



Final Report of
06-DIM-022

Study on the effects of offsets on the Development of a European Defence Industry and Market

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12 July 2007

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Executive summary

This study is motivated by ongoing developments in European defence industry and market policies aiming at a European Defence Equipment Market (EDEM) and European Defence Technology and Industrial Base (EDTIB). The main mission of the study is to analyse the impact of offset in this regard. To be able to do that we have also done a mapping of European offset and an evaluation of the effects of offset today.

Offset conceptualisation and practices

Offsets are compensations offered by a seller to a buyer. It is applied for so called off-the-shelf procurement, i.e. for already developed systems.

In Europe, France and Germany do not accept offset as a matter of policy and some of the smallest pMS seem to have no experience of offset. But almost all the others have offset policies and often well-developed offset practices.

Offset comes in different types, the most basic division being:

- *Direct offsets*: transactions that are directly related to the defence items or services exported by a defence firm – the supplying prime of offset.
- Indirect offsets: Offset transactions that are not directly related to the defence items or services exported by the supplying prime. These are further subdivided into
 - *Defence (related) indirect offsets*
 - *Non-defence (related) indirect offsets*.

In addition to this offset can be of different categories like

- subcontracting (direct or indirect – here receiving firms enter the supply chain of the supplying or other firms cooperating with the prime),
- purchases (indirect; including ‘swapping’ i.e. both involved countries are both receiver and supplier and decide to cancel these obligations out),
- export assistance, technology transfer, training, internships, credit assistance, etc.

There are considerable differences in the business and policy practices surrounding offset. A common feature, however, is that there is a special offset agreement additional to the underlying defence equipment contract and that bidding primes have considerable flexibility in finding their partners on receiving side, at least for indirect offset.

In particular for big contracts the offset agreement will consist of many offset projects or transactions. Therefore, typically at package level offset is a mixture of types and categories.

Mapping of European offset

Relevant and reliable information on European defence equipment markets in general and offset in particular is scarce. To arrive at results we have had to use patchy and partly inconsistent data sets. With these caveats in mind we have arrived at a number of conclusions:

pMS are becoming ‘more European’ in their defence trading patterns. But still ‘non-Europe’ accounts for three quarters of pMS export and half of their import.

According to our results the underlying contract volume for offset in pMS is around € 4,200m which gives, with an average offset percent of 135%, an offset volume of € 5,600m. The overall distribution according to type is:

- Direct: 40%¹
- Indirect military: 35%
- Civil indirect: 25%.

Based on estimates from questionnaires, interviews, and literature we believe that 5-10% is a reasonable range for the direct cost of offset among pMS. Caveats are due in view of the heterogeneity of offset but with the above figures this would correspond to €200-400m p.a., i.e. 1-2 % of European defence equipment expenditure.

Offset and related defence trading patterns vary widely among pMS:

- France and Germany do not accept offset as a matter of policy. Their export is globally oriented, while their – fairly limited – import is increasingly European.
- Italy, the Netherlands, Sweden and UK is a group of net exporters but also with considerable import. As a group their import patterns have a strong transatlantic orientation while, in contrast, their export has a strong European tendency. Indirect military offset is their typical form of offset.
- Finland, Greece, Poland, Portugal, and Spain are the big European defence equipment importers. Some are also significant exporters. Their offset seems to be direct to a high degree. This may indicate some risk for duplication.
- The other pMS (in EDA-24 which was our study population) are relatively small actors both in terms of export and import. As a group their DTIB:s are small and the limited absorptive capacity means that they tend towards indirect civil offset.

The future of offset

In the study we have identified three distinct positions with regard to the future of offset from an EDTIB perspective:

1. Offset should ideally be phased out eventually. In the meantime adverse impacts on competition should be mitigated.

From this ‘damage limitation’ perspective, indirect (strictly) non-military offset was found to be preferable since it distorts markets the least, at prime and supply chain level. Furthermore there are some indications that it provides some advantage for European vs. overseas players. But there are considerable problems with this result. So the Commission in the Interpretative Communication particularly singles out this category as not covered by Article 296.

2. As (1) but in the meantime offset may also serve the development of EDTIB positively

To analyse this perspective we first identified four clusters of issues from the EDTIB Strategy and Characteristics documents of relevance for judging whether and how offset may be an

¹ This would be a very high figure if it meant 40% of the real underlying contract volume. In reality many pMS apply multipliers to reward forms of offset seen as particularly valuable.

effective and legitimate tool for EDEM/EDTIB objectives:

- Some level of ‘traditional’ military security of supply (used here as shorthand also including operational sovereignty) need to be part of EDTIB
- A ‘modern’ interdependencies-oriented view of security of supply is emerging
- EDEM is at an early stage of formation and unequal power relationships may be a problem for its development
- A strong EDTIB needs to interact with the wider economy and innovation system on a Europe-wide basis.

First ‘traditional’ military security of supply – mainly to do with in-service support – must exist also from an EDTIB point-of-view. But this does not imply that this support needs to be supplied nationally. Further, the provision of in-service support will have to entail long-term planning and commitment with a level of influence for concerned pMS governments that goes beyond what is normally understood by an industry-driven process. This we have identified as a key feature of successful offset. Therefore more direct procurement approaches would be more suitable to achieve this objective.

The remaining three clusters centre around the EDTIB characteristic: ‘More focus on Centres of Excellence (as an industry driven process) with an acceptable regional distribution.’ Based on this we ask three questions: Can offset help:

- essentially full-fledged CoE:s with difficulty to enter the primes’ supply chains due to irrational factors like national preference?²
- candidate CoE:s operating in a relevant industrial context but not fully internationally competitive?
- prospective CoE:s operating in weak industrial contexts?

Our replies to these question will be provided in what follows.

3. Offset – or at least much of offset – is not consistent with Article 296 and, hence, illegal although pending case law to this effect.

According to the legal analysis done within our study it is generally difficult to justify *any* type of offset on the basis of Article 296. Not only do Member States have to prove that the offset would promote their essential national security interests, not their economic interests. They also have to prove that the offset is *necessary* to address these essential security interests.

We fear that this may be problematic for a ‘modern’ interdependencies-oriented approach to operational sovereignty/upgrading vs. a traditionally national one. Here it would seem that a pMS operating according to the ‘national’ approach could rather easily claim that a facility is ‘*necessary* in order to address essential security interests’. If this could not be used to require direct offset it could, at least, be used for motivating direct procurement or state aid. In our understanding the pMS wanting instead to use indirect defence-related offset in striving for a ‘modern’ interdependencies-oriented type security of supply via CoE:s emerging in an industry-driven process is likely to have a worse position arguing that this is *necessary* for essential security interests.

² Currently there may be rational reasons for these preferences like the embryonic state of European security of supply and cross-border transfer regimes.

Effects of offset: prime level

There are many indications provided for both positive and negative effects of offset with regard to defence equipment markets. However, the stronger of these generally apply to the subcontractor level. Also the CoE:s that pMS may want to help by means of offset are likely to be at supply chain rather than prime level.

- The findings on offset effects on the competitiveness of European vs. overseas players on European defence equipment markets are rather inconclusive. US legislation limiting technology transfer might give an advantage to European players. Also indirect civil offset was claimed to be beneficial for European primes.
- Some respondents warn against a situation where offset would be allowed for non-EU firms but prohibited in intra-EU trade. This is hardly advocated by any European actors; to the degree that offsets are illegal this illegality lies on the receiving side irrespective of whether suppliers are European or not.
- Some respondents argue that offset leads to increased defence budgets and the opening of new prime contract markets. We were not able to find conclusive evidence on this.
- In many cases offset does not have a strong effect on contract award, e.g. due to competitors tending to deliver comparable offset packages.
- At prime level there is little evidence of offset preventing firms to compete.
- Some respondents, however, warn that a tendency in some pMS towards excessively demanding offset requirements and stringent implementation rules may become a market inhibitor in the future.
- Direct and to some extent also indirect military offset are seen as more prone to affect participation and contract award. Consequently indirect civil offset is the type least likely to distort markets.
- There are indications in some cases of lacking transparency and professionalism, which in extreme cases may even offer opportunities for corruption.

Effects of offset: supply chain level

We now return to the three cases discussed under The future of offset:

1. Essentially full-fledged CoE:s with difficulty to enter the primes' supply chains due to irrational factors like national preference

Here subcontracting with R&D content as direct or indirect defence-related offset can be helpful in introducing new competent suppliers to the defence primes, and making them into internationally competitive defence subcontractors possibly via a competence upgrade in the process.

Evaluating this situation from a European level vantage point the effects of offset are beneficial as compared to a traditional supply chain pattern of national preference. But if, on the other hand, the standard of comparison is a pan-European DTIB where primes consistently apply state-of-the-art Supply Chain Management practices Europe-wide, then offset instead turns into an impediment.

Therefore from an EDTIB perspective the role of offset in this case should be seen as transitional. With Europe-wide sourcing increasingly becoming the norm the positive market-opening role of offset will diminish in magnitude and the market-impeding role will grow. If and when EDTIB policies gradually succeed in opening up defence supply chains for Europe-

wide participation this application of offset is no longer helpful. This indicates the need to monitor developments in European defence supply chains to identify changes in the role of offset which could in turn be an important input for a process for phasing out these forms of offset as EDTIB instruments increasingly take over their role.

2. Candidate CoE:s operating in a relevant industrial context but not fully internationally competitive

Also in the case of receiving pMS with competent industrial players, but lacking well-developed international networks, subcontracting with R&D content may be an option. But also export assistance, internships etc. can be highly relevant forms of supply-chain related indirect offset.

3. Prospective CoE:s operating in weak industrial contexts

For pMS essentially lacking relevant industrial players we have found that it is difficult to use offset to help them establish internationally competitive competence centres in *existing* niches. However, offset containing R&D collaboration aiming at *emerging* DTIB niches may provide some hope for the future.

For all cases it is important to have the industry-driven logic of allowing primes to search for suitable receiving side partners. This suggests that offset should be to a large degree indirect defence related, but elements of direct offset are also good as long as they are not forced by pMS to levels that threaten the industry-driven search logic.

It is obvious that developing national facilities for the national markets will lead to duplication and overcapacity at EDTIB level. It is also very likely that using offset to promote competence centres with international ambitions also frequently has led to the same result; our data do not allow us to distinguish between these two cases. But here too allowing offset to be more of an industry-driven activity is likely to be a useful remedy.

Many other policy measures can be used for the ends discussed under **2 and 3**, e.g. the Structural Funds. But even if offsets were phased out it would likely be beneficial if some of their best cooperation-enhancing features could be preserved within new policy measures like joint development programmes.

If used to help establish EDTIB CoE:s in pMS with a ‘unacceptably’ low number of such centres, the conflict between offset and EDTIB/EDEM policies does not seem significant. Phasing out of offset for this purpose can be based on success in establishing CoE:s (and subject to future Enlargement of EU).

Information needs and availability for the development of EDEM and EDTIB

In doing this study we have found great shortage of reliable background data on European defence equipment markets and DTIB:s. For the development of an EDEM and EDTIB it is crucial that this situation is improved. In particular given the criticality of the supply chain issue – with offset likely to shift from ‘good’ to ‘bad’ at a point, better such data is particularly needed.

1 Introduction

1.1 Understanding the assignment: our working hypotheses

This study is motivated by ongoing developments in European defence industry and market policies aiming at a European Defence Equipment Market (EDEM) and Defence Technology and Industrial Base (EDTIB). Many of these developments have EDA as their focal point (CoC, CoBSC, EDTIB strategy) but also the Commission is an important actor (Interpretative Communication on Article 296, work towards the new Directive on Public Procurement).

Offsets are compensations offered by the seller to the buyer of (in our case) defence equipment of so called off-the-shelf character, i.e. already developed systems. Hence offset can be seen as an off-the-shelf counterpart of *juste retour* arrangements in collaborative development projects.

The recent EDTIB Strategy adopted by EDA Steering Board in Defence Ministers formation in May 2007 takes the following position on offset:

Many EU Member States require their defence imports to be “offset” by compensatory purchases or investments. The present structure of the European DTIB, and the still-infant status of our open market efforts, make this practice understandable; and such arrangements can provide opportunities for individual Member States to build their own skills and develop important relationships for their companies. Nonetheless, when offsets appear as a criterion in defence competitions, then these clearly are not being decided on the basis of the value of competing offers alone. This issue requires further study and analysis, and will need careful consideration over time. Nonetheless, we share the ultimate aim to create the market conditions, and the European DTIB structure, in which the practice may no longer be needed – and, meanwhile, to consider how adverse impact on competition and the DTIB might be mitigated.³

Considering that the present study started in January 2007 after a tendering process in October/November 2006 the above SB position could not influence the planning of the study.

The Terms of Reference (ToR), which did guide the planning and implementation of the study, are provided *in extenso* under Annex 1. This is a summary with particular emphasis on the EDEM and EDTIB aspects:

- [a] Provide and use as a basis for the further analysis, a general description and analysis of offset policies and practices applied by pMS [..]
- [b] Evaluate the effects of the different types of offsets on pMS defence markets and analyse consequences at European level (for the defence market and defence industrial base). [...]
- [c] Analyse offsets' impact on the future development of an EDEM and EDTIB
 1. Analyse short, medium and long term consequences of offset practices for the development of a European market and European industrial base [...]
 2. Classify the different types of offsets according to their effects on competitiveness of the EDTIB and competition in the EDEM and rank them (which are likely to be more, and which are likely to be less conducive to the development of an EDEM and EDTIB).

The working hypothesis of the study has been – quite in line with the EDTIB strategy – that offset for the time being is an unavoidable element of the European defence equipment market, but also that in an ideal EDEM offsets in intra-European defence equipment trade would

³ EDA – Defence Ministers Steering Board, May 2007

not be economically efficient.

One aspect of some significance here is that as long as each pMS is buying its own equipment, abolishing offsets in intra-European defence trade but still allowing them for non-pMS firms would create a very unfavourable competitive situation for European firms. But of course this observation does not exclude a solution such that pMS cease to accept offset regardless of origin. When the legality of offset is questioned this applies to European receivers of offset regardless of where the suppliers reside (cf. Section 4.2).

Reading the EDTIB strategy narrowly one can get the impression that the benefits of offset are entirely confined to the national level whereas at European level they are a necessary evil, the damages of which should be limited as effectively as possible. Here the terms of reference can be interpreted as painting a somewhat brighter picture where offsets can be more and less 'conducive to the development of an EDEM and an EDTIB'.

Essentially treating the ToR items in numerical order we will have EDEM and EDTIB in mind throughout the study but return in a more systematic fashion to them in the final chapter. There we will revisit the 'mitigation of adverse impact'/damage limitation perspective. However, in the conduct of the study we have been guided more by perspective of 'more and less conducive' forms of offset. And after all, we find it natural to think of the national DTIB assets as the building blocks of EDTIB: Some may be deficient, others good enough but too many. And, of course, some needed building blocks may be missing altogether.

1.2 Delimitation of study

Based on the working hypothesis and the remit of customer EDA the study is entirely geared to defence equipment market and DTIB effects of offset. A qualification to this delimitation agreed with EDA at an initial Scoping workshop is that the relevant types of firms to consider are defence *related* or *relevant*, since trying to define a concept of the pure *defence company* would be difficult and not in a relevant way capture the realities of EDTIB where naturally many firms are dual-use, and increasingly so in view of the increasing importance of generic technologies in defence supply chains.⁴ This is also indicated in the EDTIB strategy.

Much offset in defence markets in non-defence in nature. In line with the above it is not our core task to investigate, e.g., alleged or real labour market effects of such offset. It is included, however, to investigate also for such offsets the distorting effects they may have on defence equipment markets.

Further the study is restricted to defence contracts with a pMS as customer (which does include third countries as suppliers).

In particular these delimitations provide guidelines for how to delimit the collection of quantitative data.

⁴ Also the perception of civil security as an important emerging market for defence systems integrators can be cited in this regard

1.3 Protection of respondents and data

EDA and the consortium have granted respondents that information provided in questionnaires (and by implication interviews) and included in the report not be attributable to individual entities (pMS, company, etc.). Due to this questionnaire and interview responses are always reported for groups of respondents. It also means that quantitative data provided by respondents is reported only in aggregated form. This does obviously not apply to information obtained through open sources.

1.4 Outline of report

As explained in Section 1.1 this report essentially follows the sequence of tasks according to the ToR (Annex 1). After this introduction follow:

- a chapter outlining the concepts and terminology in offset (Chapter 2)
- two chapters devoted to respectively the quantitative and qualitative (legal and policy framework, practices etc. at pMS, EU, and global level) mapping of offset – [a] of ToR (Chapters 3 and 4)
- a suite of chapters achieving the effect study – [b] of ToR. (Chapters 5-8 with an outline in Section 5.1.
- a chapter on offset impacts on the future development of an EDEM and EDTIB –[c] of ToR (Chapter 9).

The study is intended to analyse effects and impact; it does not lead to policy recommendations. The chapters where this is relevant end a conclusion section and the complete main conclusions are summarised in Chapter 10.

1.5 The FOI/SCS team

| Person | Competencies and roles | Authorship |
|--|--|-----------------------------|
| Dr E. Anders Eriksson, FOI | Defence industry policy, defence planning, technology and innovation policy and strategy; project manager, pMS and industry interviews, statistical analysis | Main text, Annexes 2, 4, 5 |
| Mattias Axelson, FOI | Technology and innovation strategy, international defence industry collaboration; case studies | Chapters 5, 8, Annexes 5, 8 |
| Professor Keith Hartley, York University (SCS) | Defence economics; economic and statistical analysis | Chapter 6, Annexes 2, 3, 9 |
| Mike Mason, SCS | International defence cooperation; pMS and industry interviews, case studies | Chapters 5, 8, Annex 8 |
| Ann-Sofie Stenérus | Research assistant; questionnaire and statistical analysis | Annexes 2, 4, 6, 7 |
| Professor Martin Trybus, Birmingham University (SCS) | Public procurement law; legal analysis | Chapter 4 |
| Anna Lindberg | Research assistant; questionnaire analysis | Annex 7 |
| Martin Lundmark | European defence industry policy; pMS and industry interviews | Annex 7 |
| Dr Stefan Olsson | Political science; pMS and industry interviews | Annex 6 |

2 Offset conceptual framework

2.1 Offset taxonomy used in the study⁵

Types and categories of offset

The main **types of offset** are:

Direct offsets: Offset transactions that are directly related to the defence items or services imported by a pMS. These are usually in the form of co-production, subcontracting, training, production, licensed production, or possibly technology transfer or financing activities.

Indirect offsets: Offset transactions that are not directly related to the defence items or services imported by a pMS. The kinds of offsets that are considered ‘indirect’ include purchases, investment, training, financing activities, marketing/exporting assistance, and technology transfer. Indirect offsets are subdivided into:

- **Defence (related) indirect offsets**
- **Non-defence (related) indirect offsets.**⁶

The term **mixed offsets** refers to mixtures of types. Most offset agreements are mixed in this sense, whereas offset transactions (cf. definitions below) are mostly just one type (and category).

The term **semi-direct offsets** is used when an offset transaction contains both a direct and an indirect part, typically such that an offset receiving firm gets a subcontract which includes deliveries both to the batch contracted by the receiving country and to those for other buyers.

Offsets can also be characterised in terms of **categories of offset**:

- Subcontracts (normally based on business-to-business agreement)⁷
- Co-production (direct offset; based on government-to-government agreement)
- Purchases (indirect offset; this includes offset swapping – cf. below)
- Export assistance (indirect offset)
- Technology transfer (both types)
- Training (both types)
- Licensed production (both types)
- Investment (both types)
- Credit assistance/financing (both types).

Offset agreements and transactions

- An **offset agreement** is the contract specifying the offset package related to a spe-

⁵ This builds on the taxonomy from the EDA pMS questionnaire, which with a few modifications is the same as in the US DoC BIS reports. For useful definitions of concepts see Appendix G of the 2007 report (<http://www.bis.doc.gov/DefenseIndustrialBasePrograms/OSIES/Offsets>). Some further additions and refinements were made based on interview findings.

⁶ For ‘defence related’, see Section 1.2.

⁷ According to US DoC subcontracts are only direct offset. We deviate from that usage since we want to distinguish between indirect offset that is supply-chain related (but by definition not in projects directly related to the procurement contract), and purchases where a firm in the receiving country acts as prime contractor.

cific defence import contract

- An **offset transaction** is an activity that offset supplier (also called fulfiller) claims credit for in fulfilment of the offset agreement.

An offset agreement may lead to offset transactions of many different types and categories.

Value of offset

The **credit value of offset** may be different from the **actual value** such that the latter is multiplied by a **multiplier** to reward categories of offset, which are deemed as particularly valuable for the receiving pMS. Some pMS apply extremely high multiplier values meaning that high offset percentages are sometimes quite exaggerated in terms of actual value of offset transactions (cf. Section 3.2). A few pMS sometimes use multipliers less than one.

Offset packages in bidding

There are different ways how offset may be considered in a tendering process. One is to include them as **condition for participation**, meaning that failure to include an offset package, typically meeting certain requirements, means that the bid is disqualified. The other main approach is to have offset in the **award criteria**, i.e. among the qualified bids offset is one of the parameters (along with cost and performance) that are evaluated to order the bids according to their economic advantageousness. Some countries accept offset without having it as either of the two.

Incentives for fulfilment

In most pMS **penalties** are used if suppliers do not fulfil their offset obligations within the timeframe allotted by the agreement. One approach is that the failing supplier has to pay a percentage of the offset activities unfulfilled (percentages differ widely).

Another form of penalty is to extend the term and increase the volume of the obligation in cases of failed fulfilment.

Instead of penalties there can be **best efforts clauses** meaning that the incentive to fulfil offset obligations is reputation-based.

Additionality and causality

Some pMS see it as important to count as offset only such business that is explicitly caused by the equipment contract in question and which adds business volume in the receiving country to what would otherwise have occurred. In line with this is also to credit only value added as offset (i.e. to subtract import of inputs).

A practice somewhat contrary to the above thinking is **offset ‘banking’**. Under this practice offset credits accumulated before the conclusion of a contract – e.g. ‘over-fulfilment’ of previous offset commitments – can be counted retroactively against the new contract. Another term for this practice in connection with a pre-defined foreseen contract is **pre-offset**.

Offset ‘swapping’ is a relative of banking. This occurs when Country A buys equipment from Country B and Country B from Country A. Then swapping means to cancel (part of) the offset obligations that would otherwise have arisen.

2.2 A caveat on taxonomy

It is suggested already by Section 2.1 that offset practices differ widely between countries. In addition to this it should be kept in mind that the same taxonomy can be used differently by different states and persons.

First many prefer not at all to use the term ‘offset’ but prefer, e.g., Industrial Cooperation (IC) or Industrial Participation. However, most people readily accept to discuss, e.g., IC under the heading of offset.

A more fundamental delimitation problem is the situation that offset-like activities – e.g. technology transfer or training – can be treated within the equipment procurement contract itself rather than in a separate offset (or IC etc.) agreement (cf. Section 9.2). This is the natural way of handling knowledge necessary to operate the procured system, but there is often a grey-zone here.

Further, offset is defined as compensation arrangements for off-the-shelf procurement. Since major defence contracts are seldom if ever off-the-shelf in the strictest sense of the word, but will entail some development efforts, also the bordering line between offset and *juste retour* in collaborative development projects is not entirely crisp.

Also where people talk about offset one may discern considerable variation in taxonomy usage. There are, e.g., pMS that operate with broader definitions of direct offset than the one above, like counting all defence offset as direct (and maybe even offset to related civilian sectors like aerospace).

3 Mapping European offset

In this chapter we provide our answer to [a.3] and [a.4] of the Terms of Reference (see Annex 1).

Section 3.1 sets the scene by compiling a set of background data on European defence procurement and defence related industries. Section 3.2 is the actual mapping of offset and Section 3.3 provides the main conclusions.

3.1 European defence equipment export and import

In order to map the quantitative importance of offset it is also necessary to have a grasp of the volume of international trade in defence equipment. The standard source of information on international trade in major defence equipment is the SIPRI Yearbook (Chapter 10). FOI/SCS have had access not only to the published information but also to SIPRI databases and archives. The information SIPRI publish is ‘trade indicators’; since reliable information on contract value is not always available in the open sources, SIPRI use their own standard values to assess the economic value of trade; these data do not claim to capture the true financial volume. Instead they are intended to be temporally consistent thus allowing changes in trade volume to be detected. But in the SIPRI database also contract value figures from open sources are entered as well as open source information on offset (this is also partly published).

Further, we found it useful to have access to a broader background of defence expenditure and procurement data. One of the reasons for this was that we wanted to search for regularities between offset and other variables, e.g. as DTIB performance indicators. Another was to be able to ‘triangulate’: the quality of the data from SIPRI and our study must be described as uncertain and therefore we have sought external references to validate them.

This background information is collected in Annexes 2 and 3. Annex 3 also reports the statistical analyses we tried. This background information will also be of relevance at various places in the study.

As for the validation of the SIPRI data the EDA defence equipment procurement data is the most important comparison, unfortunately it is available only for 2005 (Annex 2, Col. A). The only obvious inconsistency regards Greece, where SIPRI defence import data are considerably *higher* than EDA procurement (Cols A vs. E and R). For all other pMS equipment procurement is considerably higher. This is natural since procurement also includes domestic production and import of defence equipment not classified as ‘major’ by SIPRI – or simply not captured in their data collection.

These differences in definition and data collection methodology between EDA and SIPRI data mean that domestic production (Col. Q) compares apples and pears, which also means that the derived quantities export share (Col. S) and ‘labour productivity’ (Col. U) must be interpreted with care. In the latter case the denominator, defence industry employment (Col. N), is again uncertain with regard to comparability.

With these caveats it is still possible to draw tentative conclusions of general interest to our study:

- The importance of other European countries as buyers and sellers of defence equipment from European manufacturers is increasing.
 - In spite of this the European share of European export was as low as 28 percent 2000-2006 (up from 21 percent 1980-2006; Cols J and M).
 - For European import European firms accounted for a slight majority – 51 percent 2000-2006 (up from 37 percent 1980-2006; Cols D and G).
- The list of the biggest intra-European exporting nations was somewhat of a surprise at least to us: (1) Germany; (2) The Netherlands, (3) Sweden; (4) France; (5) UK (Annex 3, Table 8).

We also included in our study data on high-tech trade (less pharmaceuticals; export as Col. P). The original idea was to get some type of handle on the DTIB relevant subcontractor base; note that SIPRI data only records prime contracts. This did not prove a useful avenue as such, but at least it gives a picture of the very limited size of defence as compared to the total high-tech economy (Cols O vs. P).

We also found the background data useful for grouping pMS for our analyses. This is the grouping we are using:

1. Predominantly defence equipment exporters: France, Germany
2. Net defence equipment exporters with substantial import: Italy, Netherlands, Sweden, UK
3. Major defence equipment importers: Finland, Greece, Poland, Portugal, Spain
4. All other pMS (EDA-24).⁸

The border lines are not entirely crisp: according to our data Germany had an import share 2000-2006 of 7 percent vs 11 percent for UK and 10 percent for Sweden (Col. R). But for our purposes also the difference in position towards offset (cf. Chapter 4) made the used grouping logical.

Also the border line between the smallest importer 2000-2006 in Group 3, Portugal, and the biggest in Group 4, The Czech Republic, was marginal. But considering also 1980-2006 data very clearly suggests the choice we did (Annex 2, columns B and D).

At group level one interesting feature is that Group 2 is a leader in increased European export share (Cols J vs. M) but a laggard in terms of European imports (Cols D vs. G).

3.2 Quantitative analysis of offset

Analysis

The quantitative analysis of offset is based on data for 2000-2005, but data going back to 1991 has been used for comparisons, and when 2000-2005 data is missing for a pMS.

The first step of the quantitative analysis of offset was to estimate the **volume of underlying defence equipment contracts**.

⁸ The tendering process for our study was before the acquisition of Bulgaria and Romania to EU, and even at inception had they not yet joined EDA.

Based on the SIPRI information described in Section 3.1 we included in our questionnaire information on the contracts concerning the entity (pMS or firm) in question, for which SIPRI data indicated offset. We also did a random sample of the full SIPRI database of defence equipment contracts for the concerned entity and asked in the questionnaire whether offset had in fact been applied for any of those contracts where SIPRI did not indicate this. It can be mentioned that the value of the contracts where offset is indicated in the SIPRI material is around 50 percent of the total trend indicator value.

Based on questionnaire replies and other information made available to us in interviews and questionnaires we understood that the actual volume of offset is considerably higher than the SIPRI-indicated one. The reliability of the SIPRI material varies considerably between pMS, we even learnt about offset deals linked to defence equipment contracts not even included in the material underlying the SIPRI trend indicators. On the other hand the SIPRI material was reliable in the sense that there were few ‘false positives’ – indicated but disputed cases of offset. On the whole we were led to believe in a considerably higher volume than the one indicated by the SIPRI material. The US DoC (2007) material published on the Internet based on mandatory reporting from US firms is a disputed source of information. Correcting for some obvious sources of error we found the US data to be surprisingly well aligned with the SIPRI trend indicator data at pMS level.⁹

In sum we are suggesting to use the full SIPRI trend indicator value to estimate underlying contract value for those pMS that accept offset. This may be somewhat on the high side; the analysis of the above-mentioned random sample indicated some 80 percent of the SIPRI trend indicator value. But on the other hand we have the issue of offset in equipment contracts not covered at all by SIPRI; as mentioned above we have no systematic information on this but some indications that it exists.

The next step was to estimate **offset percentages**. This was done based on the SIPRI offset indicated cases plus additional information from questionnaires and interviews. With the above assumption on the volume of underlying contracts we are basing the estimates of percentages on slightly above half the total volume of underlying contracts. Considering that SIPRI data are skewed with respect to pMS coverage – in fact such that pMS with high offset percentages get better coverage (quite natural considering that SIPRI information is mainly from the trade press) – we estimated percentage per pMS and weighted these percentages with the SIPRI trend indicators per pMS. On the whole we believe the percentage estimates to be quite reliable at European level, but not for all pMS.

The final part of the analysis was to estimate **the breakdown of offset by type and category**. Here the sample of cases with such information available based on questionnaire/interview and trade press information was quite limited, particularly with regard to the information on category; the information we have based on a handful of cases is not worth printing. The information on type is based on some 30 import contract cases plus aggregated data for a couple of countries. This means that even big defence equipment import countries may be represented by a single contract in the sample. Therefore we have tried alternative methods of cal-

⁹ The errors are due to (i) the US DoC data crediting the whole contract value to contract year whereas SIPRI trend indicators credit actual delivery, and, probably, (ii) US DoC data crediting the prime’s home country for offset transaction that US firms supplied as subcontractor. The latter was suggested in interviews; we have searched but not received confirmation on this from US DoC.

culatation to get a grasp of the uncertainties involved, viz. aggregating by country – despite the sometimes very scant data – and by group. For some countries we also have problems with the border line between direct and indirect military offset (cf. Section 2.2) and between defence vs. non-defence military offset. Generally speaking we found weighting by country to be more reliable than the alternative and did a case by case reasoning on the other issues.

Table 3.1: European offset based on 2000-06 SIPRI and study data (values in € (2007))

| | Group 1: DE, FR | Group 2: IT, NL, SE, UK | Group 3: EL, ES, FI, PL, PT | Group 4: all other EDA-24 | Sum/Average |
|---|----------------------------|--|--|--|--------------------|
| A. Defence equipment import contracts p.a. (SIPRI data) | 297 | 1 461 | 2 346 | 374 | 4 478 |
| B. Defence equipment import contracts with offset p.a. | | 1 461 | 2 346 | 374 | 4 181 |
| C. Offset percentage: average (pMS range) | | 122% (100-178*) | 145% (81*-230) | 124% (72-237) | 135% |
| D. Offset agreements p.a. | | 1 783 | 3 400 | 465 | 5 647 |
| E. Direct offset: share of total (uncertainty range) | | 35% (27-35) | 44% (13-48) | 3% | 38% |
| F. - value p.a. | | 624 | 1496 | 12 | 2 131 |
| G. Defence indirect offset: share of total (uncertainty range) | | 55% (44-58) | 28% (7-34) | 20% (2-21) | 36% |
| H. - value p.a. | | 980 | 952 | 93 | 2 025 |
| I. Civilian non-defence offset: share of total (uncertainty range) | | 10% (7-29) | 28% (28-52) | 77% (76-95) | 26% |
| K. - value p.a. | | 178 | 952 | 358 | 1 488 |

* Particularly uncertain data (based on single observations)

Results

The results from the analysis are presented in Table 3.1 for the four groups of pMS defined in Section 3.1. The ranges for pMS and due to measurement uncertainty are commented above.

As already said we are assuming Defence equipment import contracts with offset (B) to be equal to the total SIPRI trend indicator value (A).

The offset percentages (C) we believe to be reasonable at group level. Note, however, that the range within each group in offset percentage is very wide. As we have said, the breakdown according to type of offset is considerably less certain (E, G, I) and consequently also the corresponding offset values per type (F, H, K).

It turns out that the four – or rather three (2– 4) groups differ considerably in how they accept offset. For Group 2 indirect defence offset is clearly the leading type. For Group 4 indirect civil is overwhelmingly the biggest type, whereas for Group 3 direct leads the field (although the uncertainty margins are particularly wide here).

This indicates – of course with individual variation within groups – that Group 2 uses offset to facilitate defence industry specialisation and a pattern of mutual interdependencies. Given their import patterns (cf. Annex 2, Col. G), however, more in a transatlantic context than a European one.

Group 3, assuming that the leading role for direct offset is true, is building a national DTIB geared to the equipment they are currently buying. This is problematic from an EDTIB perspective since it carries high risks for duplication and overcapacity.

Group 4 countries as a rule do not have the absorptive capacity in their national DTIBs to handle defence offsets and therefore instead try to use their market power to gain other perceived benefits from their defence import via indirect civil offset.

We can also see from the table that the offset percentage is frequently far above 100 percent. This is a matter of considerable debate. Comparing data for 1991-2000 with 2001-2005 there is a strong tendency to increasing offset percentages, in particular for very big contracts. In our opinion that debate is, however, somewhat exaggerated. Typically high offset percentages are due not to increasing power for buying countries but to either or both of:

- High offset multipliers, such that the ‘actual value’ of an offset transaction is perhaps just a third, or a fifth or a tenth, of the credited value. Even though use of multipliers in actual contracts is another area where our information is quite limited we have reason to believe that this is the explanation why Group 3 countries can have such high figures for direct offset – around two thirds of the underlying contract volume. With multiplier one this would be impossible save for licensed production.
- High content of indirect offset in categories ‘cheap’ to the offset supplying prime like purchases or investments.

Therefore it is in no way certain that a pMS getting 72 percent offset has been worse at negotiating than one that gets 237 percent.

