



## **Acknowledgements.**

When embarking on a project like this with only a limited amount of academic papers previously being published, some of the relevant material being highly confidential due to competitive and national security reasons and few economic theories actually fitting the trade in military materiel and the use of off sets, the information and insights gained through interviews become very important. I would therefore like to thank Mr Torbjørn Svensgård, President of the Norwegian Defence Industry Association, Mr Ivar Flage, Director of Business Development of The Kongsberg Defence and Aerospace Group (KDA), Mr Ove Sindre Lied, Director of Industrial Co-Operation at KDA, Mr Knuth Herrefoss, Senior Advisor at the Norwegian Defence Logistics Organisation (FLO) and Rear Admiral Jørgen Berggrav, Former Head of Procurement & Long Term Planning at the Norwegian Ministry of Defence. Without the combined experience and insight of my interviewees this thesis would never have got off the ground.

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# Abstract

In this thesis I have examined the international trade in defence equipment with a special emphasis on the use and effect of offset arrangements. From a scientific method perspective the subject for thesis has some inherent problems. These are lack of transparency as the details of transactions are often classified due to national security concerns, complex deal structures involving multiple parties and very little quantitative research in the field. Given the nature of the market for defence equipment traditional economic theory does not necessarily apply. My approach has been a combination of text / document studies from unclassified sources, interviews with key industry and government figures and a closer look at some significant transactions in the military equipment space.

The main findings are:

1. There is a great deal of uncertainty in terms of who benefits from offset arrangements. There is no clear evidence that the offsetting transactions fully compensate the buyer of military equipment for the increased costs offsets entail.
2. It is not clear how offsets add to the final bill for the buyer, but authoritative studies indicate that the mark up is between 10 and 30%. However, this will depend on the type of equipment, the structure of the deal and the relational dynamics between the parties involved.
3. The implementation of EU Directive 2009/81 does not seem to have enhanced cross border trade in military equipment inside EU. To the extent the EU Directive has had an impact it is more in form & terminology and less in content and increased competition.
4. The industry players, particularly from smaller countries, still insist on offsets or similar arrangements to be in place as they see it as the best way of securing market access to large markets.
5. The trade in defence equipment has slowed down in the EU, but has increased significantly in South East Asia and the Middle East, which are regions very much in favour of offsets. The use of offsets or similar arrangements are therefore not likely to decrease.

6. The spill over benefits to the general economy is significantly overestimated by developing nations.

To reduce some of the cost escalation drivers related to offsets the measures to be considered are: closer co-ordination between the buying countries on the performance specifications of the equipment at an earlier stage. Less national specification requirements and adherence to stricter policies on late stage specification changes. More information dissemination and transparency on transaction structures and costs and finally a greater willingness to allow third party post-transaction analyses to take place.

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## Chapter 1: Introduction

The trade in military materiel and weapon systems hardly satisfy the main criteria for an efficient marketplace, as it is normally characterized by a limited number of buyers and sellers, limited transparency and a number of governmental policies and activities disrupting the market. *Offsets* as a theory is normally defined as a mutual set of binding trade and counter trade agreements between a seller and a buyer, but I will spend a significant part of the thesis looking into the definitions and functionalities of such arrangements.

The composition and dynamics of the military materiel and weapon systems market (see size estimate and definition below) can have important geopolitical ramifications and are also very large and technologically advanced. The fact that the market structure itself is complex and with limited transparency is an important motivator in my research to explore the functionalities of these markets and the use and effects of offset arrangements.

There is no universally agreed-upon methodology to determine the financial value of the arms trade and industrial production as the official data on arms export, arms export licenses and arms export agreements are inconsistent. However, Stockholm International Peace Research Institute (SIPRI)'s best estimate for the value of the global arms *trade* in 2011 was "at least USD 43 billion". IHS Jane's<sup>1</sup> estimated in 2012 the value of the total global arms trade to be USD 73,5 billion. The equivalent best estimate for the value of global arms production for 2011 is USD 410 billion. This figure is based on the SIPRI Top 100. List and as such overlooks a lot of the small and medium sized enterprises (SME) involved in the industry. The 44 US companies on the SIPRI Top 100 list constitute 60% of the Top 100 total. The 30 Western European companies represent another 29% of the sales. Over 2002–2011, the combined sales of the Top 100 companies increased by 51%; however, from 2010 to 2011, it saw a decline of 5%. The decline in value of the global arms production in 2010–2011 is partly due to general austerity measures, partly the reduction of military activity in Afghanistan and a shift towards greater spending on cyber defence that may not automatically show up in the Top 100 statistics.

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<sup>1</sup> Janes Information Group is a British publishing company specialising in military, aerospace and transportation topics.

My aim is to describe and explore the market structure and the role of offsets and to examine the effects of offset arrangements. Potentially, I will identify ways of mitigating possible dysfunctionalities. I will also look at how offsets can ease market access for industry players. The role of legislation and intergovernmental activities will be studied closely, including the implementation and effects of EU Directive no 2009/81 which Norway has implemented as of 1 January 2014.

There are relevant international studies available that will be drawn upon. These studies will be used to compare and contrast the findings of my work, which for obvious reasons will have a more Norwegian perspective in terms of interviewees and case material. However, empirical data and fact sets are not necessarily available, and national security and business confidentiality concerns may restrict the extent to which it is possible to carry out traditional quantitative research in this field.

My main hypothesis would be “Do the offsets and similar arrangements distort trade in military materiel and weapon systems?” As subordinated questions I would like to look into:

- Do offsets add to the cost of military equipment?
- Do offsets ease market access for certain companies into otherwise closed markets?
- Is the implementation EU Directive 2009/81 likely to enhance cross-border trade in military equipment?
- Is offsets the main barrier for trade in military materiel and weapon systems?
- What could or should be done to mitigate the situation?

Time period defined as Post Cold War until today with the emphasis on current offset practises. However, some references may predate this periode to include certain experiences with the F16 Programme.

Country Focus: The study will focus on the Norwegian perspective and practises, but will also deal with the most relevant trading partners such as the EU and the US. The EU is relevant because Norway has implemented the EU Directive, and the US is relevant because it is by far the largest manufacturer and exporter of military materiel. Some references may occur to



countries outside the EU and US in order to illustrate trends, such as the shift towards Asia, or to discuss problems, such as corruption, lack of transparency and consequence of offsets.

A: The study is a combination of close examination of relevant publications and examination of certain case studies, and interviews with key articles players in the Norwegian Defence Sector. The focus will be on Norway and related countries.

## **Chapter 2: Overview of the offset system**

### **2.1 Scope and prevalence of offsets**

Offset arrangements have a rather broad scope, intending to create benefits both for the seller and buyer and even third parties in defence contracts. Some of the problems with offsets may stem from the inherent multitude of possibly conflicting goals and ambitions that may not be possible to reconcile. In this chapter an overview of offset practises in certain countries; we will then examine some aggregate statistics and look at trends in the use of offsets. Table 1 lists examples of direct and indirect offsets.

Table 1

*Direct and Indirect Offsets*

<b>Direct offset</b>	<b>Direct or Indirect offset</b>	<b>Indirect offset</b>
Co-production	Technology Transfer	Export Assistance
Subcontracts	Training	Purchases
	Licensed Production	Offset Swapping (compensation of offsets' obligation through reciprocal abatement)
	Foreign Direct Investment, Credit Assistance and Financing	

**2.2 What is an offset agreement?**

Offsets can be divided into two main categories: direct and indirect offsets. Direct offsets are of a military nature and concern the subject matter of the contracts directly, such as the industrial participation of local companies in the production of the equipment procured.

Indirect offsets are not linked to the imported defence product or services and can be split into indirect military offsets and indirect non-military offsets. Indirect military offsets could involve subcontracts awarded by the supplier to local defence companies for other forms of military production. An indirect non-military offset usually includes suppliers committed to mobilize foreign investment in civil sectors of the buying country's economy or to purchase civil goods in that country.

“An offset agreement is an agreement between two parties whereby a supplier agrees to buy products from the party to whom it is selling, in order to win the buyer as a customer and offset the buyer's outlay. Generally the seller is a foreign company and the buyer is a government that stipulates that the seller must then agree to buy products from companies within their country.”<sup>2</sup>

**2.3 Why require offsets?**

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<sup>2</sup> <http://www.defenceoffsets.com/about-defence-offsets.html>

### **2.3.1 Balance of trade**

A military purchase can often involve very large sums of imports, in such a scale that it severely changes the balance of trade. Offsets will reduce the balance of trade deficit on the margin. This is not unusual. Similar deals have been made on large purchase such as nuclear plant.

### **2.3.2 Access to domestic markets**

The world market for military equipment is, as previously mentioned, very political and protectionist. Offsets agreements are in some markets the only real possibility of market access.

### **2.3.3 Technology transfer and collaboration**

Poor nations emphasise the role of technology transfer when setting up offset agreement (e.g., India, etc.). Certain countries often require that the supplier build up factories and produce the product domestically.

## **2.4 Offset costs**

Offset costs can be defined as “Compensation practices required as a condition of purchase in either government-to-government or commercial sales of defence articles and/or defence services as defined by the Arms Export Control Act and the International Traffic in Arms Regulations”.<sup>3</sup>

There is evidence that demanding offsets, qualifying offsets and managing the offset commitments do increase the purchase price.<sup>4</sup> The US position on offsets and how to treat the costs of offsets may seem somewhat self-contradictory. On one hand, the US Department of Defence states that “they are market distorting and inefficient”. On the other hand, Department of Defence (DoD) has developed a complex system of rules and regulation for US defence exporters to recover their incremental offset costs from the US Government.<sup>5</sup>

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<sup>3</sup> ( Defense Procurement and Acquisition Policy FAQ)

<sup>4</sup> ( DPAP FAQ)

<sup>5</sup> ( Presidential Policy Statement 16<sup>th</sup> April 1990)

Still, the DoD officially practices what they call a “hands off” approach to offsets.<sup>6</sup> However, according to the same memorandum, “A US defence contractor may recover all costs incurred for offset agreements with a foreign government or international organization if the LAO is financed wholly with customer cash or repayable foreign military finance credits”. The term LAO means Letter of Offer and Acceptance and is a key part of the sale and purchase agreement between the contractor and the foreign buyer. When the LOA is prepared, offset costs are included, if known, in the line item price for the contracted item. There is only one hitch; these contract documents are not in the public realm, as they are protected both by commercial confidentiality clauses and Official Secrets Act type restrictions. It is therefore very difficult to get disclosure both on the stated offset costs and the real offset costs.

The costs, or benefits to society as such, are difficult to address as we do not necessarily know the alternative cost structures. The offset costs are normally not disclosed to the buyer “A study in Belgium found that the country ended up paying 20-30% more for military gear when offsets were factored in. If the costs are largely borne by taxpayers, the benefits accrue to individuals and institutions chosen by the procuring government. This make offsets a good way to conceal delivery of public subsidies to interest groups..<sup>7</sup>

Kongsberg estimated the added cost to be 3-10%.<sup>8</sup> This view is further strengthened by the findings of the Norwegian Auditor General (Riksrevisjonen) in a report relating to the offsets to the F-16 programme.<sup>9</sup> The offset negotiations between the purchasing countries (Norway, Denmark, The Netherlands, etc.) led to the establishment of multiple production lines in multiple locations, thus preventing the buyers from reaping any benefits from economies of scale.

## **2.5 Fragmentation**

The defence equipment market in the EU is marked by strong fragmentation. Although most EU production is concentrated among six member states (Germany, Spain, France, Italy,

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<sup>6</sup> [Source: DFARS 225.7303-2(3)(ii)]

<sup>7</sup> (Source; DPAP FAQ 4)

<sup>8</sup> (Intervue Kongsberg group)

<sup>9</sup> (Riksrevisjonens revisjon av anskaffelsen av F-16 kamply I perioden 1975-98 - erfaringsrapport)

Sweden and the UK), companies producing ancillary equipment and systems can be found all over Europe. EU member states spend almost 85% of their equipment budget domestically. The European governments have a clear preference for their own national defence industries. The great dependence on home markets is too small, however, to ensure the necessary level of research and development spending. The focus on building a strong national defence industry base made the nations have high protective barriers.

Many different lines in use and in production imply a high degree of fragmentation. Europe has 36 platforms in production and the USA has 11. For the number of platforms in use, this difference is wider; 79 different platforms are in use within Europe while in US there are 21. This gives a relation of 3,7 to 1.<sup>10</sup>

In the land segment, duplication is significant. This segment includes tanks, armoured vehicles and personal carriers and 155mm self-propelled howitzers. There are currently 17 production lines active in Europe, against a mere two active in the US.<sup>11</sup> Eleven of the 17 land production lines are armoured infantry vehicles and personal carriers.

The air segment includes multirole fighter/ground attack planes, attack helicopters, and anti-ship and air-to-air missiles. The difference here between Europe and the US is somewhat less. The number of fighters is in Europe and USA 3 different planes, however the F-15 and F-16 models are produced for export only, and they are exported to Europe as Norway's fighter planes (F-16 and F-35). Interestingly, the difference between the number of anti-ship missiles is rather large. France, Italy, UK, Sweden and Norway each produce their own models. The sea segment includes frigates, diesel-electric and submarines. In this segment the number of platforms is the greatest. Europe produces 16 times as many frigates alone.

These figures show the effect of uncoordinated European defence and industrial policies. The amount of duplication is staggering. To quote former US President Bill Clinton, "National when possible, multinational when necessary".<sup>12</sup> This quote points out the main problem. Cooperation takes place only when absolutely necessary. The government favouritism of its

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<sup>10</sup> One platform is for example a ship model like the KNM Skjold class. (Corvette)

<sup>11</sup> (Abrahams MTB and Stryker AFV)

<sup>12</sup> (Armaments duplication in Europe. A Quantitate analyses by Valerio Briani)

own industry extends very far. The defence industry is highly politicized. With strong economic interests, bilateral cooperation takes place only when necessary. That is why duplication occurs to a lesser extent, where development costs and scalar benefits are greatest, as is the case with fighter planes.

France, for example, which is seen by many as the most protectionist country, imports less than 1% of its defence procurement. France produces most military equipment themselves: from assault rifles to tanks and almost all aircraft, from logistical to fighter aircrafts. The fragmentation and duplication is more severe within Europe than within the US. The number of different main weapons programs in the EU is 89 compared to 27 in the US, even though the US market is 2–3 times as large.

This leads to very low competitiveness and creates economic inefficiencies, thereby constituting losses for both main stakeholders, namely governments and defence companies. More open markets could lead to more competition.

