# Why offsets requirements should not be mandated

**Stefan Markowski and Peter Hall**[1]
School of Business, The University of New South Wales at the Australian Defence Force Academy, Canberra, PO Box 7916, ACT 2610, Australia
s.markowski@adfa.edu.au
p.hall@adfa.edu.au

***First draft not to be cited without the authors' permission.***

## Abstract

This paper is about mandatory defence offsets. *Offsets* are elements of defence procurement deals *additional* to the primary content. They are *mandatory* when buyers make a purchase of military materiel *conditional on* a foreign supplier offering such additional elements. Offsets are usually expected to yield technological or industrial benefits to the purchasing country (e.g., counter trade, technology transfers, or additional jobs).

We distinguish here between offsets mandated by governments of materiel-importing countries and "discretionary" offsets which we view as purely *normal transaction*s involving goods and services bundled together to reflect the outcome of negotiations between willing buyers and sellers. In such normal commercial transactions, willing buyers and sellers negotiate not only the price of the deal, but also its content and delivery schedule.

Mandatory offsets are usually imposed in the belief that these additional conditions enhance the market power of the buyer. Buyers often require suppliers to make offsets available "cost-free" and without quality degradation in the primary deliverables. We argue that such strategies are naïve since military buyers with the market power to extract more value-for-money from foreign suppliers can do so anyway. By mandating offsets requirements, materiel-importing nations actually reduce their negotiating flexibility and with it the capacity to strike best deals in terms of all dimensions of the deal.

We also argue that mandatory offsets requirements may also increase the informational asymmetry between buyer and seller and allow the latter to engage in hidden quality degradation of deliverables to accommodate the additional cost of offset requirements. This outcome is most likely when mandatory offsets are demanded as "freebies" at no extra cost to the buyer but at additional cost to the seller.

[1] We wish to thank Mr Robert Wylie for many insightful comments. Needless to say, the responsibility for the content of this paper is theirs.

## Introduction

Defence offsets are defined by the Bureau of Industry and Security (BIS) of the U.S. Department of Commerce as "a range of industrial compensation arrangements required by a foreign government as *a condition of purchase* of U.S. defense articles and services. This *mandatory* compensation can take many forms; it can be directly related to the purchased defense system and related services, or it can involve activities or goods unrelated to the defense system. The compensation can be further classified as a Subcontract, Purchase, Co-production, Technology Transfer, Licensed Production, Credit Assistance, Overseas Investment, or Training" (BIS, 2007: iii – our italics).

While the definition is general enough to include defence materiel exported by other countries, not just the U.S.A., it highlights a well recognised aspect of defence offsets: they are compensatory arrangements *demanded* by governments of materiel-importing countries *as a condition* of purchasing military goods and services produced by other countries. *Mandatory* offsets requirements reflect the trading philosophy of countries imposing such conditions that they should be "compensated" for diverting national resources into imports of military materiel (Hall and Markowski, 1994; Hall and Markowski, 1996; Markowski and Hall, 1996; Markowski and Hall, 2004a, 2004b, 2004c; Markowski et al, 2010).

While mandatory defence offsets are government *policy requirement*, defence procurement agencies may also apply offsets at their *discretion*, i.e., when they *see benefit* in using them. In this paper we focus on offsets requirements mandated by governments of materiel importing countries as opposed to discretionary offset arrangements applied by defence procurement agencies.

Why is this "compensation" required in the case of defence-related imports when most non-defence imports are free from such onerous imposts? Some buyer countries would argue that by importing such products using taxpayer-provided funds they deprive their domestic industries of the opportunity to make them, or parts of them, in-country. This is a weak argument as most such imports could not be sourced locally precisely because the local industry lacks the capacity to make them cost-effectively or to make them at all. A stronger argument in favour of "compensation" is that these import transactions provide an opportunity to engage in activities

which the importing country would otherwise find either impossible or too costly to engage in, such as exporting goods and services which hitherto were not exported or acquiring technologies which would not have been accessible otherwise. Australia, for example, has invoked this rationale to seek sub-contracting opportunities for local producers who, it is argued, could be as competitive as their overseas equivalents but lack opportunity to break into global supply chains controlled by international prime contractors (Markowski et al, 2010).

The effectiveness of these compensatory demands depends on the ability of the importing nation to enforce them, i.e., its relative market power as an importer and, thus, its ability to extract "compensation" from overseas suppliers. However, if the buyer country has the means to effectively demand some form of import "compensation", it is far from clear why such compensatory arrangements need to be *mandated* as "offsets" rather than included in normal import deals in the form of more broadly specified buyer requirements. While Australia, for example, remains keen to use the leverage provided by its defence materiel imports to create export or import-replacement opportunities for local defence producers, it long ago abandoned mandatory defence offsets and minimum local content requirements. Many other countries, however, continue to demand offsets rather than use their market leverage to negotiate best procurement deals in terms of all dimensions of the deal (price, content, quality, delivery schedule, through-life support for deliverables).

Commercial, market-mediated transactions often involve offsets-type arrangements so that packages of products offered for sale are broadened to make them more attractive for buyers (e.g., "throwing in two products for the price of one"). Sometimes buyer demands are widened by bundling together different requirements to achieve economies of scope in procurement or to acquire packages of complementary products. In principle, such arrangements can be initiated by either party, at their discretion, and buyers and sellers are normally free to walk away from deals that do not suit them. It would be foolish for commercial buyers to make their sourcing of goods and services conditional on the availability of some vaguely specified "package enhancement" when they are normally free to negotiate best deals in terms of all dimensions of the deal.

BIS (2007) states clearly the U.S. government's formal position on offsets in defence trade. The U.S. government considers offsets to be "economically inefficient and trade distorting," and prohibits any of its agencies from "encouraging, entering directly into, or committing U.S. firms

to any offsets arrangement in connection with the sale of defense goods and services to foreign governments" (op. cit.; iii). However, BIS also recognizes that U.S. prime contractors "generally see offsets as a reality of the marketplace for companies competing for international defense sales" (*Ibid*; iii). As the world's leading producer of defence materiel and the dominant investor in defence R&D, the U.S. has a vested interest in protecting its military superiority. To safeguard the latter and protect its investment in superior military technology, it applies a wide range of export controls and related impediments to transferring technology to foreign powers, including its allies. These U.S. trade restrictions are formally promulgated in the International Traffic in Arms Regulations (ITAR). The U.S. Government's justification for regarding offsets as "economically inefficient and trade distorting" is less clear: the infamous 'Buy American Act' undermines U.S. claims that it is the protector of global free trade in defence goods and services. U.S. official hostility to offsets is more likely to reflect efforts to protect U.S. defence exporters than any principled economic objections.[i] But, is it really necessary to protect them?

