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Evaluating defense offsets: the experience in Finland and Sweden

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Introduction

The use of offsets has become a common practice in the international arms trade. Today almost all countries demand offsets for their major arms import programs. This is the consequence of changing supplier-buyer relationships on the international arms market. Export pressures due to the continuously accelerating cost of advanced weapon systems during the past three to four decades have since the end of the cold war been reinforced by the decline in domestic demand for military equipment in the main arms producing countries. Arms producing companies are outbidding each other in offering attractive offset packages as a method of competition on the international arms market, and the buyer governments are using their leverage to obtain optimally beneficial offset packages.

Offsets are agreements in foreign trade to "compensate" importing countries for the loss of domestic economic activity and foreign currency occasioned by the import. Although the very purpose for demanding offsets is to obtain economic compensation, there is still rather little knowledge about the economic impact of offsets as well as about the effect of offsets in general. Much remains to be investigated as regards their theoretical, potential, and actual economic benefits and costs. In particular, there are few empirical studies of the actual implementation and economic impact of offsets in the recipient country. Only a few countries have tried to conduct evaluations of their offset programs, among them Finland and Sweden. Therefore, the experiences of these countries can be of interest for other countries.

The purpose of this chapter is to describe and analyze the experiences in Finland and Sweden as regards their efforts to evaluate some of their offset programs in official audits. The chapter begins with a general background to the problems involved in evaluating offsets in the international arms trade, and a description of the approach taken in this chapter, including the definition and terminology used. Then follows the discussion of the experience in Finland and Sweden. The chapter ends with a number of tentative conclusions.

Evaluation of offsets

Methodological difficulties in offset evaluations

Empirical studies on the implementation of offsets, their contribution to the achievement of offset policy goals and their economic impact are associated with a number of difficulties. There are many reasons for this. One is the problem of data access. Stephen Martin (1996, pp. 3–4) argues that the main problems associated with the evaluation of offsets are, first, that there is little, if any, routinely published data on offsets, and that the analyst is therefore reliant on the goodwill of industry and government to discuss such matters; second, that offsets are big business and commercially sensitive; and third, that those involved with offsets in industry and government have vested interests which sometimes makes it difficult to disentangle fact from fiction. Willett and Anthony (1998) emphasize similar reasons for the lack of standardized data in this area: difficulties to find instruments with which to measure a complex trading activity; that the growing number of offset agreements adds a problem of scale; and that defense contractors are notoriously reluctant to reveal what they regard as highly sensitive commercial information.

But there are also more fundamental, conceptual problems involved. The four most important problems are (i) the difficulty to assess whether a particular offset activity actually occurred as a result of the offset arrangement, or whether the offsetting trade would have occurred even in the absence of the offset agreement; (ii) that arms deals with offset agreements usually increase the cost of the underlying arms deal, but that the amount of the additional cost is never specified and thus difficult to take into account; (iii) the broad range of activities covered under the umbrella of the offset concept, and the different types of impact that these different activities have; and (iv) the variety of offset policies of recipient countries, some of which are related to defense policy goals while others are related to economic policy goals.

The first of these problems is that in order to be able to evaluate the actual economic impact of offsets, it is necessary to know what transactions would have taken place in the absence of the offset transactions. Since this by definition is unknown, an assumption has to be made—most often that they would not otherwise have taken place—and this introduces a fundamental source of uncertainty into the evaluation. The second refers to the additional cost of offset-related arms deals as compared to “pure” arms purchases. Mandatory offset agreements often include penalty clauses in the event that offset obligations are not fully implemented. Suppliers insure themselves against this risk by raising the contract value of the arms deal. Non-mandatory offset deals normally also lead to higher contract values, due to the significant administration costs involved in offset arrangements. In principle, an evaluation of the economic impact of offsets should thus subtract the negative effect of the increased contract value from any positive economic effect of fulfilled offset transactions, but in practice this is often impossible since the additional cost is unknown. The third problem is that the term “offsets” does not refer to a well-defined homogenous activity but is a collective term for a broad range of transactions and activities, each of which with different economic effects. It is therefore difficult to generalize about the impact of offsets. Each type of offset has to be evaluated

on its own terms, with different methods and techniques. The fourth fundamental problem stems from the variety of goals—defense policy and economic policy goals, or a mix of these. Within each of these there can be a broad range of sub-goals, for example with respect to export and trade, business development, local industrial content, and technology transfer.

The meaning of offsets: definitions and terminology

The problems discussed above make it important to be careful with the use of concepts and terms in order to be able to be specific and differentiate among types of offsets. For the purpose of this chapter, the following terminology is used. Offset arrangements that are linked to an arms trade program, are called *defense offsets*, or simply *offsets*. The term *direct offsets* means offset projects that are directly related to the specific products of the arms import deal, while *indirect offsets* are unrelated. Offsets involve either military or civil activities. The term *military offsets* is used for offset work in the military sector, for example, sub-contracts or technology transfers to the arms industry in the recipient country; the term *civil offsets* is used for offset work in the non-military sector, for example, investment in the production of non-military goods. With this use of terms, direct defense offsets are always military offsets, since they are directly related to the arms trade deal, while indirect defense offsets can take the form of either military offsets (work in the military sector that are not related to the purchased military products but to other military products) or civil offsets. The negotiated agreement between the two parties that stipulates that the exporter will complete a certain amount of offset work within a specific time period is called an *offset agreement*, while the actual delivery of the offset work by the exporter (e.g., the placement of a specific contract) is called an *offset transaction*. For offset completion, the exporter receives *offset credits*. The term *offset projects* is used as a general term for each specific offset activity, regardless of whether it is only agreed or actually implemented.

The official terminology in Finland and S weden sometimes differs from this use. When official documents of these countries are cited, their terms are also used in this chapter. In Finland defense offsets are often called *counterpurchases* or *industrial participation* (IP), and in Sweden offsets are referred to as *industrial cooperation* (IC) or *industrial participation* (IP). The use of terms such as IP and IC is intended to emphasize the cooperative aspect of offsets and long-term business relations and activities as opposed to short-term transactions (Ahlström, 2000, p. 16).

The approach of this chapter

The evaluation in this chapter is based on the results of official audits of offset agreements made in Finland and Sweden and on interviews with officials who have been engaged in the administration and implementation of offset agreements. Evaluating the audit efforts requires criteria. In this chapter, the following criteria are used. First, to what extent have suppliers fulfilled their offset obligations (fulfillment rates, e.g., in terms of contracts placed, etc.)? Second, to what extent have fulfilled offset obligations contributed to the defense policy goals of the recipient country? Third, to what extent have fulfilled offset obligations contributed to the economic policy goals of the recipient

country? And fourth, to what extent have the offset agreement had an overall positive effect on the recipient country?

The analysis also includes inferences derived from changes in the official offset policies of Finland and Sweden. Policies, and changes therein, reflect perceptions of experts and decision makers of the costs and benefits of offsets. Although misperceptions may occur, policy changes nonetheless are based on experience gained from past offset agreements and transactions. Such experiences are not always spelled out in official documents but can be inferred from policy changes and the reasons given for these in interviews with some of the actors. In both Finland and Sweden (as well as in the other Nordic countries), policy has changed toward defense-only goals and, simultaneously, toward direct and indirect military offset requirements.[1] The question is whether these changes are motivated fully or partly by negative experiences with the use of indirect, civilian offsets and the pursuit of economic policy goals, and if so, whether these experiences would be relevant for other countries as well, or whether changes were motivated primarily by other, more specific, types of factors, such as changes in the external environment.

Finnish offset experiences

Although official guidelines were not established until 1991, Finland has used arms import offsets since 1977 to achieve both defense policy and economic policy goals. The defense policy goals were of two major types, to acquire military technology (technology transfers) and to support and sustain the defense industry (primarily through contract work). The primary economic policy goals during the 1980s and 1990s were to support small and medium-sized firms, promote local production, and increase employment, particularly in the economically weak regions of the country. The administration of offsets is the responsibility of the Ministry for Trade and Industry (i.e., policy, guidelines, and monitoring of offset) and of the Finnish Offset Committee, an intra-governmental organization designed for the purpose of formulating offset requirements in the specific deals.