## **2.6 Why does duplication matter?**

Different lines imply that development activities are unnecessarily fragmented. Each platform or system therefore receives only a fraction of the R&D funds that a common effort could have provided, which has an obvious impact on its technological content. Each country pays a higher amount of R&D funds than it could have paid for a shared project, which leaves it with less money to develop necessary capabilities in other areas<sup>13</sup>. Moreover, having different production lines makes each production line produce fewer units. In the defence industry, there are large economies of scale. The costs of developing new products vary a great deal, but are often very large. Defence systems like frigates and fighter planes also have a substantial development and system upgrade cost after purchasing. Fewer R&D funds and low return to scale leads to a much slower rate of production learning, which is a direct function of the output. Unit production costs, therefore, increase; less technologically advanced, more expensive platforms and systems obtain a narrower range of military capabilities in a less productive and innovative industry. More duplication in a perfect free market, would lead to a high degree of competition. However, because the defence market is rather closed, these free market effects are significantly reduced.

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<sup>13</sup> Armaments duplication in Europe. A Quantitative analysis by Valerio Briani

## **2.7 Consolidation**

For a long period of time, EADS and BAE were in negotiations to merge their businesses. EADS has a broad product portfolio, where civilian aircraft manufacturer Airbus is the best-known business. With civilian business counting for almost 70 % of their revenue, EADS is less dependent on the defence sector than BAE. However, BAE has a better market position in the important US market. Analysts saw “BEADS” as a viable and constructive merger, given the need for consolidation in the European defence industry. However, the German Government’s “Golden Share” torpedoed the merger plans, and the various industry groups all in need of consolidation are now all back to the drawing board. BEADS would have been a pan-European manufacturing powerhouse in the defence sector with 220.000 employees and a market capitalization of €35 billion. The deal stranded partly on corporate governance issues given the large German and French government share holdings, the location of the corporate headquarters and where the job cuts should take place in order to enhance competitiveness. Likely candidates for European consolidation in addition to EADS and BAE are Finmeccanica, Fincantieri, DCNS, Dassault, Thyssen Krupp Marine, MAN, Rheinmetall and Swedish Saab, who has failed to get any significant traction for its next generation combat aircraft JAS Gripen. However, most initiatives stalled even before stakeholders had the chance to reflect over the deals on the table and their consequences.

The Big Five firms in the US have undergone a severe consolidation process. Lockheed Martin (1995), Boeing, General Dynamics, Raytheon and Northrop. In Europe, the first wave of consolidation began with EADS (2000) and BAe Systems (1999). The pre financial crisis budget cuts will hopefully force a new wave of consolidation

## **2.8 Transparency and offsets <sup>14</sup>**

Given the size of military procurement contracts and the secrecy and strategic interests surrounding such contract, the defence sector represents a large corruption risk. According to SIPRI, approximately USD 20 billion is lost to the sector every year. National security interests can be used as a cover to protect corrupt business practises. The activities of

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<sup>14</sup> Transparency international Mark Pyman (2012) Due diligence and corruption risk in defence industry offset programmes

consultants and agents involved in defence transactions are definitely an added cost factor. Transparency International publishes an annual index, The Government Defence Anti-Corruption Index, and has documented that 70% of world governments have high to critical levels of corruption vulnerability. In 2013, they published the first comprehensive report based on analysis of 77 detailed questions collected from 82 different countries accounting for 94% of world military procurement spending. Only two countries, Germany and Australia were given an extremely high rating in terms of transparency and institutionalized efforts against corruption in the defence sector. Offset arrangements add complexity to the defence contracts, and the use of sub-contractors, agents, advisors and complicated financing and trade mechanisms make visibility very low. About 30% of the countries surveyed have high or moderate transparency, meaning that 70 % of the countries have high, very high or critical risk of corruption in defence and security. Norway ended up in category B together with countries like the UK, US, Sweden, Austria, South Korea and Taiwan. Procurement risk is seen as significant also in the higher categories. This is in particular related to financing packages and the use of sub-contractors. With the current level of offsets accounting for approximately USD 50 billion per year, offset commitments represent a substantial liability on the balance sheets of defence manufacturers. According Ungaro of the<sup>15</sup> estimated accumulated global offset obligations will reach USD 500 billion by 2017. Approximately 60% of these obligations will be held by the US defence industry. There is talk of cost cuts and re-negotiations, but so far the liabilities have just been accrued and extended.

### **2.9.1 Offset obligations worldwide**

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<sup>15</sup> (“A Ungaro: Trends in the Offsets Market; presented at the 17<sup>th</sup> Annual International Conference on Economics and Security at SIPRI 14 – 15 June 2013)



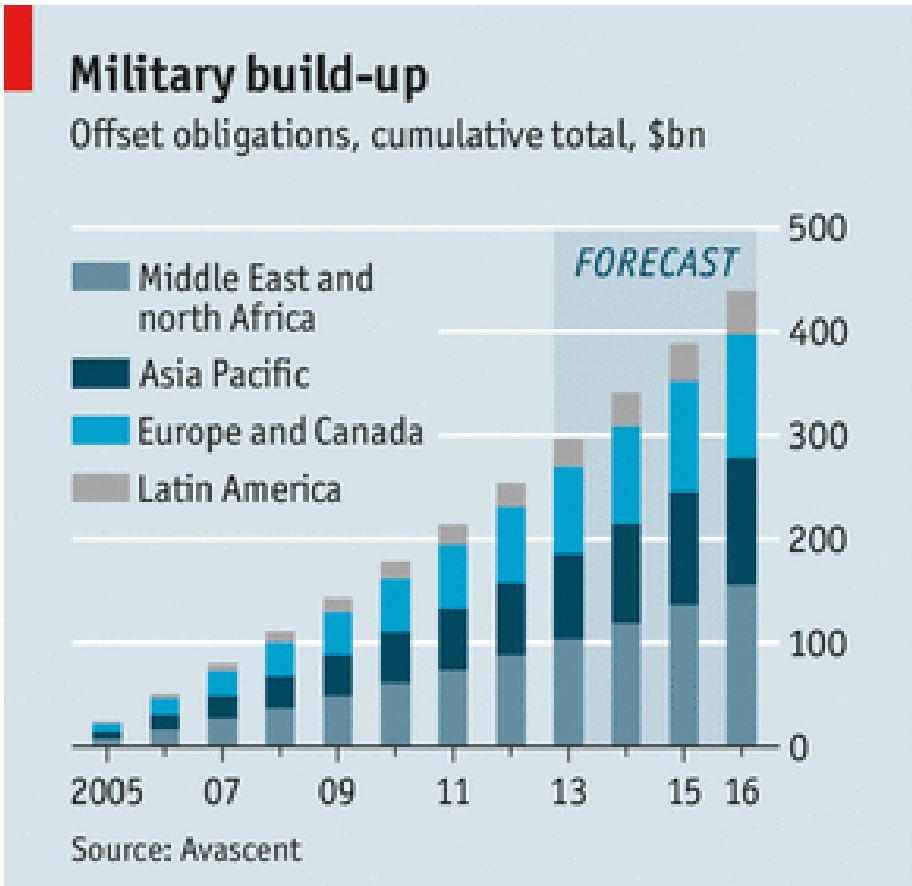


Figure 1. Global offset obligations (yearly obligations, 2005–2016).

Figure 1 shows both the current and some former offset obligations, but also an estimate for 2016. Both the current growth and the expected growth is rapid. There are some uncertainties in regards to the estimations. The full extent of the implications of the implementation of directive 2009/81 is not known, nor is to what extent it will decrease the use-offset obligations. The highest increase comes from Latin America, MENA (Middle East and North Africa) and Asia. The biggest increase comes from the Middle East countries with large revenues from oil because of an increase in military procurement and more emphasis on offsets.

In a paper by Thomas Matthew in 2009 , several relevant observations are made: European nations have been able to generate more offsets than others. During the period 1993 to 2004, European countries were able to obtain offsets valued at 99,1 % of their defence imports while non-European countries achieved 46,6% of their imports. Significantly, 72,9 % of the offsets obtained by European nations were 100% or more of the value of the weapon systems imported by them.

As it has been argued, defence offsets come at a cost and defence economists are still confounded as to who benefits (seller or buyer) from these arrangements. There is no overwhelming evidence to support any definite conclusion. If empirical data from Belgium is any evidence, then implementation of offsets in a contract can add 20 – 30 % to the cost of imported equipment. Depending on the industrial and defence infrastructure of a country and its political relations with the seller nation, the cost to the purchasing nation can vary. But what is certain is that offsets come at a price. At the same time, overwhelming evidence also suggests that offsets are gaining wide acceptance over time and in all regions. Evidently, importing nations are willing to compromise economic efficiency for the dividends that offsets promise in strengthening their defence industry.

One interesting finding in Matthew's paper is that despite the increasing use of offsets and the costs associated with it, it is still not clear who benefits. So if offsets create economic inefficiencies both to the seller and to the buyer, why do nations still carry on with such arrangements? Is it certain that so many countries need a defence industry? Why do we see so little consolidation on the buyer's side? A relatively rare example of buyer's-side consolidation is the F-16 programme, with more than 4.000 air craft produced since 1976 and purchased by 24 countries.

Figure 3. Defence imports as percentage of total annual procurements.

Officially, France and Germany do not practise offsets and are strongly against this policy. Italy, Netherlands and Sweden are net exporters but do have considerable imports. They do have an active offset policy. Greece, Spain, Poland, Portugal and Finland are net importers and do attach direct offset on the trades.

### **2.9.2 Offset obligations towards Norway**

Every year it is estimated, that the value of offsets agreement is around 3 billion NOK because of agreements Norwegian authorities have made with foreign suppliers. Around 140 Norwegian companies are annually involved in this type of cooperation. The total remaining commitment that foreign suppliers have to Norway's date. April 2008 of 9.5 billion. These obligations last until 2018.

Figure 4. Foreign DCs offset obligations in Norway.

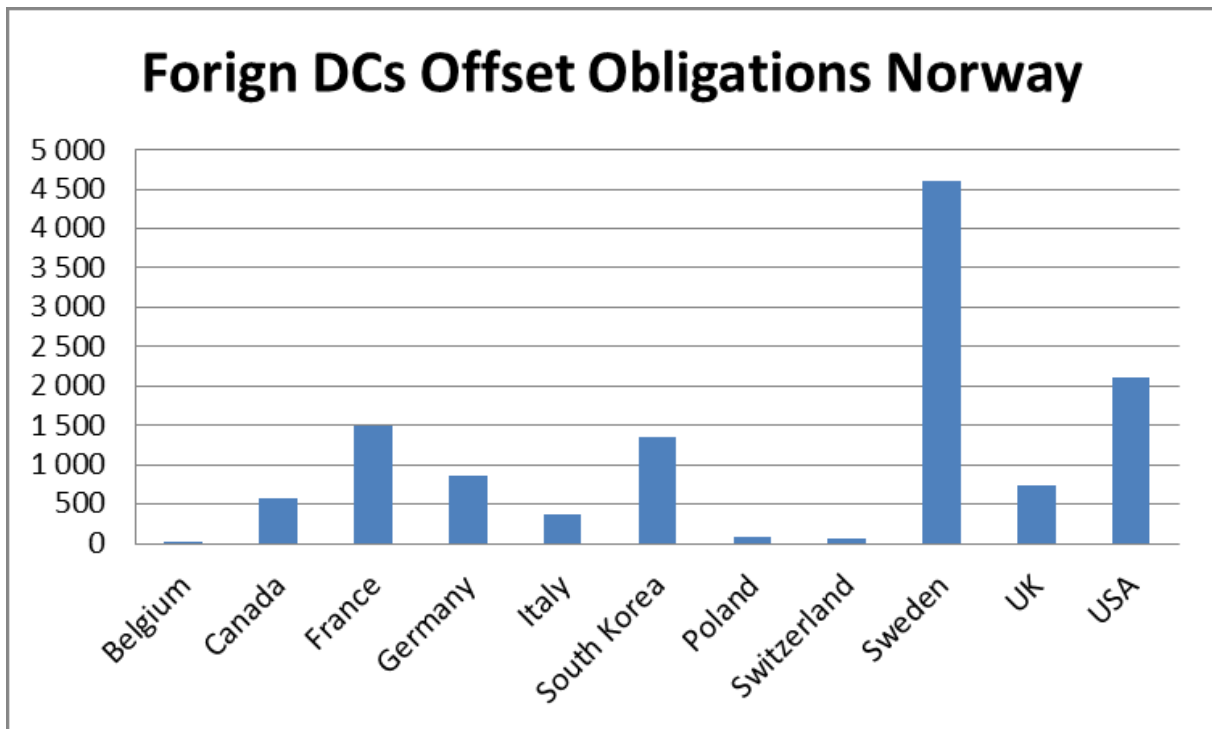


Figure 2

Figure 2 shows the foreign offset obligations to Norway. This reflects the Norwegian defence imports. Sweden has always been a close trade partner to Norway, and defence is no exception. Historically, Sweden has given Norway a large offset percentage in former deals. During a debate concerning which fighter plane Norway should buy next, the Norwegian Defence Industry Association (FSI) declared that Norwegian industry would benefit if Norway bought JAS Gripen instead of JFS-35s because of the offset package Norwegian industry would receive

## 2.10 Developments in Western European defence industry <sup>16</sup>

After the Second World War, the economies of Western Europe were shattered and the industrial infrastructure destroyed or run down. Europe needed to rearm its defence system and to rebuild its economy. This was also in the interest of the USA, as collaboration between European states and US became increasingly important. The establishment of the Marshall Plan must be seen in this context. The production of arms was partly facilitated through license agreements between US companies and manufacturing companies in the Western European countries. These bilateral programs enabled the countries to gain access to US

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<sup>16</sup> A Step Towards Affordability Chatterhouse 2011

technology. The programs helped each Western European nation build a defence-industrial base, but did not encourage cross-border trade between European nations.

### **2.11.1 1960–1990**

By the 1960s, the Western European defence industries had recovered sufficiently to produce military materiel and weapon systems with less need for technology transfer from the US. The relationship had to some degree changed. The UK and France for instance had their own aircraft industry and had developed sophisticated military systems like aircraft carriers and nuclear missiles. The Western European countries competed on the global market often as competitors to US products, although the barriers of trade were still high.

### **2.11.2 1990–Present**

The fall of the USSR and the end of the Cold War changed the strategic picture. The proportion of GDP used on defence spending fell significantly after 1991. During the financial crisis of 2008-2009 and the following debt crisis, the budgets have been cut further. In NATO today there is a growing concern that the defence burden is not shared proportionally between the US and Europe. This was the main theme of US Secretary of Defense, Robert Gates' farewell speech in 2011. According to SIPRI<sup>17</sup>, the US accounted for 39% of global defence spending, with an annual budget of USD 682 billion. This represents 4,4% of US GDP compared to a NATO average of less than 2%.