However, even if mandatory offsets are inherently inefficient and trade distorting, it does not follow that they are necessarily detrimental to the national interest of a materiel exporting country such as the U.S. Generally, if offsets are mandated by buyers as compensatory package enhancements but also paid for by them at the going market price, they may induce exports and create associated benefits for the exporting country (offsets provider). Consider, for example, technology transfers (e.g., an importer's right to use patent-protected product technology) from a country such as the U.S. where exports which could potentially undermine the exporting country's technological advantage are strictly regulated by the government concerned. If the transfer of technology is fully paid for by the buyer at prices that would have applied in the absence of offset demands, the buyer's offset-induced demand for a broader package of deliverables also increases opportunities for the seller to export more than would otherwise have been the case. Why should this arrangement be detrimental to the U.S. national interest while an identical package of products sold to the same buyer country in the absence of offsets demands would not? Also, to the extent the importing nation becomes further dependent on U.S. supplies; such arrangements could enhance the future competitive advantage of U.S. suppliers.

Clearly, as the leading producer of defence products and the dominant exporter of defence materiel, the U.S. may benefit from some forms of offsets mandated by importing nations while

other forms could be detrimental to particular sectoral interests. For example, the U.S. government has long been concerned that offsets-based technology transfers could potentially assist rival foreign suppliers and, thus, result in the displacement of producers or products unable to withstand increased global competition. Clearly, any seller or producer of an innovative product invites potential rival responses once the product is sold and exposed to replication or replacement. That is, any form of competitive advantage can potentially be eroded when product and process technologies are exported. This is not because buyers mandate imports of such products as offsets but because any import could trigger a chain reaction in the importing country that could ultimately undermine the initial competitive advantage of the exporting nation.

Ultimately, though, U.S. producers of military materiel cannot be coerced to send overseas products that it is not commercially viable for them to export. If they cannot negotiate sufficiently profitable deals they can always walk away from those that do not offer prospects of at least adequate returns. However, if importing nations have sufficient market power to trim the profit margins of exporters or to engineer changes in subcontracting arrangements along the supply chain, why do they need mandatory offsets to achieve such outcomes? Given the market power, could not similar or better outcomes be achieved by other means?

This brings us to the demand side of mandatory offsets requirements. Here the picture emerging is even more confusing. For example, European Union (EU) member states take very different attitudes to mandatory offsets. France and Germany, both significant exporters of defence materiel, do not apply mandatory offsets. However, Italy, U.K., Sweden and The Netherlands, while significant defence exporters, are also major importers of military materiel who mandate offsets-based "compensation", particularly when dealing with U.S. suppliers. Finland, Poland, Spain, Greece and Portugal are also significant importers as well as exporters of materiel. These countries mandate offsets demands to strengthen their defence industry base. Smaller defence importers in Europe also tend to mandate offsets. A report commissioned by the European Defence Agency (EDA) identifies three distinct positions taken by those members of the EU that apply offsets (Eriksson et al (2007: 4-7):

1. it is accepted that offsets have an adverse impact on market competition and distort materiel, technology and other markets. They should eventually be phased out *but pending their withdrawal*, "adverse impacts on competition should be mitigated" (our italics);

2. while recognising adverse impacts generated by offsets, it is argued that they may nevertheless assist in the development the European Defence Technology and Industrial Base (EDTIB). However, the scope for mandating offsets is decreasing as the EU market for defence materiel is consolidating and intra-EU sourcing of materiel becomes increasingly important; and
3. there is a risk involved in mandating offsets as many of them are not consistent with Article 296 of the EC Treaty and could be declared illegal challenges are mounted and specific cases come under scrutiny.

Thus, notwithstanding the clouded legal status of mandatory offsets in the European Union under Article 296, it is broadly recognised that offsets are likely to have adverse impact on European defence markets and industries.[ii] Nevertheless, given "the still-infant status of our open market efforts", offsets offer "opportunities for individual Member States to build their own skills and develop important relationships for their companies" (cited in Eriksson et al, op. cit.: 10).

Similarl logic has been followed by many developing nations seeking to enhance their technological and defence industry base through offsets. India is arguably the best example of the mandatory offsets policy. While the use of offsets by India goes back to the 1960s, the current policy of mandatory offsets was introduced in the 2005 Defence Procurement Procedure (DPP) and refined in DPP 2006 and DPP 2008 (Behera, 2009).[iii] The Indian Ministry of Defence estimate that offsets will "bring in nearly $10 billion into the country" during 2007-2012 (*Ibid*: 242).

Whatever defence, technological or industrial objectives offsets mandating nations set out to achieve, they tend to focus on mandating offsets requirements rather than thinking through the most efficient procurement method to achieve these objectives. As we noted earlier (Markowski and Hall, 2004a), mandating offsets *per se* does not improve the buyer's bargaining position. For example, buyer nations cannot force foreign prime contractors to bid for work that is unprofitable or to comply with offsets requirements that are either illegal in the home country of the exporter or which could potentially erode the latter's competitive advantage.

If mandatory offsets are to be used to extract rents, which otherwise would have been collected by the seller, or to engineer changes in the division of labour between sub-contractors within the seller's supply chain, such outcomes cannot not be achieved unless the buyer nation has the ability to pay for them and/or sufficient market power to force the seller to trim profit margins and to pass the "savings" on to the buyer. The buyer's bargaining position depends normally on the size of the buyer's budget and opportunities for further business in future. If anything, mandatory offsets are most likely to have the opposite effect. For example, when suppliers routinely anticipate demands for offsets and factor them into defence deals, buyers may not be able to negotiate deep price discounts. Instead, they must negotiate "package enhancements" even though cash savings would have been preferable as they offer the potential advantage of allowing the buyer to shop around to achieve greater value for money by buying different elements of the package from different suppliers.

These objections are hardly new (see Hall and Markowski 1994; Markowski and Hall, 2004a) and for a while, particularly in the 1990s, they seemed to reduce the appeal of mandatory offsets. Countries such as Australia - significant importers of defence materiel with a keen interest in the development and sustainment of their defence industry base - long ago abandoned mandatory offsets demands as a means of achieving defence-, technology- or industry-related policy objectives. Instead, they have tried to improve their bargaining position through the use of "smarter" procurement methods and by training more market savvy defence procurement personnel.

It appears, however, that the appeal of mandatory offsets is once again on the rise, despite the often illusory benefits attributed to them. This paper in part restates our previous argument against the use of mandatory offsets and, in part, attempts to strengthen these arguments by highlighting the importance of informational asymmetries between the buyer and the seller. While mandatory offsets requirements usually increase these informational asymmetries, they may also elicit sellers' responses, such as hidden quality degradation, that work to the buyer's disadvantage.

The remainder of the paper is structured as follows. In the following section we examine different types of defence offsets demands and their application by different countries. This is followed by a brief re-examination of advantages and disadvantages of applying mandatory

offsets schemes. This leads to a section focused on informational asymmetries associated with the use of mandatory offsets requirements. We conclude by drawing inferences for offset policies.