Statistical analysis

As explained in Section 3.1 we have done statistical analyses to search for patterns, e.g. linking offset levels to performance variables. These analyses, reported in Annex 3, have not been able to establish any such links. This is also not too surprising. As we have seen offset practices vary strongly between pMS. We suspect that offset type would be the most interesting offset related variable for future research. But as commented above information on that is fairly incomplete in our study. For the time being the upshot of the statistical analyses is support for our findings on the heterogeneity of European offset.

3.3 Summary and conclusions

Relevant and reliable information on European defence equipment markets in general and offset in particular is scarce. To arrive at results we have had to use patchy and partly inconsistent data sets.

With these caveats in mind we have arrived at a number of conclusions:

pMS are becoming ‘more European’ in their defence trading patterns. But still ‘non-Europe’

accounts for three quarters of pMS export and half their import.

According to our results the underlying contract volume for offset in pMS is around € 4,200m which gives, with an average offset percent of 135%, an offset volume of € 5,600m. The overall distribution according to type is:

- Direct: 40%
- Indirect military: 35%
- Indirect civil: 25%.

Offset and related defence trading patterns vary widely among pMS:

- France and Germany do not accept offset as a matter of policy. Their export is globally oriented, while their – fairly limited – import is increasingly European.
- Italy, the Netherlands, Sweden and UK is a group of net exporters but also with considerable import. As a group their import patterns have a strong transatlantic orientation while, in contrast, their export has a strong European tendency. Indirect military offset is their typical form of offset. This indicates a striving for defence industry specialisation and a pattern of mutual interdependencies, perhaps, however, more in a transatlantic context than a European one.
- Finland, Greece, Poland, Portugal, and Spain are the big European defence equipment importers. Some are also significant exporters. Their offset seems to be direct to a high degree. This may indicate some risk for duplication.
- The other pMS (in EDA-24 which was our study population) are relatively small actors both in terms of export and import. As a group their DTIB:s are small and the limited absorptive capacity means that they tend towards indirect civil offset.

High offset percentages are an issue of some concern. We found that there was a tendency for these to increase over time, in particular for major contracts. In our opinion the debate is, however, somewhat exaggerated. Typically high offset percentages are due not to increasing power for buying countries but to either or both of:

- High offset multipliers, such that the ‘actual value’ of an offset transaction is perhaps just a third or, even fifth or e a tenth, of the credited value.
- High content of indirect offset in categories ‘cheap’ to the offset supplying prime like purchases or investments.

4 Policy and legal context of offset

In this chapter we provide our answer to [a.1] and [a.2] in the ToR. The chapter is structured as follows:

- International law (Section 4.1)
- European policy and legal context (Section 4.2)
- pMS policy and legal context (Section 4.3)
- Business sector perspectives on offset policy (Section 4.4)

Section 4.5 gives the main conclusions of the chapter.

In addition to desk-research and an interview with the Commission the chapter is based on questionnaire and to some extent general interview responses (see Section 5.2). For a more extensive summary of these, see Annex 6 (Overview of offset policies and practices) and Annex 7 (Summary of questionnaire responses; Section 4 Future of offsets).

4.1 International law

The EU and its Member States are parties to the Government Procurement Agreement (GPA) of the World Trade Organisation (WTO) and the EC public procurement directives discussed under the next heading below comply with the requirements of this agreement.

The GPA expressly rules out offsets.¹⁰ According to Article XVI (1) GPA entities shall not, in the qualification and selection of suppliers, products or services, or in the evaluation of tenders and award of contracts, impose, seek or consider offsets.”¹¹

However, armaments are subject to a special exemption. According to Article XXIII GPA “[n]othing in this Agreement shall be construed to prevent any Party from taking any action [...] which *it considers necessary* for the protection of its *essential* security interests relating to the procurement of arms, ammunition or war materials, or to procurement *indispensable* for national security or for national defence purposes [emphasis added].” This provision is comparable to similar armaments exemptions in the other WTO agreements.¹² Moreover, Article XXIII (1) GPA is not applicable to those member States which have already excluded arma-

¹⁰ The WTO defines offsets in government procurement as “measures used to encourage local development or improve the balance-of-payments accounts by means of domestic content, licensing of technology, investment requirements, counter-trade or similar requirements.”

¹¹ However, according to Article XVI (2) GPA “[...] having regard to general policy considerations, including those relating to development, a developing country may at the time of accession negotiate conditions for the use of offsets, such as requirements for the incorporation of domestic content. Such requirements shall be used only for qualification to participate in the procurement process and not as criteria for awarding contracts. Conditions shall be objective, clearly defined and non-discriminatory. They shall be set forth in the country’s Appendix I and may include precise limitations on the imposition of offsets in any contract subject to [the GPA]. The existence of such conditions shall be notified to the Committee and included in the notice of intended procurement and other documentation.”

¹² See Article XXI (b) General Agreement on Tariffs and Trade (GATT), Article XIV bis General Agreement on Trade in Services (GATS) and Article 73 Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS): “Nothing in this Agreement shall be construed [...] (b) to require any contracting from taking any action which it considers necessary for the protection of its essential security interests [...]”.

ments in their Annexes.¹³ While the exemption would probably have to be specifically invoked by the member State in question and its use be reviewed by WTO panels or the Appellate body, such a case has not occurred yet. Hence its interpretation is difficult. The wording “*considers necessary*” rather than “*necessary*” suggests that compared to other exemptions in the GPA a different and more flexible standard of review is intended, probably only ruling against acts of abuse (bad faith).¹⁴ However, the wording “*essential security interests*” and the express references to “*arms, ammunitions, and war material*”, and “*procurement indispensable for national security or for national defence purposes*” clearly set limits to its use.¹⁵ Nevertheless the provision let to a *de facto* categorical exemption of armaments from the GPA and its prohibition of offsets.

4.2 European policy and legal context

European Community law

In contrast to the GPA, neither the provisions of the EC Treaty nor those of the relevant EC Public Sector Procurement Directive 2004/18/EC¹⁶ expressly rule out offsets. However, offsets clearly represent violations of the core free movement of goods and services regimes of the EC Treaty (Articles 28 and 49 respectively), unless justified. Furthermore, they can violate the equally fundamental freedom of establishment and other crucial principles of the European Community law, most notably the prohibition of discrimination on grounds of nationality. Moreover, the specific rules of the EC Public Sector Procurement Directive, in particular those on the selection of suppliers and service providers and the evaluation of tenders do not allow taking offsets into account. Most notably contracts should be awarded on the basis of objective criteria which ensure compliance with the principles of transparency, non-discrimination and equal treatment and which guarantee that tenders are assessed in conditions of effective competition. As a result, it is appropriate to allow the application of two award criteria only: “the lowest price” and “the most economically advantageous tender”.¹⁷ While the rules on the latter accommodate economic considerations other than price, such as quality, delivery time, and after sale service, they do not allow taking offsets into account. As a result the contracting entities on the national, regional, and municipality level (and the utilities) in the Member States of the EU do not require offsets in their supply, services, and works contracts.

However, armaments are subject to a special exemption. Article 296 (1) (b) EC Treaty allows any Member State of the European Union “to take such measures as it considers necessary for the protection of the essential interests of its security which are connected with the production

¹³ See S. Arrowsmith, *Government Procurement in the WTO* (Kluwer Law International: London, 2003) at 148.

¹⁴ Ibid., at 149. Schloemann and Ohloff, “Constitutionalisation and Dispute Settlement in the WTO: National Security as an Issue of Competence” (1999) 93 *American Journal of International Law* 424 at 443; Akande and Williams, “International adjudication of national security issues: what role for the WTO?” (2002) 43 *Virginia Journal of International Law* 365-404.

¹⁵ US International Trade Commission, 6 MTN Studies, *Agreements being negotiated at the MTN in Geneva*, prepared for the US Senate Committee on Finance, International Trade Subcommittee, 96th Congress, 1st Session (Comm. Print 96/27, 1979) at 156 as cited by A. Reich, *International Public Procurement Law: The Evolution of International Regimes on Public Purchasing* (Kluwer Law International: London, 1999) at 115-116.

¹⁶ Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts [2004] OJ L-134/114.

¹⁷ Recital 46 to Directive 2004/18/EC.

or trade in arms, munitions and war material [...]”. Moreover, Article 296 (1) (b) EC Treaty provides that “[...] such measures shall not adversely affect the conditions of competition in the common market regarding products which are not intended for specifically military purposes.” In 1958 the Council drew a list of products to which Article 296 (1) (b) EC Treaty applies¹⁸ according to Article 296 (2) EC Treaty.¹⁹ There have been no amendments since then. Products on this list are also called warlike or hard defence material. However, it is not important whether a product can be classified as warlike hard defence material; decisive for the application of Article 296 (1) (b) EC Treaty is whether the product is stipulated on the Council List of 1958. This provision represents a possibility for Member States to derogate from the application of the Treaty and can justify Member State measures taken for national security reasons in connection with armaments. The use of the derogation is subject to control mechanisms through the European Commission,²⁰ other Member States, and the European Court of Justice.²¹

In the judgment of *Commission v Spain* the European Court of Justice clarified that this provision does not represent an automatic or categorical exclusion of armaments from the application of the Treaty.²² As a derogation it needs to be narrowly defined,²³ because “[i]f every provision of Community law were held to be subject of a general proviso, regardless of the specific requirements laid down by the provisions of the Treaty, this might impair the binding nature of Community law and its uniform application”.²⁴ Member States need to specifically invoke and substantiate the exemption and prove that a situation justifying its use actually exists.²⁵ Therefore the judgment in *Commission v Spain* clarified the narrow interpretation of Article 296 (1) (b) EC Treaty, an interpretation recently reiterated in an Interpretative Communication of the Commission.²⁶ Despite this narrow interpretation Member State practice before and after the judgment in *Commission v Spain* reveals that many Member State defence procurement authorities treat Article 296 (1) (b) EC Treaty as an automatic or categorical exclusion of armaments from the regime of the EC Treaty.²⁷

¹⁸ Council-Decision 298/58 of 15 April 1958 (not published).

¹⁹ Article 296 (2) EC reads:

“The Council may, acting unanimously on a proposal from the Commission, make changes to the list, which it drew up on 15 April 1958, of the products to which the provision of paragraph 1 (b) apply.”

²⁰ Article 298 sentence 1 EC Treaty reads:

“If measures taken in the circumstances referred to in Articles 296 and 297 have the effect of distorting the conditions of competition in the common market, the Commission shall, together with the State concerned, examine how these measures can be adjusted to the rules laid down in the Treaty.”

²¹ Article 298 sentence 2 EC Treaty:

“By way of derogation from the procedure laid down in Articles 226 and 227, the Commission or any Member State may bring the matter directly before the Court of Justice if it considers that another Member State is making improper use of the powers provided for in Articles 296 and 297. The [ECJ] shall give its ruling in camera.”

²² Case C-414/97, [1999] E.C.R. I-5585, [2000] 2 C.M.L.R. 4.

²³ Case C-222/84 *Marguerite Johnston v Chief Constable of the Royal Ulster Constabulary* [1986] ECR 1651, [1986] 3 CMLR 240, at paragraph 26. See also Case C-13/68 *SpA Salgoil v Italian Ministry of Foreign Trade* [1968] ECR 453, at 463, [1969] CMLR 181, at 192 and Case C-7/68 *Commission v Italy* [1968] ECR 633 at 644.

²⁴ Case C-222/84, *ibid.* note 2, at paragraph 26.

²⁵ See on the interpretation of Article 296 (1) (b) EC in detail: M. Trybus, “The EC Treaty as an instrument of European defence integration: judicial scrutiny of defence and security exceptions”, 2002 (39) *Common Market Law Review* 1347-1372.

²⁶ Interpretative communication [of the Commission] on the application of Article 296 of the Treaty in the field of defence procurement, COM (2006) 779 final, 7th December 2006, not yet reported.

²⁷ *Ibid.*

Article 10 Directive 2004/18/EC provides that the Directive “[...] shall apply to public supply, service and works contracts awarded by contracting authorities in the field of defence, subject to Article 296 of the Treaty.” Hence it refers specifically to Article 296 EC Treaty and accommodates the narrow interpretation of the Treaty provision.²⁸ Article 10 Directive 2004/18/EC and Article 296 EC Treaty are parallel derogations on the secondary and primary European Community law levels respectively.

Article 10 of the Directive and 296 (1) (b) of the Treaty can allow the use of offsets in relation to contracts regarding war material, but only if this is a necessary measure for the protection of the essential security interests of the Member State in question.

However, according to the interpretation of Article 296 (1) (b) EC Treaty clarified in *Commission v Spain* these provisions do not represent automatic or categorical exemptions from the regimes of the Procurement Directive and EC Treaty, even when most Member States appear to follow this interpretation. The lawfulness of offsets needs to be decided on a case-by-case basis. Hence a general practice of requiring offsets for armaments contracts without appreciation of the individual case is unlawful under European Community law.

Moreover, it is generally difficult to justify any type of offset on the basis of Article 296 (1) (b) EC Treaty and Article 10 Directive 2004/18/EC since Member States not only have to prove that the offset would promote their essential national security interests, not their economic interests. They also have to prove that the offset is necessary to address these essential security interests, leaving them no other choice than requiring the offset to safeguard their essential national security interest.

In addition, Article 296 (1) (b) EC Treaty which provides that “[...] such measures shall not adversely affect the conditions of competition in the common market regarding products which are not intended for specifically military purposes”, will make it impossible to justify indirect civil offsets²⁹ since they necessarily affect competition regarding products which are not covered by Article 296 (1) (b) EC Treaty.

In summary, it is very difficult to justify offsets in defence procurement on the basis of Article 296 (1) (b) EC Treaty. Offset arrangements violate not only the Public Sector Procurement Directive 2004/18/EC, but the EC Treaty itself, unless this is justified as a necessary measure to safeguard essential national security interests.

European policy context

It is well-known that defence and national security issues were not originally included in the remit of the European Community (originally EEC). This also had far-reaching effects for defence industry and market issues – cf. above on Article 296 (previously Article 223 of the Treaty of Rome). However, the defence industry is a concern not only for national security but also for industry and competitiveness policies and hence there is already a substantial history of (in the current terminology) First Pillar initiatives with regard to defence and defence-

²⁸ See on these provisions in detail: M. Trybus, “Procurement for the armed forces: balancing security and the internal market”, (2002) 27 *European Law Review* 641-662.

²⁹ COM (2006) 779 final:

“Indirect non-military offsets, for example, which do not serve specific security interests but general economic interests, are not covered by Article 296 TEC, even if they are related to a defence procurement contract exempted on the basis of that Article.”

related industries. This is particularly true for aerospace where the links to commercial aerospace industries are of course prominent.

The general tendency here as in most debate on European defence industry is to identify effects of and propose remedies for the fragmentation of the European defence industrial base. The effects essentially fall into two categories:

- Shortfalls in the competitiveness of the European defence industry *per se* and the cost-effectiveness of European defence procurement³⁰
- Shortfalls – particularly as compared to the US – of European defence industry to facilitate high-tech development and innovation in the economy at large (due to the technological synergies between civil and defence activities).^{31 32}

In parallel to the EC line of work towards a more integrated European defence industry there have also been many other initiatives. Historically the Western European Union was a nexus of such initiatives. But there are also many initiatives made by more restricted groupings of countries, in particular by leading European powers. In addition to many bi- or multilateral procurement programmes come more generic structures for cooperation like LoI and OC-CAR.

Another highly relevant process is the formation, typically in several steps starting from collaborative programmes of multinational European defence companies like EADS, MBDA and Thales.

One of the most prominent features of the last few years has been the growing ambitions within the Second Pillar European Security and Defence Policy, and with regard to the current context the extension of these ambitions also to long-term capability development, R&T, procurement, and defence industry and market issues – all under the umbrella of EDA. This means in particular that defence industry issues – including offset as epitomised by this study – are pursued from different angles both by EDA and the Commission.

Notable achievements so far by EDA include the launching of the Intergovernmental Regime to Encourage Competition in the European Defence Equipment Market with key elements being the Code of Conduct on Defence Procurement (CoC) and the Code of Best Practice in the Supply Chain (CoBPSC). Another element of relevance to the present context is the Framework Arrangement for Security of Supply Between Subscribing Member States (sMS) in Circumstance of Operational Urgency. Most recently EDA Steering Board in Defence Minister formation launched Strategy for the European Defence Technological and Industrial Base, see Section 9.1.

³⁰ Often cited as path-breaking in this regard is Hartley, K. & Cox, A. "The Costs of Non-Europe in Defence Procurement" Brussels: Commission of the European Communities, July 1992.

³¹ This perspective has had its ups and downs. After a long period of strong belief in defence-led spin-off this perspective came in some disrepute during the 80s when growth was lagging in the US and strong is less defence-oriented economies like Japan and Germany. Today many argue that the US defence economy had indeed many wasteful aspects but that reforms, notably stressing insertion of commercial technologies, have now considerably transformed this situation.

³² Relevant Communications from the Commission: COM(96) 10 24.11.1996 "The challenges facing the European defence-related industry, a contribution for action at European level", COM(97) 466 24 September 1997 "The European aerospace industry meeting the global challenge," and COM(97) 583 04.12.1997 "Implementing European Union strategy on defence-related industries."

Returning again to the Commission and its current interest in the issue of offset, so far culminating in the Interpretative Communication (cf. previous section) it can be said that whereas the EDA Intergovernmental Regime is an attempt to achieve a better functioning EDEM within the area of application of Article 296, the role of the Commission – and of course the Court – is the delimitation of this area. A current issue is also in a new Procurement Directive to allow for specificities of defence not directly to do with essential security interests.

Whereas the Communications from the late 90s make little mention of offset, and in one case even treat the subject in a rather positive way,³³ the Commission documents from the present decade give more emphasis to the topic, typically discussing it in terms like “the gradual elimination of practices such as direct and indirect offsets” mentioned in the Green Paper.³⁴

In the consultation launched by the Green Paper

“almost all stakeholders underlined that procurement was just one aspect of an EDEM construction. They highlighted the necessity for any Community initiatives in the field of procurement law to be accompanied by actions in other areas; this was seen as a necessary precondition for an efficient internal defence market and for the creation of a level playing field for industry. In this context, stakeholders mentioned arrangements for security of supply, transfers and transits, harmonisation of export policies, state aid, offset practice and the full privatisation of all European defence firms.”³⁵

In Chapter 9 we return to these interconnected issues in the context of the EDTIB Strategy and other related EDA initiatives.

4.3 pMS policy and legal context

National laws of the participating Member States

In about half of the Member States offsets are regulated in binding laws in the form of acts of parliament (Poland, Lithuania), Presidential or Royal Decrees (Greece, Belgium), or ministerial regulations.³⁶ Cyprus, Estonia, Germany, and Malta have no offsets policy and therefore no binding laws on the matter, whereas the offsets policies in the Netherlands, the United Kingdom, Ireland, France, and Latvia are not legally binding. Italy and the Czech Republic decide on offsets on a case-by-case basis on the basis of ministerial directives.

In the Czech Republic and Sweden adherence to the offsets arrangements is a requirement of participation. In Hungary, Finland, Greece, Poland, Belgium, Slovakia, Slovenia, and Portugal offsets are an award criterion taken into account as one aspect of the tender evaluation process. In the Netherlands, the United Kingdom, Malta, Latvia, Ireland, France, Germany, Cyprus, Estonia, and Lithuania it is not taken into account as an award criterion. However, in Lithuania the winning bidder can be eliminated for the benefit of the runner-up if he or she does not accept the required offset arrangements. The importance of offsets as one of many

³³ COM(97) 466 op. cit.

³⁴ COM(2004) 608 23.09.2004 “Green Paper: Defence procurement.” The Green Paper was preceded by COM(2003) 113 11.3.2003 “European Defence – Industrial and Market Issues: Towards an EU Defence Equipment Policy.” The results of the consultations are summarised in COM(2005) 626 6.12.2005 “Communication...on the results of the consultation launched by the Green Paper on Defence Procurement and on the future Commission initiatives.”

³⁵ COM(2005) 626 op. cit.

³⁶ Hungary, the Czech Republic, Sweden, Slovakia, Slovenia, Portugal, Italy, Finland.

award criteria varies in those Member States where it is a criterion, ranging from 12.5 per cent in Portugal, to 15 per cent in Belgium, or 20 per cent in the Czech Republic.

Arbitration clauses for offsets arrangements exist in Greece, Finland, the Czech Republic, Poland, Belgium, Sweden, Portugal, and Lithuania.

As discussed above, Article 296 (1) (b) EC Treaty can only be invoked on a case-by-case basis to justify exemption from the regime of the Treaty and Public Sector Procurement Directive and allow the use of offsets for armaments procurement. Therefore any national offsets regime has to be based on a case-by-case basis. A national regime based on a legally binding, automatic and abstract offsets requirement for all armaments contracts, irrespective of whether the requirements of Article 296 (1) (b) EC Treaty are met, represents a violation of the EC Treaty, Public Sector Procurement Directive, and in most cases of the implementing national public procurement law. A legally binding law or regulation needs to accommodate the ‘case-by-case’ nature of the armaments exemptions to comply with EC law. A not legally binding regime is more flexible but also needs to clarify the necessary case-by-case evaluation of the requirements of Article 296 (1) (b) EC Treaty in each individual case.

Offset practices and policy views of pMS

The current results of the analysis of pMS offset practices are provided as country fiches to EDA. This analysis has been done as desk-study work by FOI/SCS and subsequently made subject to comments from pMS in the questionnaire.

Annex 6 provides an overview of the fiches and Annex 7 (Section 4) the views on future oriented policy issues expressed in the questionnaires and interviews.

General position towards offset Two major pMS, France and Germany, want offset to be abolished within Europe and do, as a matter of policy, not accept offset to themselves. Three of the smallest pMS have no offset policies and apparently no experience of defence offset. All other pMS accept offset at least for major contracts and most have explicit policies. On the overall level most countries see offset as useful for their national DTIB:s – and hence many argue EDTIB – but agree that there may be better methods to achieve this in the future.

Offset levels Most countries cite 100% offset either as a goal or as a minimum in their current practices. The same level is also mentioned by many as a suitable level should a cap on offset be introduced in the future, but a few give lower figures.

A few countries give further quantitative specifications as to type of offset: two pMS require respectively 20 and 50% direct offset. We believe that their definition of ‘direct’ is broader than the one used in this study (cf. Sections 2.2 and 3.2).

As for preference in terms of **type of offset** there is a broad variation of responses, but most are open to accepting all types. Naturally pMS with DTIB of some size prefer defence related offset. Among the new pMS some express a preference for defence while, there are those who do the exact opposite. Significant exporters tend to prefer indirect offset. This is in line with the findings in Chapter 3.

For **categories of offset** there is a generally high appreciation of high-tech related offset, R&T, technology transfer, etc. and this is expressed in the **multipliers** for the countries that use such. At the other extreme lie direct foreign investments. Here some of the new or other-

wise industrially weak pMS are prepared to apply high multipliers whereas some pMS are not prepared to accept such offset at all due to lack of causality (cf. Section 2.1). Also export assistance is a category of little relevance to well-established industrial economies. Among new pMS some express preference for export assistance – helping already perhaps good existing industrial competencies with insufficient network – over trying to establish new competencies using direct investment.

An interesting feature of multipliers is that at least two pMS according to their policies can apply multipliers <1 in some cases.

There are also countries that apply **weights** different from the (also used) multipliers in evaluating bids.

Technical issues The threshold, i.e. the minimum size of contract where offset is considered, is around € 5-10M for many countries but in some cases considerably lower.

As for fulfilment period most pMS want this to be associated with the procurement period. Some suggest relatively short periods (<5 years).

The practices regarding inclusion or otherwise of offset as a condition for participation and/or as an award criterion varies considerably among the pMS as does the latitude of bidders to choose offset level (cf. legal overview above).

All pMS say that bidders are free to choose offset partners, possibly citing some qualification.

Most pMS require **penalties** in the range 5-10% of the unfulfilled part of offset obligations. Some require more, one pMS 100%. Two pMS have more flexible disincentives for failure to deliver, whereas another two do not apply any other incentives than reputation-based ones.

In general the above indicates considerable variation, but it is our impression based in particular on interviews that the real variation is even greater than what can be captured by these descriptors.

This is true at the technical level, were in addition to the above the exact modalities for approving, evaluating, and auditing offset activities, and the general efficiency of offset administration may differ in many ways. But in addition to this come the bargaining position of receiving countries in terms of their size as defence equipment buyers, the competitiveness of their industries, etc. Combining these two aspects some pMS have a well-established offset apparatus since long whereas others are newcomers to the field.

4.4 Business sector perspectives on offset policy

A more detailed account of business sector views on offset as expressed in questionnaire and interviews is provided in Annex 7 (Section 4).

The views on offset naturally differ between the business communities in countries which are mainly receivers of offset, mainly suppliers, or both to a considerable degree. The differences between mainly offset receiving countries and their companies do not typically appear as big.

Companies which are to a considerable degree supplier and their associations naturally have somewhat different views compared to receivers of offset. Since the previous section dealt mainly with pMS on the receiving side and in favour of offset, it is reasonable here to concentrate on the suppliers.

Not unexpectedly these want long fulfilment periods, reasonably high thresholds and warn against high penalties (or prefer other incentives). There is a strong warning against excessive administrative burdens in connection with offset in some countries. In line with this offset harmonisation is generally regarded positively. But there is also an alternative view – sometimes in the same respondents – which stresses the vast differences between receiving pMS and, therefore, the difficulty in implementing a rigid and detailed harmonised regime.

Several respondents say that a 0% offset should be the goal at least in the long term, but 100% as a cap is also suggested by several.

No negative views have been expressed against multipliers even though, according to some, their use should be rendered more transparent as part of a harmonisation.

Big primes typically stress the difficulties in supplying direct offset, and consequently have a positive view on indirect offset, including civil.

In sum some prime representatives are strongly against offset but the majority have a more laidback view seeing offset as not ideal but a fact of life that can be handled. Big primes typically have a preference for indirect civil offset.

4.5 Summary and conclusions

The most important finding in this chapter regards the legality of offsets in Europe. The European Commission recently brought this matter up in an Interpretative Communication on the application of Article 296.³⁷ While the Commission specifically mentioned indirect non-military offset as problematic, according to the legal analysis done within our study it is generally difficult to justify *any* type of offset on the basis of Article 296.³⁸ Not only do Member States have to prove that the offset would promote their essential national security interests, not their economic interests. They also have to prove that the offset is *necessary* to address these essential security interests, leaving them no other choice than requiring the offset to safeguard their essential national security interest. We will return to this issue in Chapter 9.

On the pMS side the clear majority accept offset and plan to continue with this whereas France and Germany are opposed to offset. The different offset patterns between groups of pMS observed in Chapter 3 are on whole well in line with the policies and practices observed in the present chapter.

The positions of business sector respondents are on the whole well aligned with those of their respective countries. A special feature of big primes in particular, however, is that they ex-

³⁷ The article in the Maastricht treaty that specifies when trade in defence equipment can be exempted from the Internal Market; Interpretative communication [of the Commission] on the application of Article 296 of the Treaty in the field of defence procurement, COM (2006) 779 final, 7 December 2006.

³⁸ More precisely Article 296 (1) (b) EC Treaty and Article 10 Directive 2004/18/EC

press a strong preference for indirect civil offset.

5 Data and methodology for assessing the effects of offset

This chapter outlines the effect study – corresponding to part [b] of the ToR and describes the data and methodology used. Part [b] also provides the main input to part [c].

5.1 Outline of the effect study

The main task of the present study is to:

[b] evaluate the effects of the different types of offsets on pMS defence markets and analyse consequences at European level (for the defence market and defence industrial base).

[c] analyse offsets' impact on the future development of an EDEM and EDTIB.

Chapters 7 and 8 contain our main development as for part [b]:

- Chapter 7 deals with the prime contract level of the European defence equipment markets and how these are affected by offset. Here we also discuss the direct costs of offset.
- Chapter 8 deals with the supply chain level of the European defence equipment markets and with DTIB (based on the results presented in Chapter 7 we have concentrated on the supply chain rather than prime contractor level as far as the relationship between offset and DTIB is concerned). This is where our case study of offset receiving companies is presented.

Chapter 9 is where the EDTIB/EDEM perspective is brought to bear on the material from parts [b] and [a] of the study.

Before these main chapters of the study come two with a more supportive role. This Chapter 5 outlines our study methodology and Chapter 6 gives a research background.

5.2 Data collection

In performing the study we have relied mainly on three types of information (in addition to the open source material discussed in Chapter 3):

- Questionnaire responses from pMS, industry associations, primes, and independent experts
- Interviews with the same constituencies (plus EDA and EC) – called ‘general interviews’ to distinguish from the following category
- Case interviews with firms on the receiving and supplying side of a number of offset deals (there was also an ambition to include negatively affected subcontractors, not in receiving pMS, but we were not able to schedule any such interviews). The prime contractor case interviews were normally done in connection with general interviews.

The list of responding firms and organisations is in Annex 4. We have some type of response from 20 pMS (our population being EDA-24), with the lacking replies all from some of the smallest pMS. We also have replies from 10 industry associations and 12 primes. In the case interviews 11 receiving firms were accessed, other relevant information was secured from governments, industry associations, and primes.

The questionnaires as well as the Interview Guides for the case studies are included under Annex 5.

5.3 Questionnaires and general interviews

In addition to being the main input for the effect study, the questionnaires and general interviews were also used for collecting information for the mapping (Chapter 3) and overview of policies and practices (Chapter 4; Annex 6) parts of the study.

An extensive overview of the effects part of the replies to questionnaires and general interviews is presented under Annex 7 (Sections 1-3).

5.4 The case studies

The study has examined a number of offset deals in some depth having carried out interviews with a number of prime contractors (typically in connection with general interviews) as well as 11 subcontractors including small and medium sized enterprises (SMEs) in some European countries.³⁹ Some of these companies have been major recipients of offset/industrial participation; others have brokered offset deals in order to gain export contracts, both within and outside the European Union. Specific cases have also been discussed with pMS governments and industry associations. The home countries of the case study receiving firms were one Group 2 country (Sweden) and three Group 3 ones (Finland, Greece, and Spain). This choice should imply that the findings are representative in terms of offset *value*, since these two groups account for the lion's share of European offset.

The contracts discussed in some depth in interviews and including the 11 cases were:

- Sale of F18 aircraft by US to Spain.
- Sale of F16 aircraft by US to Greece, Belgium and Poland.
- Sale of Gripen aircraft by Sweden to Czech Republic.
- Sale of Leopard II tanks by Germany to Greece, Sweden and Spain.
- Sale of Typhoon by Eurofighter Consortium to Austria.
- Sale of NH 90 helicopter by NHI Consortium to Sweden and Finland.
- Sale of Type 214 submarines by Germany to Greece.
- Sale of Aegis fitted frigates by Spain to Norway.

The main reasons for examining these case studies is to provide enhanced granularity to the study, comparing experience in order to gain a better understanding of the costs and benefits of offset/industrial participation.

Eleven cases (counting the receiving company as unit of analysis) may seem few. However, by the standards of business case research this is in fact a big sample. In this research tradition conclusions do not arrive by way of statistical analysis but by so called theoretic generalisation (Eisenhardt, 1989). But there is a problem, in business case research both the calendar

³⁹ Two of the 11 firms were SME:s according to EU's formal definition: independent firms with at most 250 employees (and turnover of no more than € 50m p.a. or balance sheet of no more than € 43m). This may seem little, particularly in view of the explicit references to SME:s in the ToR (Annex 1). From our discussions with EDA, however, we have understood that 'SME' in the ToR should not necessarily be interpreted according to the formal definition, also considerably bigger firms are often seen as 'middle-sized'.

and working time available for the interviews is typically considerably larger than in our study. Therefore both general and theoretic background knowledge and information from questionnaires and general interviews is necessary to interpret the case study information.

5.5 Effect study methodology

In conducting the effect study we have relied, in addition to our general background knowledge, on the following sources of information:

- Questionnaire and general interview replies.
- Relevant scientific literature as reviewed in Chapter 6 (offset in defence economics) and in several subsections in Chapter 8 (business strategy aspects)
- The case study material presented in Section 8.3.

The first type of information provides the backbone of the effects study. This is obviously a material coloured by the background and interests of the respondents, but keeping this in mind and based on a careful structuring of replies in Annex 7 (Annex 6 for policies and practices), along with our understanding of the context, we claim to be able to draw firm conclusions from this material.

Transcripts from the interviews are included in this analysis, but in addition the experience from the interviews in combination with more contextually oriented reading of questionnaire responses (in contrast to the sometimes very detail oriented reading necessary to find answers to the specific questions) is also vitally important for extending the study team's understanding of the context. E.g., the expert questionnaires were quite helpful in such context building. We are, however, not including them in the overviews of responses.

Scientific literature and case studies play a strategic but more focused role in the study. In addition to contributing to the team's contextual understanding they are mainly applied in Chapter 8 to shed light on the conditions for building new industrial players and the cost of offset.

In principle our effect study methodology also included the use of statistical analysis as explained in Section 3.2. These analyses turned out inconclusive, which, however, supported an important conclusion in the study, viz. that offset can mean very different things.

6 Research overview

This chapter presents a state-of-the-art background for the effect study. It consists of

- A conceptualisation intended to convey in simple terms some of the theoretic issues at stake (Section 6.1).
- A more ‘academic’ review of the relevant literature in (defence) economics (Section 6.2).

6.1 An economics conceptualisation

Barter vs. bundling

From the vantage point of economic theory offset is often portrayed as a dubious phenomenon in stark contrast to free market principles. And at a conceptual level there is little denying this for the barter-like end of the offset spectrum. A barter economy is much less efficient than a money economy because if you have, say, rye and want to purchase a new plough, a large number of physical exchanges incurring transaction costs (search for customers and suppliers, transportation of goods) would have to take place until the plough-smith and the steel-plant workers get the goods they need and you receive your plough. In line with this, barter is a very rare phenomenon in the commercial sphere of advanced market economies.

But even advanced economies abound with bundling phenomena like sellers also providing financing solutions when selling durable goods (e.g. cars). In this simple example the relative positions of buyer and seller on the capital market lead to different optimal financing solutions – some car-buyers can find a better loan on their own merits (or can simply take the money out of their pocket), for others it is better to have the car seller also act as banker and insurer.

Perhaps the laidback position vis-à-vis offset referred to in Section 4.4 of many industries is comparable to that of a car salesperson that would prefer to concentrate on simply selling cars but grudgingly accepts that also being a banker is better for business.