## **2.12 Export and Import?**

The current size of the European defence market is approximately EUR 96 billion per year.<sup>18</sup> The contract volume awarded in EU/EEA under EU Directive 2009/81/EC is currently only EUR 1,1 billion per year or just about 1% per year of the total market volume. Only 3% of this was cross-border contracts, which translates into a mere 0,035% of the total market value. The European defence market is divided into exporters and importers of military materiel. The main exporters are UK, France, Germany and Italy. Currently more than 80% of the

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<sup>17</sup> (SIPRI Yearbook 2013)

<sup>18</sup> (Source: EU Commission Working Paper)

European defence procurement expenditure is on national programmes. The exporting countries tend to buy more than 90% of their defence materiel from national sources, while the importing countries already buy more than 50% of their defence materiel from external sources. In plain text, this means that a manufacturer of defence products in Norway, Finland, Latvia, Sweden or The Netherlands, will have slim prospects of selling their products to countries like Germany or France are very slim.

Guy Anderson, Senior Principal Analyst Aeronautics & Defence at IHS Jane's said at the presentation of IHS Jane's report "The Balance of Trade in 2013":

*The global arms market is about to get very turbulent. We may already have reached 'peak defence' with the US dominance of the global defense market under threat. The big Western defense companies have no option – export or shrink – but this could be sowing the seed of their own demise; the opportunities in the East are a double edged sword, fuelling a trend which threatens US dominance of defense. Low end defence equipment dominates the global market now but the West's edge on technology will erode this decade as Asia outspends the USA and Europe. However, money alone is not enough. India is proof of that. And size doesn't matter. Israel is set to complete its domination of the UAV ('drone') market in 2013. Turkey, Singapore, South Korea and China are also racing to innovate. Give Asia and the Middle East a decade and they will be selling world-class kit. The US is now buying significant amounts of foreign imports.<sup>19</sup>*

### **2.13.1 The United States**

The most complete and accurate list of actual offsets can be found in the Bureau of Industry and Security (BIS) Annual Reports to the US Congress, where all forms of registered offsets are codified. When looking at the offset policies of various countries, a couple of terms are important to bear in mind: *direct commercial sale* and *foreign military sale*.

**Direct Commercial Sale (DCS)** is when a defence manufacturer sells directly to the Ministry of Defence (MoD) in a foreign country. Even though the US Government is not a direct contractual part of the transaction, US Government interaction is highly visible through

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<sup>19</sup> Guy Anderson, Senior Princepal Analyst (HIS Jane)

various initiatives, restrictions and check points, including licensing of the vendors, reporting, auditing, etc. through the BIS.

**Foreign Military Sale (FMS)** is when one or more US arms manufacturer forms a contract with a foreign MoD through the Defence Security Cooperation Agency (DSCA) of the US Department of Defense (DoD). In this case, a disclaimer, taken into the contracts since 1990, states: “There are no known offset agreements proposed in connection with this sale”. This has led to a dual-track approach relative to offsets, where US defence contractors and manufacturers can get involved in DCS contracts with an offset component, while the US Government, when supervising a FMS contract through DSCA, clearly states that it cannot.

**Buy American Act.** Even though the US has ratified the GATT Agreement, and later World Trade Organization, military materiel is exempt under the Buy American Act (BAA). BAA is based on legislation originally passed in 1933 under President Hoover. Together with the Berry Amendment, BAA constitutes a substantial set of restrictions for import of non-US goods and components. The US does not have an offset policy and prohibits offsets. This does not mean that the US is not engaged in protectionism. The Buy American act requires the US government to prefer US-made products in its purchases. This does not require individual components and raw materials that comprise a manufactured good to originate in the US. Only the final manufactured product must be assembled or manufactured into its final form in the US. More than 50% of the components must be produced in the US. This law was enacted in 1933, a period marked by its protectionism. To have access to the US market, offset obligations and Norwegian-built factories on US soil are usually necessary. Both Kongsberg Defence & AeroSpace and Vinghøy have factories in the US. Without these factories, selling products to the US market is extremely difficult. As Kongsberg Gruppen has stated: “We would prefer to manufacture all products in Norway”.<sup>20</sup>

The Buy American Act prohibits small Norwegian companies from entering the US market. Only the biggest players in Norway have the necessary recourses to set up facilities on US soil.

### 2.13.2 France

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<sup>20</sup> (Kongsberg Gruppen interview)

France has a large military and aerospace industry with companies like EADS, MBDA, Dassault and Thales and is the world's fourth largest arms exporter.<sup>21</sup> France also has its own nuclear deterrent and is, for all practical purposes, self-contained in terms of industrial capacity in the defence sector.

Officially, France has no formal offset policy, but to promote the French military and aerospace industry, the French government has set up counter trade and offset departments both in the MoD and in the Ministry of Economic Affairs.

### **2.13.3 Germany**

Germany has the largest industrial manufacturing infrastructure in Europe, but typically its arms manufacturing is carried out by large civilian industrial companies with military industry subsidiaries or divisions. However, Germany is the third largest arms exporter in the world after USA and Russia.<sup>22</sup>

The official German position on offset arrangements is that they are “counterproductive to defence trade”.<sup>23</sup> Instead, Germany has established a system of “industrial balances” which is very similar to the Norwegian concept of “industrial cooperation agreements”. Typically, the “industrial balances” would match 100% of the arms contract value. Germany is a significant provider of military equipment to Norway; examples are Heckler & Kock's HK416 semiautomatic rifles, MB Gelenderwagen transport vehicles and ULA class submarines by Thyssen Nordseewerke. A German consortium was also a main contender for the Norwegian frigate project in the early 1990s, but lost to the Spanish/US Bazan consortium. Historically, major German bids or contracts have not lacked in respect of offsets compared to competitors.<sup>24</sup>

### **2.13.4 Italy**

Italy is a significant arms exporter and has no official offset policy; however, ad hoc offset arrangements do appear. If offsets are put in place, the Ministry of Defence has a department

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<sup>21</sup> (Source; SIPRI 2013 Yearbook)

<sup>22</sup> (Source; SIPRI 2013 Yearbook)

<sup>23</sup> (Source; *Das Bundesamt für Wehrtechnik und Beschaffung*)

<sup>24</sup> (Source; Bjørn Krohn)

called The National Armaments Directorate that is in charge. The aim of the unofficial offset policy is to facilitate export opportunities for Italian defence manufacturers and technology companies.

### **2.13.5 The United Kingdom**

The UK is a large arms exporter and has no official offset policy. But, unlike Italy, the UK has established certain institutions to deal with military offset contracts, the most important being the Defence and Security Organization under the UK Trade and Investment Unit under the Ministry of Trade, Investment and Business.

### **2.14 The European Union and EDA**

The weapons export/import regimes of EU countries has historically been an area of great controversy due to the fact that some EU countries have very large arms and military materiel manufacturing sectors and others do not. With such a diverse set of interests, a common policy has therefore been difficult to achieve. The fact that the EU countries have different arrangements with NATO also complicates matters.

The EU established the European Defense Agency (EDA) in 2004 as a part of the Common Foreign and Security Policy Initiative. The EDA reports to the Council of the European Union, and its main scope is to foster European defence co-operation. Relative to offsets, the most important areas of co-operation are “Promotion and enhancement of European armaments Cooperation” and “Working to strengthen the Defence Technology and Industrial Base for the creation of an internationally competitive European Defence Equipment Market”. The advent of EU Directive 2009/81/EC must be seen as one of the most significant initiatives coming out of the EDA. Denmark opted out of the EDA, but Norway has been allowed to opt in on a case-by-case basis without voting rights in the decision making bodies of the EDA. The UK is currently evaluating their future participation in the EDA.

The official European Council conclusions on the functionality of the defence industry and the defence market were published on 19/20 December 2013:

*“16. Europe needs a more integrated, sustainable, innovative and competitive defence technological and industrial base (EDTIB) to develop and sustain defence capabilities. This can also enhance its strategic autonomy and its ability to act with partners. The EDTIB should be strengthened to ensure operational effectiveness and security of supply, while*



*remaining globally competitive and stimulating jobs, innovation and growth across the EU. These efforts should be inclusive with opportunities for defence industry in the EU, balanced and in full compliance with EU law. The European Council stresses the need to further develop the necessary skills identified as essential to the future of the European defence industry.*

*17. A well-functioning defence market based on openness, equal treatment and opportunities, and transparency for all European suppliers is crucial. The European Council welcomes the Commission communication "Towards a more competitive and efficient defence and security sector". It notes the intention of the Commission to develop, in close cooperation with the High Representative and the European Defence Agency, a roadmap for implementation. It stresses the importance of ensuring the full and correct implementation and application of the two defence Directives of 2009, inter alia with a view to opening up the market for subcontractors from all over Europe, ensuring economies of scale and allowing a better circulation of defence products."<sup>25</sup>*

## **2.15 Current state of the global defence industry**

Table 2

*The 10 Largest Arms-Producing and Military Services Companies in the World Excluding China, 2012<sup>26</sup>*

Rank	Company	Arms Sales 2012 (\$m)	% of Total Sales
1	Lockheed Martin (USA)	36.000	76
2	Boeing (USA)	27.610	34
3	BAE Systems (UK)	26.850	95
4	Raytheon (USA)	22.500	92
5	General Dynamics (USA)	20.940	66
6	Northrop Grumman (USA)	19.400	77
7	EADS (trans-European)*	15.400	21
8	United Technologies (USA)	13.460	22

<sup>25</sup> (EUROPEAN COUNCIL 19/20 DECEMBER 2013 CONCLUSIONS)

<https://yerelce.wordpress.com/2013/12/20/european-leaders-summit-conclusions-speeches/>

<sup>26</sup> (Source: SIPRI Year Book 2013)

9	Finmeccanica (Italy)	12.530	57
10	L-3 Communications (USA)	10.840	82

\*EADS was renamed Airbus Group in January 2014.

Seven out of the top ten is American. The largest reason is the US huge home market. Which is crucial in a protectionist market.

Table 3

*World Military Spending, 2012<sup>27</sup>*

Region	Spending (\$b)	Change (%)
Africa	39.2	1.2
North Africa	16.4	7.8
Sub-Saharan Africa	22.7	-3.2
Americas	782	-4.7
Central America and the Caribbean	8.6	8.1
North America	708	-5.5
South America	65.9	3.8
Asia and Oceania	390	3.3
Central and South Asia	59.8	-1.6
East Asia	268	5.0
Oceania	28.2	-3.7
South East Asia	33.7	6.0
Europe	407	2.0
Eastern Europe	100	15
Western and Central	307	-1.6

<sup>27</sup> (Source: SIPRI Year Book 2013)

Region	Spending (\$b)	Change (%)
Middle East	138	8.3
World Total	1756	-0.4

*Note:* The spending figures are in current (2012) US dollars.

SIPRI announced on 14 April 2014:

“The fall in the global total comes from decreases in Western countries, led by the United States, and despite increases in all other regions. In fact, military spending in the rest of the world excluding the USA increased by 1.8 per cent. The next three highest spenders—China, Russia and Saudi Arabia—all made substantial increases, with Saudi Arabia leapfrogging the United Kingdom, Japan and France to become the world’s fourth largest military spender. China, Russia and Saudi Arabia are among the 23 countries around the world that have more than doubled their military expenditure since 2004. The fall in US spending in 2013, by 7.8 per cent, is the result of the end of the war in Iraq, the beginning of the drawdown from Afghanistan, and the effects of automatic budget cuts passed by the US Congress in 2011. Meanwhile, austerity policies continued to determine trends in Western and Central Europe and in other Western countries.”

According to a study by IHS Jane’s called “The Balance of Trade” released 25 June 2013.<sup>28</sup>

### **2.16 Defence budgets**

Asia Pacific’s defence budgets are forecast to outstrip North America by 2021, up 35% from 2013 levels to \$501 billion. Total global defence budgets are forecast to continue rising, reaching \$1.65 trillion by 2021, an increase of 9.3% over 2013 levels.<sup>29</sup>

This trend reflects a shift in global economic activity and political power. For Norway, this represents a challenge, as these countries are outside NATO and have typically been seen as off-limits for arms trade involving Norwegian companies. There are indications that

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<sup>28</sup> See more at: <http://press.ihs.com/press-release/country-industry-forecasting/peak-defence-horizon-us-uk-europe-erodes-competitive-edge#sthash.FfIERmRn.dpuf>

<sup>29</sup> <http://www.fool.com/investing/businesswire/2013/06/24/peak-defence-on-horizon-as-us-uk-europe-erodes-com.aspx>

Norway's position is changing moderately, as the Norwegian MOD recently ordered the new sea-going logistic vessel for the Norwegian Navy from Daewo in South Korea.

### **2.17 Global arms trade**

Global arms trade (exports and imports between countries) is up significantly despite the global economic downturn, increasing 30% between 2008 and 2012, from USD 56.5 billion to USD 73.5 billion. At this rate, defence trade between countries will have more than doubled by 2020. The global defence export and services market will have reached \$100 billion by 2018. IHS analysis suggests that world trade is at least 30% higher than as stated in other prominent studies publicly available. Western Europe's share of exports declined while Asia Pacific's rose.

Asia Pacific's exports are up. Western Europe's exports are down. Western Europe's share of the global market was 34.5% in 2008 and fell to 27.5% in 2012. Asia Pacific's share (including China) rose from 3.7% (\$2.0 billion) in 2008 to 5.4% (\$3.7 billion) in 2012, with many in Asia doubling exports. China has jumped up from 10th place in 2008 to be the world's 8th largest exporter today.

This underlines the fact that domestic defence spending stimulates the development of national defence industries that will over time also produce for export. Again, the challenge for Norway will be that these trade patterns are outside the framework of what has been seen as generally acceptable for Norwegian companies and the Norwegian MOD to get involved in. Norway typically only gets engaged in arms trade with neighbours like Sweden and Finland or with allies like the NATO countries. Additionally, Norway has very severe restrictions in trading materiel of military significance with countries engaged in war, civil war or with a less than respectable track record in human rights matters.

### **2.18 Military-related imports**

The USA has imported \$10.5 billion in military-related equipment and services since 2008. Foreign imports to USA are forecast to continue rising through 2013. The rise of Asia Pacific exports threatens US dominance of the global defence industry.

As the US is Norway's main trading partner in defence materiel, this is a trend of some worry in the long run, as US defence spending is likely to be reduced in relative terms and in real

terms. In a declining scenario, the US DoD is likely to favour US companies rather than importing defence materiel, unless a transaction is part of a larger industrial co-operation scheme in compliance with the Buy American Act.

