THE MILITARY INDUSTRIAL COMPLEX

A PARASITE ON SPANISH ECONOMY

JUSTÍCIA I PAU

CENTRE D'ESTUDIS PER A LA PAU JMDELÀS

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A parasite on Spanish economy

Pere Ortega
Camino Simarro

Centre d'Estudis per la Pau J.M. Delàs · Justícia i Pau
Barcelona, April 2012

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EXECUTIVE SUMMARY

The military-industrial complex in Spain is based on an oligopoly made up of four big companies that provide all the weapons that the Ministry of Defence uses for its armies. EADS-Casa manufactures aeronautics for the air force; Navantia produces warships for the navy; Santa Bárbara/General Dynamics sells heavy and small arms to the army and, last but not least, Indra provides all the aforementioned armed forces and their weapons with most of the electronics and new technologies.

These four companies make up between 75 and 80% of the total turnover of military production which amounted to approximately € 6.6 billion in 2009. That represented 1.24% of the national industrial production and 1.1% of the total work force of the Spanish industry employing about 29,000 people in the defence manufacture.

Moreover, the intense cooperation between the Ministry of Defence and the Ministry of Industry, facilitated through a creative financial mechanism inaugurated in 1996, and the commitments undertaken by the Ministry of Defence for the development of big programmes for new weaponry caused a *bubble* in the production of arms. This situation brought both the Ministry of Defence and the State an accumulated debt of about €37bn that cannot be paid off and that only increases the debt of the public Treasury that is currently in quite a bad state.

Both statistics and economic-financial data show the inefficiency of the military industry. In order to reduce the negative impact of the military industry on the whole Spanish economy it is therefore necessary to take action from multiple directions: firstly, the number of troops in the armed forces must be reduced to lower the demand for arms; the purchase and participation in joint programmes for new weaponry have to be halted; the Ministry of Industry must stop granting credits to companies for military Research and Development (R&D); finally, studies must be made into the conversion of military industries into civil production to avoid the loss of employment and create a positive impact on social wellbeing.

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The Spanish military industry has caused a *bubble* in the sector of arms production that the Ministry of Defence cannot assume

EADS-Casa, Navantia, Indra and General Dynamics/ Santa Bárbara occupy high positions in the world ranking of military industry

1. INTRODUCTION

This report examines the Spanish military industry and analyzes its impact on the Spanish economy, an impact which is not positive; it is in fact worsening the economic crisis that the Spanish state is currently experiencing. As shown in the report, the military industry in Spain has contributed to the increase of the public debt and caused a *bubble* in the sector of arms production that the Ministry of Defence cannot assume.

In the three following sections the report analyses the military industry in Spain, its history and the main changes that have occurred in the sector during the last years. In order to deepen the analysis of the military industrial sector, the fifth section includes figures from defence subsectors, which show the existence of what we call the *arms oligopoly* in the sixth section. This oligopoly shows the internationalisation of the world military industry and the role of Spain in its globalisation. In the seventh section we will see that the four Spanish companies that comprise the oligopoly (EADS-Casa, Navantia, Indra and General Dynamics/Santa Bárbara) occupy high positions in the world ranking of military industry. We also wanted to show what President Eisenhower called the *military-industrial complex*, some of the hidden interests lying behind military industry. Knowing who is who in this field will help us understand why the Ministry of Defence has committed itself to enormous contracts that were recognised as unnecessary. The two final sections show the results of an inefficient industry and provide data on a possible conversion of the military industry to civil production. Finally, the Annex includes twelve tables with figures divided by company, subsectors, contracts, R&D… and a map of the network existing between the state, financial groups and the main Spanish military industries to show the dependency of the military industries both on the Spanish state and on financial institutions or private groups.

All data included in the report was extracted from the balances of the companies or from the SABI database and compared to that of the Trade Register. Most of it corresponds to 2009. Nonetheless, the balances, with the exception of the big companies (EADS-Casa, Navantia, Indra, General Dynamics, Sener, Amper, Eurocopter and ITP), do not offer information about the percentage represented by military production in the company's gross production or the number of employed people working in the military sector. For this reason we opted for the information provided by some secondary sources[1] to gain access to these figures. The end result is that the data we provide here, though not exactly precise, offers a representative approach to the reality of the sector.

This report completes other studies by the Study Center for Peace J.M. Delàs devoted to analysing each one of the elements that make up what we know as the *arms cy*cle or the *military-economic cycle,* made up by the military expenditure of the Spanish state, the research (R&D) with military objectives, the military industry, the arms trade and the end use of the arms. As we will see, the military industry is one of

1. See Table 1 of the Annex.

About 500 companies currently provide their services and arms to the Ministry of Defence

the most relevant factors of the whole military economic cycle.

2. MILITARY PRODUCTION IN SPAIN

About 500 companies currently provide their services and arms to the Ministry of Defence. This report only cites seventy companies that are undoubtedly the most important manufacturers[2] of arms or arms components. It analyses the period between 2009 and 2011. As we explained, figures come from the balances provided by the companies or the SABI database compared with those of the Trade Register. The defence production percentages were obtained from these balances or from the secondary sources listed in Table 1 of the Annex. Almost all data included in the tables corresponds to 2009 because the 2010 results of most companies are not yet available and, in some cases, the information from 2009 was not found. In these cases we included the 2008 data. This count allows us to approach the real figure of the annual military production in Spain related to the number of employed people, total sales and the results of the companies.

Table 1 of the Annex: *Military companies in Spain 2009,* includes detailed information about sales, results and employment of the seventy analysed companies. Yet it offers scant information about the export of military material. This is the consequence of the deficient – when not inexistent – information provided by the companies due to the secrecy involved in all exports of military material. The Spanish government actually contributes to this secrecy through the Law on arms trade[3], which only details the number of exports by the country to which they are sold, without specifying who the producer is or the type of exported arms.

The Spanish government contributes to the secrecy through the Law on arms trade , which only details the number of exports by the country to which they are sold, without specifying who the producer is or the type of exported arms

Among the cited companies we included two, Defex and Isdefe, 100% of whose activity takes place in the military sector and which provide services rather than products. Isdefe is a consulting firm that provides technological services and advice to the military industry. However, we did not include the Compañía Española de Seguros de Crédito a la Exportación (Spanish Company of Credit Insurance for Exports, CESCE) which, as the map in the Annex shows, totally depends on the Ministry of Economy. As its name suggests CESCE insures exportation operations, including all arms exported abroad. In 2010 these arms exports only represented 0.6% of the total exports according to the report on arms trade that the Study Centre for Peace J.M. Delàs publishes each year[4]. This low percentage shows the irrelevance of the controversial Spanish arms exports to Spanish foreign trade as a whole and also shows that its reduction or removal would not represent a disaster for the Spanish economy.

Furthermore, we did not analyse companies that provide services and consumption goods (such as clothes, food, etc.) as they are not considered part of military industry.

Map 1 in the Annex shows the importance of the public sector managed by the Spanish government which, through the Ministry of Defence or the SEPI, holds significant interests in the military-industrial sector. Through INTA (the National Institute of Aerospace Technology) the Ministry of Defence owns 100% of Isdefe and INSA through which it has a firm control of Hisdesat, Hispasat (both dedicated to military satellites) and Xtar (for military communications). For its part, SEPI has important interests in Hispasat, EADS-Casa and Iberia (which provides maintenance of military aircrafts); and through 100% of Navantia it owns 51% shares in SAES and Sainsel (which provides warship components), 20% in Inmize (missile producers) and 51%

2. A more complete list can be found at http://www.centredelas.org, Military industry in Spain, with an Index of all the more relevant industries with their names and acronyms as well as the type of production and its percentage devoted to the defence sector.
3. LAW 53/2007, 28th of December, about the control of the defence and dual-use material exports.
4. Font, T. and Benítez, F. (2011), "The controversial Spanish arms trade, a secret business" Centre Delàs. Available at: http://www.centredelas.org/attachments/804_informe9_eng.pdf

in Defex. The autonomous government of Andalusia also holds 19.9% shares in Alestis, a company that manufactures components in carbon fibre which it sells to EADS-Casa.

As for the private sector, the map shows the strong interests of the financial institutions, banks and saving banks, as well as some venture capital financial groups, in military companies. They are all reported to illustrate and provide information about the private interests involved in the Spanish financial sector.

According to the available data the defence sector production amounted to € 6.6 billion in 2009, a figure that might be higher if we could access detailed information and if we included many other small companies providing defence material. The value of this industry only represents 1.24% of the total industrial production of the State[5]. With regards to employment, the companies do not distinguish between civil or military work, so we applied the percentage assigned to production in the defence sector. In this way we estimate that about 29,020 people work for military companies, which is 1.11% of the total workforce employed by Spanish industry (in relation to the data provided by the INE). As such, the Spanish military-industrial sector has little importance either to industrial production or job creation, the main arguments used by those who defend the military industry.

This data shows a certain recovery of the sector with respect to our previous study[6]. This recovery was caused by the increase of the projects for new weaponry implemented by the Ministry of Defence in the mid-90s, projects that have been significantly increased in recent years. Yet this recovery should start decreasing as a consequence of the progressive readjustments made to the state budget as a result of the crisis by the Socialist government in 2010 and 2011 and by the new right-wing government since the beginning of 2012. These readjustments also affect the Ministry of Defence – though less than other ministries.

Among the companies showing negative turnovers at the end of the year Navantia, EADS-Casa and Santana Motor S.A. stand out, all of which are public or partly owned by the state. However, a significant proportion of the private industry's companies also registered losses or very meagre benefits, a fact that challenges the idea that the military industry is profitable.

3. A SHORT HISTORY OF THE MILITARY INDUSTRY IN SPAIN

The state founded after the end of the Spanish civil war (1936-39) implemented a process of industrial promotion and in 1941 it funded the Instituto Nacional de Industria (National Institute for Industry, INI), a public holding to "serve the nation by promoting and funding the creation, transformation or re-founding of all kinds of industries and especially of those related to the country's defence". The objective was to reach economic autarky by strengthening national military industry in order to be independent of foreign trade on an issue that was considered to be vital: national defence. In this way Franco's dictatorship wanted to emulate Hitler's Germany, whose economic growth had been based on military industry.

So the INI was created as a tool to promote Spanish industrialisation through the military sector. Three important manufacturing centres were built: Empresa Nacional Bazán (currently named Navantia) for supplies for the navy; Construcciones Aeronáuticas S.A. (CASA, currently named EADS-Casa) for the aviation material necessary to the air force; and the Empresa Nacional Santa Bárbara (ENSB, currently named General Dynamics Santa Bárbara) for the weapons of the army. As the techniques applied to the military products required it, in 1970 the INI extended its support to other sectors: the Cen-

The Spanish military-industrial sector has little importance either to industrial production or job creation, the main arguments used by those who defend the military industry

The defence sector production amounted to €6.6 billion in 2009, which only represents 1.24% of the total industrial production of the State

5. Instituto Nacional de Estadística (2010), *Panorámica de la Industria*. Madrid, INE.
6. Ortega, P. (2007), "*La ineficiencia de la industria de guerra*", i Oliveres, A. and Ortega, P. (2007) *El militarismo en España*, Barcelona, Icaria.

The INI (National Institute for Industry) was created as a tool to promote Spanish industrialisation through the military sector

tro de Estudios Técnicos de Materiales Especiales (CETME); the Empresa Nacional de Autocamiones S.A. (ENASA), which manufactures Pegaso trucks for the Army; and Experiencias Industriales S.A. (EISA), Empresa Nacional de Óptica S.A. (ENOSA) and Equipos Electrónicos S.A (EESA), in the field of electronics.

Together with the public-owned companies there were several private companies in the defence sector, such as Placencia de las Armas (afterwards called SAPA Placencia); the short-arms producers Bonifacio Exhevarría *Star*, Gabilondo and Cía. *Llama* and Unceta and Cía. *Astra*; and then Instalaza, Esperanza and Cía., Unión Española de Explosivos (currently named Maxam) which, together with Explosivos Alaveses (EXPAL), Explosivos de Burgos and Fabricaciones Extremeñas manufactured explosives to supply part of the small and light weapons as well as the ammunition and explosives to the Spanish Armed Forces. Finally, CESELSA was the most important private electronics company in the defence sector.

Later, after the entry of Spain into NATO in May 1982 and after the arrival of the Spanish Socialist Workers' Party (PSOE) to government, the Minister of Defence Narcís Serra decided to modernise the armed forces and their weapons. This meant an increase to the budget. This policy was implemented with the participation of Spain in international programs through the Independent European Program Group (IEPG) since 1983.

Another important element was the promotion of the electronics industry for the defence sector through the creation of the Group INISEL (Empresa Nacional de Electrónica y Sistemas) in 1985 to unite the electronics companies INI, ENASA, EISA and EESA.

In 1986 the Law for the Promotion and Coordination of Scientific and Technical Research (Ley de Fomento y Coordinación de la Investigación Científica y Técnica) was approved and a general framework was created to promote and coordinate the state's research activity. Projects for new weapons to supply to the Ministry of Defence were given preferential treatment.[7]

During the 1990s neoliberal economic policies became more and more prevalent in industrialised countries. These policies were accompanied by a wave of privatisations of public companies as a consequence of the liberalising spirit that pervaded the world economy in so-called *Globalisation*. These politics were also implemented in Spain and affected the Spanish military industry through the privatization of public-owned companies. In 1992 INISEL merged with CESELSA and became INDRA, which was charged by the state with the electronic development of most of its weapons (armoured vehicles, aircrafts and warships). In 2000 CASA merged with the European Aeronautic Defence and Space (EADS) consortium, being controlled by the INI, currently named Sociedad Española de Participaciones Industriales (SEPI), which owns 5,5% of its shares. Finally in July 2001 Santa Bárbara Sistemas was acquired by the American *General* Dynamics. Navantia (formerly named Izar and before that Industria Nacional Bazán) is still a SEPI public-owned company due to losses in the millions.