Commodities vs. complex products

The previous section was couched in the simple language of economics of commodities – standardised goods tradable in open markets. That type of description does not particularly fit the types of defence equipment where offset is an issue. Furthermore this is true also for many other types of equipment for private and public users even though some general technological trends indicate some degree of change in this regard.⁴⁰

In the province of complex products or “unique goods,” bundling of goods and services is

⁴⁰ What we have in mind is the type of developments that in the defence context are known under labels such as Network Enabled Capabilities (NEC). These mean that unique services and capabilities increasingly may be delivered by standard equipment that is also useful for a wide range of other tasks in combination with software, tactical behaviour etc. which account for the unique character of the services provided. Hence the performance of a specific type of equipment is rendered less decisive to the overall “system-of-system” performance. But this should be seen not as a revolution but rather as a tendency that defence equipment is moving on a continuum from the “complex products” side towards the “commodities” – not very fast and not likely to go a long way towards the “commodities” end of the spectrum.

very common. For example developers of one-off types of equipment must typically be involved in the training and technology transfer necessary for the buyer to be able adequately to operate the equipment. In offset terminology such services could qualify as direct offset. In the case of commodity equipment in contrast – say PCs – such services are readily available on a free market.

Not only is bundling a more prevalent phenomenon for unique goods than for commodities, there are even situations where barter of a kind becomes a useful approach. One example can be where two or more companies decide to pool proprietary technologies for a common development activity deemed to be of mutually strategic importance – this is hardly a situation where the goods exchanged are tradable on a market.

These arguments indicate a problem in delimiting offset. For example technology transfer in connection with a defence equipment purchase could be either inserted in the purchase contract or dealt with in the offset contract (cf. Section 2.2).

Strategic trade theory, rents and offset

Offsets might also be justified on the basis of strategic trade theory and efforts of nations to obtain a share of producer rents. The argument proceeds as follows. Defence markets are imperfect allowing opportunities for monopoly and oligopoly suppliers to achieve producer rents. Economically strategic industries are characterised by decreasing costs (reflecting scale and learning economies); they are R&D intensive industries, including spill-overs; they comprise small numbers of suppliers resulting in firms earning monopoly rents; and they are dependent on governments where governments can use their procurement policy to protect national champions and maximise national economic benefits and rents. Defence industries have these characteristics of economically strategic industries (e.g. aerospace). Governments buying defence equipment in such imperfect markets have opportunities to use their national industrial policies to obtain a share of these monopoly rents. Offsets are one form of national industrial policy which can be used to obtain a share of such producer rents.

6.2 Offset in the economics literature

The economics of offsets is a relatively neglected and under-researched part of defence economics. Over the life-time of the specialist academic journal, *Defence and Peace Economics* (1990-2007), there were only four articles on offsets, including a case study of the F-35 programme. In addition, since 1996, there have been two edited books on the subject and a number of contributions to defence economics texts.

This Literature Review performs two tasks. First, it presents an overview of the field dealing with contributions to theory, empirical work and case studies, many of which have been country studies. Second, it reviews the contribution of the literature to answering section [b] of the Terms of Reference (Annex 1). Broadly, these deal with the effects of different types of offsets on competitiveness.

Theory contributions

Standard economic theory starts from the proposition that offsets are economically inefficient and welfare-diminishing reflecting trade diversion rather than trade creation. They require firms to allocate work away from least-cost suppliers to the purchasing nation's firms and to incur switching and transaction costs in the process. Politicians from regions which experi-

ence job losses and technology transfer due to offsets regard them as giving an ‘unfair’ advantage to foreign rivals. Also, as explained above, in imperfect markets, it is possible that offsets can be used to capture rents from oligopolists.

Theoretically, the value of the offset to the buyer depends on its additionality (i.e. whether the offset leads the prime contractor to buy more from the purchasing nation than it would otherwise have bought without an offset agreement: Udis and Maskus, 1991). Also, there are usually alternative and often lower-cost policies for achieving some of these broader economic and political objectives and any policy evaluation of offsets is further complicated by second best considerations. Transaction cost economics suggests that offsets might be regarded as forms of contracts which economise on transaction costs. Moreover, where offsets compel prime contractors to identify lower-cost suppliers in the purchasing nation, they might improve economic efficiency and be welfare enhancing. On the basis of these arguments, it has been suggested that criteria are needed to “...distinguish between beneficial offsets and detrimental offsets before attempts at international control of the phenomenon are mounted” (Udis and Maskus, 1991, p163).

Hall and Markowski (1994, p184) reach a similar conclusion suggesting that “...it might sometimes be optimal (and thus desirable) to obtain goods and services nominated as offsets as part of a package and sometimes not.” They view offsets as part of *voluntary* trading involving price-quality-quantity trade-offs which characterise complex transactions. However, they are critical of *mandatory* offset policies which are regarded as inefficient due to their restrictions on the buyer’s flexibility in negotiating the most advantageous price-content-quality deals. Overall, they recognise that in a world of imperfect markets, asymmetric information and complex transactions, offsets might well enhance the welfare of the purchaser. “This can only be assessed on a case-by-case basis” (Hall and Markowski, 1994, p188).

The literature also recognises other economic reasons for offsets. These include oligopolies, second-best solutions and the capture of economic rents; technology transfer and spillovers; the infant industry argument; offsets as a form of market entry overcoming protectionism; and offsets as a form of employment and regional policy. Governments might also use offsets to create and/or support a national defence industrial base (Martin, 1996, pp 37-41). These arguments can be critically assessed. For example, it is argued that offsets have limited usefulness as strategic trade policy; and there are alternative and sometimes lower-cost methods of achieving employment and regional policy objectives.

A recent edited volume by Brauer and Dunne (2004) reviews the theory, evidence and various national policies on offsets. It starts by considering offsets as a ‘free lunch’ and recognises the scepticism surrounding such a view: “the lunch may be free to those invited but the host still has to pay the bill”(Brauer and Dunne, 2004, p2). A contribution by Taylor concludes that “...any attempt to use a mandatory offset policy for all government procurement limits the dimensions of the negotiation and may suffer from diseconomies of scale and scope. A more flexible offset policy, which requires offsets for a particular class of goods and relies on markets in other cases, is preferable in most settings” (Taylor in Brauer and Dunne, 2004, p 30).

Empirical contributions

There have been few detailed empirical studies of offset contracts. Instead, there are various general overviews of country policies and experience (see next section). Empirical case stud-

ies have included studies of the offset arrangements for the UK purchase of Boeing AWACS and The Netherlands planned acquisition of the Lockheed Martin F-35 combat aircraft.

The UK purchase of Boeing AWACS was described and evaluated in a Parliamentary Report (HCP 286, 1989). The Report concluded that this offset programme was large and offered commensurate benefits “ primarily providing UK contractors with opportunities to gain access to the US defence market. Contracts won should produce follow-on work and downstream business extending beyond the life of the offset programme. The programme can bring new UK suppliers into the defence field, thereby strengthening the UK defence industrial base, and collaborative links with the United States can be improved” (HCP 286, 1989, p xvi).

A critique of the UK-Boeing AWACS deal is presented in Martin and Hartley (1995). Direct offset was some 5-6% of the total offset commitment so that the offset was mostly indirect with over 50% being indirect civil (Rolls-Royce aero-engines, most of which would have been purchased without the offset agreement). There were doubts about the extent of genuinely new business; about the level of technology being claimed as offset; and about the realised compared with the originally estimated employment impacts. For example, on new business resulting from offsets, it was estimated that genuinely new business was typically 25% to 40% of an offset, with a maximum of 50% (Martin and Hartley, 1995).

There have been two studies of the planned purchase of F-35 by The Netherlands. First, Vijver and Vos (2006) provide estimates of the likely economic impacts of the purchase on employment and innovation in The Netherlands. They conclude that the F-35 is important for innovation in the Dutch economy and also contributes to other aerospace programmes (spin-off) and other industries (spillovers). They provide an estimate of the value of such innovations; but there is no attempt to consider the alternative-use value of these resources. Second, Hartley (2004) presents original material estimating the economic impacts of The Netherlands and the UKs purchase of the JSF/F-35 aircraft. The economic impacts are measured in terms of jobs, technology and exports and there are comparisons with alternative programmes such as the Boeing F-18E/F, Gripen, Rafale and Typhoon (Hartley, 2004).

A survey of firms provided an alternative approach to the study of offsets. This UK survey provided evidence on UK firms’ experience in receiving and supplying offsets. It focused on the reasons firms bid for offset work, its importance to their business, their reasons for receiving offset work, its duration and its effects on competitiveness (Martin and Hartley, 1995). On duration, the survey results were mixed, with some small UK firms claiming that the offset work was only short-term but a majority of respondents claiming that follow-on work had resulted (interestingly, one firm stated that direct offset work was short-term whilst indirect offset was not). On competitiveness, the survey found no substantial evidence that offsets had improved the competitiveness of UK firms.

The UK survey also assessed the views and experience of UK firms when supplying offsets (Martin and Hartley, 1996). It estimated average offset contract values of £41.5 million (1993 prices) and an average fulfilment period of some 5 years. It was found that any adverse employment impacts on UK primes was trivial and that job losses amongst UK sub-contractors were relatively small. The survey also found that offsets are not costless and that the buyer bears most of this cost. Cost premia ranged from 3% to 60% with a typical range of 5% to almost 15% (Martin and Hartley, 1996, p 354).

Earlier UK examples include its work-sharing arrangements on the US Phantom aircraft purchased for the RAF. The UK aimed to obtain work to the value of 50% of its order for 170 of the US aircraft. Three major beneficiaries of the arrangement were British Aerospace (which later used its knowledge from the Phantom to design the tail unit for the UK-French Jaguar aircraft), Rolls-Royce aero-engines and UK avionics firms. On the Phantom buy, the UK paid an extra 23-43% premium for the British inputs into the aircraft (Hartley, 1983).

Policy contributions: country studies

Two volumes provide comparative country studies. First, Martin (1996) presents surveys of offset experience in Europe, Australia, Canada, some Asian nations, the Middle East and the USA. The study of Spain focuses on its experience with the 1984 purchase of McDonnell Douglas F-18 aircraft. It is concluded that "...there is little doubt that the programme has had beneficial effects" providing Spain with a substantial workload in different areas of the economy but at a cost through the cost premium paid for offsets (Gallart, 1996, p310; see also Gallart, 1998). There is also a study of the US-Swiss F-5 transaction. This was an 8 year agreement mostly involving indirect offsets (85%-90% of the offset commitment). This offset deal was judged to have advanced Swiss technology. Swiss producers of major defence systems profited little but many firms producing parts for US defence goods profited well (Udis, 1996, p328).

Second, Brauer and Dunne (2004) provide a more up-to-date series of country surveys of offset policy. There are surveys of European nations, Argentina and Brazil, India, South Africa, Asia, Australia and New Zealand. The study of South African offsets policy concludes that some of South Africa's defence industry is benefiting from direct offset with the possibility of becoming sub-contractor to some of the foreign equipment suppliers in the global industry. But the authors raise doubts about whether companies will survive once the offset deals end. "It is not clear that the companies will be internationally competitive to allow follow-on industrial development to be sustainable" (Dunne and Lamb, 2004, p 290). The authors then argue that off-the-shelf purchases would have been cheaper and would have allowed resources to be re-allocated to alternative civilian uses with greater potential for job creation and economic growth.

Brauer and Dunne (2004) contains at least three estimates of direct costs for offset:

- Wally Struys estimates 20-30% in 'over-costs' in conjunction with offsets tied to military procurement in Belgium. (Wally Struys, *Offsets in Belgium: Between Scylla and Charybdis?* In: Brauer and Dunne, Eds, op. cit. p.167)
- Ann Markusen indicates that offsets cost between 7-10% of the value of arms sales for major US defence firms (Ann Markusen, *Arms Trade as Illiberal Trade*, In: Brauer and Dunne, Eds, op. cit., p.71.)
- Finland estimates a 10-15% cost increase per offset agreement (cited by Björn Hagelin in Brauer and Dunne, Eds, op. cit. p.143. Hagelin in turn cites JAS Industrisamverkan, Report Ds I 1986:8 Stockholm: Ministry of Industry, 1986.)

Offsets are also evaluated in various defence economics textbooks. Examples include Hartley (1995); Sandler and Hartley (1995) and Sandler and Hartley (2007). These provide useful surveys of theory, evidence and policy. Also, the annual Reports to the US Congress on Offsets provide a comprehensive coverage of both issues and data from a US perspective (US DoC, 2007). Inevitably, 'political' Reports are influenced by lobbying from national producer

interest groups. For example, the US position is that offsets are economically inefficient and should be abolished even though the US defence market is highly protected (Buy American Act).

The Literature Review and the Terms of Reference

Not surprisingly in view of the current EDA study, the literature provides only limited answers to the questions posed by the Terms of Reference (section 2 (b) 1 and 2) (see Annex 1). Theory is ambiguous in that it shows that there are departures from the simple proposition that offsets are economically inefficient. With imperfect markets, protectionism and limited information, offsets might be efficiency-improving. Indeed, there is the conclusion that offsets can be both beneficial and harmful which suggests a case-by-case approach and raises doubts about a blanket policy approach prohibiting offsets.

In terms of the economic benefits of offsets, the evidence from the literature needs to be treated with considerable caution. It is not acceptable to claim that offsets have resulted in benefits to an economy. On such criteria, all public spending creates economic benefits. The key economic question concerns the alternative-use value of the resources and which economic activity yields net benefits. Do the resources used in the offset sector make a greater contribution to national output (including jobs, technology, etc) than alternative uses of these resources (e.g. their use in building schools, hospitals and roads)?

The claimed benefits of offsets also need further qualification. First, genuinely new business represents only a part of the total offset. Second, offsets are not 'free lunches' and involve a cost premium which has been estimated at some 5% to 15%.

Nor does the literature provide much convincing evidence on the questions relating to the short and long-run effects of different types of offsets on the competitiveness of both receiving and supplying defence companies. The few studies addressing these issues are often based on unsubstantiated claims and assertions. Even fewer address the issues directly and provide supporting quantitative data (Martin and Hartley, 1995; 1996). Indeed, most offset studies are based on national policy and focus on describing offset policy and the extent to which the original agreement was actually achieved: their focus is on providing a broad macro-economic overview of policy. Again, a proper economic study of the competitiveness issues needs to be based on a sound methodology using both quantitative and qualitative data. Such a study needs to start from a fully-specified model of international competitiveness which identifies all relevant factors with offsets as only one determinant of competitiveness. This is the approach adopted – although with quite limited time and resources available – in the current study for EDA.

7 Effects of offsets on defence equipment markets and DTIB:s: prime contract level

7.1 Structuring the problem

During the Cold War offset was used by several European countries to foster what later became leading European prime contractors, particularly in aerospace. The typical category of offset here was licensed production and consequently the cost premiums cited were quite high. Annex 9 gives an overview of this.

Fostering new primes is, however, hardly a driving force behind European offset today. In a defence economy that has been shrinking since the end of the Cold war, with system development costs rising, and with overseas competitors consolidating, also in Europe the prime level has been characterised by mergers rather than new entrants. Therefore, this prime level chapter is about the competition process on defence equipment markets between already existing and competent players, not about the emergence of new primes.

The chapter is structured as follows:

- Competitiveness of EU vs. non-EU players (Section 7.2)
- pMS ‘guns or butter’ and ‘make or buy’ decisions (Section 7.3)
- Openness and transparency of defence equipment markets (Section 7.4)
- The direct costs and time delays of offset (Section 7.5).

The conclusions of the chapter are summarised in Section 7.6.

Even though our task is limited to (E)DEM and (E)DTIB effects, in this chapter we also have to concern ourselves with the effects of indirect offset even of an entirely non-defence nature, viz. to the extent that the different types of offset have different effects on the competition process.

This chapter is structured around questionnaire questions, which are displayed in boldface and preceded by a ‘Q’. For a more extensive review of questionnaire responses, see Annex 7 (Sections 1 and 2).

7.2 Competitiveness of EU vs. non-EU players

Q: Does offset tend to favour EU-based companies vs. non-EU based companies or is it neutral in this regard?

Most respondents see offset as neutral in this regard (several pMS answer with reference to the claimed neutrality of their own procurement practices).

Some big primes answer that US firms are favoured by direct offset due to ‘quantitative issues and single company programmes’. Our interpretation of the first part is that US scale economies allow their primes to offer large financial volumes of semi-direct offset transactions affecting only a very limited part of the industrial scope of the imported system. In our terminology that would rather classify as indirect military offset (Section 2.1) and captures precisely the scope for specialisation in (this and other forms of) indirect military as opposed to

direct offset.

But there were also respondents who argued that some forms of offset are beneficial for European competitors: technology transfer due to US restrictions on knowledge export, and indirect civil due to the more well-developed European industrial networks of European firms. Note that whereas the latter claimed difference if true does not necessarily lead to a difference in the attractiveness of the offered offset package – rather one should expect that US tenderers would have to accept a lower profit margin than otherwise (cf. Section 7.4) – the US regulations on technology transfer present a more fundamental advantage to European industries.⁴¹

Several respondents point to the potentially negative effects of a future offset regime banning intra-European offsets but allowing them for extra-European players. As commented in Chapter 1 such an outcome is not likely to become European policy. In line with this the Commission's work regarding the interpretation of Article 296 is entirely geared to what the Internal Market demands from potential receivers of offset – irrespective of whether suppliers are European or non-European.

7.3 pMS 'guns or butter' and 'make or buy' decisions

In this section we discuss two aspects, not directly asked for in the questionnaire but commented by a few questionnaire respondents and several interviewees:

- Does offset lead to higher defence equipment budgets in receiving pMS than otherwise?
- Can offset lead to the opening up of potentially closed prime level markets in the sense that they can 'help' pMS with domestic primes accepting import rather than own development?

As for the 'guns or butter' issue, i.e. the **budget effect**, some (but few) argued strongly in favour. The more common position was to say that defence equipment budgets are essentially decided on other merits but offset may make them easier to sell to the public and interest groups.

Also for the **make or buy** issue for pMS who would be industrially able to develop a certain type of equipment themselves some interview respondents argued that offset can be a strong force in favour of the 'buy' option, and hence potentially for a more integrated EDEM and, indirectly, an EDTIB with less duplication.⁴² But here too the same type of question can be asked as for 'guns or butter': is offset really a major factor in the decision or is it more a device useful in marketing a decision taken on other grounds to public and interest groups?

In sum our results do not allow a firm position on either of these questions, but certainly some respondents saw them as extremely important.

⁴¹ In the case studies there were some opposite signals, viz. that US firms are more forthcoming to share their technologies than European ones.

⁴² This could take on two (not mutually exclusive) forms: the country deciding to 'buy' rather than 'make' could move its DTIB from prime contractor to subcontractor or it could seek specialisation as a prime in other system areas. In the former case it would seek direct or indirect military offset in the form of subcontracting, in the latter indirect military offset in forms like swapping.

7.4 Openness and transparency of defence equipment markets

This section is where we summarise the prime level market parts of the questionnaire and interview replies that were not covered in the above two sections.

Q: Does offset lead to a different system and/or supplier being chosen than would have occurred in the absence of offset?

The respondents are rather evenly distributed among ‘yes’ and ‘no’.

A standard argument for ‘no’ is that offset is just one award criterion with relatively little weight. Another argument, in particular in connection with major contracts, is that candidates tend to propose comparable offset packages – just as for other parts of the total deal additional to the equipment itself, e.g. financing. This argument suggests a relatively transparent process where tenderers can foresee the attractiveness of alternative offset offerings. Also note that this does not exclude that some firms may have a cost advantage in supplying offset (or financing), but according to the argument such differences will affect profit margin rather than contract award.

Among those arguing that offset sometimes does or may decide contract award direct (and also indirect military) offset was mentioned by some as more prone to change outcome than indirect (civil).

One special form of offset potentially leading to another outcome of a competition would occur if offset being accepted (or required) by the buying nation led to some potential competitors abstaining from participation. This possibility is treated as a separate question below.

Finally there is an aspect that did feature in some interviews. This is the issue of corruption in relation to defence contracts and its real or alleged links to offset. This is not a property of offset *per se*, but it seems indisputable that opaque and un-professional offset implementation provides scope for corruption potentially leading to another system being chosen that would have occurred in an open and transparent market. It was a recurring story in interviews how old offset practices have been found insufficient and subsequently replaced. Even though in particular pMS representatives naturally claim that their current offset practices are well-functioning, it is our impression that the transparency and professionalism of offset practices vary widely between pMS and that there is considerable scope for improvement.

Q: Does offset tend to restrict companies from competing?

At the prime – in contrast to lower-tier supplier (see Section 8.2) – level few respondents saw problems in this regard at the present time. At prime level offset is seen as a normal part of the defence business environment that can be handled – at a cost.

For the future, however, warnings were raised by some against excessively stringent rules and demanding requirements said to be developing in some pMS. This may lead, it was argued, to some primes refraining from competing. Theoretically this can be understood as a (potential) negative effect of lacking transparency, leading in turn to uncertainty as to cost for supplier of offset. This is due to the risk that (particularly direct) offset requirements force the supplier to engage in business relations with weak firms in the receiving country which may incur extra costs in time and money; the risk that claimed offset satisfaction is not accepted by the receiving government; and eventually the risk for a hefty penalty for non-fulfilment. It was also suggested in the interviews that this might be a greater problem to medium-sized primes than

to the big firms. Still, it should be noted that this was not claimed to be as yet a reality.

Q: Does offset increase market access?

In addition to the aspect of a country accepting offset from a foreign supplier as an alternative to placing the prime contract with domestic industry (see Section 7.3) , it is difficult to see why offset should increase market access at prime level, and we found no such arguments from respondents. That offset opens markets at subcontractor level, on the other hand, was an almost unanimous opinion (see Section 8.2).

Q: Does offset distort competition between EU-based companies?

This question added little additional insight to the other ones. A ‘no’ argument worth mentioning could be that offset is not distortive as long as the same rules apply for all.

7.5 Direct costs and time delays of offset

This section summarises the questionnaire replies presented in Annex 7 (Section 2) and other information on the same theme.

Direct costs

The direct cost of offset is here defined as the saving a buying government would make on the present defence equipment market by not requiring offset.⁴³ This cost has two parts; one is the cost for the supplier, the other the administrative costs for the receiving pMS.

Most questionnaire and interview respondents agree that there are such costs but few give explicit estimates. A well-known case-based study in the Netherlands gave the result 2.9%; of which 2.6% on the supply side and 0.3% on the government side.⁴⁴ Two other pMS cite ranges of 2-8% and 6-10% respectively. As a comparison published studies have provided estimates in the range of 5-15% and figures as high as 20-30% also feature in the scholarly debate with even higher figures applying for historical cases involving licensed production (see Section 6.2 and Annex 9). On the other hand there are those who claim that offset is free of charge and one respondent even cited cases where it was claimed that offset led to *lower* prices.⁴⁵

However, in view of the heterogeneity of offset one should not expect a generally true answer to the question. The cost will vary on a case-by-case basis, and consequently between pMS due to their general characteristics and the composition of their offset portfolios. Some general considerations mainly from interviews:

- Indirect offset is cheaper than direct. This has a compelling economic logic to it since direct offset leaves the supplier with fewer options to choose offset transactions from.

⁴³ The case of governments that do not require offset, but accept them when offered is somewhat complicating. We assume, however, that there is also in these cases some kind of implicit requirement, when offset is part of the award criteria this is straightforward based on tenderers’ knowledge that competitors may offer offset. Furthermore we here assume a fully competitive market, in reality defence equipment markets are oligopolistic, an aspect that we are not treating explicitly (cf. Section 6.1).

⁴⁴ The study was conducted by Price Waterhouse Consulting and is summarised in *Countertrade & Offset*, vol XXI, no 3, February 10, 2003.

⁴⁵ If offset helps primes to overcome a cultural and political barrier and tap into a supplier base beyond their home countries this could make some economic sense. Furthermore the cited cases seem to indicate that primes were competing on price to get this access.

The Dutch study, however, gives some contrary evidence: 0.8% cost for direct and 3.2% for indirect. We believe that this can be understood such that the Netherlands has a very internationally competitive niche defence industry (cf. Annex 2) and – at least relative to this – had a low share of direct offset in the studied cases (25%).

- Subcontracting is easier and hence cheaper to achieve in countries with well-developed industrial structure. Again this is a likely reason for the low costs found in the Dutch study, also cf. Section 8.3.
- On the other hand countries with less well-developed industrial structure tend to accept cheaper forms of indirect offset (purchase of civilian goods, direct investment, export assistance)
- In addition to the above, small contracts, short fulfilment periods, harsh penalties, red tape, and uncertainty as to government approval of offset fulfilment are cost drivers.

In sum we believe that 5-10% is a reasonable range for the direct cost of offset among pMS. In view of the numbers arrived at in Section 3.2 this would correspond to €200-400m p.a., i.e. 1-2 % of European defence equipment expenditure (Annex 2).

Time delays

Time delays of offset were acknowledged by about half the respondents. It is not our impression, however, that these delays are seen as a major problem.

7.6 Conclusions

There are many indications provided for both positive and negative effects of offset with regard to defence equipment markets. However, the stronger of these generally apply to the subcontractor level, see Chapter 8. As to prime contract the following can be said:

- The findings on offset effects on the competitiveness of European vs. overseas players on European defence equipment markets are rather inconclusive. US legislation limiting technology transfer might give an advantage to European players. Military offset (in our understanding mainly indirect including semi-direct) is seen by some as advantageous to US primes with their greater scale and scope whereas indirect civil may be easier for European firms, geographically and culturally closer to European markets.
- Some respondents warn against a situation where offset would be allowed for non-EU firms but prohibited in intra-EU trade. We understand, however, that this is hardly a policy advocated by any European actors; to the degree that offsets are illegal this illegality lies on the receiving side irrespective of whether suppliers are European or not.
- Some respondents argue that offset leads to increased defence budgets and the opening of new prime contract markets (i.e. pMS with industrial capability to develop a system in their own industry opening up competition to foreign primes). We were not able to find conclusive evidence on this.
- In many cases offset does not have a strong effect on contract award, e.g. due to competitors tending to deliver comparable offset packages.
- At prime level there is little evidence of offset preventing firms to compete.
- Some respondents, however, warn that a tendency in some pMS towards excessively demanding offset requirements and stringent implementation rules may become a market inhibitor in the future.
- Direct and to some extent also indirect military offset are seen as more prone to affect participation and contract award. Consequently indirect civil offset is the type least likely to distort markets.

-
- There are indications of transparency in pMS' dealing with offset (e.g. the tendency for the offset packages of competitors to be comparable can be interpreted thus). But there are also indications of lacking transparency and professionalism, which in extreme cases may even offer opportunities for corruption.
 - Based on estimates from questionnaires, interviews, and literature we believe that 5-10% is a reasonable range for the direct cost of offset among pMS. Caveats are due in view of the heterogeneity of offset but considering the numbers arrived at in Section 3.2 this would correspond to €200-400m p.a., i.e. 1-2 % of European defence equipment expenditure (Annex 2).
 - Offset leads to some but probably not major time delays.

8 Effects of offsets on defence equipment markets and DTIB:s: supply chain level

8.1 Structuring the problem

As mentioned in Chapter 7, during the Cold war offset was used by several European countries to foster what later became leading European prime contractors, particularly in aerospace. Building new primes is, however, not the ambition seen in today's European offset receivers. To the degree that their offset ambitions are guided by DTIB ambitions at all these can be categorised as follows:⁴⁶

- Strengthen the position of existing domestic firms in international defence supply chains.
- Foster new domestic firms such that they can take a position in *existing* niches in international defence supply chains.
- Foster new domestic firms such that they can take a position in *emerging* niches in international defence supply chains.
- Build or preserve domestic firms geared to the national defence market.

In this chapter we shall concentrate on the first three bullets, which will be afforded a section each. The first two of these sections start with a theoretic background and then introduce the relevant evidence from questionnaires and general interviews. The case study findings are predominantly within the area of the second bullet and consequently feature in Section 8.3.

The third motive – on *emerging* niches – was less well covered in our empirical study but is included as a general discussion based on analogies with other markets.

As for the fourth type of ambition the defence oriented motivation would typically be security of supply and national operational sovereignty. In addition there may of course be a plethora of motivations to do with regional labour markets and other non-defence considerations. In interviews and questionnaires this motive is seldom if ever stated by pMS governments while it is clearly seen as a reality by business sector representatives.

All four DTIB-related motives for offset are affected by changing perspective from national to EDTIB level; this analysis will be pursued in Chapter 9. But already before taking on the EDTIB perspective a lot of EDTIB relevance can be said for the three motives to do with international supply chains: If a firm is a relevant player in international supply chains in the 'pre-EDTIB' world, then it will at least be a strong candidate for being also an EDTIB asset – the possible problem here being overcapacity in the specific area of competence.

For nationally oriented firms in contrast any serious EDTIB strategy implementation must mean thorough revision of the basic rules. Further, to analyse the problem of nationally competitive assets from a *national* DTIB perspective is relatively trivial:

- If a country is willing and capable to pay the price in money, delays, quality problems, etc. it is always possible to establish and sustain a purely national DTIB asset.

⁴⁶ For countries that have industries at prime level, an alternative approach might be to seek specialisation at that level; cf. footnote 42. We were not able to conclude whether this is an important aspect of offset. Anyhow, the DTIB analysis of that case is parallel to the first case treated below; cf. Section 9.3.

- From a European perspective, doing so will almost inevitably lead to undue duplication of competencies.

Therefore we defer the more systematic treatment of nationally oriented DTIB assets to the EDTIB context of Chapter 9. Section 8.5 below only briefly presents the questionnaire and interview replies on duplication and sustaining existing capabilities, in particular but not exclusively of relevance for the fourth motive for offset above.

Finally Section 8.6 discusses some of the wider benefits claimed for offset – not a topic researched in-depth in the study – while Section 8.7 provides the main conclusions of the chapter.

8.2 Offset for accessing international defence industry supply chains?

The perspective taken in this section is the supply chain counterpart of the prime level discussions in Chapter 7, i.e., we are considering firms that, at least arguably, have requisite competencies to participate in international supply chains and study whether and how they are helped or hindered by offsets.

Evidence from general business research

There is a global trend in large manufacturing companies' Supply Chain Management (SCM) to increasingly see subcontractor relations as strategic. This means that the relations are long-term and that important functions like Quality Assurance and R&D increasingly are outsourced to the suppliers. In for instance the automotive industry as much as 70 - 80 % of R&D takes place in the manufacturer's industrial network of partners, suppliers and consultants. This development means that the industrial network become an important unit of analysis for understanding the individual company's capacity (Karlsson 2003).

This increased role of subcontractors also means that primes search for potential subcontractors world-wide and systematically assess the merits of incumbent vs. candidate subcontractors. But in the context of strategic SCM the decision to phase out a subcontractor is not taken easily. Before doing so a prime would typically take actions like going from single to dual sourcing (i.e. the retain the old subcontractor while introducing a new one).

The defence industry is not unaffected by this trend. For example, new defence systems are increasingly developed in consortia with a few major companies constituting the core and a large number of companies forming a supply network (Axelson with James, 2000). Well known development projects organised in large network are the Eurofighter, the Meteor and currently the Neuron.

This shift from internal development to complex development networks is basically driven by economies of scale arguments such that increasing development costs drive companies to specialise on core competencies where they can capture a large share of the relevant market – typically globally (Karlsson 2003).

Evidence from questionnaire and general interviews

We first turn to the issue of market access at supply chain level (the prime level counterpart was treated in Chapter 7), thereafter to the issue whether supply chain access achieved due to

offset has an effect lasting beyond the offset commitments and other EDTIB related questions. As in Chapter 7 questionnaire questions are in boldface and preceded by a ‘Q’. Also see Annex 7 (Sections 1 and 3).

Q: Does offset distort competition between EU-based companies? / Q: Does offset tend to restrict companies from competing? / Q: Does offset increase market access?

The very purpose of the main category of direct offset, subcontracting, as well as the subcontracting and export assistance transactions that go under defence related indirect offset, is to modify defence industry supply chains.

If there are requirements for – typically direct – offset that effectively delimit a certain sub-contract to one domestic firm – perhaps not even fully capable of performing the task, then the market is obviously very strongly distorted and receiving country will have to pay in money and delays. Allowing the prime freedom to choose among competing local partners for direct and indirect offset are obvious remedies to this type of situation.

Judging from replies, this strongly distortive type of offset does exist but is not the most typical. Many, also on the major prime side, testify to the market-opening effects of offset, and that offset-induced supplier relations frequently lead to mutual learning and last beyond the offset obligation starting them. Among receiving pMS many see offset as a way of accessing the supply chains of the big primes otherwise closed, e.g. due to national preference.

Several respondents point to special problems with SME:s (not from offset receiving country) being blocked as potential subcontractors. It is argued that this happens even for contracts without offset obligations (e.g. with the prime’s home country) due to the SME:s’ lacking capacity to help supply offset in subsequent contracts for the same type of equipment.

Q to pMS and business sector: Does offset impact on the strengthening (or weakening) of industry market position at EU level?

- **Impact on established supply chains?** Most big primes see negative effects, in particular for direct offset and due to national subcontractors being driven out of business. Receivers see positive effects.

Question to business sector only:

- **For your company/country as supplier of offset, has offset subsequently influenced your business in the receiving country?** Most who respond (several do not) see positive effects in terms of subsequent orders and supply chain relationships. Some see examples of offset leading to receiving companies becoming competitors, particularly with regard to SME:s in supplying country.
- **For your country as receiver of offset, has offset subsequently influenced your business in the supplying country?** Most who find the question applicable give positive responses, but some find it hard to establish causality.

Questions to pMS only:

- **Business development with receiving country?** Only few pMS (receivers) respond, all positive.

Discussion and conclusions

There is a relatively clear picture emerging that offset sometimes is seen as helping ‘new’

firms from receiving pMS to enter defence industry supply chains, and to remain there beyond fulfilment of the offset obligations. This suggests that offset has created some value in an EDTIB sense by achieving more European integration of defence industry supply chains. In other words offset sometimes breaks supplier lock-in due to national or other preferences, and ‘forces’ primes to learn about ‘new’ competent subcontractors.

However, adopting the type of SCM practices today state-of-the-art in other high-tech industries this type of learning would be a systematic effort across the globe, and the notion of changing the subcontractor population based on the whim of equipment-buying governments would seem peculiar indeed.

Now this criticism of defence markets is not entirely fair. First the political conditions of defence industry and procurement impede global sourcing ambitions due to security of supply and cross-border transfer considerations. The evolving EDEM framework will, however, ameliorate this situation at European level.

Second, as we have seen, there is a strong movement in the major defence primes against direct offset and in favour of indirect – and in particular indirect civil. From the SCM vantage point this can be understood such that the primes do not want buyers to meddle with their supply chains. This view we have encountered in particular in the aerospace sector. Perhaps it is a token of a new time that Poland, despite a quite ambitious approach to building its DTIB, refrains from the final assembly of her batch of F-16, so far very much the standard custom for substantial buyers of fighter aircraft.

In other areas like land systems, the old practices of final assembly in the buying country of at least part of the contract volume are alive and well and it is still possible, at least in an industrially well developed country, to find suitable local suppliers for about a third of the export value. In interviews industrialists presented a positive view of the mutual learning from successive offset partners in their consecutive buyer nations. But the economic efficiency of this must be strongly questioned, and not least the practice of almost always doing (part of) the final assembly in the receiving country. It is argued by respondents that the cost share of final assembly is small – maybe 3-5% of the contract, and the value for surge capability of having several assembly plants is also quoted by respondents. This might be a good argument for one or two ‘extra’ plants in Europe but hardly for the present industry structure.