**2.19 The European defence market remains closed**

There is strong evidence that EU Directive 2009/81 has not paved the way for a greater proportion of cross-border trade in military materiel after its implementation. The interviews with industry representatives referred to in this thesis leave an impression of an EU regime for trade in military materiel primarily put in place to protect domestic defence industries.<sup>30</sup>

The fundamental challenge for the European defence industry is how to deal with the combination of falling defence budgets and excess capacity. Still, the European defence industry is very much organised along national lines. PWC, the consultancy, recently carried out a survey indicating that European governments are paying 30–40% more than necessary for military equipment due to the fact that price competition does not really work in Europe due to the national structures put up to blur competition.<sup>31</sup>

Table 4

*The Main Importers and Exporters of Major Arms, 2008–2012*<sup>32</sup>

<b>Exporter</b>	<b>Global Share (%)</b>	<b>Importer</b>	<b>Global Share (%)</b>
1. USA	30	1. India	12
2. Russia	26	2. China	6
3. Germany	7	3. Pakistan	5

<sup>30</sup> (Interview)

<sup>31</sup> (Neil Hampson, PWC, March 2013)

<sup>32</sup> Source: SIPRI 2013

<b>Exporter</b>	<b>Global Share (%)</b>	<b>Importer</b>	<b>Global Share (%)</b>
4. France	6	4. South Korea	5
5. China	5	5. Singapore	4
6. UK	4	6. Algeria	4
7. Spain	3	7. Australia	4
8. Italy	2	8. USA	4
9. Ukraine	2	9. UAE	3
10. Israel	2	10. Saudi Arabia	3

### 2.20.1 Regulatory regime

Norway is a part of the European economic area. We are then obliged to follow the treaties set by the EU. A treaty is a binding agreement between EU member countries. It sets out EU objectives, rules for EU institutions, how decisions are made and the relationship between the EU and its member countries. Under the treaties there is a layer of laws. Defence procurement is subjected to the rules enshrined in the EU Treaties. Procurement is subjected to the fundamental rules and principles of

- non-discrimination on grounds of nationality,
- free movement of goods,
- free movement of services and
- free movement of establishment.

The security exemption Article 346 in the Lisbon Treaty states that TFEU (formerly Article 296 TEC) allows EU countries to exempt defence and security contracts if the application of European law would undermine their essential security interests:

**Article 346 (1) (a)** allows EU countries to keep secret any information the disclosure of which they consider contrary to the essential interests of their security

**Article 346 (1)(b)** allows EU countries to take measures they consider necessary for the protection of their essential security interests in connection with the production if trade in arms, munitions and war material (specified in the 1958 list). Measures taken

under Article 346 (1)(b) may not adversely affect competition on the common market for products not specifically intended for military purposes.<sup>33</sup>

The wide interpretation of the article causes a loophole that may severely limit cross-border trade.

### **2.20.2 Directive 2009/81/EC**

The directive is a move that provides a regulatory framework for defence equipment contracts and exports within the EU. The objective of the directive is to liberalize the market, where the price and quality of products determines what is bought and not the offsets attached to it; to move away from the current nation state fragmentation; and to move towards an open market with a more level playing field. This will also involve using article 346 more as an exception rather than a standard.

*The new law, the “EU Defence Procurement Directive”, governs the procurement procedures for defence and non-military security supply, services and works contracts. This law is applicable in all EU member states. EU Directive 2009/81/EC must be transposed in each member state’s body of legislation by August 2011. In Norway, the law was implemented in January 2014. The aim of this directive is to harmonize acquisition procedures throughout the EU: first, by increasing competition and encouraging cross-border bidding among European bidders, so as to prevent systematic sole-source procurement or non-competitive procurement from national suppliers; second, by increasing transparency through the obligation to advertise defence contracts in the EU official journal. Various contract performance conditions will make indirect offsets in defence contracts illegal.<sup>34</sup> The directive does have some ambitious goals. So far, we have seen an increase in transparency. Germany and France advertise contracts on a larger scale. That is good and what the directive intended. French companies still wins almost all contracts in France, the same can be sad for Germany.*

### **2.21.1 Norwegian objective**

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<sup>33</sup> EU law and defence procurement 2013 ec europa eu

<sup>34</sup> <http://export.gov/europeanunion/marketresearch/securityanddefensesector/>

The Norwegian Ministry of Defence states that “Industrial Cooperation (also called offset) is an industrial policy tool that the Norwegian Government uses to secure and increase the Norwegian industry's access to foreign defence-related markets. The scheme helps to strengthen industry expertise, capabilities and market opportunities for the benefit of the military and industry.

Industry Projects must fall within one of the following three categories:

- Category 1: Strategic projects
- Category 2: Non-strategic, defence-related projects
- Category 3: National security related projects and multipurpose projects (dual use projects)<sup>35</sup>

**Strategic projects** are considered to have strategic importance for the defence/national security and industry in Norway. These projects help to develop and strengthen national competence in one or more fields.

**Defence-related** projects are projects involving military equipment and services and related technology, which are insubstantially used by nations’ armed forces.

**Security-related** projects are projects that include materials, services and related technology used for protection against non-military threats to society’s security and other vital security interests.

**Multiuse projects** are projects that have applications in both the civilian and military sectors and include technology that is not specifically designed or modified for military use.

Accepted projects involving expertise and technology may also be included in this category.

### 2.21.2 Norwegian defence industry

The Norwegian Defence sector is relatively small, with approximately 100 firms. Many of these are SMEs. While Norway has some large oligopolistic producers who dominate both the domestic and export market, the Norwegian export market is highly concentrated, relying on a few products that make the bulk of Norwegian firm’s sales. <sup>36</sup>Products like Kongsberg’s NSM. Norwegian defence products focus on medium- and high technology niche products.

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<sup>35</sup> (<http://www.regjeringen.no/nb/dep/fd/tema/forsvaret-og-industrien/industrielt-samarbeid.html?id=528526>)

<sup>36</sup> ([http://mpira.ub.uni-muenchen.de/36026/1/MPRA\\_paper\\_36026.pdf](http://mpira.ub.uni-muenchen.de/36026/1/MPRA_paper_36026.pdf))



The core competence is a specific set of abilities or qualities that gives the firm a unique advantage and position relative to its market rivals.

In the defence sector, R&D activities are much higher than in the economy in general.

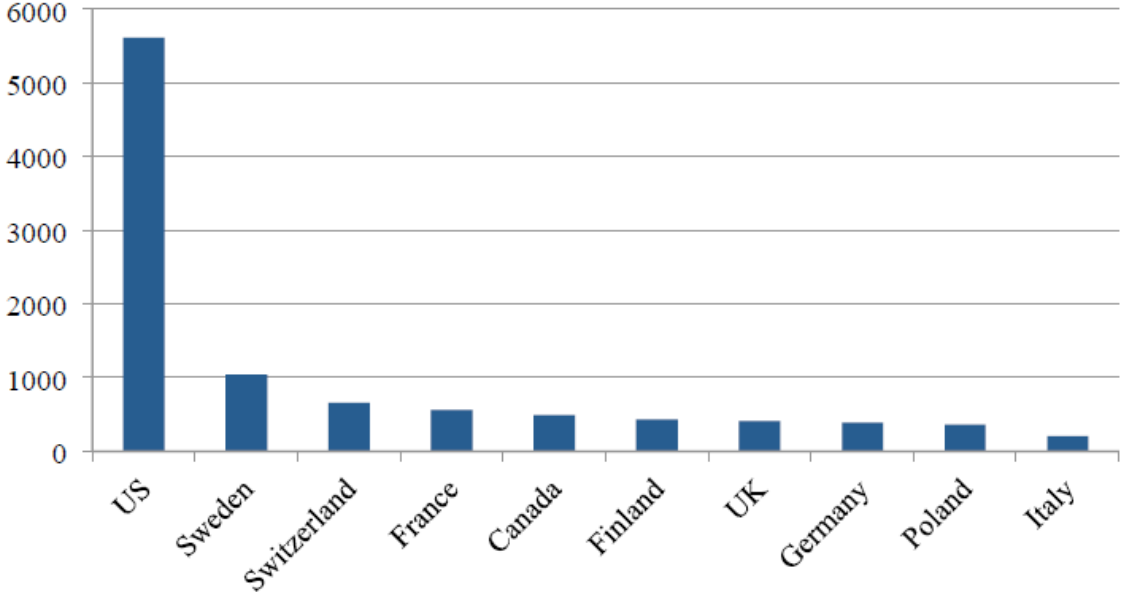
Figure 1 shows the relative importance of the US export markets to the Norwegian companies. This reflects that the US share of worldwide defence spending is around 40%.

Both Sweden and the US have long collaborative traditions and trade with Norway.

Switzerland, on the other hand, has not historically been a large importer of Norwegian defence equipment. Switzerland, however, has recently made a few large purchases like the Protector system from Kongsberg, worth NOK 350 million.<sup>37</sup>

Niche products like Protector and increased repurchase have increased the export share of Norwegian defence production in recent years.<sup>38</sup>

Figure 1.1 Norwegian defense exports by receiving market, 2008 – 2011, in million NOK



Source: Norwegian Ministry of Foreign Affairs (2012).

Figure 1. Norwegian defence exports by receiving market, 2008–2011, in million NOK.<sup>39</sup>

<sup>37</sup> <http://www.fsi.no/nyheter/aktuelle-saker/nytt-regel/>

<sup>38</sup> <http://www.ffi.no/no/Rapporter/10-00466.pdf>

<sup>39</sup> (Source: Norwegian Ministry of Foreign Affairs (2012))

#### **2.21.4 Regulatory regime in Norway**

Norway is subject to a number of national, bi-lateral and multinational treaties and regulations. On the national level, three main frameworks apply:

**Anskaffelses Regelverk for Forsvarssektoren** (ARF) regulates procurement contracts that can be entered into outside the framework of EU directive number 2009/81/EC. Currently, Norway and the EU seem to be at odds as regards the role of offsets related to third-party countries.

**Forsvars og Sikkerhetsspesifikke Anskaffelser** (FOSA) regulates procurement contracts that must be entered into inside the framework of EU directive number 2009/81/EC. This directive now calls for a ban on offsets for new defence-related procurement contracts. However, FOSA establishes a new regime of compulsory industrial co-operation agreements.

European Union directive 2009/81/EC was implemented by Norway 1 January 2014 as a part of the EEA Treaty (EØS avtalen). However, there seems to be a difference in interpretations between Norway and the EU on the role of offsets related to purchases from third party countries.<sup>40</sup> Furthermore, the Norwegian requirement for “Industrial co-operation arrangements” can be seen as offset arrangement requirements redefined. Norwegian defence industry executives do not see the implementation of the EU directive as a game changer if limited to the EU sphere as market access to key markets like France and Germany has been very limited.

Disputes between Norway and the EU will have to be resolved in the EU Court.<sup>41</sup> The law on public procurement (LOA) regulates all other public procurement contracts and states principles, procedures, responsibilities and guidelines for such procurement processes. A significant proportion of Norwegian defence procurement activities is regulated by LOA but is confined to non-military significant materiel such as food, electricity, civilian travel & lodging, etc.

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<sup>40</sup> (Ref Nationen article)

<sup>41</sup> (Interview)

## Chapter 3: Economic Theory

### 3.1 Why trade?

According to economic theory, there are two reasons to trade: (a) differences between countries cause comparative advantages that cause specialisation, further causing comparative advantage and (b) cross-border trade can lead to coloration and economy of scale.

#### 3.1.1 Comparative advantage

Ricardo developed the theory of comparative advantage in the early 1800s.

Ricardo then came up with a fictional example between England and Portugal. It showed how both nations could benefit from trade.

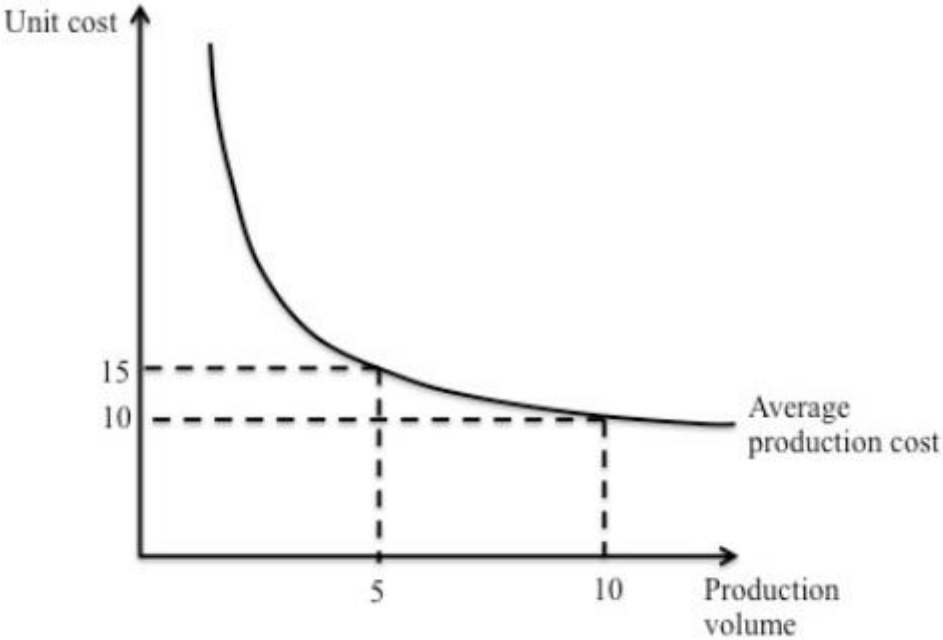
"Comparative advantage," the idea that both parties can benefit from trade even if one of them is better at producing everything than the other. In both England and Portugal, it is possible to produce both wine and cloths. However, in England it is hard to produce wine and moderate difficulty to produce clothing. In Portugal, both products are easy to produce, with less labour input. Even though Portugal is more efficient in both clothing and wine, it has a higher opportunity cost in regards to clothing.

	Cloths	Wine
Portugal	100	110
Britain	90	80

In the absence of transportation costs, it is efficient for Britain to produce cloth and for Portugal to produce wine (it is assumed both are trading for equal price) The opportunity cost in Britain of producing one unit of clothing in terms of one unit of wine is equal to  $100/110=0,909$ , while the same opportunity cost for Portugal is  $90/80=1,125$ . The opportunity cost in Britain of producing one unit of wine instead of cloth is  $110/100=1,1$  while the same opportunity cost in the US is  $80/90=0,888$ . Britain has a comparative advantage in producing cloth while Portugal has a comparative advantage in producing wine, even though Portugal has absolute advantage in both goods.

If Portugal wanted one unit of cloth and one unit of wine, it would need to spend 170 labour units, while Britain would need to spend 210 labour units in order to accomplish the same. That is a total of 380 units in total for two units of cloth and two units of wine. If they produce according to their comparative advantage and then trade, 360 units of labour are needed. This example shows the efficient benefit of trading. With restricted trade, neither Britain nor Portugal can reach those benefits.

b) A firm is said to have economies of scale when its average cost falls as output increases. Economies of scope is generalise the concept of economies of scale to the case of the multiproduct firm. Economics of scale is an argument for consolidation and mergers.



