Public Goods and Territory
The role of EADS in the Construction of Europe

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Abstract.

The paper will attempt to demonstrate the fundamental importance of public goods in the performance of any territory or economy. After discussing the concept and definition of public goods, one of the most important of them (defense), will be reviewed in the context of the European Union (E.U.) as a territory. The EU is currently undergoing continual creation, transformation, flux and flow as it steadily constructs a judicial and political framework whose precise nature is still unknown. However, EU agencies are launching policies in the area of defense and defense industry which will most certainly be of great significance in the surrender of sovereignty by member states. In the context of increasingly dynamic European integration, European defense policy constitutes one of Europe's most important goals.

This common defense policy is currently being implemented through Foreign Policy, Security and Common Defense initiatives. Typically, the governments of member states attempt to improve the productive fabric in the sector through the territorial organization of defense activities. Such is remarkably the case of the aerospace industry through the recent creation in July of 2000 of the European Aeronautic Defense and Space Company (EADS) which agglutinates the activities of its three founding firms: the German Daimler Chrysler Aerospace AG, Aerospatiale Matra, S.A. from France and Spain's Construcciones Aeronáuticas S.A. (CASA). These firms have worked together for many years on numerous projects and joint ventures in the area of European cooperation such as Airbus, Eurocopter, Eurofighter and Arianespace.

The present paper will also discuss the case of the firm CASA, foremost in the Spanish aeronautic sector. Since its foundation in 1923, CASA has developed sufficient technological and productive capability to compete in the international aerospace design, manufacturing and maintenance markets. Territorial and organizational changes undergone by the firm in the process of the constitution of EADS have particular interest. The paper attempts to draw some conclusions as to the foreseeable consequences for the European territories where these firms locate and to speculate on the influence these consequences may have on the construction of Europe.

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1.1. Theoretical framework.

Since Samuelson´s seminal work in 1955, economics has been developing the essential theory to scientifically analyse the existence of public goods in the society. This type of goods is characterised by non-excludability and non-rivalry in consumption. Both traits clearly and worryingly distinguish public goods from the rest of market goods. If nobody can be excluded in consumption and the enjoyment of one person is in no way reduced by that of another; is it possible to think that public goods are similar to an inextinguishable source of wealth to satisfy human needs?

Cost-free status of public goods has been, and it is still, one of the biggest illusions in society and its citizens. Due to the shortage of enough private supply of pure public goods, caused by the lack of incentives, public goods tend to provide "free meals" to individuals. However, their provision, like that of any other market goods, always involves a cost that somebody has to pay for. Therefore, the control and provision of public goods have been traditionally considered a public task, which gives a sound justification for the state intervention in the economy.

Neither the number, nor the quantity of public goods is predetermined in an economy. Each society is responsible for enumerating which ones are to be considered public goods. Some are thought as pure public goods everywhere, while the public content of many others is more dubious. Indeed, even a football match could be socially rated as a public service. However, it is difficult to find any society where security and defence are not regarded as pure public goods. Therefore, society delimits the borderline between public and private goods, according to the relative importance given to each good or service, and deals with the consequences of these decisions. In this respect, it is key for society to pose the right questions, before it looks for the right answers.

But one thing is clear, some core of public goods, those we call basic institutional goods are the major ingredient in the performance of any society. Free decisions of millions of individuals driven to obtain private goods and services should, at the same time, pursue and strengthen basic institutional goods. Simply put, institutional goods, when they grow and develop, generate more product than the resources that they use and, therefore, are fundamental to the construction, the progress and the stability of societies.

There is no contradiction but coexistence between public and private goods. The former characterised by non-excludability and non-rivalry in consumption, the later ruled by microeconomics laws.

Romer (1986) and later Nelson and Romer (1996) used the endogenous growth model to clarify what types of goods exist and which their role is in the economy. According to this model, individuals acquire human capital whose level and accumulation rate determine the possibilities of any society to achieve knowledge and innovations applied to the productive process, and, therefore, to increase income and welfare. This human capital, called "wetware" by Nelson and Romer, represents the mind´s capacity to generate knowledge, that is to say, solutions, at least partial ones, to the fundamental economic problem of society: that is scarcity. By means of "wetware" (human capital), individuals and, by extension, the society create "hardware", (the material embodiment of human capital), and "software", that is to say, codes to interpret, use and develop machines ("hardware").

According to an alternative and more conventional classification, the economy is composed of four basic types of goods and services, depending on the possibilities of rivalry and excludability in consumption:

1. *Rival and excludable goods*, also called private goods where the consumption of one individual excludes any other person´s demand.
2. *Rival but non excludable goods,* traditionally known as commons, with a pre-capitalist origin and probable source of the so called "tragedy of commons".
3. *Non rival and non excludable goods,* called pure public goods, particularly relevant for this paper.
4. *Non rival but excludable (or partially excludable) goods,* especially suitable for the analysis of endogenous growth theory, since patents and other forms of protection of knowledge can foster investment in human capital and research.

This work analyses those pure public goods that have been accepted by almost all societies[1]. It particularly focuses on the Security and the Defence. Historically, the protection of the population and the territory against external enemies has been a sine qua non of the birth and the development of nation states. Countries and sovereignty have been reinforced by means of the capacity of defence against third parties. This has required the training of an appropriate army both in terms of people and armaments. If,

[1] Security, Defence, Social Institutions, Law, Property Rights, Health, Education and Research.

according to the historical experience, it is possible to say that the "state is defence", how should be interpreted any trend that points out to debilitating this identity?

