Industrial Participation, Investment and Growth: The Case of South Africa's Defence Related Industry[1]

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1. Introduction

In September 1999 the cabinet finally gave its approval, in a slightly revised form, for the South African National Defence Force's (SANDF) R29,9 billion arms acquisition programme.[2] To spend so much money on arms procurement from abroad is a major blow to the local defence industry. To justify its decision to purchase from foreign suppliers and to win public support for the arms deal, the South African government has continually stressed the potential positive effects of the proposed industrial participation (IP) offers (otherwise know as offsets) on investment, job creation and growth in the local-defence related industry and the national economy. At the time of approving the programme, they stated that the foreign suppliers had made IP offers worth R104 billion which would result in the creation of more than 65 000 jobs over a period of 7 years.[3]

The size and importance of the deal and the extent of the offsets make this an important case study for research on the economics of offsets. This paper provides such a study. It provides a detailed examination of the economic issues surrounding the industrial participation aspects of the R30 billion arms deal, and its likely impact on investment and growth in South Africa's defence-related industry and more generally in the national economy.

Section 2 considers the present state of the defence-related industry. Section 3 surveys the existing literature on the economics of offsets and the international experience of defence offsets. Section 4 provides details of the arms acquisition programme, followed by a description of government policies on industrial participation in Section 5. Information on the arms acquisition programme and its expected industrial participation activities are presented in Section 6. Section 7 considers the value of the defence-related industry to the South African economy. Section 8 outlines the local procurement that it is likely to result from the arms deal. This is followed in Section 9 by a discussion of the existing, and planned, inward investment, joint ventures, technology transfer and export benefits that are attached to the

[2] The original programme and list of preferred suppliers was approved by cabinet in November 1998. The revised programme, approved by cabinet in September 1999 will be divided into two tranches: the first tranche, costing R21,3 billion, will include 3 submarines and 4 corvettes from Germany, 12 jet trainers from Britain, 9 light fighters from Britain and Sweden, and 30 light utility helicopters from Italy. The second tranche, costing an additional R8,6 billion will include 12 jet trainers from Britain and 19 light fighters from Britain and Sweden. The 4 maritime helicopters from Britain, and the balance of 10 light utility helicopters from Italy are excluded from the revised programme.

arms deal. Section 10 considers the job creation aspects of the arms deal and the industrial participation activities. Section 11 considers the non-defence industrial participation activities that are expected to flow from the arms acquisition programme and finally Section 12 presents some tentative conclusions.

2. South Africa's Defence-Related Industry

The cuts in South Africa's defence budget since the late 1980s have had a dramatic effect on the country's defence-related industry, which has undergone a process of downsizing and restructuring as outlined in Batchelor and Dunne (1998). The restructuring and commercialisation of the public sector defence industry, including the formation of Denel in 1992, has had a dramatic effect on the private sector defence industry. The changes in Armscor's procurement policies, including more transparent and competitive procurement from both local and foreign suppliers, have fundamentally altered the 'cosy' relationship that was evident between the public and private sector industry during the apartheid era.

The new ANC-led government's commitment to black empowerment has resulted in a number of empowerment deals and equity partnerships between (largely white) private sector defence companies and black companies. In 1997 a black empowerment group, Kunene Technology Limited acquired a 47% share in Grintek Electronics. In June 1999 Reunert formed a new joint venture radar company with empowerment group Kgorong Investment Holdings and DaimlerChysler Aerospace (Dasa). The equity of the new company, Reutech Radar Systems is distributed between Reunert (37%), Dasa (33%) and Kgorong (30%) (Business Day, 9 June 1999). These empowerment deals have also fundamentally changed the structure of the local defence market.

In response to the decline in demand, local defence firms have pursued a number of supply-side adjustment strategies. The outcome of these adjustment strategies has included a changed local defence market in terms of size and structure; the increasing concentration and monopolisation of the domestic defence market; a dramatic increase in defence export sales; the increasing internationalisation of the domestic industry through international joint ventures and equity partnerships; and a significant increase in diversification initiatives.

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[3] "Economic and Fiscal Impacts of the Procurements", Press Release, Government Communication and

The downsizing and restructuring that has taken place in the local defence industry has been reflected in the poor and deteriorating financial performance of most local defence firms. In terms of profitability, a recent study (Batchelor, Dunne and Parsa, 1999) showed that defence companies had lower average net profit margins (net profit/turnover) than non-defence companies for the period 1988-1997. Denel's turnover has declined in real terms by an average of 5% per annum since 1992, and in the last few years the company has posted massive losses (Business Day, 22 February 2000).

The 3 largest private sector defence groups (Reunert, Grintek and Altech) have also witnessed some financial problems since the early 1990s as a result of the significant declines in the value and share of their defence work. However, all of these firms have reduced their dependence on their defence business to less than 20% of turnover and have been able to offset the declines in domestic defence with significant increases in non-defence work and export orders.

The downsizing and restructuring of the local defence industry has taken place in a policy vacuum, and the government has adopted a 'hands-off' approach to defence industrial adjustment. Their approval of a large procurement order with foreign suppliers constitutes a major threat to the long-term survival of the local defence industrial base. This has led government to continually emphasis the offset arrangements which are attached to the arms deal, and which will in all likelihood provide some benefits for local defence industry. While it seems that local industry will benefit from the offsets, there are a number of issues associated with the decision to import with offsets that are questionable. The next section considers some of the conceptual issues involved in offsets and the international experience of defence offsets.

