given that arms are both important for national security and a good exchanged on global markets, the analysis of interstate and interfirm cooperation may provide important insights for debates, which reach from the transformation of the state and globalization towards the sociology of technology and military innovation.¹⁴

3. Defence industrial cooperation in Europe I: general trends

On an aggregated level, there is a trend towards more cooperation in the European defence sector.¹⁵ While the total number of collaborative activities with European participation remained almost constant from 1961 until the mid-1970s, it nearly doubled in the second half of the 1970s. This steep increase of initiating cooperation projects involving European countries continued until 1985 and even accelerated in the period from 1986 to 1990 where numbers more than tripled and then remained on this higher level during the first half of the 1990s (see figure 1).

¹⁰ Marc R. DeVore, “International armaments collaboration and the limits of reform”, *Defence and Peace Economics* 25:4 (2014), 417-419.

¹¹ Jocelyn Mawdsley, “The A400M Project: From Flagship Project to Warning for European Defence Cooperation”, *Defence Studies* 13:1 (2013): 14-32.

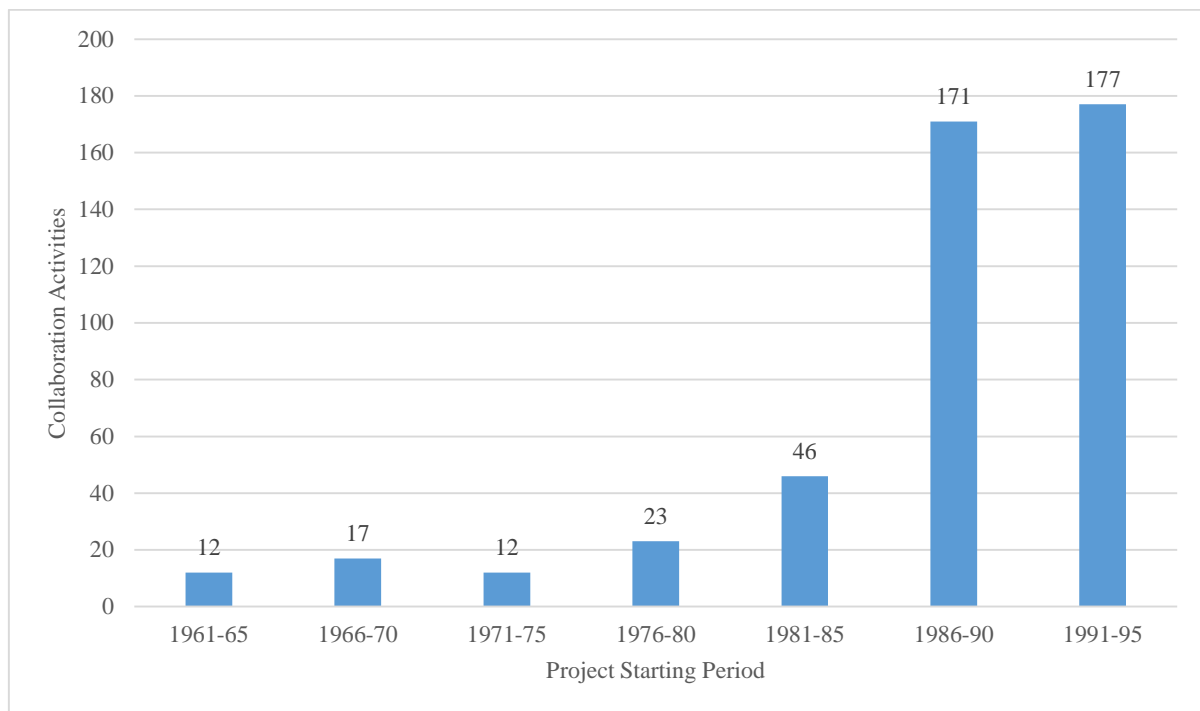
¹² Tucker, “Partners and Rivals”.

¹³ DeVore, “Arms Collaboration Dilemma”.

¹⁴ See, for instance, Moritz Weiss, “Integrating the Acquisition of Leviathan’s Swords? The emerging regulation of defense procurement within the EU”, in *Beyond the regulatory Polity? The European Integration of core state powers*, ed. Philipp Genschel and Markus Jachtenfuchs (Oxford: Oxford University Press, 2014): 27-44.

¹⁵ Accounting for trends and developments of European defence industrial cooperation is a challenging undertaking as there is no source of consistent data covering the whole period from the post-war era until today. For this reason this chapter relies on two different databases: Richard A. Bitzinger’s Defense Budget Project (DBP) Globalization Database, a comprehensive list of collaborative projects (*without financial scope*) in the period from 1961 until 1995 and the Defence Data provided by the European Defence Agency (EDA) providing financial data on collaborative defence spending in the period from 2005 until 2011 (*without information on collaborative projects*). Our special thanks go to Richard A. Bitzinger for generously sharing his database on defense industries globalization activities between 1961 and 1995.