Since 1977, the Finnish Government has negotiated 20 offset agreements. Only one of these has been subject to an official audit, namely the deal related to the procurement of United States F/A-18 Hornet combat aircraft, the largest offset agreement ever negotiated in Finland. This section summarizes the results of this audit and evaluates its conclusions as regards the economic impact of the offset agreement. It then compares these to a parallel assessment made by the US Department of Commerce.

The Finnish audit of the F/A-Hornet offset agreement

In 1992 the Finnish Government ordered 64 F/A-18 Hornet combat aircfaft from the US aerospace company McDonnell Douglas (MDC), to be delivered before the end of 2000. To this was linked an additional order for the armaments and maintenance system for the aircraft to be delivered by 2001. The total procurement cost was 13.92 billion Finnish markkaa (FIM), or about $3.3 billion (FIM9.5 billion for the aircraft and FIM4.42 billion for the equipment).[2] The offset arrangement linked to these arms deals was concluded

between the Finnish Government and MDC[3] and amounted to 100 percent of the combined contract value for the two deals (i.e., $3.3 billion). The duration of the offset agreement was slightly longer than the delivery period for the aircraft and their systems: the offsets were to be fulfilled over a 10-year period from the date of signing the offset agreement, half of which during the first five years. The agreement was associated with penalties to be incurred for unfulfilled offset obligations (Statsrevisorerna, 1994; 1995).

In 1999, three years before the completion of the offset period, the national audit organization in Finland (*Statens Revisionsverk,* SRV) conducted an audit of the offset agreement. The official purpose was three-fold: first, to examine the fulfillment of offsets and to assess their impact; second, to investigate whether the offset goals for the deal, as set by parliament, had been achieved; and third, to investigate whether the benefits of the offset projects had outweighed the costs incurred (SRV, 1999, p. 13). As regards fulfillment rates—concluded contracts for offset projects—the audit found that by the end of 1998, that is, after 6 years of the 10-year offset period, 88 percent of total offset commitments had been fulfilled, involving around 600 offset projects. However, it was emphasized that the basic question as regards fulfillment was whether these transactions would have occurred anyway, i.e., without the offset obligations. SRV made efforts to investigate this, but it was not always possible to demonstrate the role of the offset supplier in the creation of the deals. In fact, in none of the 600 offset projects was it possible to establish with certainty what positive effect the supplier had had on the initiation of the deal. Furthermore, it was evident that some of the projects accepted as offsets would have occurred without the offset arrangement. The evaluation also identified a number of problems concerning the reliability of the fulfillment statistics. These included the over-pricing of multiplier coefflcients,[4] the use of consultants,[5] and the practice of advance crediting of some projects before the results of these projects were ascertained.

The offset goals, the audit concluded, had not been satisfactorily achieved. The specific goals of the Hornet agreement, as determined by the Finnish parliament, were first, to promote the production and employment of the defense equipment industry in Finland; second, to involve small and medium-sized companies in the offset projects; and third, to also involve the high-technology industry and research community. The offset agreement was designed to include 16 percent in direct offsets (directly linked to the aircraft or its equipment and maintenance) and 84 percent in indirect offsets. Within the latter category, the distribution of offsets was 59 percent in exports from Finland to the USA, 15 percent in technology transfers from the USA to Finland, 9 percent in US support for Finnish marketing and export promotion, 9 percent in US contributions to a Finnish capital investment fund, with the remaining 8 percent in other types of offsets. The greatest problems identified by SRV in terms of goal achievement were in the areas of employment promotion and in providing exports for small and medium-sized firms. The number of new job opportunities created as a result of offsets was found to be extremely limited and the export share of small and medium-sized firms was small despite coefficients assigned to promote them. In the area of technology transfer, goal achievement was slightly better in that the amount of achieved transfers corresponded to expected volumes. However, the proportion of high-tech exports was small and concentrated primarily on traditional export products from large export companies. The majority of offset-generated export business was conducted with existing trade partners

so that the export share going to new markets and customers was relatively small. The audit also concluded that it was uncertain whether any lasting business contacts had been created as a result of the offset projects.

The third criterion to be addressed by the audit was whether the offset benefits outweighed their costs. As part of the entire arms deal/offset package, the Finnish Goverament had agreed to pay the management costs for fulfillment monitoring. The size of this additional cost had been estimated at about 3–6 percent of the arms deal contract value ($100–200 million). The audit was unable to conduct a regular cost-benefit analysis. It only noted that offset management costs had been significant. It also noted that the large scale of offset obligations in the Hornet deal were fulfilled partly through seemingly artificial projects. To avoid the labor-intensive management of a diversified offset package, the audit agency therefore recommended better advance offset planning and to limit it to specific measures. It also recommended that in future cost-benefit evaluations be conducted for each major import procurement program.

In sum, regarding the economic effects, the main audit conclusions were that first, the registered fulfillment rates were high, but the reliability of these statistics were uncertain and it was entirely unclear whether the registered transactions would have occurred regardless of the offset obligations or not; second, that the economic offset goals were not fully achieved, particularly not with respect to employment and small and medium-sized firms; and third, that it is questionable whether the benefits of offsets were greater than their costs and whether it is always expedient to demand 100 percent offsets. As regards future offset arrangements, SRV emphasized the importance of improved advance planning and of considering more limited levels of offset compensations and focus instead on a smaller number of targeted offset activities. The audit agency also remarked that linking defense offsets to economic policy goals was questionable because it involves a significant amount of financing general export promotion activities via the defense budget (SRV 1999, p. 16).

The US survey of the F/A-Hornet offset agreement

The Finnish conclusions are in apparently stark contract to the conclusions of a study conducted by the supplier government. In its 2001 version of its annual “Offsets in Defense Trade” publication, the Bureau of Export Administration (BEA) of the US Department of Commerce reviewed the performance of several of the largest Finnish companies that received offsets related to the Hornet deal. It concluded that “it is likely that offsets probably aided these companies’ growth” (US BEA, 2001, p. 37). This conclusion was based on a statistical survey of income and employment data for the largest offset-receiving companies, together accounting for 30 percent of total offset work under this deal. While noting that offset work was not the only reason for income and employment increases, the study still maintained that offsets were “undoubtedly a factor” (p. 38). These conclusions seem to contradict the assessment of the Finnish audit, but it is possible to reconcile the conclusion that offset-receiving companies experience net income and employment growth with the assessment that the Finnish economy received no significant net benefit, nor that Finnish offset policy goals were achieved. A possible explanation is that the US survey identified short-term effects, while the Finnish evaluation was looking at medium and long-term effects. Most of the offset work placed

with Finnish companies included in the US review were counterpurchases, which contribute directly to the companies demand. Furthermore, the major impact on company net income occurred in the first year of the contract period, when offset work accounted for almost 20 percent of the combined net income of these companies. This reinforces the impression that the impact identified in the US review might well be of short duration. As regards the technology transfer obligations in the Hornet offset deal, the US study concluded that "transferring and introducing know-how and new technology to Finnish companies may not only have impacted a specific industry sector or company, but it is likely that it also may have strengthened the trend of growing investment in commercial research and development, an indicator signaling high level of innovation" (US BEA, 2001, p. 39). However, no attempts were made to measure this or to conduct an empirical examination; the US BEA conclusion is not empirically supported. These two studies illustrate how parties to an offset contract can arrive at different conclusions, or at least emphasize different types of results and thus give an impression of contrasting findings.