Production possibility curve

The notion that production becomes more efficient as production grows. This typical happens in industries where fixed costs are large. In such cases increased production volume implies that the fixed costs are spread across a larger number of produced units, thereby lowering the average total production cost per unit.

Diseconomies return to scale occur when the organisation becomes so big that it experiences inefficiencies. Large multinational companies have factories all over the world, dozens of

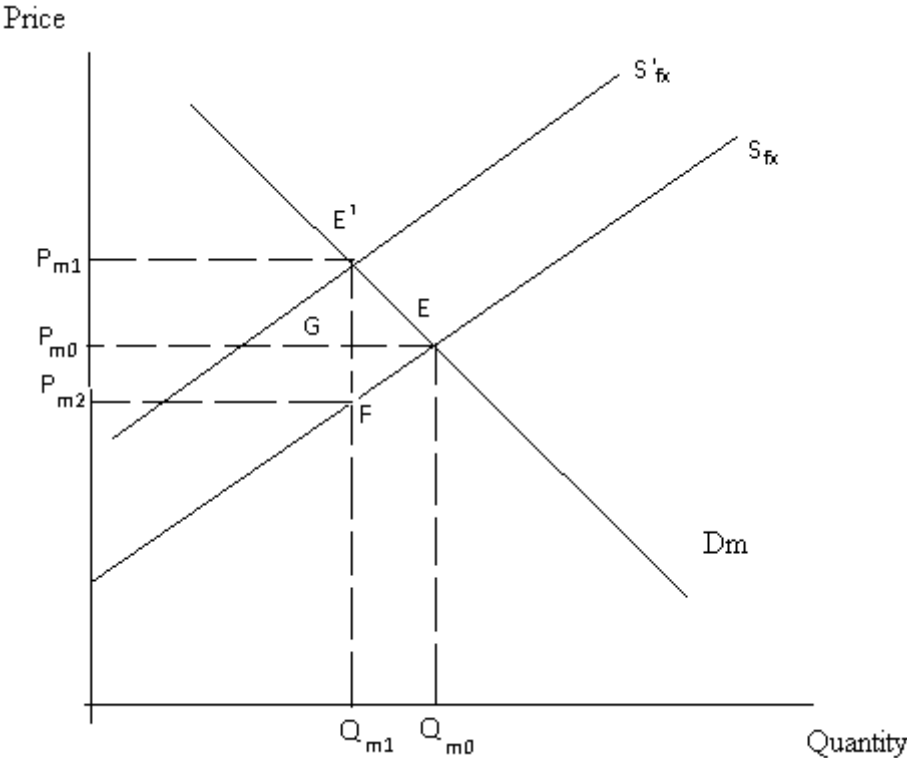
levels of management that decrease accountability, countless opportunities for corruption and miscommunication drive the average cost up.

The benefits of mergers and consolidation vary from sector to sector, partly depending on whether there are returns to scale or not. Economic of scope arise when there is an advantage in producing related goods within a company. Large spill-over effects between different products<sup>42</sup>. A merger may increase or decrease the price of a certain good.

**3.1.2 Basic effects of trade restrictions on prices and Quantntities**

**Example 1: The effects of tariff**

Tariffs are taxes levied at the border. They make the imported goods less competitive by raising their price in relative to the domestic goods. The tariff will create a wedge between domestic and international producers equal to the tariff.



Figur 4: The Dm line represent the demand for imports, while the Sfx represent the supply of imports. Under free trade the price equals Pm0 and the Quantity equals Qm0. Introducing tariffs will cause the price to rise to

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<sup>42</sup> <http://www.jstor.org/stable/1885979>

$P_{m1}$  while the producer receives  $P_{m2}$ . The difference between  $P_{m2}$  and  $P_{m1}$  equals the tariffs. The Quantity will decrease from  $Q_{m0}$  towards  $Q_{m1}$ . The triangle between F, E and E is social welfare loss.

The figure demonstrates who benefits and who will loose from the new tariffs. The domestic producers will benefit because of the new increased price.

### **Example 2: The effects of import quotas**

While the tariffs target price, quotas target volume by placing a direct restriction on volume. The trade effect is similar as previous example. The reduced quantity available to the consumer causes the domestic price to rise. The domestic price continues to rise until the quantity supplied domestically at the higher price plus the amount of the import allowed under the quantum exactly equals the reduced quantity demanded. While the effects on tariffs and quotas are identical, the welfare effect are not.

The government can simply put the quota at quantity  $Q_{m1}$ . Both quota and tariffs do mostly have protectionist intentions, tariffs have historical also had a revenue driven motivations. In more modern times, less harmful taxes are now preferred, if the purpose is revenue generation.<sup>4344</sup>

### **Example 3: The effects of subsidies**

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<sup>43</sup> [http://www.pftac.org/filemanager/files/PITAA/2009/2\\_PITAA09%20Revenue%20and%20Trade%20pres.pdf](http://www.pftac.org/filemanager/files/PITAA/2009/2_PITAA09%20Revenue%20and%20Trade%20pres.pdf)

<sup>44</sup> International Economics, Seventh edition Appleyard/Field/Cobb

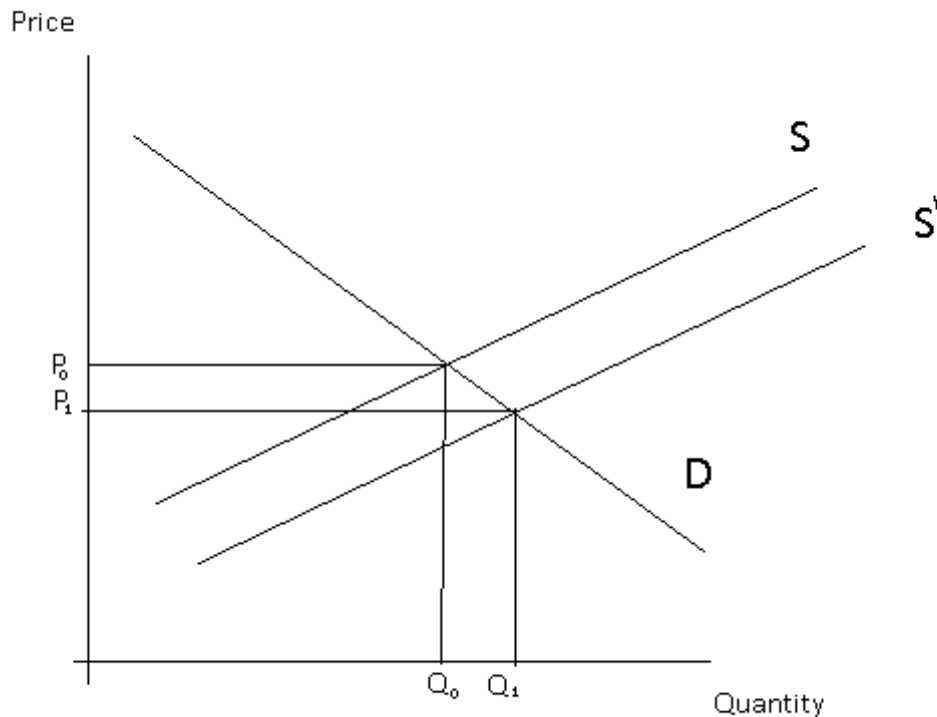


Figure 5

A subsidy is a benefit granted by the government to groups or individuals in support of something regarded as beneficial by the society. A subsidy can be anything from free schools, petrol subsidies, to production subsidies given to farmers. In this thesis, export subsidy's is the most relevant. An export subsidy tries to assist the country's balance of trade payments.

In the example Figure above, a subsidy that affect the marginal profit has been introduced. It will cause a right shift in the supply curve. That will cause the quantum produced to increase from  $Q_0$  to  $Q_1$ .

### 3.2 What of the theory is relevant to the global defence sector?

The explained trade examples are typical for a small country large market, where the policy of the smaller country only in a minor extent, affects the global. The example is also more precise in regards to homogeneous goods.

### 3.3 The implications of trade barriers

As shown earlier in chapter 3 Benefits of trade arise due to specialisation and economics of scale. The trade barrier causes large economic losses. The protectionism causes both each individual market with insufficient scale and lack of competition that inhibits long-term productivity. According to the theory, the cost of restricting trade could be very large. Empirical evidence backs up this claim. In an empirical study, Hartley uses export data, comparative unit prices, and data on economics of scale from defence firms. His estimations suggest that unit cost would be reduced by 10 to 25 percent by increased competition, 10 to 20 percent by taking advantage of economies of scale, and 5 percent by economics of learning (Hartley 2006). He also argues that because the defence sector highly advanced in its technology. The effect might be larger.

Hitch and McKean (1960) Argues that large upfront investment such as research, development, testing and evaluation requires substantial investments and take years. As with fixed cost, it is beneficial to divide them on many production units. To lower, the average cost. Even though the paper/book is old. The defence sector was in 1960 as in 2015 a sector higher in both R&D and technology than the average industry sector. In addition, little trade also characterized the market at that time. The strategy relied on as previously mentioned that each NATO country should have its own production facilities, which it then could ramp up if needed.

### **3.4 The arguments for interventionist policies.**

#### **3.4.1 Protecting domestic consumers:**

The argument can be made, whereby the governments try to restrict trade, on the bases that consumers need protection. This argument is mainly used when the health of the consumers is at a concern. Such as food and medicine products.

#### **3.4.2 Terms of trade gains:**

Is measures to influence the world price and thereby change the terms of trade. To change the world price the country has to be a big player in that segment. This accounts mostly for large countries. A measure China could implement is to increase the tax on oil. <sup>45</sup> It would then lower the demand for oil that would lead to a decreased oil price. The result would be a favourable term of trade than before the measure. Small countries can rarely enforce the same

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<sup>45</sup> China is a big importer of oil. The second biggest, according to The world factbook (2013)



power on the global markets. However, some niche suppliers like Chile in Copper or Turkey with Hazelnuts could implement some policies on the supply side that would benefit the terms of trade and thereby increase commodity prices.

### **3.4.3 Revenue generation**

Trade taxes has historically been an important part of revenue generating. Like the sound toll generating 2/3 of the Danish revenue in the 16century. Today trade taxes is mostly used as a source of revenue in some middle and low-income countries.

### **3.4.4 National defence argument**

This argument implies that a national industry is vital for the national security. The technology, human capital and production capabilities that's go along with it, is important in case of wartime. If free market is allowed in peacetime. The fare that foreign companies will take a share of the domestic production and thereby reducing the countries own production capabilities in case of wartime.

It is not easy to identify which industries are vital to the national security. In pretentions for protection, almost all industries put forth some claim for protection in the concern of national interest. For example, US watch industry successfully obtained protection using the national security argument. <sup>46</sup>

This makes the article 346 somewhat hard to define.

**3.5 Protectionism** is a policy of protecting domestic industries against foreign competition by means of tariffs, subsidies, import quotas, or other restrictions or handicaps placed on the imports of foreign competitors. This raises the price of foreign products. Protectionist measures are easy to recognize and will generally be met with a counter tariff or at least strong condemnation. Openly protectionist frameworks do not work within the EU Constitution. This study therefore reviews other more subtle protectionist measures that could prohibit trade.

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<sup>46</sup> In the Shadow of the Garrison State by Aaron L Friedberg

Governments all around the world want their own industry to prosper and workers to have “secure” jobs. Authorities are still tempted, by providing their own industry an advantage beyond that. Especially when the country is struggling with competitiveness.

Excessive bureaucracy associated with the process of importing and exporting may restrict trade. For example, goods may be deliberately held-up at ports and airports, and there may be unnecessarily complex and lengthy paperwork associated with international transactions. Governments can set tough quality standards that are hard for domestic goods too meet. Authorities are well informed of the performance standards that foreign products are not able to accommodate. The authorities can then set up criteria that exclude some competitors. This could be a challenge for the overseas company to prove. Domestic authorities are more willing to collaborate with domestic firms.

There are numerous examples of disputes in regards to quality standards, especially in the food industry. As an example, US Congress during the Bush Administration, declared that a catfish is not a catfish when it comes from the Mekong Delta. This happened after a rapid increase of catfish imports from the Mekong Delta. Now better known as Pangasius, the American consumer still buys large quantities of this fish. Therefore, the US government is currently working on tougher regulations and food safety standards in regards to Pangasius. There are numerous examples from China, a country with lax regulations in regards to its own food industry. Chinese food contains large amounts of heavy metals and chemicals, yet China still has a tendency to enforce strict rules on foreign firms.

In the case of buying defence equipment. The buyer is monopolized within each country. Tenders are designed in a manner that favors their own domestic industry.

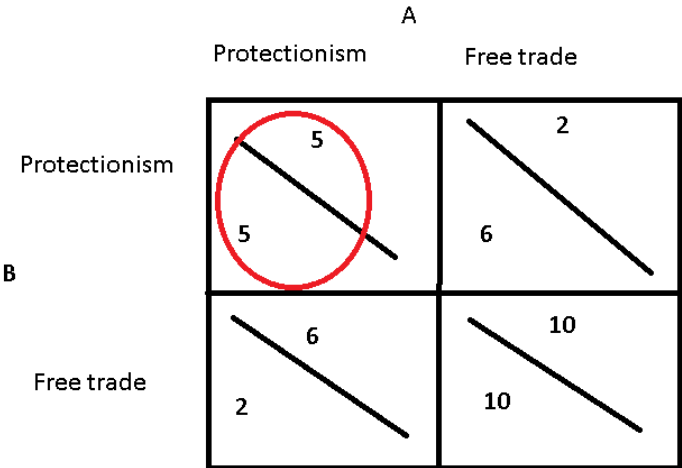
### **3.6 Game theory**

Game theory can be defined as the study of conflict and cooperation between intelligent rational decision-makers. Game theory provides general techniques for analysing situations in which two or more individuals make decisions that will influence one another’s welfare. A study of strategic decision-making has applications in fields such as political science, biology, philosophy and economics among others.

Take, for example, a situation where two nations have equal defence sectors. If both are free trading, one or both nations sees the opportunity to become more protectionist, forcing the other to change its policy, forcing both to implement a protectionist policy. Smaller nations affect larger ones to a lesser extent than the opposite. In this example, the Nash equilibrium conditions are satisfied when both nations apply a protectionist policy. That makes the current situation so locked.

According to this model, a country that implements a free trade policy will experience a loss because the other countries will not follow this free trade path. In the long term, the country that initiated the free trade approach will convert to a more protectionist policy.

