

## Offset to decline for Britain's defence-industrial base?

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# OFFSET TO DECLINE FOR BRITAIN'S DEFENCE-INDUSTRIAL BASE?

DR RON MATTHEWS

*'While the global arms trade declines the number of Third World arms producers and exporters is on the increase. Dr Ron Matthews looks at the competition facing major arms exporters and at the implications for military technology transfer (offsets), focusing on its role in a buyer's market.'*

If, like the proverbial phoenix, the Soviet Union and East European countries rise above the ashes of communism, acknowledgement must surely be given to the important role that 'barter' has played in the process. Although no statistics are available to evidence the exact extent of barter's impact on intra- and international trade for these States, most informed commentators would concur that this trading vehicle has enjoyed rapid growth over recent years. The reason why is unsurprising. Nearly all the erstwhile non-market economies are strapped for cash; of the convertible kind, that is. The convertible currency debt of the big five East European countries (Bulgaria, Czechoslovakia, Hungary, Poland, and Romania) increased from \$66bn in 1988 to \$69bn in 1989 and then to \$80bn in 1990; Soviet debt over the same years was \$28bn, \$39bn and \$43bn.<sup>1</sup> Internal economic chaos associated with rising foreign debt is not a good recipe for international trade.

### Barter is better

Trading prospects are ameliorated with barter, because it makes financial illiquidity irrelevant. Trade is facilitated through a cashless, mutual exchange of wants. Remarkably, this form of trading mechanism appears not only to be working, but working well. Examples of Soviet barter deals include: Rank Xerox's sale of computers for camel saddles and animal feed; Pepsi Cola's \$3bn sales contract requiring Pepsi to increase bottling capacity in the USSR from 24 to 50 plants, and open two Pizza Hut restaurants in Moscow, receiving in return tankers, freighters, and numerous consignments of Stolichnaya Vodka; Philip Morris's agreed construction of cigarette factories in the Soviet Union being financed through a link-up with Avtovaz, the Lada car manufacturer; and, closer to home, Rover's recent £50m sale of 4800 Montego and Maestro cars to the Siberian government in exchange for supplies of liquified natural gas.

Moreover, as a symptom of the economic travails currently afflicting the Soviet Union, barter has also become pervasive 'within' the economy. So widespread is barter in the Soviet Union that the central government has formalised it, setting aside 25 000 cars, 4500 trucks, and 100 000 washing machines to 'sell' to farmers for 'above-plan' grain output; a television set 'costs' 20-30 tonnes of grain; a Volga car, 400-700 tonnes.<sup>2</sup> It should also be noted that due to the regional division of labour that has evolved within the Soviet economy,

barter deals between Republics are also common. One such deal, which was never consummated, related to a Georgian Government request for hundreds of AK-47 automatic weapons from the Tula Armaments Factory in exchange for a shopping basket of meat, fruit, juices, tobacco, sausages, tinned fish, condensed milk and tea.<sup>3</sup>

### Key element

Although 'guns for butter' type deals are never likely to figure prominently in the Soviet Union's internal trading activities, they could, nevertheless, become a key element in external trading relationships. Much uncertainty surrounds this issue, not least because considerable Soviet military aerospace and electronic capacity is currently undergoing conversion to civil manufacturing activity. However, the Soviet Union is a recognised leader in producing military-related goods, much of which have 'dual-use' significance. It would therefore not be surprising if the Soviets attempted to exploit this comparative advantage by selling their expertise in the international market place. In facilitating this policy aim, the Soviets are naturally aware that technology transfer is an essential feature of aerospace sales. This partly explains the Soviet's current search for joint venture participation in aerospace projects in Asian markets.<sup>4</sup>

Trading armaments for the capacity and capability to make them is something novel to the Soviet Union, having previously restricted military technology transfer solely to India. Traditionally, the Soviet Union has been more than willing to sell its arms (latest figures are for 1990, showing the USSR listed as the world's second biggest arms exporter, accounting for 29 per cent of global arms sales),<sup>5</sup> while exhibiting a reticence in releasing the technology to produce them. For competitive, rather than security and political reasons, the West's leading arms suppliers have not been similarly constrained (technology transfer features in much of the US, Britain, and France's arms trade. In 1990 these three countries' arms exports totalled nearly \$12bn at 1985 prices, or 54 per cent of global exports).<sup>6</sup>

The use of the word, 'constrained', is deliberate. Indeed, it provides the rationale for this article: directed towards assessing the implications of military technology transfer. Although the issue has for long been bubbling under the surface, the relatively recent changed conditions of the arms market has meant that offset,

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which incorporates technology transfer, has taken on a greater degree of significance. The changed conditions relate to the decline in global arms trade (from \$39.8bn in 1987 to \$33.8bn in 1988, \$33.5bn in 1989, and \$21.7bn in 1990)<sup>7</sup> and the rising numbers of Third-World arms producers and, increasingly, arms exporters. The world's arms market has thus become very competitive. A buyers' market. It, of course, raises the question, whether, because of the advantageous position they find themselves in, the buyers are able to extract greater benefits from arms vendors than is generally recognised or, indeed, desirable.

This paper attempts to address this issue by focusing on the role of offsets. As a departure point, it is instructive to cite the metaphor employed recently by one American expert who likened the process to a freight train hurtling towards you: either you stand your ground and be destroyed, or you attempt to grab hold of the train as it whistles by, hoping to survive.<sup>8</sup>

The metaphor highlights the dilemma facing Britain's defence contractors in regard to military offsets:

- non-involvement, almost certainly means losing business to a foreign competitor;
- involvement, on the other hand, means the creation of foreign competition. The question no longer being if this will happen, but when.

### Typology

The discussion has moved from barter to offset. But both terms describe trading arrangements where some or all of the cash payments from the arms buyer are compensated (or offset) by the vendor purchasing goods and services or through the provision of investment. These forms of compensatory trade fall under the generic rubric, countertrade. Several major types can be identified as illustrated in figure 1, below:

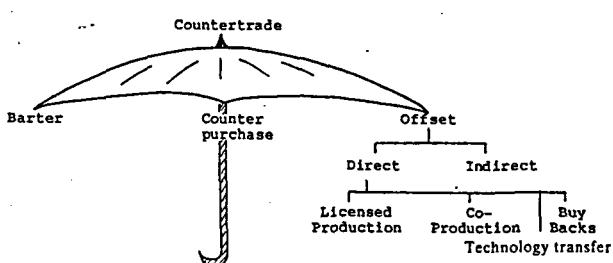


Figure 1: Countertrade's 'umbrella' Classification

**Barter:** This relates to the direct exchange of goods-for-goods, where no cash is involved. Contemporary barter deals are perhaps more common than realised, oil payments for armaments being the most popular.<sup>9</sup> Note the following examples of oil-for-guns swaps: Iran used this method for its 1985 \$1.3-1.6bn contract with China for battle tanks, rocket launchers and other military hardware; and Iraq, in the same year, exchanged petroleum for ammunitions and other military equipment from South Africa.<sup>10</sup> Also popular are commodity-for-guns swaps. Israel, for instance, has traded military equipment and weapons to countries like Colombia, Honduras, Ecuador and El Salvador (which have limited foreign exchange) in exchange for foodstuffs, petroleum, and coal.<sup>11</sup>

**Counter-Purchase:** Here, there are two main contracts.

The first having regard to the original or principal export contract to supply arms. The second contract is legally separate from the first, but linked in terms of an agreed contribution to the principal contract's sales value. This associated contract is the counter-purchase arrangement, whereby the arms seller undertakes to purchase a compensatory amount of commodities. In the context of developing countries, this normally covers foodstuffs, but increasingly it includes manufactured goods. For instance, the recent Malaysia-UK MoU on the sale of British defence equipment to this Asian state includes 40-50 per cent counterpurchase obligations. In fact, counterpurchases against the GEC-Marconi Martello radar contract have already begun with tea and palm oil, and may also extend into manufactured products to reach the \$350m target.<sup>12</sup> Also note how the Philippines Aerospace Development Corporation in 1988 attempted to purchase 18 SIAI-Marchetti S-211 Agusta helicopters partly through payment in prawns.<sup>13</sup> General Dynamics, moreover, under its \$4.2bn sale of 160 F-16 fighters to Turkey in 1984 agreed to huge counterpurchases over a ten year period; and, more recently, the same company in a sale of \$337m worth of F-16s to Indonesia, agreed to market in the US transport planes produced in Indonesia under a joint-venture with Spain to a value of 50 per cent of the primary arms sale.<sup>14</sup> The arms vendor can either market the counter-purchased goods directly, turning the company's sales department into a quasi clearing organisation or employ a specialised Trading House to do the job for it. This much is flexible. But modern counter-purchase agreements do impose quite rigid conditions; most notably in relation to: the nature of goods to be included in the contract; the markets where they may be sold; the time period allowed for completion of the counter-purchase; and penalties for non-performance.

**Offsets—Direct:** This type of offset has direct correspondence to the principal armaments export. For instance, the sale of fighters to a defence developing nation (DDN) may (and in the 1990s almost certainly does) involve the purchaser in the manufacture of some of the aircraft's parts and components. Examples of direct offsets are numerous. For instance, the 1984 award by the Saudis of the huge C<sup>3</sup> Peace Shield air defence programme to Boeing and General Electric of the United States was made conditional on the reverse investment of 35 per cent of the technical content value of the contract in high-tech joint ventures. Upward of \$1bn has thus since been channelled towards related offsets such as airframe and engine overhaul, repair and maintenance.

**Licensed Production:** In major sales of defence equipment, there is often a demand by the purchaser for local industries, existing or potential, to be included in the production process. Certainly, to begin, domestic 'production' would necessarily be at the lower end of the technological spectrum. The usual sequence would be movement from outright purchase to CKD assembly of final goods to licensed production. This path will be taken in the 1991 General Dynamics \$5.2bn sale of F-16 fighters to South Korea. The terms of the contract are that the US company initially sells 12 fully built aircraft, export parts for 36 more to be assembled in South Korea, and, in the final stage, assists the Asian country to license-produce a further 72 aircraft. In another case,

Greece, which is determined to develop its defence-industrial base, has proved to be an active proponent of direct offsets. The country's purchase of 40 F-16s and an equal number of Mirage 2000 fighters in the mid 1980s have both included direct military offsets. For the French plane, it has been reported that half of the 60 per cent agreed offsets, spread over 15 years, relate to direct compensation.<sup>14</sup> The majority of the work is being undertaken by Hellenic Aerospace Industries (HAI), covering airbrakes, the assembly of SNECMA M53-P2 engines, and avionic and instrumentation work for Thomson-CSF. After protracted negotiations, HAI is also expected to be involved in the production of aft fuselages for the F-16, as well as some form of participatory production in the GE F110 engines, powering the American fighter.

**Co-production:** General Dynamics' F-16 sale to Greece was pursued via direct negotiations with the Greek Government. This arrangement defines the contract as one of licensed production. By contrast, if the technology transfer had been negotiated at government-to-government level, such as General Dynamic's earlier sale of F-16 fighters to the European Programme Group (Denmark, Norway, Belgium and Holland) at the end of the 1970s, then this would have been referred to as a co-production project.

**Technology transfer:** This term is often used in confusing juxtaposition with other forms of direct offset. In particular, technological transfer is often assumed to be part and parcel of licensed and co-production programmes. While this is normally the case and royalty fees are involved, this has to be distinguished from technology transfer where the license is gifted and royalties are waived.

**Buyback:** Direct offsets normally include what are termed buy-backs. This is where an arms contract stipulates a specified amount of locally manufactured components are to be purchased by the original vendor, thus forming part of the offset arrangements. This form of offset is becoming an increasingly important feature of western arms sales involving technology transfer to developing countries. But, clearly, the western defence contractor must ensure that his partner's manufacturing facilities produce at sufficient quality to enable the components to be integrated into the vendor's output, perhaps for export to other countries.

**Indirect:** This form of offset is indirect to the principal arms export contract. It often involves the arms exporter investing in unrelated activities, albeit at a similar technological level, in the purchasing country. British Aerospace's proposal to construct an aluminium smelter in Saudi Arabia provides an example of this type of offset. Able to export supplies to Britain, the smelter would form part of BAE's £1bn economic offset programme linked to UK defence sales in Saudi Arabia.<sup>15</sup> Other indirect offset ventures considered by Britain and Saudi Arabia include computer training centres, a plastic yarn plant, and bio-technology work.<sup>16</sup> Not all indirect

offsets are investment related, however. In BAE's recent sale of Hawk fighters to Malaysia, the Asian country's Defence Secretary-General suggested that increased landing rights into London for Malaysia's national airline be considered for offset.<sup>17</sup>

### How important is countertrade?

The value the market places on countertrade ought to be gauged by the growth in its use. But this presumes that countertrading is measurable. Unfortunately, this appears not to be the case: not only because governments generally do not monitor this form of trading activity, and so official statistics are scarce, but also because from a corporate angle countertrade represents a highly sensitive and thus confidential aspect of the marketing approach. Firms are thus loathe to disclose information concerning their involvement in this area. But although precise figures are not available, broad magnitudes can be obtained from the fragmentary evidence that does exist.

Recent US statistics indicate that countertrade accounted for approximately \$20bn of the \$35bn total US defence sales over the period 1980-87, representing almost 60 per cent of America's arms exports.<sup>18</sup> In the US, countertrade has grown dramatically in the 1980s as defence contractors have become more flexible in their marketing strategy in the face of shrinking defence markets. UK defence contractors have been similarly obliged to increase their marketing options as a corporate policy response to tighter trading conditions. Interviews with representatives of the major British defence-related companies confirm *a priori* suspicions that countertrade is now almost routinely demanded by purchasers in major foreign arms sales. All the big weapons platform and engine manufacturers possess specialist in-house countertrading expertise, if not separately functioning countertrade departments. Counter-purchase, licensed production, offsets and buybacks are all sales methods commonly employed by the prime defence contractors. However, an important aspect in the evolving nature of countertrade is the developing countries' shift in emphasis from counter-purchase towards institutionalised military offsets. Discussions with company representatives have indicated that nearly all Britain's prime defence contractors are involved in offset programmes, many of which involve upwards of 100 per cent compensation of the original transaction cost. One major contractor's offset ratio surged from around 10-15 per cent in the mid-1980s to between 60-100 per cent in the early 1990s; another's is currently around 90 per cent, with 10 per cent buybacks; and these examples are not untypical.<sup>19</sup> Given the increasing importance of offsets in military sales, it will be useful to evaluate the motivations for this form of countertrade.

It has been noted that there are two types of military offset: the split being between those directly and indirectly related to the principal arms sale. It is the direct form

**"Countertrade accounted for \$20bn of the \$35bn total US defence sales over the period 1980-87, representing almost 60 per cent of America's arms exports."**

of offset that has recently been generating controversy. The problem centres on the advanced nations' anxieties over technology leakage from their defence-industrial bases. Yet this is a rather narrow focus for evaluating the net worth of offsets. Discussions need to embrace a wider and more diverse set of factors. In particular, the benefits as well as the costs of offsets must be taken into consideration, both from the perspective of the vendor and of the purchaser. A framework for examining comparative motivations for offsets is given in figure 2. This is not an exhaustive list of the factors associated with direct offsets as they affect both parties, but does highlight focal points for discussion. These will now be considered, beginning firstly with the DDN's perspective.

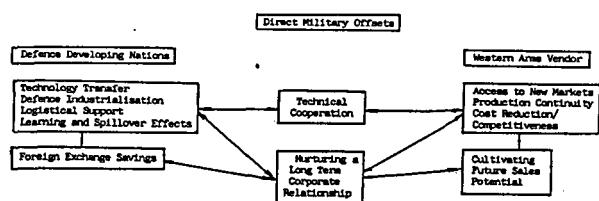


Figure 2: The Exchange Equation in Military Offsets

The primary reason why DDN's seek military offsets is for technology transfer. This is considered a separate and, indeed, superior objective to defence industrialisation. This is because developing countries perceive production capacity as a necessary though not sufficient condition for realisation of their defence-industrial ambitions. Just as important, if not more so, is the ability to develop and produce sophisticated high-technology defence equipment. To achieve this goal speedily, requires that technology be transferred from leading-edge western arms manufacturers. Technology is here defined to include both the hard and soft components. Thus, not only the machinery, computerised equipment, and electronic items for both processes and products are transferred, but also the knowledge and skills embodied in the physical technology. There will, moreover, be development spin-offs from this process. Dissemination of technological knowledge to the DDN's has potential for trickle-down to civil manufacturing activities. New industries are established, creating investment and employment through offset multipliers. Also the enhanced skills acquired in the defence sector can be transferred to other engineering sectors in the host economy; even though the final goods produced may be dissimilar, the engineering skills remain unchanged.

### Maximising benefits

A major difficulty in maximising these benefits is the need to ensure that offsets are related as far as possible to the principal arms contract. This is the 'additionality' problem. In other words, making sure that the inward investment arose from the principal arms order, and would not have been undertaken anyway in the absence of offsets. In this relation, note the work that qualified for the 130 per cent offsets in Boeing's sale of AWACs to Britain and France (both countries regarded as DDNs in the context of AWAC technology).

In the British offset negotiations, not only was Boeing allowed to claim 60 per cent of the value of follow-on contracts resulting from orders originally placed before

the signing of the AWACs contract, but the US vendor was also allowed to claim 35 per cent of the value of Rolls Royce civil aircraft engines that might have been purchased for the AWACs without the offset.<sup>20</sup> Similar concessions were also allowed by the French in the calculation of their AWAC offsets. In this instance, the joint French and US produced (SNECMA-GE) CFM-56 engines for both the French AWAC contract and a previous contract with the Saudis, years earlier, were included as offsets in France's purchase of the Boeing reconnaissance aircraft.<sup>21</sup>

Furthermore, not only are there problems associated with knowing when an offset is not an offset, but it seems that agreed offsets may not necessarily be the same as actual offsets. In respect of Britain's AWACs purchase, it transpired that no monitoring mechanism was in place to record employment created by the US £1.5bn AWACs offset programme. Thus, although 4500 jobs had been promised through US contracts placed with British defence contractors, this could never be confirmed as offset obligations were only measurable by reference to value and quality.<sup>22</sup>

### The cost of offsets

Finally, the argument that offsets reduce the requirement for foreign exchange needs to be addressed. If all that developing nations sought to achieve through arms procurement was savings in foreign exchange, then, clearly, the obvious option would be to purchase arms off-the-shelf. But, of course, this is generally not the course taken today. As has previously been stated, DDN's actively seek parts manufacture, tooling, technology transfer, training, and technical assistance. But even though some of this will be covered in the offset arrangements, the acquisition of such competence does not come cheap. Thus, in the early stages of establishing defence-industrial capacity, the transfer of resources from the advanced country partner will impose an enormous burden on the buyer's foreign exchange reserves. The high degree of technological excellence required in arms manufacture, particularly aerospace, demands that considerable and costly processes and learning be absorbed. This short-run effect occurs irrespective of the DDN's existing industrial status. Note, in this context, that the agreement by Japan to produce the American F-15 fighter under license has been estimated to have entailed costs per plane that were at least double those of direct purchase from McDonnell Douglas.<sup>23</sup>

In the long-term when production capacity comes on stream, the inward flow of technology will subside, with a positive impact on exchange reserves. Moreover, if local production facilities can be integrated into the civil manufacturing fabric, there will then be opportunities for wider dissemination of productive efficiency gains through greater capacity utilisation. The foreign exchange position may therefore again benefit through the greater potential for exports from heightened local productivity. Finally, because much of the transplanted technology relates to investment goods, which increases the means for further production, this will act to expand national income.

Of course, through the undertaking of more and more investment projects that may otherwise have been foregone, licensed production and buybacks will lead to

greater capital accumulation, accentuating the negative short-run and positive long-run effects on the country's foreign exchange reserves.<sup>24</sup> Whether the net effect is negative or positive is indeterminate; the presumption, however, is that it is the latter. If this is the case, then offsets may hold the potential for improving the DDN's terms of trade, through facilitating the domestic transfer of resources from primary and consumer goods production to that of high-technology items, suggesting that it may be at least as economically efficient as cash-based transactions.

### Advanced nations' position

It has to be conceded that the benefits of direct offsets to the arms vendor appear less pronounced than that for the armaments purchaser. Most importantly, willingness to offer offsets allows the West's defence contractors the opportunity to compete and often the ability to complete defence sales, which, taken together, are difficult enough in the adverse trading conditions of the 1990s. But it should be noted that the offer of offsets tends only to be made in the face of competition; if this is absent, then arms vendors restrict offset availability. This probably explains the US Government's intervention in negotiations to sell US fighters to South Korea. Only US contractors (Northrop (F-20), General Dynamics (F-16), and McDonnell Douglas F/A 18) were competing for the contract, thus enabling the US authorities to impose a 30 per cent ceiling on offsets. But it is doubtful if such a policy could have been imposed, if, say, the French company Dassault had been in contention with a bid to supply Mirage fighters with attractive offset options. Of relevance in this regard, is an International Trade Commission survey of 500 US companies which revealed that 31 contracts, totalling \$1 billion, were lost during 1980-84 because the companies could not or would not engage in countertrade.<sup>25</sup>

Offsets, then, is first and foremost a marketing tool, providing access to new markets for the West's arms vendors. In an era of declining defence orders, offsets thus allow capacity utilisation levels to be maintained in the vendor's plants. Extended production runs also keep skilled workforces together, influencing cost and competitiveness in a positive manner. And, of course, in the long-run, the new markets may also be the source of further demand.