After the end of the Cold War the military industry was affected by a slowing process. Still, in the mid-nineties the US, Russia and the European Union –including Spain- spurred the world arms market. In the Spanish case we also have to highlight that the most important client of the military industry, the Ministry of Defence, kept increasing its demand for new weapons year after year[8] for its entrance into NATO. The Spanish military industry has been consolidating since 2002, and especially the four main companies: EADS-Casa, Santa Bárbara, already absorbed by General Dynamics, Indra and particularly the public-owned Navantia, which were all benefited by new

After the entry of Spain into NATO in May 1982 the Minister of Defence Narcís Serra decided to modernise the armed forces and their weapons

7. For more information about the development of the military industry in Spain see Manonellas, M and Xarles, G. (2000), "*La industria armamentista: pérdidas públicas y beneficios privados*", in Oliveres, A. and Ortega P. (2000), *El ciclo armamentista español*, Barcelona, Icaria.
8. See Table 2 in the Annex.

very relevant contracts assigned by the Ministry of Defence. Nowadays these four companies are still very dependent on the Ministry of Defence, just as they were in the past.

4. SOME SIGNIFICANT CHANGES IN THE SECTOR

It is particularly noteworthy that the Spanish government decided to sign the agreement of the European Defence Agency (EDA) that was created in the European Union to smooth the trade and circulation of military products among its member states on the 13th of June 2007. The Spanish government, in agreement with Afarmade (formerly the military industries' association) decided to adhere to the EDA's protocol that ruled that all competitions above €1bn had to be made public through the EDA. At the same time the government and Afarmade became aware of a clause of the EDA's protocol that rules that states can decide, for reasons of *national security*, not to submit some military contracts to public competition. As a consequence, Spanish companies that want to be protected, such as Navantia, can keep being favoured with respect to other European competitors.

Afarmade announced its dissolution as an association after 24 years in September 2009 due to the discontent of the most relevant arms industries, such as Navantia and EADS-Casa, who considered their interests not properly defended. The result was the creation of a new association named Asociación Española de Tecnologías de Defensa, Aeronáutica y Espacio (TEDAE), which the rest of the companies of the sector joined as partners and named the former Minister of Defence of the last socialist government of Felipe González, Julián García Vargas as their highest representative.

A significant change also occurred in the property of the Unión Española de Explosivos (UEE), that was later named MaxamCorp. It is a holding of six companies, among them Explosivos Alaveses (Expal), a company of the subsector of the ammunition and explosives field that despite the closing of its factory in Vitoria, kept its commercial name and moved its production to other subsidiaries such as Explosivos de Burgos (EDB), Fabricaciones Extremeñas (FAEX) and Fabricaciones Metalúrgicas de Albacete. Expal is a company that manufactures and exports bombs and explosives. In the past it manufactured cluster bombs and anti-personnel mines, which are today prohibited for the indiscriminate damages they cause on civil population. In June 2006 Francisco Torrente was appointed to be Expal's president. Mr. Torrente is a former admiral of the Spanish Army who, just a few months earlier, was the Secretary General of Defence (Segenpol). After this appointment the contracts of Expal with the Ministry of Defence increased significantly, to the point that Expal overcame the crisis that had forced it to close its factory in Vitoria and acquired another one in Santa Bárbara, in the autonomous region of Murcia, on land that was owned by the Ministry of Defence.

The Memorandum of Understanding (MoU) that was signed in March 2010 by the Minister of Defence Carme Chacón and her Israeli counterpart, Ehud Barak to promote military cooperation, technology exchange and R&D in the defence sector between the two countries is also noteworthy. Such an exchange benefits Israel especially as by entering the Spanish market it ensures a profitable platform to reach other markets such as Latin America and Africa and also because it owns more advanced military technology than Spain. Currently most of the exchanges between the two countries consist of sending components of Spanish arms to be transformed by the Israeli military industries and then be sent back to Spain to integrate them into Spanish weapons. It is the case of the aircraft EF-2000 (Eurofighter), missiles and Tigre helicopters among others. The two countries also signed an international Agreement in 2011 which classifies the information about transactions made in the military industrial sector, trade, R&D and exchanges of technology. These agreements build an alliance to protect the military cooperation between Spain and Israel.

In February 2011 the government of the autonomous region of Andalusia

In 2007 Spain sign an agreement of the European Defence Agency (EDA)

A clause in the EDA's protocol rules that states can decide, for reasons of national security, not to submit some military contracts to public competition

Carme Chacón and her Israeli counterpart, Ehud Barak, signed a MoU to promote military cooperation, technology exchange and R&D in the defence sector between the two countries

decided to close Santana Motor that used to manufacture Anibal all-terrain vehicles and sell them to the Ministry of Defence. It was decided after ten years of continuous losses that amounted to €270m. Santana Motor was owned entirely by the government of Andalusia and the company employed some 1,090 people. The Ministry of Defence cancelled the contract of the Anibal vehicles after finding serious irregularities in their functioning and this brought the company towards its closure. The case of Santana Motor is a good example of the inefficiency of the military industries that depend on the State.

5. DEFENCE INDUSTRIAL SUBSECTORS

The analysis of the whole military-industrial sector offers more information if it is made by defence subsectors as this demonstrates the existence of what we are going to name the *arms oligopoly*. To make such an analysis it is necessary to point out that some companies work in different subsectors. In these cases we opted to review them under the subsector in which they place themselves.[9] In this way the aerospace subsector has the most significant turnover and employment rate of the whole defence sector as EADS-Casa is the biggest company of the Spanish military industry. The aerospace subsector is followed by the naval subsector, in this case for the enormous importance of Navantia. Indra is the leading company in electronics and communications while General Dynamics/Santa Bárbara stands out in the field of vehicles and armoured vehicles. The engineering sector is more divided as a number of companies compete in a more balanced way. Yet Isdefe stands out in this field. It is worth mentioning that some of the companies included in this subsector could actually be found in the electronics subsector and vice-versa. Finally the subsector of the production of weapons and ammunition is leaded by Expal, of the Maxam group. Table 1 and graphics 1 and 2 show the turnover and employment rates of each subsector of the defence field.

The case of Santana Motor is a good example of the inefficiency of the military industries that depend on the State

The highest turnover and employment rate is not represented by the electronics sector, although it could be said that it offers the highest added value in technology and is the most competitive in the market of new technologies, as shown by the growth of companies such as Indra, Amper, Sener, GMV o Tecnobit.

6. THE ARMS OLIGOPOLY

After analysing military production both as a whole and by subsector we can see that the four important companies of the Spanish military industry (Navantia, Indra, EADS-Casa and General Dynamics/Santa Bárbara) represented 75.4% of the total military turnover and 74% of the work force of the whole military industrial sector in 2009, similar to former decades. Each one of the reviewed companies actually monopolises every military industrial subsector: EADS-Casa in aerospace; General Dynamics/Santa Bárbara in armoured vehicles and light arms; INDRA monopolises electronics and Navantia the naval sector. We thus find that these four companies make up the oligopoly of arms production of the Spanish military-industrial complex. We are now going to provide the most significant data about each one of these companies.

Navantia

Empresa Nacional Bazán was created in 1947. Its mission was to produce all kinds of military vessels and naval arms for warships of the Spanish Army. In 1998, due to the high losses registered throughout its existence –the company never made a profit- Bazán implemented a plan to rationalise the company and significantly reduced its staff. Afterwards in December 2000 under the right-wing government of the Partido Popular, it merged with the national company Astilleros Españoles S. A. (AESA) with civil production, and was named IZAR. The reason of the merger was the bankruptcy of the AESA civil shipyards due especially to their scarce technologic innovation as a result of

9. See the Tables 3, 4, 5, 6, 7 and 8 of the Annex for the breakdown of the analysed companies for each subsector identified of the defence industry.

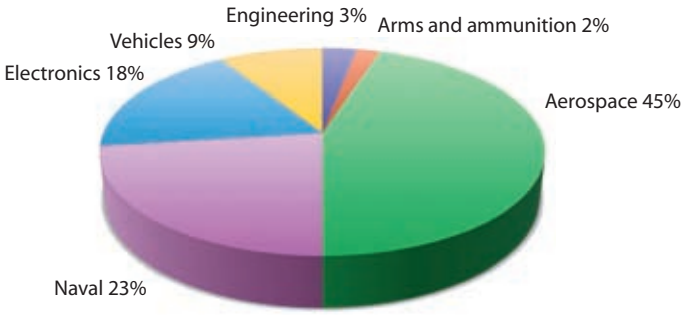
Table1. Turnover and employment rates by subsector of defence (2009)

	Total employment	Total defence sales*
Aerospace	10,173	3,011.09
Naval	5,339	1,492.75
Electronics	9,167	1,182.21
Vehicles	2,758	527.95
Engineering	1,506	206.52
Arms and ammunition	788	134.89
Total	**29,731**	**6,555.40**

*In million euros. Source: prepared by the authors

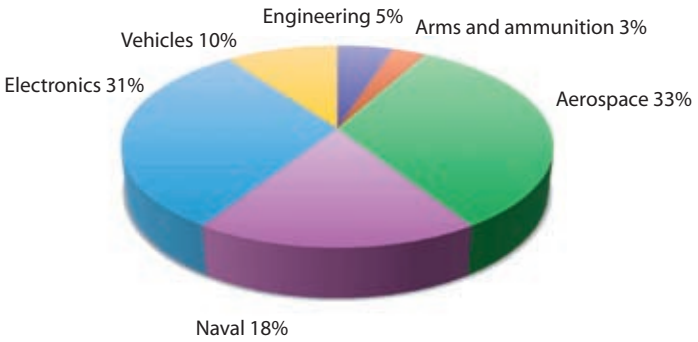
El subsector aeroespacial es el subsector de mayor facturación y empleo de todo el sector de defensa

Graphic 1. Sales by Defence subsectors (2009)



Source: prepared by the authors

Graphic 2. Employment by Defence subsectors (2009)



Source: prepared by the authors

the labour-intensive manufacture of warships and the strong competition from other manufacturing countries such as South Korea and Indonesia. In 2004 the company's losses amounted to €2.6bn.[10] The reason for the losses was an investigation by the European Commission into the aid granted to Izar by the Spanish Government, which annulled the aid received, leaving the company near collapse. So in 2005 the socialist government again divided the civil shipyards from the military shipyards and the new military company was called Navantia, while most civil shipyards disappeared.

Navantia has four lines of commercial activity. Table 2 shows the turnover for each one of these activities in 2009 and 2010.

Naval manufacture is the most significant activity. In order to survive Navantia specialised in warships with greater added value such as aircraft carriers, submarines and frigates, investing heavily in R&D. It also built important strategic alliances to compete on the global market creating consortiums

Las cuatro grandes empresas de la industria militar en España (Navantia, Indra, EADS-Casa y General Dynamics/Santa Bárbara) representaron en 2009 el 75,4% del total de la facturación y el 74% del empleo en el sector industrial militar

10. See Table 9 in the Annex.

Since it was founded Navantia has always recorded negative results. It has accumulated losses amounting to €3.3bn in the last ten years

to unite technological, economic and industrial efforts. Let's see some examples. In January 1999 Izar and the American Lockheed Martin created the *Advance Frigate Consortium* (AFCON) to incorporate the technological antiaircraft AEGIS system created by Lockheed Martin, undoubtedly the most advanced, to compete jointly in the international frigate market. Izar and the French DCNI founded the *Scorpone* consortium in 1991, to share the manufacture of submarines at 50%. It signed an agreement with the German shipyard HDW to develop the

Table 2. Commercial Activity of Navantia

Commercial Activity	2009	2010
Naval manufacture	236.04	203.33
Repairs	170.49	150.65
Turbines and engines	111.13	56.17
Systems and arms	28.29	39.46

In thousands of Euros. Source: prepared by the authors.

Table 3. Subsidies given to Navantia

Year	Amount
2008	9,752
2009	8,351
2010	7,827

In thousands of Euros. Source: prepared by the authors.

On December 31st 2010 Navantia owed €2.7bn to the Ministry of Industry

project of a mini-submarine. Besides this it has divisions for repairs and the manufacture of turbines and diesel engines for all kinds of warships. Finally, it develops arms systems for warships through the FABA programme, specialized in fighting systems, communications, shooting direction and weapons systems. Through the same programme it works with Lockheed Martin on the above mentioned AEGIS System.

In order to survive Navantia specialised in warships with greater added value such as aircraft carriers, submarines and frigates, investing heavily in R&D

Since it was founded Navantia has always recorded negative results. Its losses have always been assumed by SEPI. Table 9 in the Annex shows how it has accumulated losses amounting to €3.3bn in the last ten years despite the 300% rise of its turnover and despite having received significant subsidies every year from different institutions such as the local government of the autonomous region of Murcia or from the European Union and especially from the Ministry of Industry(Table 3).

Navantia is also granted interest free loans by the Ministry of Industry for the development (R&D) of special military programmes for the Ministry of Defence. According to the company's balance, on the 31st of December 2010 it owed €2.7bn to the Ministry of Industry for these programs. These loans make Navantia the most protected company of the Spanish military-industrial complex.

EADS-Casa

Construcciones Aeronáuticas S.A. (CASA) specialises in the manufacture of medium and light military transport aircraft and in the early 1990s it became the world leader in this production sector. Despite its leadership it recorded important losses until 1992. For this reason in July 2000 the right-wing government decided to merge it with the European consortium *European Aeronautic Defence and Space Company* (EADS), comprising the French company Aerospatiale-Matra owned by Lagardere, the German company Daimler Chrysler Aerospatiale (DASA) and Alenia (Italy). Since that moment CASA was named EADS-Casa. In return for this merge SEPI gained 5,5% shares in the consortium.

The European consortium EADS is the second European military company after the English BAE Systems and the second world military aerospace company after Boeing. Its 121,691 employees are distributed among 70 centres in 48 countries. EADS has specialised manufacture divisions: Airbus Military for the fighter aircraft such as the EF-2000 (Eurofighter) and the cargo military aircraft A400M; Eurocopter produces helicopters such as the Tigre fighter and the military cargo NH-90 helicopters; Astrium specialises in the production of space rockets and Galileo satellites; lastly, it has the second largest division for the production of missiles in the world (through 37.5% of MBDA) which manufactures, among others, the Meteor and the ASMP-A for the transport of nuclear warheads.

EADS has different subsidiaries in Spain. EADS-Casa is the aeronautic division whose production is 85%-95% military. In November 2009 EADS-Casa was named Airbus Military for the manufacture of military aeronautics. EADS-Casa owns 60% shares in CESA S.A. (Compañía Española de Sistemas Aeronáuticos).

Eurocopter is another of its subsidiaries, based in Albacete and specialising in the manufacture of both civilian and military helicopters. Military helicopters (such as the Tigre, EC-135 or cargo NH-90 helicopters) make up 90% of its production. Other less relevant subsidiaries are EADS Astrium and EADS Casa Espacio, both specialising in space engineering and EADS Defence in defence engineering (called Cassidian Solutions since 2010).