3. The Economics of Defence Offsets

When countries procure defence equipment they have a number of options ranging from indigenous production to off the shelf purchase from a foreign supplier. In between there are various forms of involvement in production and the development of the product, each of

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Information Service, 15 September 1999.

which will have different implications for costs, programme risks, control over specifications and wider industrial and economic benefits (Hartley, 1991). In addition to direct involvement of the purchasing country, joint production, licensed production, sub-contractor production, foreign direct investment and technology transfer there are various other methods of compensation such as countertrade, which may be civilian rather than military. All of these are lumped together under the concept of "offsets". Countries often have different criteria for whether offset obligations are required for a particular transaction and what types of offsets are acceptable. The United States Government defines offsets as 'industrial compensation practices required as a condition of purchase in either government-to-government or commercial sales of defence articles and/or defence services' [4]. The UK has followed a more restrictive approach (Martin, 1996).

It is useful to distinguish between direct offsets, which includes goods and services for the equipment the purchaser is buying (i.e. the supplier sources parts of the weapon system from the purchaser) and indirect offsets, which includes goods and services unrelated to the specific equipment, and can include foreign investment and countertrade (barter counter purchase and buy back). It is also possible to agree to inward investment unrelated to the purchase of the goods. Such offset deals are an increasingly important part of the international trade in military equipment, especially in the aerospace industry (Martin, 1996; Udis and Maskus, 1991).

The nature of offset agreements will depend upon the type of buyer. In the case of a country with a defence industry, the emphasis of the offsets will often be on limiting the impact on the domestic industry by a relocation of economic activity from the supplier country to the purchasing country, including technology transfers. This relocation of economic activity may also be linked with offsets that focus on non-military products.

While official publications often herald offset agreements as beneficial to the purchasing country, the issue is much more complex and the costs and benefits of such programmes have been the subject of some debate. In general offset agreements are likely to be more of an attempt to justify foreign procurement, or to eschew domestic procurement, rather than an economic argument in support of the benefits of import replacement. In addition, while

[4] This definition is taken from "Offsets in Military Exports" (U.S. Department of Export Administration,

governments are usually only too happy to highlight the purported economic benefits (e.g. job creation) of offsets *ex ante*, they often seem reluctant to evaluate the economic impact of offsets *ex post*.

If a country with a local defence industry decides to procure new weapons systems, then it has to decide whether to produce the weapons locally or to purchase from a foreign supplier. Imports of off the shelf products (without offsets) tends to be the cheapest option, while local production is likely to be the most expensive option and the technology may not be available. If the decision is made to import then there is usually a search for a foreign supplier with the appropriate weapon system and a decent offset deal. If there is a local defence industry then it is bound to be affected by the procurement orders going abroad, but evidence suggests that maintaining a local defence industry is expensive and uneconomic for a small country (Dunne, 1996). This means importing arms may be more sensible, especially as there is usually a premium attached to offsets, with the result that the purchase price is normally higher. A study by Cooper (1999) argued that

'*the costs incurred by arms companies as a result of offset deals are simply passed on to the recipient…the level of job creation and technology transfer over and above that which would have occurred without offsets is generally minimal*' (Cooper , 1999).

The welfare issues are unclear. Offsets relocate production to the purchasing nation, which represents a trade diversion, which can be welfare reducing. Imports can create wealth by allowing labour to be moved to more productive (competitive) areas of the economy.
On the other hand international markets are not competitive and offsets may improve efficiency if they remove non-tariff barriers and lead to a search for more efficient subcontractors. Offsets may be considered as a subset of the myriad price-quality-quantity trade-offs, which characterise negotiations for large transactions (Martin and Hartley, 1995). They may lead to reduced transaction costs (reducing the number of contracts per trade) but they may also inhibit the flexibility of negotiating advantageous deals and result in inefficient procurement (Hall and Markowski, 1994).[5]

Washington D.C., December 1998).

[5] The impact on the supplying firm can be negative if, for example, they end up with lower quality components as part of countertrade. Countertrade can destroy local industry, tending to hit smaller contractors. This has been recognised in the US with workers from a subcontractor demonstrating against countertrade negotiations, which could have replaced their input.

Competitive bidding leads defence companies to compete on offsets and to come up with ingenious ways to deal with offset requirements. This sometimes leads to unrealistic and often complex offset agreements. The complexity of some agreements has led to the establishment of specialist agencies (e.g. Australia, Spain) within government to deal with offset programmes. This has helped both purchasers and suppliers to overcome the problems of the past, but there are still a number of potential problems. It is possible that the supplier may plan to renege, building into the purchase price the cost of reneging (moral hazard). It is often unclear how much of the offsets is genuinely new work; how much of the work would have been won without the offset, what is the technical content; and which companies and regions will benefit from the offsets? In addition, defence offsets have often been linked with development aid (e.g. Pergau Dam).

Over 130 countries have some form of offset policy. In a recent international survey Martin (1996) concludes that, although problems of getting data make comparisons difficult there are some general conclusions that can be drawn:

1. Typically the value of direct/indirect offset is measured in financial terms and success or failure tends to depend on whether the vendor meets the obligation within the specified time period. It is also often unclear whether the work actually occurred because of the offset (was it new) and whether the difference between the off-the-shelf price compared well with the offset value.
2. Offsets have involved a learning experience on both sides. Suppliers often underestimate the costs of meeting offset commitments. Originally there was no cost to failing to meet offset obligations but now financial penalties for non-fulfilment have been included in offset agreements. There has been a move away from promises of orders to determining a package of work for domestic industry in advance.
3. There has been a move away from rather general offset programmes towards more focussed offset programmes.
4. Time horizons have lengthened especially for countries with domestic defence industries. Buyers provide incentives for foreign firms to continue placing work with local firms and often try to encourage foreign firms to establish more formal links with local firms.
5. There has been a move towards more focussed longer-term investment strategies, joint ventures, technology transfers etc.