Also the problems encountered by SME:s in relation to offset can likely be attributed to the general developments in SCM cited above. As we have seen, being a strategic partner supplier increasingly requires sophistication beyond design and manufacturing. We understand that demands on suppliers to assist with offset obligations are also part of the same trend. According to the critics this can be a forbidding requirement for some SMEs, even though technically competent. We have not been able to assess the scope of this problem but it does not seem unlikely that companies unable to assist in offset might also have problems with e.g. technology transfer and technical support within an export contract in the absence of offset.⁴⁷ Hence this may be an SME problem of a more general nature and there is indeed a debate well be-

⁴⁷ As we understand it the requirements on SMEs to assist with offsets would be in connection with their industrial specialty. In primes indirect offset beyond the business units’ industrial competence is typically handled by specialist functions at group level and specialised consultants. We find it unlikely that subcontractor SMEs should be asked to handle the latter type of offset problems.

yond the defence industry on the problems for SMEs to comply with the requirements imposed by the primes' current practices in SCM, e.g. as regards taking responsibility for R&D. Helping SME:s develop the skills and resources necessary to function as state-of-the-art strategic partners to primes is also likely to help with regard to offset obligations.

In sum, if it is true that primes are locked-in with suppliers due, e.g., to national preference offset – in particular subcontracting as direct or indirect defence-related offset – can be an effective tool in opening up markets and hence economically beneficial if applied with discretion. But adopting instead more fully, e.g. in European context, SCM practices of today's high-tech industries, with a more systematic search and assessment of potential strategic suppliers, will be an even better option. This alternative will, however, not necessarily solve problems reported with SME subcontractors being excluded from supply chains due to inability to supply offset; at least in part this problem is likely to be a symptom of a wider set of problems to comply with state-of-the-art requirements on strategic partner suppliers.

8.3 Offset for building new players for international defence industry supply chains? Existing niches

In this section we consider the problem of a country wanting to use offset as an instrument for building, in existing niches, new domestic actors sufficiently competent to participate in international supply chains also after the offset obligations are fulfilled.

Evidence from general business research

What effects of offset on receiving companies can be expected? The following discussion will build on theories in strategic management in order to conceptualise how the receiving company's local and global environment and internal technological competence influence offset effects.

First, the role of the individual company's local cluster will be elaborated. In the second subsection the company's path dependence on previously developed technological competence is discussed. Finally the effects of globalisation are discussed. Each section first reviews generic research results, and then turns to the likely implications for offset.

Cluster dynamics – external conditions influencing offset effects on receiving companies' competitive advantage Clusters are geographic concentrations of interconnected companies, suppliers, companies in related industries, associated institutions such as universities, etc. The cluster perspective suggests that central sources of company competitive advantage reside not only outside its organisation but also outside its industry – e.g. within related industries. The reason is that the density of related organisations and knowledge creates a dynamic environment that provides the individual company with valuable input, such as skilled employees, complementing technologies and potential for close relationships with demanding customers. Competitive clusters are also characterised by two or more competing companies.

One illustrative example is the Swedish automotive cluster within the Gothenburg area. This cluster has excelled in the competitive environment between Volvo and Saab. Chalmers University of Technology has been closely related to these companies, providing both engineers in fields of technology required and relevant research. The internationally best known cluster is the Silicon Valley, with its high concentration of IT companies. This cluster emerged largely through research from Stanford University and government investments in defence

electronics during the decades after the Second World War.

In brief, a competitive cluster is characterised by:

- Factor conditions, such as people with relevant education and supporting research
- Demand conditions, such as sophisticated and demanding local customers
- Related and supporting industries, such as locally based specialised suppliers and competitive companies in related fields of technology
- Context with competitors, locally-based competitors that inspire the individual company to continuously strive for new innovations and enhanced productivity (Porter, 1998)

The likely **implication** in terms of offset is that long term positive effects from offset deals require that receiving companies belong to cluster environments with relevant characteristics.

Development of technological competence - internal conditions influencing offset effects on receiving companies' competitive advantage In order to build a sustainable competitive advantage a company needs to differentiate its market position relative to its competitors (Porter, 1996) and it needs supporting resources, such as technology (Wernerfelt, 1984). A sustainable competitive advantage is in principle achieved either through cost leadership, i.e. being cheaper than the competitors, or through delivering greater value than them. In order to accomplish either of these strategies it is necessary to have fitting internal resources – e.g. production system, logistics and sales.

Arguably, technological competence is a key to competitive advantage in the defence industry. The term 'technological competence' can be defined as knowledge on and skills to use technique. Concerning complex products this includes substantial theoretical knowledge and skills to use e.g. production systems including machinery. Further, technological competence should be seen as an organisational capability.

A competitive advantage built on technological competence requires the combination of the following factors:

- Unique technology relative to what competing companies offer
- Difficult-to-imitate technology, i.e. it would take competitors substantial time and investment to imitate the technology
- Valuable technology relative to the customer needs, i.e. there is a market appreciating the technology and its price (Barney, 1991)

Concerning offset effects on receiving companies one interesting issue is hence what it takes to build competitive technological competence through offset deals.

The knowledge constituting a competitive technological competence is largely 'tacit', which means that it cannot be fully expressed by words or documents such as blue prints. The consequence is that technological competence by and large has to be learnt over time and is inseparable from the individual company. One implication is that technology transfer is likely to have limited effect on the receiving company's technological competence unless it is combined with substantial work – including internal development based on the received technology. Therefore, receiving an offset deal containing advanced technology will hardly give access to much of the supplying company's technological competence. Instead, the receiving company must build its own technological competence in co-operation with the prime and

other supply chain firms through the work-share received due to the offset deal.

One important aspect for the potential effect of offset deals is that it should be expected that the capability to build new technological competence is largely dependent on the receiving company's already existing competence. The reason is that the capacity to learn is strongly related to what is already known – i.e. the company's absorptive capacity (Choen and Levinthal, 1990) Therefore, the capacity to take advantage of an offset deal is strongly related to whether the receiving company's pre-existing technological competence is related or peripheral. If the existing technological competence is peripheral it will take substantial investments over long periods of time in order to build any competitive advantage. Conversely, if the company has related technological competence, an offset deal may help to further develop its competitive edge.

The likely **implication** is that offset deals should be expected to have limited long term effects on receiving companies' competitive advantage in the absence of previous related and competitive technological competence.

Industrial clusters and globalisation According to the common view on industrial clusters, competitive advantage on the company level is by and large dependent on conditions in the local environment – i.e. society's knowledge level, related industries, competitors and demanding customers. With globalisation of R&D and manufacturing it is reasonable to question to what extent this view is valid any more.

Manufacturing companies in many industries continuously search for low cost alternatives to plants in the most developed economies. During the last decade manufacturing has been moved to low cost countries in e.g. Central and Eastern Europe and South East Asia. This means that companies or regions without previous industrial competitive advantage become integrated in global supply chains. Their advantage is reasonable well educated people, low costs and a decent infrastructure. When major companies move manufacturing equipment and rapidly train people to become employees these companies or regions receive advantages that hardly would have emerged from within the local clusters. In brief, major companies inject knowledge into local companies and regions and thereby enhance their position in global industrial networks.

The knowledge injection effect is apparent regarding manufacturing. To what extent is a similar development possible concerning R&D? Clearly, companies involved in development of knowledge intensive products are willing to invest in development around the world. Not least this is apparent in the ICT and pharmaceutical industries. In these industries several companies have R&D centres globally distributed. Some development projects are integrated between facilities on different continents (Orlikowski, 2002). It is more than likely that local companies (including subsidiaries) benefit from becoming part of global R&D structures. Compared to receiving investments in manufacturing in low cost countries it is reasonable to assume that the barriers to receiving R&D investments are higher. The reason is that it is much more difficult to inject the kind of knowledge used for R&D than knowledge used for manufacturing. The principal difference is that while manufacturing knowledge to a large extent is routine based and thereby possible to transfer in standardised form, R&D knowledge is experience based and not based on routines which makes it very costly to transfer (Kogut and Zander, 1992).

So, what are the principal **implications** for the possibility to use offset as a mean to build competitive industries?

- R&D capacity is the key to long term competitive advantage. Becoming a part of a global industrial network can strengthen the individual company's or region's access to investments and markets.
- Relying on manufacturing without R&D is no successful way to competitive advantage. In particular, if the manufacturing system is developed elsewhere the manufacturing firm becomes dependent on suppliers of work, which creates low cost lock-in.⁴⁸
- Receivers of manufacturing orders, companies as well as regions, must use profits and possible other means to invest in R&D capacity in order to create any long term competitive advantage.

Evidence from questionnaire and general interviews

Below the relevant responses are summarised. As before boldface text starting with 'Q' denotes questionnaire questions. For a broader account of replies, see Annex 7 (Section 3).

Q to pMS and business sector: Does offset impact on the strengthening (or weakening) of industry market position at EU level?

- **Development of niche capabilities?** Most see such an effect, some caution that it may mean duplication of niches.
- **Provision of new capabilities?** Mostly affirmative replies, some cautioning about duplication and sustainability, but also some who say that this rarely happens [some may have taken the question to mean "new for pMS", others "new for EDTIB" – and hence relevant under Section 8.4]

Question to business sector only:

- **For your company/country as supplier of offset, has technology transfer, if any, to receiving companies had a positive, negative or neutral impact?** Experiences vary (also within the same company). Some see a risk of technology transfer leading to the emergence of competition, others say this can be avoided by proper management practices.
- **For your company/country as receiver of offset, has technology transfer, if any, from supplying companies had a positive, negative or neutral impact?** Almost all who find this question applicable answer in the positive.

Questions to pMS only:

- **Positive, negative or neutral impact of technology transfer?** Most say positive. Major exporters say negative or neutral, which is an indication of technology transfer leading to emergence of competitors.

Evidence from the case studies

Effect on technological competence and innovation The results from the case studies indicate that the effects from offsets on technological competencies critically depend on the receiving company's previous technology level. It seems that companies that already have a high technological competence level further enhance their level through offset deals in their area expertise. This effect requires, however, that the offset contains substantial development

⁴⁸ This may be somewhat less of a problem for potential large-volume defence-related manufacturing, cf. footnote 50

work for the receiving company. It is through development work over a long period of time, several years, that potentially new competencies are developed or existing ones enhanced. In contrast, companies receiving offset orders in technology areas peripheral to them do not seem to enjoy lasting positive effects.

Technology transfer has a potential positive effect, but it must be related to substantial development work in order to enhance the receiving company's technological competence. It is indicated in the studies that a sequence of offset deals with technology transfer in combination with advanced development work may help a company to develop new technological competence. In one case this has clearly led to development of technological competence enabling the company to compete on the international market with an advanced niche product. Realising technology transfer is difficult and is associated with misunderstandings between supplying and receiving companies, which drives costs.

Offset deals without substantial development within the receiving company do not seem to have lasting effects. Several companies experience that although offset deals containing manufacturing may have short term positive effects on cash flow and employment there may be long term costs associated with delayed restructuring. Even companies that receive offset orders within a competitive business model are less clear that manufacturing work has any effect beyond the short term cash flow.

In brief, it is clearly indicated that companies that achieve long term positive effects, on technological competence from offset deals, have related competences before the offset deal or at least a clear long-term strategy to develop niche competence. Long term positive effects require substantial development work within the receiving company. Technology transfer can support development of technological competence, but it is difficult and drives costs. It is not necessary to use technology transfer if the receiving company's existing competence is relevant. Manufacturing orders do not seem to have any lasting positive effects on receiving companies.

Effect on competitive position The evidence concerning the offsets effects on companies' competitive position is rather limited. It is difficult to estimate a company's previous and existing market position and even more difficult to say whether change can be explained by any specific offset deals when these vary on a 'case-by-case' basis. The results presented in this section provide some indications, but that should not be treated as general evidence.

There are a couple of examples suggesting that companies receiving offset strengthened their international market position – both in the supplying firms supply chain and through export orders to foreign defence forces. Successful development on the international market concerns companies that used offset to strengthen their existing technological competencies or to develop new niche competence over a long period of time. Hence, to the extent that offset deals have contributed to exports, the receiving company's internal development competence is decisive. Therefore, it is possible that offset deals that have positive influence on technological competence enhance receiving companies' exports. It can be noted that a company that has used offset to build technological competence and gain export orders in those areas subsequently became a supplier of offset deals.

Companies receiving mainly manufacturing offset deals do not seem to gain any competitive advantage in international markets. This seems to be the case both when the receiving com-

pany is competitive in one niche and receives peripheral offset orders and when companies lack any previous competitive advantage. However, there are examples of companies surviving as manufacturers on their national market through offset deals.

In brief, it is indicated that the companies receiving offset deals containing substantial technology development are more successful on the international market than companies' receiving manufacturing offset deals.

Discussion and conclusions

Offset may under certain conditions lead to the provision of new capabilities. First the word 'new' is ambiguous and may have been interpreted as 'new to Europe' (or the world) by some, 'new to pMS' by others, here we have the latter interpretation in mind. There is also an issue whether the new capabilities are taken to be competitive at national or – the case we are considering here – international level. At any rate the findings of the case studies – which are strongly supported by general research results – caution that establishment of new internationally competitive competence centres in already existing fields that do not build on considerable pre-existing industrial and technological resources is something quite unlikely to happen.

Offset may under certain conditions achieve technology transfer. This is strongly supported by questionnaire and interview responses, not least that some see adverse effects of unintended technology transfer. But again there is a strong caution from the case study. To receive in an effective way technology transfer requires an already existing industrial context. Further, effective technology transfer normally requires a complex working relationship and hence needs the context of subcontracting with elements of R&D being performed by the receiving firm.

In sum, it is very hard to build an internationally competitive defence industry supply chain player in the absence of a pre-existing industrial context. However, with such context in place offset with elements of subcontracting including R&D may mean that a receiving firm is considerably upgraded with regard to competitive position. For a relevant industrial context with insufficient international business networks also such forms of offset as export assistance, internships etc., which may contribute towards building supply chain-relevant networks can be of value.

8.4 Offset for building new players for international defence industry supply chains? Emerging niches

The theme of this section has not been extensively covered in questionnaires and interviews (cf. Section 8.3 on ambiguous questionnaire responses). It is, therefore, more in the form of a general discussion.

The upshot of Section 8.3 can be seen as quite negative for countries with currently limited internationally competitive DTIB resources. Our results are well-founded in research and case studies but some moderating aspects can yet be presented.

First some countries including pMS have very rapidly established themselves as internationally competitive actors in commercial high-tech (cf. Annex 2). We have not looked into this in detail, but a likely mechanism in many cases is that they have become low cost/high vol-

ume manufacturers. While a rationalised EDTIB might provide some scope for such tasks, say for MOTS⁴⁹ components, high-volume production is not a typical feature of the defence industry.⁵⁰

The example of another fast-growing high-tech player, Finland, points in a more useful direction. Here we have a case of a country where the industry structure has shifted dramatically due to the country being an early entrant of a since booming industry – mobile communication. This can perhaps be described as a case of ‘leapfrogging’, viz. such that Finland moved from an economy predominantly geared to exploitation of natural resources to a high-tech economy without passing the mid-tech position of, e.g., a major engineering industry.

Therefore, policy instruments helpful in the early identification and exploitation of emerging technologies are of great interest. We encountered in our interviews one offset-related idea along these lines:

- It has been suggested to organise EDA ad hoc Category B programmes where contributions can be in the form of know how rather than money.⁵¹ In such a programme, a company could offer know how as offset to in particular less industrially advanced pMS, which would have this as their entry ticket. The programme would then provide a context of co-operation allowing them to participate in building world class networks in a technology area hopefully emerging as significant.

8.5 Duplication and sustaining existing capabilities

This brief section essentially takes up questionnaire responses which do not fit elsewhere.

Evidence from questionnaire and general interviews

Below the responses relevant under this theme are summarised. For a broader account, see Annex 7.

Q to pMS and business sector: Does offset impact on the strengthening (or weakening) of industry market position at EU level?

- **Duplication?** Several pMS and business sector respondents see direct offset leading to duplication.
- **Sustaining existing capabilities?** Most say yes, some caution that this may have negative EDTIB effects, in particular in connection with direct offset.
- **Scale advantages** (reuse technology of the receiving companies, machinery or split development costs on a larger volume)? Responses diverge.

Discussion and conclusions

These responses are what should be expected from the discussion in Section 8.1, particularly if offset is applied to a high degree to support national DTIB assets for the national market.

⁴⁹ Military off the shelf.

⁵⁰ The research background of Section 8.3 furthermore identified a market position based on manufacturing without R&D (or in some industries perhaps rather advanced design functions) as a not very strong position, essentially since primes can opt for some even more low-cost location. This would, however, be less of a problem in an EDTIB context due to the security of supply and cross-border transfer concerns linked to locating key manufacturing resources outside of Europe.

⁵¹ See EDA – Armaments Cooperation, 1 January 2005.

Offset, in particular direct, leads to duplication of competencies. This is strongly indicated in questionnaire and general interview replies. It should also be logically expected. Whether this duplication is ‘undue’ is a more complicated issue. Some level of competition is obviously a positive EDTIB quality and an advantage from going from national to European level in sourcing decisions. Still we suggest that direct offset and governments strongly indicating which offset projects they desire are both drivers of undue duplication while a more market-oriented approach granting primes the right to select their receiving partners is likely to lead to less undue duplication.

Offset leads to sustaining existing capacities. This should come as no surprise. The negative aspects of this are already discussed under the duplication theme.

8.6 Alleged and real wider benefits of offset

This section discusses wider alleged benefits of offset. The theme was not systematically researched in the study but featured in interviews and desk-studies.

The benefits created for national DTIB:s by offset may also involve spillover effects to the wider national and European innovation systems. While there may be other and more cost-effective policy instruments for this than offset – not least in view of the limited size of DTIBs in relation to, e.g., the general high-tech economies of pMS (cf. Section 3.1 and Annex 2), it is highly consistent with well-known research findings that offset – direct and supply-chain related indirect – involving the close co-operation between competent supplying and receiving side firms may be highly value-creating in this regard.

Turning to non-supply chain offset, the ease whereby supplying firms are prepared to offer offsets like direct foreign investment, and the low costs cited should perhaps suggest concern for some indirect offset being a ‘no pain, no gain’ type phenomenon. This is further substantiated by some countries’ rejecting, e.g., direct investment as offset due to difficulties to establish additionality and causality (‘wouldn’t this investment have happened anyway?’). On the other hand some governments are prepared to use their highest offset multipliers for the same categories. An explanation can be provided in the homely context of the example how some car-buyers benefit from the financing deal the car-seller can offer and others do not (Section 6.1). In line with this, for some less industrially strong pMS access to the business network of a defence prime may be a very valuable asset, whereas for a developed industrial economy such contacts are commonplace. Even so it must be asked whether this is not often a zero-sum type situation. That is, the volume of direct industrial investments being made in, say, the new Central European MS is not likely to be positively affected by offset obligations, but the states well connected due to offset may benefit relative to their neighbours.⁵² The argument for direct purchases as indirect civil offset is fairly parallel – it may be perceived as a valuable form of offset by players with poorly developed business networks but hardly by those that have such.

Export assistance on the other hand is also a category of offset relevant mainly for pMS with less developed international industrial network. This category, however, is intended to exploit already existing industrial competencies in co-operation with potential qualified customers in

⁵² Arguably this is somewhat positive from an EDTIB perspective since countries investing in defence equipment are rewarded.

the prime's network. Hence it can be classified as supply-chain related and is therefore more in line with research and practice based knowledge on how to achieve effective transfer of technology (as well as managerial skills, market knowledge etc.).

Summarising countries without well-developed business networks can potentially benefit from a broader range of offset categories than those who have such networks. But the caveats presented in Section 8.3 against trying to establish new industrial players in the absence of a suitable industrial context apply also to non-defence industries.

But as we have seen in particular in Section 8.2 also firms in industrially advanced countries may perceive difficulties in getting access to the supply chains of defence primes, be the wish to achieve such access a matter of defence or industrial policy or both.

There are also other types of benefits claimed for offset than those to do with access to the business networks of the defence primes. So the Netherlands study cites benefits in terms of profitability and job creation.⁵³ In contrast to the above arguments to do with unique access to industrial clusters and networks, this type of argument is generally considered as problematic not to say erroneous by economists. This is even more the case for the tax ('the tax-payers money should stay in the country') and the balance of trade arguments sometimes heard in favour of offset. The economists' counter-argument is based on the alternative use of resources. Hence, in the Netherlands case, if the engineers, qualified workers, facilities and other production factors employed by the offset projects had otherwise remained unutilised the turnover and profit data reported would be of relevance. But if they have alternative uses the seemingly positive data may actually mean a loss compared to these alternatives. That is, from the vantage point of welfare economics a reported success in this regard could be an actual loss.

8.7 Conclusions: Costs and benefits of offset from a European perspective

In Section 7.5 we dealt with the static problem of what cost reduction a pMS electing not to accept offset could expect in today's defence equipment market. Then in principle a pMS paying the price of offset must be expecting some benefits.

These may be broader than defence (see Section 8.6). This theme has not been systematically researched in the study but we argue that, quite generally, the relevant aspect of offsets is the access they give to the business networks of the defence primes. Measured against this standard many forms of offset have limited utility even though this will vary with the receivers' ease of accessing international business networks without such help.

The classical case for offset has been to accept a higher cost in order to build and maintain the national DTIB (Annex 9). As discussed in Sections 8.1-3 the main mechanisms for this among pMS today, at least if restricting attention to what may have EDTIB relevance, i.e. not considering purely national assets,⁵⁴ is to help already competent domestic firms into the supply chains of defence primes, making them into internationally competitive defence subcontractors possibly via a competence upgrade in the process.

⁵³ See footnote 44.

⁵⁴ The discussion of such assets is deferred to Chapter 9.

Evaluating this situation from a European level vantage point the above-mentioned effects of offset are beneficial as compared to a traditional supply chain pattern of national preference (which could be due, e.g., to security of supply concerns, cultural similarity and influence from national politics).

But if, on the other hand, the standard of comparison is a pan-European DTIB where primes consistently apply state-of-the-art Supply Chain Management practices Europe-wide, then offset instead turns into an impediment, and its reduction presents a saving potential in addition to the static one discussed in Section 7.5.

Therefore, we are in a situation where the types of offset that have a particularly strong impact on DTIB, viz. subcontracting with R&D content as part of either direct or defence-related indirect offset, both create value by integrating European supply chains *and* dissipate value by preventing the full exploitation of the potential for such integration.

We have not found it possible to quantify this potential but we believe that state-of-the-art SCM practices are already used in substantial parts of the European DTIB. This is a likely explanation to the preference of many primes for indirect civil offset over direct.

It can be said, however, that forms of subcontracting offset with R&D content that allow primes flexibility in selecting partners and hence to apply current SCM practices are ways to make offset more conducive to the development of a future EDTIB or in other words to help create a Europe-wide structure of defence-relevant, internationally competitive industrial competence centres without unreasonable levels of duplication. This is true in particular for defence-related indirect offset, but also for direct if kept within limits reasonable given the industrial potential of the receiving country.

In the case of receiving pMS with competent industrial players, but lacking well-developed international networks, export assistance can be another highly relevant form of supply-chain related indirect offset.

For pMS essentially lacking relevant industrial players we have found that it is difficult to use offset to help them establish internationally competitive competence centres in existing niches. However, offset containing R&D collaboration aiming at emerging DTIB niches may provide some hope for the future.

9 Impact of offset on the future development of EDEM and EDTIB

In this chapter we set the results from the study in the EDEM and EDTIB context. We do this in the following steps:

- Identification of EDEM and EDTIB developments of potential relevance for offset (Section 9.1)
- Analysis of whether and how offset can be an effective and legitimate tool for EDEM/EDTIB objectives (Section 9.2)
- Based on the analysis in the above topic and our study results, in particular from Chapter 8, a more specific analysis of the usefulness of offset for promoting EDTIB Centres of Excellence (CoE:s) as emerging from an industry-driven process, and hence arguably EDEM/EDTIB objectives (Section 9.3)
- A discussion of information needs and availability for EDEM/EDTIB policy analysis based on our experience in doing the study (Section 9.4).

Section 9.5 contains a summary of the chapter's conclusions.

9.1 The development of EDEM and EDTIB

The document 'Characteristics of a strong future EDTIB' was approved by EDA Steering Board in NAD formation in September 2006 and succinctly sets out the requirements for an EDTIB and some of the means for getting there:

1. Capability driven

The EDTIB should be responsive to pMS and EU defence needs and thus be capable of:

- Delivering and sustaining key military capabilities;
- Providing complex system of systems solutions;
- Sustaining and upgrading platforms over the long-term;
- Sustaining the necessary levels of European and national operational sovereignty

2. Competent

The EDTIB should be capable of delivering cutting-edge technology on time by:

- Promoting innovation also from other sources including academia;
- Developing and sustaining key technologies (with a particular focus on disruptive technologies);
- Accelerating the fielding of new technologies.

3. Competitive

In business terms, the EDTIB needs to be:

- Providing cost efficiency;
- Enabling global exports;
- Attracting co-operation with non-European partners;
- Contributing to overall economic growth, not least amongst SMEs.

In order to develop and sustain an EDTIB of such character, Europe needs to work towards:

- More consolidation, work-sharing and interdependencies on a European-wide basis, based on Security of Supply and drastically simplified procedures for Intra-Community Transfer;
- More focus on Centres of Excellence (as an industry driven process) with an acceptable regional distribution;
- More integration into the wider European industrial base (as commercial solutions (i.e. dual use) increasingly become key drivers);

- Less dependence on non-European sources for key defence technologies.⁵⁵

In May 2007 EDA Steering Board in Defence Minister formation adopted a strategy for EDTIB. This strategy confirms and develops the above characteristics and, in particular, expands on the strategy for getting there. The development of an EDEM with Europe-wide competition is included as one main building block of this strategy.⁵⁶

In terms of the characteristics of EDTIB the strategy document includes the following additions and amplifications:

- A strong EDTIB is important both for security and defence policy and as an economic asset. The latter helps to support public support for defence.
- A fully adequate DTIB is no longer sustainable on a strictly national basis.
- In a world of multinational operations a national DTIB approach is also operationally unacceptable.
- Less dependence on non-European sources for key defence technologies is reconfirmed from Characteristics document, but shall not be understood as excluding imports from, or cooperation with, overseas defence industries.

As to the strategy to accomplish this, one main element is the actions for pMS governments:

- Clarifying military, technological, and industrial priorities.
- Consolidating demand such that the collaborative, as opposed to national, option is always considered in procurement decisions. This should apply not only to new equipment developments, but also – or perhaps more – to off-the-shelf purchases and upgrading of existing equipment and other aspects of in-service support.
- Increasing investments.
- Ensuring Security of Supply as a prerequisite for increased mutual dependence. The already approved Framework Arrangement on Security of Supply in Circumstances of Operational Urgency⁵⁷ needs to be operationalised and complemented with more long-term oriented instruments.
- Increasing competition and cooperation.

The final item above preambles the subsequent two sections, respectively entitled ‘Competition: developing the EDEM’ and ‘Cooperation: achieving more, and more effective, collaboration’. The latter is largely a further development of the actions for pMS governments listed above. One of the topics has deeper relevance to our study:

- In the context of equipment collaborations governments should refrain from ‘too much emphasis on national defence industrial ends’ and ‘exercise self-restraint – to allow industry to find the most efficient solution to consolidated requirements, and [...] move as rapidly as possible away from the approach of “fair shares” (juste retour)’.

The EDEM section revisits the initiatives taken during the past couple of years under the Intergovernmental Regime to encourage competition in the European Defence Equipment Market:⁵⁸ the Code of Conduct, the Code of Best Practice in the Supply Chain, and the Electronic Bulletin Board (with government-to-industry and industry-to-industry sections), as well as a number of related initiatives. Particularly salient topics for the study include:

⁵⁵ EDA – NADs Steering Board, September 2006

⁵⁶ EDA – Defence Ministers Steering Board, May 2007

⁵⁷ EDA – NADs Steering Board, September 2006

⁵⁸ EDA – Defence Ministers Steering Board, November 2005.

- The ‘vision of a healthy, competitive and integrated future EDTIB will not be realised if our market-opening efforts are perceived to be simply a bonanza for the large prime contractors. With industry’s active cooperation, we need to drive the benefits of competition down the supply chain – so that excellent second- and third-tier companies, often SMEs (with their typical flexibility and capacity to innovate), are able to prosper in a European scale of market. This makes economic as well as political sense: the future success of the DTIB in Europe will depend upon effective utilisation of human capital and innovation wherever these are to be found in Europe – in SMEs, and in suppliers not always associated with defence (universities, software houses, providers of dual-use technology), and in the new Member States. We note the slowness of Western European prime contractors to see the new Member States as places to invest, rather than just sell’.
- ‘Fair competition requires not only a level playing field, but also the assurance that individual competitors are not improperly advantaged. This suggests that features such as government ownership of, or publicly-provided aids to, defence industries will call for particular transparency if mutual confidence is to be maintained that there is no unfair competitive advantage (such as hidden subsidy) involved.’

The paragraph on offset was quoted *in extenso* in Section 1.1:

- ‘[T]he still-infant status of our open market efforts, make this practice understandable... Nonetheless, when offsets appear as a criterion in defence competitions, then these clearly are not being decided on the basis of the value of competing offers alone. ...[W]e share the ultimate aim to create the market conditions, and the European DTIB structure, in which the practice may no longer be needed – and, meanwhile, to consider how adverse impact on competition and the DTIB might be mitigated.’

9.2 Offset as an effective and legitimate tool for the development of EDEM and EDTIB?

In sum the EDTIB Characteristics and Strategy contain many element clearly difficult to reconcile with offset – just as its collaborative development counterpart, *juste retour*. However, the closure of offset practices is not seen as imminent.

In Section 1.1 we identified two alternative perspectives regarding the, for the time being unavoidable, role of offset with regard to the development of EDEM and EDTIB:

- ‘mitigation of adverse impact’/damage limitation
- types of offset more and less ‘conducive to the development’.

The effect study puts us in a position to promptly deliver an answer to the damage limitation perspective: Indirect civil offset has been found to have the least distorting impact on prime contract level markets, with some tendency to favour European vs. non-European firms. Further, at supply chain level purely civil offset (in contrast to civil but defence-relevant) by definition will not impact on defence equipment markets or DTIB:s. Now there are considerable problems with this result. So the Commission in the Interpretative Communication particularly singles out this category: ‘Indirect non-military offsets, for example, which do not serve specific security interests but general economic interests, are not covered by Article 296 TEC, even if they are related to a defence procurement contract exempted on the basis of that

Article.⁵⁹

Turning instead to the perspective of more or less EDTIB conduciveness we need to much more broadly invoke the results from the effect study. To be able to do so in a systematic way we start by identifying a number of themes among the above characteristics of a strong EDTIB and the implementation strategies for it, in particular EDEM, where based on our study results we believe that some pMS might argue that some forms of offset are helpful for the wanted type of development. These themes and the usefulness of certain forms of offset will then be critically assessed in what follows.

Some level of ‘traditional’ military security of supply (used here as shorthand also including operational sovereignty) need to be part of EDTIB:

- ‘Sustaining and upgrading platforms over the long-term.’ Platforms exist in all pMS and some local capacity may therefore be beneficial in this regard.
- ‘Accelerating the fielding of new technologies.’ Argument as for previous item.
- ‘Sustaining the necessary levels of European and national operational sovereignty.’ Here the *national* part can be taken as an argument for having some industrial capacity nationally.

A ‘modern’ interdependencies-oriented view of security of supply is emerging:

- ‘More consolidation, work-sharing and interdependencies on a European-wide basis, based on Security of Supply and drastically simplified procedures for Intra-Community Transfer.’ For others to be interdependent requires some EDTIB assets to be in my pMS.
- ‘More focus on Centres of Excellence (as an industry driven process) with an acceptable regional distribution.’ No additional argument but an explicit confirmation of the relevance of geography.

EDEM is at an early stage of formation and unequal power relationships may be a problem for its development:

- ‘The still-infant status of our open market efforts make offset an understandable practice’.
- ‘EDTIB will not be realised if our market-opening efforts are perceived to be simply a bonanza for the large prime contractors.’
- ‘We note the slowness of Western European prime contractors to see the new Member States as places to invest, rather than just sell’.

A strong EDTIB needs to interact with the wider economy and innovation system on a Europe-wide basis:

- A strong EDTIB is important both for security and defence policy and as an economic asset. The latter helps to support public support for defence.
- ‘Contributing to overall economic growth, not least amongst SMEs.’ If EDTIB is an engine for innovation and growth, pMS contributing economically will have a legitimate interest in its geographic distribution
- ‘Promoting innovation also from other sources including academia.’ The basic ability for defence-related innovation is distributed across Europe, hence better exploited by a

⁵⁹ COM(2006) 779, 7.12.2006, p. 7. Note, however, as explained in Section 4.2 and further discussed in Section 9.2, that the problems of justifying offset under Article 296 go further than to indirect non-military.

distributed EDTIB .

- ‘More integration into the wider European industrial base (as commercial solutions (i.e. dual use) increasingly become key drivers).’ Since the wider industrial base is distributed across Europe integration is more effective if this also holds for EDTIB.

Again, these are *potential* arguments for offset. There may be other more cost-effective ways of achieving an ‘acceptable’ regional distribution. Also several of the characteristics strongly suggest the opposite – concentration. In fact the item on CoE can be seen as the acknowledgement of this goal conflict.

‘Traditional’ vs. ‘modern’ interdependencies-oriented security of supply

Recall that in Chapter 8 we refrained from analysing the theme of national assets for the national market in a pre-EDTIB setting since we foresaw that such an analysis would have limited relevance from an EDTIB perspective. This is the place do this analysis.

The theme of ‘traditional’ security of supply does contain some indisputable substance: both in-service support and upgrading require solid understanding of the equipment involved. For in-service support also limited geographic distance is sometimes a real issue. Finally some would also argue that cultural similarity matters, both in a general sense and in how military forces organise and operate.

As we saw above the EDTIB strategy argues that the collaborative option applies also (or perhaps more) to in-service support and upgrading.

We see no contradiction between these two positions. Legacies in terms of the equipment operated, as well as geographic and cultural closeness, determine what collaborations are possible or effective but they rarely prescribe exclusively national solutions.

Hence ‘traditional’ security of supply should not be seen as separate from its ‘modern’ interdependencies-oriented counterpart. But if interpreting the latter in terms of networks of CoE:s or at least internationally competitive competence centres emerging from an industry-driven process, there is still a significant difference. Even though in-service support in an EDTIB setting ought to take place in a network of mutually interdependent pMS, international competitiveness is still not so much of an issue; if I operate AFV X Mk Y, it is someone able to service precisely this type of equipment I need – be it something worthy of the label CoE or not.⁶⁰ And as a pMS I will hardly be prepared to accept the European structure of such support facilities to be the outcome of an entirely industry-driven process.