In 2008 and 2009 EADS-Casa was granted subsidies amounting to €391m for different items (capital, exploitation and interest) in order for it to be able to keep its activity, its workplaces and investments (Table 4).

Table 4. Subsidies given to EADS-Casa

Capital subsidies	Year 2008	Year 2009
Ministry of Economy	72,069	44,777
Ministry of Science and Technology	22,431	18,170
Ministry of Industry and Energy	17,707	17,970
Ministry of Education and Science	436	750
European Union	973	939
Andalusia local government	85,935	107,485
Andalusia Technologic Corporation	-	228
City council of Seville	107	8
Madrid Autonomous Region	692	551
TOTAL	**200,350**	**190,878**

In thousands of Euros. Source: prepared by the authors.

Moreover, as in the case of Navantia, there are other types of aid: the "advances" (credit) granted by the public administration, mostly by the Ministry of Industry for R&D. These are 0% interest loans payable over 20 years. According to the balance of EADS-Casa, on the 31st of December 2009 the company had received €191.6m from this type of aid. These loans and subsidies highlight how strongly the Spanish state supports EADS-Casa.

The important increase that can be seen for 2009, both in sales and employment[11] is due to the fact that the data we used include all the companies of the Group EADS-Casa operating in Spain, such Airbus Military, EADS-Casa Espacio, EADS Defence and Eurocopter. We do not have this data at our disposal for the previous years.

Failure and corruption in EADS

The consortium EADS owns 100% of Airbus, the company charged with the manufacture of the aircraft A-380 for civil transport that was meant to compete with the American company Boeing in the field of world civil transport. On the 13th of June 2006 Airbus announced that the supply of its A-380 would be postponed due to technological problems and also announced that the cost would be doubled. This caused the company's shares to go down by 27% in the stock market and a big scandal because just three months earlier Airbus co-chairman, Noël Forgerard, had sold its stock-options shares gaining €3.8m. The main private shareholders of EADS, such as the French arms producer Arnaud Lagardere and his German partner Daimler-Chrysler had done the same, selling 7.5% shares. The first-hand information they had at disposal was decisive in their selling of half their shares for capital gains that reached €7m while the capital owned by the French and Spanish states and the rest of the shareholders lost its value. As a result of the scandal and pressure from the states, the managers of EADS were fired but thanks to their dismissal-proof contracts they got enormous compensations (€14m). The French Authority for Financial Markets charged 20 managers of EADS for the use of privileged information. Eventually the gamble taken by the states of the EADS consortium to put it at the cutting edge of technological and industrial innovation in Europe was jeopardised by the image of corruption given by its managers.

CASA, specialises in the manufacture of medium and light military transport aircraft and in the early 1990s it became the world leader in this production sector

Eurocopter is another of its subsidiaries, based in Albacete and specialising in the manufacture of both civilian and military helicopters

11. See Table 10 and 11 in the Annex.

In 2008 and 2009 EADS-Casa was granted subsidies amounting to €391m. On the 31st of December 2009 the company had also received €191.6m from the Ministry of Industry as R&D aid

At the beginning of the program in 2001 the Spanish government committed itself to buy 27 aircraft for the initial cost of €3.4bn

The governments participating in the project pf the A400M were forced to make extraordinary contributions amounting to €1.5bn. The Spanish government contributed €225m under the item "technological development (R&D)"

One more failure, the A400M aircraft

The military cargo A400M aircraft is another controversial case of EADS production. Seven countries were involved in the project (Germany, France, Belgium, United Kingdom, Spain, Turkey and Luxembourg) and committed themselves to buy 180 of the aircraft. Western Europe does not have large aircraft such as the A400M that can transport 400 soldiers and heavy material to very far destinations. At the beginning of the program in 2001 the Spanish government committed itself to buy 27 aircraft for the initial cost of €3.4bn. The project was delayed on a number of occasions because the countries participating in its production had not allocated sufficient resources for its development, which made the price of the project increase by €10bn on top of the predicted €20bn. EADS management then threatened to abandon the project if contributions were not made to finance the delay in the manufacture of the aircraft. The governments participating in the project were forced to make extraordinary contributions amounting to €1.5bn. The Spanish government contributed €225m (R.D. 26/6/2011) under the item "technological development (R&D)" to divide in the period between 2011 and 2013 by €75m per year. Finally it is worth mentioning that the refund of the credit is subjected to a tax on each sold aircraft from no. 185 to no. 464 between 2021 and 2040. This means that if the sales of the A400M aircraft do not exceed the 180 aircrafts already promised by the member states, EADS will not refund any of the loan it was granted, and it would do that only after selling 464 aircrafts.

No country has yet committed itself to buy any A400M besides the seven countries already involved in its manufacture.

General Dynamics Santa Bárbara

Empresa Nacional Santa Bárbara S.A. was founded to produce all the light and heavy weaponry of the Spanish armed aorces such as artillery, missiles, rifles, ammunition and armoured vehicles. It was totally state-owned through the public company SEPI until 2000, when the right-wing government decided to privatise it due to its high losses. Three companies wanted to purchase it: the American General Dynamics, the German group Krauss Maffei, Rheinmetall and Explosivos Alaveses. In the end, in July 2001 Santa Bárbara was sold to General Dynamics, one of the world's biggest arms producers.

SEPI stated that General Dynamics had promised to keep Santa Bárbara's entire workforce for five years, which the German company would not have done. This decision caused the reaction of the German government, which considered it to be counterproductive to European interests. The main objection was that Santa Bárbara was the concessionary for the manufacture of the Leopard armoured vehicles whose licence was given by the German company Kraus Maffei. This might have caused a transfer of technology and information about the Leopard vehicles in favour of its American rival General Dynamics that produces the Abrams tanks and is a rival for Germany in the world market. The second objection was that since 1999 the EU Partners had bet on a Community arms policy and had created the European Defence Agency (EDA) and the main European countries in the field of arms production joined it. It was never anything but contradictory to bet on a European military industry with the EU spurring many joint programmes (such as the EF-2000, the A400M military cargo aircraft or the Tigre helicopters) being able to compete with the US and then to leave Santa Bárbara in the hands of a US company allowing the penetration of the US arms industry into Europe.

The sale to General Dynamics was made at the ridiculous price of €5m at a time when it was guaranteed a very juicy order for the production of 242 Leopard tanks for the value of €1.941bn (today it is €2.123bn), the modernisation of the Pizarro armoured vehicles for the value of €480.81m (now €781m), the 155/52mm towed howitzer for the value of €102.17m (today it is €191m) and a plan of am-

munition for the value of €180.3m. So as a matter of fact, General Dynamics was benefited by so many orders that Santa Bárbara became a very lucrative investment.

Thanks to the above mentioned contracts the new company's management was able to invert the negative-results tendency and to make a profit since 2004.[12] Yet Santa Barbara's future is still uncertain: General Dynamics opened other factories in Europe (in Switzerland, Germany and Austria) and Santa Barbara's managers are willing for the company's gains to grow through the manufacture of the new VBR 8x8 armoured vehicle that the Ministry of Defence announced it wants to purchase for €1.3bn and they hope that Saudi Arabia may want to purchase 200-270 of its Leopard armoured vehicles for €3bn.

Like the rest of the big companies of the military industrial oligopoly, Santa Bárbara receives 0% interests loans. According to its balance at the end of 2010 it owed €2.412bn to the Ministry of Industry for the advanced payments for R&D of the programs for the Leopard and Pizarro armoured vehicles, the transportable 155mm howitzer and the Spike missile.

In July 2001 Santa Bárbara was sold to General Dynamics, one of the world's biggest arms producers

INDRA

INISEL was founded in 1985 by the INI to consolidate the electronic and information technology sector of the public industry. It always recorded a loss, so in 1992 the government decided to merge it without any compensation with the private company CESELSA. Thus INDRA was created. 66.09% of its shares were held by SEPI and the rest by the private sector. In 1999, when it made a profit, the state sold its shares to a number of shareholders[13] for 92.526bn pesetas while the Ministry of Defence charged it with the electronic development of most of its weapons, armoured vehicles, aircrafts, warships and other programs in the field of electronic warfare.

In 2006 and 2007 Indra bought two companies in the same field, Azertia and Soluciona. This way, the company's workforce grew from 6,360 in 2000 to 26,175 in 2009. Today Indra has some 31,000 employees and is present in 30 countries.[14]

During the last ten years Indra has managed to grow continuously with a 344% growth in sales. As concerns its production Indra is organized in three main areas of activity: information technology, simulation and automatic maintenance systems and electronic equipment for defence. According to its balances the defence sector represents 28-32% of its production but the sales it records are not divided between the civil and military field, so it is not possible to exactly determine the total volume of its military production. Besides, part of its turnover in the security sector could be related to defence and yet not be included in these figures.

Indra controls 80% of the Sociedad Española de Misiles (Inmize) that designs and develops missiles such as the Meteor, which is the arm system of the EF-2000 aircrafts, Rafale and Gripen. Inmize is the Spanish subsidiary of the main European missiles producer, MBDA, partly owned by the European group EADS and whose director was Pedro Morenés, the current Minister of Defence, until December 2011.

Table 5 shows the itemisation of the direct subsidies received by Indra such as aids for export, training and especially for R&D by a number of public institutions.

Just like the other big companies of the Spanish military oligopoly Indra is also granted 0% interest loans to return in 20 years, besides the subsidies, by the public administration for R&D (Table 6). Such aids show the favouritism that the public administration offers to a company that does not seem to need them, as it makes a significant profit each year.

According to its balance at the end of 2010 it owed €2.412bn to the Ministry of Industry for the advanced payments for R&D

12. See Table 9 of the Annex.
13. See the *Map of the military industry network with the State and financial groups in Spain* in the Annex.
14. See Table 11 in the Annex.

Table 5. Subsidies given to INDRA

Capital Subsidies	Year 2009	Year 2010
Ministry of Industry	2,125	758
Centro para el Desarrollo Tecnológico Industrial	557	-
European Union	372	170
Local government of the autonomous region Castilla y León	-	341
Corporación Tecnológica Andaluza	-	571
Local government of the autonomous region of Galicia	360	98
Autonomous region of Madrid	565	565
Aids to exports	115	20
Aids to training	1,580	1,715
Other	93	270
TOTAL	**5,767**	**4,508**

In thousands of Euros. Source: prepared by the authors.

Table 6. Credits given to INDRA

Credits for R&D	Year 2009	Year 2010
Ministry of Industry	28,108	31,037
Centro Desarrollo Tecnológico Industrial	15,093	25,346
ENISA	3,250	3,250
TOTAL	**46,451**	**59,633**

In thousands of Euros. Source: prepared by the authors.

During the last ten years Indra has managed to grow continuously with a 344% growth in sales

Until 2010 Indra was also granted €64.14m by the public administration between subsidies and credit for R&D

7. THE SPANISH MILITARY INDUSTRY IN THE WORLD *RANKING*

According to the SIPRI yearbook[15], Spanish companies rank among the 100 companies with the highest military production in the world (Table 7). So, in 2009 Navantia ranked 43th in the list and Indra ranked 65th. Other companies in the ranking are transnational military companies whose subsidiaries are also located in Spain. Among these we find the American General Dynamics (5) with Santa Bárbara Sistemas in Spain and Raytehon (6) with Raytehon Microelectronics; at 7th place we find the European consortium EADS that controls Airbus Military among others; the French company Thales (11) whose Spanish subsidiary is Thales Alenia Space España; Eurocopter España is represented by Eurocopter (23) and Iveco España that belongs to the Italian FIAT (93). Finally we find other Spanish companies whose shares are partly held by a European military company that is included in the ranking. It is the case of the British Rolls Royce, at 19th place, that holds 49% of ITP (Industria de Turbo Propulsores) or of MBDA at 20th place, whose Spanish subsidiary is Inmize.

This world strategy of business concentration is part of the phase that capitalism is currently going through and that we mentioned at the beginning, *Globalisation*. Military industries are significantly involved in this phase as we can see from the ranking. The high-ranking companies have their subsidiaries located in a vast number of world countries. As we explained Spain is also part of this process and, for example, Maxam has its subsidiaries in Ghana, Tanzania, Mali, Kazakhstan, Colombia,

15. SIPRI (2011): *SIPRI Yearbook 2011. Armaments, Disarmament and International Security*. Nueva York, Oxford University Press.

Table 7. The Spanish military industry in the world ranking (2009)

SIPRI Ranking*	Company	Sales in the defence sector* (Headquarters)	Sales in the defence sector* (Spanish subsidiaries)
5	General Dynamics (Santa Bárbara)	25,590	385.47
6	Raytheon (Raytheon Microelectronics España)	23,080	4.54
7	EADS (Airbus Military)	15,930	2,600.67
11	Thales (Thales Alenia Space España)	10,200	34.72
19	Rolls Royce (ITP)	4,140	196.04
20	MBDA (Inmize)	3,610	2.57
23	Eurocopter (Eurocopter España) and EADS-Casa subsidiaries of EADS	3,050	253.00
43	Navantia	-	1,423.82
65	INDRA	-	678.75
93	Fiat (Iveco España)	650	53.62

* In millions of current Euros. Source: prepared by the authors.

Cameron, and up to 20 countries; Amper in Mexico and Brazil; Indra has its subsidiaries in 30 countries (among them Kenya, Morocco, Zimbabwe, China and Colombia); Sener in Mexico, Poland, Japan; Aernnova in the US. All these examples allow us an idea of the dimensions of the Spanish military industry that has also opted for globalisation.

8. WHO IS WHO IN THE SPANISH MILITARY INDUSTRIAL COMPLEX

What we name the *military industrial complex* is the network of interests existing around the military economic cycle. This means both the corporate interests of the armed forces professionals –especially high-level officials-, shareholders, managers, commission agents and consultants of this industrial sector, and those of some politicians who end up in the network of the military industrial complex. All these interests, in one way or another, justify the existence of armed forces that are oversized with respect to real needs as well as the expenditure they represent (the end result of which is *militarism*, understood as the influence of the military on politics).

It is more and more common for military companies to hire politicians who worked in the Ministry of Defence or high-level officials of the armed forces as managers. This is a common strategy of many countries given the benefits that companies gain by having managers with knowledge, personal relations and first-hand information about the military policies of their governments. Spain is not different in this: during the last ten years members of the military and politicians have left active service to be hired in droves as managers of military companies.