6. It is unlikely that offsets will disappear in the foreseeable future.

Clearly the benefits of offsets to the procuring country are open to question and the only way of determining the true value of an offset arrangement to a country is to make a detailed analysis, including at the level of defence firms. When this has been done the impact on the economy has been much smaller than expected or promised (Matthews, 1996, Martin, 1996). For a small country the issue may be to maintain an intelligent customer capability (intelligent buyer) and to be able to maintain and upgrade systems rather than to retain a domestic production capability. This might be achieved through maintaining technological capabilities in research establishments and requiring technology transfers, rather than retaining a local defence industrial base. If there are to be defence offsets then they could be used for developing civil products and/or to assist with the conversion of defence companies rather than attempts to maintain local defence capabilities. Any other solution could be considered second best.

In the case of South Africa the decision has been made to procure the weapons, and the emphasis has been placed on offsets rather than price. While there are clear opportunity costs, particularly with respect to the local defence industry, considerable efforts have been made to implement offset policies that reflect the experience of other countries, such as the UK. There is also a reasonable amount of information available, which allows us to consider the likely economic impact of the defence offset deals. Before doing so we need to consider the nature of the arms acquisition programme and the government's policy on offsets.

4. The Defence Review and the SANDF's R30 billion arms acquisition programme

The cuts in South Africa's defence budget that have been taking place since the late 1980s have been funded largely through cuts in the SANDF's capital budget, the Special Defence Account. In the 1999/2000 budget the Special Defence Account was allocated 17% of the total defence budget, down from nearly 60% in the late 1980s (Department of Finance, National Expenditure Survey, 1999). As a result of the cuts in procurement spending the SANDF has had to cancel or postpone most of its major procurement projects since the early 1990s (Batchelor and Dunne, 1998).

The Defence Review, which was approved by parliament in April 1998, provided details of a new force design and force structure for the SANDF. It proposed reversing the trend of increasing personnel and operating expenditure to allow for increased capital expenditure by cutting personnel levels in the SANDF from 100 000 to around 70 000 by 2000/01. The proposed rationalisation process in the SANDF would reduce the share of personnel expenditure to 40% and operating expenditure to 30% of the total defence budget, thereby allowing capital expenditure to increase to 30% of the budget, a level last achieved in 1993/94. The Defence Review also approved new equipment requirements for the SANDF in line with the proposed new force design and force structure (Defence Review, 1998).

As a result of the Defence Review, Armscor, the DoD's acquisition organisation, issued requests for tenders to foreign suppliers to meet the SANDF's new equipment requirements, including main battle tanks, jet trainers, light fighter aircraft, light utility helicopters, corvettes, submarines and maritime helicopters. All potential foreign suppliers were notified of the government's policy on offsets, and requested to submit proposals with their tenders. The next section provides some detail on these policies and their proposed implementation

5. Industrial Participation in South Africa

Offsets or 'Industrial Participation' (IP) as it is officially referred to in South Africa, became mandatory for all government purchases in September 1996. In April 1997 Cabinet approved National Industrial Participation (NIP) policy and operating guidelines for all government departments and parastatals to be administered by the Department of Trade and Industry (DTI) (see **Appendix 1**). NIP effects all government and parastatal purchases or lease contracts (goods, equipment and services) with an imported content equal to or exceeding US$ 10 million (or the equivalent thereof) are subject to an Industrial Participation Obligation. The IP obligation must equal or exceed 30% of the value of the imported content of the purchase or lease and must be fulfilled within 7 years from the effective date of the IP agreement. The prospective foreign seller/supplier has to submit and implement business projects, which would generate IP credits equalling or exceeding the 30% IP obligation. A 5% performance guarantee is required prior to the IP contract being awarded.

The mission of the NIP policy is *'to leverage economic benefits and support the development of South African industry by effectively utilising the instrument of government procurement'*.

The stated objectives of NIP policy are: sustainable economic growth; the establishment of new trading partners; the generation of inward foreign investment; increasing exports of 'value added' goods and services; R&D collaboration; job creation; human resource development; technology transfer; and the creation of economic advantages for previously disadvantaged communities.

The Defence Industrial Participation (DIP) policy for purchases by the Department of Defence (DoD) has further objectives more focussed on the defence-related industry. It aims to retain and create jobs, abilities and capabilities; allow a sustainable defence industrial capacity, with strategic logistic support capabilities; to promote value-added arms exports; to promote like-for-like technology transfer and joint ventures; to maintain skilled indigenous manufacturing capabilities

To deal with some of the problems discussed above the SA Government has set out some principles for all IP contracts. These include a requirement that there should be no increase in price as a result of IP (this is very difficult to police as there is no fixed price!); must represent new business; must be economically and operationally sustainable; must result directly from the purchase contract[6]; and the fulfilment of any IP obligation lies solely with the seller.

IP projects and activities can be investments; joint ventures; sub-contracting; licensed production; R&D collaboration; export promotion and supply partnerships. They are dealt with by an IP Secretariat in the DTI to evaluate IP proposals, negotiate IP contracts and monitor all IP projects and activities and an IP Control Committee, which is made up of representatives from the Departments of Finance, Trade and Industry, Foreign Affairs, Defence In evaluating IP proposals a credit system is used which also allows the accumulation of credits (Appendix 1).

For NIP policy related to DoD purchases, the value threshold is US$10 million (or equivalent). Unlike with other government departments the DIP obligation is 100% split 50:50 between national (i.e. non-defence) and defence priorities and managed separately by DTI and Armscor.