## Defence offset categories and offset demands

### Offset categories

Mandatory defence offsets take a variety of forms such as enhanced local content of procurement deals (through changes in the sub-contracting arrangements of prime contractors), countertrade (offsetting imports of goods and services by the buyer country with exports from the latter to the supplier country), co-production arrangements, technology transfers from the seller to the buyer, licensed production in the materiel importing country, financial/credit assistance for the buyer, direct foreign investment in the importing country, or training of the buyer's personnel by the offset provider. All these requirements are mandated by the buyer/importing nation as *additional* or *secondary* to the *primary* materiel import transaction. Such requirements may be mandated for all defence imports exceeding a certain minimum dollar value of imported content, or limited to designated import transactions (e.g., materiel sourced from particular countries).

Mandatory offsets are often divided into:

- *direct offsets* - items and activities directly *related* to a purchase of defence materiel; and
- *indirect offsets* - items and activities *unrelated* to a purchase of arms or equipment often involving civilian activities of no consequence to national security objectives.

In this paper, we also distinguish between three types of offsets:

- *countertrade* (export creation);
- *local content requirements* (import substitution); and/or
- *bundling* (import broadening) activities.

In the case of countertrade, the importing country makes an arms purchase conditional on a supplier country buying its home-made products as offsets, i.e., the importer is "compensated" for buying defence materiel from a foreign supplier by exporting locally-made products, which otherwise would not have been exported or even produced.

In the case of local-content requirements, an arms purchase is conditional on an overseas supplier sourcing an agreed fraction of contract-related work in the importing country. This may involve using existing local suppliers as *sub-contractors,* or *licensed production*, or *direct investment* by the seller in the importing country. While local content requirements may take many specific forms, they essentially involve some form of *co-production*, i.e., making components in country that otherwise would have been made overseas, or assembly of final products that would have been assembled elsewhere, or drawing on the supplier's design and technological know-how to develop local design or R&D capabilities, and so on.

And, in the case of bundling, an arms-importing country makes purchase conditional on the arms seller's willingness to supply products *additional* to those comprising the primary transaction. Bundling only makes sense if the importing nation is able to use its market power, revealed through the intended primary acquisition, to obtain products that otherwise would not be offered by the supplier (e.g., new technologies), or to reduce the supplier's profits by buying packages of goods and services at prices lower that those that would have been paid if the same products were purchased separately rather than jointly.

The above categorisation is far from clear cut as the facilitation of countertrade may first involve direct foreign investment in the host economy subsequently "paid for" by exports to the investor's home economy. Similarly, bundling could be used to develop local capabilities ultimately reducing import-dependence of the host (importing) economy.

For the buying country to obtain real benefits from any form of offset involving local content or bundling, that the country must have the absorptive capacity to make good use of the technology (or other goods and services) that are added into the deal. Similarly, in a market economy, countertrade should be profitable for country that mandates offsets-enabled exports. Thus, as it is wasteful to acquire goods and services that cannot be put into a beneficial use, it is also wasteful to divert scarce national resources into export-oriented activities that are loss making and need to be subsidised.

## Defence offsets: global perspective

Martin (1996: 16) estimated the number of countries with a *countertrade/offsets policy* to be over 130 in 1992. He also estimated the share of world trade by volume linked to countertrade to be between 10 and 30 percent (op. cit.: 17). These are rather rubbery figures as, generally, there is a paucity of information on the global incidence of defence offset demands, offsets obligations, actual offset deals, and, in particular, final outcomes and impacts of offset deals.

More is known about formal offsets and local content *policies* (e.g., BIS, 2007) but the all-important distinction between mandatory offsets requirements and those applied by defence procurement agencies if practicable (best endeavours approach) is often blurred.[iv] There is also considerable confusion as to which industry and trade assistance initiatives are *de facto* offset policies and which ones are not. For example, Australia often uses larger defence acquisitions as an opportunity to secure work for its domestic defence producers but it no longer mandates specific local content targets. Instead, it relies on "best endeavours" of its defence procurement personnel to secure advantageous local content deals (Markowski and Hall, 2004c). The official Australian position is that "In general, offsets … do not work" and, thus, as a procurement policy instrument they are relegated to the back burner (DoD, 2010: 54). However, BIS (2007: Appendix F) lists Australia as a country applying "official offsets policies" and bundles it together with several other countries that mandate defence offsets requirements.

The most informative and consistent source of data on offsets are the bi-annual reports prepared by the Bureau of Industry and Security (BIS) of the U.S. Department of Commerce (e.g., BIS, 2007; 2009), which track offsets agreements signed and completed by the U.S. defence contractors. This information has been collected because the U.S. Defense Offsets Disclosure Act of 1999 makes it "the policy of the United States to monitor the use of offsets in international defense trade, to promote fairness in such trade, and to ensure that foreign participation in the production of United States weapons systems does not harm the economy of the United States" (BIS, 2007: 1-3).

BIS (2009: ii) estimates the number of countries with defence *offset agreements* with U.S. suppliers (obligating U.S. defence contractors to provide offsets) to be 45 over the period 1993-2008. During that period, U.S. firms reported entering into 677 offset agreements (an average of about 42 agreements per year). The cumulative value of these agreements was nearly US$69

billion, or 71 percent of U.S. defence export sales of US$97 billion. On a year-by-year basis, the value of offset agreements as a proportion of the total value of defence contracts with US suppliers has ranged between 34 percent in 1993 and 125 percent in 2003. The annual value of offset agreements peaked at over US$9 billion in 2003 (over twice the average annual value of offset agreements, which was US$4.3 billion over the period 1993-2008 (BIS, 2009: 4-5 and Table 3-1).

The cumulative value of *offset transactions* (discharged offset obligations) was US$49 billion or 51 percent of U.S. defence export sales. The annual value of offsets *transactions* peaked at over US$4.7 billion in 2004 (BIS, 2009: 6-8 and Table 4-1).[v] BIS (2009: ii and 10, Table 4-3) reports that between 1993 and 2008 U.S. firms reported 9,877 offset *transactions* with 47 countries with the actual value (in current dollars) of nearly US$49 billion and offset "credit value" of over US$58billion. The difference between the higher "credit value" and the "actual value" is due to about 12 percent of all transactions attracting "value credits" (*multipliers*) greater than the actual reported value of these transactions.

The most common offset transaction types were: countertrade (purchases) at 36 percent of all transaction by value, local content (sub-contracts) (22%), and bundling, mostly taking the form of technology transfers, at nearly 18% (*Ibid*: 11).

BIS (2009) also estimates *direct offsets* completed by U.S. defence contractors over this period to account for about 41 percent of the actual value of the offsets transactions 1993-2008, *indirect offsets* for over 58 percent, and *unspecified offsets* for less than 1 percent (op. cit.: 9 and Table 4-2).