Figure 1 - European Collaboration Activities 1961-1995¹⁶



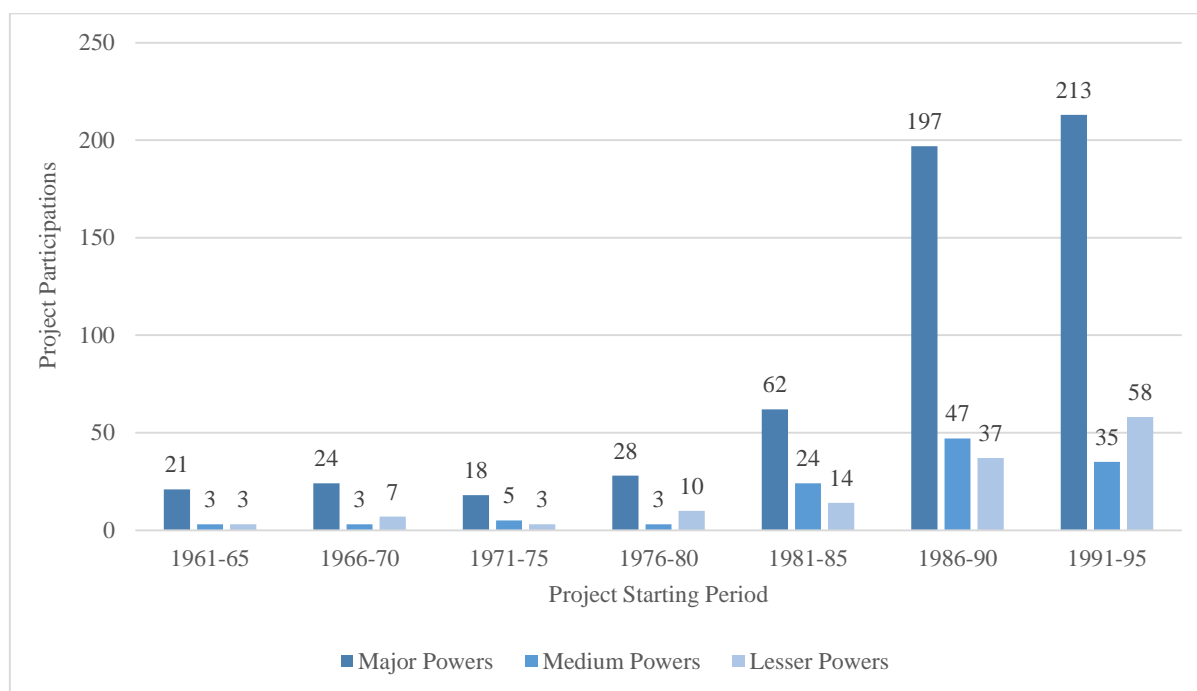
The observed trend of increasing collaboration applies to all three groups of countries: major, medium and lesser powers,¹⁷ with the larger powers accounting for the bulk of cooperation activities but medium and lesser powers slightly catching up. In short, there is some convergence (see figure 2). Indeed, a key finding is that 263 out of the 458 collaborative activities from 1960 to 1995 were operated without the participation of medium or lesser powers. These projects were conducted either exclusively among major European powers (107 projects) or between major European powers and third countries (156 projects). These latter agreements were mostly concluded within the NATO framework (especially with the United States) during the Cold War tensions of the 1980s (130 projects). Seth Jones, relying on the same database, has stressed that intra-European collaboration gradually replaced transatlantic collaboration as the threat of the USSR faded and the world shifted from bi- to unipolarity.¹⁸ From a structural realist perspective, he found confirmatory evidence that this variation over time was, indeed, an attempt to reduce dependence on the US hegemony. At the same time, the empirical evidence also questions structural realist predictions to explain variation of defence industrial cooperation across countries. After all, the major powers – rather than the medium or the lesser ones – seem to be drivers behind the trend of increasing interstate cooperation.

¹⁶ A European collaboration activity is defined as a co-development, coproduction, merger/acquisition, marketing alliance or technology transfer involving at least two countries, one of which being European as understood by the scope of this handbook. Source: Richard A. Bitzinger: DBP Globalization Database.

¹⁷ The major powers as understood in this handbook comprise France, Germany, Russia and the United Kingdom; the medium powers are Italy, Poland, Portugal, Spain, Turkey and Ukraine while the lesser powers include Austria, Albania, Belgium, Bulgaria, Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Switzerland, Luxemburg, Netherlands, Norway, Romania, Slovakia, Sweden, the countries of the former Yugoslavia (Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Macedonia) and the countries of the former USSR (Belarus, Estonia, Latvia, Lithuania, Moldova).

¹⁸ Seth G. Jones, *The Rise of European Security Cooperation* (Cambridge, Cambridge University Press, 2007), 137-180.

Figure 2 - Project Participations per Group



Yet, also the medium and lesser powers, both starting from an almost negligible degree of participation in military cooperation activities, have been involved in a rapidly increasing number of cooperative projects. With a compound annual growth rate (CAGR) from 1960 to 1995 of the average collaborative project participations per country of 37 per cent (lesser powers) and 34 per cent (medium powers), participation among these countries increased even faster than that of the major powers (30 per cent).¹⁹ Correspondingly, the lesser and medium powers' combined share in the total amount of cooperative project participation has increased from 22 per cent in the 1960s to about 30 per cent in 1995.²⁰ As a result, while the major powers, France, Germany and the United Kingdom, still conduct the bulk of cooperation activities,²¹ the data also suggest that medium and especially lesser powers are increasingly involved in these cooperative projects. Convergence is the consequence.

Two further questions follow from these findings: (i) Who initiates defence industrial cooperation, the governments or industry itself? (ii) Can we observe sectoral variation between air-, sea- and land systems?