The assessment of DIP proposals is based on the extent to which it supports the capabilities required in the defence industry to provide for a strategic, logistical support and upgrade capacity for a technologically advanced and modern defence force, its doctrine and posture (Defence Review, 1998). All DIP proposals, contracts and projects/activities are managed and administered by Armscor on behalf of the DoD. All non-military portions of IP projects linked to DoD purchases are managed and administered by the DTI in accordance with the provisions of NIP policy. Direct DIP involves activities directly linked to the specific DoD purchase or Main Agreement, while indirect DIP involves IP activities that may be unrelated but have relevance for the defence industry as a whole. Unlike other government departments, the DoD also has an in-house DIP programme, fully managed by Armscor, on all purchases between US$2 million – US$10 million. The DIP obligation for these purchases is 50% of the value of the contract.

The discharge period for all DIP obligations is 7 years. A penalty of 10% is levied by Armscor, with the approval of the DoD, on the unfulfilled portion of DIP obligations for contracts worth US$10 million or more. Armscor levies a penalty up to 30% on the unfulfilled portion of DIP obligations for contracts worth between US$2 million and US$10 million.

Many of the features of South Africa's NIP and DIP policy follow the approaches of other countries. Given the concerns of the previous section it is clear that the government has tried to deal with some of the issues and problems with offsets, but while statements of intent are valuable, it is what happens that is important and there are reasons for scepticism. Certainly, the government's policies seem to reflect some of the lessons learned by countries such as the UK, but any evaluation of their impact on the economy, or value to it, will need a more detailed understanding and analysis. The next section outlines the details of the arms acquisition package and the proposed IP activities.

6. Arms Acquisition and Industrial Participation

[6] The exception is the Strategic Partnership Agreement (SPA), which involves a long-term agreement between government and supplier and is not linked to a single tender.

In September 1999 the cabinet approved a revised version of the SANDF`s arms acquisition package, having approved a list of preferred suppliers in November 1998. At the time of the cabinet decision, information about the costs of each of the components of the acquisition programme, together with some details about the foreign suppliers' NIP proposals was made public (see Table 1). No details on the foreign suppliers' DIP proposals have been made public.

Table 1. SANDF Acquisition Programme

Programme	Number of Units	Supplier	Cost
Tranche 1:			
Corvettes	4	Germany	R6,917m
Submarines	3	Germany	R5,354m
Light Utility Helicopters	30	Italy	R1,949m
Jet Trainer/Light Fighter	12/9	Britain/Sweden	R7,110m
Total: Tranche 1			**R21,330m**
Tranche 2:			
Jet Trainer/Light Fighter	12/19	Britain/Sweden	R8,662m
Total: Tranche 1& 2			**R29,992m**

Source: Department of Defence, Defence Acquisition Package, 18 November 1998
Note: * Total value of IP activities as a percentage of purchase cost

The total direct cost of the acquisition programme is estimated at R29,9 billion (in 1999 prices and exchange rates) to be paid out over a period of at least 8 to 14 years. The equipment is expected to be delivered between 2000 and 2008. The total IP commitments (DIP and NIP) are valued at R104 billion, although the actual economic benefits deriving from these commitments is expected to amount to almost R70 billion over a period of 11 years (GCIS, 15 September 1999).

The IP commitments are divided into 3 categories:

i) direct offsets: defence related offsets (about 20% of the total, or R14,5 billion) including direct purchases from the local defence industry (R4 billion); technology transfers (R3 billion) and export orders for local defence firms (R7,5 billion);
ii) indirect offsets: counter-purchase by the foreign defence suppliers of non-defence goods and services from South Africa (about 45% of the total, or R31 billion);
iii) inward investment in South Africa's defence and non-defence industries by the foreign defence suppliers and other companies associated with the suppliers (about 35% of the total, or R24 billion). (GCIS, 15 September 1999).

In terms of the total IP commitments there is a split between NIP and DIP. It is estimated that at least R14,5 billion of the total IP offers of R104 billion will be spent directly in the local defence-related industry with the balance of R89,5 billion to be spent on non-defence activities, including indirect offsets and inward investment. Each of the arms acquisition programmes carries a 5% penalty clause for non-delivery on NIP and DIP projects and activities.

At the time of writing information on the foreign suppliers' NIP and DIP offers remains sketchy, making it difficult to undertake a comprehensive assessment of the economic impact of the IP activities on South Africa's defence-related industry and the national economy. What is clear from the general discussion, however, is that the overall economic and welfare effects of the packages are far from obvious. The benefits espoused by those involved are questionable. Fundamentally, the policy aims seem contradictory - to justify purchases from abroad while at the same time maintaining a domestic defence production capability, arguing that this is important for the economy. The next section considers this issue.

7. The Value of South Africa's Defence-Related Industry

As mentioned earlier the procurement of arms from foreign suppliers rather than from the domestic industry casts a shadow over its future. This need not be a concern as there is a body of literature that suggests that military spending is unproductive and can either have no significant effect, or a negative effect on economic growth in developing countries (Grobar and Porter, 1989; Dunne, 1996). The negative economic effects of military spending can be exacerbated by investment in domestic arms production (Brauer, 1991; Dunne, 1995). According to a study by Vayrynen (1992) 'in purely economic terms arms production is inefficient and expensive …it distorts the structure of the national economy in the long run and has only a limited export potential.'

In a recent study of the South African defence industry Batchelor and Willett (1998) concluded that 'the expansion of the domestic arms industry (during the 1970s and 1980s) distorted the trajectory of the country's industrial development (and) imposed a number of long-term economic costs on the economy. The absorption of scarce resources (capital, labour and foreign exchange) and the crowding out of non-military public and private investment and of non-military R&D contributed to the underdevelopment, declining

productivity and poor international competitiveness of the civilian economy.' Despite massive downsizing and restructuring in the last 10 years, the defence-related industry remains highly capital, skill, import and research intensive, with very limited linkages to the civilian economy.