Swedish offset experiences

Sweden has had an offset policy since 1983. The policy was developed in the context of the procurement of sub-systems for the domestic JAS 39 Gripen combat aircraft program. The smaller size of the Gripen program, as compared to its predecessor program, the Viggen, would have involved significant employment cuts at Saab, the producer company of Swedish fighter aircraft. To avoid personnel cuts, Saab needed to expand its commercial production. Offsets were seen as a method for achieving this. Offset requirements were therefore linked to import contracts for the engine and other sub-systems for Gripen. This was the context in which the first guidelines for Swedish offset requirements were drawn up and subsequently employed for the import components of the Gripen program. An official evaluation of Gripen offsets has not been conducted. There was an official investigation in 1986 (Swedish MoI, 1986), but this was in the early stage of the program and looked only at planned, not implemented, offsets. The administration of offsets is the responsibility of the Ministry of Defense (policy and guidelines) and of the arms procurement agency, *Försvarets Materiel Verk* (FMV) (specification and management of offsets).

Since 1983 the Swedish Government has entered 15 offset agreements. Three of these underwent an official audit, conducted in 1995, and provided the basis for a subsequent revision of Swedish offset policy in 1999. The first part of this section summarizes the results of this audit. The second part analyzes the motivations and rationale behind the change in Swedish offset policy in 1999 with the aim to make inferences as regards the economic impact of previous offset agreements.

The Swedish audit of three offset agreements

The 1995 official audit of Swedish defense offsets was conducted by the Swedish National Audit Office (*Riksrevisionsverket*, RRV).[6] It covered three defense offset agreements associated with the import of US Hellfire missiles (agreed in 1983), the French Super Puma helicopters (agreed in 1987), and German DWS39 bomb capsules

(agreed in 1987). The selection of these three offset agreements was based on data availability. During the period 1983 to 1994, the Swedish arms procurement agency, FMV, signed a total of eleven offset agreements, four of which were completed by 1995. The audit included three of these, with a combined value of SEK1 billion ($120 million). The fourth was excluded since "it was very similar to one of the other three examined." The RRV audit had three purposes: to assess the goal achievement of these offset programs, to evaluate the administration of offsets by the FMV, and to evaluate its own method for auditing offset programs (RRV, 1999).

The main goals of Swedish offset policy during the period of these programs were three-fold, namely to generate long-term cooperation between Swedish and foreign industry, to provide employment in Sweden, and to transfer valuable knowledge to Sweden. These goals were supplemented with a set of six sub-goals, including one purely defense-related goal: to secure local capacity to maintain imported defense materiel. The other five were general industrial and economic policy goals: (i) to generate local employment in interesting and sustainable industrial activities; (ii) to stimulate technological development in industry through transfer of technology and know-how to Sweden; (iii) to promote regional balance in the distribution of employment opportunities and industrial activity; (iv) to improve the international competitiveness of Swedish industry; and (v) to protect the Swedish domestic market (Swedish MoD, 1983, para 3.2).

The RRV audit focused on two of these sub-goals, namely to examine the three audited offset agreements with regard to their effects on technology transfers to Swedish industry and the creation of export opportunities for Swedish firms. The audit found that while formal offset fulfillment had been satisfactory in all three offset programs, policy goal achievement was more complicated to evaluate. While it was possible to identify the effects of direct offsets (those directly related to the respective arms deals), it was difficult to establish the effects of indirect offsets, such as the effects of reciprocal purchases of products that were not related to the arms deals (RRV, 1999).

The detailed findings, and recommendations for changes in offset policy and practice, were more far-reaching than these conclusions suggest. They implied a number of weaknesses in Swedish offset policy and practice at the time. RRVs main recommendation was that government offset policy should be made more specific. For policy goal achievement, it was seen as important to make a distinction between sub-goals that should be regarded as general requirements applicable to all offsets and those that should be used as specific requirements in individual offset agreements. RRV also recommended that policy should include guidelines for implementation by the FMV, the procurement agency. Among other items, these should direct FMV how to formulate offset requirements and administer agreements and to set criteria for approval of offset credits for actual transactions. RRV had found that FMV had dealt with the approval and administration of offset contracts on a case-by-case basis without established criteria with which to decide which contracts could be counted as offsets. In some cases, FMV retroactively approved existing orders as offsets in order to allow offset commitments to be fulfilled (RRV, 1999, p. 92). Another finding was that contractual offset requirements, as signed by FMV, had often been vaguely formulated. This resulted both in inadequate guidance for the final assessment of whether to approve a given order as an offset credit and in an unsatisfactory degree of achievement of the long-term goals of the offset policy. RRV further noted that offset orders given to Swedish companies upon the