First, relying again on Richard Bitzinger's DPB Globalization database, one can observe a distinct shift from government-induced towards industry-induced defence cooperation. Until 1969, when German *Vereinigte Flugtechnische Werke* (VFW) and Dutch *Fokker* joined forces in the consolidated *VFW-Fokker*,²² collaborative activity involving European countries were exclusively operated through government initiative. Yet, in the course of the 1970s, industry-induced cooperation increasingly gained ground. Whereas around one third of the cooperation projects were initiated by defence firms during the 1970s and early 1980s, this share more than doubled until 1990 (78 per cent) and led to a

¹⁹ In order to account for the considerable different amount of countries per group (major powers 4, medium powers 6, and lesser powers 18 until 1990 and 27 starting from 1991) the statement on relative growth intensity is based on average project participations per country in each group.

²⁰ Bitzinger, DBP Globalization Database.

²¹ Due to its special role, this statement does not apply to Russia and the former USSR. More details on Russian defence cooperation is provided below.

²² "VFW Vereinigte Flugtechnische Werke GmbH", last modified July 11, 2011, <http://www.globalsecurity.org/military/world/europe/de-vfw.htm>.

situation in which companies were the drivers of defence industrial cooperation in 9 out of 10 projects in 1995.²³

Second, the degree of collaboration is highest in the aircraft and advanced electronics sector followed by cooperation in the development and production of missile systems. In the land and sea sector (especially armoured vehicles and naval industries) cooperation levels are low. Yet, whereas the aerospace sector had constantly been predominant in collaboration projects during the 1961 to 1995 period, cooperation in the field of advanced electronics was almost not existent until the late 1980s, when a series of cooperation projects were initiated. Electronics, then, even turned out to be one of the main sectors of military cooperation.²⁴ One possible explanation for this development is the relative capital intensity of the aerospace and the electronics sector. The more expensive a defence good is, the higher are the potential benefits of cooperation. Increasing units diminish variable cost and add to the return on investment. This aligns to the observation that the progress in European defence industry consolidation is differentiated along the same fault line. The electronics and the aircraft industries are consolidating at a significantly faster pace than their counterparts in naval and land systems, where capital intensity is lower, technological process is slower, units are higher (in case of the armoured vehicles) and many firms are still state-owned. Hence, economies of scale are neither achievable nor necessary to the same degree as they are in the advanced and extremely capital-intensive electronics or aircraft sector.

When we turn to more recent developments in European defence industrial cooperation, the European Defence Agency (EDA) – established in 2004 – provides data on collaborative defence *spending* for equipment procurement as well as Research and Technology (R&T).²⁵ The findings are largely consistent with those on the level of collaborative *projects* exhibited above.

From 2005 to 2011, a general trend of growth in total collaborative defence equipment procurement expenditure can be observed (see figure 3).²⁶ While aggregated collaborative defence equipment procurement expenditures among the major powers increased strongly by 75 per cent, the rise was smaller among lesser powers with 17 per cent. For the medium powers, with collaborative defence equipment spending first doubling until 2008 and then falling again to 2005 level in 2011, no clear trend is conceivable.²⁷ Against the backdrop of the EDA's member states' shrinking defence budgets since 2006,²⁸ the share of collaborative defence equipment procurement spending as part of total defence procurement expenditure was increasing from 2005 to 2011.²⁹ This trend indicates to reflect the European strategy of enhanced "pooling and sharing" of military capabilities, even though, in absolute terms, a great potential of further cooperation can be observed. Finally, the above-mentioned trend towards intra-European – rather than transatlantic or global – cooperation clearly continued until

²³ Bitzinger, DBP Globalization Database. See also Thiem, "Intergovernmental armaments cooperation", 15.

²⁴ Bitzinger, DBP Globalization Database.

²⁵ "Defence Data Portal", European Defence Agency (EDA), accessed April 20, 2016, <http://www.eda.europa.eu/info-hub/defence-data-portal>.

²⁶ Data is available covering the period from 2005 to 2013. As it is getting incomplete for the major powers starting in 2012, we have decided to solely consider the period from 2005 until 2011. Yet, during this period there are several cases, especially in the group of the lesser powers, where it is unclear if there actually was no collaborative defence spending or if data was merely not available.

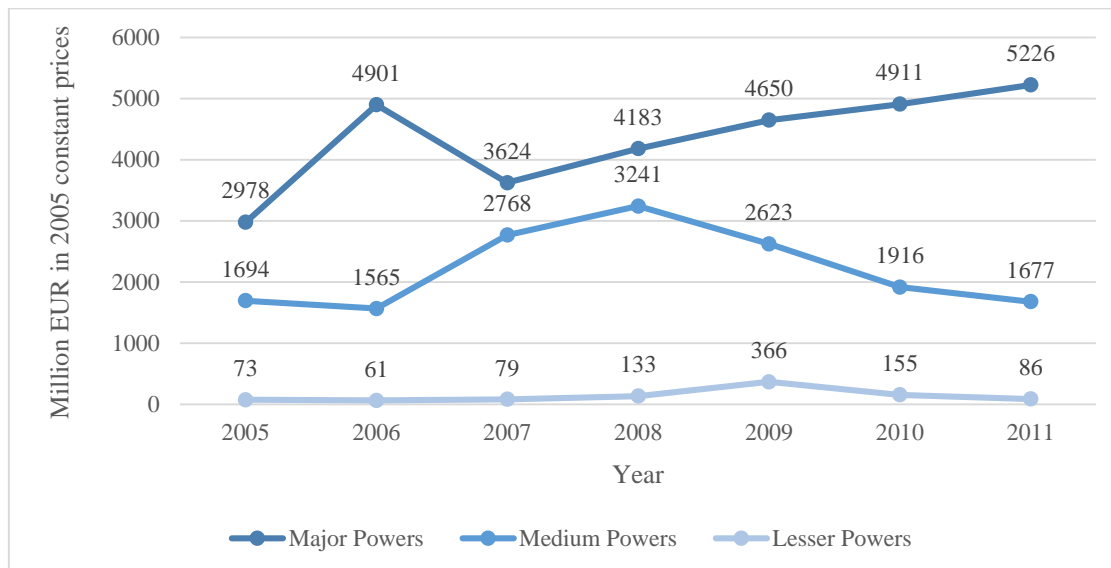
²⁷ "Defence Data Portal", EDA.