Such was the case of Pedro Morenés, the new Ministry of Defence of the right-wing government that has been in power since December 2011 and the former chairman of MBDA España. MBDA is owned by three important European military industrial companies (EADS and BAE Systems hold 37.5% shares each and Finmeccanica holds 25%) and manufactures missiles (in Spain it produces the Meteor missile with a cost of €100m). Previously Morenés was also a consultant and representative of Instalaza, a military industry located in Zaragoza and entirely devoted to the manufacture of explosives. In the past it produced

Spanish companies rank among the 100 companies with the highest military production in the world

It is more and more common for military companies to hire politicians who worked in the Ministry of Defence or high-level officials of the armed forces as managers

Pedro Morenés, the new Ministry of Defence was the former chairman of MBDA España. Previously Morenés was also a consultant and representative of Instalaza

anti-personnel mines and cluster bombs, both currently prohibited in Spain. Through his mediation in 2007 the company sold cluster bombs to Gaddafi, right before they were prohibited in Spain. He was also the director of Segur Ibérica, the private security company that protects fishing vessels in the off the Somali coasts in the Indian sea. Between 1996 and 2000, with the right-wing government, Morenés was the State Secretary of Defence, between 2000 and 2002 he was the State Secretary for Security and he was State Secretary for Science and Technology until 2004. Furthermore, Morenés chose Pedro Argüelles, who had been the director of the Spanish subsidiary of the US corporation Boeing, that provided the Armed Forces with EF-18 Homet, Boeing 747, AV8V Harrier and Chinnok helicopters, as the State Secretary of Defence. The Morenés-Argüelles combination opens the door of the Ministry of Defence to two of the most important aeronautic companies of the world military industry.

Pedro Argüelles, who had been the director of the Spanish subsidiary of the US corporation Boeing, was chosen as the State Secretary of Defence

On the subject of ministers, a similar case was that of the former Minister of Defence during the socialist government of the Prime Minister Felipe González (1991-1995), Julián García Vargas who, during his mandate, increased Spanish presence in NATO, adapted the armed forces to it and intensified international missions. He was later appointed as the chairman of TEDAE, the association which includes most Spanish military companies and was created to replace Afarmade. He is also a member of INDRA's advisory board.

It is not accidental that the EADS subsidiary, Eurocopter, built a factory in Albacete when José Bono was the Minister of Defence and previously had been the president of the autonomous community of Castile-La Mancha. This is another good example political interests meeting those of the military-industrial sector.

General Carlos Villar Turrau was hired by General Dynamics/Santa Bárbara as vice-chairman of the business strategy division in February 2009

Some cases also stand out among military personnel. For example, General Carlos Villar Turrau, Commander in Chief of the Army until 2008, was hired by General Dynamics/Santa Bárbara as vice-chairman of the business strategy division in February 2009. It was also the case of the Commander in Chief of the navy, Admiral Sebastián Zaragoza, who was hired by the public-owned company Navantia as a commercial consultant for exports in November 2008. As we mentioned earlier, Admiral Francisco Torrente of the Spanish navy was appointed chairman of Explosivos Alaveses (Expal) in 2006 and before that Secretary General for Defence Policy (Segenpol). As a representative of Expal, Torrente was appointed as chairman of Afarmade in March 2009 until it was dissolved in September 2009.

This hiring policy caused some protests within the armed forces about the appointment of military officials as managers of private arms companies as it harms the ethical behaviour of soldiers that should set an example and be objective, honourable and trustworthy. These principles are jeopardised by the entrance of military officials into private companies that are contractors of the Ministry of Defence. There were even quite disagreeable comments made by some military personnel about the favouritism of the Ministry towards some contracts granted to the company Santa Bárbara since it hired Carlos Villar.

Another case was that of Aeronáutica del Espacio (BAiE), a Catalan business association made up of industry officials who work in the aerospace sector. Its aim is to obtain aid for its expansion in Catalonia. The chairman of BAiE was Fernando de Caralt, who had held high-level positions in different military industries; for example he was chairman of CASA –that is today part of Airbus Military- and was also the founder and chairman of Afarmade, the association of Spanish arms manufacturers. He is also the chairman of CIMSA, a company whose production is 50%-70% military and that provides parachutes for the EF-2000 aircraft and for the armed forces of the Spanish state and of other countries.

Enrique Navarro held a number of high-level positions in the Ministry of Defence during the right-wing and left-wing governments. In 2011 he left the Ministry to found IC2, a logistics company that works in areas affect-

ed by conflicts, with public transport technology department and an energy and environment department. In 1996 Navarro was the deputy director of the Cooperation Department of the Ministry of Defence and was the person who led the Ministries of Defence and of Industry to apply accountancy that allowed the granting of loans to military companies for R&D to develop new weapon prototypes.[16]

The above mentioned cases show the relation existing between Spain and the network of the *military industrial complex*, a concept that was coined by President Eisenhower when he condemned the existence of a strong lobby of military figures, corporations and some politicians in the US during his final speech.[17]

9. TEMPORARY RECEIVERSHIP OF THE MINISTRY OF DEFENCE AND THE *ARMS BUBBLE*

In 1996 the victory of the right-wing People's Party over the incumbent socialist government brought a change in the policies of the Ministry of Defence. It proposed a reform of the armed forces to make them more professional and an end to compulsory military service and implemented a number of important projects for new weapons. These projects represented a continuation of those already started during the former socialist government of Felipe González to adapt the armed forces to the needs imposed by the addition of Spain to NATO. These important armaments programs[18] caused a significant rise in military expenditure due to the commitments made with military corporations (EADS-Casa, Navantia, Santa Bárbara, Indra, ITP, Eurocopter…) which were to implement these programs that would last thirty years (until 2025). These commitments were added to the above mentioned 0% interest credits for R&D granted to these military corporations. All told, the Ministry of Defence committed itself to an expenditure that was over the astronomical figure of €40bn.

These enormous investments could not have been made without very significantly increasing the military budget. Of course such a significant increase would have had a political cost for the right-wing government, as it would not have been well received by the Spanish public. As we mentioned in the former section the Cooperation Department of the Ministry of Defence found a solution through a process of *creative accountancy*, establishing an agreement with the Ministry of Industry that such would grant 0% interest loans to military companies to develop R&D programs. Such loans would be returnable in 20 years, by which time the Ministry of Defence would have paid for the arms.

Three objectives were reached this way: military expenditure of the Ministry of Defence was increased in a discreet way and, at the same time, critics among the public were silenced by reducing the political cost represented by the increase; secondly, the contribution to R&D was increased (at the time Spain was among the last OECD countries); and thirdly, the demands of the military industry were met, financing the research and development of new weapons prototypes.

This decision of the right-wing government, despite the criticism of the socialist opposition, was continued by the socialist party after it won the elections in 2004. So the loans for R&D of the Ministry of Industry reached truly unusual proportions. Today the loans granted to military companies between 1997 and 2011 amount to 14.976bn of current Euros according to the Ministry of Industry.[19] This figure has to be added to the budget for military R&D of the Ministry of Defence that, during the same period, amounted to €4.607bn, most of which ended up in pockets of the military corporations.

Admiral Francisco Torrente of the Spanish navy was appointed chairman of Explosivos Alaveses (Expal) in 2006 and before that Secretary General for Defence Policy

Large weapons programs caused a significant increase in military spending due to commitments to military industries

16. Perez Ramírez, P. (2007): *Dossier El negocio español de las armas*. Revista Capital, nº 85. Pg. 68.
17. Eisenhower, in January 1961, warned about the enormous power of the *military industrial complex* and of its negative influence on governmental policies during his last speech before leaving the White House.
18. See Table 2 in the Annex.
19. See Table 12 in the Annex.

The R & D credits are an accounting trick that actually hid "help" to the military industries

This credit could be suspected of being an accountancy trap that actually hid *aid* to the military companies. This was verified when, through an initiative of the Delàs Centre, a parliamentary question was asked through the Group ERC-IU-ICV to ask how much of those loans had been returned. The answer of the State Secretary for Constitutional and Parliamentary Affairs in June 2008 was that, after thirteen years, €81.45 million had been returned. That is 0.6% of the total amount. Although the loans are returnable for 20 years and can still be returned, the poor amounts that have been given back until now make us fear that the loans could be cancelled and increase public debt.

Defense was in default and did not have sufficient resources to meet the payments of large weapons programs. He had created what might be called a *arms bubble*

The situation became more serious with the arrival of the crisis at the end of 2008 due to the budget cuts that also affected the Ministry of Defence. Before the end of the term, in October 2011, the Minister Carmen Chacón, publicly stated that the Ministry of Defence, due to lack of solvency, could not assume the payment of €26.692bn that corresponded to the big Special Armaments Programs that had been guaranteed to a number of companies. At the end of 2011 the Ministry of Defence had only paid €4.267m. The State Secretary of this Ministry, Constantino Méndez, was even more explicit on the 6th of October 2011, when he said: "we should not have bought these systems that we are not going to use, for war scenarios that do not exist and with money that we did not have then and we do not have now." So it is crystal clear. The Ministry of Defence found itself in a situation of temporary receivership and did not have the necessary resources to assume the payment of the big armament programs.

Constantino Méndez said: "we should not have bought these systems that we are not going to use, for war scenarios that do not exist and with money that we did not have then and we do not have now"

Furthermore, as these programs will have to be re-negotiated with the military companies to postpone the payments, the officials of the Ministry of Defence estimated that in 2015 the debt will amount to €36.876bn, and presented a report in which they suggest increasing investment by €1.5bn a year, postponing the payments until 2040, and cancelling the advances made by the Ministry of Industry for R&D. This has to be added to the high cost for the maintenance of these arms: €400m each year which in 2025, when all pending arms will have been supplied, will amount to €800m.

In fact, the Ministry of Industry has already assumed the expenditure of the Ministry of Defence not only through loans for R&D but also through the purchase of material for the Emergency Military Unit for the value of €180m between 2007 and 2011.

This is the situation today and figures increase every year while no one actually knows how to solve the enormous problem of these investments in weapons and of what we might call the *arms bubble* that brought the Ministry of Defence to the verge of collapse.

10. THE ECONOMIC CRISIS AS A CHANCE FOR CONVERSION

As we have explained in this report, the Ministry of Defence and the military industry are so interdependent in Spain that it is not easy to understand which one is the chicken and which the egg. The existence of the armed forces justifies the military industry and vice-versa, the industry of defence (under the pretext that it creates richness and jobs) justifies the maintenance of the armies, as these keep the demand for arms high. We must not forget that the industry of defence would not be profitable if it did not receive the substantial contracts signed with the Ministry of Defence. The same is valid for the aid and subsidies they receive from a number of public institutions among which we find the injections of funds for military R&D granted by the Ministry of Defence and the Ministry of Industry. Perhaps these companies would not exist or would have converted their production if they did not receive such favouritism from the State that makes them an enormous parasite on the current Spanish economy.

As we mentioned above, the military industry is part of the military industrial complex. This causes these companies to create structural defects that prevent them from being competitive. The first defect is undoubtedly the lack of control on the costs of production, as these firms are not based on the universal principle of the cost-benefit

law, due to the lack of competence in the market and to the fact that their client (the Ministry of Defence) will always pay in the end, no matter the final price of the arms. Another defect that deeply affects the internal structure of production is the introduction of continuous changes to the design of long-term projects (we already mentioned that some of them last 20 years) which also increases costs. Furthermore, the failure to comply with agreed payments also increases the financial costs of arms.[20]

All the arguments offered in this report show the lack of opportunity costs which slows down civil industry and makes it inefficient as it is deprived of capital for its development. Thus the main argument used to defend the military industry as the engine for the transfer of R&D to the civil sector is an invention of the military industrial complex that has never been verified. For example, it would be very easy to show the technological virtues of arms: it would be sufficient to publicly declare how many passed through the patent register for their civil commercial exploitation. And the contrary could actually be valid, that technology developed in the civil sector is exploited by the military industry.

These structural defects also affect the Ministry of Defence, which is very badly governed, without true control on the weapons it purchases that, in some cases, were designed for fighting scenarios that do not exist today such as Cold War-style land invasions and air attacks. The Ministry of Defence's governance is inert due to the rapid changes of the politicians who govern it and the erratic policies of successive governments.

To summarise, there is no proper control on purchases, on their monitoring or on compliance with contracts. The usual delays in the delivery of the armament programs cause over-costs but this does not imply any kind of accountancy for the responsible managers.

20. As Table 2 in the Annex shows the initial costs of the projects suffer from significant increases with time.

As a consequence, if we want to reduce the negative impact of the military industry on the Spanish economy it is necessary to act in multiple aspects. Firstly, the number of armed forces troops should be reduced to lower the demand for arms; secondly, the purchase and participation in new joint programmes for new weaponry have to be halted; the Ministry of Industry must stop granting loans to companies for military Research and Development (R&D); finally, studies should be made for the conversion of military corporations towards civil production to avoid the loss of employment and create an effective impact on the social wellbeing of the population.

In this sense the economic crisis that Spain has been going through since 2008 should be an opportunity to change the policies of the state's military expenditure (1.6% of the GDP) and to employ them for the development of a productive economy in the civil field. Yet there are currently no signs that this is going to happen. The budget cuts that have affected the Ministry of Defence until now seem to be dictated by the crisis, not by the will to promote the conversion of the military industry or, at least, to cancel some of the big arms contracts. It seems that the government is waiting for a recovery of the Spanish economy that will allow the public Treasury to increase the military budget to buy new weapons.

In this report we gave arguments about the economic inefficiency of the arms industry in opposing those who defend its virtues and economic benefits. Yet there is another kind of argument we still have not mentioned, the ethical one. Ethics tells us how human beings should behave towards nature. This makes us wonder whether the continuous scientific-technologic developments have negative or positive impacts on humanity. In the case of arms, there is no doubt that they cause insecurity as the invention and purchase of new war devices immediately produces a domino effect on other countries, who start researching new weapons to combat those of the rival country. That is the everlasting arms race that leads inevitably to war.

The Ministry of Defence and the military industry are so interdependent in Spain. This industry would not be profitable without substanciosos Ministry of Defense contracts

Such companies generate a series of structural defects that prevent them from being competitive. Furthermore, the lack of opportunity costs hinders and transfers inefficiency to the civilian industry

There is no proper control on purchases, on their monitoring or on compliance with contracts

Of course, there will always be those who say that war is inevitable and that it has always affected humanity, so we need weapons to defend ourselves. However we consider war a human cultural invention and, as such, it can be transformed and abolished just as was done with slavery. The first step in this direction would be unilateral disarmament that would make the rest of countries follow the same path. We must abandon the production of weapons of more and more destructive capability, especially after the invention of nuclear bombs, which defy the limit of reason, being weapons capable of destroying all human life and the planet. So, above economic reasons, it is ethics that make arms totally unjustifiable.