Figur 6



**3.7 Public choice**

is an economic theory applied to political science problems. It was developed in the United States after World War II, but it had antecedents in mathematics studies of policy choices in the 1800s. The researchers did find that politicians and officials behaved in the same way as entrepreneurs and workers in private enterprises. They were not only representatives of the common good but also thought about their own position. The usual distinction between behaviour in a competitive market economy and a government was thus greatly reduced.

## Chapter 4: Examples of worldwide Offset Use

### 4.1 Saudi Arabia

Offsets, as previously described, are widely used. There are lessons to be learned from previous experiences from different countries.

Saudi Arabia is highly dependent on petroleum. Approximately 95% of exports comes from this commodity. There is an increased focus on trying to transform the economy and becoming less dependent on oil. Saudi Arabia does have a massive trade surplus, therefore offset arrangements are not instruments for balance of trade. The emphasis is therefore on projects that improve the skill level of the population and increase technological capabilities, pick private sector business projects, mutually beneficial partnerships between Saudi and foreign companies, usually in the form of joint ventures. The industrial content includes battery production, sugar refineries, pharmaceutical production and assembly of electronic components. I will use the Peace Shield Programme to illustrate offset mechanisms.

#### **Peace Shield:**

Based on Mitra (2009)

This was a programme set up by Boeing as the prime contractor for establishment of a ground-based air defence facility in which the Saudi Government pursued an offset programme aimed at bringing in high technology transfer content. The Boeing group set up four Peace Shield offset companies:

**The Advanced Electronic Company**, to manufacture the latest and most advanced military and commercial electronic equipment within Saudi Arabia.

**The Aircraft Accessories and Components Company**, for maintenance, repair and overhaul of aircraft components like flight controls, pneumatic fuel and hydraulic systems.

**Al-Salam Aircraft Company**, for MRO, upgrade and modification of civil and military aircraft.

**International Systems Engineering** is a company that specializes in information technology, systems integration and development.

**Al-Yamamah:** This was a major defence contract between the UK, primarily through BAE Systems (British Aerospace), and Saudi Arabia for purchase of military and civilian aircraft, missiles, weapon systems and helicopters with associated training and support, as well as construction projects. The total value of this programme was around \$7-8 billion, that is, about

four to six times larger than the Peace Shield programme. The contract had an investment target of about \$1.5 billion. Investments in pharmaceuticals, vegetable oil manufacturing, petroleum, food processing, health care and environment care equipment were also encouraged. The objective was to acquire fully developed, proven technology for immediate commercial application. However, the Al Yamamah programme's main claim to fame has been the number of corruption claims and investigations that has taken place in its wake in the UK. Ethics and Offsets will be examined more closely in a later section of this paper.

**Al-Sawary II:** This was a programme for purchase of frigates from France for the Saudi Navy at a cost of \$3 billion, carrying an offset investment obligation of about 35%, in various fields including glass, precious metals, smart cards and agro industry. The ships were anti-air warfare frigates based on the La Fayette class. Additionally, the contract included training, maintenance, spare parts and construction of shore based facilities.

In the study there is a claim that offsets helped to contribute to the industrialization of Saudi Arabia, diversification of the economy and participation by the private sector in national economic development. A number of high ventures lower in technology content but with more favourable long-term business prospects have been established. Cutting-edge technology is generally not shared due to national security concerns of the selling party. Technology that is mature or soon to be replaced can be shared. The Saudi offset program has therefore stressed transfer of medium commercial exploitable technology, rather than high technology. Saudi Arabia also focused on trying to manufacture components and sub-assembly lines of main systems under license, as was due in some other countries.

#### **4.2.1 Turkey**

Turkey has during the last 30-40 years had an ambitious program for building defence capabilities. Offsets was strategically important in this process. In 1986, turkey bought 160 F-16 jets from General Dynamics of the US. In this offset deal, general dynamics subcontracted most of the assembly to the newly formed Turkish Aerospace industries. The Turkey example

is viewed as a success. With exports 1.2bn in 2012. *Around 80 percent of Turkey's export, are linked to offsets. If you removed all offsets today, it would be like removing life support.* <sup>47</sup>

#### **4.2.2 South Africa**

In 1990s South Africa agreed to a 8,4bn deal to buy aircrafts, submarines and warships from Sweden, Italy, Germany and the UK. The companies involved promised 65000 jobs and revenue that would outweigh the cost four times to one. But those benefits never materialized according to a study conducted by J Paul Dunne and Gay Lamb (2004).

#### **4.3 Other countries.**

The jury is still out on South Korea, but offsets seems so far to have led to mixed results. (Chinworth 2004, p 243). For Indonesia (Bitzinger 2004) its "Apparent success was illusory", "In reality it was a bloated, state-owned white elephant, employing many more workers than it needed and was awash in excess production capacity". In a meta-analysis (Jurgen Brauer and J Paul Dunne) concluded that there is no evidence that offsets stimulates broad-based civilian economic growth and that the spill overs to civilian sectors have been limited. And that whatever technology is transferred is quickly outpaced by continuous technology advances in the main developed country.<sup>48</sup> Higher cost than anticipated is also widespread. There is an incentive to exaggerate benefits and understate or ignore the cost. For developed countries, opportunity cost of military expenditures can be extremely high. It also strong evidences that offset agreements in the developed world has been plagued with corruption.

For developed countries, offsets have been helpful for building military capabilities. In Norway, offsets was of mayor importance in the build up to the Kongsberg Group. When the offsets started in the 60s and 70s. The distance between USA and Norwegian capabilities where far smaller than South Africa, Indonesia and even Turkey. Kongsberg manage to adopt technology and later develop their own technology. Its seems too ambitious for developing countries to jump into the world of high tech. The leap seems too far.

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<sup>47</sup> Guy Anderson, analyst at IHS

<sup>48</sup> Brauer and Dunne (2004)

#### **4.4 The Norwegian F16 Programme**

In June 1975, an agreement was reached, in the form of a "Memorandum of Understanding" (MOU), between Belgium, Denmark, the Netherlands, Norway and the United States regarding planned co-production of the F-16. Agreements were further specified in separate contracts between the United States and each of the other participating countries. Main Contracts regarding the production of 998 F-16 fighters was signed in May 1977. The original purchase included 650 aircraft by the USA, 116 by Belgium, 58 by Denmark, 102 by the Netherlands and 72 by Norway . Based on the price level, as of January 1975 it was agreed that a price ceiling of US \$6.091.000 per aircraft would be set. The price included mainly the airframe, engine, radar, share of development costs and costs relating to double toolset as a result of several production lines.

The cost of necessary additional equipment could vary in type and number of intermediate each country, in addition the price ceiling. In addition to the original aircraft, additional planes were sold to individual participating countries and also to other third-world countries. The total number of aircraft produced by 1 February 1997 was 3.615. There are still 380 aircraft on order. It may be mentioned here that Norway has acquired two replacement airplanes.

The European authorities asked at this time that as a condition for some procurement on F-16s take place in Europe. According to the MOU agreement, the United States is obliged to accord the European participating countries as a whole a total repurchase of at least 58% of the value of the European procurement. If it were possible to place the aircraft in Europe, could be considered to regard other U.S. purchases in Europe as offset. However, to here to talk about compensatory production at the same technological level. This is referred to as indirect repurchase. In accordance with the provisions of the MOU agreement, the U.S. Defense Department demanded that main suppliers were to place contracts both regarding development and production in the European participating countries. It was, however, a condition that contracts should be "reasonably competitive". Although procedures to clarify the concept of "reasonably competitive" were adopted by the Steering Committee, there was

no fixed exact definition of this term. The MOU agreement is clear with regard to the distribution of the offset between the United States and the European participating countries as a group, but there are no guidelines for the distribution of offsets between the European parties.

If one adds the status of repurchase as of March 1996, Norway is clearly the worst off, with a repurchase rate of only 44,8%. Any future cooperation programs should specify each country's share repurchase as much as possible. In this connection, each country's industrial capacity in the different areas must also be taken into account. Furthermore, clear and precise guidelines must be established on how to assess and calculate repurchase shares, including conditions that are not purely economic.

## **Chapter 5: Interviews**

### **5.1 Method and limitations**

The primary purpose of interviews in this thesis is to provide real-life perspectives from representatives of key organisations in this field. Normally, interviews are carried out in greater numbers in order to establish a basis for empirical evidence and documentation. However, in this particular case, Norway only has one customer in the defence sector, the MOD represented by the Defence Logistics Command FLO. The Norwegian Defence Industry Association, FSI, represents the overall majority of Norwegian defence industry and contractors. The FSI representative clearly stated that he spoke on behalf of the industry as such and not on behalf of a specific company. The reason for interviewing the two executives from Kongsberg was that the Kongsberg Group is by far the largest Norwegian defence contractor, with more than 40 years of experience with offsets and international industrial co-operation agreements. The interview technique was not driven by a uniform interview guide, as the interviewees had very different roles to play in the defence sector. Despite these methodological limitations, the interviews should provide significant insights from industry practitioners and public agencies and thus enhance the quality of the thesis. For further discussion on the value of interviews in case studies, refer to Ragin & Becker and Andersen.

The following interviews took place in October–November 2013. The purpose of the interviews was to have a direct communication with representatives from The Norwegian Defence Industry Association (FSI), The Norwegian Defence Logistics Organisation (FLO), and Kongsberg Group (KG). The interviews were taped and transcripts were produced. Below is a summary of the points raised during the interviews.



### **5.2.1 Interview with Mr Torbjørn Svensgård of the Norwegian Defence Industry Association (FSI)**

Q: What is the purpose of offset arrangements from the Norwegian industry perspective?

A: We use offset arrangements for two main purposes: market access and technological co-operation. Norway has used offsets in more than 25 years going back to the F-16 programme. Norway uses offsets to focus on the development of our domestic military industry in terms of competence, R&D and export opportunities. We do not engage in offset arrangements with a general economic development perspective. As regards market access, we find it very difficult to achieve significant export volumes to France, Germany, UK and Italy. However, with countries like Sweden, Spain and the US, our industry has achieved very good results. In Eastern Europe, Middle East and Latin America, our industry has done well even without offsets.

Q: What is your view on the implementation of the new EU Directive 2009-81?

A: We do not think it will change the dynamics of military procurement very much. Norway has ratified the directive and will implement it on January 1<sup>st</sup> 2014. We have seen that even though the French MOD has been best in class in terms of announcing procurement projects for tender; 270 contracts out of 270 tenders have been won by French companies since France implemented the directive. The market for defence products in EU is not an efficient market as every country only has one customer, one end user: the government. It is therefore almost impossible to sell Norwegian defence equipment to European countries with a large and diversified defence industry. For the future, article 346 in the EU Treaty still gives exemption to defence equipment of essential security interest.

Q: What about licencing?

A: Norwegian companies like Kongsberg, Kitron and Nammo have established manufacturing facilities in the US to comply with their Buy American Act. However, we have seen very few examples of licencing operations established in Norway.

Q: What is the experience of Norwegian companies when they meet offset requirements with potential customers abroad?

A: Currently Norwegian companies have offset commitments of about USD 1 bn in countries like Poland, Finland, Switzerland, Croatia, Malaysia and Canada.

Q: How is the MOD's follow up as regards foreign companies offset commitments?

A: The Defence Logistics Organisation, FLO, is following up on behalf of the MOD and there are strict controls in terms of milestones, bank guarantees and cash deposits to act as collateral towards the offset liabilities. US and international GAAP also requires that such liabilities are listed on the companies' balance sheets.

### **5.2.2 Interview with Kongsberg Group ASA (Kongsberg), Mr Ivar Flage, Director of Business Development and Mr Ove Sindre Lied, Director of Industrial Co-Operation**

Q: The Kongsberg Group (Kongsberg) has been involved in offsets for many years and is by many seen as a beneficiary of the current system. What is Kongsberg's experience with offsets?

A: There is no doubt that it would have been difficult for Kongsberg to achieve the level of success that we have had without close cooperation with Norwegian offset authorities and international defence contractors (DC) with offset obligations in Norway. Part of the DC's solution to solve their obligations have been to provide market access and opportunities for technological co-operation. Let me give you a specific example: the Spanish company BAZAN got a contract for the five new frigates back in 2001 to the Norwegian Navy and BAZAN got an offset obligation in Norway exceeding 10 billion NOK. Part of BAZAN's offset solution was that Kongsberg was able to sell the NASAMS Air Defence system to Spain. Another important order for Kongsberg was that we got the order with Lockheed Martin (LM) for integration of the Kongsberg Combat Management System (CMS) with LM's AEGIS system. LM was a large sub-contractor to BAZAN, and Kongsberg's contract with LM has led to follow-up contracts (market access) with both the Republic of Korea's Navy and the Australian Navy.

Kongsberg prefers to participate in programs where we also benefit from technology transfer and enhancements because of requirements from defence customers around the world. Furthermore, Kongsberg has had a lead role in involving smaller Norwegian companies that would otherwise not have had the opportunity to get in a position to serve large international clients.

Q: How do you see the future role of offsets for Kongsberg, given Norway's ratification of the EU Directive 2009-81?

A: We hope that Europe over time will be a more level playing field. The EU Commission has taken the view that offset arrangements do not belong in a free trade environment. But we think there is a logical flaw in this argument, as the defence market in each country does not satisfy even the most basic free market assumptions. The main problem

in the European defence business is not offsets, but the closed nature of nationally defence markets. In fact, there are reasons to believe the three largest defence markets in Europe have also been the prime advocates for reducing the role of offsets. A cynic would say that this is a strategy for having free export opportunities and that it is still a very much closed home market. Furthermore, even if Norway by the implementation of Directive 2009-81 is contributing to developing the market in a more open way, article 346 will still give Norway the opportunity to retain the offset arrangements in the form of “industrial co-operations agreements” in the future. Implementation of Directive 2009-81 in Norway has led to a revision of the Norwegian procurement regulations for defence procurement in order to meet the EU directive’s requirement. Kongsberg believes that offsets will be less used in Norway and EU, but only future practise will show how this will work out.

Q: What about the US market?

A: As we discussed earlier, the US market has become very important to Kongsberg, where our Remote Weapon Station (RWS) has been the most successful product. USA has no offset law, but Kongsberg established a manufacturing and assembly plant in Johnstown, Pennsylvania in order to be able to create political support as a supplier of defence equipment to the US. From a manufacturing cost perspective, multiple assembly lines can drive cost, but producing all units in Norway would not create an environment for winning US contracts.. Very often contractors without local production will face product/system specifications that rule “external” bidders out. Even though the US DoD only buys 2% of its annual procurement from abroad, it is still a big number: USD 10,5 billion during 2008 – 2013 and growing.<sup>49</sup>

Q: Is legal action in this industry a big problem?