signing of offset agreements gave them an advantage over potential foreign suppliers. This might lead to less competition and thus higher prices. In view of these findings, RRV recommended that FMV should draw up its own policy and guidelines for individual offset agreements and that these guidelines should direct FMV to (i) raise offset content demands and specify the requirements more clearly; (ii) establish in advance the criteria by which transactions can be approved as offset transactions; (iii) conduct offset orders through competitive bidding, open also to foreign companies; and (iv) from initiation to conclusion, continuously monitor, control, and document offset projects. These recommendations indicate that there had been significant difficulties in FMVs administration of offset transactions.

The third purpose of the RRV audit was to evaluate its own evaluation method. The audit model developed by RRV was essentially a strategy for the compilation of information. The model consisted of three steps: the specification of the offset goals to be evaluated, a mapping out of the effects that are relevant for the audit of the specified offset goal, and the identification of some form of specific measurement for the evaluation of these effects. The basic idea was to focus on the achievement of the most tangible goals which, in turn, could constitute the basis to assess effects on the more general goals. RRV concluded that their audit model had proven appropriate for evaluating the effects of offsets. Based on its experiences with the evaluation of these offset arrangements, RRV recommended that an audit of major offset transactions be decided at an early stage of an offset agreement (RRV 1995, pp. 34–35).

The rationale for changes in Swedish offset policies

Sweden' s first offset policy, from 1983, drew on the European experience with offset agreements related to licensed production of US F-16 fighter aircraft. These included only direct offsets, work linked exclusively to the procured aircraft. This meant that when the procurement program ended, so did the offset program. Inherent in this construction was a temptation to buy more aircraft in order to maintain production and employment at the plants that did the offset work. Sweden wanted to avoid this effect and therefore decided to put a strong emphasis on indirect offsets in its first offset policy.

Since its revision in 1999, Swedish offset policy is fundamentally different. The overall goal has changed from a mix of economic and defense policy goals (with an emphasis on the economic part) to a pure defense policy goal: "The main purpose of offset requirements should be to secure Swedish competence in defense technology" (Swedish MoD, 1999). Consequently, the types of offsets demanded have changed. In particular, the policy change involved abandoning civil offset requirements, focusing instead exclusively on military offsets, both direct (related to the imported military equipment) and indirect (related to other military equipment or technology). The main objective of direct military offsets is to support domestic maintenance and modification of the imported military system or sub-system, while the objective of indirect military offsets is to secure defense technological competence in Sweden more generally. Following parliamentary decisions, the policy directs that military offsets should be focused primarily on the technology fields that have been prioritized as essential to maintain within the country. The policy for indirect military offsets directs that more importance should be attached to their qualitative and long-term impact than to their

quantitative and short-term impact, and it states that the forms of offsets that are most important for this purpose are activities that contribute to extending the production runs of Swedish systems through export promotion and international cooperation.

Some reasons for these policy changes can be found in the recommendations made by RRV in 1995 and in the rationale for these recommendations. Other reasons have been provided in interviews conducted by the author. First, behind the change of the overall goal of Swedish offset policy (toward defense policy goals) was the experience that it has proven difficult to implement policy with several types of goal. Thus, a choice had to be made between defense policy and economic policy goals (Wilén, 1994). But the reasons for the preference for defense policy goals are not clearly stated anywhere. One reason seems to be the principle that offset benefits should accrue to the sector that had financed them, that is, the defense sector. This rationale was reinforced by the experience that offset agreements come at a cost: arms deals with offsets generally carry a higher contract value than those without, in particular if the offset deal is accompanied by a penalty clause (sellers tend to shift the cost of this risk to the buyer).