Traditionally direct offset is often used to establish the type of facility we are discussing at a national level. In principle this could be done in a network context too, i.e. when country X maintains a facility also for countries A, B, and C.

It is, however, really worth asking if offset is a cost-effective instrument in this regard, either for the purely national or multinational case. The argument on this from hard core economists is worth listening to. It goes that if a government wants to achieve security of supply in rela-

⁶⁰ It is not difficult to imagine ‘network CoE:s’ emerging in this context – global or European level firms operating in-service support and upgrading facilities in many countries and effectively exploiting the economies of scale and scope in this market.

tion to a type of defence equipment by developing and maintaining some domestic industrial competence, then it should carefully define this competence as a requirement in its tendering specifications – possibly just as an option to be able to independently assess whether such investment gives value for money. Then this security of supply – if deemed cost-effective – would be achieved as an integral part of the procurement contract, and failure of the seller to deliver would be a breach of this ‘real’ contract, not just something included in a normally less legally binding offset contract. We find this a very compelling argument and very much in line with Public Procurement legislation, particularly if prospective contractors are given liberty to design their proposed solutions to the customer’s problem.⁶¹

In sum, also from an EDTIB point-of-view there must be in-service support for the particular types of equipment that pMS operate. But this does not imply that this support needs to be supplied nationally. Further, the provision of in-service support will have to entail long-term planning and commitment with a level of influence for concerned pMS governments that goes beyond what is normally understood by an industry-driven process. Therefore the situation lacks one of the prerequisites we have identified for effective offset, viz. considerable freedom for offset suppliers to find their receiving side partners. Based on the above analysis it seems that other procurement approaches would be more suitable here than offset.

The regional aspect of CoE:s in EDTIB and the legitimacy and effectiveness of offset

Consider on the other hand upgrading. In many cases the in-service support facilities discussed in the previous subsection will play a role here too. But at least for major upgrades also something like the network of CoE:s emerging as an industry-driven process will be a necessary resource base. We have argued above that in view of mutual interdependencies it is a legitimate ambition of pMS to be a player in this game. Can some forms of offsets be a policy instrument whereby a pMS could influence an industry driven process so as to increase the likelihood of achieving this legitimate interest?

This can be summarised by the EDTIB characteristic: ‘More focus on Centres of Excellence (as an industry driven process) with an acceptable regional distribution.’. The following section, therefore, will explore the issue of a potentially legitimate and effective use of offset for fostering CoE:s – or at least internationally competitive EDTIB centres of competence, but let us from now on use the notation ‘CoE’ – as a key element of ‘modern’ interdependencies-oriented security of supply.

Furthermore, such CoE:s are also key to the interaction between EDTIB and the wider economy and innovation system, which we identified as another potential argument for offset; it is difficult to see purely national DTIB assets being attractive partners for other innovation system players – even nationally.

Finally we identified unequal power relationships as a motive for offset potentially coherent with EDTIB. The possibility for governments to use offsets to obtain a share of producer rents was discussed at a theoretical level in Section 6.1. Here we would argue in the following way:

- If defence primes fail to utilise certain potential CoE subcontractors due to irrational reasons like regional preference, then it would be in line with the EDTIB strategy that pMS use offsets to persuade primes to change this behaviour.
- If a pMS lacks EDTIB CoE:s to a degree that makes their regional distribution ‘un-

⁶¹ We are indebted to an expert questionnaire respondent for this argument.

acceptable’, then use of offset would seem legitimate – at least if it also has a good chance of being effective rather than wasteful.

We have seen in Chapter 7 that the scope for new CoE:s to enter EDTIB shall be expected to be at supply chain, rather than prime, level. In Chapter 8 we also did a rather comprehensive analysis of the conditions for using offset for this purpose. In the next section we shall put this analysis in the EDTIB setting.

The legality of offset

But before doing so we also need to revisit the legal issues discussed in Chapter 4.

First, indirect non-military offsets have been squarely identified by COM in the Interpretative Communication as irreconcilable with Article 296 – which is the legal basis used for offset in EU.⁶² From an EDTIB perspective this may imply certain problems to do with defence-relevant but strictly speaking non-defence offset.

But furthermore the legal analysis carried out in the study (Section 4.2) indicates serious problems with the legality of *any* form of offset, having to do with whether offsets can be claimed to be ‘*necessary* in order to address essential security interests’. The implications of this have not (yet) been established in case law, but we are somewhat concerned with regard to the incentives created for pMS wanting to maintain or develop DTIB assets in particular for upgrading, the case we discussed in the previous subsection.

As we have seen there such a pMS could go for a ‘modern’ interdependencies-oriented approach by fostering a portfolio of EDTIB assets relevant for upgrading equipment for own and other pMS’ forces, but where the exact composition of this portfolio should be the outcome of an industry driven process, rather than of a policy grand design. In the next section we will investigate whether certain forms of offset can, under certain circumstances, be conducive to this.

That country would seem considerably more coherent with EDTIB than one that goes instead for a traditionally national approach, carefully identifying the industrial assets it claims to be necessary for its operational sovereignty and taking decisive action to preserve them (also beyond the legitimate needs for in-service support discussed above).

Then it would seem that the second country could rather easily invoke Article 296 for sustaining its approach via direct procurements, state aids, and maybe even offset requirements specifically directed towards ‘necessary’ DTIB assets. The first country on the other hand – under the above interpretation – is likely to have greater difficulty in arguing that using offset to promote an industry driven process with inherently uncertain outcome but leading, perhaps, to some CoE:s be necessary in order to address its essential security interests.

In general we have identified flexibility in offset for primes to choose receiving side partners as a feature beneficial from an EDTIB perspective. Precisely this flexibility could make it particularly difficult to invoke Article 296.

⁶² Cf. footnote 59.

9.3 Offset for promoting CoE:s

Offset for opening up defence equipment markets: supply chain CoE:s and primes in receiving pMS

The first of three CoE-related cases discussed in Chapter 8 was:

- Essentially full-fledged CoE:s with difficulty to enter the primes' supply chains due to irrational factors like national preference. See Section 8.2.

Here supply-chain related offset, mainly subcontracting (direct and indirect defence relevant) was seen to open up supply chains.

But it was also argued that Europe-wide state-of-the-art Supply Chain Management would be a better alternative. This conclusion is very much in line with the EDTIB documents – in particular the CoBPSC – as is the realisation that objective merit is not always the primes' criterion for selecting subcontractors.

The logic for full-fledged supply chain CoE:s also applies *mutatis mutandis* for primes (where such exist) in receiving pMS. Between countries with substantial defence prime contractors, indirect defence offset, not least in the form of swapping, is a natural type as evidenced by the results for Group 2 in Section 3.2. But again a fully implemented CoC would be a superior alternative to achieving this effect by means of offset.

From an EDTIB and EDEM perspective the role of offset in the cases we are discussing here should clearly be seen as transitional. With Europe-wide sourcing increasingly becoming the norm the positive market-opening role of offset will diminish in magnitude and the market-impeding role will grow as discussed in Section 8.7. If and when EDTIB and EDEM policies gradually succeed in opening up defence supply chains for Europe-wide participation we see a clear conflict with offset of the forms discussed in this subsection.⁶³ This indicates the need to monitor developments in European defence supply chains to identify changes in the role of offset which could in turn be an important input for a putative process for phasing out these forms of offset as EDTIB instruments increasingly take over its role.

Offset for building new CoE:s in receiving country

In this subsection we discuss the remaining two CoE-related cases from Chapter 8:

- Candidate CoE:s operating in a relevant industrial context but not fully internationally competitive. Also here did we see a role for offset – the same forms as in the above subsection and in earlier stages also export assistance – for upgrading these to CoE:s. See Section 8.3.
- Prospective CoE:s operating in weak industrial contexts. Here the chances of establishing CoE:s in *existing* niches were found to be quite limited. We did, however, point to possibilities to use offset with a content of R&D cooperation as a way to help

⁶³ A regime of coexistence between, on the one hand, Europe-wide sourcing and on the other national sourcing as the norm with offset used for treating the 'anomaly' of import will also create problems of a more technical nature. One respondent commented this type of situation (perhaps more likely to become a reality for upgrades and minor systems procurement than for major systems) arguing that offset requirements if used for external suppliers should be applied also for domestic ones. We understand the position such: If external firms are required to supply both local content and additional offsets totalling perhaps well above 100% of the procurement contract, a domestic prime free to choose subcontractors globally and not asked for any other forms of compensations would be unduly favoured.

receiving countries enter *emerging* niches. See Section 8.4.

In these cases it is important to have the industry-driven logic of allowing primes to search for suitable receiving side partners. This suggests that offset should be to a large degree indirect defence related, but elements of direct offset are also very good from this perspective as long as they are not forced by pMS to levels that threaten the industry-driven search logic. It is obvious that developing national facilities for the national markets will lead to duplication and overcapacity at EDTIB level. It is also very likely that using offset to promote competence centres with international ambitions also frequently has led to the same result; our data do not allow us to distinguish between these two cases. But here too allowing offset to be more of an industry-driven activity is likely to be a useful remedy.

Many other policy measures can be used for the ends discussed here, e.g. the Structural Funds. Doing an evaluation on the effectiveness of (relevant forms) of offset vs. other policies to achieve technology transfer is far beyond the scope of this study. But well-managed offset programs have attractive features like the market-driven selection of partners and the serious collaborative work on complex problems within highly qualified industrial contexts that they can offer e.g. a subcontractor from a new MS. Even if offset were phased out it would likely be beneficial if some of these features could be preserved within new policy measures like joint development programmes.

If used to help establish EDTIB CoE:s in pMS with a ‘unacceptably’ low number of such centres, the conflict between offset and EDTIB/EDEM policies does not seem significant. Phasing out can be based on success in establishing CoE:s (and subject to future Enlargement of EU).

9.4 Information needs and availability for EDEM and EDTIB policy analysis

In doing this study we have had to rely on incomplete and patchy data. This is the case already at the prime contract level, where, however, SIPRI at least has a long time series of compatible data collected from open sources (Section 3.1).

For information specifically on offset: types, categories, use of multipliers, etc., we have had to rely on data from those of our respondents who have been able to share it with us. Further, as we have found, approach to and conceptualisation of offset varies widely among pMS, which makes it difficult to get a consistent picture even when data is available.

In our study we have indicated defence industry supply chains as a key area; how open these supply chains are to Europe-wide participation is a major determinant whether offset is helpful or an impediment to the development of EDTIB and EDEM. Therefore we have suggested that such monitoring could be a useful guide for successively phasing out (some forms of) offset. But this type of information seems entirely missing at European level.

In sum, the policy analyses that will be needed to guide EDEM and EDTIB developments will be seriously hampered by lack of basic data unless EDA (including pMS), the Commission, and perhaps other actors, e.g. from the industry side, take decisive action.⁶⁴

⁶⁴ We are aware of the MEDI (Mapping of the European Defence Industry) initiative of DG ENTR.

Further, better availability of information will also be useful for bench-marking and exchange of best practice among pMS and industry, which we think would be of great value in defence procurement and defence industry policy, not least with regard to offset.

9.5 Conclusion: the conduciveness of types of offset to EDTIB

The future of offset

In the study we have identified three distinct positions with regard to the future of offset from an EDTIB perspective:

4. Offset should ideally be phased out eventually. In the meantime adverse impacts on competition should be mitigated.
5. As above but in the meantime offset may also serve the development of EDTIB positively
6. Offset – or at least much of offset – is not consistent with Article 296 and, hence, illegal although pending case law to this effect.

From the ‘damage limitation’ perspective (1), indirect (strictly) non-military offset was found to be preferable since it distorts markets the least, at prime and supply chain level. Furthermore there are some indications that it provides some advantage for European vs. overseas players. But there are considerable problems with this result. So the Commission in the Interpretative Communication particularly singles out this category as not covered by Article 296.

From a perspective that accepts that offsets may have both drawbacks and benefits (2) the answer is more complex. As a first step we identified four clusters of issues from the EDTIB Strategy and Characteristics document of relevance for judging whether and how offset may be an effective and legitimate tool for EDEM/EDTIB objectives:

- Some level of ‘traditional’ military security of supply (used here as shorthand also including operational sovereignty) need to be part of EDTIB
- A ‘modern’ interdependencies-oriented view of security of supply is emerging
- EDEM is at an early stage of formation and unequal power relationships may be a problem for its development
- A strong EDTIB needs to interact with the wider economy and innovation system on a Europe-wide basis.

First ‘traditional’ military security of supply – mainly to do with in-service support – must exist also from an EDTIB point-of-view. But this does not imply that this support needs to be supplied nationally. Further, the provision of in-service support will have to entail long-term planning and commitment with a level of influence for concerned pMS governments that goes beyond what is normally understood by an industry-driven process. Therefore the situation lacks one of the prerequisites we have identified for effective offset, viz. considerable freedom for offset suppliers to find their receiving side partners. Based on our analysis it seems that other, more direct procurement approaches would be more suitable in this regard.

Focusing instead on upgrading, the ‘modern’ interdependencies-oriented view of security of supply based on a network of CoE:s – or at least internationally competitive EDTIB centres

of competence – becomes highly pertinent. For a pMS to strive for establishing such CoE:s for its security of supply seems highly legitimate. This can be summarised by the EDTIB characteristic: ‘More focus on Centres of Excellence (as an industry driven process) with an acceptable regional distribution.’

Furthermore, such CoE:s are also key to the interaction between EDTIB and the wider economy and innovation system.

Finally we identified unequal power relationships as a motive for offset potentially coherent with EDTIB. Here we would argue in the following way:

- If defence primes fail to utilise certain potential CoE subcontractors due to irrational reasons like regional preference⁶⁵ (see Chapter 8), then it would be in line with the EDTIB strategy that pMS use offsets to persuade primes to change this behaviour.
- If a pMS lacks EDTIB CoE:s to a degree that makes their regional distribution ‘unacceptable’, then use of offset would seem legitimate – at least if it also has a good chance of being effective rather than wasteful.

The context of a ‘modern’ interdependencies-oriented approach to upgrading vs. a traditionally national one is also relevant to apply to the legal issue (3). Here it would seem that a pMS operating according to the ‘national’ approach could rather easily claim that a facility is ‘*necessary* in order to address essential security interests’. If this could not be used to require direct offset it could, at least, be used for motivating direct procurement or state aid. In our understanding the pMS wanting instead to use indirect defence-related offset in striving for a ‘modern’ interdependencies-oriented type security of supply via CoE:s emerging in an industry-driven process is likely to have a worse position arguing that this is *necessary* for essential security interests.

Offset for promoting CoE:s

Neglecting the possible legal problems, we next turn to applying the results from Chapter 8 to the potential EDTIB role for offset outlined above. Based on Chapter 8 (cf. above) we identified three main cases:

- Essentially full-fledged CoE:s with difficulty to enter the primes’ supply chains due to irrational factors like national preference. See Section 8.2.

From an EDTIB and EDEM perspective the role of offset in this case should clearly be seen as transitional. With Europe-wide sourcing increasingly becoming the norm the positive market-opening role of offset will diminish in magnitude and the market-impeding role will grow as discussed in Section 8.7. If and when EDTIB and EDEM policies gradually succeed in opening up defence supply chains for Europe-wide participation we see a clear conflict with offset being used for this purpose. This indicates the need to monitor developments in European defence supply chains to identify changes in the role of offset which could in turn be an important input for a putative process for phasing out these forms of offset as EDTIB instruments increasingly take over their role.

The other cases are:

- Candidate CoE:s operating in a relevant industrial context but not fully internationally

⁶⁵ Currently there may be rational reasons for these preferences like the embryonic state of European security of supply and cross-border transfer regimes.

competitive. Also here did we see a role for offset for upgrading these to CoE:s. See Section 8.3

- Prospective CoE:s operating in weak industrial contexts. Here the chances of establishing CoE:s in *existing* niches were found to be quite limited. We did, however, point to possibilities to use offset with a content of R&D cooperation as a way to help receiving countries enter *emerging* niches. See Section 8.4

In these cases it is important to have the industry-driven logic of allowing primes to search for suitable receiving side partners. This suggests that offset should be to a large degree indirect defence related, but elements of direct offset are also good from this perspective as long as they are not forced by pMS to levels that threaten the industry-driven search logic.

It is obvious that developing national facilities for the national markets will lead to duplication and overcapacity at EDTIB level. It is also very likely that using offset to promote competence centres with international ambitions also frequently has led to the same result; our data do not allow us to distinguish between these two cases. But here too allowing offset to be more of an industry-driven activity is likely to be a useful remedy.

Many other policy measures can be used for the ends discussed here, e.g. the Structural Funds. But even if offsets were phased out it would likely be beneficial if some of their best cooperation-enhancing features could be preserved within new policy measures like joint development programmes.

If used to help establish EDTIB CoE:s in pMS with a ‘unacceptably’ low number of such centres, the conflict between offset and EDTIB/EDEM policies does not seem significant. Phasing out can be based on success in establishing CoE:s (and subject to future Enlargement of EU).

Information needs and availability for the development of EDEM and EDTIB

In doing this study we have found great shortage of reliable background data on European defence equipment markets and DTIB:s. For the development of an EDEM and EDTIB it is crucial that this situation is improved. In particular given the criticality of the supply chain issue – with offset likely to shift from ‘good’ to ‘bad’ at a point, better such data is particularly necessary.

10 Summary and conclusions

This chapter summarises the main conclusions drawn in the study. For ease of reference it maintains the structure of the report, i.e. each chapter presenting conclusions corresponds to a section in this chapter. Chapters 1, 2, 5, and 6 have a more supportive character and, therefore, are not summarised here.

10.1 Mapping European offset (Chapter 3)

Relevant and reliable information on European defence equipment markets in general and offset in particular is scarce. To arrive at results we have had to use patchy and partly inconsistent data sets.

With these caveats in mind we have arrived at a number of conclusions:

pMS are becoming ‘more European’ in their defence trading patterns. But still ‘non-Europe’ accounts for three quarters of pMS export and half their import.

According to our results the underlying contract volume for offset in pMS is around € 4,200m which gives, with an average offset percent of 135%, an offset volume of € 5,600m. The overall distribution according to type is:

- Direct: 40%
- Indirect military: 40%
- Civil indirect: 20%.

Offset and related defence trading patterns vary widely among pMS:

- France and Germany do not accept offset as a matter of policy. Their export is globally oriented, while their – fairly limited – import is increasingly European.
- Italy, the Netherlands, Sweden and UK is a group of net exporters but also with considerable import. As a group their import patterns have a strong transatlantic orientation while, in contrast, their export has a strong European tendency. Indirect military offset is their typical form of offset. This indicates a striving for defence industry specialisation and a pattern of mutual interdependencies, perhaps, however, more in a transatlantic context than a European one.
- Finland, Greece, Poland, Portugal, and Spain are the big European defence equipment importers. Some are also significant exporters. Their offset seems to be direct to a high degree. This may indicate some risk for duplication.
- The other pMS (in EDA-24 which was our study population) are relatively small actors both in terms of export and import. As a group their DTIB:s are small and the limited absorptive capacity means that they tend towards indirect civil offset.

High offset percentages are an issue of some concern. We found that there was a tendency for these to increase over time, in particular for major contracts. In our opinion the debate is, however, somewhat exaggerated. Typically high offset percentages are due not to increasing power for buying countries but to either or both of:

- High offset multipliers, such that the ‘actual value’ of an offset transaction is perhaps just a third or, even fifth or e a tenth, of the credited value.

- High content of indirect offset in categories ‘cheap’ to the offset supplying prime like purchases or investments.

10.2 Policy and legal context of offset (Chapter 4)

The most important finding in this chapter regards the legality of offsets in Europe. The European Commission recently brought this matter up in an Interpretative Communication on the application of Article 296. While the Commission specifically mentioned indirect non-military offset as problematic, according to the legal analysis done within our study it is generally difficult to justify *any* type of offset on the basis of Article 296. Not only do Member States have to prove that the offset would promote their essential national security interests, not their economic interests. They also have to prove that the offset is *necessary* to address these essential security interests, leaving them no other choice than requiring the offset to safeguard their essential national security interest. We return to this issue in Chapter 9.

On the pMS side the clear majority accept offset and plan to continue with this whereas France and Germany are opposed to offset. The different offset patterns between groups of pMS observed in Chapter 3 are on whole well in line with the policies and practices observed in the present chapter.

The positions of business sector respondents are on the whole well aligned with those of their respective countries. A special feature of big primes in particular, however, is that they express a strong preference for indirect civil offset.

10.3 Effects of offsets on defence equipment markets and DTIB:s: prime contract level (Chapter 7)

There are many indications provided for both positive and negative effects of offset with regard to defence equipment markets. However, the stronger of these generally apply to the subcontractor level, see Chapter 8. As to prime contract the following can be said:

- The findings on offset effects on the competitiveness of European vs. overseas players on European defence equipment markets are rather inconclusive. US legislation limiting technology transfer might give an advantage to European players. Military offset (in our understanding mainly indirect including semi-direct) is seen by some as advantageous to US primes with their greater scale and scope whereas indirect civil may be easier for European firms, geographically and culturally closer to European markets.
- Some respondents warn against a situation where offset would be allowed for non-EU firms but prohibited in intra-EU trade. We understand, however, that this is hardly a policy advocated by any European actors; to the degree that offsets are illegal this illegality lies on the receiving side irrespective of whether suppliers are European or not.
- Some respondents argue that offset leads to increased defence budgets and the opening of new prime contract markets (i.e. pMS with industrial capability to develop a system in their own industry opening up competition to foreign primes). We were not able to find conclusive evidence on this.
- In many cases offset does not have a strong effect on contract award, e.g. due to competitors tending to deliver comparable offset packages.
- At prime level there is little evidence of offset preventing firms to compete.
- Some respondents, however, warn that a tendency in some pMS towards excessively

demanding offset requirements and stringent implementation rules may become a market inhibitor in the future.

- Direct and to some extent also indirect military offset are seen as more prone to affect participation and contract award. Consequently indirect civil offset is the type least likely to distort markets.
- There are indications of transparency in pMS' dealing with offset (e.g. the tendency for the offset packages of competitors to be comparable can be interpreted thus). But there are also indications of lacking transparency and professionalism, which in extreme cases may even offer opportunities for corruption.
- Based on estimates from questionnaires, interviews, and literature we believe that 5-10% is a reasonable range for the direct cost of offset among pMS. Caveats are due in view of the heterogeneity of offset but considering the numbers arrived at in Section 3.2 this would correspond to €200-400m p.a., i.e. 1-2 % of European defence equipment expenditure (Annex 2).
- Offset leads to some but probably not major time delays.

10.4 Effects of offsets on defence equipment markets and DTIB:s: supply chain level (Chapter 8)

In Section 7.5 we dealt with the static problem of what cost reduction a pMS electing not to accept offset could expect in today's defence equipment market. Then in principle a pMS paying the price of offset must be expecting some benefits.

These may be broader than defence (see Section 8.6). This theme has not been systematically researched in the study but we argue that, quite generally, the relevant aspect of offsets is the access they give to the business networks of the defence primes. Measured against this standard many forms of offset have limited utility even though this will vary with the receivers' ease of accessing international business networks without such help.

The classical case for offset has been to accept a higher cost in order to build and maintain the national DTIB (Annex 9). As discussed in Sections 8.1-3 the main mechanisms for this among pMS today, at least if restricting attention to what may have EDTIB relevance, i.e. not considering purely national assets (see Chapter 9), is to help already competent domestic firms into the supply chains of defence primes, making them into internationally competitive defence subcontractors possibly via a competence upgrade in the process.

Evaluating this situation from a European level vantage point the above-mentioned effects of offset are beneficial as compared to a traditional supply chain pattern of national preference (which could be due, e.g., to security of supply concerns, cultural similarity and influence from national politics).

But if, on the other hand, the standard of comparison is a pan-European DTIB where primes consistently apply state-of-the-art Supply Chain Management practices Europe-wide, then offset instead turns into an impediment, and its reduction presents a saving potential in addition to the static one discussed in Section 7.5.

Therefore, we are in a situation where the types of offset that have a particularly strong impact on DTIB, viz. subcontracting with R&D content as part of either direct or defence-related

indirect offset, both create value by integrating European supply chains *and* dissipate value by preventing the full exploitation of the potential for such integration.

We have not found it possible to quantify this potential but we believe that state-of-the-art SCM practices are already used in substantial parts of the European DTIB. This is a likely explanation to the preference of many primes for indirect civil offset over direct.

It can be said, however, that forms of subcontracting offset with R&D content that allow primes flexibility in selecting partners and hence to apply current SCM practices are ways to make offset more conducive to the development of a future EDTIB or in other words to help create a Europe-wide structure of defence-relevant, internationally competitive industrial competence centres without unreasonable levels of duplication. This is true in particular for defence-related indirect offset, but also for direct if kept within limits reasonable given the industrial potential of the receiving country.

In the case of receiving pMS with competent industrial players, but lacking well-developed international networks, export assistance can be another highly relevant form of supply-chain related indirect offset.

For pMS essentially lacking relevant industrial players we have found that it is difficult to use offset to help them establish internationally competitive competence centres in existing niches. However, offset containing R&D collaboration aiming at emerging DTIB niches may provide some hope for the future.

10.5 Impact of offset on the future development of EDEM and EDTIB (Chapter 9)

The future of offset

In the study we have identified three distinct positions with regard to the future of offset from an EDTIB perspective:

1. Offset should ideally be phased out eventually. In the meantime adverse impacts on competition should be mitigated.
2. As above but in the meantime offset may also serve the development of EDTIB positively
3. Offset – or at least much of offset – is not consistent with Article 296 and, hence, illegal although pending case law to this effect.

From the ‘damage limitation’ perspective (1), indirect (strictly) non-military offset was found to be preferable since it distorts markets the least, at prime and supply chain level. Furthermore there are some indications that it provides some advantage for European vs. overseas players. But there are considerable problems with this result. So the Commission in the Interpretative Communication particularly singles out this category as not covered by Article 296.

From a perspective that accepts that offsets may have both drawbacks and benefits (2) the answer is more complex. As a first step we identified four clusters of issues from the EDTIB Strategy and Characteristics document of relevance for judging whether and how offset may be an effective and legitimate tool for EDEM/EDTIB objectives:

- Some level of ‘traditional’ military security of supply (used here as shorthand also including operational sovereignty) need to be part of EDTIB
- A ‘modern’ interdependencies-oriented view of security of supply is emerging
- EDEM is at an early stage of formation and unequal power relationships may be a problem for its development
- A strong EDTIB needs to interact with the wider economy and innovation system on a Europe-wide basis.

First ‘traditional’ military security of supply – mainly to do with in-service support – must exist also from an EDTIB point-of-view. But this does not imply that this support needs to be supplied nationally. Further, the provision of in-service support will have to entail long-term planning and commitment with a level of influence for concerned pMS governments that goes beyond what is normally understood by an industry-driven process. Therefore the situation lacks one of the prerequisites we have identified for effective offset, viz. considerable freedom for offset suppliers to find their receiving side partners. Based on our analysis it seems that other, more direct procurement approaches would be more suitable in this regard.

Focusing instead on upgrading, the ‘modern’ interdependencies-oriented view of security of supply based on a network of CoE:s – or at least internationally competitive EDTIB centres of competence – becomes highly pertinent. For a pMS to strive for establishing such CoE:s for its security of supply seems highly legitimate. This can be summarised by the EDTIB characteristic: ‘More focus on Centres of Excellence (as an industry driven process) with an acceptable regional distribution.’

Furthermore, such CoE:s are also key to the interaction between EDTIB and the wider economy and innovation system.

Finally we identified unequal power relationships as a motive for offset potentially coherent with EDTIB. Here we would argue in the following way:

- If defence primes fail to utilise certain potential CoE subcontractors due to irrational⁶⁶ reasons like regional preference, then it would be in line with the EDTIB strategy that pMS use offsets to persuade primes to change this behaviour.
- If a pMS lacks EDTIB CoE:s to a degree that makes their regional distribution ‘unacceptable’, then use of offset would seem legitimate – at least if it also has a good chance of being effective rather than wasteful.

The context of a ‘modern’ interdependencies-oriented approach to upgrading vs. a traditionally national one is also relevant to apply to the legal issue (3). Here it would seem that a pMS operating according to the ‘national’ approach could rather easily claim that a facility is ‘*necessary* in order to address essential security interests’. If this could not be used to require direct offset it could, at least, be used for motivating direct procurement or state aid. In our understanding the pMS wanting instead to use indirect defence-related offset in striving for a ‘modern’ interdependencies-oriented type security of supply via CoE:s emerging in an industry-driven process is likely to have a worse position arguing that this is *necessary* for essential security interests.

⁶⁶ Cf footnote 65

Offset for promoting CoE:s

Neglecting the possible legal problems, we next turn to applying the results from Chapter 8 to the potential EDTIB role for offset outlined above. Based on Chapter 8 we identified three main cases:

- Essentially full-fledged CoE:s with difficulty to enter the primes' supply chains due to irrational factors like national preference. See Section 8.2.

From an EDTIB and EDEM perspective the role of offset in this case should clearly be seen as transitional. With Europe-wide sourcing increasingly becoming the norm the positive market-opening role of offset will diminish in magnitude and the market-impeding role will grow as discussed in Chapter 8. If and when EDTIB and EDEM policies gradually succeed in opening up defence supply chains for Europe-wide participation we see a clear conflict with offset being used for this purpose. This indicates the need to monitor developments in European defence supply chains to identify changes in the role of offset which could in turn be an important input for a putative process for phasing out these forms of offset as EDTIB instruments increasingly take over their role.

The other cases are:

- Candidate CoE:s operating in a relevant industrial context but not fully internationally competitive. Also here did we see a role for offset for upgrading these to CoE:s. See Section 8.3
- Prospective CoE:s operating in weak industrial contexts. Here the chances of establishing CoE:s in *existing* niches were found to be quite limited. We did, however, point to possibilities to use offset with a content of R&D cooperation as a way to help receiving countries enter *emerging* niches. See Section 8.4

In these cases it is important to have the industry-driven logic of allowing primes to search for suitable receiving side partners. This suggests that offset should be to a large degree indirect defence related, but elements of direct offset are also good from this perspective as long as they are not forced by pMS to levels that threaten the industry-driven search logic.

It is obvious that developing national facilities for the national markets will lead to duplication and overcapacity at EDTIB level. It is also very likely that using offset to promote competence centres with international ambitions also frequently has led to the same result; our data do not allow us to distinguish between these two cases. But here too allowing offset to be more of an industry-driven activity is likely to be a useful remedy.

Many other policy measures can be used for the ends discussed here, e.g. the Structural Funds. But even if offsets were phased out it would likely be beneficial if some of their best cooperation-enhancing features could be preserved within new policy measures like joint development programmes.

If used to help establish EDTIB CoE:s in pMS with a 'unacceptably' low number of such centres, the conflict between offset and EDTIB/EDEM policies does not seem significant. Phasing out can be based on success in establishing CoE:s (and subject to future Enlargement of EU).

Information needs and availability for the development of EDEM and EDTIB

In doing this study we have found great shortage of reliable background data on European

defence equipment markets and DTIB:s. For the development of an EDEM and EDTIB it is crucial that this situation is improved. In particular given the criticality of the supply chain issue – with offset likely to shift from ‘good’ to ‘bad’ at a point, better such data is particularly necessary.

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ANNEX 1
The terms of reference

Annex 1: The terms of reference

This Annex contains the full text of the Contract 06-DIM-022, Annex 1, Section 2. For clarity of reference, numbering has been added at all levels of the list. Reference will be made according to a format such that **[b.1.3]** refers to the third sub-bullet under the first bullet under **[b]**, viz. “market position at global level...”

The study will seek to analyse the impact of offset practices on the progressive establishment of an open and transparent EDEM and the competitiveness of the EDTIB. The focus of the study shall be on offsets which pMS require in the framework of national procurement from suppliers established in other pMS. Crossborder cooperative programmes and juste retour arrangements shall not be covered; offset practices of non-pMS countries shall be of interest only insofar as companies from these countries substantially participate in tenders of pMS.

This study will provide: information for further discussions with pMS on seeking a common view on the effects of offsets in view of the EDA's efforts to establish a more transparent and competitive EDEM. The results could serve as II basis for further steps in the on-going harmonisation process.

The study shall:

[a] Provide and use as a basis for the further analysis, a general description and analysis of offset policies and practices applied by pMS with particular emphasis on:

1. Describing the legal framework at international (WTO), European (TCE), national level (e.g. laws, guidelines);
2. Comparing pMS practices/approach (reasons for using offsets, combination of types and categories requested (direct, indirect defence, indirect non-defence, mixed, etc.);
3. Assessing quantitative importance of offset in the pMS (value and percentage of offset transactions in proportion to each national defence equipment procurement budget, and number of offset contracts by offset types and categories);
4. Assessing quantitative importance of offset between pMS compared to offset from non-pMS.

[b] Evaluate the effects of the different types of offsets on pMS defence markets and analyse consequences at European level (for the defence market and defence industrial base). A methodology to structure and analyse cases should be developed to:

1. Assess the short, medium and long term effects of the various types of direct and indirect offsets on the competitiveness of *receiving defence companies* (distinguishing between SME and prime contractors):
 - a. market position at national level (effect on proportion of turnover, development of the local supply chain, innovation, maintenance of less-competitive facilities and structure, technology impact, etc.);
 - b. market position at EU level (participation in cooperative programmes. improved positioning in supply chains, specialisation, sustainable relationships with foreign suppliers, etc.)
 - c. market position at global level (such as increase in exports).

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The terms of reference

2. Assess the short, medium and long term effects of the various types of direct and indirect offsets on the competitiveness of *supplying defence companies* (distinguishing between SME and prime contractors):
 - a. financial impact (such as increase in price of the product, administrative costs, delay);
 - b. technical impact (such as modification of the national supply chain and consequences);
 - c. impact in the procurement process (level of distortion of the competition – preventing companies to bid...; advantage or disadvantage in case of participation of non-pMS companies, etc.).

[c] Analyse offsets' impact on the future development of an EDEM and EDTIB

1. Analyse short, medium and long term consequences of offset practices for the development of a European market and European industrial base in terms of:
 - a. Efficiency/inefficiency, risk of overcapacity at EU level, redistribution, technology transfer, etc;
 - b. Openness and transparency of the market (access to pMS markets and compatibility with other tools such as the CoC, CoBPSC, EDTIB strategy), etc);
 - c. Competitiveness with regards to non-pMS companies participating in pMS procurement processes.
2. Classify the different types of offsets according to their effects on competitiveness of the EDTIB and competition in the EDEM and rank them (which are likely to be more, and which are likely to be less conducive to the development of an EDEM and EDTIB).

