Determinants of International Armaments Cooperation

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Abstract: International sharing of works spreading in the current globalized world has also influenced defense acquisition and international trade in arms and other military equipment. Following essential characteristics of actors involved and forms of international armaments cooperation, the paper focuses on definition of key benefits and drawbacks of international division of labor in defense acquisition. Furthermore, based on expected effects of these pros and cons, it describes key determinants of governments’ rational behavior in relation to international armaments cooperation.

Key-Words: Armaments, Arms Contract, International Cooperation, Defense Acquisition, Transparency, Economies of Scale

1 Introduction
Producing arms and other military equipment and international trade in these commodities represent the worldwide second largest economic activity of human being, following oil mining and processing and trading oil and oil products [1]. Producing and trading arms are characterized by a number of unique specifics resulting from the nature of actors in the market as well as from the specifics of defense itself.

First, disregarding illegal arms transfers and few insignificant exceptions (e.g. private military companies), weapons and other military equipment are being purchased by individual national governments using public funds. This specific is closely linked to the purely public nature of the defense goods [2]. Second, governments influence or are involved in production of weapons and other military equipment, either directly as owners of production facilities or indirectly via national regulation [3]. These governmental interventions are connected with a wide range of factors, covering security, political, economic and legal considerations. Third, governments (as well as international community) make many efforts to regulate and control international arms trade (including both newly produced and used items). This regulation results from the need to prevent flows of dangerous material to the hands of unfriendly governments or other entities. In fact, these specifics represent market barriers, preventing common market forces to promote economic efficiency, both on the side of demand and supply, and both at national and international levels. These specifics have a significant influence on arms market internationalization, i.e. international division of labor in defense acquisition [4].

In particular, these specifics have impacted the demand side of international arms market. While on the side of supply, especially producers of major weapon systems, i.e. supersonic aircraft, aircraft carriers, submarines, advanced missiles etc., the technology necessary and related substantial R&D as well as other costs have driven manufacturers to merge (or collapse). Therefore, both national and international and both horizontal and vertical integration have resulted in the situation when the market is dominated by a rather limited number of oligopoly suppliers of major weapon systems [5]. No expectation is a situation of a temporarily monopoly supplier of latest generation of given weapon system [6].

As already indicated, a rather different development has characterized the side of demand, i.e. behavior of individual national governments in this market. Prevailinglly, national governments tend to act independently in defense acquisition and control their national resources [7]. In the Western and Central European region, this fact is in a sharp contrast with European integration and furthermore, with stagnating or even declining military expenditures of most governments in the region, that result in a deficiency of resources available for maintaining and modernizing national armed forces [8]. Therefore, combination of limited resources and
the lack of cooperation have started to threaten the ability of the region to achieve its regional international security and political goals [5]. In the course of recent years, only few examples of international armaments projects can be found, e.g. the Eurofighter project or acquisitions via international institutions like NATO Support Agency.

What are the mechanisms and forms of international cooperation among governments in the sphere of defense acquisition? What are the driving forces that both stimulate and impede governments to share or pool their armaments efforts at international scale?

2 International Cooperation in Arms Production and Trade

In arms production and trade, international cooperation (work sharing) can be divided into four main categories:

- Cooperation among arms manufacturers (industry, usually with support of given national governments);
- Cooperation among governments producing and exporting weapons (usually agreement among governments to share a joint armaments project, covering research and development, design, production and potentially maintenance and servicing of given system);
- Cooperation among governments purchasing identical or very similar weapon system(s) (pooled arms contracts, potentially covering the acquisition process, maintenance, repair, modernization etc.);
- Cooperation between a government purchasing given weapons system and foreign contractor (often called offsets; usually in order to compensate outflow of public funds from domestic economy or to partially involve domestic defense industrial base).

International cooperation among arms manufacturers is the most similar to cooperation tendencies driven purely by market forces. Firms in defense industry seek for international partners, merge, take other firms over, provide licenses and sign sub-contracts etc. if expected economic benefits exceed related costs. These are usually connected with economies of scale, diversity and level of technology available (R&D potential) etc.