Second, the choice of specific defense policy sub-goals for direct and indirect military offsets in the revised offset policy was motivated by two basic reasons, namely to prioritize the defense technology sectors and to adjust to the increasing internationalization of arms production. Thus, since 1999 the overall rationale is to use offsets to support Swedish defense industry in the prioritized sectors, primarily by targeting offsets to support Swedish exports and international cooperation and thereby to lengthen production runs in these sectors. Third, although the decision to abandon civil offsets was not motivated by an outright failure to achieve economic policy goals, there were a number of negative experiences with civil offsets during the 1980s and late 1990s. These had been associated with a number of problems, primarily because of the lack of interest among small and medium-sized companies to engage in offset work. This lack of interest had several components: (i) the short-term outlook of many of these companies may have reflected a perception among them of offsets as countertrade and thus an inability to understand the potential for long-term industrial cooperation; (ii) most companies already had full order books because of strong growth in the Swedish economy during this period; (iii) their protected environment as sub-contractors to the Swedish automobile industry which was flourishing at the time; and (iv) their risk-avoiding behavior, partly due to the asymmetry in size among potential Swedish offset contractors—primarily small and medium-sized firms—and the foreign offset-providing companies which were large corporations.[7]

In the area of indirect military offsets experiences were mostly negative, again primarily because of low interest among potential Swedish offset partners. Swedish defense companies generally disliked offset work and argued that they would have sold their products regardless of offset obligations. The technology transfer component involved in offset work was difficult to estimate and assess. In one case, a Swedish defense company even argued that an offset contract for technology cooperation had actually involved more technology transfers from it than to it. Some Swedish defense companies argued in favor of a standard clause in all Swedish arms import contracts that these purchases should be counted as offset work for future Swedish exports deals, a form of offset swaps. Still, the interviewed officials were not entirely negative toward offset agreements. The general assessment can be summarized as a negative perception of

offsets in principle but a pragmatic attitude in practice: offsets exist; therefore, they need to be used optimally. The main obstacle to achieving an optimal economic impact of offsets was seen to be insufficient focus and lack of specificity of offset policies and guidelines that would be necessary to target offset work to economic policy goals and/or company strategy. In sum, the change in 1999 in Sweden's offset policy from one with a mix of defense and economic policy goals to one toward exclusive defense policy goals was due mainly to the difficulties involved in having a mixed policy. The choice between the two was guided primarily by the principle that the sector paying for the offsets should also receive its benefits. The difficulties encountered in the implementation of indirect civil offsets in Sweden during the 1980s were to a large extent due to the specific economic environment for small and medium-sized firms in Sweden during this period and thus do not have general application.

Summary and conclusions

The evaluation of the Finnish and Swedish experience with defense offsets, although limited in scope and depth, can be useful to other countries. However, the evaluation shows that the impact of offsets is often highly dependent on the specific context and economic environment of the time. It serves to caution against deriving overly strong generalizations. In the following subsections the experience of defense offset evaluations in Finland and Sweden is summarized, and an attempt is made to draw some general conclusions.

Summary of offset experiences in Finland and Sweden

The registered rate of offset obligation fulfillment was high in the agreements that have been evaluated in Finland and Sweden. However, the audits confirmed that there are major difficulties associated with the interpretation of such statistics. The major problems are: (i) reliability problems due to difficulties to establish to what extent registered activities were actually related to an offset; (ii) reliability problems due to the difficulty to ascertain whether the same, or corresponding, activities would have taken place even in the absence of the offset arrangement; and (iii) validity problems in terms of goal achievement: quantitative measures are poor indicators for assessing the achievement of policy goals such as long-term industrial cooperation and development.

Both countries faced major difficulties in the implementation of indirect offsets. In Sweden, the audit concluded that indirect civil offsets were difficult and costly to target, administer, implement, and monitor, and did not appear attractive to Swedish small and medium-sized companies, primarily because of their lack of interest in offset work. Neither did indirect military offsets attract much interest among S wedish defense companies, primarily because they thought that they would have achieved the same contracts even without the offsets. In contrast, direct military offsets were relatively easy to implement and monitor in the Swedish cases. The main problem with these are that they are difficult to sustain beyond the duration of the arms import program.