²⁸ "Defence Data 2013", European Defence Agency (EDA), 2015, DOI: 10.2836/552746, 2.

²⁹ "Defence Data 2011", European Defence Agency (EDA), 2013, DOI: 10.2836/1686, 4.

2011. It, ultimately, reached 92.7 per cent of the expenses for collaborative defence procurement spent in projects with at least two European countries involved.³⁰

Figure 3 - Collaborative Defence Equipment Procurement Expenditure per Group



The analysis above has not applied to Russia, one of the four major powers, for two reasons. First, the DBP Globalization Database does not provide data on defence collaboration within the USSR until 1990. Second, Russia is not a member of the European Defence Agency and therefore no data on collaborative defence spending is provided. Thus, relying on our two databases, no statements on the development of Russian defence collaboration can be made. Nonetheless, based on a variety of sources some trends in Russian defence industrial cooperation can be identified.

After the fall of the Soviet Union, Russian production- and arms-systems were “old and out-dated”³¹ and its defence industries “unable to produce the advanced equipment required”³². Russian defence firms and the government were aware of the risk of losing ground in global competition.³³ The government’s response was the establishment of bilateral “Military-technical Cooperations” (MTC),³⁴ promoting imports, exports and licensing productions, but also containing “joint research and design projects to create new types of weapon and military hardware”³⁵. Throughout the period from 1991 until today, China and India have been the most important partners in the realm of defence industrial cooperation.³⁶ Yet, even though the Russian Federation conducted some successful projects with India,

³⁰ “Defence Data 2011”, EDA, 4. However, this does not provide clear evidence for a decreased dependence on the US as intra-European collaborative spending is defined as expenditures in projects that involve at least two European countries but that might as well involve non-European partners.

³¹ Jyotsna Bakshi, “India-Russia Defence Co-operation”, *Strategic Analysis* 30:2 (2006), 452.

³² “The Military Balance 2015: Russia and Eurasia”, in *The Military Balance 115* (2015), 166.

³³ Björn Hagelin, Mark Bromley and Siemon T. Wezeman, “International Arms Transfers” in *Sipri Yearbook 2006. Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2006), 455.

³⁴ Baidya B. Basu, “Russian military-technical cooperation. Structures and processes” *Strategic Analysis* 25:3 (2001), 445; “The Military Balance 2004: Russia and Eurasia,” in *The Military Balance 104* (2004), 296.

³⁵ Baidya B. Basu, “Russian military-technical cooperation.”, 440.

³⁶ Siemon Wezeman, Sam Perlo-Freeman and Pieter Wezeman, “International arms transfers and arms production: Developments in arms transfers,” in *SIPRI Yearbook 2015. Armaments Disarmament and International Security* (Oxford: Oxford University Press, 2015); Hagelin et al. “International Arms Transfers”; Baidya B. Basu, “Russian military-technical cooperation”.

such as the ramjet supersonic cruise missile “BrahMos”,³⁷ current cooperation efforts are constrained by considerable delays and reduction of agreed purchases.³⁸ Sino-Russian collaboration, at present, even does not reach beyond the stage of declaration of intent.³⁹ Nevertheless, Russia might prospectively be even more reliant on its non-Western partners as the annexation of the Crimea in 2014 destroyed any type of cooperation with the Ukraine, which, in turn, interrupts supply chains of the Russian arms industries,⁴⁰ and entailed sanctions by European defence industrial partners such as France, Germany and Italy.⁴¹ Especially in the case of France, with the suspension of the envisaged Russian purchase and licensing of French Vladivostok-class (Mistral) assault ships the political conflict had far-reaching repercussions in 2014.⁴² Largely independent from these recent developments, an increased cooperation between Russia and the other European major powers in terms of co-development and co-production is not to be expected in the short-run as there exist large differences in competitiveness of their respective defence champions – a gap that Russia tries to mitigate through intensified importing of technology.⁴³

4. Defence industrial cooperation in Europe II: bi- and multilateral arms projects

In order to add more empirical depth to the comparative statistics provided above, some of the most prominent bi- or multilateral collaborative projects in the aerospace, land and naval sector shall be briefly discussed. This allows for a more comprehensive picture of the opportunities and challenges of defence industrial cooperation and provides the empirical background for discussing the governance of European defence industries.