1.2. The defence and its industry.

Armaments industry has been historically linked to the action of government. This linkage is based on the public nature of defence and on the monopoly of force by the state, both outside the country, where other states represents an alternative to sovereignty, and inside the country, where citizens can be tempted by independence and violence. Therefore defence industry has strongly depended on governments. Public monopsony has predominated on the demand side, while oligopoly or monopoly, have characterised the supply side. The state has been very often the only consumer and supplier of this market due to the public nature of many of their firms[2]. This situation has determined the features of the defence industry, where hierarchical organisations, closeness to power and political interference, take the place of market forces.

Due to the public monopsony of these markets, governments have traditionally determined conditions of production and delivery dates; they have controlled production and trading licences and have established commercial relations not only depending on the ratio quality/price but also on strategic and political factors (Medina, 2001: 134). Within the firms, the lack of concern regarding production costs has inevitably led to overstaffed plants, paternalist labour relations and low productivity. Moreover, in public firms, strong class unions have influenced the management of these organisations, which have become hostages to the interest of politicians and unionists.

This situation does not seem favourable to any transformation of defence firms towards the market. In fact, many of these firms failed in their intent to produce for civil market. The main reason is that any transformation requires human and financial efforts and a long and difficult learning process. It is, above all, a change of the rules guiding these firms, which involves a new governance structure, in accordance with the market where uncertainty is much bigger than in public hierarchies. Defence firms, distant from markets and used to privileged relations with power, did not suspect their governance structures have to be transformed. But radical exogenous changes such as need to adapt quick technological innovations to products and processes and the end of the cold war propelled the movement.

1.2.1. The technological imperative of trial and error.

It is possible to think that hierarchy, bureaucracy and proximity to power could lead defence firms to produce low quality goods, with backward technological content. However, this industry precisely stands out due to the high quality and the advanced knowledge incorporated into its products. The extreme competition among national armies and the need to equip armies with enough deterrent and destruction power explain why the public good that represents the defence has always counted on the necessary resources to equip the army with the most competitive armament, both in terms of quality and technological innovation. Human, financial and material resources generously fed European armament industry for the most part of XX century, due to the predominance of pre-war, war and post-war situations. Furthermore, budget for defence was usually beyond the real possibilities of countries, as can be observed nowadays in many developing countries, which suffer a situation similar to the one lived by Europe in the past.

Military power requires maximum reliability in the functioning of any armament. That is to say, any product, from a simple bullet to the most sophisticated rocket, has to work perfectly. For this purpose, defence industry has to establish exhaustive quality controls and systematic production tests. In reality, defence industry has always used these methods, as its significant contribution to the history of technological progress reveals. These military practices and their culmination as war and destruction, paradoxically engender knowledge, crudely reflecting the processes of creative destruction that characterise many socio-economic models. The scientific method, a system of knowledge where learning and working processes are based on trial and error, has been practised in the defence industry since its beginnings. For this reason, distance from the market and proximity to public hierarchies have not been incompatible with quality and innovation capacity.

Defence industry has had, until very recently, a marked national character. Every government has maintained autonomous defence industries, considered, as have been said above, a public good and a basis of national security and sovereignty. However, the technological sophistication that current armaments have achieved and the need for huge R&D expenses to be competitive have transformed the public nature of this

[2] Even, when the consumer was a foreign country, sales should be made in agreement with the government, which not only took the final decision but also kept the exclusive control of patents and armaments

industry during the last decades. Nowadays, almost no country is able to produce armament autonomously, and governments are increasingly promoting international agreements of co-operation and joint production (AFARMADE, 2000)

1.2.2. Institutional shock.

The need for international co-operation and the changes caused by the end of the cold war have represented an earthquake for the defence industry at an international level. As a consequence of peace dividends, both national governments and defence industry drastically reduced their financial and productive capacities, leading, during the nineties, to a restructuring of this industry.

The deepest effects of restructuring influenced the governance structure, both outside and inside defence firms. Institutional changes firstly affected the governance relationships between national governments and defence firms. The incapacity of the states to maintain the growth of armaments industries, due to the budgetary pressures to reduce their armed forces, implies the breakdown of the rules of the game that had guided this sector throughout its history. In Europe, the decrease in the domestic demand of armaments has intensified competitiveness in an already small market, accustomed to stability provided by the state.

The relationship of defence firms with export markets has significantly changed as well. Despite the rigorous regulation of international armaments trade[3], currently, the industry of defence requires increasing export capacity in order to be efficient. This exigency generates an intense international competition. In this context, it is fundamental for defence firms to have available the most competitive and most technologically advanced products and, therefore, to reinforce international co-operation.

Despite these transformations, the impact of institutional change specially affected the internal governance structure of firms. How could the defence industries, burdened with the bureaucratic mentality of their staff and whose production was not conditioned by costs, direct their activity towards the civil sector?

The first attempts of diversification towards the civil activity clearly failed and led defence industries to restructure their staff or, even, to abandon the sector. The rules of the market (costs, initiative, image and information) seems to be too high obstacles for defence firms which require a new and different entrepreneurial governance, both inside and outside the firms. This change implies, above all, the transformation of the learning

processes and the mental models of the individuals involved in production. In particular, defence industries should be able to confront the challenge of the market by means of the improvement and adaptation of their capacities and the creation of institutions able to ensure an efficient governance structure. This should be complemented with an adequate technological level and a flexible organisation of production that favour the diffusion of knowledge and the achievement of increasing returns to scale. Moreover, government actions should be conceived to facilitate and to foster these transformations. In accordance with these objectives, the European defence industries have begun a process of vertical concentration of the main national defence firms, which is subsequently giving place to a new process of international horizontal integration among European firms. At the same time, the EU is advancing in the design of what could be the institutional framework of a truly "continental public good", the security and defence policy of the EU.