ANNEX 2
Overview of background data

Annex 2: Overview of background data

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U |
|----------------|---|-------------|----------------------------|-------------------------|-------------|----------------------------|-------------------------|-------------|--------------------------|-------------------------|-------------|--------------------------|-------------------------|------------|----------------------------|------------------------------|--------------------------|--------------|--------------|---------------|--------------------------|
| | 2005 | 1980-2006 | | | 2000-2006 | | | 1980-2006 | | | 2000-2006 | | | 2003 | 2005 | 2005 | A-E+K | E/A | K/Q | K-E | Q/N |
| | Defence Equip- ment Procure- ment | Import p.a. | Import from Europe p.a. | Percent Europe (C/B) | Import p.a. | Import from Europe p.a. | Percent Europe (F/E) | Export p.a. | Export to Europe p.a. | Percent Europe (I/H) | Export p.a. | Export to Europe p.a. | Percent Europe (L/K) | Employment | Defence of total export | High-tech of total export | Domestic pro- duction | Import share | Export share | Trade balance | Labour produc- tivity |
| Austria | 184 | 62 | 49 | 79% | 38 | 28 | 73% | 43 | 8 | 18% | 31 | 13 | 41% | 3 | 0.03% | 19% | 177 | 21% | 18% | -7 | 59 |
| Belgium | 223 | 198 | 26 | 13% | 27 | 4 | 15% | 55 | 13 | 24% | 66 | 27 | 41% | 6 | 0.02% | 10% | 262 | 12% | 25% | 39 | 44 |
| Cyprus | 48 | 47 | 20 | 44% | 28 | 5 | 16% | 2 | | | | | | | | 35% | 20 | 59% | | -28 | |
| Czech Republic | 213 | 42 | 23 | 55% | 157 | 85 | 54% | 48 | 4 | 8% | 62 | | | 15 | 0.10% | 24% | 119 | 74% | 53% | -94 | 8 |
| Estonia | 20 | 5 | 5 | 84% | 12 | 9 | 78% | 0 | 0 | 100% | | | | 10 | | 25% | 8 | 58% | | -12 | 1 |
| Finland | 539 | 280 | 111 | 39% | 172 | 84 | 49% | 12 | 7 | 55% | 24 | 19 | 80% | 10 | 0.05% | 31% | 391 | 32% | 6% | -148 | 39 |
| France | 5 618 | 137 | 34 | 25% | 65 | 37 | 57% | 2 444 | 342 | 14% | 1 884 | 269 | 14% | 240 | 0.51% | 25% | 7 437 | 1% | 25% | 1 819 | 31 |
| Germany | 3 445 | 386 | 74 | 19% | 232 | 147 | 63% | 2 027 | 644 | 32% | 1 967 | 611 | 31% | 80 | 0.25% | 23% | 5 180 | 7% | 38% | 1 735 | 65 |
| Greece | 1 400 | 1 483 | 959 | 65% | 1 998 | 1 273 | 64% | 8 | 5 | 60% | 13 | 1 | 10% | 15 | 0.10% | 8% | -585* | 143% | -2% | -1 985 | -39 |
| Hungary | 106 | 127 | 20 | 16% | 64 | 58 | 90% | 7 | | | 12 | | | 2 | 0.02% | 44% | 53 | 61% | 22% | -53 | 27 |
| Ireland | 94 | 15 | 11 | 73% | 19 | 13 | 68% | 0 | 0 | 100% | | | | | | 29% | 75 | 20% | | -19 | |
| Italy | 2 119 | 293 | 112 | 38% | 414 | 139 | 34% | 792 | 116 | 15% | 511 | 148 | 29% | 26 | 0.17% | 12% | 2 216 | 20% | 23% | 97 | 85 |

ANNEX 2
Overview of background data

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U |
|----------------|---------------|--------------|--------------|------------|--------------|--------------|------------|--------------|--------------|------------|--------------|--------------|------------|------------|--------------|------------|---------------|------------|------------|--------------|-----------|
| Latvia | 14 | | | 100% | | | | | | | | | | | | 7% | 14 | | | | |
| Lithuania | 37 | 11 | 7 | 61% | 21 | 19 | 88% | 0 | 0 | 100% | 1 | 1 | 100% | | 0.01% | 11% | 16 | 58% | 3% | -21 | |
| Luxembourg | 24 | 0 | | | 0 | | | | | | | | | | | | 24 | 1% | | 0 | |
| Malta | 9 | 2 | 2 | 97% | 3 | 3 | 100% | 0 | | | 2 | | | | 0.09% | 62% | 8 | 34% | 22% | -1 | |
| Netherlands | 1 215 | 512 | 108 | 21% | 213 | 48 | 22% | 593 | 206 | 35% | 620 | 373 | 60% | 10 | 0.19% | 25% | 1 622 | 18% | 38% | 407 | 162 |
| Poland | 633 | 466 | 55 | 12% | 247 | 146 | 59% | 125 | 4 | 3% | 95 | 0 | 0% | 50 | 0.13% | 18% | 481 | 39% | 20% | -152 | 10 |
| Portugal | 223 | 156 | 71 | 46% | 159 | 58 | 37% | 5 | 4 | 95% | | | | 5 | | 15% | 64 | 71% | | -159 | 13 |
| Slovakia | 95 | 20 | 1 | 7% | 6 | 6 | 100% | 35 | 0 | 1% | 49 | 2 | 4% | 7 | 0.19% | 19% | 138 | 6% | 35% | 43 | 20 |
| Slovenia | 39 | 8 | 4 | 55% | 13 | 13 | 100% | | | | | | | | | 15% | 26 | 33% | | -13 | |
| Spain | 2 166 | 577 | 202 | 35% | 312 | 171 | 55% | 203 | 33 | 16% | 224 | 97 | 43% | 20 | 0.15% | 12% | 2 078 | 14% | 11% | -88 | 104 |
| Sweden | 1 217 | 170 | 92 | 54% | 127 | 62 | 49% | 345 | 183 | 53% | 528 | 308 | 58% | 25 | 0.51% | 21% | 1 618 | 10% | 33% | 401 | 65 |
| United Kingdom | 6 699 | 673 | 86 | 13% | 706 | 157 | 22% | 1 859 | 275 | 15% | 1 179 | 190 | 16% | 200 | 0.38% | 26% | 7 173 | 11% | 16% | 474 | 36 |
| Group 1 | 9 063 | 522 | 109 | 21% | 297 | 184 | 62% | 4 470 | 986 | 22% | 3 851 | 880 | 23% | 320 | 0.34% | 23% | 12 617 | 3% | 31% | 3 554 | 39 |
| Group 2 | 11 250 | 1 649 | 398 | 24% | 1 461 | 406 | 28% | 3 589 | 780 | 22% | 2 839 | 1 019 | 36% | 261 | 0.27% | 21% | 12 629 | 13% | 22% | 1 379 | 48 |
| Group 3 | 4 961 | 2 963 | 1 399 | 47% | 2 888 | 1 732 | 60% | 353 | 53 | 15% | 356 | 118 | 33% | 100 | 0.11% | 17% | 2 429 | 58% | 15% | -2 532 | 24 |
| Group 4 | 1 106 | 536 | 168 | 31% | 388 | 241 | 62% | 192 | 26 | 14% | 222 | 42 | 19% | 43 | 0.03% | 19% | 940 | 35% | 24% | -166 | 22 |
| Sum | 26 380 | 5 671 | 2 073 | 37% | 5 033 | 2 562 | 51% | 8 605 | 1 845 | 21% | 7 268 | 2 059 | 28% | 724 | 0.23% | 21% | 28 615 | 19% | 25% | 2 235 | 40 |

ANNEX 2

Overview of background data

Notes and comments:

* See comment in main text

Column A is from EDA; Columns B—M from SIPRI database; Column N from BICC. See Annex 3 for more detailed references.

Europe is defined as EU-27 plus Iceland, Liechtenstein, Norway, and Switzerland.

The trade statistics underlying Columns O and P is from Eurostat.

High-tech is according to a customary definition less pharmaceuticals, i.e.: power-generating machinery, office machines, telecom, electrical machinery, aircraft, and professional and scientific instruments.

Column A is in 2005 €m, others in 2007 €m



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ANNEX 2
Overview of background data

ANNEX 3
Statistical analyses

Annex 3: Statistical analyses**Introduction**

1. This section presents a statistical analysis of arms exports and imports and the role of offsets. Initially, it presents the data on arms exports for pMS for various periods from 1980 to 2006. There follows a rank correlation and regression analysis. Throughout, the analysis and results are subject to the counter-factual, namely, what would have happened in the absence of offsets.

2. Data limitations determined the statistical analysis. For example, the lack of published data on defence industries meant that it was not possible to test hypotheses about the impact of offsets on the competitiveness of defence companies and industries. At best, industry level data identify defence-dependent industries (e.g. aerospace and shipbuilding) but these data include civil as well as all military sales (including defence exports). Indeed, there are major conceptual problems in defining defence industries: for example, little is known about defence industry supply chains and some companies might be 'key' components of a national defence industrial base even though at any moment of time they might have zero defence sales (e.g. civil airlines; merchant shipping: Hartley, 2007: see Literature Review). In the absence of industry and company-level data, it is possible to test for the impact of offsets by focusing on exports and imports where such international trade data can be used as indicators of international competitiveness. One of the research questions addressed is: do offsets favourably affect arms exports?

An overview of the SIPRI arms export data

2. Arms exports based on SIPRI data are shown in Table 1 with the definition of the SIPRI arms exports data described in the Notes to Table 1. The 'top three' nations of France, Germany and the UK dominate the arms export totals accounting for almost 75% of all exports over the period 1980 to 2006. However, there is evidence that the 'top three' share of the total declined substantially in the recent period of 2000 to 2006. Nations which consistently increased their shares of total arms exports in each sub-period included Sweden (2.8%; 3.5%; 7.3% for 1980/89, 1990/99 and 2000/06, respectively); The Netherlands (5.8%; 7.2%; 8.5%) and Spain (1.9%; 2.5%; 3.1%).

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Statistical analyses

Table 1 Arms Exports, 1980 – 2006 US\$ millions, 1990 prices

| Country | 1980-1989 | 1990-1999 | 2000-2006 | 1980-2006 | Employment in 2003 (000s) |
|------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|------------------------------|
| France | 28655 | 15889 | 11131 | 55675 | 240 |
| Germany | 16894 | 17662 | 11620 | 46176 | 80 |
| UK | 20341 | 15046 | 6967 | 42354 | 200 |
| Italy | 10746 | 4289 | 3021 | 18056 | 26 |
| Netherlands | 5193 | 4653 | 3663 | 13509 | 10 |
| Sweden | 2502 | 2232 | 3121 | 7855 | 25 |
| Spain | 1683 | 1628 | 1322 | 4633 | 20 |
| Poland | 1666 | 633 | 559 | 2858 | 50 |
| Belgium | 309 | 563 | 387 | 1259 | 6 |
| Czech | 0 | 731 | 369 | 1100 | 15 |
| Austria | 685 | 121 | 183 | 989 | 3 |
| Slovakia | 0 | 513 | 289 | 802 | 7 |
| Finland | 21 | 110 | 143 | 274 | 10 |
| Greece | 0 | 99 | 78 | 177 | 15 |
| Hungary | 42 | 51 | 68 | 161 | 2 |
| Portugal | 102 | 1 | 0 | 103 | 5 |
| Cyprus | 0 | 43 | 0 | 43 | |
| Malta | 0 | 0 | 10 | 10 | |
| Estonia | 0 | 8 | 0 | 8 | 10 |
| Ireland | 8 | 0 | 0 | 8 | |
| Lithuania | 0 | 0 | 3 | 3 | |
| Aggregate Total | 88847 (74.2%) | 64272 (75.6%) | 42934 (69.2%) | 196053 (73.6%) | 724 (71.8%) |

Notes:

- i) Nations ranked by aggregate exports for 1980-2006. Some pMS nations not shown due to no record of arms exports.
- ii) SIPRI data are based on actual deliveries of major conventional weapons. They are termed trend indicator values and are only an indicator of the volume of international arms transfers and not of the actual financial values of such transfers.
- iii) Employment measured in (000s) refers to the nation's defence industry employment in 2003 (BICC, 2005).
- iv) Figures in brackets show share of top three nations in total.
- v) Columns 2-5 show value data in US\$ millions at 1990 prices and as defined by SIPRI: see Note (ii).

Sources: SIPRI Arms Transfers database; BICC, **Conversion Survey 2005**, Bonn International Center for Conversion.

3. Table 2 shows 'labour productivity' for arms exports in 2003 and for 2000-06. For 2003, it can be seen that there are major differences between nations using this

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Statistical analyses

measure of labour productivity. For example, compare Greece (US\$ 533) and The Netherlands (US\$ 34300) as well as the relatively low 'productivity' position of France and the UK. The extent of the productivity differentials suggests scope for gains from trade in a Single European Market for defence equipment. Admittedly, this performance indicator is for one year only: hence, the figures were re-estimated for arms export labour productivity over the longer period 2000-06. Whilst the extremes remained unchanged, there were some changes in the rankings (Austria; Belgium; Finland; UK). Table 2 is subject to further limitations: it does not show labour productivity for each national defence industry; nor does it show value added per employee for each industry. Also, there are two ways of achieving a high score in Table 2 (each commendable from a EDTIB perspective): first, to have a high export share relative to production; and second, to have high labour productivity in the usual sense in the industry which identifies itself as 'defence' (this can be achieved, for example, by outsourcing to dual-use suppliers). Overall, the data in Table 2 are no more than suggestive and must be treated as such.

Table 2. Arms Exports 'Labour Productivity', 2003 and 2000-06

| Nation | Arms Exports 'Labour Productivity' 2003 (US\$, 1990 prices) | Arms Exports Labour Productivity 2000-06 (US\$, 1990 prices) |
|------------------------|--|---|
| The Netherlands | 34300 | 366300 |
| Germany | 23525 | 145250 |
| Sweden | 18760 | 124840 |
| Italy | 12500 | 116192 |
| Spain | 7950 | 66100 |
| France | 5354 | 46379 |
| Czech | 4267 | 24600 |
| UK | 3410 | 34835 |
| Belgium | 2500 | 64500 |
| Finland | 2400 | 14300 |
| Poland | 1400 | 11180 |
| Austria | 667 | 61000 |
| Greece | 533 | 5200 |

Notes:

- i) Arms exports 'labour productivity' was estimated by dividing arms exports for 2003 by defence industry employment in 2003 using the SIPRI Arms Transfers database and BICC (2005). For 2000-06, the corresponding figure was aggregate arms exports for 200-06 divided by defence industry employment in 2003 (note that this is another definition than in Annex 2).
- ii) Nations not shown had no arms exports in 2003.

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Rank correlation analysis

4. A rank correlation was estimated between arms exports for each of the periods 1980 – 2006 and the size of the defence industrial base measured by employment in 2003. The correlation was based on the data in Table 1 but excluding Cyprus, Malta, Ireland and Estonia for which employment data were not available. **The result for each period was a positive rank correlation of +0.76 (significant at the 1% level) showing that the size of the defence industrial base was positively associated with arms exports.** This suggests that offsets which contribute to creating, sustaining or expanding a nation’s defence industrial base are likely to contribute to arms exports. But caution is needed since correlation is not causation and arms exports depend on a variety of variables which need to be included in an expanded economic model. Again, data do not exist in the public domain which allows a fully-specified economic model to be estimated (e.g. including price variables for arms exports and non-price variables such as finance and support, etc).

Regression analysis

5. An initial model of arms exports was estimated in which arms exports were dependent on defence equipment procurement expenditure and offsets. The equipment spending variable reflects economies of scale and learning. Problems arise in measuring offsets. Three measures were used, namely, a dummy variable (OFS1), the actual offset percentage based on the EDA questionnaire data (OFS2) and an alternative measure developed by FOI for this study (OFS3). The results are reported in Table 3. **Defence equipment procurement spending had a significant and the expected positive impact on arms exports. However, none of the offset variables showed any significant impact on arms exports.**

Table 3. Regression Analysis: Impact of Offsets, 2000-06

| Dependent variable | Constant | Defence procurement expenditure | Offsets 1 (dummy) | OFS(2) | OFS (3) | Adjusted R ² |
|------------------------|----------------------|---------------------------------|----------------------|----------------|-----------------------------|-------------------------|
| 1) Arms Exports | 19.7 (0.39) | 1.62 (7.04) | | | | 0.71 |
| 2) Arms Exports | 462.1 (0.44) | 1.61 (6.86) | --537.56 (--0.49) | | | 0.696 |
| 3) Arms Exports | --232.99 (--0.29) | 1.595 (6.62) | | 3.50 (0.41) | | 0.695 |
| 4) Arms Exports | 1819.8 (0.823) | 1.47 (4.02) | | | -- 11.91 (-- 0.86) | 0.633 |

Notes:

i) Arms exports are for the period 2000-2006, measured in US\$ millions, 1990 prices (see Table 1). Defence procurement is defence equipment spending in Euros millions

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in 2005. Data based on nations shown in Table 1 unless stated otherwise (e.g. see definition of OFS (3)).

ii) Offsets variables: offsets 1 is a dummy variable (1,0) where 1=offsets and 0= no offset required. OFS (2) or Offset 2 is the actual percentage offset reported in the EDA questionnaires; OFS (3) is offsets as measured by FOI: this variable was estimated for 14 nations only (excluding Slovakia, Hungary, Cyprus, Malta, Estonia, Ireland and Lithuania).

iii) Figures are estimated coefficients. Figures in brackets are t-ratios.

6. Further tests were undertaken for different sub-periods and using total military spending rather than equipment spending, with military spending reflecting economies of scale and learning. Typically, the military spending variable was highly significant with the expected positive impact on arms exports. **However, the offset variables generally showed no significant impacts on arms exports.** There was one exception where the offset variable was significant but with a negative sign (i.e. adverse effects on arms exports for 1980-89 shown in Equation (3), Table 4). Examples of these results are shown in Table 4.

Table 4. Arms Exports and Offsets, 1980-06

| Dependent variable | Constant | Military spending | Offsets 1 (dummy) | Offsets (2) | OFS (3) | Adjusted R ² |
|----------------------------------|----------------------|-------------------|------------------------|----------------|----------------------------|-------------------------|
| 1) Arms Exports (Total) | 1543.1 (0.57) | 1.41 (16.63) | --3545.87 (--1.31) | | | 0.95 |
| 2) Arms Exports (1990-99) | --942.73 (--1.11) | 0.46 (13.76) | | 5.59 (0.67) | | 0.92 |
| 3) Arms Exports (1980-89) | 2044.25 (1.5) | 0.65 (14.85) | --3578.82 (--2.542) | | | 0.94 |
| 4) Arms Exports (Total) | 899.4 (0.214) | 1.39 (12.73) | | | -- 17.4 (-- 0.65) | 0.94 |

Notes:

i) Arms exports (Total) are for 1980-2006. Equation 2 is for 1990-99 and equation 3 is for 1980-89 . The data are shown in Table 1 and are 'volume' data.

ii) Military spending data are represented by annual military expenditure in 1995 for equations 1 and 2 all in US\$ millions, at 2000 prices and exchange rates. Equation 3 military spending is for 1985 in US\$ millions at 1985 prices and exchange rates.

iii) For equations 1-4, the sample excludes Czech Republic, Slovakia, Malta, Estonia and Lithuania, reflecting lack of SIPRI military spending data for these nations.

iv) Remaining details as in Table 3.

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7. Alternative data were obtained based on the *value of arms exports* (SIPRI Yearbook, 2006, Table 10.2). These data are shown in Table 5 and the country rankings differ substantially from the 'volume' data in Table 1. The arms exports value data of Table 5 were used to estimate regressions where arms exports by value were a function of defence equipment procurement and the alternative measures of offsets. The adjusted R^2 for the three equations were each in the region of 0.8 and positive and highly significant coefficients were estimated for the procurement variable. **However, none of the offsets variables were significant.**

Table 5. Arms Exports Values: 1998-2004

| Nation | Arms Exports by value US\$ millions, 2003 prices |
|----------------|---|
| UK | 55154 |
| France | 35283 |
| Germany | 6758 |
| Belgium | 5619 |
| Sweden | 5562 |
| Netherlands | 4477 |
| Italy | 4046 |
| Austria | 2163 |
| Spain | 1911 |
| Czech Republic | 640 |
| Slovakia | 395 |
| Poland | 351 |
| Greece | 313 |
| Finland | 304 |
| Ireland | 285 |
| Portugal | 107 |
| Lithuania | 17 |
| Malta | 10 |
| Cyprus | 0 |
| Estonia | 0 |
| Hungary | 0 |

Notes:

- (i) Nations ranked by size of arms exports by value for 1998-2004.
- (ii) Export data for Poland, Hungary, Cyprus, Malta and Estonia based on SIPRI volume data for 1998-2004 (SIPRI did not provide value data for these nations).
- (iii) Data for UK and Sweden. SIPRI reported two sets of data for these nations. The higher figures were reported in Table 5. For the UK, arms exports are defined as deliveries of defence materiel and other aerospace equipment and services. For Sweden, arms exports are defined as exports of military and other goods, services and software to military users. The alternative UK figures are considerably lower.

Source: SIPRI Yearbook, 2006.

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Defence R&D and arms exports

8. Questions arise as to whether defence R&D is a major determinant of arms exports. We estimated various regressions where arms exports were dependent on defence R&D in 1991 and 2001 as well as measures of offsets. Lags were included by using previous defence R&D in 1991 as a determinant of arms exports in 2000-06; similarly, arms exports in 2000-06 were assumed to be dependent on defence R&D in 2001. Examples of the results are shown in Table 6. **Defence R&D was significant with the predicted positive impact on arms exports; but the offset variables remained non-significant.**

Table 6. Arms Exports and Defence R&D

| Equation | Constant | Defence R&D 1991 | Defence R&D 2001 | Offsets 1 (Dummy) | OFS (3) | Adjusted R ² |
|-----------------|-----------------------|------------------|------------------|--------------------|-------------------|-------------------------|
| 1) Arms Exports | --301.32 (--0.21) | 2.28 (5.99) | | 1407.87 (0.972) | | 0.69 |
| 2) Arms Exports | --4573.04 (--0.99) | 9.35 (7.45) | | 6133.15 (1.287) | | 0.78 |
| 3) Arms Exports | 795.31 (0.46) | | 2.36 (4.08) | 180.19 (0.10) | | 0.49 |
| 4) Arms Exports | 2488.8 (1.21) | 1.95 (4.18) | | | --9.2 (--0.67) | 0.65 |

Notes:

- (i) Arms exports are volume data for 2000-06(see Table 1).
- (ii) Defence R&D data are US\$ millions at current PPP rates (i.e. value figures).
- (iii) Other equations were estimated but with no new significant results.
- (iv) Further details as in Table 3.

Source: OECD (2004). **Main Science and Technology Indicators**, OECD, Paris, Tables 59/60.

Arms Imports

9. Data on arms imports for various periods from 1980 to 2006 are shown in Table 7. Again, the ranking of nations changes markedly compared with the data Tables for arms exports (see Tables 1 and 5). The top 5 arms importers are Greece, UK, Spain, Netherlands and Poland, which accounted for over 60% of all arms imports over the period 1980-2006. With such volumes of arms imports, these nations are likely to be major supporters of offset policies.

10. A rank correlation between total arms imports 1980-2006 and defence industry employment in 2003 gave a surprisingly positive relationship which was almost significant at the 5% level (Spearman rank correlation of 0.46). Also, regression analy-

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Statistical analyses

sis of arms imports generally gave ‘poor’ results with low goodness of fit and few significant coefficients. One of the ‘best’ equations showed total arms imports, 1980-2006 dependent on defence equipment procurement expenditure (ME) and offsets (Offsets dummy variable). **The procurement variable was positive and almost significant at the 5% level, whilst the offset variable was positive and significant at the 5% level** (although there are problems about the direction of causation between offsets and imports):

$$\text{Arms imports 1980-2006} = -1078.03 + 1.35\text{ME} + 7212.22\text{OFS1}$$

$$(0.32) \quad (1.99) \quad (2.11)$$

Adjusted $R^2 = 0.26$

Table 7. Arms Imports, 1980-2006 US\$ millions, 1990 prices

| Nation | Arms Imports 1980-89 | Arms Imports 1990-99 | Arms Imports 2000-06 | Total Arms Imports 1980-06 |
|----------------|----------------------|----------------------|----------------------|----------------------------|
| Greece | 4642 | 10162 | 8598 | 23402 |
| UK | 4127 | 7044 | 4168 | 15339 |
| Spain | 7603 | 3708 | 1848 | 13159 |
| Netherlands | 8294 | 2104 | 1260 | 11658 |
| Poland | 8338 | 829 | 1458 | 10625 |
| Germany | 2740 | 4674 | 1373 | 8787 |
| Italy | 2133 | 2105 | 2448 | 6686 |
| Finland | 1511 | 3862 | 1015 | 6388 |
| Belgium | 3491 | 857 | 159 | 4507 |
| Portugal | 680 | 1943 | 937 | 3560 |
| Sweden | 1658 | 1501 | 752 | 3911 |
| France | 665 | 2069 | 383 | 3117 |
| Hungary | 1183 | 1332 | 381 | 2896 |
| Austria | 705 | 480 | 225 | 1410 |
| Cyprus | 282 | 612 | 167 | 1061 |
| Czech Republic | 0 | 32 | 925 | 957 |
| Slovakia | 0 | 432 | 31 | 463 |
| Ireland | 134 | 88 | 111 | 333 |
| Lithuania | 0 | 123 | 126 | 249 |
| Estonia | 0 | 54 | 69 | 123 |
| Malta | 1 | 20 | 18 | 39 |

Note: Data are volume indicators: see Table 1 Notes.

Source: SIPRI data base.

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The Destination of pMS Arms Exports

11. What is the distribution of pMS arms exports between Europe and non-European countries? Table 8 provides the broad answer to this question. Amongst the top 6 arms exporters over the period 1980-06, exports to European nations accounted for some 22% of total arms exports. Non-European nations were the major arms export markets for the top 6 countries. Interestingly, amongst all pMS shown in Table 8, only Sweden, Finland, Greece, Portugal and some of the smaller nations showed arms exports to Europe exceeding those to non-Europe.

Table 8. Distribution of pMS Arms Exports, 1980-2006

US\$ millions, 1990 prices

| pMS Nation | Arms Ex-ports 1980-89 | Arms Ex-ports 1990-99 | Arms Ex-ports 2000-06 | Total Arms Exports 1980-06 |
|----------------------|--------------------------|--------------------------|--------------------------|----------------------------------|
| France: | | | | |
| Europe | 4314 | 1893 | 1589 | 7796 |
| Non-Europe | 24341 | 13996 | 9542 | 47879 |
| Germany: | | | | |
| Europe | 3994 | 7058 | 3612 | 14664 |
| Non-Europe | 12900 | 10604 | 8008 | 31512 |
| UK: | | | | |
| Europe | 3485 | 1662 | 1125 | 6272 |
| Non-Europe | 16856 | 13384 | 5842 | 36082 |
| Italy: | | | | |
| Europe | 1009 | 754 | 872 | 2635 |
| Non-Europe | 9737 | 3535 | 2149 | 15421 |
| Netherlands: | | | | |
| Europe | 1208 | 1281 | 2205 | 4694 |
| Non-Europe | 3985 | 3372 | 1458 | 8815 |
| Sweden: | | | | |
| Europe | 1526 | 818 | 1817 | 4161 |
| Non-Europe | 976 | 1414 | 1304 | 3694 |
| Spain: | | | | |
| Europe | 30 | 159 | 573 | 762 |
| Non-Europe | 1653 | 1469 | 749 | 3871 |
| Poland: | | | | |
| Europe | 47 | 52 | 1 | 100 |
| Non-Europe | 1619 | 581 | 558 | 2758 |
| Belgium: | | | | |
| Europe | 78 | 66 | 158 | 302 |
| Non-Europe | 231 | 497 | 229 | 957 |
| Czech Re- public: | | | | |

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| | | | | |
|------------|-----|-----|-----|------|
| Europe | 0 | 92 | 0 | 92 |
| Non-Europe | 0 | 639 | 369 | 1008 |
| Austria: | | | | |
| Europe | 32 | 72 | 75 | 179 |
| Non-Europe | 653 | 49 | 108 | 810 |
| Slovakia: | | | | |
| Europe | 0 | 0 | 11 | 11 |
| Non-Europe | 0 | 513 | 278 | 791 |
| Finland: | | | | |
| Europe | 1 | 36 | 114 | 151 |
| Non-Europe | 20 | 74 | 29 | 123 |
| Greece: | | | | |
| Europe | 0 | 98 | 8 | 106 |
| Non-Europe | 0 | 1 | 70 | 71 |
| Hungary: | | | | |
| Europe | 0 | 0 | 0 | 0 |
| Non-Europe | 42 | 51 | 68 | 161 |
| Portugal: | | | | |
| Europe | 98 | 0 | 0 | 98 |
| Non-Europe | 4 | 1 | 0 | 5 |
| Cyprus: | | | | |
| Europe | 0 | 0 | 0 | 0 |
| Non-Europe | 0 | 43 | 0 | 43 |
| Malta: | | | | |
| Europe | 0 | 0 | 0 | 0 |
| Non-Europe | 0 | 0 | 10 | 10 |
| Estonia: | | | | |
| Europe | 0 | 8 | 0 | 8 |
| Non-Europe | 0 | 0 | 0 | 0 |
| Ireland: | | | | |
| Europe | 8 | 0 | 0 | 8 |
| Non-Europe | 0 | 0 | 0 | 0 |
| Lithuania: | | | | |
| Europe | 0 | 0 | 3 | 3 |
| Non-Europe | 0 | 0 | 0 | 0 |

Notes:

(i) Europe comprises all EU nations including Switzerland, Norway, Lichenstein and Iceland (i.e. Western Europe plus EU members from Central and Eastern Europe. Non-Europe is the rest of the world including USSR/Russia, Turkey, Eastern Europe and the West Balkan states.

(ii) See also Table 1 Notes.

Source: SIPRI database on arms exports.

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Conclusion

12. Non-European nations were the major arms export markets for most pMS. Various arms exports and arms imports models were estimated. The main conclusions of the analysis were:

- 1) For arms exports, there was evidence that procurement, military spending and defence R&D had significant and positive impacts on arms exports.
- 2) There was no statistical evidence that offsets had any significant and positive impact on arms exports.
- 3) Arms import models were estimated but generally gave relatively poor results. At best, there was some evidence that equipment procurement spending had a positive impact on arms imports and that offsets also had a similar positive impact.



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ANNEX 4
Information collection status***Annex 4: Information collection status*****1. pMS**

| pMS | Status (I = Interview performed; QR = Questionnaire response received) |
|------------|--|
| AT | I, QR |
| BE | I with extensive presentation in hardcopy |
| CY | No reply; no offset policy according to EDA questionnaire 2005 |
| CZ | I, QR |
| DE | QR, I proposed but not deemed necessary by DE (reference made to DKF) |
| EE | QR |
| EL | I offered but denied, QR |
| ES | I |
| FI | QR |
| FR | I |
| HU | QR |
| IE | QR |
| IT | QR |
| LT | QR |
| LU | No reply; no offset policy according to EDA questionnaire 2005 |
| LV | No reply |
| MT | No reply; no offset policy according to EDA questionnaire 2005 |
| NL | I, QR |
| PL | QR with only quantitative information; attempts to set up an interview failed due to scheduling problems |
| PT | QR |
| SE | QR |
| SI | QR with only quantitative information |
| SK | QR |
| UK | I, QR |

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2. NDIA's and other industry organisations

- CZ AOP – I
- DE BDI – QR
- DE DKF – I (w/ presentation), QR
- EL SEKPY – I, QR
- ES AFARMADE – I
- FR CIDEF – I, QR
- IT AIAD - QR
- NL NIID – I, QR
- SE FIF – I, QR
- UK DMA – I, QR

3. Companies – ‘general’ interviews and QR

- BAe Systems (on behalf of group) – I, QR
- EADS (on behalf of group incl. Eurocopter) – I, QR
- Finmeccanica (on behalf of group) – QR
- Rheinmetall – I
- SAFRAN – I
- Thales – I

4. Companies explicitly involved via Industry organisations

- Dassault – CIDEF
- (SAFRAN)⁶⁷ – CIDEF
- (Thales Aerospace) – CIDEF
- (BAe Hägglund) – FIF
- Saab – FIF
- Krauss-Maffei Wegman – DKF
- Rohde & Schwartz – DKF
- Stork – NIID

5. Other company interviews

These are mainly case oriented interviews.

- Intracom (EL)
- Elfon (EL)
- Indra (ES)
- ITP (ES)
- EADS CASA (ES)
- Navantia (ES)

⁶⁷ Companies in parentheses also feature under 3.

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- Noptel Oy (FI)
- BAe Hägglunds (case, also cf. 4; SE)
- FLIR Systems (SE)
- Saab (case, also cf. 4; SE)
- Volvo Aero (SE)
- Rolls-Royce (UK)

6. Expert questionnaires and background interviews

- EC DG MARKT
- EDA
- George Burton, Counterpoint Intelligence Ltd
- Aris Georgopoulos, Nottingham U
- J-P Hebert, CIRPES
- Stefan Markowski, U of New South Wales
- Ron Matthews, Cranfield U
- Wally Struys, Royal Military Academy, Brussels



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Information collection status

ANNEX 5
Questionnaires and Interview Guides

Annex 5: Questionnaires and Interview Guides

Here we present the Questionnaires and Interview Guides used in the study. The briefing material included an earlier version of the taxonomy now included in Chapter 2.

Questionnaire instrument on offset to pMS

Introduction

For background, cf. Cover letter and Briefing note.

The questionnaire instrument consists of four parts:

- Part I: offset policies and practices
- Part II: mapping quantitative importance of offsets
- Part III: effects of offsets
- Part IV: future of offsets

Please note that the information you provide will be carefully handled and owned by EDA. Information will not be published with specific reference to pMS or industry but rather aggregated for reporting purposes.

Part I: Offset policies and practices

Attached at Annex 3 is a fiche summarising the reply from your country to the offset questionnaire issued by EDA in 2005 (05-38 2005), supplemented by FOI/SCS.

Question 1: Please confirm that the information shown at Annex 3 remains unchanged;

Question 2: If changes have occurred, please revise the list accordingly.

Part II: Mapping quantitative importance of offset

Attached at Annex 1 is a list of defence equipment contracts where offsets appear in relation to your country (as receiver or supplier). The list is based on data obtained through SIPRI and other open sources (e.g. Internet).

Question 3: Do these contracts give a representative picture of the offset practices of your pMS? Then if possible provide the information on these contracts requested in Annex 2 (if this is difficult, also limited and approximate information is of use).

Question 4: Are there contracts not listed in Annex 1 containing offsets that you consider more relevant in this regard? If so please explain why and include if possible information on these in the Annex 2 form;

Question 5: Annex 1 also contains a list of randomly sampled defence equipment contracts

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with your pMS as buyer, and where FOI/SCS as yet have no indication of offsets. Do any of these contain offset? If so please provide information as according to Annex 2.