Transport aircraft: The A400M military transporter

The A400M military transporter aircraft is one of the most recent examples for the ambiguous results of multilateral defence cooperation. From the initiation phase of the project in the early 1980s, the A400M has been considered to be a “flagship” European collaborative project⁴⁴. It was endorsed in 1997 by Britain, France, Germany, Spain, Belgium, Luxembourg, Turkey, Italy and Portugal, with the latter two countries withdrawing from the program before production started.⁴⁵ In 2003, the A400M project has been launched and integrated into OCCAR for management. From an economic perspective, the A400M was thought to break “new ground in European collaborative procurement with the adoption of a more commercial approach towards its acquisition and support”⁴⁶ and to enable cost-effective and rapid response to crises with the potential of becoming an integral part of the development of the EU’s Common Security and Defence Policy.⁴⁷ Yet, in the course of production, the program faced serious problems⁴⁸ and delays in production. Only when credible exit threats were

³⁷ Bakshi, “India-Russia Defence Co-operation”, 459.

³⁸ Rahul Bedi, “IAF chief plans more C-17s, admits FGFA delays” and “Go West. Indian lifters enter new era”, *Jane’s International Intelligence Review* (October 2013).

³⁹ Kjell Engelbrekt and John Watts, “Sino-Russian Strategic Collaboration. Still an ‘Axis of Convenience’?” *Swedish National Defence College*, February 12, 2015.

⁴⁰ “The Military Balance 2016: Russia and Eurasia”, in *The Military Balance 116*, 170f.

⁴¹ “The Military Balance 2015: Russia and Eurasia”, 166; “The Military Balance 2016: Russia and Eurasia”, 170f.

⁴² “The Military Balance 2015: Russia and Eurasia”, 164.

⁴³ “The Military Balance 2015: Russia and Eurasia”, 166

⁴⁴ Mawdsley, “The A400M Project”, 14.

⁴⁵ Mawdsley, “The A400M Project”, 21.

⁴⁶ “A400M. A Tactical and Strategic Airlifter”, OCCAR, accessed April 26, 2016, <http://www.occar.int/340>.

⁴⁷ Mawdsley, “The A400M Project”, 14.

⁴⁸ Pierre Tran, “EADS CEO: Clients Must Share A400M Funding Burden”, *Defense News*, January 12, 2010.

brought forward by the prime contractor, Airbus, renegotiation of contracts was successful in 2010. Finally, the first transporter aircraft, supposed to come into operation in 2009, was only delivered to France in 2013, with a four years delay, and with a cost over-run estimated to be approximately 7.6 billion Euros.⁴⁹ As of December 2015, out of the 170 aircrafts that have been ordered 21 have been delivered and are currently in operation.⁵⁰

Combat fighter aircraft: Eurofighter

The Eurofighter Typhoon is Europe's largest military collaborative program⁵¹ designed to be upgraded and extended to provide decades of effective use. Production is operated by the major aerospace companies of the Eurofighter partner nations: BAE Systems (United Kingdom, 33 per cent ownership of the Eurofighter Consortium), Airbus Defence and Space (Germany, 33 per cent and Spain, 13 per cent) and Finmeccanica (Italy, 21 per cent).⁵² The initial agreement of collaboration on an aircraft, however, was concluded between the United Kingdom, West Germany and France in 1983. After the French decision to opt out and build the Rafale unilaterally in 1985, Italy and Spain joined the Eurofighter in 1985 and 1988, respectively. The construction of first aircraft prototypes started in 1989 with clear division of production of components among the four core nations. Between 2003 and 2005, the Eurofighter was taken into service. Since then, 719 Eurofighter Typhoon have been ordered (by the four partner countries as well as Austria, Saudi Arabia, Oman and Kuwait) of which 467 have already been delivered.⁵³

Helicopter: TIGER

The TIGER is a multi-role combat helicopter fully developed in Europe and manufactured in three different variants (according to the different Final Assembly Lines in the partner countries Germany, France and Spain) by Airbus Helicopters.⁵⁴ The program was bilaterally initiated by France and Germany as anti-tank and support helicopter system to confront the large number of main battle tanks from the Warsaw Pact in the Cold War. After numerous struggles,⁵⁵ the project survived the 1990s and, ultimately, OCCAR has managed it since 2001. Spain joined in 2004 and Australia was granted observer status to the TIGER program in 2009, a consequence of the Australian order of 22 helicopters in 2001.⁵⁶ From an optimist perspective, the helicopter program is seen as to have "lasting impact beyond its own confines" being the catalyst for incremental integration and resulting full fusion of the French and German helicopter industries, and finally for the "ongoing integration of the European defense and aerospace industries"⁵⁷. In a similar vein, considering that "by the end of twenty-first

⁴⁹ Mawdsley, "The A400M Project", 14.

⁵⁰ "Orders, Deliveries, In Operation Military aircraft by Country Worldwide", Airbus Defence & Space, last modified December 31, 2015,

<http://militaryaircraft-airbusds.com/Portals/0/Images/Aircraft/OrdersAndDeliveries/AMOrdersDeliveries.pdf>.

⁵¹ Keith Hartley, "The industrial and Economic Benefits of Eurofighter Typhoon. Final Report", Eurofighter GmbH, Released June 20, 2006, 3.

Derived from: http://www.defense-aerospace.com/dae/articles/reports/Typhoon_studyJune2006.pdf.

⁵² Markus N. Heinrich, "The Eurofighter Typhoon programme: economic and industrial implications of collaborative defence manufacturing", *Defence Studies* 15:4 (2015), 342.