If one accepts the opportunity costs associated with maintaining a domestic defence industry, then the emphasis in procurement decision making should be on cost. This will allow the saved expenditure to be used to support the diversification and conversion of the domestic defence industry. Instead the current IP policy has been designed to maintain the local defence industry through the use of offsets.

The direct DIP activities will result in the foreign suppliers purchasing certain locally manufactured inputs (e.g. sub-systems, components) from the domestic defence industry, which will then be integrated into the new weapons systems. In some of the programmes significant parts or sub-systems of the new weapons systems will be manufactured locally, either under license or in collaboration with the foreign suppliers. The foreign suppliers will contract directly with the local industry and will take final responsibility for the weapons systems before they are delivered to the SANDF.

These direct DIP activities are likely to have a positive impact on the fortunes of certain sectors of the local defence-related industry. However, the costs of these direct DIP activities will probably be higher. This is due to the fact that the foreign suppliers have an incentive to raise their prices to include the price of the offsets and the penalty clause, and the fact that there are no market prices or standardised goods in the defence market. These are important issues and there has been some debate recently about whether South Africa is paying higher prices for some of the new weapons systems (e.g. light utility helicopters) because of the government's insistence on offsets (Business Times, 25 July 1999).

The indirect DIP activities will result in some of the foreign suppliers investing (through equity purchases) in certain local defence companies and/or setting up new production/assembly facilities for other defence products and services. A number of the suppliers may also help South African defence firms to win export contracts, and/or integrate South African inputs (e.g. technology, sub-systems) into their weapons systems for sale in foreign markets.

Despite the fact that some local defence firms stand to benefit quite substantially from the direct and indirect DIP activities, there are concerns that the arms package will benefit only established white-owned defence companies because government does not have a clear policy on black empowerment in the defence industry (Sunday Argus, 26 September 1999).

Overall, this suggests that direct and indirect DIP activities could provide much-needed finance and technology for the local defence-related industry and assist it to become more internationally competitive. However, this could be at the cost of higher procurement prices and the costs of maintaining a local defence industry. In addition, the contracts are subject to the risk of broken promises.

8. Local Purchases from the Defence-Related Industry

All the components of the arms acquisition programme will require purchases of inputs (e.g. components, sub-systems) from the local defence industry. Since the announcement of the list of preferred suppliers in November 1998, a number of local defence companies have entered into agreements, or are busy concluding agreements, with the foreign suppliers to supply inputs for the new weapons systems for the Navy and Air Force. The value of purchases from the local defence industry will depend on their competitiveness (in terms of price, quantity and delivery) and capabilities, and whether the foreign suppliers are confident that local inputs can be successfully integrated into their weapons systems.

The acquisition programme involves the purchase of significant quantities of new weapons systems for the Navy and the Air Force. These purchases will have a significant impact on the maritime, naval shipbuilding and aerospace sectors and sub-sectors of the local defence-related industry. However, the local industry is considerably smaller, more concentrated and financially weaker than it was in the late 1980s as a result of the defence cuts and increased foreign competition. The market-driven processes of downsizing and restructuring have also led to a loss of capabilities, including skilled human resources, in many sectors and sub-sectors of the local industry. Many of the foreign suppliers have expressed concern at the lack of capabilities in the local defence industry, and have struggled to identify worthwhile direct and indirect DIP activities in the sectors and sub-sectors of the local industry. (The Star, 22 July 1999).

South Africa's maritime and naval shipbuilding industry, which is concentrated in Durban and Cape Town, has downsized quite dramatically in recent years with the attendant loss of valuable capabilities and skills. The country's only naval shipyard, Dorbyl Marine, closed down in the early 1990s because of poor trading conditions. The industry thus lacks the capacity to design and manufacture major naval ships including submarines, although a few companies have the capacity to design and manufacture small harbour patrol boats. The local maritime industry does, however, have a limited capacity in naval electronics (including shipborne radar systems), systems integration (combat suites), ammunition (including naval bombs and mines), research and development and ship repair and maintenance.

Notwithstanding the local industry's reduced capabilities, local defence companies such as LIW (Denel) and ESD (Reunert) are likely to supply the 35mm and 76mm naval guns for the corvettes (Engineering News, 5 March 1999). In early 1999 it was reported that 7 local defence companies including African Defence Systems (formerly Altech), Grintek, Reunert and Denel had formed a consortium to bid for the manufacture of the combat-suites for the corvettes, which could result in up to R2 billion worth of contracts for local industry (Sunday Times, 10 January 1999). The marine engineering division of Siemens in Pinetown, Kwazulu-Natal is hoping to supply locally manufactured electrical and electronic systems for the submarines and corvettes (Business Day, 2 December 1998).

Overall, this sector is not particularly well placed to benefit from the Navy's acquisition programmes without significant investments to upgrade and expand its existing capabilities.

South Africa's aerospace industry, which is concentrated in a few companies in Gauteng, has a relatively well-developed capacity to design and manufacture missiles, aerospace engines and fixed and rotary wing military aircraft. The industry also has significant capabilities in electronics (including radar), avionics, systems integration, weapons systems, and ammunition. Likely beneficiaries of the European suppliers' local purchases for the Air Force's acquisition programmes (jet trainers, light fighters, light utility helicopters) include companies such as Denel Aviation, Grintek, ATE, AMS and Aerosud.