We are keen to receive your first reactions to the samples ASAP.

Part III: Effects of offset

Wherever possible with examples related to Annex 1 or additional cases you have introduced at Question 4, please explain your country's experience on the effects of offset arrangements on the industrial base:

Question 6: what is the impact of offsets on competition at EU level?

- Does offset tend to favour EU-based companies vs. non-EU based companies or is it neutral in this regard? Please explain
- Does offset tend to restrict companies from competing? Please explain
- Does offset distort competition between EU-based companies (at prime and/or sub-contractor level and in particular SMEs)? Please explain
- Does offset increase market access? Please explain
- Does offset lead to a different system and/or supplier being chosen than would have occurred in the absence of offset? Please explain

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Question 7: what is the implementation efforts associated with offsets?

- Price increase (if any) in percentage of the contract value? Please provide an estimation
- Administrative costs (if any) including resources for managing the process? Please quantify approximately if possible
- Delays (programme timescale) (if any)? Please specify
- Others, please specify

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Question 8: Does offset impact on the strengthening (or weakening) of industry market position at EU level? Please take into account the following points:

- Duplication? Short, medium, long term
- Impact on established supply chains? Short, medium, long term
- Development of niche capabilities? Short, medium, long term
- Provision of new capabilities? Short, medium, long term
- Sustaining existing capabilities? Short, medium, long term
- Scale advantages (reuse technology of the receiving companies, machinery or split development costs on a larger volume)? Short, medium, long term
- Positive, negative or neutral impact of technology transfer?
- Business development with receiving country? Short, medium, long term

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Question 9: Please identify 2 offset arrangements with your pMS as buyer, included in Annex 1 (or additional cases you have introduced at Question 4) that we could analyse more

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deeply and a point of contact at governmental level. If possible select the cases such that both direct and indirect offsets are covered.

Question 10: Please identify defence-related companies substantially affected by offset arrangements in your country:

- as receivers or suppliers (one Prime and 2 subcontractors especially SMEs),
- positively or adversely affected

Part IV: Future of offsets

The documents referred to in this part of the questionnaire are accessible on EDA's website www.eda.europa.eu.

Question 11: Taking into account how offsets could be applied in the future, please address the following:

- Is there an optimum level of offsets percentage related to the contract value that could be considered as best practice on the effect on the industrial base at EU level? Please explain
- Is there an optimum fulfilment period? Please explain

Question 12: Based on your previous answers please rank the different types and categories of offsets according to their effects on the EDA's endeavours to develop a truly European Defence Equipment Market in particular on the Code of Conduct on defence procurement and Code of Best Practice in the Supply Chain.

Question 13: Do you see offset as a cost-effective method for the long-term strengthening of the European Defence Technological and Industrial Base (EDTIB) as illustrated in the EDA's key characteristics of a strong future EDTIB? Please rank the different types and categories of offsets applicable.

Question 14: How may your offset practices be impacted by the guidance of the Interpretative Communication on the application of Article 296 of the Treaty in the field of defence procurement, published by the European Commission in December 2006?

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Questionnaire instrument on offset to NDIAAs (and other defence industry organisations)

Introduction

For background, cf. Cover letter and Briefing note.

The questionnaire is in three parts:

- Part I: sampling of offset contracts
- Part II: effects of offsets
- Part III: future of offsets

Please note that the information you provide will be carefully handled and owned by EDA. Information will not be published with specific reference to pMS or industry but rather aggregated for reporting purposes.

Part I: Sampling of offset contracts

Attached at Annex 1 is a sample of defence equipment contracts with your country as buyer or seller where offsets appear to have been applied. The list is based on data obtained through SIPRI and other open sources.

Question 1: Do these contracts give a representative picture of the offset experience of your country? Then if possible provide the information on these contracts requested in Annex 2 (if this is difficult, also limited and approximate information is of use).

Question 2: Are there contracts not listed in Annex 1 containing offsets that you consider more relevant in this regard? If so please explain why and include if possible information on these in the Annex 2 form;

Question 3: Annex 1 also contains a list of randomly sampled defence equipment contracts with your country as buyer, and where FOI/SCS as yet have no indication of offsets. Do any of these contain offset? If so please provide information in Annex 2.

We are keen to receive your first reactions to the samples ASAP.

Part II: Effects of offset

In addressing the following points, please provide examples wherever possible and name the offset contract(s) you refer to

Question 4: what is the impact of offsets on competition at EU level?

- Does offset tend to favour EU-based companies vs. non-EU based companies or is it neutral in this regard?

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- Does offset tend to restrict companies from competing (at prime and/or subcontractor level and in particular SMEs)?
- Does offset distort competition between EU-based companies (at prime and/or subcontractor level and in particular SMEs)? Please explain
- Does offset increase market access? Please explain
- Does offset lead to a different system and/or supplier being chosen than would have occurred in the absence of offset? Please explain
- Others? Please explain

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Question 5: What is the implementation efforts associated with offset contracts:

- price increase (if any) in percentage of the contract value for a contract with offset vs. a contract for the same defence equipment without offset? Please specify
- administrative costs (if any) including resources for managing the process? Please quantify approximately if possible
- delays (programme timescale) (if any)? Please specify
- others, please specify

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Question 6: Does offsets impact on the strengthening (or weakening) of your country's market position at EU level? Please take into account the following points

- Duplication? Short, medium, long term
- Impact on established supply chains? Short, medium, long term
- Development of niche capabilities? Short, medium, long term
- Provision of new capabilities? Short, medium, long term
- Sustaining existing capabilities? Short, medium, long term
- scale advantages (reuse technology of the receiving companies, machinery or split development costs on a larger volume)? Short, medium, long term
- For your country as supplier of offset, has technology transfer, if any, to receiving companies had a positive, negative or neutral impact for your country?
 - a. Negative: the receiving company has exploited the technology
 - b. Positive: you have learned from their use of the technology
 - c. Other effect
- For your country as supplier of offset, has offset subsequently influenced your business in the receiving country? If so
 - d. Have you gained new orders?
 - e. Have your competitors' gained new orders?
 - f. Have you developed supply chain or partner relationships with receiving companies?
 - g. Have the receiving companies become competitors?
- For your country as receiver of offset, has technology transfer, if any, from supplying companies had a positive, negative or neutral impact for your country?
 - h. Negative: explain how
 - i. Positive: explain how
 - j. Other effect

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- For your country as receiver of offset, has offset subsequently influenced your business in the supplying country? If so
 - k. Have you gained new orders?
 - l. Have your competitors' gained new orders?
 - m. Have you developed supply chain or partner relationships with supplying companies?
 - n. Have you become competitors to the supplying companies?
- Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Part III: Future of offset in Europe

Question 7: Taking into account how offsets could be applied in the future, please address the following:

- Is there an optimum level of offsets percentage related to the contract value that could be considered as best practice on the effect on the industrial base at EU level? Please explain
- Is there an optimum fulfilment period? Please explain

Question 8: Do you see offset as a cost-effective method for the long-term strengthening of the European Defence Technological and Industrial Base (EDTIB)? Please specify and identify the types and categories of offsets that you consider compatible with the development of a European Defence Equipment Market and the strengthening of the European Defence Technological Industrial Base.

Question 9: Are there drivers for changes? If so what are they?

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Questionnaire on offset to Prime Contractors

Introduction

For background, cf. Cover letter and Briefing note.

The questionnaire is in three parts:

- Part I: sampling of offset contracts
- Part II: effects of offsets
- Part III: future of offsets

Please note that the information you provide will be carefully handled and owned by EDA. Information will not be published with specific reference to pMS or industry but rather aggregated for reporting purposes.

Part I: Sampling of offset contracts

Attached at Annex 1 is a sample of defence equipment contracts with your company (group) as prime contractor and where offsets appear to have been applied. The list is based on data obtained through SIPRI and other open sources.

Question 1: Do these contracts give a representative picture of the offset experience of your company? Then if possible provide the information on these contracts requested in Annex 2 (if this is difficult, also limited and approximate information is of use).

Question 2: Are there contracts not listed in Annex 1 containing offsets that you consider more relevant in this regard? If so please explain why and include if possible information on these in the Annex 2 form.

Question 3: Annex 1 also contains a list of randomly sampled defence equipment contracts with your firm as seller, and where FOI/SCS as yet have no indication of offsets. Do any of these contain offset? If so please provide information in Annex 2.

We are keen to receive your first reactions to the samples ASAP.

Part II: Effects of offset

Wherever possible with reference to examples related to the list of offset contracts identified in Part 1, please explain the effects of these contracts:

Question 4: what is the impact of offsets on competition at EU level?

- Does offset tend to favour EU-based companies vs. non-EU based companies or is it neutral in this regard? Please explain
- Does offset tend to restrict companies from competing (at prime and/or subcontractor level and in particular SMEs)?

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- Does offset distort competition between EU-based companies (at prime and/or sub-contractor level and in particular SMEs)? Please explain
- Does offset increase market access? Please explain
- Does offset lead to a different system and/or supplier being chosen than would have occurred in the absence of offset? Please explain
- Others? Please explain

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Question 5: What is the implementation efforts associated with offset contracts:

- price increase (if any) in percentage of the contract value for a contract with offset vs. a contract for the same defence equipment without offset? Please specify
- administrative costs (if any) including resources for managing the process? Please quantify approximately if possible
- delays (programme timescale) (if any)? Please specify
- others, please specify

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Question 6: Does offsets impact on the strengthening (or weakening) of your market position at national and EU level? Please take into account the following points

- Duplication? Short, medium, long term
- Impact on established supply chains? Short, medium, long term
- Development of niche capabilities? Short, medium, long term
- Provision of new capabilities? Short, medium, long term
- Sustaining existing capabilities? Short, medium, long term
- scale advantages (reuse technology of the receiving companies, machinery or split development costs on a larger volume)? Short, medium, long term
- For your company as supplier of offset, has technology transfer, if any, to receiving companies had a positive, negative or neutral impact for your country?
 - o. Negative: the receiving company has exploited the technology
 - p. Positive: you have learned from their use of the technology
 - q. Other effect
- For your company as supplier of offset, has offset subsequently influenced your business in the receiving country? If so
 - r. Have you gained new orders?
 - s. Have your competitors' gained new orders?
 - t. Have you developed supply chain or partner relationships with receiving companies?
 - u. Have the receiving companies become competitors?
- For your company as receiver of offset, has technology transfer, if any, from supplying companies had a positive, negative or neutral impact for your country?
 - v. Negative: explain how
 - w. Positive: explain how
 - x. Other effect
- For your company as receiver of offset, has offset subsequently influenced your business in the supplying country? If so
 - y. Have you gained new orders?

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- z. Have your competitors' gained new orders?
- aa. Have you developed supply chain or partner relationships with supplying companies?
- bb. Have you become competitors to the supplying companies?

Please differentiate between the application of direct and indirect offsets in answering this question (and for indirect offset defence vs. civilian).

Part III: Future of offset in Europe

Question 7: Taking into account how offsets could be applied in the future, please address the following:

- Is there an optimum level of offsets percentage related to the contract value that could be considered as best practice on the effect on the industrial base at EU level? Please explain
- Is there an optimum fulfilment period? Please explain

Question 8: Do you see offset as a cost-effective method for the long-term strengthening of the European Defence Technological and Industrial Base (EDTIB)? Please specify and identify the types and categories of offsets that you consider compatible with the development of a European Defence Equipment Market and the strengthening of the European Defence Technological Industrial Base.

Question 9: Are there drivers for changes? If so what are they?

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Questionnaire on offset to independent experts

Mapping quantitative importance of offset

1. For the EDA offset study FOI/SCS have identified a sample of defence equipment contracts where offset to our understanding has been included (Annex 1). We are currently researching these cases based on public sources. For a subset of cases we will also undertake a more thorough study of effects:
 - a. Do you have any general comments to these cases? (e.g., not offset to your knowledge, less relevant due to...)
 - b. Are you particularly familiar with any of cases?
 - c. Do you have readily available information you want to share on any of the cases?
2. To assess the quantitative importance of offset we are *inter alia* using the above-mentioned sample. To assess the reliability of our estimations we have also identified a sample from all defence equipment import contracts (from SIPRI databases). To our knowledge, for the listed items (Annex 2) from that sample offset was not included in the contract. Is this correct to your knowledge?

Effects of offset

3. Could you identify defence-relevant firms substantially affected (favourably or adversely) by offset in the above cases and more generally in Europe:
 - a. as receivers of offset,
 - b. as involved in supplying offsets (also other than the prime of each listed deal)
 - c. as adversely affected (e.g. potential suppliers displaced from supply chain due to offset)
4. Is offset seen in European countries as an argument for a larger defence equipment budget than would be otherwise acceptable?
5. This is a counter-factual question and might therefore be difficult to answer: In your experience do offset packages sometimes lead to another system and/or supplier being chosen than would have occurred in the absence of offset?
 - a. Could you comment the cases in list 1 from this perspective?
 - b. Could you comment this at a general level?
 - c. In your experience, does offset tend to favour EU vs. non-EU, the other way around, or is it neutral in this regard? (In general and for listed cases if you are aware that they differ)
6. Are you aware if difficulties in supplying offset (or difficulties in understanding and managing the offset aspects of a contract) have prevented firms from competing on defence equipment contracts or subcontracts? If so, give examples (cf. question 3.b)

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7. What would you consider a typical price increase (if any) for a contract with offset vs. a contract for the same defence equipment without offset?
 - a. How would this vary with offset percentage? (In general and for listed cases if you are aware that they differ)
8. What are in your experience the administrative requirements and costs for offset? (In general and for listed cases if you are aware that they differ)
 - a. What effects (if any) do offsets have on the way defence-relevant firms are managed?
9. What time delays (if any) do offsets cause for defence equipment contracts? (In general and for listed cases if you are aware that they differ)
10. In your experience, have offsets led to overcapacity in the European market?
 - a. If yes: how and in what industries?
 - b. If not: why not?
11. For questions 3—10 do you see any significant differences with regard to type and category of offset (cf. briefing note)?

Future of offset in Europe

12. Do you have a general opinion on defence equipment market offsets and their future in Europe?
 - a. If you see changes emerge, how do you assess their speed?
 - b. What are the forces pro and con changes?
13. Taking into account how offsets could be applied in the future, please address the following:
 - a. Can you say something on suitability of level of offsets percentage related to the contract value that could be considered as best practice on the effect on the industrial base at EU level? Please explain
 - b. Is there an optimum fulfilment period? Please explain
14. How may European offset practices be impacted by the guidance of the Interpretative Communication on the application of Article 296 of the Treaty in the field of defence procurement, published by the European Commission in December 2006?
15. Do you see offset as a cost-effective method for the long-term strengthening of the European Defence Technological and Industrial Base (EDTIB) as illustrated in the EDA's key characteristics of a strong future EDTIB?⁶⁸
 - a. Please rank the different types and categories of offsets applicable in this regard. Please motivate!
 - b. Can you give examples of more or less success in this regard:

⁶⁸ Cf. EDA's webpage.

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- i. for countries?
- ii. for firms?

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Questionnaires and Interview Guides

Interview guide for the case study on offset effects: firms in receiving pMS (direct and indirect defence-related)

Experience of offset

1. Your firm has been identified as a receiver of offset-related business. Is this correct?
2. What was the first offset contract you received, and when?
3. What additional offset contracts have your company received?
4. What was the volume of work gained from offset deals?
5. How would you classify the offsets by type and category (cf. briefing note)?

Costs to gain offset

6. How did you gain the offset orders/s?
7. Which costs were associated with gaining offset orders?

Effect on technological competence and innovation

8. What was your major technological competence at the time of your first offset order?
9. How would you describe the scope and level of your company's current technological competence?
10. What was the technological content of the offset orders?
 - a. Was it high technology or low technology – or any in-between?
 - b. Did you have related technology ex ante the offset order/s?
 - c. Did the offset supplier company transfer technology to you?
 - i. If so, how was the technology transferred?
 - d. Has the technological content in offset orders contributed to new innovations in your company?
11. Did you in turn transfer technologies deriving from your offset related business to your own supply chain – domestically, internationally?
12. Do you have experience of other instruments for technology transfer or joint development of new technology
 - a. How do the offset-related experiences compare to others?
 - b. Have you participated in any EU programmes?
 - c. If so, did this have any relationship to the offset deal/s?
 - d. Can you see future EU programmes substituting for the technology transfer effects of offset?
13. Are there other important aspects how offset has affected your technological competence and innovation?

Effect on competitive position

14. How would you describe your company's competitive position at the time you gained the first offset order? (National, European, global player)
15. How would you describe your company's current competitive position in the market? (National, European, global player)
16. How has your company's market relationships with governmental customers, prime contractors and domestic and international suppliers changed as an effect of the offset deal/s?
17. To what extent can subsequent contracts be related to the technology you worked with in the offset deal/s?
 - a. Contracts from the national government

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- b. Contracts from other governments'
 - c. Contracts from the supplier of the offset (new offset or other deal)
 - d. Contracts from other companies' (offset or other deal)
 - e. Contracts to your suppliers – domestically and internationally
18. What factors (inhibiting or enabling) may explain any subsequent contracts/or lack of contracts/deals?
- a. IPR regulations
 - b. Licensing contracts
 - c. Technology transfer (form of transfer – if it included substantial learning or not)
 - d. Overcapacity in competing industries
 - e. Other
19. Generally, how would you regard your competitive advantage to have been influenced by the offset deal/s?
- a. How large portion of your current turn over can be related to the offset deal/s?
 - b. Have you accessed new technology that has influenced your competitiveness?
 - c. Did the offset deal substantially influence your financial situation at that time (positively or negatively)?
 - d. Has the offset deal influenced the way customers and other companies regard you – i.e. what is the impact on your company's brand (positively or negatively)?
 - e. Other
20. Are there other important aspects how offset has affected your market position?

General

21. If you have experience of different types and categories of offset, are there differences in their effects?
22. If you have experience of offset from different supplying states, are there differences in their effects?
23. In your experience, have offsets led to overcapacity in the European market?
- a. If yes: how?
 - b. If not: why not?
24. If you had known what you know today regarding the effect of the offset deal, what if anything, would you have done differently?
25. Do you have a general opinion on defence equipment market offsets and their future in Europe?
- a. If you see changes emerge, how do you assess their speed?
 - b. What are the forces pro and con changes?

ANNEX 5
Questionnaires and Interview Guides

Interview guide for the case study on offset effects: supply chain firms potentially negatively affected

Experience of offset

1. Your firm has been identified as a potential loser of business due to offset. Do you think this is correct?
2. If so in connection with what offset deals was it that your firm might have lost business?
3. How did this happen?
 - a. Orders where placed directly with firms in the receiving country
 - b. Orders where placed with other firms (where?) who where able to assist in supplying offset in their turn.
4. Can you say anything of volumes?
5. Do you have other experience of offset (as receiver or supplier)?
 - a. What deals and how?

Costs to gain offset

6. Has your firm been actively involved in trying to secure offset-related business?
 - a. Which costs and efforts were associated with such attempts?

Effect on competitive position

7. How would you describe your company's competitive position at the time you first came in contact with offset? (National, European, global player)
8. How would you describe your company's current competitive position in the market? (National, European, global player)
9. How has your company's market relationships with governmental customers, prime contractors and domestic and international suppliers changed as an effect of the deal/s you potentially lost due to offset?
10. Generally, how would you regard your competitive advantage to have been influenced by the offset deal/s?
11. Are there other important aspects how offset has affected your market position?

General

12. If you have experience of different types and categories of offset, are there differences in their effects?
13. If you had known what you know today regarding the effect of the offset deal, what if anything, would you have done differently?
14. In your experience, have offsets led to overcapacity in the European market?
 - a. If yes: how?
 - b. If not: why not?
15. Do you have a general opinion on defence equipment market offsets and their future in Europe?
 - a. If you see changes emerge, how do you assess their speed?
What are the forces pro and con changes?

ANNEX 5
Questionnaires and Interview Guides

Interview guide for the in-depth study of supplying companies

The following questions will be asked to a minor sample of the companies' contribution the questionnaire. The companies that will be addressed are both prime contractors and SMEs.

1. How would you rate the importance of offset for the export deals that you have won?
2. Which are the major costs associated with offset?
3. How does your company normally arrange offset deals?
4. Is there, in your opinion, a difference between offset offered by EU and non EU (US) companies?
 - a. If so, what constitutes the difference?
 - b. What is the effect of the difference?
5. How would you describe your technology transfer strategy?
 - a. Is there a difference in the strategy concerning technology transfer for different countries (EU non EU)?
6. Have your technology transfer strategy changed in offset deals during the last decade?
 - a. If so, why?
7. How would you estimate the impact of offset on your company's competitiveness on the international defence market?
 - a. Short term – less than five years
 - b. Long term – more than five years
8. Which are the major factors that have influenced your competitiveness on the international market?
9. In what way, if any, have offset receiving companies contributed the development of your competitive position?
 - a. Have you developed long or short term collaboration with offset companies in addition to the offset contract?
 - i. If so, what kind of relationships?
 - b. Have receiving companies after the offset deal developed relationships with any of your competitors?
 - i. If so, how if at all can that be related to your offset relationship?
 - c. Have any receiving company opportunistically used technology transferred from your company?
 - d. Have any receiving company become a competitor to you on their national market, the EU market, the global market?
10. Generally, in your opinion, has offset strengthened or weakened your company's competitive advantage?
11. If you would wish, what would be the future of offset within the EU?

ANNEX 6
Overview of offset policies and practices

Annex 6: Overview of offset policies and practices

This overview builds on country fiches based on pMS replies to an EDA questionnaire in 2005 and some additional open source material. These fiches were provided for comment to pMS as part of the study questionnaire.

For the Groups, see Chapter 3. The notation ‘5-15 M€ – 4’ means that 4 respondents gave an answer within the relevant range (here 5-15 M€).

| Applied thresholds | offset | Group | Questionnaire responses |
|--------------------|--------|-------|--|
| | | 1 | |
| | | 2 | 5-15 M€ – 4 |
| | | 3 | 5-10 M€ – 4 |
| | | 4 | Up to 1.5 M€ – 3 2.7 M€ (neg), 11 M€ (ITT) – 1 4 M€ – 1 5 M€ (2.5 m€ for foreign subcontractors) – 1 17.8 M€ for foreign primes, 8.9 M€ for foreign subcontractors – 1 |

| Applied minimum offset levels | Group | Questionnaire responses | Comments |
|-------------------------------|-------|--|---|
| | 1 | 100% in exceptional cases when applied – 1 | |
| | 2 | 70-100% – 1 Up to 100% – 1 100% – 2 | |
| | 3 | 100% – 5 | One respondent also require a minimum of 15% subcontracting |
| | 4 | 100% – 7 No specific requirements – 1 | Two of the respondents requiring 100% offset also has a requirement of 20% direct offset, a third a requirement of 30% direct offset. In addition, one of the three above mentioned respondents also require a 30% investment ratio. |

ANNEX 6
Overview of offset policies and practices

| Applied multipliers | Group | Questionnaire responses |
|---------------------|-------|--|
| | 1 | |
| | 2 | 2-3 – 1 3-30 – 1 Use of multipliers is restricted to a minimum – 1 |
| | 3 | 0.3-3 – 1 0.5-5 – 1 2-5 – 1 2-10 – 1 No multipliers – 1 |
| | 4 | 1-3 – 1 1-5 – 1 1-7 – 1 2-5 – 1 5-10 – 1 Negotiable – 1 No multipliers – 1 |

| Applied fulfilment periods | Group | Questionnaire responses | Comments |
|----------------------------|-------|--|--|
| | 1 | | |
| | 2 | 2-5 years – 1 5-7 years – 1 Approximately length of contract – 1 UK | |
| | 3 | Approximately length of contract – 4 | |
| | 4 | Up to 5 years – 3 Up to 10 years – 2 10 years – 1 5-15 years – 1 Length of contract + 1 to 2 years – 1 Length of contract ± 1 year – 1 Depends on contract – 1 | The respondent stating a 10-year fulfilment period also say that 50% of the obligation should be fulfilled with 5 years. |

ANNEX 6
Overview of offset policies and practices

| Applied penalties | Group | Questionnaire responses |
|-------------------|-------|--|
| | 1 | |
| | 2 | 10% of unfulfilled part – 1 Obligation is increased by a percentage of the unfulfilled part – 1 No penalties – 1 |
| | 3 | 5-10% of unfulfilled part – 2 Up to 15% of obligation – 1 Normally a penalty of 2% linked to progress and 3% at the end of the fulfilment period – 1 Penalties are equal to unrealised obligations – 1 |
| | 4 | 5-10% of unfulfilled part – 3 A percentage share that differs from case to case – 1 Reduced or eliminated multipliers, banning from future contracts – 1 There are penalties for unfulfilled obligations – 2 Proposed penalty rate up to 50% of obligation – 1 No penalties – 1 |

| Preference for type | Group | Questionnaire responses |
|---------------------|-------|--|
| | 1 | |
| | 2 | Both direct and indirect – 4 |
| | 3 | Direct – 1 Both direct and indirect – 4 |
| | 4 | Indirect – 2 Both direct and indirect – 5 |

ANNEX 6
Overview of offset policies and practices

| Preference for category | Group | Questionnaire responses |
|-------------------------|-------|---|
| | 1 | |
| | 2 | Co-development, (software) engineering, production of subsystems and components – 1 Activities that strengthen the national defence industry – 1 |
| | 3 | Technology transfer, training, technical support, exports promotion – 1 Subcontracts, technology transfer, co-production – 1 Subcontracts, technology transfer, training, marketing and export assistance – 1 Purchase of local products, subcontracts, technology transfer – 1 Direct purchases, cooperative agreements, licensed technologies, training – 1 |
| | 4 | Technology transfer, direct investments, job-creation – 2 Technology transfer – 1 R&D, strategic goods, high technology – 1 Technology transfer, foreign direct investments – 1 Technology transfer, CIS, nano- and biotechnology, export support – 1 |

| Is offset a condition for participating? | Group | Questionnaire responses |
|--|-------|-------------------------|
| | 1 | No – 2 |
| | 2 | Yes – 2 No – 1 |
| | 3 | Yes – 2 |
| | 4 | Yes – 5 No – 3 |

| Is offset an award criteria? | Group | Questionnaire responses |
|------------------------------|-------|--|
| | 1 | No – 2 |
| | 2 | No – 2 |
| | 3 | Yes – 1 |
| | 4 | Only in case of equal offers – 2 No – 4 |

ANNEX 6
Overview of offset policies and practices

| | | |
|--|-------|--|
| Are bidders free to determine how much to offer as offset? | Group | Questionnaire responses |
| | 1 | |
| | 2 | Yes – 2 No – 1 |
| | 3 | Yes, if above minimum level – 2 No – 1 |
| | 4 | Yes – 3 Yes, if above minimum level – 2 No – 3 Decided on a case-by-case basis – 1 |

| | | | |
|---------------------------------------|-------|--|---|
| Can bidders decide whom to work with? | Group | Questionnaire responses | Comments |
| | 1 | | |
| | 2 | Yes – 4 | |
| | 3 | Yes – 2 Yes, from a list of certified beneficiaries (new beneficiaries can also be proposed) – 1 Bidders are directed to preferred areas – 1 | According to one respondent, final selection must however be approved by the handling agency |
| | 4 | Yes – 8 Bidders are directed to preferred areas – 1 | Two respondents say that bidders are free to choose partners provided that the decision maker approves. |



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ANNEX 6
Overview of offset policies and practices

ANNEX 7
Summary of questionnaire responses

Annex 7: Summary of questionnaire responses

This annex summarises the responses to pMS, industry organisation, and prime questionnaires. Also data from interviews are included.

For the Groups, see Chapter 3. The notation ‘5-15 M€ – 4’ means that 4 respondents gave an answer within the relevant range (here 5-15 M€).

‘G’ stands for government and ‘B’ for business respondents.

To protect the integrity of respondents the G/B notation is sometimes suppressed. Also groups have been merged on some occasions.

1. What is the impact of offsets on competition at EU level?

| Does offset tend to favour EU-based companies vs. non-EU based companies, or is it neutral in this regard? | Group | Questionnaire responses | Comments |
|--|-------|---|--|
| | 1 | Non-EU based companies are favoured – 1 Direct offsets tend to favour non-EU based companies while civilian offsets are neutral – 2 Neutral – 1 | The respondents point out US companies as being favoured due to their competitive advantage on quantitative issues and single company programmes. One respondent does, however, also mention that US companies may have disadvantages in terms of technology transfer due to US Technical Assistance Agreements |
| | 2 | EU-based companies are favoured – 1 (B) Neutral – 4 (B) Neutral according to offset policy – 3 (G) | Some of the respondents answering “neutral” point out that this is only valid under the condition that offset is practiced within Europe, if not, non-EU companies are favoured |
| | 3 | EU-based companies are favoured – 1 (G) Neutral – 1 (B) Neutral according to offset policy – 1 (G) | EU-based companies are mentioned as being favoured mainly due to logistical factors. One respondent also points out that direct offsets may inhibit US companies due to their strict technology transfer/exports regulations |
| | 4 | EU-based companies are favoured – 1 (G) Neutral – 2 (G) Neutral according to offset policy – 2 (G) | EU-based companies are mentioned as being favoured due to the fact that offset is successfully applied to diminish the technological gap with the US |

ANNEX 7
Summary of questionnaire responses

| Does offset restrict companies from competing? | Group | Questionnaire responses | Comments |
|--|-------|--|--|
| | 1 | Yes, especially for SMEs – 2 No, but it may – 1 No, it does not – 3 | Complex administration in association with indirect defence related offset and civilian offset is pointed out as potentially making bidding unattractive and costly to companies. The respondents saying that offset does not restrict companies from competing do however recognise that it raises hurdles to SMEs and that more stringent rules and higher penalties will lead to companies being restricted. Requirements on direct offset are considered to result in more restrictions than civilian offset. |
| | 2 | Yes, especially for SMEs – 1 (B) Not in general, but could happen in case of extremely demanding offset requirements – 4 (B) No, not according to policy – 1 (G) No, it does not – 4 (2G, 2B) | Some nations' complicated and incompatible ruling with regard to offset is mentioned by one respondent as possibly restricting companies. One respondent also answered that offset in fact should make companies more competitive |
| | 3 | Not on prime level, but it may on sub-contractor level – 1 (G) No, it does not – 2 (G) | One of the respondents saying that offset does not restrict companies does however point out that for low value competitions, some companies might refrain from participating due to burdening offset obligations |
| | 4 | Yes, it may – 1 (G) No, not according to policy – 1 (G) No, it does not – 3 (G) | According to two respondents, offset requirements is a common practice in defence procurements and companies are accustomed to that. Offset does therefore not restrict companies from competing. |

ANNEX 7
Summary of questionnaire responses

| Does offset distort competition between EU-based companies? | Group | Questionnaire responses | Comments |
|---|-------|--|--|
| | 1 | Yes, it does – 4 Competition is affected but not necessarily distorted – 1 No, it does not – 2 | Two of the respondents answering that offset distorts competition say that offset contributes to enhance the political impact of on defence contracts and that it may lead to an “offset race” with unrealistic proposals. |
| | 2 | Yes, it may – 3 (2G, 1B) No, not according to policy – 1 (G) No, it does not – 6 (1G, 5B) | One of the reasons given as to why offset does not distort competition is that equal offset rules apply for all competitors. One respondent also points out that offsets serve as a tool for introducing SMEs on the international market |
| | 3 | Yes, it may – 1 (G) Not on prime level, but it may on sub-contractor level – 1 (B) No, it does not – 2 (G) | Instead of distorting competition, one respondent see offset as a method to build national defence industries and ensure the growth of many SMEs. |
| | 4 | No, it does not – 6 (G) | Some of the respondents regard offset as an enhancer of competition |

ANNEX 7
Summary of questionnaire responses

| Does offset increase market access? | Group | Questionnaire responses | Comments |
|-------------------------------------|-------|-----------------------------------|---|
| | 1 | Yes – 2 No, not for primes – 1 | For one respondent offset increases market access as it may lead to a better acceptance of defence spendings. For the other respondent, however, offset neither leads to the creation of new markets or to the increase of ordered quantities. |
| | 2 | Yes – 9 (3G, 6B) | According to some of the respondents, offset is a tool for accessing markets that otherwise would be closed to international competition. Offset is also mentioned to facilitates long term partnerships which may lead to further business relations |
| | 3 | Yes – 4 (3G, 1B) | One respondent emphasises that offset is an effective market opener, especially for SMEs. |
| | 4 | Yes – 5 (G) | One respondent points out that offset can work as a “door opener” for SMEs. Another respondent mentions that civilian or mixed offsets tends to increase market access. |

ANNEX 7
Summary of questionnaire responses

| Does offset lead to a different system and/or supplier being chosen than would have occurred in the absence of offset? | Group | Questionnaire responses | Comments |
|--|-------|---|--|
| | 1 | Yes, it does – 1 Yes, it may – 2 No, not in general – 1 | One of the respondents saying that offset may affect the choice of supplier points out that this is particularly true when defence related direct and indirect offsets are required. The respondent saying that offset does not affect the choice, say that offset is just considered to be a second level decision criteria. |
| | 2 | Yes, it does – 1 (G) Yes, it may – 1 (B) No, not in general – 1 (B) No, it does not – 3 (2G, 1B) | The respondents answering that offset does not change the choice of supplier state that technical specifications and cost-effectiveness of the procured system is considered to be more important than specific offset deals |
| | 3 | Yes, it may – 2 (1G, 1B) No, it does not – 1 (G) | One of the respondents saying that offset may affect the choice of supplier points out that this is particularly true when direct offsets are required |
| | 4 | Yes, it may – 2 (G) No, it does not – 2 (G) | One of the respondents saying that offset may affect the choice of supplier points out that this is particularly true when direct offsets are required |

ANNEX 7
Summary of questionnaire responses

2. What is the implementation efforts associated with offset contracts?

| What is the price increase (if any) in percentage of the contract value for a contract with offset vs. a contract for the same defence equipment without offset? | Group | Questionnaire responses | Comments |
|--|-------|---|---|
| | 1 | There are price increases associated with offset – 7 | No respondents report specific percentages. According to one respondent, civilian offset should not create additional costs as it should be subcontracted under competitive conditions. |
| | 2 | There are price increases associated with offset – 6 (2G, 4B) Offset could lead to price increases – 1 (G) Offset does not lead to price increases in a competitive environment – 2 (B) | In general, the price increases mentioned are normally between 2 and 3 percent, although costs as high as 8 percent is reported. One respondent also mentions that despite initial costs, offset could also lead to long term positive economic effects. |
| | 3 | There are price increases associated with offset – 2 (1G, 1B) Offset could lead to price increases – 1 (G) No information – 1 (G) | The price increases mentioned ranged from 3 to 10 percent. |
| | 4 | There are price increases associated with offset – 1 (G) Offset could lead to price increases – 2 (G) No information – 2 (G) | The price increase mentioned was approximately 3 percent. |