APPENDIX

Table 1. Military companies in Spain 2009

Company	Sales defense	Sales total	Earnings	Employ. defense	Employ. total	Export defense	Export total	% defense	Note
EADS-Casa1	2.600,67	3.024,03	-192,79	8.317	9.671	1.658,60	1.928,60	86%	3
Navantia	1.423,82	1.582,02	-82,66	4.966	5.518	829,84	829,84	90%	3
INDRA	678,75	2.513,90	195,60	7.067	26175	325,69	904,70	27%	3
General Dynamics/Santa Bárbara	385,47	385,47		1.805	1.805			100%	3
SENER Grupo	253,05	937,24	74,56	488	1807			27%	3
ITP, S.A.	196,04	500,10	-0,02	791	2.019			39%	3
Aernnova	99,20	283,44	13,01	64	183			35%	5
ISDEFE	86,65	127,42	8,25	675	993	8,91		68%	3
Amper Grupo	65,68	285,57	16,84	286	1242			23%	3
Expal, S.A.	64,70	64,70	7,29	71	71			100%	3
Iveco España	53,62	1.094,36	-64,20	208	4.247			5%	4
Tecnobit	53,30	59,22	6,01	325	361	13,00	15,64	90%	4
DEFEX, S.A.2	50,64	50,64	6,78	21	21	50,64	50,64	100%	3
ESPELSA	44,78	59,71	2,51	323	430			75%	4
UROVESA	42,76	61,08	6,15	55	78			70%	4
Hisdesat, S.A	36,24	55,69	13,62	16	25			65%	3
Thales Alenia Space	34,72	53,41	1,77	133	204			65%	3
CESA	33,98	48,55	2,58	180	257			70%	4
GMV	32,25	46,07	2,31	330	472	18,42		70%	3
Fabricaciones Extremeñas	25,02	25,02	4,53	173	173			100%	3
Nucleo (Page Ibérica)2	20,43	102,13	-0,69	80	400			20%	4
Santana Motor, S.A.	20,00	20,00	-24,00	580	580			100%	3
Astilleros Gondan	19,58	65,27	1,61	25	84			30%	4
TECOSA	16,42	54,72	5,04	34	114			30%	4
Electrónica Submarina (SAES)	16,09	16,09	2,55	107	107			100%	3
Hispasat, S.A.	15,54	103,83	38,43	18	123			15%	5
EINSA2	14,79	30,81	4,19	47	97			48%	4
Aciturri Aeronáutica	13,13	37,52	2,32	87	249			35%	5
Explosivos de Burgos	11,41	11,41	0,24	117	117			100%	3
Emte Sistemas	11,18	74,55	0,06	81	538			15%	4
Sainsel	10,07	12,59	1,52	33	41			80%	4

Company	Sales defense	Sales total	Earnings	Employ. defense	Employ. total	Export defense	Export total	% defense	Note
Rodman Polyships	9,99	49,96	2,64	64	319			20%	4
INSA	8,90	44,48	2,43	120	602			20%	4
SAPA Placencia	8,84	9,02	s.d.	239	244			98%	4
Fluidmecánica Sur	8,55	9,50	0,82	104	115			90%	4
Aerlyper	7,00	8,75	0,10	52	65			80%	4
Rohde & Schwarz	6,62	33,08	1,14	19	93			20%	4
Software AG	6,60	81,38	2,86	59	723			8%	4
Sintersa	6,34	8,80	1,39	71	98			72%	4
Instalaza	6,00	6,06	-0,13	70	71			99%	4
SCP S.A.	5,47	10,73	0,79	15	30			51%	4
Aritex Cading	5,34	53,42	3,40	9	93			10%	4
Internacional Composites (ICSA)	5,07	66,34	2,72	24	315			8%	4
Nextel	4,87	19,47	-0,53	53	211			25%	4
Cohemo	4,74	5,92	0,11	9	11			80%	4
Raytheon Microelectronics	4,54	15,14	-3,35	50	168			30%	5
Equipos Móviles Arpa2	4,26	5,01	-0,54	52	61	0,15	38,60	85%	4
JPG, Ingeniería	3,84	4,80	0,05	30	37			80%	4
CRISA	3,73	37,30	2,63	27	269			10%	4
RYMSA	3,42	22,78	-2,96	37	247			15%	4
SACESA	3,07	38,34	0,18	22	270			8%	4
Simave	2,97	9,89	0,10	24	81			30%	4
Navair2	2,85	3,17	0,14	30	33			90%	4
Bereta Benelli Ibérica	2,83	18,89	0,38	11	72			15%	4
Inmize (MBDA)	2,57	2,57	0,47	18*	18*			100%	3
Langa Industrial2	2,37	6,77	0,36	12	35			35%	4
Alava Ingenieros	2,36	23,59	59,69	9	90			10%	5
MASA2	2,33	23,34	0,40	17	165			10%	4
SVAT, S.A.	2,31	23,12	1,72	3	27			10%	4
CIMSA	2,31	3,85	0,14	26	43			60%	4
Avanzit	2,14	30,53	-6,06	11	150			7%	4
Astilleros Duarry	1,82	4,54	-0,25	11	27			40%	4
Aries Ingenieria2	1,25	12,46	0,83	9	91			10%	4
SPA, S.A.	1,17	6,49	0,29	10	54			18%	4
Parafly	1,09	1,21	0,02	14	15			90%	4
Ibérica del Espacio	0,77	7,65	0,12	5	45			10%	4
CT Ingenieros2	0,73	14,51	1,31	14	284			5%	4
Gutmar	0,64	3,53	0,48	7	41			18%	4

Company	Sales defense	Sales total	Earnings	Employ. defense	Employ. total	Export defense	Export total	% defense	Note
GTD Sistemas	0,52	2,59	0,51	60	300			20%	4
Industrial Matricera Palentina	0,48	6,85	0,42	3	42			7%	4
Total	**6.530**	**12.522**		**28.901**	**63.839**				

Source: prepared by the authors
1. EADS-Casa agrupa a EADS-Casa, Airbus Military, EADS-Casa Espacio y Eurocopter.
2. Datos año 2008.
Fuente: Base de datos SABI consultada en julio 2010.
Los porcentajes de producción militar proceden:
3. Balance de las empresas.
4. Fuerzas de Defensa y Seguridad (2010): "Directorio de empresas de Defensa en España 2010" Fuerzas de Defensa y Seguridad, nº 86, 33-66.
5. Estimación propia.

Table 2. Main military contracts 1996-2025

Contract	Companies	Period	Inicial cost	Current cost
87 Aviones EF-2000	EADS-Casa, Santa Bárbara, ITP, Indra, Gamesa, Tecnobit	1997/2024	6.363,10	11.718,00
239 Blindados Leopardo	Santa Bàrbara, Indra, Navantia, Electroop, Sapa Placencia, Amper, CAF	1996/2017	1.941,77	2.399,40
212 Blindados Pizarro	Santa Bárbara, Steyr, Puch, Indra	2005/2024	707,47	845,40
24 Helicópteros Tigre	Eurocopter, Sener, Amper, ECESA, Indra	1997/2014	1.081,82	1.579,60
45 Helicópteros NH-90	Eurocopter, Sener, ECESA General Electric, ITP, Indra	2006/2012	1.260,00	2.463,00
27 Aviones A400-M	EADS-Casa, Flabel, ITP, Sener, Tecnobit, Alcor	2001/2020	3.449,81	5.493,00
4 Fragatas F-100	Navantia, Indra, Maxam	1997/2010	1.602,80	1.809,80
1 Fragata F-105	Navantia, Indra, Maxam	2006/2012	475,00	834,00
4 Buques BAM	Navantia, Indra, Sainsel,, Navalips	2006/2012	215,00	488,00
1 Buque BPE	Navantia, Indra, Sainsel	2004/2010	360,00	461,70
4 Buques BAC	Navantia, Indra, Sainsel	2003/2022	213,00	238,50
4 Submarinos S-80	Navantia, Tecnobit, Abengoa, SAE, Indra	2011/2014	1.502,53	2.212,50
770 Misiles Iris T (EF-2000)	Sener, Expal, ICSA	2005/2011	247,32	291,50
2600 Misiles anticarro Skipe	Rafael (Israel), Santa Bárbara, Tecnobit	2008/2022	260,00	355,50
70 Obús 155 mm	EADS-Casa, Indra, ITP, Iberia	2006/2023	180,50	199,80
43 Misil Taurus (EF-2000)	Taurus Systems, EADS, Sener	2004/2010	57,00	60,10
Nodos CIS (Comunicación)	Indra, INTA, Hispasat	2008/2012	59,70	60,70
Avión apagafuegos UME	Bombardier	2007/2011	40,50	40,50
Helicópteros UME	Eurocopter	2007/2011	76,00	80,40
5 Aviones P-3 Orion	EADS-Casa	1999-2006	108,45	108,45
13 Aviones C-295	EADS-Casa	2005-2009	174,82	205,00

Contract	Companies	Period	Inicial cost	Current cost
84 Blindados Centauro	Iveco, Amper, Oto Melara	1999-2007	134,65	134,65
232 Misiles Meteor (F-18 y EF.2000	MBDA, Inmize, INTA	1999-2006	62,13	103,85
40 Torpedos submarinos S-80	Gobierno de Alemania, Amper, Iveco	2005/2014	76,31	76,31
120 Misiles Sparrow (F-18 y EF-2000)	Indra	1997/2015	50,86	50,86
5 Aviones AV-8B	EADS-Casa, Indra, ITP, Iberia	1997/2018	148,06	148,06
Sistema Observación Satélites Paz e Ingenio	Hisdesat	2012/2016	376,52	376,52
220 Vehículos blindados LMV Lince	Iveco España	2007/2010	143,00	143,00
4 Sistemes de radar Arthur	Ericsson	2006/2012	69,09	69,09
21 Blindados Piraña III	Rheimentall, Santa Bárbara	2008/2015	68,30	68,30
Mantenimiento avión EF-2000	EADS-Casa	2010/2019	150,00	150,00
Total			**21.655,51**	**33.265,49**

In million euros. Source: prepared by the authors

Table 3. Aerospatial Sector (2009)

Company	Sales defense	Sales total	Earnings	Employ. defense	Employ. total	Production defense
EADS-Casa (Grupo)*	2.600,67	3.024,03	-192,79	8.897	9.671	86%
ITP - Industria de Turbo Propulsores	196,03	500,10	-0,02	791	2.019	39%
Aernnova	99,20	283,44	13,01	64	183	35%
Hisdesat	36,24	55,69	13,62	16	25	65%
CESA - Compañía Española de Sistemas Aeronáuticos	33,99	48,55	2,58	180	257	70%
Hispasat	15,54	103,83	38,43	18	123	15%
Aciturri Aeronáutica	13,13	37,52	2,32	87	249	35%
Internacional de Composites, S.A. (ICSA)	5,07	66,34	2,72	24	315	8%
Sociedad Andaluza de Componentes Españoles (SACESA), (ahora Alestis)	3,07	38,34	-0,29	22	265	8%
Mecanización Aeronáutica, S.A. (MASA)	2,33	23,34	0,40	17	165	10%
CIMSA - Ingeniería de Sistemas	2,31	3,85	0,14	26	43	60%
SPA, S.A.	1,17	6,49	0,29	10	54	18%
Parafly, S.A.	1,09	1,21	0,02	13	15	90%
Ibérica del Espacio	0,77	7,65	0,12	5	45	10%
Industrial Matricera Palentina	0,48	6,85	0,42	3	42	7%
Total	**3.011,09**	**4.207,23**		**10.173**	**13.471**	

* Includes EADS-Casa, EADS-Casa Espacio, Airbus Military and Eurocopter.
In million euros. Source: prepared by the authors

Table 4. Naval Sector (2009)

Company	Sales defense	Sales total	Earnings	Employ. defense	Employ. total	Production defense
Navantia, S.A.	1.423,80	1.582,02	-82,66	4.966	5.518	90%
Astilleros Gondan	19,58	65,27	1,61	25	84	30%
S.A. de Electrónica Submarina (SAES)	16,09	16,09	2,55	107	107	100%
Sainsel Sistemas Navales, S.A.	10,07	12,59	1,52	33	41	80%
Rodman Polyships, S.A.	9,99	49,96	2,64	64	319	20%
Fluidmecánica Sur, S.L.	8,55	9,50	0,82	103	115	90%
Navair	2,85	3,17	0,14	30	33	90%
Astilleros Duarry	1,82	4,54	-0,25	11	27	40%
Total	**1.492,75**	**1.743,14**		**5.339**	**6.244**	

In million euros. Source: prepared by the authors

Table 5. Electronics and Communications (2009)

Company	Sales defense	Sales Total	Earnings	Employ. defense	Employ. total	Production defense
INDRA	678,51	2.513,90	195,6	7.067	26.175	27%
Sener S.A. (Grupo)	253,05	937,24	74,56	487	1.807	27%
AMPER (Grupo)	66,36	285,57	16,84	331	1.242	23%
Tecnobit, S.L.	53,30	59,22	6,01	325	361	90%
GMV	32,25	46,07	2,31	330	472	70%
Núcleo (antes Page Ibérica)	20,43	102,13	-0,69	80	400	20%
Telecomunicación Electrónica y Conmutación,S.A.(TECOSA)	16,42	54,72	5,04	34	114	30%
Emte Sistemas	11,18	74,55	0,06	81	538	15%
INSA - Iingeniería y Servicios Aeroespaciales, S.A.	8,90	44,48	2,43	120	602	20%
Rhode & Schwarz	6,62	33,08	1,14	19	93	20%
Software AG	6,60	81,38	2,86	59	723	8%
SINTERSA (Sistemas de Interconexión, S.A.)	6,34	8,80	1,39	71	98	72%
SCP S.A.	5,47	10,73	0,79	15	30	51%
Raytheon Microelectronics	4,54	15,14	-3,35	50	168	30%
Computadoras Redes e Ingeniaría (CRISA)	3,73	37,30	2,63	26	269	10%
Radiación y Microondas, S.A. (RYMSA)	3,42	22,78	-2,96	37	247	15%
Simave, S.A.	2,97	9,89	0,1	24	81	30%
Avanzit Tecnología	2,14	30,53	-6,06	11	150	7%
Total	**1.182,21**	**4.367,51**		**9.167**	**33.570**	