1.3. The Common Foreign and Security Policy (CFSP).

Since the Treaty on European Union came into force at Maastricht in November 1993, the CFSP has become one of the three basic pillars of the EU[4]. It is the first time since the Treaties of Rome that Europe can make its voice heard on the international stage and express its position on armed conflicts and human rights. At the same time, EU has decided that it should be capable not only to act independently in crisis management but also to intervene to prevent conflict. During the past decade, the institutional and organisational transformation of CFSP has meant that European defence has advanced quickly, especially in terms of political objectives. It is plausible to think that in the near future strategic actions on security and defence will become strong elements in the EU policy. This section reviews the main agreements made in the context of the CFSP.

The Western European Union (WEU)[5] was initially the organism responsible for setting in motion the CFSP. According to the Treaty of Maastricht, the WEU would assume the role of NATO's European pillar and would form the EU's defence component. The role of WEU as NATO´s European pillar was confirmed though the gradual formulation of a European Security and Defence Policy (ESDP), which was part of the CFSP and covered all matters relating to European security in the framework of the NATO´s

[3] Nowadays, it is only possible to export to allied countries where no kind of sanction has been imposed.
[4] EU pillars are: European Union, Common Foreign and Security Policy and Justice.

policies. The role of WEU as a EU´s defence component was defined in 1992 when the WEU confirmed NATO's responsibility for collective self defence and formally decided to confine its operations to the "Petersberg tasks"[6]: humanitarian and rescue tasks, peacekeeping tasks and combat-force tasks in crisis management, including peacemaking.

The relationship between the EU and the WEU was problematic from the beginning of the Treaty on European Union. Differences in the composition of both organisms made co-ordination difficult, even more, taking into account that the decisions of one organism needed the approval of the other (Sanz, 2001: 87). These problems were reflected in the redaction of the Treaty of Amsterdam in 1997, where the Treaty of Maastricht was revised and completed. This new Treaty on European Union insisted on the resolution to develop a CFSP, which included the gradual formulation of a ESDP, and kept the main roles of the WEU in the field of defence, anticipating, however, its possible integration in the EU.

The period 1998-2001 was characterised by the rapid development of the ESDP, both in the creation of an autonomous action force and in the definition of its relationship with the NATO.

French and British declaration at Saint Malô in December 1998 implies a radical change in the United Kingdom positions on security and defence that, until then, had been contrary to the majority of EU projects. This declaration proposed that "*the Union must have the capacity for autonomous action, backed up by credible military forces, the means to decide to use them, and a readiness to do so, in order to respond to international crises without prejudice to actions by NATO*". For this purpose, EU should be equipped with the necessary means and structures.

Between 1999 and 2001, European Council summits at Cologne, Helsinki, Feira, Nice, Göteburg and Laeken reaffirmed EU agreement to have the necessary means and capabilities to intervene autonomously in "Petersberg tasks". For this purpose, the Helsinki European Council set a "headline goal" that implies the EU commitment to be able, by the year 2003, to deploy within sixty days, and sustain for at least one year, up to 60.000 persons capable of carrying out the full range of "Petersberg tasks". The achievement of this goal, which does not involve the establishment of an European

[5] The WEU was established in 1954, evolved from the Brussels Treaty Organisation founded in 1948, by Belgium, France, Germany, Italy, Netherlands and Luxemburg and it is the first step towards an European security and defence.

[6] So called after the name of the German city where the WEU Ministerial Council defined these missions.

army, has been accelerated and in December 2001, the Laeken European Council declared the operational capability of ESDP, considering that EU was already able to develop some crisis management operations.

The "headline goal" set by the European Council implied the transfer of WEU functions to the EU. This process was completed in the declaration during the WEU Council of Marseille, in November 2000. Since then, the WEU only remains responsible for the "Commitment to collective defence". That is to say, the responsibility for defending any member country in the case of aggression. At the same time, the EU has reinforced its relationship with the NATO, in order to be able to develop increasingly complex operations, by means of consultation and co-operation arrangements, and with the UN, by means of the commitment to support UN crisis management operations with EU capabilities.

European Council summits have been also essential to define the basic institutional structure of the ESDP. In 1999, Mr. Javier Solana was appointed as High Representative for the CFSP, responsible for assisting the European Presidency in the external representation of the EU, and the Council in the implementation of policy decisions in CFSP matters. The creation of the new permanent political and military structure of the EU was approved in the Nice European Council (December 2000): the Political and Security Committee (PSC); the Military Committee (MC) and the Military Staff (MS). Finally, a Committee for Civilian Aspects of Crisis Management was created in 2000, in order to give advice on the non-military aspects of "Petersberg tasks".

Indeed, the EU has experienced a significant progress in its security and defence policy since the Treaty of Maastricht came into force. However, the EU is still far from the total operational capacity of the ESDP. In fact, the ESDP has shown little capacity of reaction in recent international crisis, like the wars in Kosovo and Afganistan. Moreover, it is accused of excessive dependency on the NATO and the US foreign policy. In this respect, one of the key factors to consolidate the ESDP is to develop a European industry of defence. In order to achieve this objective, the EU should overcome three kinds of problems: a- economic problems, focused on the current restructuring of the industry of defence; b- political problems, related to the transformation of a national public good into a continental one; and c- institutional problems, that imply the design of a new governance structure for this industry.

1.4. Towards a European defence industry.

The development of a European industry of defence becomes essential to the credibility and efficiency of the ESDP. However, advances in this respect have been, until now, very limited. European co-operation in defence matters still has a marked inter-governmental character, linked to the EU and the NATO, but without representing an EU real responsibility (Medina, 2001:126). This situation is due, above all, to the traditional characteristics of the industry of defence as national public good. Nevertheless, as mentioned above, the recent restructuring of this activity, the institutional agreements that have been signed and the political will of European governments to reach a complete development of the ESDP increasingly favour the integration of European national markets and policies. That is to say, current economic, institutional and political circumstances in the industry of defence could be contributing to EU political integration.