Different countries' appetite for offsets deals also varies widely. BIS (2007, Table 2-5) shows countries with offsets requirements roughly divide into equal thirds: those that demand over 100 percent of the value of defence contracts in offsets; those that target the mid-range of between 50 and 99 percent; and those that accept less than 50 percent. Geographically, Europe with the average ratio of 98.4 percent and the inter-country range between 28 and 172 percent has had more appetite for offset deals than other regions, including (Americas average 97%), Middle East and Africa (average 44% and range 33% to 116%), and Asia-Pacific (39% and 22% to 100%).

BIS (2007: 5-3, Table 5-2) also shows the United Kingdom to be the top recipient of offsets provided by U.S. defence contractors: US$7.2 billion or about 17 percent of all U.S. offsets transactions in 1993-2006. Over the same period, the top five recipient nations (UK, Israel, Finland, Poland, South Korea) accounted for US$21.0 billion or about half of all offset transactions, and the top ten recipient nations (top five plus Italy, Netherlands, Greece, Canada, Australia) for US$31.6 billon or nearly three quarters of all offset transactions. **Table 1** shows the value of offsets agreed with the top 15 importers of US defence materiel and the actual and credited (using credit multipliers) values of offsets transactions for the top 15 offsets receiving nations.

*(Insert Table 1 about here)*

Between 1993 and 2006, the five U.S. industry sectors that accounted for over 80 percent of all offset transactions were: Transportation Equipment (mostly aerospace products) – 53 percent; Electronics/Electrical Equipment (13%); Technical Services and Consulting (5.5%); Industrial machinery (4.5%); and Measuring and Analysing Instruments (4.3%) (BIS, 2007: 2-10/2-11 and Table 2-4).

BIS offset reports on the have also attempted to analyse the impact of offsets obligations imposed on U.S. exporters of military materiel on the U.S. defence preparedness, industrial competitiveness, employment, and trade. The picture that emerges from these reports appears to be rather cloudy and confusing. Little is known about how the values of offset agreements in which U.S. defence suppliers are involved are negotiated and determined (e.g., what prices and value multipliers are agreed by the parties prior to offset agreements and how these values are arrived at). As mandatory offsets demands are fully anticipated by exporters who sell defence products to countries that mandate them, how do these contractors "package" their offers? Is the cost of expected offset requirements already included in prices quoted for exportable defence materiel?

BIS reports show the aggregate value of offset transactions to differ on a year-by-year basis from the aggregate value of offset agreements. This is because offset transactions are completed over a number of years following the initially agreed offset obligations. However, how do these individual offset completions (discharged obligations) relate to previously agreed offset

deliverables? What proportion of offsets agreed by the parties is subsequently fully discharged? And, what happens when offsets obligated by contractors are not delivered? Are liquidated damages demanded and obtained from contractors by offset recipient nations? Or, do the latter "forgive" suppliers who fail to discharge their offset obligations? Also, on the buyer side of offset deals, since offsets credited on completion of such transactions often exceed their actual (transacted) value due to the application of value multipliers, how are these value "enhancers" arrived at in practice? Is there much room for "creative accounting"? Or outright corruption, especially when indirect offsets are also mandated and a variety of government agencies are involved in their application?

What we consider particularly ambiguous are various attempts to estimate the true cost of offsets to recipient countries. It has long been reported that offsets demands increase the cost of arms purchased under primary deals to which they relate. For example, Eriksson et al (2007: 47-49) reports that members of the European Union pay five to ten percent more for the imported defence materiel as a result of (direct) offset demands. A number of contributors to Brauer and Dunne (2004) estimate the cost premia to vary between seven and 15 percent although Struys (2004: 167) argues that "Belgium pays a 20 to 30 percent penalty for imported weapons systems. These overcosts are financed solely from the Ministry of Defense budget, impinging upon other defense budget categories". An official Australian estimate shows the offset-related cost premium for the F/A-18 Hornet program in Australia in 1985-90 to be about 17 percent (DoD, 1994).

On the other hand, as shown in Table 1, the average ratio of offset agreements (by value) to the value of related export contracts is 71 percent and for some countries it is well in excess of 100 percent (Greece 113%, Netherlands 119%, Poland 170%). Since offsets agreements are *additional to* these export-import contracts and providing that they are paid for directly by recipient nations, why are cost penalties imputed to primary deals at all? Alternatively, if it takes on average between five and 15 percent of the cost of primary deal to pay for offsets provided by foreign suppliers, why are these offsets "valued" on average at 70 percent of the underlying export-import contracts? Is it possible that these billions of dollars of reported offset "values" are expressed in "funny money" so that arbitrary price sets are used to inflate values of offset deals

while the "real money" does not change hands much and the actual offset transactions are largely cross-funded by 5-15 percent cost premia included in primary import deals?

## Advantages and Disadvantages of Mandatory Offset Requirements

BIS (2007: ch. 3) discusses possible effects of offset requirements that U.S. defence exporters had to comply with between 2002 and 2005. It notes that, in the absence of offset requirements, (offsets-related) work diverted overseas would have generated over U.S. 16,000 jobs (in equivalent work-years). This line of reasoning assumes that many of these jobs would not have been lost anyway due to foreign direct investment and technology transfers that U.S. defence suppliers would have normally engaged in as export-oriented commercial entities. Clearly, offsets are responsible for trade and production distortions but they are not the sole cause of job relocation overseas. However, BIS also estimates that offset demands imposed on U.S. defence contractors result in a net gain in U.S. defence industry employment as offset-related defence exports contribute twice the number of jobs lost (in equivalent work-years) due to offset-related diversion of defence work overseas. It further observes that offsets-related technology transfers, worth nearly eight percent of the U.S. annual aerospace R&D spend, represent not so much a loss to suppliers, who still retain the technological knowhow and benefit from its application, as a potential gain to buyers.

BIS reports offer no insights into whether and how mandatory offset requirements benefit offset recipients as opposed to the U.S. as an offset provider. As noted above, "values" assigned to offset agreements and transactions diverge considerably from their actual costs. For the materiel buyer, the value of offsets credited to an offset deal also reflects the country's preference for one category of offsets rather than another, for example, direct technology transfers tend to be assigned higher value multipliers than indirect offsets. Also, offsets contributing to the sustainment of defence capability over time tend to be assigned higher value credits than offsets contributing to the creation of new manufacturing capacity. And, when a particular value is assigned to an offset agreement or transaction, it tells us nothing whether the recipient country is able to make good use of the offset delivered and the extent to which these outcomes, if beneficial, can be sustained over time.[vi]

There are some reported "success stories" (for an overview see Eriksson et al, 2007, ch. 6: 38-43, and Annex 9). However, none of these apparent "success stories" appears to have been subjected to simple tests of efficiency and effectiveness. At the very least, the following questions should be asked before any mandatory offsets scheme is considered to be an efficient and effective instrument of defence procurement policy:

- What would have happened in the *absence* of these mandatory offsets requirements?
- Whatever the apparent benefit, why are these mandatory arrangements the *most efficient* way to obtain it? Could the *same outcome* in terms of, say, local content, be achieved at *lower cost* by a different route? Or, a *better outcome* achieved at the *same cost*?
- Do these mandatory offset requirements *get in the way* of optimising defence procurement?
- Do they *get in the way* of optimising social welfare?

Clearly, any attempt to address the counterfactual is difficult. As we argued on previous occasions, mandatory offsets schemes appear to belong to the realm of smoke and mirrors where evidence on their *costs* and *effects* is hard to extract and/or generalise with any precision because:

- these policies are among many policies that affect employment, technology transfers and use, industry capability formation and market access for seller;
- desired policy outcomes (e.g., employment, import substitution) are affected by a multitude of non-policy factors at micro and macro levels;
- there are many positive and negative externalities that need to be allowed for in cost-benefit calculations;
- effects vary widely from case to case and they take long periods to feed through. Costs are incurred more immediately;
- given the changing nature of defence contingencies and the pace of technological change, it is difficult to assess the prospect of continuing demand for local production. While many costs are reasonably certain, benefits are risky and some may never eventuate; and
- in the light of the above, the recipient country's absorptive capacity for offset deliverables is very hard to assess and can only be determined *ex post* with any precision.

It is for these reasons that we were highly sceptical about the ability of mandatory offsets schemes to pass such efficiency and effectiveness tests as they restrict the buyer's flexibility to negotiate the most advantageous import deals and to direct scarce national resources to activities that generate the highest net social benefit (Hall and Markowski, 1994). This sentiment is echoed by Taylor (2004), who argues that "… any attempt to use a mandatory offsets policy for all government procurement limits the dimensions of the negotiation" (Taylor, 2004: 40). In sum,

> Offsets requirements, especially defence offsets, involve addressing a mixture of different objectives and lack of clarity as to what is to be achieved by using them is a key problem in evaluation exercises. Commercial buyers are assumed to be driven by economic self-interest but policy that mandates defence offsets *requires* public agencies to obtain offsets or local production, even if it is unclear what net benefits will accrue to them as a result. (Markowski and Hall, 2004: 45)

## Informational Asymmetries

All defence procurement transactions involve a degree of contractual incompleteness in that it is practically impossible to design contracts that are completely unambiguous, provide for every contingency, and are, thus, fully enforceable. We argue below that mandatory offsets schemes increase add to this contractual incompleteness by adding usually vague and hard to enforce secondary requirements to primary elements of procurement deals. The resultant clouding of defence procurement transactions is more disadvantageous for the buyer, who must comply with the mandated secondary requirements, than the supplier, who is free to walk away from unprofitable transactions. In the following two sections, we first consider mandatory offset demands from the buyer's perspective and next from the seller's.

### Buyers

Defence offsets tend to be mandated by materiel importing nations because they *promise* to offer buyers prospects of greater engagement of local sub-contractors by foreign primes, more secure supply chains, opportunities for the diffusion of new product and process technologies, enhanced export opportunities, and general economic benefits in the form of employment creation and diversion of economic activity to preferred, usually politically sensitive locations. However, even if all such package enhancements are genuine and buyers have the capacity to absorb them, how

do they know which of many offers that are compliant with the mandated offsets requirements represents the best value for money?

First, consider a case when offset requirements are not mandated. In **Figure 1**, the buyer nation intends to import quantity $X_1$ of a military product X, say a weapons system, as the primary component of the intended procurement transaction. It is also contemplating the purchase of another product Y, which could be added to the primary requirement to form a joint transaction $(X_1,Y_i)$, where $Y_i$ denotes a particular quantity of Y to be bundled together with the primary requirement $X_1$. Alternatively, Y could be purchased independently of X. While the requirement $X_1$ is fixed, the buyer is more flexible as to the required quantity of Y: It has an option to purchase the two products jointly, as the bundled transaction $(X_1,Y_i)$, or separately as two standalone transactions $(X_1)$ and $(Y_j)$. For example, the buyer may consider the purchase of a larger quantity of Y if it is more advantageous to acquire it jointly with X.

In the figure, the benefit surface B(X,Y) shows the value of different combinations of X and Y to the buyer. The cost surface, $C(X_1,Y_i)$, is not shown in the figure. However, for illustrative purposes, we show costs that would be incurred by the buyer if it purchased indicated quantities of the two products along the continuum of possible product combinations between $X_1$ and $Y_4$. For example, if the buyer wishes to bundle the two requirements together into a joint requirement $(X_1,Y_1)$ the value of this particular product combination to the buyer I shown as $B(X_1,Y_1)$and the cost as $C(X_1,Y_1)$. Thus, the net benefit of this particular joint acquisition is: $B(X_1,Y_1) - C(X_1,Y_1)$.

In general, given its budget constraint, the buyer would prefer to bundle its requirements into a joint transaction if the expected net benefit of bundling $X_1$ and $Y_i$ together exceeds that the combined net benefit of two standalone transactions $X_1$ and $Y_i$, that is, if there are economies of scope in military procurement. Thus

$$B(X_1,Y_i) - C(X_1,Y_i) \geq [B(X_1) - C(X_1)] + [B(Y_i) - C(Y_i)]$$

Also, the buyer may prefer to purchase X and Y jointly as long as

$$B(X_1,Y_i) - C(X_1,Y_j) \geq [B(X_1) - C(X_1)] + [B(Y_i) - C(Y_i)], \text{ for } j > i.$$

That is, it may take advantage of economies of scope in procurement to acquire a larger quantity of Y than it would have purchased under a standalone option.

The issue of interest is how the value-for-money-seeking procurement agency is to know whether to source the two products jointly or separately and in what quantities. In the absence of mandatory offset requirements, it could, for example, use the market-mediated source selection mechanisms to solicit cost information while its client Services would provide benefit information. Thus, it could take advantage of a "multi-envelope" tendering process to identify the least cost offer for each product combination ($X_1$,Y) it wishes to consider. It could then consult its client Services to rank these offers on the value for money basis. Finally, it would select the net value maximising quantities of X and Y and the corresponding mode of their acquisition (jointly or separately). The process could involve more than one round of requests for quotation so that, given its budget constrain, the buyer could search for the most advantageous combination of the two products and the best way of sourcing them using a sequence of steps and develop appropriate heuristics to ensure that the process is likely to generate satisfactory (although not optimal) outcome.

Consider now the case when the government mandates an offset requirement so that it is no longer possible to purchase $X_1$ as a standalone transaction as it now must be bundled with some other product. The latter may need not be product Y as it is now left to the offset provider to offer a good or a service that complies with the offset requirement. The mandatory scheme may also encourage the provision of indirect offsets in which case the utility of offset deals offered by different suppliers would have to be determined by different government agencies with all the attendant problems of cross-organisational decision making. Alternatively, the defence procurement agency may be left in charge of the joint acquisition in which case we would expect it to prefer direct to indirect offsets and to assign value multipliers to offset offers using its own parochial criteria rather some broader notion of public good.

From the buyer perspective, there are two obvious disadvantages of mandatory offset requirements. First, the buyer is no longer in charge of the "package" specification. Instead, it is the government-mandated offsets guidelines that determine what suppliers have to offer to comply with offset demands. The potential heterogeneity of offers would make it very difficult to evaluate "packages" offered on the value-for-money basis. This would be particularly difficult when more than one government agency is drawn into the process when indirect offsets are offered by suppliers. Second, the defence procurement agency is now restricted in its choices of procurement strategies as, under the mandated offsets guidelines, it is directed to seek "in kind" package enhancements rather than equivalent price discounts. In Figure 1, options such as $X_1$ or $Y_4$ are no longer available to the buyer.

By depriving it of flexibility to negotiate most advantageous deals, including deep price discounts, mandatory offset requirements do not appear to serve the best interest of the materiel buyer. This disadvantage could be compounded if it is further mandated that offsets should be provided by suppliers at "no extra cost" to the buyer. As long as the compliance with offset requirements is costly to the seller, it is very likely that the cost of offset provision would be shifted to the buyer in the form of hidden quality degradation.[vii]

### Sellers

From the seller's perspective, the application mandatory offset requirements by buyers could be potentially advantageous as long as buyers expect to pay market prices for the sought-for package enhancements. To start with, sellers are free to walk away from non-profitable transactions. In addition, offsets demands mandated by the buyer nations, put materiel suppliers in a relatively advantageous position as they who determine what to offer as "compliant offsets" under various mandatory offsets schemes.

Consider **Figure 3** where the cost surface, $C(X_1,Y_i)$, shows the cost, to the seller, of providing different combination of products X and Y. The figure is similar to Figure 1 in that the seller is requested to provide $X_1$ quantity of product X and to enhance the primary package by adding to it a quantity of another (offset) product. In the figure, the supplier of $X_1$ is also willing to provide product Y to comply with offset requirement. Under the offset scheme, it is no longer possible to offer X and Y separately. Thus, the contractor must determine a combination of the two products

$(X_1,Y_i)$ that meets the mandated offset requirement but is also sufficiently profitable to supply. While the revenue surface, $R(X_1,Y_i)$, is not shown, revenues associated with the supply of selected combinations of $X_1$, and $Y_i$ are shown in the figure. For example, if the combination $(X_1,Y_1)$ were to be supplied, the contractor would incur the cost $C(X_1,Y_1)$ and obtain the profit of $R(X_1,Y_1) - C(X_1,Y_1)$. Depending on the degree of competition for the market, the supplier may also select those "supplementary" products that offer best value multipliers, i.e., best fit the buyer's offset credit criteria. As long as the package enhancement is paid for by the buyer, the application of mandatory offsets may broaden the range of profitable supply opportunities.

Alternatively, if the supplier is expected to comply with offset demands at no additional cost to the buyer, it could either walk away from unprofitable deals or, more likely, it would engage in hidden quality degradation to reduce the cost of producing the primary component X.

In either case, the seller enjoys informational advantage over the buyer and, paradoxically, the application of mandatory offset requirements is likely to put the seller in more advantageous bargaining position. It is hard to see how mandatory offsets requirements could hurt suppliers.[viii] Unless such "package enhancing" demands assure sellers of adequate returns on resources needed to comply with them, they are always free to "say no to the opportunity".

## Concluding Comments

On the face of it, "defence procurement agencies seeking to engage suppliers under offsets schemes are doing nothing different from normal market operators attempting to exercise market power in their best interest" (Markowski and Hall, 2004a: 52). However, defence procurement agencies are anything but normal market operators exercising market power. The making of and trading in arms is inevitably politically charged as, in addition to purely national security considerations,

> Government conduct is driven by a desire for domestic employment, access to technology and the economic strength it can create, the maintenance of economic capabilities, and a desire for operational sovereignty over key systems… [and] … Governments, at their heart, still face powerful incentives to spend their defense research

and development and procurement dollars at home to the extent possible. (Bialos et al, 2009: 19)

There is no obvious rationale for governments to insist on prescribing in detail how procurement transactions should best be conducted by defence procurement agencies rather than leave it to those directly involved in these activities to find best ways of transacting business under general government guidelines. In some cases, governments are impatient for results as they operate in "political time and space". And, in others, they have little confidence in the ability of public servants to achieve desirable outcomes. However, when offsets requirements are mandated to apply to all transactions involving imported defence materiel above certain threshold value, information asymmetries associated with the application of such schemes make it very hard to target outcomes that are both efficient in terms of the proverbial bang for the defence buck and effective in terms of national resource allocation.

## References


Behera, L. K. (2009) "India's Defence Offset Policy", *Strategic Analysis*, Vol. 33, No. 2: 242-523.

Bialos, J. P. et al (2009) *Fortresses and Icebergs,* Washington DC: Johns Hopkins University and US DoD.

BIS (2007) *Offsets in Defense Trade,12th Report to Congress*, U.S. Department of Commerce, Bureau of Industry and Security, Office of Strategic Industries and Economic Security.

BIS (2009) *Offsets in Defense Trade,14th Study*, U.S. Department of Commerce, Bureau of Industry and Security.

Brauer, J. and Dunne J. P. (2004) *Arms Trade and Economic Development: Theory, Policy and Cases inarms Trade Offsets*, London: Routledge.

DoD (1994) *Review of F/A-18 Industry Program*, Canberra: Department of Defence.

DoD (2010) *Building Defence Capability: A Policy for a Smarter and More Agile Defence Industry Base*, Canberra: Department of Defence.

Eriksson, E. A., Axelson, M., Hartley, K., Mason, M. Stenerus, A-S. and Trybus M. (2007) *Study on the effects of offsets on the development of a European Defence Industry and Market*, Final Report of 06-DIM-022, Brussels: FOI and SCS for the European Defence Agency.

Hall, P. and Markowski, S. (1994) “On the Normality and Abnormality of Offsets Obligations”, Defence and Peace Economics, Vol. 5: 173-188.

Hall, P. and Markowski, S. (1996) “Some Lessons from the Australian Defense Offsets Experience”, *Defense Analysis*, Vol. 12, No. 3: 289-314.

Markowski S. and Hall, P. (1996) “The Defence Offsets Policy in Australia”, ch. 3 in Martin (1996): 49-73.

Markowski S. and Hall, P. (2004a) “Mandatory defense offsets – conceptual foundations”, ch. 3 in Brauer and Dunne (2004): 44-53.

Markowski S. and Hall, P. (2004b) “The defense industry in Poland: an offsets-based revival?”, ch. 12 in Brauer and Dunne (2004): 172-186.

Markowski S. and Hall, P. (2004c) “Defense offsets in Australia and New Zealand”, ch. 18 in Brauer and Dunne (2004): 271-283.

Markowski, S., Hall, P and Wylie, R. (2010) “Buyer-seller interaction in defence procurement”, ch. 4 in Markowski, S., Hall, P and Wylie, R. (eds.) (2010) Defence Procurement and Industry Policy: A small country perspective, London and New York: Routledge: 139-145.