In million euros. Source: prepared by the authors

Table 6. Military vehicles (Armoured and land platforms) (2009)

Company	Sales defense	Sales Total	Earnings	Employ. defense	Employ. total	Production defense
General Dynamics/Santa Bárbara	385,47	385,47	s.d.	1.805	1.805	100%
IVECO España	53,62	1.094,36	-64,20	208	4.247	5%
UROVESA	42,76	61,08	6,15	55	78	70%
Santana Motor, S.A.	20,00	20,00	-24,00	580	580	100%
EINSA*	14,79	30,81	4,19	47	97	48%
Cohemo	4,74	5,92	0,11	9	11	80%
Equipos Móviles Arpa*	4,26	5,01	-0,54	52	61	85%
SVAT, S.A.	2,31	23,12	1,72	3	27	10%
Total	**527,95**	**1.625,77**		**2.758**	**6.906**	

In million euros. Source: prepared by the authors

Table 7. Engineering (2009)

Company	Sales defense	Sales Total	Earnings	Employ. defense	Employ. total	Production defense
ISDEFE*	86,65	127,42	8,25	675	993	68%
Especialidades Eléctricas, S.A. (ESPELSA)	44,78	59,71	2,51	322	430	75%
Thales Alenia Space España*	34,72	53,41	1,77	133	204	65%
Ingeniería y Servicios Aeroespaciales, S.A. (INSA)	8,90	44,48	2,43	120	602	20%
Aerlyper S.A.	7,00	8,75	0,10	52	65	80%
Aritex Cading	5,34	53,42	3,4	9	93	10%
Nextel Engineering Systems, S.L.	4,87	19,47	-0,53	53	211	25%
JPG Ingeniería	3,84	4,80	0,05	30	37	80%
Inmize	2,57	2,57	0,47	s.d	s.d	100%
Langa Industrial	2,37	6,77	0,36	12	35	35%
Alava Ingenieros	2,36	23,59	59,69	9	90	10%
ARIES Ingeniería y Sistemas, S.A.	1,24	12,46	0,83	9	91	10%
CT Ingenieros*	0,73	14,51	1,31	14	284	5%
Gutmar	0,64	3,53	0,48	7	41	18%
GTD - Ingenieria de Sistemas y Software Industrial, S.A.*	0,52	2,59	0,51	60	300	20%
Total	**206,52**	**437,48**		**1.506**	**3.476**	

* Figures from 2008.
In million euros. Source: prepared by the authors

Table 8. Weaponry and ammunitions (2009)

Company	Sales defense	Sales Total	Earnings	Employ. defense	Employ. total	Production defense
Explosivos Alaveses (EXPAL)	64,70	64,70	7,29	71	71	100%
Fabricaciones Extremeñas (FAEX)	25,02	25,02	4,53	173	173	100%
S. A. de Electrónica Submarina (SAES)	16,09	16,09	2,55	107	107	100%
Explosivos de Burgos (EDB)	11,41	11,41	0,24	117	117	100%
SAPA Placencia, S.A	8,84	9,02	s.d.	239	244	98%
Instalaza, S.A.	6,00	6,06	-0,13	70	71	99%
Beretta Benelli Ibérica	2,83	18,89	0,38	11	72	15%
Total	**134,89**	**151,19**		**788**	**855**	

In million euros. Source: prepared by the authors

Table 9. Turnover balance by company (2000-2010)

Años	EADS-CASA	Izar / Navantia	Indra	General Dynamics/ Santa Bárbara
2000	63,14	-172,53	46,45	-29,58
2001	23,62	-154,52	59,74	-47,99
2002	-40,59	-120,75	65,52	-2,87
2003	55,05	-30,28	73,79	-6,30
2004	36,90	-2.600,88	89,88	1,93
2005	68,23	-127,90	104,10	-0,02
2006	78,49	-30,87	117,90	3,39
2007	-22,09	4,17	154,78	5,20
2008*	67,58	-55,87	182,00	17,98
2009*	-192,79	-82,66	195,60	
Total	**137,54**	**-3.372,09**	**1.089,76**	**-58,26**

*EADS-Casa is EADS-Casa, Airbus Military, EADS-Casa Espacio and Eurocopter.
In million euros. Source: prepared by the authors

Table 10. Sales by company (2000-2010)

Year	EADS-CASA		NAVANTIA		INDRA		GENERAL DYNAMICS / SANTA BÁRBARA	
	Sales defense	Sales total	Sales defense	Sales total	Sales defense	Sales total	Sales defense	Sales total
2000	802,13	1.002,66	356,81	734,17	197,65	676,88	104,58	104,58
2001	669,81	837,26	562,01	1.156,39	226,09	774,29	301,91	301,91
2002	685,65	856,63	450,81	1.536,83	227,14	873,60	367,01	367,01
2003	761,07	1.031,63	545,92	1.706,99	451,26	981,40	406,20	406,20
2004	796,00	995,00	881,60	1.102,41	313,80	1.079,20	392,03	392,03
2005	911,73	1.140,01	779,20	955,60	539,10	1.202,23	388,65	388,65
2006	1.055,98	1.319,98	902,00	1.142,99	586,98	1.950,10	499,49	499,49
2007	870,29	1.087,87	1.013,00	1.267,12	633,00	2.167,60	451,19	451,19
2008*	2.464,34	2.768,93	1.285,90	1.461,30	684,00	2.379,60	441,79	441,79
2009*	2.600,67	3.024,03	1.423,82	1.582,02	678,75	2.513,90	385,47	385,47
Total	**11.617,67**	**14.064,00**	**8.201,07**	**12.645,82**	**4.537,77**	**14.598,80**	**3.738,32**	**3.738,32**

*EADS-Casa is EADS-Casa, Airbus Military, EADS-Casa Espacio and Eurocopter.
In million euros. Source: prepared by the authors

Table 11. Employment by company (2000-2010)

Year	EADS-CASA		NAVANTIA		INDRA		GENERAL DYNAMICS / SANTA BÁRBARA	
	Employ. defense	Employ. total	Employ. defense	Employ. total	Employ. defense	Employ. total	Employ. defense	Employ. total
2000	5.873	7.341	3.890	8.005	1.857	6.360	2.046	2.046
2001	4.035	5.044	5.352	11.012	1.698	5.816	2.030	2.030
2002	3.814	5.254	5.769	11.064	2.802	6.092	2.418	2.418
2003	3.408	4.734	5.604	10.928	2.937	6.385	2.320	2.320
2004	3.402	4.734	5.564	10.764	1.924	6.516	2.320	2.320
2005	3.785	4.732	4.478	5.597	2.069	8.282	2.248	2.248
2006	4.011	5.014	4.449	5.632	2.060	19.500	2.224	2.224
2007	4.218	5.273	4.505	5.632	6.856	23.482	1.979	1.979
2008*	8.001	8.990	4.870	5.535	7.144	24.806	1.872	1.872
2009*	8.317	9.671	4.966	5.518	7.067	26.175	1.805	1.805
Total	**48.864**	**60.787**	**49.447**	**79.687**	**36.414**	**133.414**	**21.262**	**21.262**

*EADS-Casa is EADS-Casa, Airbus Military, EADS-Casa Espacio and Eurocopter.
In million euros. Source: prepared by the authors

Table 12. Military R&D in Spain (1997-2009)

Años	R&D Ministry of Defense	Military R&D Ministry of Industry	Total military R&D
1997	290,11	210,36	500,47
1998	300,14	581,00	881,14
1999	294,75	1.198,58	1.493,33
2000	293,48	964,11	1.257,59
2001	382,11	947,8	1.329,91
2002	314,04	1.176,85	1.490,89
2003	322,97	1.049,90	1.372,87
2004	303,42	1.070,00	1.373,42
2005	315,69	1.014,60	1.330,29
2006	325,88	1.358,01	1.683,89
2007	361,04	1.225,06	1.586,10
2008	355,67	1.308,57	1.664,24
2009	312,41	1.149,92	1.462,33
2010	231,89	950,91	1.182,80
2011	203,91	770,71	974,62
Total	**4.607,51**	**14.976,38**	**19.583,89**

In million euros. Source: prepared by the authors. State budgets..

Tabla 13. Directorio de empresas e industrias militares y acrónimos

Denominación	Producción
A5 Security Barcelona	Sistemas de video / visión infrarroja y térmica de larga distancia (Ministerio de Defensa: proyectos para aviones no tripulados. Facturación en Defensa: 5% en 2010).
ACCENTURE Madrid y Barcelona	Equipos, software y comunicaciones.
ACITURRI AERONÁUTICA - Aries Complex Miranda de Ebro (Burgos)	Mecanizado de precisión, estructuras metálicas, carcasas de motor (programas militares A350, A400M, EFA 2000), 35% producció militar / año 2008
ADS (Advance Dynamics Sisitems) Miñao (Alava)	Investigación y desarrollo de sistemas aeroespaciales.
A PLUS SYSTEMS S.A. Barcelona	Equipos, software y comunicaciones (25% producción militar).
ADARO TECNOLOGÍA S.A. Gijón	Equipos y herramientas de rescate, sistemas de descontaminación.
AEG Power Solutions Ibérica (antes Saft Power Systems Ibérica) Miñano (Alava)	Acumuladores y baterías para aviones, torpedos, buques, radares, etc. (10% producción militar).
AERNNOVA AEROSPACE S.A. Miñano (Alava)	Fuselajes, paneles aviones, alas y palas helicópteros (35% producción militar / año 2009).
AEROSPACE ENGINEERING GRUP Abanto (Vizcaya)	Revisión y reparación aeronáutica.
AERLYPER S.A. Madrid	Equipos de seguridad (radares, cámaras y comunicación) en aviones civiles y militares (80% producción militar / año 2009).
AEROMARITE (filial de ITP) Albacete	Mantenimiento de motores de helicópteros civiles y de combate.
AESMIDE Madrid	Asociación de Empresas Contratistas con las Administraciones Públicas
AICOX Soluciones Madrid	Producción de sistemas, electrónica e informática industrial para EADS, Indra, INTA, Eurocopter España, etc. (15% producción militar)
Airbus Military (antes EADS-Casa) Getafe (Madrid), Tablada (Sevilla), Bahía de Cádiz, Illescas (Toledo)	Aviones de combate, aeronaves, helicópteros y misiles militares (86% producción militar).
Aitor (Grupo Pielcu) Albacete	Cuchillos, navajas y bayonetas.
AIR FASTER Madrid	Logística y servicios aeronáuticos (50% producción militar).
ALAVA INGENIEROS Madrid y Barcelona	Ingeniería aeronáutica, aviones sin piloto (10% defensa / año 2009).
ALESTIS AEROSPACE S.A. Sevilla	Componentes en fibra de carbono para el avión A400M, paneles y ensamblajes.
ALFA BRAVO SERVICIOS AERONÁUTICOS S.L. Madrid	Ingeniería aeronáutica, fabrica mini aviones y helicópteros no tripulados UAV.
ALTRAN España Madrid y Barcelona	Ingeniería, tecnología y sistemas de información para Aeronáutica, Espacio y Defensa de Europa e India.
AMPER S.A. (matriz del grupo) Getafe (Madrid)	Electrónica militar en comunicaciones, aviónica, telefonía y defensa electrónica (23% producción militar / año 2009).

Denominación	Producción
AMPER PROGRAMAS DE ELECTRÓNICA Y COMUNICACIÓN S.A. Getafe (Madrid)	Es la principal empresa del grupo Amper dedicada a diseñar electrónica militar (92% producción militar).
ANORTEC Barcelona	Adaptaciones técnicas para el Ejército de Tierra (Facturación en Defensa y Seguridad: 30% en 2010).
APPLUS + Campus de UAB Bellaterra – Barcelona	Pruebas mecánicas, ingeniería, certificación en seguridad e implementación de procesos para Navantia, Airbus, Indra. (Facturación en Defensa: 12%).
ARDESA S.A. Zamudio (Vizcaya)	Armas cortas, deportivas y de caza, cartuchos y municiones.
ARIES INGENIERÍA Y SISTEMAS S.A. Madrid	Balística, sistemas UAV, radar y acústica submarina (10% producción militar / año 2008).
ARITEX CADING S.A. Badalona (Barcelona)	Diseño industrial, ensamblajes y soldaduras (participa en los aviones A400M y F-5); (10% producción militar / año 2009).
ASAEY Donostia (Guipuzcoa)	Armas cortas y municiones (90% producción militar).
ASTILLEROS GONDÁN S.A. Castropol (Asturias)	Buques y artefactos navales civiles y militares (30% producción militar / año 2009).
ASTILLEROS NEUMÁTICOS DUARRY S.A. Cornellà de Llobregat (Barcelona)	Embarcaciones neumáticas para la armada, ejército de tierra (40% producción militar / año 2009).
AYA AGUIRRE Y ARANZABAL S.A.L. Eibar (Guipúzcoa)	Armas ligeras cortas y municiones.
BARCELONA AERONÁUTICA Y DEL ESPACIO (BAiE) Barcelona	Asociación empresarial que agrupa empresas catalanas del sector aeronáutico civil y militar.
BERETTA BENELLI IBÉRICA S.A. Trespuentes (Álava)	Pistolas y armas cortas (15% producción militar / año 2009).
BERMEJO S.A. Toledo	Espadas y sables para el ejército (80% producción militar).
BOEING España Madrid	Delegación comercial del gigante aeronáutico de EEUU que vela por los intereses de la empresa en España, entre otros, el avión F-18 del ejército del aire.
BOINAS ELOSEGUI S.A. Pamplona	Boinas y gorras militares. Suministra a diversos ejércitos del mundo (15% producción militar).
BRESEL S.A. Albacete	Explosivos, bombas y minas (forma parte de Expal).
BULL Madrid	Computación, seguridad IT, sistemas de guerra electrónica (Ministerios de Defensa Francés y Español, Navantia y EADS). Producción militar 10% en 2010.
C&C Aeromarine Madrid	Software, radares y sistemas de comunicaciones para Armada. (Facturación en Defensa: 40%).
Cassidian Solutions (de EADS- Defence, filial de Airbus Military) Barajas Park – Madrid.	Redes de telecomunicacióny montaje de aviones militares filial EADS (88% producción militar en 2010).
CICOM Sistemas Madrid	Telecomunicaciones y seguridad, para Ministerios de Interior y Defensa, AEAT (España).
CIDAER INDUSTRIAS AERONÁUTICAS Albacete	Aviones no tripulados militares.
CIFRA Y COMUNICACIONES S.A. Madrid	Sistemas de comunicación y perturbadores de radio (20% producción militar).