The changes that have been observed in the most traditional features of the industry of defence and the impetus given by the ESDP to strengthen EU military capabilities, indeed, favour the development of a European defence sector. Nowadays, no EU government defends the total autonomy of armament acquisitions. In general terms, it is plausible to think that current situation has the basic ingredients to be able to aspire to a European defence conceived as a continental public good where the integration of firms in each defence activity could help to overcome the current fragmentation of this industry. Governments actions to achieve this goal have been, up to now, very timid and have basically consisted on the development of an institutional framework that intends to be the basis of European industry of defence and to facilitate the restructuring of this industry by means of the promotion of the processes of inter-national integration already initiated by the private sector.

The institutions created to develop a European industry of defence have focused on the harmonisation of requirements of EU national armament acquisitions. The Conventional Arms Export Working Group (COARM) was formed in 1991 with the objective of co-ordinating the national arms export policies. Since 1992, European co-operation of the industry of defence has been organised by means of the Western European Armament Group (WEAG), whose aims are to create the necessary conditions for the development of a European armament market and to strengthen the European defence technological and industrial base in order to be able to compete with US in the defence international market. For this purpose, the WEAG propose the harmonisation of requirements; the

co-operation in R&D and the principles to guide the opening up of national defence markets to cross-border competition. In 1996, the WEAG promoted the creation of the Western European Armament Organisation (WEAO). This organism is part of the WEU and intends to be a predecessor of a European Armament Agency that is still awaiting its creation. Moreover, in 1995, the European Council established the Ad Hoc Party on a European Armament Policy (POLARM) responsible for the elaboration of reports and recommendations concerning the design of a European armament policy. Finally, the activity of the Organisation Cojoint de Cooperation en Matière de Armament (OCCAR) started in 1996, under the principles of harmonisation, cost effectiveness, competitive industrial base, renunciation of "juste retour"[7] and openness to other countries. This organism could become the starting point for the harmonisation of armament demands in EU countries. For this purpose, the OCCAR aims at providing more effective and efficient arrangements for the management of certain existing and future collaborative armament programmes. Currently the members of the OCCAR are France, Germany, Italy and United Kingdom, while Belgium, Netherlands and Spain have already applied for the incorporation and many other countries are interested in it.

This institutional framework has obtained, until now, limited results. For this reason, in 1997, EU governments acknowledged that the efforts made by the private sector to restructure the industry were one of the key pieces for the development of a European industry of defence and that, for this purpose, public action should facilitate the processes of concentration and co-operation among firms. In this field, the aerospace activity has developed pioneering public and private actions.

1.5. The development of the European aerospace industry.

In 1997, German, French and British governments expressed their intention to foster the restructuring and the integration of defence aerospace industry. In order to achieve this objective, these governments and the Spanish one proposed the establishment of an action programme to the main European aerospace firms. Airbus[8] participants responded to this proposal with a document on the principles that should guide the creation of a European defence aerospace company. These principles were based, both

[7] The principle of renunciation to the "juste retour" implies that the members´ share is not necessarily equivalent to their investment. This is a fundamental principle of similar organisms like the WEAG and of any economic organism. Therefore, it is remarkable the relevance of this principle because, without it, the possibility of developing a European defence would be much more reduced.

[8] In 1967, German, French and British governments signed an agreement to jointly develop a new commercial jet plane, the Airbus

on economic effectiveness and public support to the private initiatives (AFARMADE, 2000: 136).

In July 1998, German, Spanish, French, Italian, British and Swedish governments signed a "Letter of intentions" (LOI), where they committed themselves to support industrial co-operation in the aerospace activity, promoting, among other objectives, the guarantee of supply to any country, the exports liberalisation and the harmonisation of requirements. At the same time, the LOI recognised that the processes of concentration and merger of aerospace industry should be ruled according to the private sector principles, without any direct intervention of governments, whose role was limited to the creation of favourable conditions for the integration. Despite the negative reaction of some EU countries that feared they would be left aside in the development of a European industry of defence due to their small size, the LOI has become the institutional framework to foster co-operation agreements already initiated by aerospace firms. In particular, since 1999, concentration and mergers have significantly grown in this activity. Many factors explain why aerospace industry has become a pioneer in the integration of European defence:

- The aerospace industry, compared to the majority of industrial activities, uses a very complex and advanced technology and requires high R&D expenditures – around 14,5% of turnover in 2000 (AECMA, 2000: 19). Both traits reduce the autonomy of firms and promote co-operation and concentration agreements in order to be competitive. Furthermore, these traits convert aerospace industry in a strategic niche where innovations can be diffused to others industrial and defence activities.

- Unlike other defence activities, aerospace has almost achieved a complete integration of military and civil production. In 2000, military sales represented 29% of total turnover while civil sales represented 71%, a percentage that is increasingly growing from the beginning of the nineties (AECMA, 2000: 9). Access to wider markets reinforces the interest for mergers in the activity as a means to achieve powerful scale economies.

- Aerospace industry is an export-oriented activity: sales out of Europe accounted for 52% of total sales in 2000. Although this export success is mainly driven by civil products, where exports accounted for 71% of sales, openness in military product is

also significant, where almost 30% of sales are exports (AECMA, 2000:14). The necessity of international competitiveness has given an impetus to the integration of the European aerospace industry.

- Finally, it is important to point out that a nationally fragmented European Aerospace industry is increasingly unable to compete with the US aerospace industry, whose restructuring had taken place at the beginning of the nineties, giving rise to the world leader companies in terms of turnover.

The restructuring of European aerospace defence industry has followed a similar path to US restructuring some years before. Initially, the majority of firms remained linked to their country of origin due to the vertical integration of national industries. This happened in Germany, France, Spain, Italy, United Kingdom and Sweden. The creation of national big companies was considered the first step towards a European integration by means of international mergers.