Achievement of pure defense policy goals has not been evaluated in any detail. However, meeting these goals seems to be associated with more positive experiences

than with meeting economic policy goals. The reasons are not quite clear. In Sweden the preference in favor of defense over economic policy goals, when a choice had to be made between them in the 1999 policy revision, was motivated partly by the principle that the benefits should accrue to the funding ministry, and partly by the opportunities identified in using offsets to support prioritized defense industry sectors and military technologies, deemed necessary in an era of growing internationalization of arms production. The experience from attaining economic policy goals (from the implementation of civil offsets) has been more bleak. It is not always clear whether the reasons for this were general or specific for the three deals evaluated, and to what extent they derive from the specific economic environment at the time. In the Finnish case the economic goals were not fully realized, and this was true in particular for the effect of offsets on employment and on small and medium-sized firms.

The overall utility of offsets was regarded as limited in Finland and problematic in Sweden. The Finnish audit of the Hornet offset deal questioned whether high offsets are always better than more limited offset demands and even whether the benefits of offsets were greater than their costs. In Sweden, the audit concluded that it was difficult to establish the effects of indirect offsets and did not make any overall assessment of the utility of the offsets in the three studied cases.

Conclusions

It is relatively easy to monitor formal fulfillment of offset work in terms of contracts signed, but it is difficult to establish whether these transactions are the results of the offset arrangement. Thus, statistics on offset fulfillment should be regarded with a great deal of caution. The contribution of offsets to the achievement of long-term policy goals within broad policy areas such as defense policy and economic development policy is extremely difficult to evaluate empirically because of the multitude of other determinants that can affect these goals: reality is too far removed from a *ceteris paribus* situation.

Regarding the choice of goals for offset policy, it is easier to implement an offset policy with only one type of overall goal: either defense policy goals or economic policy goals. Regardless of which of the two major policy options is chosen, it is important to define the long-term offset policy goal in line with the overall defense and economic policies within which it is adopted.

For an assessment of the long-term impact of an offset arrangement, one must take into account also the duration of the offset program. Since duration of direct offsets normally coincides with that of the arms import program, this type of activity thus tends to have a relatively short-term economic effect. It can even be argued that this carries a cost in the future: when the arms deal is completed, the offset work is finished as well and there is a need to find alternative employment for labor and capital used in the offset work. Like any other company decision, the choice of offset projects needs to be based on a realistic assessment of long-term prospects for the production line, technology, and company to survive in international competition. This is particularly problematic with direct military offsets. In an environment where the level of demand is much lower than it was ten years ago, and the main players on the defense market are larger and stronger competitors, the future of many small arms producing companies is highly uncertain.

Thus, for the purpose of maintenance, support, repair, and modification, there is room for innovative ideas for how to satisfy these needs in other ways than by offset requirements.

In using offsets for economic policy goals the most important condition for long-term success is that offset projects are designed to suit a specific economic or regional policy initiative or company strategy. The more tailored an offset activity can be to an existing policy or strategy, the better the prospects for the satisfaction of long-term policy goals. In any cost-benefit analysis of offsets it is important to take into account not only the benefit side of the equation but also the cost side. Since it is generally acknowledged that offset agreements increase the cost of an arms import program, this additional cost to the contract price of an offset-related arms import deal should be taken into account in any evaluation of the economic implications of defense offsets.

Notes

1. Nordic offset policies, and changes therein, are described in Hagelin (2004).
2. The dollar value was $2.92 billion at the time of the agreement, but eventually increased to $3.3 billion.
3. The MDC team included General Electric (engine subcontractor), Northrop (aircraft tail), and Hughes (radars) but MDC alone was responsible for the implementation of the offset agreement.
4. Multipliers as high as 20 were seen as overly high, resulting in unreasonably high offset credits.
5. The use of consultants made it impossible to assess the contribution of the offset provider separately from the contribution of the consultants.
6. The audit was published in Swedish in 1995 (RRV, 1995) and subsequently summarized in English as RRV, 1999.
7. There has been no systematic study of the reasons for this lack of interest. The listing in the text is based on interviews with FMV staff.

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