Martin, S. (1996) *The Economics of Offsets: Defence Procurement and Countertrade,* Amsterdam: Harwood Academic Publishers.

Struys, W. (2004) “Offsets in Belgium: Between Scylla and Charybdis?”, ch. 11 in Brauer and Dunne (2004): 164-171.

Taylor, T. (2004) “Using procurement offsets as an economic development strategy”, ch. 2 in Brauer and Dunne (2004): 30-43.

**Table 1** Offsets Agreements and Transactions 1993-2006: Top 15 countries in each category

| Top 15 US Defence Export Destinations | | | | |
|---|---|---|---|---|
| **Country** | **No of Offset Agreements** | **Value of Export Contracts (US$ billion)** | **Value of Offset Agreements (US$ billion)** | **Offsets to Exports Ratio (%)** |
| United Kingdom | 47 | 12.8 | 10.5 | 82 |
| Taiwan | 42 | 11.4 | 2.5 | 22 |
| South Korea | 67 | 9.2 | 5.4 | 59 |
| Greece | 51 | 7.5 | 8.5 | 113 |
| Canada | 28 | 4.6 | 4.5 | 98 |
| Israel | 49 | 4.4 | 2.1 | 47 |
| Saudi Arabia | n/a | 4.1 | 1.4 | 34 |
| Turkey | 20 | 3.9 | 1.8 | 46 |
| Poland | 3 | 3.7 | 6.3 | 170 |
| Australia | 17 | 3.5 | 1.6 | 46 |
| Italy | 9 | 2.7 | 2.5 | 93 |
| Switzerland | 11 | 2.6 | 2.0 | 77 |
| Netherlands | 48 | 2.1 | 2.5 | 119 |
| Spain | 26 | 2.0 | 1.7 | 85 |
| Norway | 31 | 1.3 | 1.4 | 108 |
| **All countries** | 582 | 84.3 | 60.0 | 71 |
| **Top 15 US Offsets Recipients** | | | | |
| | **Actual Value of Offset Transactions (US$ billion)** | **Credit Value of Offset Transactions (US$ billion)** | **Multiplier** | |
| United Kingdom | 7.247 | 7.114 | 0.98 | |
| Israel | 4.203 | 4.357 | 1.04 | |
| Finland | 3.501 | 3.738 | 1.07 | |
| Poland | 3.338 | 4.374 | 1.31 | |
| South Korea | 2.841 | 3.155 | 1.11 | |
| Italy | 2.424 | 2.444 | 1.01 | |
| Netherlands | 2.335 | 2.642 | 1.13 | |
| Greece | 2.311 | 4.611 | 1.99 | |
| Canada | 1.986 | 1.956 | 0.99 | |
| Australia | 1.641 | 1.693 | 1.03 | |
| Switzerland | 1.381 | 1.387 | 1.00 | |
| Spain | 1.238 | 1.484 | 1.20 | |
| Turkey | 1.129 | 1.189 | 1.05 | |
| Taiwan | 1.116 | 2.033 | 1.82 | |
| Norway | 1.002 | 1.289 | 1.29 | |
| **All countries** | 42.0 | 48.9 | 1.16 | |

Source: BIS (2007), Tables 4-1 and 5-2: 4-3 and 5-3.