Denominación	Producción
CIMSA INGENIERÍA DE SISTEMAS S.A. Les Franquesses (Barcelona)	Paracaídas, chalecos, sistemas de freno para aviones, estabilizadores de torpedos (60% producción militar / año 2009).
CACM Madrid	Cluster Aeroespacial de la Comunidad de Madrid para promover el mercado aeroespacial.
COHEMO S.L. (Comercial Hernando Moreno S.L.) Móstoles (Madrid)	Componentes para blindados y acorazados. Mantenimiento del Leopard, Pizarro, Centauro, BMR (80% producción militar / año 2009).
CompAir Iberia Madrid	Compresores eléctricos y portátiles (5% facturación Defensa en 2010)
COMPAÑÍA ESPAÑOLA DE CRÉDITOS A LA EXPORTACIÓN S.A. (CESCE) Madrid	Financiera para la exportación de productos y equipos, también de la industria militar.
COMPAÑÍA ESPAÑOLA DE SISTEMAS AERONÁUTICOS (CESA) Getafe (Madrid)	Ingeniería y equipos de mando de vuelo, trenes de aterrizaje, frenos, lanzaderas y mantenimiento aeronáutico (70% producción militar / año 2009).
CONSULTING CONEXION LIDER Madrid	Conectores especiales para el EFA, A400M, CN-235, F-100, S-80, Misiles Meteor (25% producción militar).
CORITEL S.A. Madrid, Barcelona, Vigo, Màlaga	Suministro de productos varios y textiles.
COMPUTADORAS REDES E INGENIERÍA S.A. (CRISA). Madrid	Electrónica de vuelo y sistemas de comunicación (10% producción militar / año 2009).
CT INGENIEROS Getafe (Madrid)	Ingeniería de estructuras y sistemas aeronáuticos para EFA2000, A400M, CN-235, CN-295, A330MRTT (5% producción militar / año 2008).
DAS Photonics Valencia	Conversores de frecuencia, generadores de señales de referencia. Para Ministerio Defensa y Ejército Español, Facturación en Defensa y Seguridad: 100% en 2010.
DEFEX S.A. Madrid	Promoción, comercialización y exportación de armamentos (100% facturación en defensa).
Desarrollo Técnicas Industriales de Galicia Valdoviño – La Coruña	Ingeniería de productos, planta e industrial y control de calidad para Ministerio de Defensa Español, Navantia y mercados internacionales. Facturación en Defensa: 50%
DRAGER SAFETY HISPANIA, SEGURIDAD INDUSTRIAL Madrid	Equipos de seguridad, protección personal y detección de gases.
EADS-Casa (Airbus Military) Getafe (Madrid), Tablada (Sevilla), Bahía de Cádiz, Illescas (Toledo)	Aviones de combate, aeronaves, helicópteros y misiles militares (86% producción militar / año 2009).
EADS Defence & Security España (Getafe – Madrid)	Proveedor de soluciones de sistemas para fuerzas armadas. Facturación en Defensa: 100% en 2010.
ELCAN OPTICAL TECHNOLOGIES (filial de Raytheon). Màlaga	Microelectrónica y sistemas ópticos. En el sector de defensa trabaja especialmente en aeronáutica militar.
ELECTROOP S.A. Alcobendas (Madrid)	Dispostivos ópticos, programa Leopard (90% producción militar).
EMTE SISTEMAS S.A. Esplugues de Llobregat (Barcelona)	Instalaciones de radio para navegación aérea (15% producción militar / año 2009).
EQUIPOS INDUSTRIALES DE MANUTENCIÓN S.A. (EINSA) Alcalá de Henares (Madrid)	Plataformas de carga de misiles y utillajes diversos en aviones de guerra (48% producción militar / año 2008).

Denominación	Producción
EQUIPOS MÓVILES DE CAMPAÑA ARPA S.A.U. La Muela (Zaragoza)	Material de campaña, tiendas, cocinas, contenedores, remolques, hospitales, unidades móviles y de carga (85% producción militar / año 2008).
Ericsson España Madrid	Sistemas de comunicación fija y móvil (para Defensa y Seguridad).
ESPECIALIDADES ELÉCTRICAS S.A. (ESPELSA). Madrid	Sistemas de mando, control, reconocimiento y simulación (75% producción militar / año 2009).
EUROCOPTER ESPAÑA S.A. Albacete	Fabricación de helicópteros de combate Tigre, NH-90 y EC-135 (filial de EADS-CASA); (90% producción militar).
EUROPEAN SECURITY FENCING Màlaga	Empresa de exportaciones (20% facturación defensa).
EXPLOSIVOS ALAVESES S.A. (EXPAL) Madrid	Explosivos, minas, municiones, bombas clusters, fragmentación y carcasas (100% producción militar / año 2009).
EXPLOSIVOS DE BURGOS S.A. (filial Expal) Burgos	Explosivos, minas, cohetes, espoletas (100% producción militar / año 2009).
EZENTIS Tecnología (antigua Avánzit Tecnología) – Madrid, Barcelona, Sevilla, Mallorca, Menorca, La Coruña, Astúrias.	Tecnologías de la información y telecomunicaciones para Ministerio de Defensa.
FÁBRICA ESPAÑOLA DE CONFECCIONES S.A. San Sebastián de los Reyes, Madrid	Prendas y uniformes para las fuerzas armadas (80% producción militar).
FABRICACIONES EXTREMEÑAS S.A. (filial Expal). Càceres	Explosivos, minas, bombas de fragmentación (100% producción militar / año 2009).
FABRICACIONES METALÚRGICAS DE ALBACETE S.A. (filial de Expal). Albacete	Explosivos, minas, bombas de fragmentación.
FACOR - FÁBRICA DE ARMAS DE LA CORUÑA S.A. La Coruña	Armas ligeras y municiones (extinguida).
FARO SPAIN S.A. Blanes (Girona)	Láser para el avión militar A400-M (7% producción militar).
FCC Servicios Industriales y Energéticos (FCCSie) Madrid	Mando y control, planeamento operativo, sistemas GIS y otros, para Eurofighter, Ministerio de Defensa Español, NATO, Thales, Indra. Facturación en Defensa: 75%.
FCTDS – Fundación Círculo de Tecnologías para la Denfensa y la Seguridad Madrid	Foro de personas y entidades del sector de las tecnologías para la Defensa y la Seguridad, como Ministerios, Colegios y Universidades.
FH – Fundación Hélice La Rinconada – Sevilla	Actividades relacionadas con el desarrollo del cluster aeronáutico andaluz.
FLUIDMECÁNICA SUR S.L. Chiclana de la Frontera (Cádiz)	Equipos hidráulicos para maquinaria naval (90% producción militar / año 2009).
GAS GAS MOTOS S.A. Salt (Girona)	Motocicletas todo terreno para el ejército (3,2% producción militar).
GENERAL DYNAMICS S.A./Santa Bárbara La Coruña, Oviedo, Trubia, Palencia, Murcia, Granada, Alcalá de Guadaira (Sevilla), Paracuellos del Jarama (Madrid)	Blindados, cañones, armas ligeras, bombas, obuses y toda clase de explosivos (100% defensa / año 2009).
GENERAL ELECTRIC COMPANY Madrid	Electrónica militar, especialmente para el sector aeronáutico.
GMV S.A. Tres Cantos (Madrid), Barcelona	Simulación y navegación del espacio, sistemas de mando y control (70% producción militar / año 2009).

Denominación	Producción
GRUPO ALCOR Vitoria (Álava)	Accesorios y componentes de aeronáutica, su principal cliente es EADS-CASA (10% defensa).
GRUPO EDEFA S.A. Madrid	Empresa de servicios, edita la revista Defensa.
GTD, INGENIERÍA DE SISTEMAS Y SOFTWARE S.A. Barcelona	Simuladores de vuelo y soft militar (20% defensa / año 2009).
GUTMAR S.A. Hospitalet de Llobregat (Barcelona)	Mecanización y cápsulas misiles Eurofighter (18% producción militar / año 2009).
HEGAN Zamudio (Vizcaya)	Asociación que agrupa las empresas del sector aeronáutico civil y militar del País Vasco.
HEMPEL Polinyà (Barcelona)	Pinturas y recubrimientos especiales (5,52% defensa).
HISDESAT SERVICIOS ESTRATÉGICOS S.A. Madrid	Sistemas de comunicaciones por satélite aeronáutico y espacial civil y militar (65% producción militar / año 2009).
HISPASAT S.A. Madrid	Sistemas de comunicaciones por satélite aeronáutico y espacial civil y militar (15% producción militar / año 2009).
IBERIA MANTENIMIENTO Barajas (Madrid)	Participa en programas militares de mantenimiento y reparación de aviones de la armada y el ejército del aire.
IBÉRICA DEL ESPACIO S.A. Madrid	Ingeniería aeroespacial (10% producción militar / año 2009).
IBERSYSTEMS DE DEFENSA S.L. (filial Nexter Systems) Barcelona	Desarrollo de vehículos blindados, fabricación y abastecimiento de componentes, ensamblaje y mantenimiento de vehículos.
INDALO Actividades Aeronáuticas Sevilla	Suministrador oficial del Ministerio de Defensa Español y de OTAN – paracaídas, visión nocturna, etc.
INDITE 2000, S.L. Móstoles (Madrid)	Periscopios y cuadros de mando para blindados.
INDRA Aranjuez, San Fernando de Henares, Torrejón de Ardoz (Madrid), Barcelona	Electrónica militar, simuladores de vuelo, sistemas de tiro, defensa electrónica (27% producción militar / año 2009).
INDUSTRIA DE TURBO PROPULSORES S.A. (ITP). Zamudio (Bizkaia), Getafe (Madrid)	Motores de aviones Eurofighter, A400M y helicópteros Tigre (39% defensa / año 2009).
INDUSTRIAL MATRICERA PALENTINA (Grupo INMAPA) Villamuriel de Cerrato (Palencia)	Estampaciones, soldaduras, matricería y utillajes especiales para el sector militar (7% producción militar / año 2009).
INDUSTRIAS EL GAMO S.A. Sant Boi de Llobregat (Barcelona)	Armas ligeras y municiones.
INDUSTRIAS PUIGJANER S.A. Polinyà (Barcelona)	Laminado de proyectiles, ojivas de misiles, depósito de combustible para el EF-2000.
INDUSTRIAS Y CONFECCIONES (INDUYCO) Madrid	Uniformes militares (17,24% producción militar).
Inespasa Sevilla	Conjuntos para sector aeoroespacial (clientes: EADS, Airbus, Boeing).
INFORMÁTICA EL CORTE INGLÉS S.A. Madrid	Productos informáticos y consultoría.
INGENIERÍA DE SISTEMAS PARA LA DEFENSA S.A (ISDEFE) Madrid	Sistemas de información y consultoría de la industria militar (68% facturación en defensa / año 2009).
INGENIERÍA Y SERVICIOS AEROSPACIALES S.A. (INSA) Madrid	Mantenimiento estaciones aeroespaciales (20% producción militar/ año 2009).

Denominación	Producción
INMIZE Alcobendas (Madrid)	Fabricación de misiles de crucero Meteor KEPD-350 para el EF-2000 y posiblemente el Iris T (100% producción militar / año 2009).
INSTITUTO NACIONAL DE TECNOLOGÍA AEROESPACIAL (INTA) Madrid	Instituto de investigación militar del sector aeroespacial dependiente del Ministerio de Defensa.
INTERNACIONAL DE COMPOSITES S.A. (ICSA).Toledo	Aeronáutica militar y reparaciones aeronaves (8% producción militar / año 2009).
INSTALAZA S.A. Zaragoza y Madrid	Armas ligeras, proyectiles, bombas de racimo y municiones (99% producción militar / año 2009).
ITT DEUSTO Bilbao	Tecnologías de la información.
ITT DEFENCE ESPAÑA Madrid	Comunicaciones e integración de sistemas.
ITURRI Sevilla	Sistemas de seguridad y protección tanto personal como colectiva. Vehículos blindados militares.
IVECO PEGASO S.L. Madrid, Valladolid, Barcelona	Vehículos blindados y todoterrenos militares (5% producción militar / año 2009).
JAL, INDUSTRIA AUXILIAR DE MECANIZACIÓN S.A. Pinto (Madrid)	Mecanización de componentes aeronáuticos.
JPG (GRUPO DE INGENIERIA, RECONSTRUCCIÓN Y RECAMBIOS) Mallabia (Vizcaya)	Mantenimiento y modernización vehículos militares (80% producción militar / año 2009).
LANGA INDUSTRIAL S.A. Navalcarnero (Madrid)	Equipos hidráulicos y mantenimiento para las fuerzas armadas (35% producción militar / año 2008).
Marsaza (Martín Zaballos) Manzanares (Ciudad Real)	Cisternas mercancías peligrosas, remolques y carrocerías especiales p/ Ministerio de Defensa y otros. Facturación en Defensa: 32% en 2010.
Martín Acedo Manufacturing (MAAC) (Grupo TAM) (Madrid)	Blindaje antiminas, componentes para vehículos blindados, mantenimiento de carros de combate.
MBDA ESPAÑA Madrid	Toda clase de misiles militares (empresa filial de EADS).
MAXAM CORP. (antes Unión Española de Explosivos). Madrid	Toda clase de explosivos (a través de su filial Expal fabrica explosivos militares).
MECÁNICA DE PRECISIÓN TEJEDOR S.A. Pinto (Madrid)	Piezas de precisión para vehículos blindados (Leopard y Pizarro).
MECANIZACIÓN AERONÁUTICA S.A. (MASA). Agoncillo (La Rioja)	Componentes para aeronáutica militar y reparaciones aeronaves (10% producción militar / año 2008).
MIER COMUNICACIONES S.A. La Garriga (Barcelona)	Sistemas de comunicaciones por satélites y aeronáutica.
Militärtecnologie, Dienst und Überwachung (MDU) (Sevilla)	Software y Hardware de sistemas aeronáuticos, consult. Sistemas de armas e inteligencia.
Munters Spain (Munters AB) Madrid	(Des)Humidificación industrial y refrigeración del aire (Cuerpos de Seguridad del Estado, Ejército de Tierre y del Aire, Programa Eurofighter.
M. TORRES Elortz (Navarra)	Componentes aeronáuticos (A400M, EF-2000, F-22).
NAVAIR San Jerónimo (Sevilla)	Soldaduras especiales para equipos militares navales y aeronáuticos (90% producción militar / año 2008).
NAVANTIA (antes Izar y Bazán) Ferrol, Fene, Cádiz, San Fernando y Cartagena	Toda clase de embarcaciones de guerra (80% producción militar / año 2009).