The fear, however, is that these increased product demands are likely to be associated with further offset requirements, continuing the ongoing wizening of the developed nations' defence industries. The process is argued to have already begun, with criticism directed at the loss of strategic jobs offsets are held to have caused amongst the West's defence sub-contracting firms. Whereas, previously, foreign sales could have provided the life-blood for keeping an advanced country's arms plant alive, offsets in the 1990s may sound its death-knell. An example here relates to the projected sale by B.Ae of 50 of the electronic warfare versions of its Tornado fighter to Korea. The insistence by the Koreans of

outright transfer of Tornado production to the Far East means that B.Ae's Wharton plant will be reduced to a repair and maintenance plant, with inevitably high job losses.<sup>26</sup> Yet, in certain circumstances, there is the conflicting argument that, overall, more employment may be created via the principal export order. Further, it is important to note that most western defence prime contractors are introducing just-in-time policies with local sub-contractors. It is difficult to see how offsets through, say, buy-backs from distant sub-contractors can represent anything more than a 'blip' to this trend.

Western defence contractors also point to the heightened riskiness of offset contracts. The British Government advises that 90 per cent of all countertrade negotiations fail.<sup>27</sup> As a consequence, administration costs soar. Other costs associated with payment delays and insurance must also be taken into account, and possibly not all these costs will be recoverable. Uncertainty extends into other areas as well.

For instance, the type and numbers of components to be produced in the purchasing country may be subject to change. Furthermore, the purchasing country may refuse to produce particular components because of anticipated small volumes of production. Compounding these difficulties, the western industrial partner may have no say in the choice of local sub-contractor in the offset/buy-back arrangements. More problematical, though, is the DDN's predilection for the creation of 'fresh' capacity implying that the local industrial partner may possess limited relevant manufacturing experience. This worsens the problems of cost determination for the purpose of gauging offset values. To overcome the teething and operational efficiency problems encountered at the customer's end, the advanced country partner calculates buy-back output value by multiplying pay rates by home-plant production hours; the latter incorporating an appropriate percentage for learning effects. Finally, there is also the serious problem of illegal third country sales. For example, Colt Industries officials estimated that by the 1980s South Korea had produced between 140 000 and 300 000 M-16s for unauthorised export to such diverse customers as Indonesia, Nigeria and Yugoslavia.<sup>28</sup>

### Implications

Countertrade, and in particular, offsets, are increasingly the cause of controversy and concern amongst advanced defence-industrial exporting countries. In this respect, questions are repeatedly being asked regarding the winners and losers of defence offset technology-sharing arrangements. The purpose of this article has not been to answer such questions, but rather to screen thinking on the subject, facilitating informed discussion. Although the topic is involved, there is clearly the impression that DDN's have created a development strategy that is proving to be far more effective than its classical, import-substitution, export-orientated, debt-led growth predecessors. Indeed, it has the potential, through technology transfer and competition, of transforming

*"Offsets, then, is a marketing tool, providing access to new markets for the West's arms vendors."*

the existing economic order of the international arms market. This certainly applies to conventional weapons exports, and, in the long-run, even high-technology items.

For the West's corporate defence traders, the policy of offering offsets sows the seeds of future international competition. A broad British prime-contractors are being forced down, ironically, because of the highly competitive conditions of the current market. Government policy appears confused. The British authorities' stance is one of spectacular ambivalence.<sup>29</sup> The US Government, on the other hand, is increasing its profile in corporate offset negotiations, including the requirement that defence contributors provide Congress with details of any offset arrangements worth more than \$5m. But policy measures in the event of unacceptable offset arrangements are undisclosed, giving the impression that responses will be *ad hoc* and tied to circumstance. Policies to effectively control offsets will prove difficult to formulate. This is borne out by the fact that for all the concerns the US harbours over illegal third country sales of its defence products, the American Government still does not have in place a workable system for monitoring third-party sales.

Given these difficulties, it seems likely that offsets are here to stay. Hence, if technology transfer represents the future for defence industries, corporate offset policy should be framed proactively for marketing purposes rather than reactively as an afterthought. To conclude by employing yet another metaphor, if the albatross cannot be avoided, then take it, and dance. □

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