⁵³ "Orders, Deliveries, In Operation Military aircraft by Country Worldwide", Airbus Defence & Space, last modified December 31, 2015,

<http://militaryaircraft-airbusds.com/Portals/0/Images/Aircraft/OrdersAndDeliveries/AMOrdersDeliveries.pdf>.

⁵⁴ "TIGER. A new Generation of Helicopters", accessed April 26, 2016, <http://www.occar.int/39>.

⁵⁵ Krotz, *Flying Tiger*.

⁵⁶ "TIGER. A new Generation of Helicopters"

⁵⁷ Krotz, *Flying Tiger*, 201.

century, Eurocopter had become the world's largest helicopter manufacturer, with the military share of its sales steadily rising"⁵⁸, the TIGER project in itself reads as a success story. Nevertheless, disagreement over military requirements, cost overruns and delays have also been integral part of this collaborative project.

Armoured vehicle: BOXER

The all-terrain utility armoured fighting vehicle BOXER is one of the few cooperation projects in the land systems sector conducted bilaterally between the Netherlands and Germany. It is produced in nine different vehicle variants (four for Germany, five for the Netherlands) with a total volume of over two billion Euros from 1999 until 2015, whereas deliveries are still going on until 2021.⁵⁹ Prime contractor is Armoured Vehicle Technology (ARTEC GmbH), founded in 1999, a joint venture of Krauss-Maffei Wegmann GmbH (Germany), Rheinmetall Landsysteme (Germany) and Rheinmetall Nederland (Netherlands).⁶⁰ The procurement of the vehicles is managed by OCCAR, the two partner countries being the main recipients. Lithuania joined the "only true European Vehicle Programme"⁶¹ in December 2015 when the country ordered 88 BOXER to be delivered between 2017 and 2020. The program was originally initiated by Germany, the United Kingdom and France, which established a joint procurement and development study in 1994. Yet, France left the program in 1999 in order to pursue the nationally built Véhicule Blindé de Combat d'Infanterie (VBCI). In 2001, the Netherlands having been an observer since 1997, became full partner and in 2003, the United Kingdom withdrew from the program, likewise to focus on a national project, the Future Rapid Effect System (FRES).⁶²

Frégate européenne multi-mission (FREMM)

FREMM, a class of multi-purpose frigates, "is the most ambitious and innovative European naval defence project"⁶³. The program is designed in three versions by French DCNS (partly state-owned) and Italian Fincantieri (state-owned). OCCAR has been responsible for the management of development, production and initial service support since 2005. The program comprises the construction of 18 ships: ten for Italy, and eight for France. After production had started in 2007, the first FREMM was delivered in 2012 and the objective of contractual delivery is 2022 for 18 frigates.⁶⁴ Further operators are Morocco, which has been delivered one frigate worth 470 million Euros in 2014, and Egypt, which bought one frigate as part of a larger armament deal before opening the new Suez Canal.⁶⁵

⁵⁸ Krotz, *Flying Tiger*, 201.

⁵⁹ „BOXER. The Next Generation of Multi Role Armoured Vehicles“, accessed April 26, 2016, <http://www.occar.int/34>.

⁶⁰ "The Company", ARTEC, accessed April 26, 2016, <http://www.artec-boxer.com/index.php?id=company>.

⁶¹ "News", ARTEC, accessed April 26, 2016, <http://www.artec-boxer.com/index.php?id=news>.

⁶² "Bound Volume Hansard. Written Ministerial Statements", United Kingdom Parliament, accessed April 26, 2016, http://www.publications.parliament.uk/pa/cm200203/cmhansrd/vo030717/wmstext/30717m05.htm#30717m05.html_spm5.

⁶³ "FREMM. Multi Mission Fregates", accessed April 26, 2016, <http://www.occar.int/339>.

⁶⁴ "FREMM. Multi Mission Fregates".

⁶⁵ "A Brest, le Maroc prend possession de sa frégate Fremm Mohammed VI", L'Usine Nouvelle, accessed April 26, 2016, <http://www.usinenouvelle.com/article/a-brest-le-maroc-prend-possession-de-sa-fregate-fremm-mohammed-vi.N236729>. "Egypt officially signs for 24 Rafales, FREMM frigate, and missiles", IHS Jane's Defence Weekly, accessed April 26, 2016, <http://www.janes.com/article/49025/egypt-officially-signs-for-24-rafales-fremm-frigate-and-missiles>.

Missiles: MILAN

The MILAN antitank missile, initiated in 1983 by France, West Germany and the United Kingdom, was meant to substantially increase the defence capability of the Western alliance's armed forces. More than 360,000 missiles and 10,000 launch units have actually been produced since 1972 and are now in service in 41 countries all over the world.⁶⁶ This makes it one of the commercially most successful collaborative arms projects. The MILAN antitank missile “was the first of a series of infantry anti-tank weapons that seriously started to challenge the supremacy of the main battle tank on the battlefield”⁶⁷, and is in service until today. It is manufactured and further developed by MBDA, a truly European company with shareholders from all major European powers.⁶⁸

In sum, these examples reflect not only the predominance of Europe's major powers in prominent collaborative projects, but also point out successes and failures of defence industrial collaboration. Although clear patterns are difficult to reveal, one can identify two factors, which seem to facilitate successful collaboration. In particular in combination, high development costs and large economies of scale appear to increase the likelihood of success.