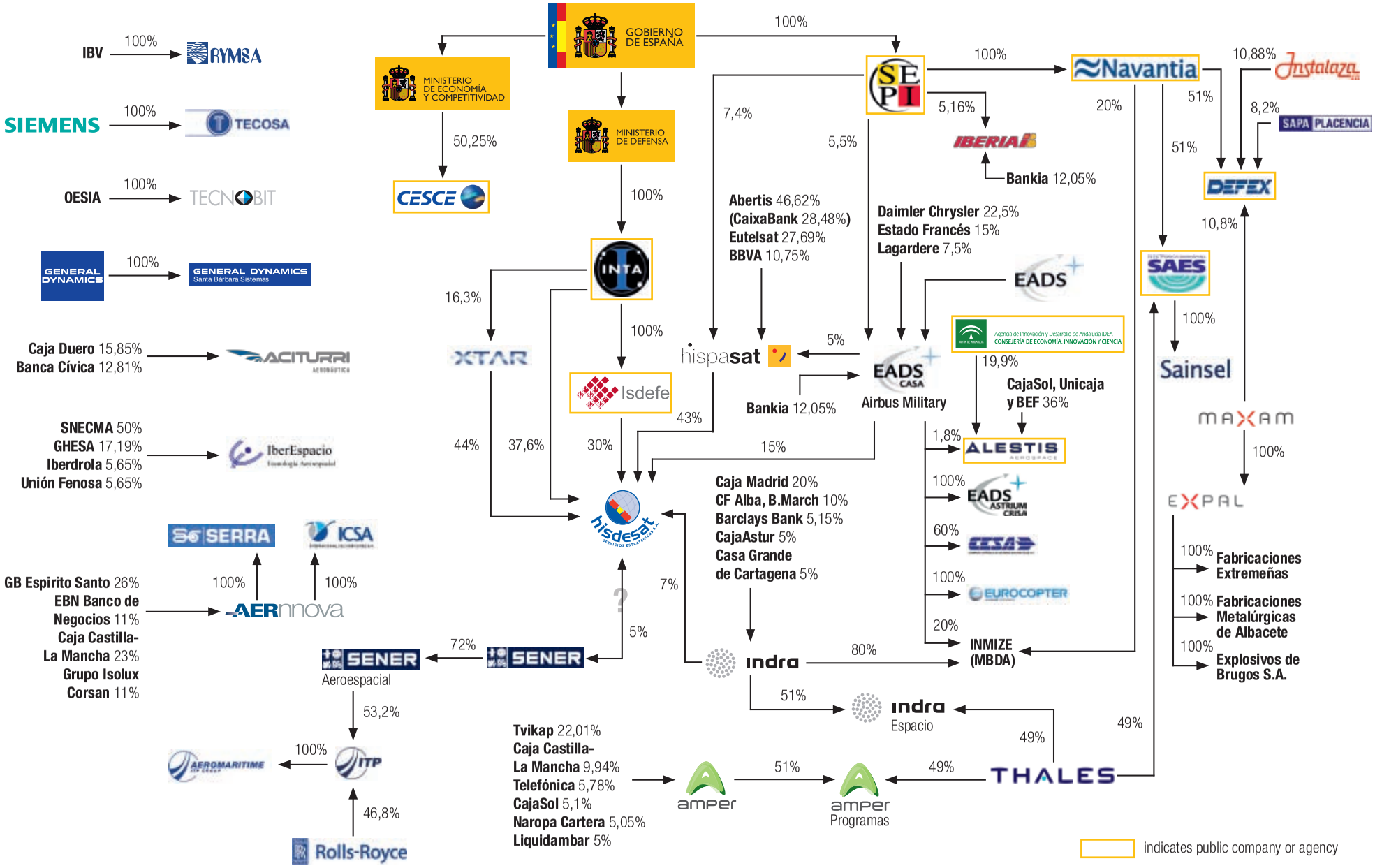
Denominación	Producción
NEXTEL ENGINEERING SYSTEMS Madrid	Proyectos de simulación y subcontratación en defensa (25% producción defensa / año 2009).
NISSAN MOTOR IBÉRICA S.A. Madrid y Barcelona	Vehículos todoterreno para el ejército.
Novalti (del cluster HEGAN y de la Agrupación ATECMA) (Barakaldo / Vizcaya)	Equipos, mecanismos y componentes mecánicos para aeronáutica, espacio y Defensa
NÚCLEO (antes Page Ibérica) Tres Cantos (Madrid)	Telecomunicaciones y sistemas de control de equipos militares. Trabaja para el programa Eurofigther (20% producción defensa / año 2008).
OTO MELARA IBÉRICA (filial del grupo italiano Finmeccanica). Loriguilla (Valencia)	Vehículos blindados, cañones, carrocerías (100% militar).
PAP TECNOS INNOVACIÓN S.A. Alcobendas (Madrid)	Estaciones de armas por control remoto (PAP Tecnos es propiedad de la empresa israelí Rafael).
PARAFLY S.A. Tres Cantos (Madrid)	Paracaídas, estabilizadores, cascos, chalecos seguridad (90% producción defensa / año 2009).
PELI PRODUCTS S.A. Barcelona	Maletas y equipos estanco para protección de armas y sistemas de iluminación nocturna (15% defensa).
Pemac (Madrid)	Apantallamientos electromagnéticos, protección informática (Facturación en Defensa 90% en 2010).
PTC (Product Development Company) (Madrid)	Software de ingeniaría aeronautica y soluciones (clientes: General Dynamics, NASA, Ejército de EEUU).
Quatripole Ingeniería, S.L. Arganda del Rey (Madrid)	Ingeniería y servicios para vehículos militares, mantenimiento de blindados, para todas las areas de Defensa nacionales y regionales y empresas como Navantia. Facturación en Defensa: 90% en 2010.
RAFAEL (adquirió PAP Tecnos) Tres Cantos (Madrid)	Empresa israelí de ingeniería de misiles, fabrica entre otros el misil anticarro Spike para las fuerzas armadas españolas.
RAYTHEON MICROELECTRONICS ESPAÑA (también Elcan) Màlaga	Microelectrónica y sistemas ópticos. En el sector de defensa trabaja especialmente en aeronáutica militar (30% defensa / año 2009).
RODMAN POLYSHIPS S.A. Vigo	Plataformas navales y patrulleras ligeras (20% producción militar / año 2009).
RHODE & SCHWARZ ESPAÑA S.A. Madrid y Barcelona	Sistemas de radiocomunicación y unidades móviles (20% producción militar / año 2009).
RYMSA (RADIACIÓN Y MICROONDAS S.A.) Arganda del Rey (Madrid)	Telecomunicaciones espacio y radares (15% producción militar / año 2009).
SAINSEL SISTEMAS NAVALES S.A. Sevilla, San Fernando de Henares (Madrid)	Instalaciones y válvulas electrónicas (80% producción militar / año 2009).
SANTANA MOTOR S.A. Leganes (Madrid), factoría en Linares (Jaen)	Vehículos todoterreno militares (2/2011 la Junta de Andalucía cierra la empresa por pérdidas continuadas); (100% producción militar / año 2009).
SAPA PLACENCIA S.A. Andoain (Guipúzcoa)	Sistemas de defensa antiaérea, armas ligeras (98% producción militar / año 2009).
SCP S.A. (Suministros de Conectores Profesionales S.A.). Madrid	Conectores especiales para armamento (51% producción militar / año 2009).
SENER, GRUPO DE INGENIERÍA S.A. Las Arenas (Vizcaya), Barcelona, Valencia y Las Palmas	Electrónica militar, vigilancia, sistemas de tiro, sistemas de control para misiles (27% producción militar / año 2009).
SERVICIOS LOGÍSTICOS INTEGRADOS S.A. (SLI, S.A.) Las Rozas (Madrid)	Servicios de comunicaciones y de control aéreos, terrestres y marítimos del Ministerio de Defensa (filial de UTI de EEUU).

Denominación	Producción
SERVICIOS Y PROYECTOS AVANZADOS S.A. (SPA, S.A.). Getafe (Madrid)	Vehículos especiales, aeronáutica, defensa NBQ (18% producción militar / año 2009).
SETROSON Madrid	Bancos de pruebas hidráulicos y de combustible aeronáuticos (EF2000) (100% producción militar).
SIDENOR INDUSTRIAL S.L. Vitoria y Basauri	Aceros especiales, fundición, estampaciones (artillería y naval militar).
SIEMENS IT SOLUTIONS Madrid	Desarrollo de soluciones y proyectos logísticos militares (Ministerio de Defensa).
SIMAVE S.A. Madrid, Barcelona	Telecomunicaciones, guerra electrónica y sistemas de seguridad (30% producción militar / año 2009).
SINTERSA (Sistemas de Interconexión, S.A.) Madrid	Cableados eléctricos EF2000, Pizarro, Leopard, BMR, Scorpène. (72% producción militar / año 2009).
SISTEMAS DE CONTROL REMOTO San Sebastián de los Reyes – Madrid	Aviones do tripulados / blancos aéreos para Ministerio de Defensa, Ejército de Tierra, Armada e INTA. Facturación en Defensa: 100% en 2010.
SISTEMAS Y VEHÍCULOS DE ALTA TECNOLOGÍA S.A. (SVAT). Madrid	Vehículos especiales para las fuerzas armadas (10% producción militar / año 2009).
SOCIEDAD ANDALUZA DE COMPONENTES ESPAÑOLES S.A. (SACESA) - [ahora Alestis] Sevilla	Componentes en fibra de carbono para el avión A400M, paneles y ensamblajes (8% producción militar / año 2009).
SOCIEDAD ANÓNIMA DE ELECTRÓNICA SUBMARINA (SAES). Cartagena	Minas marinas, sonares y sensores (100% producción militar / año 2009).
SOCIEDAD DE TRATAMIENTO DE SUPERFÍCIES AERONÁUTICAS (Sevilla)	Pintura y acondicionamiento interior de aeronaves para EADS, Airbus y Ministerio de Defensa. Facturación en Defensa: 70% en 2010.
SOFTWARE AG ESPAÑA Tres Cantos (Madrid)	Sistemas de integración SOA fuerzas armadas (8% producción militar / año 2009).
SUBCONTRATACIÓN DE PROYECTOS AERONÁUTICOS S.A. (SPA SA) Berantevilla (Álava)	Mecanizados y montajes de precisión para EF-2000 y buques de guerra (10% producción militar) (en quiebra julio 2008).
TEAM INGENIERÍA DEL TRANSPORTE Huesca	Góndolas transporte blindados (producción militar: 15% año 2004/06, 5% año 2007).
TECNATOM Madrid	Servicios de ensayos no destructivos e ingeniería (9% facturación en Defensa, 2008).
TECNOBIT GRUPO Alcobendas (Madrid), Valdepeñas (Ciudad Real)	Ingeniería electrónica, equipos de sonido e imagen (90% producción militar / año 2009).
TECNOLOGÍAS REUNIDAS PARA LA DEFENSA (TRD), Madrid	Material logístico, contenedores de misiles y torpedos, jarras de munición, etc., para ejército, Cuartel General del Aire, JAL y UME.
TECNOVE Herencia (Ciudad Real)	Sistemas de comunicación de seguridad para defensa (10% producción militar).
TEDAE (Asociación Española de Empresas Tecnológicas de Defensa, Aeronáutica y Espacio). Madrid	Asociación profesional patronal de promoción de los intereses de los fabricantes de material aeronáutico militar, lo forman EADS-Casa, Indra, GD/ Santa Bárbara.
TEKPLUS Engineering Design Tres Cantos (Madrid)	Aeronáutica, espacio y desarrollo de proyectos de UAV. Facturación en Defensa: 25% en 2010.
TELECOMUNICACIÓN ELECTRÓNICA Y CONMUTACIÓN S.A. (TECOSA) Tres Cantos (Madrid)	Comunicación de radio y telefonía, equipos de simulación de armas (30% producción militar 2009).
TEGRAF INGENIERÍA Getafe (Madrid)	Diseño de estructuras.

Denominación	Producción
TELEFÓNICA SOLUCIONES Madrid	Sistemas de mando, comunicaciones y control, guerra electrónica.
THALES ALENIA SPACE ESPAÑA S.A. (antes Alcatel Espacio) Tres Cantos (Madrid)	Equipos y componentes de telecomunicaciones en satélites, aviones no tripulados (65% producción militar / año 2009).
THE MATHWORKS Madrid	Comunicaciones y electrónica para EF2000, A400M (30% producción militar).
TURBAIR S.A. Torrejón de Ardoz (Madrid)	Reparación de motores y fibra de carbono, EF-18, EFA2000, C-101 (75% producción militar).
TYCO ELECTRONICS AMP ESPAÑA S.A. Berga, Montcada i Reixac (Barcelona)	Electrónica de defensa (A400-M, Leopard, Pizarro, S-80, F-85).
UAV Navigation Madrid	Sistemas de control para aviación (clientes: US Army, EFIS, IAI. Facturación en Defensa: 55% en 2008).
Unmanned Solutions Madrid	Sistemas aéreos no tripulados (Facturación en Defensa: 40%).
UROVE SA – VEHÍCULOS ESPECIALES S.A. Santiago de Compostela	Plataformas para transportes de armas pesadas. Vehículos blindados (70% producción militar / año 2009).
UTILIS IBÉRICA S.L. Madrid	Tiendas modulares, puestos de mando, hospitales de campaña (90% producción militar).
WARTSILA IBÉRICA S.A. (antes Navalips) Bermeo (Vizcaya)	Turbinas, hélices y accesorios navales (extinguida en 2006).
ZÓDIAC ESPAÑOLA S.A. Roses y Figueres (Girona)	Embarcaciones neumáticas (3% producción militar).

Fuente: elaboración Centre Delàs, 29/2/2012

Map 1. The military industry network with the state and financial groups



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