This vision of the development of a European aerospace industry met its first obstacles in 1999. The assets of Marconi Electronic System (MES), the defence branch of the US company General Electric Co (GEC), were absorbed into British Aerospace (BAE), forming the group BAE-GEC which, at that moment, was the world third company in terms of turnover. The main objective of this absorption, the access to US market without losing the position in the European market, was criticised by other European firms like Deutsche Aerospace (DASA) from Germany and Thomson CSF from France since it disdained the project to create a European aerospace defence industry. For this reason, BAE-GEC was left aside in the first arrangements made to develop a horizontal merger between European firms that took place in 1999 through the establishment of the European Defence and Space Company (EADS).

1.6. EADS: its creation and background.

In July 2000, EADS started to quote on Frankfurt, Paris and Madrid stock exchanges. It integrates the aeronautic and space activities of Aerospatiale Matra SA (France), Daimler-Chrysler Aerospace AG (Germany) and Construcciones Aeronáuticas SA (Spain)[9]. EADS is the first international European firm devoted to the industry of

[9] These firms have been co-operating more than forty years in various collaboration projects and joint ventures in the aerospace industry, like Airbus, Eurocopter, Eurofighter and Arianspace.

defence and, as its own name remarks, it aims at becoming the main European company in this industry. Daimler-Chrysler and the French state own each 30,2% of EADS capital, the Spanish holding SEPI own 5,5% while the rest of the capital, 34,1%, is owned by small stakeholders.

Since its establishment, EADS has been the world third aerospace firm in terms of turnover, only below Boeing and Lockheed Martin from US. EADS is as well one of the two main international companies that construct commercial aircraft, helicopters, space-shuttles and missiles. At the same time, it is one of the major suppliers of military aircraft, satellites, and military electronic. In particular, EADS is the world leader in commercial-shuttles; the world second firm in helicopters[10], commercial aircraft[11] and missiles systems; the world third firm in satellites[12] and military transport aircraft[13]; and the world fourth firm in combat aircraft[14].

The initial results of EADS show the potential success of this integration of European aerospace firms (see table 1): between 2000 and 2001, revenues increased 27,2%; during the same period, the losses of the company became benefits and the capital expenditure grew from 1.351 millions Euros in 2000 to 2.196 millions in 2001. At the same time R&D expenditures significantly increased from 1.339 millions Euros to 2.046. Together with good economic results, the creation of EADS has implied an increase in the number of employees of the new company. In total, the staff of the group augmented 15,8% between 2000 and 2001 and all national plants of the firm contributed to this growth (see table 2).

Table 1. EADS results (millions Euros)

	1998 pro forma	*1999 pro forma*	*2000 pro forma*	*2001*
Revenues	20.584	22.553	24.208	30.798
Profit (loss)			-1.115	2.001
Capital expenditure			1.351	2.196
R&D expenditure			1.339	2.046

Source: http://www.eads.net

[10] EADS owns 100% of Eurocopter.
[11] EADS owns 80% of Airbus Industry soon Airbus Integrated Company.
[12] EADS owns 75% of Astrium and 25,9% of Arianspace.
[13] EADS controls the programmes A400M, C-212, CN-235 and C-295.
[14] EADS owns 43% of Eurofighter.

Table 2. Number of employees, EADS 2000-2001.

	2000	*2001*
TOTAL EMPLOYEES	88.879	102.967
France	40.123	41.550
Germany	36.065	38.445
Spain	7.454	7.893
United Kingdom	2.806	11.754
Italy	33	767
US	2.106	2.175
Rest of the world	292	383

Source: http://www.eads.net

Although EADS activity is focused on the civil sector -only 25% of total sales are from the military sector-, there are great hopes that the integration of firms will have a positive impact on European military production. At the same time, EADS is causing significant territorial, organisational, productive and technological changes among its members. This is the case of CASA[15], the last firm that joined EADS, whose experience could guide other European firms that aim at merging with the company in the future.

1.7. The transformation of CASA into EADS-CASA.

Construcciones Aeronáuticas SA (CASA), now EADS-CASA, is the most important firm in Spanish aerospace industry. Since its establishment in 1923, CASA has developed the necessary technological, productive and organisational abilities to be able to compete internationally in aerospace design, production and maintenance.

The history of CASA is characterised by the predominance of the public sector, both in its capital and management. In 1943, the Instituto Nacional de Industria (INI) bought 33% of CASA´s capital. In 1971, INI obtained the majority of CASA´s capital. This share augmented until 1992, when it accounted for 99,28% of the capital. However, the integration of CASA into EADS, in December 1999, meant the end of public control. Then, CASA became and associated firm to EADS in the same conditions as Aerospatiale Matra SA from France.

[15] The information about EADS-CASA was gathered by means of personal interviews to the managers of the firm between September 2000 and February 2001,when the incorporation of CASA into EADS was taking place, as a part of an INTERREG-II research project on EU Regional Policy.

The relationship of CASA with other European aerospace firms did not begin when CASA joined EADS. In fact, from the beginning of its activity, CASA had been increasingly participating in big European aerospace projects[16]. Therefore, it is possible to talk about a process of natural integration previous to the official one.

The process of integration forced CASA to take actions at both internal and external relations of the firm. Changes in the internal organisation of CASA are characterised by vertical integration of Spanish aerospace firms previous to the merger with EADS; and by division of labour and specialisation of national plants. Changes in external relations are related to the links of the firm with its territory, the network of subcontractors, the suppliers, other firms and the public sector. The economic results of CASA in terms of employment, sales, benefits, exports and investment (in capital, R&D and training) show the success of the strategies followed previous to become part of EADS.

1.7.1. Changes in the internal organisation of CASA.

Vertical integration.- Spain, like other European countries, experienced a process of vertical integration of national aerospace firms before the creation of EADS. In 1971, when CASA became a member of the project Airbus, the Spanish firm absorbed Hispano Aviación SA (HASA). During the nineties, the process of vertical integration quickened its pace. CASA merged with two of the largest Spanish aerospace firms, Compañía Española de Sistemas Aeronáuticos (CESA) -whose main activities were design, production, standardisation, tests and support services to the products, maintenance and repair of aircraft accessories- and Aeronáutica Industrial (AISA) -devoted to the design, production and maintenance of aircraft. From 1989, when CESA was created, 60% of its capital had belonged to CASA while, since 1995, CASA has been the only shareholder of AISA, established in 1923.

Division of labour according to big projects.- CASA becomes EADS-CASA due to its integration into EADS in 1999, and, consequently, becomes a member of the European projects Airbus, Eurofighter, Airbus Military and Arianespace. As a consequence of this transformation, CASA was restructured in four divisions:

[16] For example, CASA engaged in the project Airbus in 1971, when the Spanish government joined an agreement that had been signed in 1969 by other European aerospace firms. In 1992, CASA had already supplied more than one thousand rudders to Airbus.

1. *Military transport aircraft division,* responsible for the production of transport aircraft C212, C235 and G95, and combat aircraft like the Eurofighter, with a 13% share of EADS-CASA, that produces the right wing of the aircraft and composite materials of carbon fibre[17].

2. *Airbus division,* dedicated to the design, development and production of various structural components of Airbus models, with a 4% share in the Airbus Military and a 10% share in the Airbus Civilian. Furthermore, EADS-CASA is participating, with other Airbus members, in the pre-launch activities of the A3XX, a 530/570-seat commercial aircraft.

3. *Aeronautics division,* whose main activities are the maintenance and modernisation of aircraft (F18, P3 Orion) and the production of carbon fibre aero-structures for other firms, airframe sections, aircraft gates and landing gearboxes.

4. *Space division,* responsible for the production of satellites, launchers and parts of Hispasat and Arianspace.

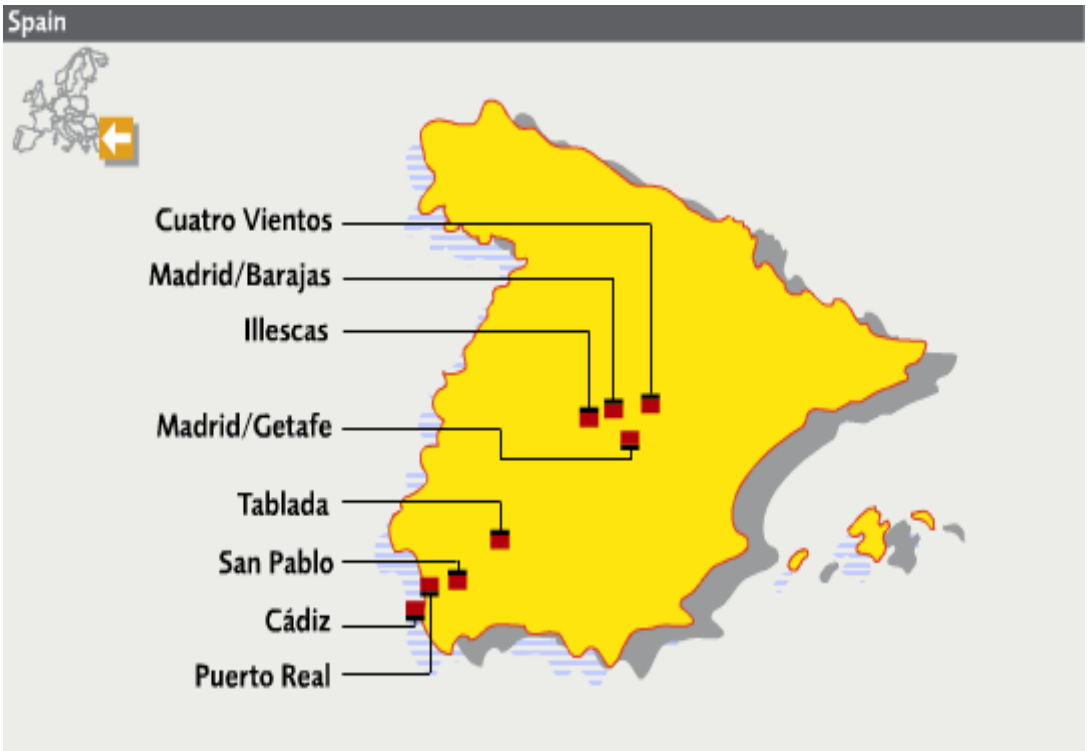
Specialisation of national plants.- Eight over more than ninety manufacturing plants of EADS in Europe -Germany, France, Spain, United Kingdom, Netherlands and Romania (see map 1)- are located in Spain. Three of these eight plants are located in the region of Madrid –the headquarters at Barajas and two manufacturing plants at Getafe and Cuatro Vientos; One in Toledo at Illescas and four in Andalucia –two in Sevilla and two in Cadiz (see map 2).

[17] EADS-CASA has paid special attention to new materials technology (composites of carbon fibre). For this reason, currently, EADS-CASA has the most advanced systems and processes to design, produce, maintain and repair any kind of aero-structures made of these materials. In the next future, these new materials will account for more than 40% of military aircraft and, probably, more than 30% of civil aircraft.

Map 1. Plants of EADS in Europe.

Source: http://www.eads.net

Map 2. Plants of EADS in Spain



Source: http://www.eads.net

As mentioned above, the establishment of EADS has caused an increase in international competition. Even, it would be plausible to expect a "trade war" between US and European aerospace firms. Taking into account how international competition could affect the territories where EADS is located, the company has carried out a division of tasks, by means of the specialisation of each territory. According to the new organisation of EADS each manufacturing plant executes a part of the common activities of EADS. This division of labour has also affected EADS-CASA:

- EADS-CASA Headquarters and the scientific and technological research department are located at Barajas (Madrid), together with the development and construction of space products.

- At Cuatro Vientos (Madrid), EADS is specialised in the project Eurocopter Spain and in helicopter maintenance.

- The plant at Getafe (Madrid) is devoted to the engineering and system division, carbon fibre component development and manufacture, final assembly of combat aircraft, assembly of structural subassemblies and aircraft maintenance (helicopter, and their components and combat aircraft and their components).

- Illescas factory (Toledo) is specialised in advanced manufactures of carbon fibre components.

- At Cadiz, the activity of EADS-CASA is sheet metal technology, diffusion welding and superplastic shaping and helicopter component maintenance.

- At Puerto Real (Cadiz), EADS-CASA carries out the assembly of structural subassemblies.

- The activities of San Pablo factory (Sevilla) are final assembly and maintenance of transport aircraft and their components, manufacture of electrical components and assembly of structural subassemblies.

- Finally, Tablada factory (Sevilla) is specialised in the integrated numerical control component, stretch forming and chemical milling, assembly of structural subassemblies, tubes and welding and launchable tanks

1.7.2. Changes in the external relations of CASA.

Territorial changes.- the plants of EADS-CASA keep relation with the European and the national markets. On the one side, the natural environment of EADS-CASA is Europe and the firm has a feeling of belonging to an international economic and territorial system, Europe. On the other side, local territory is still fundamental for the firm. EADS-CASA´s managers value the advantages of Madrid as national centre due to its infrastructure, technological climate, human capital, specialised labour market, good social relations and the external image of the city. Therefore, neither the integration into EADS nor the changes in internal organisation has reduced the relevance of national industrial relations to CASA. Geographic proximity remains an essential factor of territorial anchorage.

Subcontracting network.- a network of industrial societies related to CASA has been formed around the firm throughout time. Externalisation and subcontracting are remarkable traits of aerospace industry. The main firm, responsible for the final product, often uses local subcontractors to carry out a substantial part of the production. These relations give rise to a network organisation, on which depends the flexibility of the productive system.

EADS-CASA carries out the design and other functions previous to production, the production, the assembly, the finish and the packaging. However, during the integration of CASA into EADS, externalisation and subcontracting increased. Currently, part of design and other functions previous to production, the production itself and the assembly are subcontracted. On average, 12% of total sales -a higher percentage than in 1997- is subcontracted or externalised. Subcontractors, many of them small and medium enterprises, are located in the regions of Madrid, Sevilla and La Rioja. Furthermore, these firms have experienced qualitative changes due to their relation with EADS, since

EADS-CASA only subcontracts those firms with proven certificates of quality and standardisation.

In parallel with the expansion of subcontracting, EADS-CASA is increasingly working as subcontractor itself, providing aerostructures, wings, tails and tanks. For this reason, EADS-CASA has all the necessary certificates of quality and standardisation. On average, 40% of its production is for other firms (half of this percentage as risk capital partner of Airbus). Moreover, international aeronautic firms, like Boeing, order the design and production of aircraft components to EADS-CASA.

Suppliers.- The relations of EADS-CASA with the suppliers of raw materials, machinery, components and accessories have changed as well. The majority of these suppliers are Spanish firms, located in the regions of Madrid, Castilla la Mancha, La Rioja, Andalucía, Cataluña y el País Vasco. However, EU and international suppliers are increasingly growing. At the same time, collaboration within EADS has allowed CASA to develop its own services. Technical and technological attendance, design, education, accounting and marketing are totally internalised. Software is developed between CASA and other firms from Madrid and EU. Only publicity and transportation are externalised. The former partially ordered within Madrid territory and the later, in Madrid and the areas where plants are located.

Co-operation relations.- co-operation between EADS-CASA and other firms and organisations has increased. The integration into EADS has facilitated the participation in projects, the obtaining of funds and the exchange of ideas and information. Currently, the objectives of this co-operation are focused, above all, on the development of new products and new production processes. EADS-CASA not only co-operates with rest of EADS but also with other Spanish and foreign firms. For example, EADS-CASA transfers technology to other companies through its specialised staff; also with the right to use its inventions (like in Chile and Indonesia[18]); or through consultancy services and R&D carried out for non-European firms. At the same time, EADS-CASA also collaborates with the Spanish central government -in particular with the ministries of defence, science and technology and foreign affairs; with the regional governments and the city councils in the areas where manufacturing plants are located; with universities

[18] In 1973, CASA signed an industrial collaboration agreement with Indonesia in order to produce and commercialise C-212. In 1979, CASA and IPTN from Indonesia decided to develop a transport light aircraft, CN-235.

and public research centres, like the Instituto Nacional de Técnica Aerospacial (INTA); and with unions and professional associations. Co-operation with the public sector basically takes place at a national level, although EADS-CASA is increasingly achieving agreements with EU governments.

1.8. Performance of CASA before its integration into EADS.

CASA´s performance has improved as its participation in big European aerospace projects increased, up to become a part of EADS. Currently, more than 70% of the total turnover of CASA and the other two founder members of EADS comes from the common activities of the new company.