5. Governing the European Defence Technological and Industrial Base (EDTIB): cooperation vs. competition

After having presented the empirical record of defence industrial cooperation in Europe, we turn to the governance of Europe's defence-industrial base. More specifically, the focus is on the governments' strategies on how to sustain this sector. Historically, European governments provided their national defence companies with protected markets and companies provided states with secure supplies of domestically manufactured weaponry. This equilibrium – which placed the defence industrial sector somewhat *between the state and the market*⁶⁹ – has increasingly been under pressure by a number of challenges.⁷⁰ The end of the Cold War had shrunk procurement budgets in Europe and, thus, led to a structural underinvestment in the so-called European Defence Technological and Industrial Base (EDTIB).⁷¹ Consolidation at the national – not yet the European – level was one of the consequences.⁷² In addition, Europe's defence industries had to face American consolidation and were thus increasingly confronting powerful multinational defence companies on global export markets.⁷³ Furthermore, technological advancement entailed an escalation of development and production costs of military platforms, which undermined the ability of states to meet their defence needs solely

⁶⁶ “MILAN Anti-Tank Missile System, France”, Army Technology, last accessed April 26, 2016, <http://www.army-technology.com/projects/milan/>.

⁶⁷ “Infantry. MILAN”, The British Army, accessed April 26, 2016, <http://www.armedforces.co.uk/army/listings/10040.html>.

⁶⁸ “MILAN”, Global Security, last modified December 29, 2012, <http://www.globalsecurity.org/military/world/europe/milan.htm>.

⁶⁹ DeVore and Weiss, “Who's in the cockpit?”.

⁷⁰ Keith Hayward, “The Globalisation of Defence Industries”, *Survival* 42:2 (2000), 115-132.

⁷¹ Richard A. Bitzinger, “The European Defense Industry in the 21st Century: Challenges and Responses”, in *The Modern Defense Industry: Political, Economic, and Technological Issues* ed. Richard A. Bitzinger (Santa Barbara: Praeger, 2009), 175-195.

⁷² European Commission, *The Challenges Facing the European Defence-Related Industry: A Contribution for Action at European Level*, COM(1996)10 (Brussels: January 24, 1996).

⁷³ Eugene Gholz and Harvey M. Sapolsky, “Restructuring the US Defense Industry”, *International Security* 24:3 (1999/2000), 5-51; Wally Struys, “The Future of the Defence Firm in Small and Medium Countries”, *Defence and Peace Economics* 15:6 (2004), 551-564; Stephen G. Brooks, *Producing Security: Multinational Corporations, Globalization and the Changing Calculus of Conflict* (Princeton: Princeton University Press, 2005).

through domestic production.⁷⁴ As a result from these tectonic shifts, European governance of the EDTIP increasingly gained importance among both policy-makers and industries.⁷⁵

In the course of the 1990s, the initial response to these challenges was defence industrial cooperation: “Collaborative armaments programmes are now the most common way of addressing the prohibitive costs of purely national approaches to the development and production of large complex weapon systems in Europe”⁷⁶. The basic objective was to extract the gains from collaboration, which would make European firms more competitive and thus the industrial base could largely be sustained. While our contribution has elaborated on the advantages of defence industrial cooperation above, Europe’s governance of these arrangements was characterized by one problematic characteristic: “*juste retour*”. This principle suggests a fair industrial return of a state’s investment. As a result, national industrial policy criteria determined the distribution of work share rather than quality and price. The desired integration of the EDTIB on the basis of comparative advantage was precluded and costly overcapacities were maintained. Given the unsatisfactory record of these projects, some European states founded an international organization, OCCAR, to manage cooperative defence equipment programs. In turn, the tit-for-tat “*juste retour*” was replaced by an “overall” industrial return of investment. Yet, the positive effects remained modest.⁷⁷ The primary implication of these experiences was to realize the limited impact of cooperation as a means to strengthen the EDTIB. However, building on its experiences in other industrial sectors, the European Commission increasingly became aware of applying distinct policy instruments to this end.

While defence industrial cooperation was further upheld in the course of the 2000s, competition as an instrument to strengthen the EDTIB was increasingly gaining ground.⁷⁸ The idea was that the widespread failure to consolidate European defence industries by state-induced collaboration should be supplemented by market-induced competition.⁷⁹ Given that the intergovernmental approach of the 1990s had not substantially reduced national protectionism, the European Commission turned to supranational case law to reinforce its demands of more competition.⁸⁰ Building on a fairly accidental case judgment against Spain in 1998, the European Commission indirectly threatened EU member states to sue protectionist laws and policies at the European Court of Justice. The objective was to encourage governments applying no longer the exemption clause of Art. 346 (TFEU) as the rule, but more often the general public procurement regulations of the Union. Under monopsonist conditions, this would encourage the survival of the fittest defence firms in Europe. Therefore, the Commission proposed legislation of defence procurement, which should introduce competition in Europe as a means to strengthen the EDTIB. While the legislation process had already been difficult, the

⁷⁴ David Kirkpatrick, “Trends in the Costs of Weapon Systems and the Consequences”, *Defence and Peace Economics* 15:3 (2004), 259-273.

⁷⁵ European Commission, *The Challenges Facing the European Defence-Related Industry: A Contribution for Action at European Level*, COM(1996)10 (Brussels: January 24, 1996); European Commission, *Green Paper: Defence Procurement*, COM(2004)608 (Brussels: September 23, 2004).