ANNEX 7
Summary of questionnaire responses

| What are the administrative costs associated with offset contracts (if any) including resources for managing the process? | Group | Questionnaire responses | Comments |
|---|-------|--|--|
| | 1 | There are administrative costs associated with offset – 4 | No respondent reported specific figures. The administrative costs are said to vary a great deal depending on the terms and conditions of the offset contract |
| | 2 | About 0.3 % of contract value – 1 (G) 1-2 specialists per €100 M of military sales – 1 (B) On average 3-4 fulltime administrative officials dealing with offset – 1 (G) More than 15 administrative officials – 1 (B) There are administrative costs associated with offset, but no reported amount – 7 (2G, 5B) | |
| | 3 | About 0.5-1 % of contract value – 1 (B) On average 3-4 fulltime administrative officials dealing with offset – 1 (G) On average 10 officials – 1 (G) | |
| | 4 | Less than 1 % of contract value – 1 (G) On average 3-4 fulltime administrative officials dealing with offset – 2 (G) There are administrative costs associated with offset, but no reported amount – 2 (G) | |

ANNEX 7
Summary of questionnaire responses

| Are there any delays in the programme timescale associated with offset contracts? | Group | Questionnaire responses | Comments |
|---|-------|---|----------|
| | 1 | Yes, direct offset may cause delay of delivery – 2 Yes, offset may cause delays in the negotiation phase – 1 There may be delays, but insignificant compared to overall delivery period – 1 Yes, offset may cause delays - 1 | |
| | 2 | Yes, offset may cause delays – 1 (G) Yes, offset may cause delays in the negotiation phase – 1 (B) No, in general there are no delays – 6 (2G, 4B) | |
| | 3 | Yes, offset may cause delay of delivery – 1 (G) Yes, direct offset may cause delay of delivery – 1 (B) No, in general there are no delays – 2 (G) | |
| | 4 | Yes, offset may cause delays in the negotiation phase – 1 (G) No, in general there are no delays – 3 (G) | |

ANNEX 7
Summary of questionnaire responses

3. Does offset impact on the strengthening or weakening of industry market position at EU level?

| Duplication? | Group | Questionnaire responses | Comments |
|--------------|-------|---|---|
| | 1 | Offset may lead to duplication – 6 | It is primarily direct offset that leads to duplication. According to two respondents offset might not lead to duplication in the long term as governmental support might stop at the end of the program and that offset cannot sustain the workload over time. According to the third respondent, however, offset could support the build-up of a competition-driven European industry but could also have adverse effects with respect to US competition. |
| | 2 | Offset may lead to duplication – 4 (3G, 1B) Duplication in the form of licensed production has neither a strengthening or weakening effect on the individual companies' market position – 2 (B) Duplication as a result of military offset has a weakening effect on the industry whereas civil offset has a strengthening effect – 1 (B) | For the respondents answering that offset may lead to duplication, this primarily applies for direct defence related offsets. |
| | 3 | Offset may lead to duplication – 2 (G) Offset will not lead to further duplication due to the already existing national capabilities – 1 (B) | According to one respondent, the duplication of assembly lines does not always have to be negative as it can benefit the national security of supply as well as prove useful in high demand situations. |
| | 4 | Offset may lead to duplication – 2 (G) The aim is to increase cooperation rather than duplication – 1 (G) | In those cases offset is said to potentially lead to duplication this is primarily with respect to direct offsets and in the short term. |

It should be noted that the respondents interpreted this question, with respect to the duplication sub question, in two different ways; (1) whether offset leads to duplication; and (2) whether duplication has a strengthening or weakening effect on the industry market position. How individual respondents interpreted the question should be clear from the table

ANNEX 7
Summary of questionnaire responses

| Impact on established supply chains? | Group | Questionnaire responses | Comments |
|--------------------------------------|-------|--|--|
| | 1 | Negative impact on established supply chains – 5 Impact without value judgement – 1 | <p>The negative effect is mentioned to be a result of national subcontractors being driven out of business and that it leads to reorganisations, delays additional costs and other disadvantages.</p> <p>Although the respondents are distinctly negative to the effects that offset has on established supply chains, one respondent point out that diversifying the supplier base could also have a positive effect on the industry.</p> |
| | 2 | Positive impact on established supply chains – 1 (G) Direct offsets has a negative impact on established supply chains – 1 (B) Impact without value judgement – 2 (1G, 1B) No significant impact on established supply chains – 2 (B) | <p>According to one respondent, the impact is positive due to increased competition.</p> <p>Civil offsets will according to one respondent have a strengthening effect on the industry market position at EU level.</p> <p>Offset has been used to enable domestic providers of in-service support. That can be avoided on the long term due to EDEM agreements.</p> |
| | 3 | Direct offset has a positive impact on established supply chains – 1 (G) Negative impact on established supply chains – 1 (B) Impact without value judgement – 1 (G) | <p>The positive impact is said to be due to benchmarking opportunities and a potential innovative effect on old supply chains.</p> <p>As another respondent answers, offset can have an initial negative effect on the established suppliers but be positive in the long run for the security of supply.</p> |
| | 4 | Positive impact on established supply chains– 3 (G) Impact without value judgement – 2 (G) | <p>One respondent express that the positive impact is a result of increased competition</p> |

ANNEX 7
Summary of questionnaire responses

| [Can offset help in the] development of niche capabilities? | Group | Questionnaire responses | Comments |
|---|-------|---|--|
| | 1 | <p>(Direct) offset facilitates the development of niche capabilities which may lead to duplication of existing capabilities – 2</p> <p>Development of niche capabilities is difficult with defence related offsets but easier with civilian offsets – 1</p> <p>Offset may facilitate the development of niche capabilities – 2</p> | <p>Given that offset facilitates the development of niche capabilities it can jeopardise the SMEs' core business, but it could also have positive effects according to one respondent.</p> |
| | 2 | <p>Offset may facilitate the development of niche capabilities and have a positive impact on the indigenous industry – 4 (2G, 2B)</p> <p>Offset may facilitate the development of niche capabilities and have a positive impact on the industry at EU level – 2 (B)</p> <p>Offset may facilitate the development of niche capabilities but not sustain them on the long term – 1 (G)</p> <p>Direct offset has a negative effect on the development of niche capabilities whereas indirect defence related and civilian offset has a positive effect – 1 (B)</p> | <p>As one respondent points out, the development of niche capabilities may be beneficial for the indigenous industry but does not necessarily have the same strengthening effect on the EU level as each country focus on their own niches.</p> <p>For the respondents saying that offset has a positive effect on the EU level this is due to the fact that it constitutes an important opportunity for the strengthening of European excellencies.</p> |
| | 3 | <p>Offset may facilitate the development of niche capabilities in a positive sense – 3 (2G, 1B)</p> | |
| | 4 | <p>Offset may facilitate the development of niche capabilities in a positive sense – 4 (G)</p> | <p>One respondent point out that niche capabilities are the key of existence for the SMEs.</p> <p>Some respondents also point out that the positive effect on the development of niche capabilities is only valid on the short term.</p> |

ANNEX 7
Summary of questionnaire responses

| [Can offset help in the] provision of new capabilities? | Group | Questionnaire responses | Comments |
|---|-------|---|--|
| | 1 | Offset may facilitate the development of new capabilities – 3 Only receivers will gain new capabilities – 1 | One of the respondents saying that offset may facilitate the development of new capabilities does however point out that it may not ensure the competitiveness of new capabilities in the long run. |
| | 2 | Offset may facilitate the development of new capabilities and have a positive impact on the industry at EU level – 2 (1G, 1B) Offset may facilitate the development of new capabilities for receivers – 2 (1G, 1B) Offset may facilitate the development of new capabilities, but may not ensure competitiveness in the long run – 1 (G) Offset seldom provides new capabilities – 2 (B) Direct offset has a negative effect on the development of new capabilities whereas civilian offset has a positive effect – 1 (B) | One of the respondents who state that offset seldom provides new capabilities does however point out that new capabilities can be generated locally as follow on activities. |
| | 3 | Offset may facilitate the development of new capabilities and have a positive impact on the industry at EU level – 3 (G) Offset is a unique tool for the domestic industry to increase its capabilities on all terms – 1 (B) | According to one respondent, the positive effect on the industry is a result of activities, such as assembly and maintenance, being dispersed to the receivers, allowing the prime to concentrate on design and development of new systems. Another respondent points out that offset is a way to bring capabilities in to Europe from non-European obligors. |
| | 4 | Offset may facilitate the development of new capabilities and have a positive impact on the industry at EU level – 1 (G) Offset may facilitate the development of new capabilities – 2 (G) Offset may facilitate the development of new capabilities for receivers – 1 (G) | The positive impact of offset in terms of providing new capabilities is most often viewed as a short term effect. One respondent did however comment on the effect of offset being positive on all terms. |

ANNEX 7
Summary of questionnaire responses

| [Can offset help in sustaining existing capabilities? | Group | Questionnaire responses | Comments |
|---|-------|---|---|
| | 1 | <p>Direct offset may provide a means of sustaining existing capabilities in the defence industries – 1</p> <p>In the short term but not in the long term – 1</p> <p>I can lead to that existing capabilities in the supplying country may not be sustained – 1</p> | <p>One respondent points out that the capabilities sustained by offset are not necessarily competitive. Also, in countries without offset requirements, existing capabilities may be weakened as a result.</p> |
| | 2 | <p>Offset may provide a means of sustaining existing capabilities – 5 (B)</p> <p>In the shorter term but not in the long term – 1 (G)</p> <p>Defence related offsets has a weakening impact on the industry at EU level whereas civilian offsets has a strengthening impact – 1 (B)</p> | <p>A majority of the respondents emphasise that it is the existing capabilities in the receiving country that are sustained by offsets and not in the supplying country</p> |
| | 3 | <p>Offset may provide a means of sustaining existing capabilities which has a positive impact on the industry at EU level – 3 (G)</p> <p>Offset may provide a means of sustaining existing capabilities – 1 (G)</p> <p>In all terms – 1 (B)</p> <p>In the short term but not in the long term – 1 (G)</p> | <p>One respondent highlight that the effect of offset is particularly positive for sustaining niche capabilities</p> |
| | 4 | <p>Offset may provide a means of sustaining existing capabilities – 2 (G)</p> <p>In the short term but not in the long term – 2 (G)</p> | <p>One respondent emphasises that offset should not be viewed as a tool for sustaining capabilities.</p> <p>Another respondent says that non-competitive capabilities would not be preferred in the long run, hence the short term effect of offsets.</p> |

ANNEX 7
Summary of questionnaire responses

| [Can offset help in exploiting] scale advantages (reuse technology of the receiving companies, machinery or split development costs on a larger volume)? | Group | Questionnaire responses | Comments |
|--|-------|--|---|
| | 1 | Offset does not affect scale advantages – 2 No scale advantages as offset requires sharing – 1 | One of the respondent saying that offset does not affect scale advantages mentions that this is valid for companies in countries that do not require offset |
| | 2 | Offset could have positive effects on scale advantages – 3 (1G, 2B) Scale advantages are welcome side effects – 1 (G) Offset does not affect scale advantages – 2 (1G, 1B) Defence related offsets has a weakening impact on the industry at EU level whereas civilian offsets has a strengthening impact – 1 (B) | One respondent points out that offset could have positive effects on scale advantages provided that offset receivers are competitive companies. According to another respondent there will be scale advantages in the long run be it with or without offset. |
| | 3 | Offset could have positive effects on scale advantages – 2 (G) Offset can only provide scale advantages through the split of development costs – 1 (B) | |
| | 4 | There are cost advantages in local production/subcontracting and split development costs – 1 (G) Scale advantages are not negatively affected by offset – 1 (G) | |

ANNEX 7
Summary of questionnaire responses

| Impact of technology transfer? | Group | Questionnaire responses | Comments |
|--------------------------------|------------------|--|---|
| <p>(pMS)</p> | <p>1 & 2</p> | <p>Offset related technology transfer (preferably in connection to direct offsets, but also indirect defence related and civilian) is anticipated to have a strengthening impact on the national industry position – 1</p> <p>Offset related technology transfer has a weakening impact on companies in countries that do not require offset – 1</p> <p>Offset related technology transfer neither strengthens nor weakens the industry market position at EU level – 1</p> <p>Offset related technology transfer has a distortionary effect on the market – 1</p> | <p>According to one respondent, offset related technology transfer to one domestic company might be harmful to another as the transfer might lead to dominant market positions. Governments should therefore avoid requiring technology transfer to certain companies.</p> |
| | <p>3</p> | <p>Offset related technology transfer (both direct and indirect defence related) has a strengthening effect on the national industry position – 1</p> | <p>According to one respondent, technology transfer in connection to both direct and indirect defence related offsets has a strengthening effect.</p> <p>Another respondent points out that the positive impact is a result from that technology is made available at a lower cost.</p> |
| | <p>4</p> | <p>Offset related technology transfer has a strengthening impact on the industry market position at EU level – 2</p> <p>Technology transfer has a strengthening impact on the national industry market position – 3</p> | |

ANNEX 7
Summary of questionnaire responses

| Business development with receiving country? (pMS) | Group | Questionnaire responses | Comments |
|--|-------|--|--|
| | 1 | | |
| | 2 | | |
| | 3 | <p>Offsets, in particular indirect defence related, has a positive impact on business development – 1</p> <p>An active contractor may find plenty of further business opportunities with receiving countries – 1</p> | <p>According to one respondent, offsets foster economic, social and military links which can lead to further business development. Indirect defence related offsets seem to lead to more sustainable relationships as they, unlike direct offsets, can extend beyond final delivery.</p> |
| | 4 | <p>Both direct and indirect offset has a positive impact on business development – 1</p> <p>Offset has a short term positive impact on business development – 1</p> <p>Offset is a vehicle in finding new business relations – 1</p> | |

ANNEX 7
Summary of questionnaire responses

| As a supplier of offset, has technology transfers been exploited by receiving companies? (Business) | Group | Questionnaire responses | Comments |
|---|-------|-------------------------|--|
| | 1 | Yes – 1 | |
| | 2 | Yes – 1 | Negative effects of receiving companies exploiting technology can normally be foreseen and handled |
| | 3 | | |
| | 4 | | |

| As a supplier of offset, has offset subsequently influenced your business in the receiving country in terms of gaining new orders? (Business) | Group | Questionnaire responses | Comments |
|---|-------|--|--|
| | 1 | Yes, it has lead to new orders – 1 Offset may create linkages to local industry which can be positive in case of new acquisition programmes – 1 No, usually a new acquisition program leads to a new tender evaluation – 1 | |
| | 2 | Yes, it has led to new orders – 2 | One respondent points out that off-sets serve as a comparative advantage |
| | 3 | | |
| | 4 | | |

ANNEX 7
Summary of questionnaire responses

| As a supplier of offset, has offset subsequently influenced your business in the receiving country in terms of developing supply chain or partner relationships? (Business) | Group | Questionnaire responses | Comments |
|---|-------|--|---|
| | 1 | Yes, it may lead to long-term partner relationships – 1 Yes, it may lead to new (though often short term) partner relationships – 3 | One of the respondents saying that technology transfer may help strengthening partnerships also says that this effect applies to both direct and indirect defence related offsets. In most cases, however, the effect is limited to the duration of the contract. |
| | 2 | Yes, it has led to the development of partner relationships – 2 Difficult to correlate offset with subsequent business but some partner relationships have been developed – 2 | |
| | 3 | | |
| | 4 | | |

| As a supplier of offset, has offset subsequently influenced your business in the receiving country in terms of receiving companies becoming competitors? (Business) | Group | Questionnaire responses | Comments |
|---|-------|--|----------|
| | 1 | Yes, especially to SMEs – 1 Yes, from a pure manufacturing site point of view – 1 | |
| | 2 | Yes, in case of direct and indirect defence related offset – 1 No recognised examples related to offset – 3 | |
| | 3 | | |
| | 4 | | |

ANNEX 7
Summary of questionnaire responses

| As a receiver of offset, what is the effect of technology transfer on your business? (Business) | Group | Questionnaire responses | Comments |
|---|-------|--|---|
| | 1 | In cases where technology has been transferred this has not immediately led to new business – 1 | |
| | 2 | In general a positive impact – 3 With gained experience the impact of technology transfer has become increasingly positive – 1 No significant effect – 1 | One of the respondents describing the positive impact of technology transfer say that offset can assist in bringing in technological capabilities that enhance the national defence industrial capabilities |
| | 3 | In general a positive impact, the indigenous industry has increased its production capabilities – 1 | |
| | 4 | | |

| As a receiver of offset, has offset subsequently influenced your business in the supplying country in terms of gaining new orders? (Business) | Group | Questionnaire responses | Comments |
|---|-------|---|----------|
| | 1 | Offset has led to new orders – 1 | |
| | 2 | Offset has led to new orders – 1 No influence on subsequent business – 1 | |
| | 3 | | |
| | 4 | | |

| As a receiver of offset, has offset subsequently influenced your business in the supplying country in terms of developing supply chain or partner relationships? (Business) | Group | Questionnaire responses | Comments |
|---|-------|--|----------|
| | 1 | Successful business partner relationships have been developed – 1 | |
| | 2 | Offset has led to the development of partner relationships – 1 Difficult to correlate offset with subsequent business but some partner relationships have been developed – 2 No influence on subsequent business – 1 | |
| | 3 | | |
| | 4 | | |

ANNEX 7
Summary of questionnaire responses

4. Future of offsets

| Is there an optimum level of offsets percentage related to the contract value that could be considered as best practice on the effect on the industrial base at EU level? | Group | Questionnaire responses | Comments |
|---|-------|--|--|
| | 1 | 0% – 3 The lower the better, maximum 100% – 1 30-40% – 1 Up to 100% – 1 No general optimum level – 1 | In order to avoid dissemination and protect SMEs, one respondent says that offset regulations should only be applied to acquisitions exceeding 10 M€. Also, multipliers should be used and harmonised |
| | 2 | Less than 100% – 1 (G) Up to 100% – 1 (G) Depends on national DTIB, but up to 100% reasoned fair – 1 (G) 100% – 2 (1G, 1B) Optimum policies varies from country to country – 1 (B) No general optimum due to substantially different DTIB – 2 (B) No general optimum level due to multipliers and different calculations methodologies – 1 (B) | According to one respondent, the percentage of direct offset should in principle be limited due to the potential inherent inefficiency |
| | 3 | 100% – 3 (G) No general optimum level – 1 (B) | According to one respondent, no general optimum level should be established due to the fact that multipliers differ from country to country and a max. percentage requirement will disadvantage EU-members in comparison to non-EU members |
| | 4 | 20-30% – 1 (G) 100% – 1 (G) 100% (20% direct) – 1 (G) 100% (30% direct) – 1 (G) 100% or more – 1 (G) No general optimum level – 1 (G) | According to one respondent, no general optimum level can be established due to completely different national objectives |

ANNEX 7
Summary of questionnaire responses

| Is there an optimum fulfilment period of offset obligations? | Group | Questionnaire responses | Comments |
|--|-------|---|--|
| | 1 | <p>There should be no general optimum fulfilment period – 1</p> <p>The longer the better – 1</p> <p>7-10 years for mid-sized projects and min. 15 years for high value procurements – 1</p> <p>Approx. length of contract for direct offset and 10-15 years for indirect defence related and civilian offset – 1</p> <p>Approx. length of contract for direct offset and 7-10 years for civilian offset – 1</p> | <p>According to one respondent there should be no general optimum fulfilment period due to the risk of paying penalties and the difficulty of making reliable forecasts.</p> <p>The respondents generally state that a longer period is better than a short as it facilitates long-term business relations.</p> <p>One respondent does however point out the inherent risk of longer contracts connected to that inner and outer conditions may change substantially over time</p> |
| | 2 | <p>Up to 5 years – 1 (G)</p> <p>3-10 years – 1 (G)</p> <p>10 years – 1 (B)</p> <p>Approx. the length of the contract – 2 (1G, 1B)</p> <p>Longer than the length of contract – 2 (B)</p> <p>Optimum policies varies from country to country – 1 (B)</p> | <p>As one respondent points out, a narrow time limit may increase both risks and costs. Rather, the time limit should be adapted to the business opportunities in the receiving country limit but should not be too long.</p> |
| | 3 | <p>Up to 8 years – 1 (G)</p> <p>Approx. the length of the contract – 2 (G)</p> | <p>One respondent says that a progress schedule with several check points could be an alternative</p> |
| | 4 | <p>Up to 5 years – 2 (G)</p> <p>Approximately 10 years – 2 (G)</p> <p>No general optimum fulfilment period – 1 (G)</p> | <p>The two respondents expressing the shortest fulfilment period say that this allows for better control over implementation.</p> <p>According to one respondent, no general optimum level can be established due to completely different national objectives</p> |

ANNEX 7
Summary of questionnaire responses

| Rank the different types and categories of offsets according to their effects on the EDA's endeavours to develop a truly European DEM. | Group | Questionnaire responses | Comments |
|--|-------|--|--|
| (pMS) | 1 & 2 | <p>Types</p> <p>1) Indirect defence related offset 2) Direct offset – 1</p> <p>1) Direct and indirect defence related offset 2) Civilian offset – 1</p> <p>Indirect offset is better than direct offset – 1</p> <p>All types of offset can help to develop a truly EDEM, provided that companies are free to determine the arrangements – 1</p> | <p>One respondent mentions that offset can have the positive effect of speeding up the development of the EDEM</p> <p>One respondent points out that with indirect offsets the threat of involuntary transfer of technological knowledge is smaller</p> |
| | 3 | <p>Types</p> <p>1) Direct offset 2) Indirect defence related offset 3) Civilian offset – 1</p> <p>Preferred type may vary from case to case – 1</p> <p>Categories</p> <p>Technology transfer and foreign direct investments should be preferred categories – 1</p> <p>Product development, sub-contracting and absorption of products produced by the domestic defence industry should be preferred categories – 1</p> | <p>According to one respondent, activities directed towards strengthening the national defence industry will develop the EDEM. The same respondent also points out that governments should be encouraged to reinforce their role in the offset selection process through clearly defining their needs and priorities.</p> <p>The respondent saying that the preferred type may vary from case to case emphasises that the EDEM will have to build on the best technology available regardless of the domain (defence related or civil) where it was developed.</p> |

ANNEX 7
Summary of questionnaire responses

| | | | |
|--|---|--|--|
| | 4 | <p>Types</p> <ol style="list-style-type: none"> 1) Mixed offset 2) Civilian offset 3) Defence related indirect offset 4) Direct offset – 1 <ol style="list-style-type: none"> 1) Indirect defence related offset 2) Direct offset – 1 <p>Direct offsets and indirect defence related offsets when it makes sense. Otherwise, civilian offsets – 1</p> <p>Limiting to defence related offsets seems sensible in the medium and long term – 1</p> <p>Indirect offset should remain an alternative – 1</p> <p>Categories</p> <ol style="list-style-type: none"> 1) R&D 2) High technology products 3) Technology transfer 4) Investments 5) Licensed production 6) Credit assistance/financing – 1 | <p>One respondent emphasises that a limitation to direct offset will only result in a more disintegrated EDEM.</p> |
|--|---|--|--|

ANNEX 7
Summary of questionnaire responses

| Is offset a cost-effective method for the long-term strengthening of the EDTIB as illustrated in the EDA's key characteristics of a strong future EDTIB? Rank the applicable types and categories of offset. | Group | Questionnaire responses | Comments |
|--|-------|---|---|
| | 1 | <p>No, it is not a cost effective method – 2 It is not the most cost effective method – 2</p> <p>Types and categories Direct offsets should be replaced by joint development programs and indirect defence related offsets could be considered if it can contribute to the reinforcement of the EDTIB – 1</p> | <p>According to one respondent, the technology ready for transfer from outside Europe does not strengthen the EDTIB or the EDEM. Instead, inter-European technology cooperation should be the focus and properly designed offset could provide adequate incentives for this.</p> <p>Another respondent points out that industrial consolidation and specialisation is slowed down by offsets.</p> |
| | 2 | <p>Yes, it is – 1 (B) Yes, in case of civilian offsets – 1 (B) Yes, in the short and medium term – 2 (B) Offset can be a tool to manage the process of integration and aggregation of the future EDTIB – 1 (G) If properly designed, offset can strengthen the EDTIB – 4 (2G, 2B) Perhaps not, but still an important tool for the development of the national defence industry – 1 (G)</p> <p>Types and categories Civilian offset has a strengthening impact whereas direct has a weakening impact – 1 (B) No general types and categories due to substantially different DTIB – 2 (B)</p> | <p>One respondent emphasises that offset is only a second best policy tool under present circumstances, but until a fully functioning defence market emerges it can strengthen the EDTIB.</p> |
| | 3 | <p>Yes, it is – 3 (2G, 1B)</p> <p>Types and categories Defence related offset is a suitable means for developing the EDTIB in smaller member states – 1 (G) Defence related offset has the best effect on the EDTIB, although both civilian and direct offset could contribute – 1 (G)</p> | <p>According to one respondent, the positive effect of offset stems from that fact that it facilitates the growth of SMEs.</p> <p>Another respondent mentions that offset is a method to be used until a more transparent and better functioning defence market emerges.</p> |

ANNEX 7
Summary of questionnaire responses

| | | | |
|--|---|---|---|
| | 4 | <p>Yes, it is – 2 (G) Yes, in case of well-balanced offsets – 1 (G) Yes, on the national level – 2 (G) The effect of offset is more positive than negative – 1 (G)</p> <p>Types and categories</p> <p>1) Direct offset – Industrial participation 2) Direct/indirect offset – Technology transfer 3) Direct offset – Long-term subcontracts 4) Direct/indirect offset – Marketing/export assistance 5) Direct/indirect offset – Training 6) Direct/indirect offset – Licensed production 7) Direct/indirect offset – Investments 8) Indirect offset – Purchases, Long term subcontracts – 1 (G)</p> <p>1) Mixed offset 2) Civilian offset 3) Defence related indirect offset 4) Direct offset – 1 (G)</p> <p>1) R&D 2) High technology products 3) Technology transfer 4) Investments 5) Licensed production 6) Credit assistance/financing – 1 (G)</p> <p>Direct offsets and indirect defence related offsets when it makes sense. Otherwise, civilian offsets – 1 (G)</p> | <p>According to one respondent, offset can work as an instrument for some pMS to improve the competitiveness of the national industry which in turn can prevent market domination of already established firms.</p> |
|--|---|---|---|

ANNEX 7
Summary of questionnaire responses

| How may offset policies be impacted by the guidance of the Interpretative Communication on the application of Article 296 of the Treaty in the field of procurement? (pMS) | Group | Questionnaire responses | Comments |
|--|-------|---|----------|
| | 1 & 2 | No impact due to no formal offset policy – 1 The use of offsets will be more restricted – 2 | |
| | 3 | The use of offsets will be more restricted – 2 Marginal impact – 1 None to marginal impact as offset practices are in line with the IC and Article 296 – 1 | |
| | 4 | Marginal impact – 1 None to marginal impact as offset practices are in line with the IC and Article 296 – 2 No impact due to no formal offset policy – 1 Employment of offsets will carry on as before – 1 Involved Ministries observe the current discussion – 1 | |

ANNEX 7
Summary of questionnaire responses

| Are there drivers for change? (Business) | Group | Questionnaire responses |
|---|-------|--|
| | 1 | <p>A harmonisation of rules and practices is desirable, including limiting the volume of offset requested, setting meaningful thresholds and fulfilment periods, allowing for indirect offset, developing the use of sensible multipliers and avoiding counterproductive situations with inefficient local participation – 1</p> <p>EDA can provide guidelines for offset, but actual harmonisation will be difficult. EDA should try to make countries refrain from requiring offsets. The long-term vision should be guided by the strengthening of the EDTIB, the identification of key technologies and the creation of centres of excellence – 1</p> <p>In case of harmonisation of offset guidelines, flexibility should be preferred over strict application as it improves the chances of successful fulfilment. However, offset are market barriers that drive up costs and tie up valuable resources, and they do not fit into the landscape with a common European Economic Area – 1</p> <p>Offset should be designed to be a tool helping the strengthening of the EDTIB. This includes harmonising the level of offset required to an acceptable level (<40%) with proper multipliers, setting up a threshold of applicability, allowing flexibility of the fulfilment period and prioritising projects that enhance existing EU competences and without creating useless competition inside the EDTIB – 1</p> |
| | 2 | <p>The principle driver for change is the need to migrate towards indirect offset – 1</p> <p>Harmonisation of offset regulations within EU is necessary, although flexible to account for particular national needs. Key points for improvement are the standardisation of bank credits and credit swaps – 2</p> <p>In the current political context offsets should remain as part of the general rules and commercial package for an open competition market – 1</p> <p>Offset has been designed and implemented due to the imperfect defence market. As long as no real level playing field exists, the offset mechanism provides for a next best solution to enable fair participation of defence related industries. The offset instrument have to be used primarily to enable SMEs, but also for the strengthening of internationally competitive “national champions” – 1</p> <p>The driver for change is the need for an improved total defence equipment supply chain – corresponding to the member states’ requirements for capabilities – over time – 1</p> |
| | 3 | <p>There can be no homogeneous offset policy at EU level due to different nations’ needs and priorities. Offset policy should therefore be individual to each member state. Restrictions on offset at EU level will put European companies at a disadvantage compared to non-EU based companies – 1</p> |
| | 4 | |



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ANNEX 7
Summary of questionnaire responses

ANNEX 8
Summary of case study interviews

Annex 8: Summary of case study interviews

This annex gives a brief overview of the case studies from the side of receiving firms.

Summary of questions and answers regarding offset effects on receiving companies

| Kind of offset deals ↓ | Investigated issues → | Experience of offset | Effect on technological competence and innovation | Effect on competitive position |
|---|--------------------------|--|---|---|
| Direct offset – mainly development • 4 companies | | 1 major deal: 4 companies | Positive effect: 4 companies | Positive effect: 2 companies |
| Direct offset – mainly manufacturing • 3 companies | | 1 major deal: 2 companies 2+ deals: 1 company | No effect: 3 companies (possibly negative in 1 case) | No effect: 2 companies Somewhat positive effect: 1 |
| Direct offset – development and manufacturing • 4 companies | | 2+ deals: 4 companies | Positive effect: 4 companies | Positive effect: 4 companies |
| Indirect offset (swapping) • (1 company; also above) | | 1 major deal | No effect | No effect |



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ANNEX 8
Summary of case study interviews

ANNEX 9
Historical context of offset in Europe

Annex 9: Historical context of offset in Europe

This annex presents a brief background on how offset (in particular licensed production) have been used, particularly during the Cold War, to build national DTIB:s in European countries.

There are historical examples where offsets were associated with the creation of competitive defence firms and, in some cases, the establishment of world class firms. This section provides some illustrative examples only based on European experience and does not claim to be a comprehensive account of the record of offsets.

Within the UK, two examples are presented, namely, *Westland* and *Marshall of Cambridge*. Initially, the Westland Aircraft Company entered the helicopter market in 1947 by acquiring a licence to build the Sikorsky S-51 helicopter in the UK (known as the Westland Dragonfly), followed in 1959 by a further licence agreement for the Sikorsky S-61 helicopter (known as the Sea King which was sold to the UK Armed Forces and achieved substantial export sales). The company developed an independent design and development capability in helicopters enabling it to enter into the Anglo-French helicopter agreement of 1967. This was an agreement to develop three types of helicopters: Aerospatiale with design leadership on the Puma and Gazelle and Westland with design leadership on the Lynx which was sold to the UK Armed Forces and to overseas customers. Later, Westland became an equal partner with Agusta (Italy) on the UK-Italy collaborative EH 101 Merlin helicopter. In 1995, Westland was selected to build the Boeing Apache attack helicopter in a deal involving some 240 UK companies, including Rolls-Royce Turbomeca engines (Jane's All The World's Aircraft, 1999-2000, p534). Eventually, GKN Westland merged with Agusta to form AgustaWestland which is now owned by Finmeccanica of Italy and is a world class helicopter company.

Another UK 'success' based on offsets from the USA involved Marshall of Cambridge which specialises in the modification, repair and overhaul of aircraft. In 1966, Marshall became the designated centre for the UK RAF Lockheed Hercules transport aircraft fleet. It was involved in the lengthening of Hercules fuselages for the RAF and in conversion work on both the Hercules and Lockheed TriStars (conversions to flight refuelling roles). Marshall is now an international specialist undertaking Hercules modification and repair work for a number of overseas governments (including similar work on other aircraft).

Other UK examples include its work-sharing arrangements on the US Phantom aircraft purchased for the RAF. The UK aimed to obtain work to the value of 50% of its order for 170 of the US aircraft. Three major beneficiaries of the arrangement were British Aerospace (which later used its knowledge from the Phantom to design the tail unit for the UK-French Jaguar aircraft), Rolls-Royce aero-engines and UK avionics firms. On the Phantom buy, the UK paid an extra 23-43% premium for the British inputs into the aircraft.⁶⁹

Further examples of offsets and work sharing arrangements contributing to the creation of a competitive industry arose with the re-entry of both *Germany* and *Italy* into the aerospace

⁶⁹ Hartley, K, (1983), *NATO Arms Co-operation*, Allen and Unwin, London, p 128

ANNEX 9

Historical context of offset in Europe

industry after World War II. Based on licence production of US designs, such as the Lockheed F-104 Starfighter, both nations re-entered and created a modern competitive aerospace industry. Germany and Italy created the design capability allowing their countries to be partners and prime contractors in the Tornado, Typhoon and Airbus programmes (cf. Japan which over the same time-period was less successful in creating a competitive aerospace industry based on the licence production of US designs). Similarly, based on CASA, *Spain* became a partner in the Eurofighter Typhoon programme and used its collaboration to create a competitive aerospace industry (including aero-engines and electronics) with further collaboration in civil and military Airbus programmes (e.g. A400M airlifter). Spain is an example of a nation using collaboration and its associated work-sharing for design, development and production to create a competitive aerospace industry.

The Netherlands is another example where its co-production of US F-16 aircraft contributed to the maintenance of its aerospace industry, including such major companies as Stork Aerospace ranked 62nd in the Flight Top 100 aerospace companies in 2006 (the former Fokker manufacturer became part of Stork Aerospace). The original F-16 co-production agreement involved no design nor support responsibility and was a 'build-to-print' arrangement. In contrast, The Netherlands' involvement in the US Lockheed Martin F-35 aircraft (JSF) is on the basis of integrating the industrial partners into the design, production and support teams for the aircraft. Stork through its Fokker subsidiaries will be involved in the F-35 programme.⁷⁰

These illustrative historical examples show how offsets can enable firms to become major competitors with some world class firms and to be prime contractors in major European and US international collaboration programmes.

⁷⁰ Hartley, K, in RUSI (2001), A Counter-Expertise Study of the Netherlands f-16 Replacement Programmes, RUSI, London, March.