A: Kongsberg Defence Contractors typically has one client, the Ministry of Defence in each country. There are in addition a limited number of industry partners in each country, and trust is therefore key to success. We have to be seen as a long-term and financially robust player. Reputation risk is high and the procedures for dealing with the MODs are highly regulated. The idea of launching a lawsuit against the client if we lose out in a tender situation is not very attractive. In order to go to court, we would have to provide evidence of illegal proceeding of the actual tendering process. Kongsberg uses this mean very seldom. However, it may turn out positively, as it did in USA, where our lawsuit against US government led to our first large RWS contract in the country.

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<sup>49</sup> (Source: IHS Pressroom June 24, 2013)

Q: What is the status of the JSM missile for F-35 now?

A: The Norwegian MOD's decision to acquire F-35 as the next generation fighter aircraft has opened up for Kongsberg to market the JSM missile to the US DoD. Offset obligation related to the F-16 program has positively contributed to the development of the Norwegian defence industry. Kongsberg objective is that the F-35 industry programs can be more significant. Kongsberg is currently developing Joint Strike Missile (JSM), which will fit inside the bomb bay of the F-35. We are working to get JSM defined as a standard anti-ship missile for F-35. The first live launch of the missile will be from F-16 and F-18 test aircraft, but we are planning to launch from the F-35 in 2017–2018. Kongsberg's Naval Strike Missile Project today has about 150 sub-contractors, and the JSM project already has more than 100. So if we are successful, a lot of other companies will benefit too.

Q: The EU countries have consistently reduced their defence spending during the last ten years, and in quite a few countries investment spending has fallen even more. Has this led to consolidation or to more protectionism?

A: The EU has in general not been in the driver's seat as regards consolidation. As an example, there are still too many vehicle producers in Europe turning out too many similar vehicles. The defence market is a highly political market where jobs and national security interests are more important than economic efficiency. Thus, there is a lot of duplication of effort both in manufacturing, but also in R&D. Consolidation in Europe requires someone to take the initiative to close capacity. With a high degree of state ownership in the sector, very few politicians have seen any incentive in bringing this issue up. The new EU directive has some positives in particular on transparency requirements, but is not likely to alter the overall picture in the short term.

### **5.2.3 Interview with Mr Knuth Herrefoss, Senior Advisor in the Norwegian Defence Logistics Organisation (FLO)**

Q: How would you describe the competitive landscape in the defence industry that Norway relates to?

A: The defence industry hardly satisfies the criteria for an efficient market, unlimited number of providers, unlimited number of buyers, total transparency and equal access to information, etc. It seems that the countries we deal with have very different ways of organising their military procurement practises and their weapons/military systems manufacturers. In general Norwegian companies have struggled with gaining market access to countries like UK, Italy, France and Germany as they all have significant domestic defence industries. In the USA, Norwegian companies have had more success due to large orders from

Norway (aircraft, Aegis radar systems, etc.) and strict compliance from Norwegian companies to the Buy American Act's requirement to establish local presence in the US.

Q: Do we see a paradox in the fact that those countries which claim to be the strongest advocates of liberalisation of the arms industry in fact still stick to very protectionist trade practises when their own procurement is concerned?

A: That is a fair way of summarising my experience during the last few years. I remember having worked very hard to get Norwegian companies into the value chains as sub-contractors, just to see the national procurement agencies being instructed by their MODs to buy domestic products.

Q: How do you assess the impact on cross-border trade by the implementation of EU directive...?

A: European Defence Agency had a bulletin board for all contracts above €1 million that worked well. After the implementation of the directive, the bulletin board activity has decreased? So far no contracts have been won in France by non-French companies since the implementation of the directive. In Germany, only one cross-border contract has been awarded. Without the offset obligations, very few cross-border deals take place in continental Europe.

Q: Norway has entered into offset agreements with various countries, including Canada. What is the experience with offsets in Canada?

A: Canada has a defined offset regime managed by the Industrial and Regional Benefits Office in the Department of Industry. The policy framework was established in 1986 and is designed to support investments in high-tech industries and other sub-contractors in Canada. Despite its good intentions, the Canadian regime today is a bit of a drag, as it is difficult to find relevant investments in the required regions, and Canada is also very reluctant versus going into swapping agreements with other countries.

Q: What about Poland, where Kongsberg recently has entered into some significant missile contracts?

A: Poland's offset regulations go back to 1999, but were revised in 2007 and aim to support Poland's domestic industry by opening foreign markets. The system is managed by the Finance Ministry and has received offsets with multipliers of between 2 and 5. For instance, was the 2003 purchase of 48 F-16 fighters, at a contract value of USD 3.5 billion from Lockheed Martin, supported by a USD 6 billion offset package? Kongsberg was successful in Poland partly because they had a relevant product, but also because they were prepared to carry out some production in Poland. Norway has subsequently bought trucks

from Polish manufacturers to satisfy the offset requirements. Kongsberg's NSM will be the key capability in the Polish coastal artillery going forward.

Q: I heard about the term SWAPS. Can you elaborate on that?

A: One mechanism that can work well is batement or SWAPS of offset liabilities. Let me give you one example; The Norwegian MOD has bought a fair amount of equipment from manufacturers in Switzerland and the Swiss MOD has bought a fair amount of military equipment (Protector remote Weapon Station) from Kongsberg (KOG). Both transactions entailed offset liabilities. As Norway has excellent relationships with Switzerland we were able to negotiate a deal where the offset liabilities were swapped.

Q: What do you expect the outcome of Norway's approbation of EU Directive 2009/81 will be?

A: I do not expect major changes, as "industrial co-operation agreements" still can take place under the directive. In addition, Article 346 in the Lisboa Treaty can also provide exemptions from the ban on offsets. Norway is prepared to test this principle in the courts of law.

## **Chapter 6: Findings and Analysis**

### **6.1 Overview of findings**

In Financial Times and HIS Jane's in 2013 the aggregate amount of offset commitments by arms manufacturers has now passed USD 75 billion. This is despite the fact that it is difficult to identify the benefits neither to the seller nor to the buyer. The use of offsets or similar arrangements seems to have become endemic to the politics and procedures related to large military contracts. The underlying political philosophy is job creation and technological development on the country level, but so far it has not been possible to document if the excess cost and economic inefficiencies related to offsets are compensated by job growth and technological advances.

### **6.2 The defence industry is not efficient**

It has not been possible to find evidence against my initial hypothesis that the defence industry and trade in military materiel lack the fundamentals of an efficient market. Economic theory for example Richardo's theory of "Trade and Comparative Advantage" would argue that the current structure of the international arms trade is way off from being optimal. The lack of transparency and complicated transaction structures also make it difficult to act in accordance with traditional rational behaviour. The fact that the accounting practises for

treating offsets are quite variable leads to certain companies like Lockheed Martin and Raytheon to give full disclosure in their annual reports while others BAE and Northrop Grumman provide no such information.<sup>50</sup> Very few other pieces of information of such value / liability would be tolerated by the financial markets to be undisclosed.

### **6.3 The defence industry is fragmented**

The defence industry is highly fragmented, in particular in Europe. Europe currently has more than 17 production lines for heavy military armoured vehicles, tanks and artillery while the US, despite significantly higher production numbers only has two lines. (Tom Enders, CEO Airbus Group in an Interview with Aviation Week 12 May 2014) However, Buy American Act imposes a requirement for foreign defence companies to set up local production lines in the US. The localisation of these production lines are then subject to local, regional and national politics which adds complications to an already complicated sales process. In the interview with one of the Kongsberg executives this problem was highlighted and he explicitly stated that if it was up to industrial economics, the manufacturing would take place in Norway. There seems to be too many countries trying to develop national full ranges of weaponry and systems. Because of the massive scale of US defence spending, US will even in a protected market reach large quantum's in compared to European countries.

There is also limited harmonisation of standards and specifications this probably to protect national R&D and design environments. Sweeden and Norway had initially plans to buy the same helicopter, but the enginers in boths countries couldnt agree on what specification they wanted in the new plane. To little insentive to harmonize standars. The Kongsberg Gruppen executive also mentioned the problems they had faced when trying to sell the Protector Remote Weapon Station to the German Armed Forces. Despite the fact that Protector is by many seen as best of breed and that German industry at the time had no alternative to offer, no sales contract was entered into. The German Army commissioned German industry to design a similar system for them which ended up with inferior specifications at a higher unit price.

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<sup>50</sup> .(FT 9 Oct 2013).

#### **6.4 Declining demand and excess capacity in Europe has made it difficult to combat protectionism despite the introduction of EU Directive 2009/81**

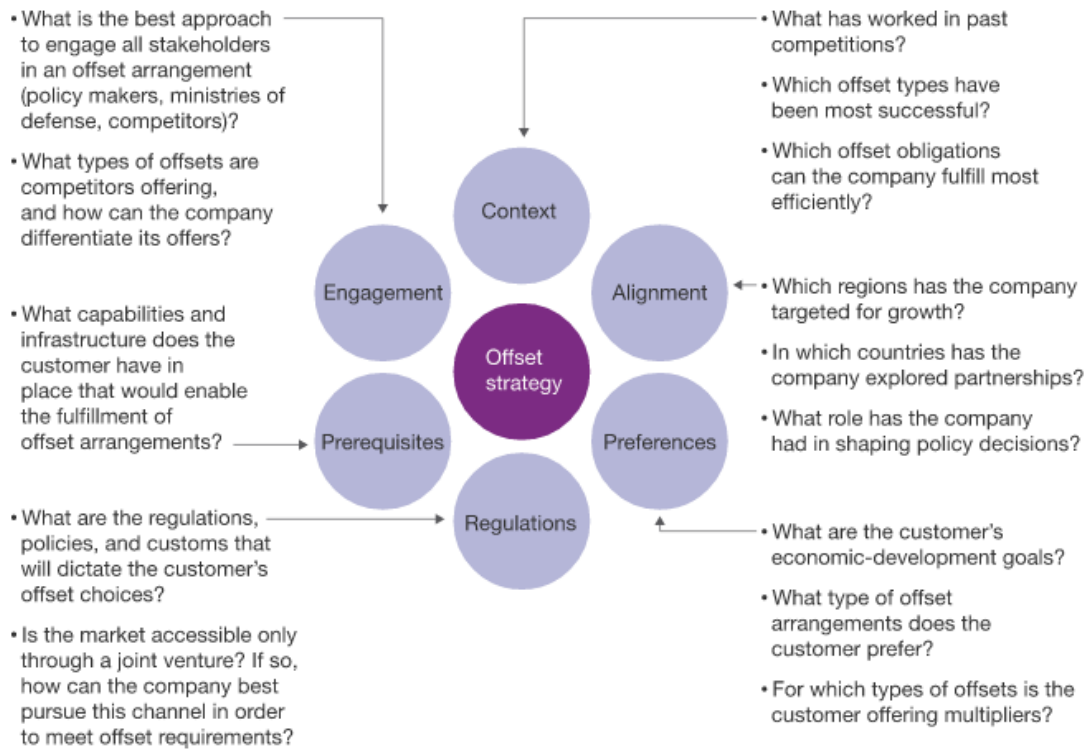
One of my findings in this study is the decline of defence budgets among Europe's NATO members as shown in section 2.4.1. During the same period we have seen a distinct increase in defence spending in Asia. However, we have not seen a similar consolidation in the European Defence industry. Cross border trade of military materiel in Europe is still appallingly low as shown in section 2.4.4 and the introduction of EU Directive 2009/81 has so far not changed the fact that it is still very difficult to sell military weapon systems into countries that have a large defence industry sector.

#### **6.5 It is not clear who benefits from offsets – the buyer or the seller**

As we saw in section 2.5 it is not clear who benefits from the various offset and counter trade practises that we are currently seeing. The sellers are obliged to bundle their products with investments in less efficient production lines or in investments / trade in products or activities outside their core business. The buyers will eventually pay a higher price for the product than what would have been the case if the sellers' offset obligations had been excluded. This view is traditionally called "Pay to Play", but has recently been challenged by management consultancy firm, McKinsey who recently published an article which looks more positively at the use of offsets in international trade. (McKinsey Insights, July 2014, Dehoff, Dowdy and Kwon). The article called "Defence offsets: From contractual burden to competitive weapon" maintains that the most important source of growth for US defence contractors will come from overseas as the current export share is still less than 30% and that offsets play a central part of winning contracts in particular in South East Asia, The Middle East and South America. The McKinsey article also examines the risks to offset practises, but devises six core areas companies need to focus on in order to build sound offset strategies. The exhibit below shows these.



To build sound offset strategies, companies need to focus on six core areas.



**Figure 7**

When talking to representatives from Norwegian weapon systems manufacturers, it is evident that they are in favour of offsets. (See sections 6.2 – 6.4). The main rationale referred to is improved market access through offset mechanisms. This view is also supported by the arguments put forward in the McKinsey article referred to previously.

In the case of Norway's Kongsberg Group ("KOG"), which is the locomotive of the Norwegian defence industry, the Government carry several hats 1) as a regulator and legislator relative to arms exports and imports 2) as a seller / exporter through its 50,1% holding in KOG and 3) as a buyer through the Ministry of Defence in such cases as the purchase of F-35 combat aircraft from Lockheed Martin that has an extensive range of offset arrangements with KOG. From a corporate governance perspective such a complex set of roles is unusual at best, but can also be seen as unhealthy.

One party who obviously benefits from offsets and counter trade is the myriad of consultancy firms, legal firms and investment banking boutiques who provide advice and structure deals between buyers and sellers (Ref. The Economist 25 May 2013). Examples of such firms are: Dolin International Trade & Capital of New York and Blenheim Capital of London. The

advisory industry in Europe is organised in The European Club for Countertrade and Offsets (ECCO) and industry statistics and standards are found in “Countertrade & Offset” published in the UK by Lindsey Shanson.

**6.6 The growth in military spending in Asia and the Middle East is leading to increased use of offsets also third party offsets**

According to the FT / Janes IHS study (NOTE) the value of offset commitments is expected to reach USD 500 by 2030, but these estimates are surrounded by a great deal of uncertainty. But the Economist is expecting the accumulated value of such obligations to reach USD 450 billion already by 2016 based on a report by Avascent, a consulting firm . (NOTE: The Economist 25 May 2013). The growth is mainly coming from the Middle East, Africa and the Far East.

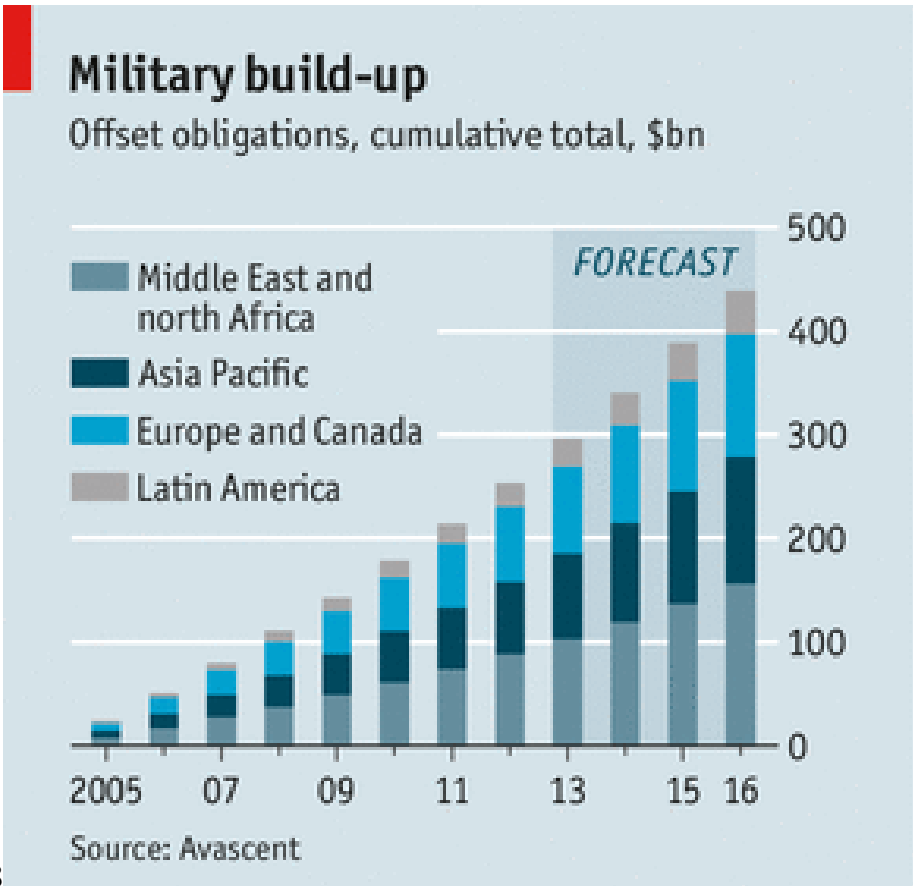


Figure 8

A clear feature with the next generation of offsets is that they are primarily third party offsets as the buying countries only to a limited extent have domestic high-tech or defence related industries. A famous (notorious) example of such offset arrangements is the shrimp farm set up in Saudi Arabia in 2006 backed by Raytheon that suffered environmental issues and eventually went bankrupt.

When looking at the table above the strongest growth in offset exposure is towards countries that have a less than impressive score on Transparency International Corruption Index.

In their Special Section on Defence Transparency International states that:<sup>51</sup>

*We estimate at least US\$ 20 billion is lost to corruption in the sector every year. And that is only a modest estimation of the costs incurred when national security concerns become a veil to hide corrupt activity. Single source contracts, unaccountable and overpaid agents, obscure defence budgets, unfair appointments and promotions, and many more forms of corruption in this secretive sector waste taxpayer funds and put citizens' and soldiers' lives at risk.*

*The cost is paid by everyone. What is wasted on defence corruption could be spent in improving schools, healthcare or infrastructure. Corruption destroys trust in military institutions and the armed forces, risking lives in the process. When leaders buy arms because they've been bribed or received favours, it is the soldiers in the field who are left with shoddy guns or inadequate protection. Soldiers exist to protect citizens, but governments have a duty to protect their soldiers, and they buy from defence companies to do so. Corruption, on the other hand, protects only the corrupt.*

## **6.7 The Norwegian paradox**

Norway has gone from being among the smallest NATO nations in terms of defence spending to becoming a middle-sized country both in spending terms and in military capacity. The election of former Prime Minister Jens Stoltenberg to the position of NATO Secretary General underlines this point. Norway has been criticised for moving from a traditional role of peace keeping often under the UN flag to a more vocal proponent of military intervention as seen in Afghanistan and Libya. The same dualism can be seen relative to the defence industry. While the Norwegian Sovereign Wealth Fund managed by NBIM is banned from investing in

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<sup>51</sup> [http://www.transparency.org/topic/detail/defence\\_security](http://www.transparency.org/topic/detail/defence_security)

certain arms manufacturers by the Ministry of Finance's Ethics Board, the Norwegian Government is the majority shareholder of the Kongsberg Group. While NBIM cannot invest in the shares of Lockheed Martin, the Norwegian MOD has signed the largest arms contract in Norwegian history with Lockheed Martin for the procurement of F-35 combat aircraft.

There has never been a public debate in Norway as to whether there should be a national defence industry or not. There has never been a debate on how such an industry should be organised, regulated and owned. However, the Norwegian defence industry continues to develop with the direct and indirect support of the Government through offsets and other national preference schemes.

The underlying rationale has been preservation of national security, creation (preservation) of jobs and technology spill-over. As regards national security that argument was probably valid a century ago when military operations primarily was men with guns carrying their equipment on their backs. Given today's complex military operations, Norway can never be self-sustained with military equipment. As regards job creation the bulk of defence industry jobs are technical / engineering which are skills typically in shortage in industrial Norway. The technological spill-over argument is similar to the debate around US aerospace programs including moon-landings. My assumption is that if the objective is to develop advanced technology for civilian use, to develop military technology and betting on large scale spill-over effects may be seen as a detour.

#### **6.8 The EU paradox – EU Directive 2009/81 versus Article 346 in the Lisbon Treaty.<sup>52</sup>**

The EU directive 2009/81 has, if taken at face value, the objective of facilitating an internal market for military equipment that will increase competition, reduce duplication and reduce unit cost. However, the EU Commission has singled out Article 346 in the Lisbon Treaty as a main stumbling block for such a development. Article 346 states that “Any member state may take such measures as it considers necessary for the protection of essential interests of its security which are connected with the production of or trade in arms, munitions and war material”. However, so far, it is difficult to document any significant change in the modus

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<sup>52</sup> (Source: “The EU Defence and Security Procurement Directive: A step towards affordability”, Jay Edwards, Chatham House, International Security Programme Paper ISP PP 2011/05)

operandi of the European defence equipment market. A more common view is voiced by Professor Keith Hartley at the University of York:

*The EU defence manufacturing sector is currently best described as a set of independent national markets, each with a distinctive set of supply and demand arrangements. Each member state with indigenous industrial capability ensures that it spends the majority of any investment in defence equipment domestically to protect the industry from any competition and to sustain what has long been seen as a manufacturing sector of strategic significance nationally.*<sup>53</sup>

One can argue that it is politically challenging to reduce protectionist measures in a period where unemployment rates are high and the defence industry is not working at full capacity. But from an instant political reward perspective, there will never be a good time to abolish a regime that is perceived to provide long-term contracts and employment. However, if the extra costs of the current defence industry structure is in the region of 30–40%, it is worth considering if the employment effect of these surplus funds could be higher if employed outside the defence sector. The European Commission states that structural changes in the defence industry are very much a long-term ambition. The EU countries seem at odds over offsets and can, according to EDA<sup>54</sup>, be divided into the following groups:

- France and Germany do not accept offsets as a matter of policy, and whose import levels are very limited.
- Italy, the Netherlands, Sweden and the United Kingdom are net exporters, but they also have considerable imports. They import mainly from the United States and rely on direct offsets as a tool for providing opportunities to their sizeable defence industries.
- Finland, Greece, Poland, Portugal and Spain are the main EU defence equipment importers and attach a high importance to offsets.

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<sup>53</sup> (Source: Keith Hartley, ‘A single EU market for defence equipment: organisation and collaboration’, University of York)

<sup>54</sup> (Source: E. Anders Eriksson, ‘Study on the Effects of Offsets on the Development of a EU Defence Industry and Market’, EDA, 2007)

- The other member states are relatively small actors that tend towards indirect civil offset owing to their limited defence industry capacity.

Interestingly enough, Norway has discovered to have a lot of interests in common with Finland, Greece, Poland, Portugal and Spain in these matters. Norway has also successfully engaged in large-scale defence equipment deals with Finland, Poland and Spain. Furthermore, Norwegian officials have voiced strong beliefs<sup>55</sup> in the legal viability of offset arrangements based on Article 346 and stated commitment to defend this position in European courts. In this case, we may face a situation where a non-EU member may fight an EU directive based on a Lisbon Treaty article.

## **7 Concluding Remarks**

The major problem with the European Defence industry today is over-capacity and lack of scale. The EU has stated a long-term ambition in creating more of a single market also for defence products. (Ref EU Directive 2009/81) One important driver to achieve this goal would be to align military planning more closely across borders and standardise materiel and systems to a much greater extent. This would also involve setting common operational standards and technical specifications. (Ref Interview with Rear Admiral Jørgen Berggrav, former SACTREPEUR). This approach could lead to certain countries taking a more specialized role in their areas of expertise. Germany could for example be lead on submarines, France on aviation, UK and Sweden on armoured vehicles etc. The lead countries could then have a system of sub-contractors from the second tier countries in their respective sector. Will this be an easy task to achieve and will it happen over-night? Obviously not, but the alternative is to preserve an already inefficient defence industry in Europe.

The main problem in the defence industry is not offsets as such, but the underlying protectionism and its ramifications such as fragmentation, duplication of effort and diseconomies of scale. However, offsets tend to lead to unnecessary costs, more complex purchasing criteria and offset commitments need to be managed both by the seller and the buyer. Furthermore, offsets, in particular indirect offsets, do not offer much in terms of

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<sup>55</sup> Regjeringen eget skriv

transparency. This is very problematic in terms of transactions involving countries with high corruption rate. There is currently no globally accepted regulatory framework for trade in defence systems, nor is there a watch-dog for offset arrangements. Research into the arms trade in general and the use of offsets is challenging as access to certain data is limited both due to lack of disclosure on the corporate level, but also national security restrictions in most countries.

It is tempting to describe the global defence industry by using the “Unfavourable Nash Equilibrium Model”. Nash employs traditional Game Theory, but in the Unfavourable Nash Equilibrium situation, none of the players has any incentive of acting in a co-operative manner. In this framework where the big players don’t import military products. The Norwegian offset policy is understandable. Until the big players start importing military equipment to a larger extent.

Translated into the defence industry sector this means that no single defence corporation nor any single government would have something to gain by adopting more “efficient” or “market based” behaviour. This may sound depressing at the outset, but as Governments are in a sole buyer situation in their indigenous countries, co-operation between Governments may provide a viable path. It is highly unlikely though that such initiatives will come from the industry itself as they do not enjoy a similar position.

The main findings are:

There is a great deal of uncertainty in terms of who benefits from offset arrangements. There is no clear evidence that the offsetting transactions fully compensate the buyer of military equipment for the increased costs offsets entail. It is not clear how offsets add to the final bill for the buyer, but authoritative studies indicate that the mark up is between 10 and 30%. However, this will depend on the type of equipment, the structure of the deal and the relational dynamics between the parties involved. The implementation of EU Directive 2009/81 does not seem to have enhanced cross border trade in military equipment inside EU. To the extent the EU Directive has had an impact it is more in form & terminology and less in content and increased competition. The industry players, particularly from smaller countries, still insist on offsets or similar arrangements to be in place as they see it as the best way of

securing market access to large markets. Without offsets they would likely export even less than the levels of today. The countries most Sceptical towards offsets is not the most free market/open trade countries. Rather the contrary so they don't have to import in return. The trade in defence equipment has slowed down in the EU, but has increased significantly in South East Asia and the Middle East, which are regions very much in Favour of offsets. The use of offsets or similar arrangements are therefore not likely to decrease.

The scope of the thesis has been biased towards Norway and the way Norwegian firms and authorities see the situation. If I was to look into the subject matter again, I would have liked to structure a survey covering more countries and a greater number of interviewees and facing them with a more structured interview script.

To reduce some of the cost escalation drivers related to offsets the measures to be considered are: closer co-ordination between the buying countries on the performance specifications of the equipment at an earlier stage. Less national specification requirements and adherence to stricter policies on late stage specification changes. Lower acquisition time, so the equipment is not outdated when received. More information dissemination and transparency on transaction structures and costs and finally a greater willingness to allow third party post-transaction analyses to take place.



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## Appendix

### Appendix

Even though the military materiel and weapon systems market lacks distinct boundaries and precise definitions, typically one will include the following categories:

**Maritime Warfare Systems:** frigates, destroyers, cruisers, air-craft carriers, submarines, patrol boats, landing crafts, mine warfare vessels, fleet oilers, tenders, supply ships, hospital ships, tugs and related weapon systems and command & control systems.

**Air Warfare Systems:** fighter aircraft, bomber aircraft, reconnaissance aircraft, helicopters, transport planes, missiles, satellites, radar systems and unmanned aircraft including drones.

**Land Warfare Systems:** tanks, artillery, armoured vehicles, military vans and lorries, missiles, rockets, machine guns, hand weapons, rifles, etc.

**General Military Materiel:** miscellaneous command control & information systems, personal protection systems, sensors, uniforms, ABC counter measure systems, cyber defence systems, system integration materiel, training systems and simulators, etc. In addition there is annual multibillion dollar spending on nuclear weapon systems and military aerospace systems.

Country	Offset Requirement	Multiplier	Emphasize
India	30%	0	Indigenization

S-Korea	30%	1-6	Technology
UAE	60%	Complex	Ex post profit
Brazil	100%	1-4	Technology
Australia	By case	1-6	Defence Industry
Poland	100%	2-5	Defence Industry
Finland	100%	0.3 - 3.0	Defence Industry

List of  
Multipliers

Rank		Country	Spending, 2012 (\$ b.)	Change (%)		Spending as a share of GDP (%) <sup>a</sup>	
2012	2011			2011-12	2003-12	2012	2003
1	1	USA	682	-6.0	32	4.4	3.7
2	2	China	[166]	7.8	175	[2.0]	[2.1]
3	3	Russia	[90.7]	16	113	[4.4]	[4.3]
4	4	UK	60.8	-0.8	4.9	2.5	2.5
5	6	Japan	59.3	-0.6	-3.6	1.0	1.0
6	5	France	58.9	-0.3	-3.3	2.3	2.6
7	8	Saudi Arabia	56.7	12	111	8.9	8.7
8	7	India	46.1	-0.8	65	2.5	2.8
9	9	Germany	[45.8]	0.9	-1.5	[1.4]	1.4
10	11	Italy	[34.0]	-5.2	-19	1.7	2.0
11	10	Brazil	33.1	-0.5	56	[1.5]	1.5
12	12	South Korea	31.7	1.9	44	2.7	2.5
13	13	Australia	26.2	-4.0	29	1.7	1.9
14	14	Canada	[22.5]	-3.9	36	[1.3]	1.1
15	15	Turkey <sup>b</sup>	[18.2]	1.2	-2.1	2.3	3.4
<b>World total</b>			<b>1 753</b>	<b>-0.5</b>	<b>35</b>	<b>2.5</b>	<b>2.4</b>

## **Acronyms and Abbreviations**



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