⁷⁶ European Commission, *The Challenges Facing the European Defence-Related Industry*, 8.

⁷⁷ European Commission, *Green Paper: Defence Procurement*.

⁷⁸ Ulrika Mörtz and Malena Britz, “European Integration as Organizing: The Case of Armaments”, *Journal of Common Market Studies* 42:5 (2004), 957–973.

⁷⁹ European Commission, *Towards a more competitive and efficient defence and security sector*, COM(2013) 542 (Brussels: July 24, 2013).

⁸⁰ Catherine Hoeffler, “European Armament Co-operation and the Renewal of Industrial Policy Motives”, *Journal of European Public Policy* 19:3 (2012), 435-451; Michael Blauburger and Moritz Weiss, “‘If you can’t beat me, join me!’ How the Commission Pushed and Pulled Member States into Legislating Defence Procurement”, *Journal of European Public Policy* 20:8 (2013), 1120-1138; Martin Trybus, *Buying Defence and Security in Europe. The EU Defence and Security Procurement Directive in Context* (Cambridge: Cambridge University Press, 2014).

implementation was even harder. Nevertheless, the Commission, again, applied case law and could thus even challenge traditional practices, such as defence offsets.⁸¹ Interestingly though, the most important exemption of applying secondary law to national defence procurement was cooperation of, at least, two EU member states.⁸² In other words, European governments may now either apply more competitive procurement procedures or cooperate in joint projects. This dual strategy is meant to preserve the EDTIB in the long-term.

In conclusion, the empirical record clearly indicates the predominance of the major powers in both defence industrial cooperation and competition. Similar to the results of Thiem's Qualitative Comparative Analysis,⁸³ qualitative process analyses suggest the major and more competitive powers being in the driver's seat of enforcing both cooperation and competition. For instance, smaller EU members initially opposed EU legislation on defence procurement and, in particular, defended national offsets. Only when the major powers provided for compensations in the governance of supply chains, they ultimately agreed.⁸⁴

6. Conclusion

Across Europe, defence industries have historically been dominated by national security considerations and the emphasis on domestic security of supply. Nevertheless, the escalating costs of modern weapon systems combined with budgetary austerity have led European countries and companies increasingly to involve in bi- or multilateral responses to global challenges. The most frequent response is that European countries participate in international defence cooperation projects – a trend well documented in data on collaborative defence spending and on involvement in cooperation activity. This trend is accompanied and supported by the sector's consolidation and the consequent emergence of European defence champions (e.g. Airbus, MBDA). This development is also reflected by the shift of initiating defence industrial cooperation from government- towards industry-induced programs. Due to the fact, however, that arms collaboration cannot simultaneously resolve collective-action and principal-agent problems,⁸⁵ several weaknesses and challenges persist. Against this backdrop, competitive strategies such as public tenders and the reduction (or even abolishment) of offsets are developed as a complement to cooperation in order to strengthen the European Defence Technological and Industrial Base in the 21st century.

The overall convergence of European countries' national strategies towards more bi- or multilateral cooperation and more market-oriented procurement strategies needs nonetheless to be qualified along the three groups of major, medium and lesser powers. Major powers are continuously dominating defence cooperation. Not only are their governments involved in most of the co-development and co-production programs but also is the European defence sector polycentrically organized around France, Germany, the UK, and partly Italy, Spain and Sweden. Even though medium and lesser powers are increasingly involved in collaborative projects, their interest in a *European* security of supply seems not prevalent. Especially the lesser powers, which do not possess considerable defence industrial capacities, are oftentimes rather inclined to import weaponry off-the-shelf from the United States. Another variation from the generally converging trend has been identified across sectors. Whereas the technologically advanced aerospace and electronics domains are already deeply consolidated and

⁸¹ Moritz Weiss and Michael Blauburger, "Judicialized Law-Making and Opportunistic Enforcement: Explaining the EU's Challenge of National Defence Offsets", *Journal of Common Market Studies* 54:2 (2016), 444–462.

⁸² European Parliament and Council, *Directive 2009/81/EC, 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* (Brussels: July 13, 2009).

⁸³ Thiem, "Intergovernmental armaments cooperation".

⁸⁴ Blauburger and Weiss, "'If you can't beat me, join me!'", 1120-1138.

⁸⁵ Marc R. DeVore, "The Arms Collaboration Dilemma".

cooperation is at daily occurrence, the land and the naval systems sectors are widely lagging behind. These latter industries are moreover characterized by even more state influence through government shares or ownership.

In conclusion, our contribution demonstrates an overall increase of cooperation and marketization in Europe⁸⁶ which can be interpreted as a trend towards a normalization of the defence market. Nevertheless, it is important to acknowledge that this alleged tendency is promoted within the boundaries of a continuously highly politicized sector. In face of political tensions, cooperation in the defence sector is frequently questioned. This has recently become apparent in the case of France, which rapidly suspended the delivery of two Mistral-class amphibious-assault ships to Russia in reaction to the annexation of Crimea in 2014.⁸⁷ This reminds us of the inherently sensitive nature of defence cooperation and underlines the persisting conflict between political, economic and technological imperatives.

⁸⁶ Malena Britz, “The Role of Marketization in the Europeanization of Defense Industry Policy”, *Bulletin of Science, Technology & Society* 30:3 (2010), 176-184.

⁸⁷ “The Military Balance 2015: Russia and Eurasia”, 166.

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