However, in the case of defense related production, national governments tend to strongly regulate all transactions, including international cooperation projects. Therefore, besides economical drivers, this form of cooperation is highly influenced by security and political considerations.

Cooperation among governments to share or pool their capacities to develop, design, produce or even maintain and repair certain weapon system expresses their will to achieve either better quality (level of technology) for the system to be designed or to achieve the required result at lower costs.

This form of cooperation is rather similar to the form described above and can even directly include partners from the industry. The main difference consists in the key actors. While in the previous form, the key actors are represented by defense industry firms seeking to maximize their profits, here, the key actors are the governments primarily responsible for armaments of their militaries and national defense capabilities. So, profit maximization is not the key driver here and is being replaced by a more complex of security, political and economic targets [9].

International cooperation among governments purchasing weapons represents formation of a “weapon system club” pooling several governments in order to acquire certain military equipment. It might even cover a part or whole life cycle management of given equipment. This form of international armaments cooperation generates additional costs resulting from the necessity to agree on terms and conditions of the joint project by all partners (e.g. technical/performance requirements, sharing of costs and benefits) and from the need to monitor and manage the joint project at international scale. These additional costs can be indicated as collective (weapon system club) transaction costs.

On the other hand, cooperation among governments purchasing weapon system(s) might result in significant economic or performance benefits. Forming a joint demand for a weapon system (establishing a weapon system club of governments) creates a stronger market position compared to those of individual nations, especially if these represent small nations with limited military budgets (resulting in relatively low numbers of pieces to be purchased). A better position in the market creates a potential for given weapon system club to negotiate better contract conditions, especially lower price, higher quality standards etc. Lower project costs are expected to result also from a more effective control mechanism designed among the weapon system club members. In the case of a single and independently acting national government, transparency of defense contracts is often questionable due to the persistent lack of public control. Collective (international) control among individual governments – members
pooled within a weapon system club forms conditions for higher level of transparency and therefore enhanced effectiveness and efficiency.

International cooperation on the side of arms supply (i.e. production) has resulted in integration of arms production capacities, especially regarding main (sophisticated) weapon systems [4]. This trend has resulted from the need to achieve adequate economies of scale and possess necessary technology. On the other hand, international cooperation on the side of demand (i.e. on the side of governments acquiring weapons) has undergone very limited developments. What are the particular reasons and what factors can be identified as determinants of efficiency of international armaments cooperation among these governments?

3 International Armaments Cooperation Determinants
Assuming that governments behave rationally, as any other economic entity under any circumstances, they would approach to international armaments cooperation if the expected marginal benefits exceed the expected marginal costs.

\[ MC < MR \]  

(1)

Based on the characteristics of advantages (additional benefits) and setbacks (additional costs) related to international cooperation among governments procuring military equipment, we can specify both sides of this inequation as sums of individual sets of identified factors with economic impact [10]. Then, costs of international armaments cooperation can be expressed as:

\[ C_{IAC} = \sum (TC_{IAC} + LB_{DIB} + FST + LI + CR) \]  

(2)

where:

- \( C_{IAC} \) stands for additional costs related to approaching to international cooperation in an armaments project;
- \( TC_{IAC} \) represents collective (weapon system club) transaction costs (i.e. those related to the process of forming and managing of given weapon system club, e.g. searching for suitable partners, negotiating terms and conditions with other governments in the club, monitoring of conduct among the club partners during the project execution etc.);
- \( LB_{DIB} \) represents lost benefits expectedly gained for domestic defense industrial base if the project would be carried out by the nation independently (without given weapon system club partners);
- \( FST \) stands for potential future security threats resulting from the sharing of given armaments project with other nations (Note: This parameter belongs to those that are rather difficult to quantify. It can be expressed as either the value of countermeasures necessary to be prepared to face anticipated threats or as a value of defense/security investments potentially deflated due to given threats, both weighed with estimated occurrence probabilities.);
- \( LI \) stands for loss of national independence resulting from the internationally shared armaments contract. More than likely, this parameter will have no economic expression and if any, it could be also classified as potential future security threats resulting from sharing an armaments project (\( FST \)). However, from the political point of view, this factor might have a substantial impact on government’s behavior that is why it is worth to be mentioned separately;
- \( CR \) represents deadweight losses caused by the necessity to compromise when setting technical requirements acceptable for all the participants (nations) within given weapon system club.