AMS is expected to supply health and usage monitoring systems for the Agusta 109 helicopters and some of the electronic equipment on the Gripen fighters (Engineering News,

5 March 1999). Denel Aviation had been awarded a R282 million contract to design, develop and manufacture weapons-carrying pylons for the local (i.e. for the South African Air Force) and export versions of the Gripen fighter aircraft (Business Report, 31 May 1999). In addition, Agusta offered Denel Aviation licence rights to manufacture the A109 helicopter in South Africa, the right to source components for the helicopter from local industry, and to perform complete maintenance and overhaul of the A109 in South Africa (Engineering News, 16 July 1999). Overall, Denel is likely to gain up to R7,5 billion (R6,5 billion for Denel Aviation and R1 billion for Kentron) in new business as a result of the arms acquisition package (Jane's Defence Weekly, 29 September 1999).

This sector of the defence-related industry is therefore potentially well placed to benefit from the Air Force's acquisition programmes.

9. Investment, Joint Ventures, Technology Transfer and Exports

In recent years most of South Africa's foreign investment has been linked to short-term speculative investment in bonds and equities (Budget Review, 1999). Despite large inflows of short-term capital there has been very little long-term fixed direct investment, which is the kind of investment that is needed to compensate for South Africa's low level of domestic saving (15% of GDP in 1998) and to create jobs.

As result of the finalisation of the arms package, a number of European defence companies, including the preferred suppliers, have made investments in local defence companies, particularly aerospace and IT companies. Most of this investment has involved equity purchases, rather than fixed investment in plant and capital.

BAE Systems, previously British Aerospace, is the majority shareholder in Paradigm Systems Technology, a Gauteng-based software company. In 1997 it acquired a 20% equity share in Advanced Technologies and Engineering (ATE), a Gauteng-based aerospace company (Business Day, 9 December 1998). In February 1999 Altech sold the remaining 50% of its defence business (African Defence Systems) to the French company Thomson CSF, which had purchased an initial 50% equity in the company in March 1998 (Business Times, 28 February 1999). In March 1999 Swedish company Celsius purchased 49% of Grintek Avitronics for R30 million (Business Day, 1 March 1999).

BAe Systems is also currently in negotiations to purchase a 20% equity share in Denel's aerospace division, which will form the basis for a new Aerospace company with ATE and Aerosud (Business Day, 22 April 1999). Vickers, the UK engineering firm, has recently purchased Reumech OMC, the armoured vehicle division of Reunert (Business Day, 9 September 1999).

These equity investments are linked to the arms purchases from countries such as Germany, Italy, Sweden and Britain, but are also part of larger initiatives by European governments to promote increased trade between South Africa and themselves.

Another form of inward investment has been the growing number of joint ventures between European and South African defence firms, sparked off by the arms deal. These joint ventures are significant in that they involve technology transfers, and should allow South African defence firms to become part of these European companies' global supply chains. In May 1998 Grintek and GEC-Marconi (UK)[7] entered into a joint venture, in which Grintek will produce sub-system components for telecommunications productions which GEC-Marconi sells globally (Business Day, 7 May 1998). In June 1999 Reunert and Daimler-Chrysler Aerospace (Germany) together with a black empowerment group Kgorong Investment Holdings formed a new joint venture company, Reutech Radar Systems (Business Day, 9 June 1999). In August 1999 Grintek and DaimlerChrysler Aerospace (Dasa) entered into a joint venture to develop high frequency radio systems (Business Day, 13 August 1999).

The arms deal has already had a significant impact on South Africa's defence exports. Some European governments have been 'prompted' to purchase South African defence products in favour of their own products, despite criticism from their domestic defence industries. For example, in early 1999 Denel's Somchem division was awarded a R1 billion contract to supply fuses for the AS90 155mm howitzer guns used by the British peacekeeping forces in Bosnia (Business Day, 6 January 1999).

Some of the preferred European suppliers have also helped South African defence firms to bid for, and win, foreign defence contracts. In late 1998 Grintek was awarded a R56 million

[7] This joint venture is now with BAE Systems, who took over GEC's defence arm.

contract to supply audio-management systems for the British Aerospace-Saab Gripen fighter aircraft (Business Day, 16 November 1998). This was followed by an export contract in March 1999 from Ericsson Saab Avionics worth R6,2 billion to develop and produce electronic sub-systems for the Swedish Air Force's next batch of 64 Gripens for delivery in 2003, in March (Business Report, 26 March 1999). Then in May 1999 Grintek was awarded an R8,4 million contract to design and develop the communications control and display unit (CCDU) for the aircraft (Business Report, 28 May 1999).

During early 1999 British Aerospace (Australia) and Denel Aviation entered into a joint sales effort to sell the Rooivalk Attack Helicopter to Australia. However, the bid was unsuccessful (Pretoria News, 22 April 1999). Analysis, Management and Systems (AMS) were awarded a R10 million contract to supply onboard computers for the sale of British Aerospace Hawk jet trainers to Canada. This contract was a follow up to a contract to supply flight computers for Hawk jet trainers bought by the Australian Air Force in 1998 (Business Report, 27 August 1999).

10. Job Creation

Total formal employment in the non-agricultural sectors of the South African economy has continued to decline since 1994, despite a 10 per cent expansion in real output, thereby creating a situation of 'jobless growth' (Budget Review, 1999). Thus economic growth has been achieved through improvements in productivity (including labour productivity) rather than through employment creation. Unemployment in South Africa is currently estimated at 37.6 % of the work force and the need for 'labour-demanding growth' has thus become South Africa's most formidable economic challenge (Budget Review, 1999).

The foreign suppliers' defence purchases from the local defence-related industry, together with the prospect of increased defence exports, is likely to have a positive impact on job creation in local defence firms. Currently direct employment in the defence-related industry is estimated at 25 000 jobs (15 000 in the public sector and the rest in the private sector). Indirect employment (e.g. suppliers, sub-contractors) accounts for a further 35 000 jobs.[8] To

[8] This is an estimate based on information obtained from the Aerospace, Maritime and Defence Industry Association of South Africa (AMD).

put this into perspective more than 60 000 jobs in the defence industry have been lost since the late 1980s (Batchelor and Dunne, 1998).