Figure 1 Buyer's Perspective

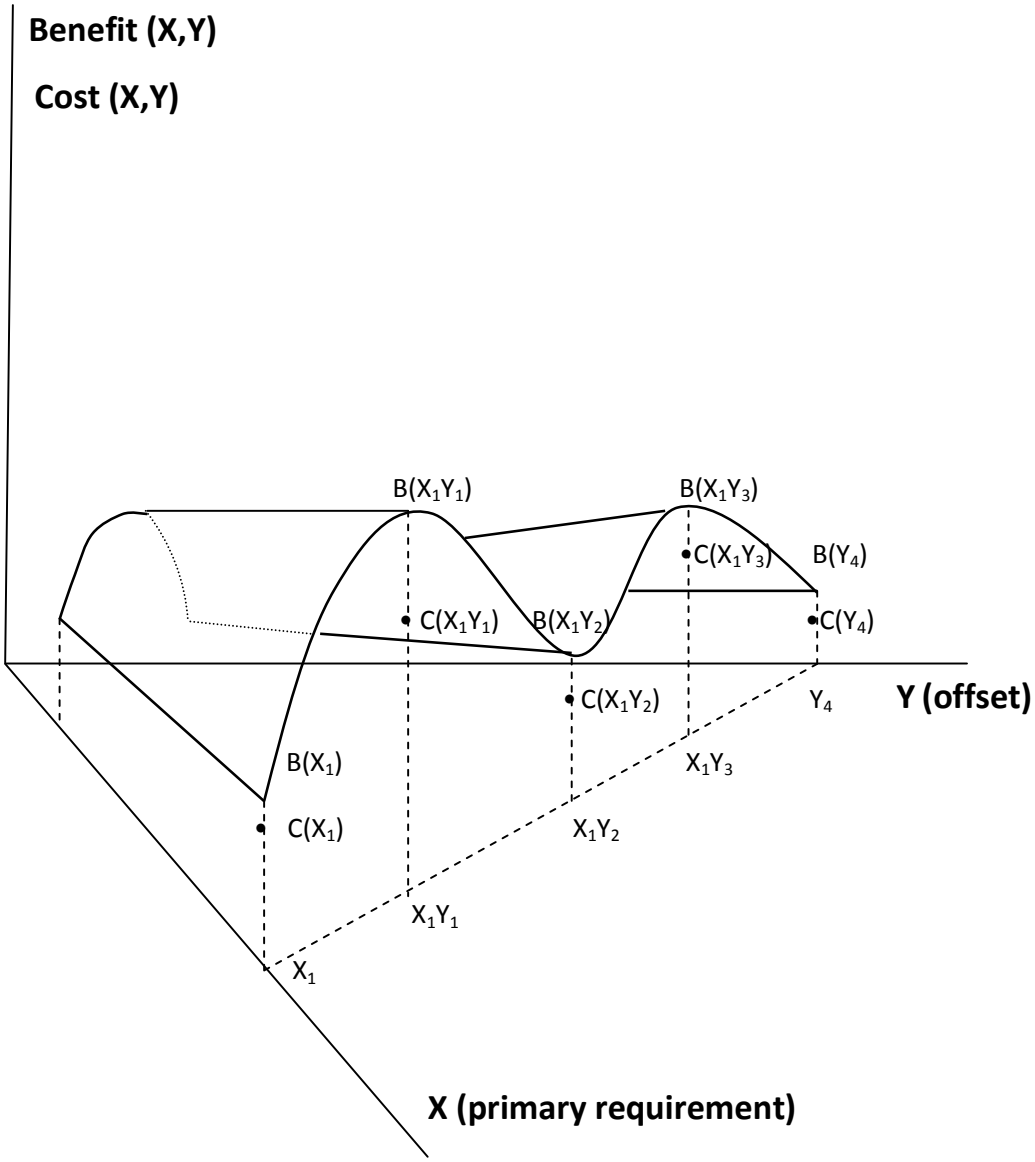
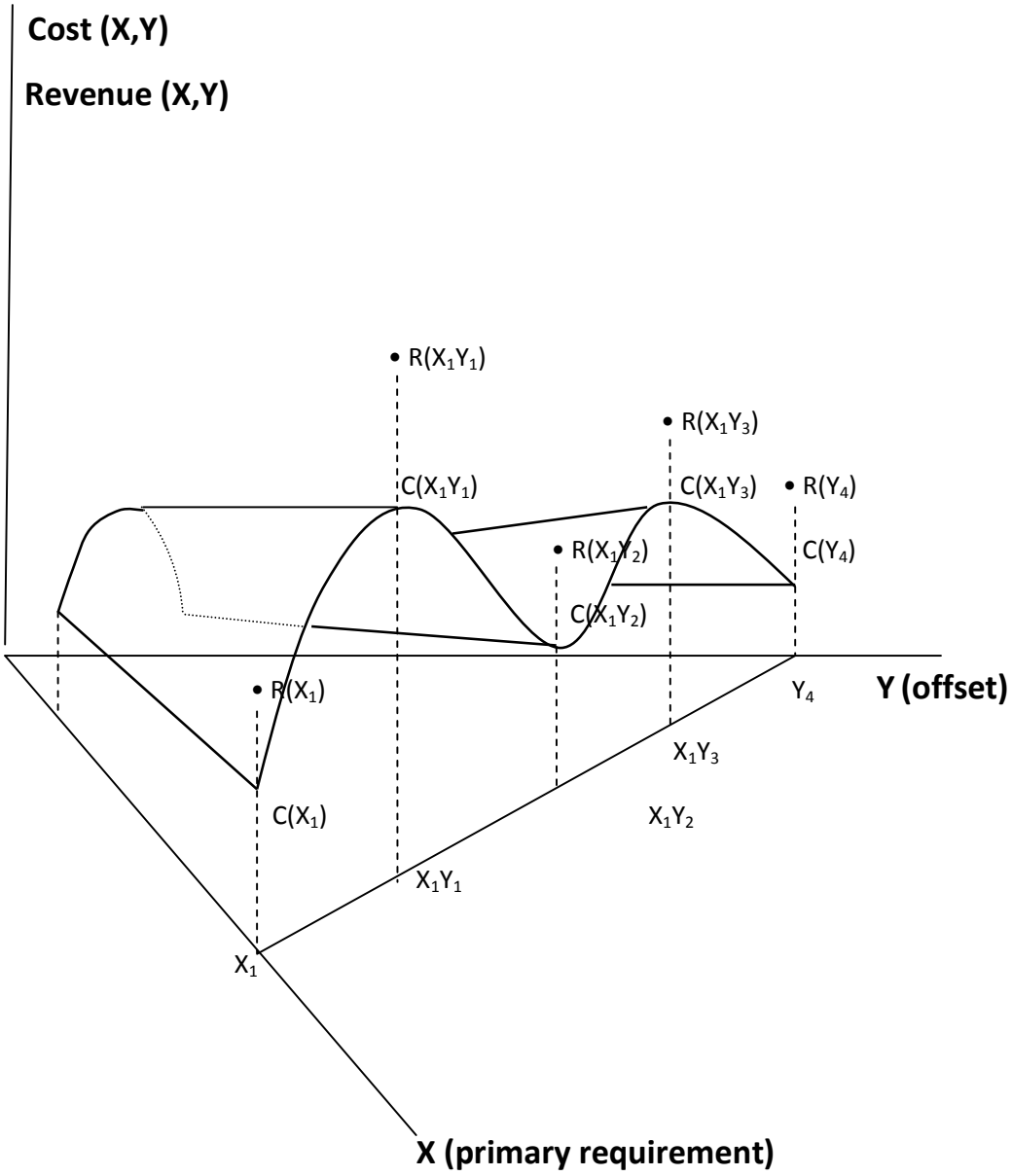


Figure 2 Seller's Perspective



## Endnotes

[i] Thus, offsets requirements "can negate many of the economic and industrial base benefits accrued through the export sale" as "in some cases portions of the prime contractor's business are displaced by exports that include Subcontract, Co-production, or Licensed Production offsets" while "indirect offsets can displace sales from the commercial manufacturing sectors of the U.S. economy" (BIS, 2009; 3-1). Also, mandatory offset requirements "can endanger future business opportunities for U.S. subcontractors and suppliers, with possible negative consequences for the domestic industry base" and, in particular, offsets-related technology transfers "can also help create or enhance current and future competitors for U.S. subcontractors and suppliers, and in some cases prime contractors" (*Ibid:* 3-1/3-2).

[ii] For example, the EDA Steering Board shares "the ultimate aim to create the market conditions, and the European ETIB 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" (cited in Eriksson et al, op. cit.: 10).

[iii] All defence import contracts worth at least Rs3 billion should attract defence-specific offsets equivalent to 30% of the contract value and discharged concurrently with the main contract (*Ibid*: 243).

[iv] That is, it is important to differentiate between offsets requirements that a defence procurement agency must apply as a matter of government direction and those that it is encouraged to apply if practicable (best endeavours approach).

[v] To keep these figures in proportion, in 2008, the value of US merchandise exports totalled US$1.29 trillion while defence-related merchandise exports totalled US$16.5 billion (1.29 precent of total exports), offsets agreements entered into by U.S. defence firms amounted to nearly US$3.5 billion, the actual value of offset transaction completed that year was US$3.2 billion (*Ibid*: 15 and table 5-1).

[vi] For example, the once much heralded offset deal under the Australian F/A-18 Hornet program involved 47 Australian companies as sub-contractors under local content arrangements with prime contractor McDonnell Douglas. Although there was some follow-on work, Australian contractors had little success in commercialisation via offset-related sales and sales beyond offsets. Most US sub-contractors in the F/A-18 supply chain denied Australian firms the option to make their products or use their processes after the mandated program ended (DoD, 1994).

[vii] It is sometime argued that the strong case for applying mandatory offset schemes is the presence of market distortions that result in highly abnormal profits (and/or inflated costs) derived by defence suppliers in the absence of "compensatory arrangements". Thus, by enforcing offset demands, buyer nations can reduce "cost padding" and trim excessive profits which are normally 'built into" defence transactions. However, if the buyer has the market power to deter cost padding by suppliers and/or reduce their abnormal–profitability, why does it need to mandate offset requirements to achieve it rather than use its bargaining power directly to seek the most advantageous deals?

[viii] Traditional arguments that offset demands threaten to displace future exports of the offsets provider by creating new competition in the offset recipient country, or displace other suppliers in the offsets providing country if they involve offset-enabled countertrade, are hardly credible as they apply to all exports and exporters regardless of the mode of their engagement.