Total sales grew from 834,877 millions Euros in 1995 to 1,248,518 millions in 1999, last year of the firm´s autonomy. Around 70% of these sales came from the civil market, while 30% from the military one. The profits of CASA in 1999 -close to 3% of total sales- were also bigger than in 1995. These results are based on the increase of exchanges, both within EADS and with the EU governments. Exports account for 89,1% of CASA´s sales in 1998 (Ministerio de Defensa, 1999) while exports achieved between 40% and 60% of sales by means of intra-firm trade[19] in1999. In this year, CASA gained access to new markets, particularly in the EU, attracting new clients, generally from the public sector. Moreover, investment also increased significantly, mainly focused on R&D for the development of new products and processes. This type of investment almost doubled from 1996 (108.464 millions Euros) to 1999 (180.423 millions). In the same period, investment in capital grew as well from 8.311 millions Euros to 91.293 millions.

The creation of EADS has brought and will bring a restructuring of the personnel which, in general terms, decreased. In 2000, EADS-CASA had 816 employees less than CASA in 1995 (see table 3). Redeployments of labour force were caused by the shrinkage of administrative staff and semi-qualified and non-qualified workers, while, at the same time, the number of managers, engineers, technicians and qualified workers grew. In 2000, 1.192 of CASA´s employees had a university degree, and around 1.000 employees (13,5% of the staff) participated in R&D activities. In order to optimise the staff, the integration into EADS obligated CASA to reduce the number of non-qualified workers and to contract highly qualified employees. In the short term, new and highly

[19] Exports significantly vary from one year to the other, because external sales strongly depend on the contracts derived from international projects.

qualified human resources should be incorporated into EADS-CASA, since the majority of managers and R&D staff are over fifty years old. In this respect, it is expected that the firm will contract young and qualified employees and will develop the French model to manage the staff, which is considered one of the most advanced models of organisation within the industry. Several training initiatives were taken in order to deal with the necessity of more qualified staff. Between 1997 and 2000, CASA devoted 4.970 millions Euros to training. These resources were used for continuous education as well as offering training courses in its own technical school when workers are contracted.

In sum, the integration of financial and productive capital in the creation of a company like EADS has favoured the recent results of CASA. Above all, this process has encouraged commercial exchanges (of intermediate and final goods) among the member firms and with the governments of the countries where the plants of EADS are located. The transformation of the European aerospace industry not only affects European cohesion in connection to the ESDP, but also accompanies and reinforces the global process of EU formation and integration. Therefore, this change could contribute to accelerate political integration, the last step of present Europe.

Table 3. Number of employees, CASA 1995-2000.

EMPLOYEES	CASA 1995	EADS-CASA 2000	Madrid 2000	Sevilla 2000	Cádiz 2000	Toledo 2000
Total	8.185	7.369	4.558	1.897	776	138
Managers	40	150	137	10	3	0
Engineers	1.737	1.790	1.502	199	83	6
Technicians	1.201	1.409	826	445	125	13
Administrative staff	1.773	1.180	786	264	122	8
Workers						
Qualified	2.590	2.656	1.216	905	428	107
Semi-qualified	721	79	28	34	13	4
Non-qualified	120	105	63	40	2	0

Source: Author.

1.9. Conclusions.

The transformation of European aerospace industry exhibits a change in the conception of European defence, which involves higher regional integration. It is confirmed that the traditional link between the states and their defence, conceived as a national public good, is weakening and giving rise to the formation of a common defence, conceived as a continental public good. In this process, it is possible to begin to see how the creation of European companies, located in the territory of various countries, like EADS, could stimulate the birth of a new political entity.

Such a transformation is not immediate. On the contrary, it is a long process that involves deep political, institutional and economic changes. From a political point of view, states have accepted to renounce to a part of their sovereignty, and have proposed, by means of the ESDP, the institutional and organisational framework that could become the seed of a European army. At the same time, recent initiatives in the industry of defence, where aerospace activity is pioneer, tend to reinforce institutional and political agreements, by means of a growing integration of firms, guided by the principles of market economy.

Indeed, this process is just starting. Although the ESDP has achieved notorious advances and the increasing integration of aerospace industry, by means of the creation of EADS, has opened a promising path, European defence is still closely related to national states. The existence of a European army and a common defence is not only faraway but also full of obstacles that should not be forgotten:

- European defence is still very dependent on NATO and US and will have serious problems to achieve its autonomy. In fact, US, that supports the creation of a common defence linked to the NATO, has already expressed its reserves on the project of formation of a European defence industry independent from US (Olivé, 2001: 148).
- One of the main reasons for US reserves is based on the integration and co-operation agreements that currently link European and US defence firms. Strategies of integration with US firms, like BAE´s strategy, are plausible alternatives to the arrangements among European firms and are regarded as a menace for the establishment of a European armament market. It is still difficult to see how to harmonise these types of agreements in a world market that is increasingly open and where technological collaboration becomes a need.

- European demand for armament is not yet unified. In the defence industry, the process of European integration has begun on the supply side. One of the most important and complex steps to achieve a common defence will be the unification of the demand of all European ministries of defence and the consequent loss of sovereignty that it involves.
- The integration of European defence industry could find the opposition of some firms and countries which feel that they have been left aside from integration and co-operation agreements, as happened in 1998, after the declaration of the LOI. In this respect, the ESDP should try to create the favourable conditions for broad international mergers, specially taking into account the firms of those countries that aspire to join EU.
- As has been mentioned above, the productive activity of European defence industry has two territorial levels that are compatible between them. On the one side, international integration and co-operation agreements among the biggest national firms in each activity; on the other side, subcontracting relations with the local network of small and medium enterprises of each country. In principle, this key role played by the territory in the productive relations of the manufacturing plants of Europeans defence companies, does not seem to be a significant obstacle for the integration of the different national industries of defence. However, the relevance of territory shows that part of defence activity will maintain a marked national character.
- Finally, it is plausible to ask to what extent the rapid process of integration that has taken place in the aerospace industry around EADS is an exception or could be repeated in less advanced defence activities, like the production of tanks and munitions, where the pace of international mergers could be slower because the technological imperative for integration is weaker.

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