The job creation estimates which were presented by government in September 1999 suggest that R104 billion worth of IP commitments will create approximately 65 000 jobs – this amounts to R1,6 million per job. This figure is extremely high and nearly 20 times higher than the average cost per job in the local defence industry. In 1997 the cost per job (remuneration costs per employee) in the public sector defence industry (Denel) was R93 722, while in the private sector (e.g. Reunert) it was slightly lower at R82 838. However, this is not an accurate reflection of the real costs associated with maintaining or creating jobs in the defence industry. In 1997 turnover per employee in the public sector defence industry (Denel) was R231 898 while in the private sector (e.g. Reunert) it was more than double - R464 633. Based on these figures, the estimated R14,5 billion worth of potential DIP activities could create, or sustain, approximately 40 000 jobs (based on R350 000 per job) in the local defence-related industry[9].

Any such estimates are questionable, however, as the impact of the arms acquisition programmes, including the DIP activities, on job creation in the local defence-related industry is difficult to quantify. Certainly local purchases by the foreign suppliers, equity investments, joint ventures and export contracts will help to maintain jobs in the local defence-related industry, and prevent further retrenchments. In addition, even if the estimates presented above are accepted, they represent considerably fewer jobs than could be created if the money were used for other purposes than buying arms.[10]

11. Non-Defence Industrial Participation

Government, through its NIP policy, has attempted to use the defence purchases to leverage substantial investment in the non-defence sectors of the South African economy. It has

[9] It has been reported that Denel's R1 billion contract to supply artillery charges for the British Army's 155mm howitzers will sustain 100 jobs and create 30 new jobs (Business Report, 25 June 1999). Another report suggests that the combination of the UK export contract, together with the Agusta helicopter deal and the local purchases associated with the arms acquisition programmes will secure or create about 1400 jobs in Denel and about 6000 jobs at its affiliates (Business Times, 22 November 1998)

[10] Reallocations of defence spending to other forms of government spending have been shown to increase employment and output. See discussion in Dunne (1996)

attempted to ‘direct’ this investment to particular sectors (minerals and energy) of the industrial economy and to specific parts of South Africa such as Kwazulu-Natal, the Western Cape and the Eastern Cape (The Star, 29 July 1999). It has also attempted to link it with other national economic and industrial policy initiatives (e.g. the DTI’s Spatial Development Initiatives and Industrial Development Zones) (GCIS, 15 September 1999).

In September 1999 the government released some details of the foreign suppliers' NIP offers.

- The German Frigate Consortium is offering to invest in the construction of a mini-steel mill (in Coega), to supply technology for a new a crank shaft foundry (at ADE in Cape Town) and to source automotive components from South Africa for overseas markets. A number of other projects relating to cosmetics, gold refining, chromex mining and the production of textiles and plastic components are under consideration.
- The German Submarine Consortium is offering to invest in the construction of a stainless steel plant (in Coega) and a stainless steel fabrication plant (e.g. for sinks, cutlery etc).
- Agusta, the Italian company supplying the light utility helicopters, is offering to invest in the construction of a special steel mill (with Danielli/ABS) to produce products for tool bearing, engineering and forging steels. The company's NIP offer also includes investments and technology transfers in gold jewellery manufacturing (with Filk), mohair products (with ALPHA TOPS) and ostrich skin (with Enny). In addition Denel is likely to be offered a licence for the local assembly and manufacture of parts and components for Agusta's K119 Koala civilian helicopter.
- BAe/SAAB, the British/Swedish consortium supplying the jet trainers and light fighter aircraft is offering investment and the establishment of joint ventures, including technology transfers between British, Swedish and South African companies in the following sectors/industries: military aerospace (BAe Systems), civilian aerospace (Rolls Royce), mining equipment (Atlas Copco), remote control systems (Radius), household products (Electrolux), electrical equipment (ABB), spring manufacture (Lesjofors), wax production (BIM Kemi), motor vehicles (Volvo), GSM base stations (MIAB), and fish processing (Swedefish).[11]

In attempting to assess the value, and likely economic benefits of these proposed NIP offers, it is clear that many of the promised investments are highly dubious. For example the German

submarine consortium's NIP proposal (valued at nearly R19 billion) includes the construction of a stainless steel plant by German company Ferrostaal at Coega near Port Elizabeth, and the establishment of a US$10 million venture capital fund to help SMMEs in the stainless steel industry (Business Day, 14 June 1999). The steel plant will form the anchor tenant for the planned deep water port at Coega and is expected to generate 3000 jobs during the construction phase and 1000 permanent jobs once production begins (Business Day, 14 June 1999). The construction of the plant is expected to cost R6 billion, while exports and local sales are expected to generate revenues of nearly R13 billion, which is 50% lower than the initial IP estimates of R24 billion announced in November 1998 (Business Day, 14 June 1999).

South Africa already has a well-developed stainless steel manufacturing capacity. The loss-making Columbus project, which is the largest single site stainless-steel plant in the world, will have a planned output of 600 000 tonnes at full production by the end of the century; and Iscor is currently expanding its stainless steel capacity by 480 000 tonnes (Fine, 1997). In the light of these developments, and the uncertainties around export markets and the limited number of jobs (including in downstream industries) that have been created in these mega-projects, does the stainless steel plant at Coega make any economic sense? Some studies have pointed out that the world market for stainless steel already suffers from excess production capacity, that the world price of steel is too low and therefore does not make the plant viable, and that running such a plant will be highly capital intensive, and skill intensive, requiring imports of skilled people (Finance Week, 6 August 1998). It is also worth noting that the proposed job creation effects of the submarine deal, including the stainless steel plant at Coega, are significantly less than the 16 000 jobs which were originally estimated in November 1998.

In addition, Ferrostaal recently stated that ‘the submarine deal swayed the investment decision’ (quoted in Business Day, 14 June 1999). This suggests that their decision to invest in South Africa is not based on any rational investment criteria. It is also possible that many of the other foreign suppliers’ NIP offers are also based on such ‘irrational’ investment criteria. This does not bode well for the future of these projects or inspire confidence in their ability to contribute to future economic growth in the SA economy.

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[11] The details of the NIP offers are contained in a press release by the Government Communication and

The record of employment creation associated with investment in strategic industries (e.g. Armscor, Sasol, Mossgas) and massive capital-intensive mega-projects (e.g. Columbus and Alusaf) is not particularly impressive (Fine, 1997). In many of these mega-projects the potential foreign exchange earnings are never repatriated, vertical integration does not take place and the job creation effects in downstream industries are never fully realised (Fine, 1997). This does suggest that the government should be cautious of sanctioning investment in capital-intensive mega projects such as the proposed stainless steel plant at Coega to generate jobs. A more sensible strategy might be to leverage investment into sectors with a high capacity for mass employment creation and can make a positive contribution to South Africa's infrastructure capacity and towards meeting basic needs in public utilities sectors (e.g. housing, transport, tourism, energy, communication).

12. Conclusions

South Africa faces a number of economic challenges, including attracting foreign direct investment and creating jobs. In this context the government has decided to spend nearly R30 billion on imported arms for the SANDF. At no point has government considered trying to limit the purchase costs of the SANDF's acquisition programme, by simply buying the cheapest off-the-shelf weapons (or even second-hand weapons). Instead, it has invested considerable effort into negotiating offset offers from the foreign equipment suppliers to benefit the local defence related industry and the national economy.

Leaving aside the issue of whether the expenditure on arms was necessary at all on security grounds, this paper has shown that the choice of imports with offsets seems a risky one. The purported economic benefits of offsets are questionable and what little empirical evidence is available suggests that they tend to have a much smaller impact on the local economy than expected. It is very difficult to judge whether the prices are reasonable, given the fact that there are no market prices and no standardised goods in the defence market. It is also unclear whether the work attached to the offsets is genuinely new work at the same level of technology etc.

Information Service (CGIS), 15 September 1999.

The South African government has made a serious attempt to develop IP policies that reflect the lessons learned by other countries. However, there are still potential problems, which leave the promised benefits of the arms acquisition programme open to doubt. There is still the possibility of firms reneging on agreements and simply paying the agreed penalties and whether the promised inward investment will take place and generate the numbers of jobs that have been promised. In addition there is the question of capacity within government (e.g. DTI and Armscor) to monitor the implementation of the NIP and DIP offers.

The local defence industry will certainly benefit from the direct offsets and while it might struggle to retain the capabilities to produce a range of advanced weapons systems it could become a part of the global industry as sub contractor to some of the foreign equipment suppliers. There are capacity and capability problems in the areas relevant to the navy orders, which suggest that the sector will benefit little, but the local aerospace industry has the capacity and capability to benefit significantly from the Air Force orders.

Whether South Africa should be maintaining a defence industrial base at all is an important question, given the evidence that it can be a drain on the economy. Off the shelf purchases would have been cheaper and would have allowed the government to allocate the savings to encourage conversion in defence related industries. This would have allowed it to develop those areas of the economy with the highest potential for economic growth and job creation, thereby dealing more effectively with the current high levels of unemployment.

A related issue is whether government should be using its IP policies (and its human resources) to support the maintenance of a local defence production capability. It could support a strategic capability to assess and make informed choices between competing weapon systems (i.e. an intelligent customer capability). This would seem to be preferable given the costs of maintaining a local defence production capability, the current state of certain sectors of the defence industry, and the fact that the international market has relatively stagnant demand and excess capacity.

Many of the foreign suppliers' NIP offers are certainly highly questionable. It is not clear whether SA will be getting state of the art technology in areas of growth, or old technology in areas of overcapacity (e.g. stainless steel). The dangers are clear. After the economic damage the misallocation of resources to strategic industries and capital-intensive mega-projects

caused under apartheid, it is important not to make the same mistakes again. It is not clear from our survey of the issues that the implications for industrial policy implicit in some of the offset offers have been fully thought out. It is certainly the case that the alternatives have not been given adequate consideration.

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Appendix 1: National Industrial Participation Policy

The evaluation of IP proposals and the awarding of IP credits are based on the following methodology:

Objective	Methodology	Factor
Sustainable Economic Growth	Revenues accumulated over the fulfilment period	$1 = 1 Credit
Export Promotion	Export Revenues = Additional Credits	$1 = 1 Credit +LC*
Job Creation	Salaries and Wage costs accumulated over the fulfilment period	$1 = 1 Credit
Training and Development	Training and Development Costs accumulated over the fulfilment period	$1 = 1 Credit
SMME Promotion	Outsourcing to SMMEs	$1 = 1 Credit
Previously Disadvantaged Individuals	Outsourcing to PDI SMMEs PDI Ownership % x Revenues	$1 = 2 Credits $ x % = Credits
Investment	Capital outlay or capital injections	$1 = 2 Credits
R&D Expenses	All costs	$1 = 2 Credits
Technology Transfer	On a case by case basis linked to revenues	$1 = 1 Credit

Source: National Industrial Participation Policy for South Africa, Department of Trade and Industry, Pretoria, April 1997

* LC = Local Content