Similarly, benefits resulting from approaching to an internationally shared armaments contract can be specified, representing again a set of factors, related to expected economies of scale, distribution of certain transaction costs etc. Then, they can be expressed as a sum of following factors:

\[ B_{IAC} = \sum (FCR + UPR + TCS_{IAC} + CTS + OCS_{SC} + MCS + PAC) \]  

(3)

where:

- \( B_{IAC} \) stands for benefits resulting from sharing burdens of given armaments project among foreign partners;
- \( FCR \) stands for reduction of fixed costs over the system life cycle achieved through sharing of assets among the weapon system club partners or even pooling of certain defense capabilities;
- \( UPR \) represents reduction of purchase unit price resulting from a higher number of units purchased and a stronger market position of a weapon system club compared to positions of its individual members;
- \( TCS_{IAC} \) stands for savings in (individual) transaction costs caused by shared technical and market information and joint negotiation with contractor(s) as well as shared costs of contract monitoring and management;
• CTS represents cost savings resulting from higher contract transparency, linked to control by all partners pooled within the weapon system club;
• OCS_SC represents savings in operational costs achieved by the expected possibility to share maintenance and service capacities thanks to identical/similar system purchased by several nations pooled within the weapon system club;
• MCS stands for savings expected in relation to future modernization projects shared by given weapon system club partners;
• PAC means promoting of alliance cohesion through shared armaments project, i.e. by stronger ties among members of given weapon system club (Note: This factor is also difficult to quantify but it can be expressed as a value of additional individual assets/military spending that would be necessary to compensate effects of given weapon system club partners coordinated approach).

Based on this specification, the inequation mentioned above (1), characterizing the situation when a rationally behaving government will seek to share its armaments contract(s) with foreign partner(s), can be formulated as:

\[ C_{IAC} < B_{IAC} \]  

or

\[ \sum (TC_{IAC} + LB + FST + LI + CR) \]

\[ < \sum (FCR + UPR + TCS_{IAC} + CTS + OCS_{SC} + MCS + PAC) \]  

This inequation characterizes the key factors every rationally behaving government will consider when making decisions regarding either individual or internationally shared armaments contract.

4 Conclusion
International armaments cooperation among national governments represents a rather complex issue. International division of labor (sharing of costs and benefits) is influenced not only by economic factors but also by security and political ones. These non-economic factors often outweigh the economic rationale of international armaments cooperation.

In spite traditional aspects of preserving national independence and sovereignty in defense, international armaments cooperation represents a potential for substantial benefits, consisting mainly in reduced unit costs derived from economies of scale and stronger market position of governments pooled within a weapon systems club.

Expected increase in collective transaction costs connected with formation and management of given weapon system club are to be compensated by decreasing individual transaction costs each individual government would have to spend in relation to placing and managing an independent contract in the market.

A substantial benefit of international cooperation in the sphere of armaments, i.e. the sphere traditionally excluded from the rules common for any other public contracting and connected with tendencies to briberies and other misconducts, represents natural control installed among members, i.e. governments pooled within given weapon system club. This control results in enhanced transparency and subsequently forms conditions for significant costs savings.

In addition, in the Western and Central European region, national defense and security policies are based on collective approach, connected with development of both NATO and EU. International projects resulting in shared or pooled military equipment or even entire defense capabilities promote cohesion and strength of these alliances and therefore contribute to further security integration in the region.

The above outlined determinants of international armaments cooperation should be examined by every rational government. Nevertheless, assessing possibilities of international approach to defense acquisition always has to take into account the actual situation in given segment of international armaments market case by case (unique novel technology vs. easily available technology; monopoly supplier vs. more competitive supply side of the market etc.) as well as position of each and every country (size, economic and technological potential, broader security and political considerations).

References:


