

12

The defense industry in Poland: an offsets-based revival?

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Introduction

In September 1999, Poland introduced mandatory offsets legislation in preparation for future acquisitions of western defense equipment. At the end of 2002, Poland embarked on two large equipment purchases: the US\$3.5 billion procurement of 48 F-16C/D from the USA and the €1.18 billion acquisition of 690 armored vehicles from Finland. Each transaction involves a major offset deal. The Finnish transaction is expected to result in vehicle production in Poland and the US purchase involves an offset package valued at over US\$6 billion. Offsets, broadly-defined to include countertrade, bundling, and local content arrangements (see Markowski and Hall, 2004a), are seen as a means of securing work for the ailing defense industry, popularly referred to by Poles as *zbrojeniowka*, arguably one of the very few remnants of Soviet-type enterprise.

Offsets are not new to Poland as communist Poland used countertrade in many of its international trade transactions with other Soviet bloc countries and many Third World nations. Toward the end of the communist era, these countertrade transactions often took the form of complex, multilateral clearing deals using international offset brokers. Many former *apparatchiks* cut their teeth on these deals and are arguably more comfortable than their western procurement counterparts when operating in the smoke-and-mirrors world of defense offset deals.

This chapter is structured as follows: the first section deals with communist-era arms production and trade, including countertrade. The second section looks at the turbulent post-communist history of *zbrojeniowka* and its current parlous state. Third, Polish offset legislation and administration is reviewed. The penultimate section deals with Polish offsets in the past two years, and the last section draws conclusions.

Defense industry and trade under communism

Soviet-style arms production

Producing national security was a key priority for every Soviet-type economy, including Poland. For larger member countries of the Soviet bloc such as Poland this implied large-scale domestic production of military equipment and consumables for the national armed forces and significant exports to other Warsaw Pact and “friendly” Third World countries in the Middle East, Africa, and Asia. After the USSR, Poland was the second largest

member of the Warsaw Treaty Organization (WTO), and so were the Polish Armed Forces. Since the late-1950s, Poland had had a relatively liberal communist regime but all key industrial sectors, and in particular the national defense industrial base (NDIB), were state-owned, centrally-planned and managed by Soviet-style industrial technocrats.

Unlike Soviet-style consumer products, which were generally poor quality, arms produced by the Soviet bloc, including Poland, had to “perform” since they were frequently battle-tested against western weapons in conflicts such as the Vietnam, Arab-Israeli, and Iran-Iraq wars. Thus, despite its economic backwardness and technological inferiority, the Soviet bloc was able to punch well above its economic weight by producing vast quantities of conventional arms for intra-bloc deployment and for export. The weapons individual Warsaw Pact countries produced were largely determined by the USSR, which maintained its military dominance within the bloc by ensuring that key weapon technologies and systems were first available to the Soviet military. Transfers of new military technologies to other bloc producers were normally permitted only when Soviet domestic production lines reached their planned capacity. As a rule, when transferred to other bloc countries, Soviet arms designs were not to be modified (Piatkowski, 2003). Generally, Soviet satellites were not allowed to develop weapon systems that might have been used by them to wrest independence from the Soviets. Nuclear weapons and strategic delivery systems were a Soviet monopoly.

Division of labor within the bloc was largely determined by Soviet-controlled agreements between member countries. Under these arrangements, different members of the Soviet bloc were allocated responsibility for particular product lines, either for a complete weapon system or parts. For example, Poland specialized, *inter alia*, in the production of main battle tanks, helicopters, and telecommunication equipment (Piatkowski, 2003). Interoperability was the order of the day and achieving scale and scope economies in weapon production was paramount. Countries such as Poland developed and maintained NDIB production capability well in excess of domestic requirements and export commitments. Production was duplicated within the bloc to minimize the risk of supply hold-ups, i.e., to prevent a potentially recalcitrant member of the bloc undermining “collective” (i.e., Soviet) security through non-delivery of a key weapon system.

Despite their dedication to internationally coordinated production, members of the Soviet bloc thought it prudent to maintain high levels of national autarchy in defense supply, in case supply lines were interrupted. The logic of “self-reliance” in domestic weapon production prevailed in larger communist countries, such as Poland, until the Soviet system collapsed in Europe in 1989–91. This doctrine of industrial “self-reliance” has remained highly influential throughout the period of post-communist transition.

The Polish NDIB under communism

During its final days under communism (1989) Poland was reported to be spending US\$18.6 billion, in 1995 prices, on defense (Nelson, 2003, tables 4.1 and 4.2, pp. 77–78). While the latter figure is an accounting distortion emanating from the lack of convertibility of the Polish zloty and, thus, the use of “artificial” prices and exchange rates, it is indicative of the high burden of defense in the national economy. (Three years later, when the Polish economy became more market-oriented and the convertibility of

the zloty was largely restored, the same US source, the Arms Control and Disarmament Agency, estimated defense expenditure at US\$3.8 billion in 1995 prices, a decline of some 80 percent.)

In 1986, defense materiel accounted for about two percent of all industrial production and, in 1989, for about 1.2 percent (Nelson, 2003, table 4.6, p. 86). The NDIB represented a significant export-oriented sector. Peacetime production was supported by exports to other Soviet bloc countries and “friendly” Third World nations such as India, Algeria, Libya, Syria, and Iraq. In 1986, Poland exported over US\$2 billion worth of military products (in constant 1996 dollars) or over 12 percent of all exports. It imported US\$1.6 billion worth of defense products (in constant 1996 dollars) or over 10 percent of all imports (Nelson, 2003, table 4.3, p. 81). However, the arms trade started to decline in the late 1980s, and in 1989, Polish military exports fell to less than US\$0.5 billion, 3 percent of all exports, and imports to US\$0.8 billion, nearly 6 percent of all imports (Nelson, 2003; constant 1996 dollars are again used).

In 1988, the Polish NDIB included 84 state-owned, specialized industrial enterprises employing 180,000 people. These mostly defense-specific enterprises were divided into a “military” group, controlled by the Ministry of Defense and managed by uniformed personnel (providing through-life logistic support, producing spare parts and consumables, and undertaking military research), and a “civil” group, controlled by civil ministries and managed by civilians (Piatkowski, 2003, p. 153). Government production entities comprising the NDIB were administered separately from other state-owned enterprises. They were centrally managed as one large defense-related sector but structured into a small number of large “product integrator” enterprises (e.g., main battle tank producers or helicopter manufacturers), each supported by a network of dedicated smaller component and materials suppliers. Many of these enterprises also produced civil goods such as motorcycles and electric sawing machines. In the late 1980s, civil goods and services accounted for 46 percent of the total output of the Polish NDIB (Nelson, 2003, table 4.5, p. 86).

Under communism, defense-related enterprises were accorded preferential treatment. They were given preferential access to raw materials and basic components, investment, R&D resources, and export markets. Pay scales were also higher than in other industries (Nelson, 2003). Many larger firms were located in small towns and provided their workers with job-related housing, health care, and child support. While this was a normal feature of Soviet-style industrial enterprises, job-related welfare benefits were particularly valuable in priority sectors of the economy (e.g., in *zbrojeniowka* and coal mining).

By the end of the 1980s, Poland produced jet trainers and helicopters, heavy armor and artillery, armored personnel carriers and other vehicles, ground-to-air missiles, small arms and other infantry weapons, a wide range of munitions, radars, communication equipment, and command and control systems, specialized logistic support equipment, small and medium-size surface vessels, and a range of engines and components. Technologically, most these products were dated as the USSR did not share up-to-date military know-how with Poland and only a handful of locally designed products were anywhere near the leading edge of military technology (Piatkowski, 2003).

Soviet-type international trade and offsets

Traditionally, Soviet bloc countries tried to insulate themselves from volatility in international trade by monopolizing and “centrally planning” their exports and imports and keeping their currencies convertible. As a result, it was relatively difficult for a Soviet-type economy to export and import. This difficulty was exacerbated by a well-known inability to produce good quality manufactures. A special effort was made to produce export-quality military products. But this required intense administrative focus and highly prioritized resource allocation and could only be done on a limited scale. On the other hand, the Soviet bloc could produce primary products in large quantities and traded them for convertible currencies in international markets. Examples included oil, gas, coal, and gold. Thus, there were two types of exports: easily exportable “hard” goods, including many military products, and not-so-easily-exportable “soft” goods (e.g., inferior quality machinery and consumer durables). Scarce hard goods were used to obtain the most critical imports while soft goods were used to pay for less important imports.

Offsets, mainly in the form of countertrade and bundling, were another systemic feature of the command economy. Intra-bloc trade to some extent involved trade in hard goods: the Soviets supplied their satellites with oil, gas, and other primary products while more industrialized nations such as Czechoslovakia and Poland paid with exports of more elaborately transformed products (e.g., trucks, machine tools, or military goods) or with other commodities (e.g., coal, uranium). However, much intra-bloc trade comprised soft or “softish” goods, and Soviet-style mercantilism involved trying to export “soft” and import “hard” goods. Further, since currencies were not convertible, either goods had to be swapped for goods (the crudest form of barter) or a reference currency such as the US dollar or the notionally transferable rouble had to be adopted to set prices and delivery terms. Western countries usually imported hard goods and paid for them in convertible currencies. But often the only way to export to the Soviet bloc was to engage in countertrade. Bundling was also used by the bloc countries to obtain limited technology transfers. Many Third World countries, such as India, experienced shortages of (convertible) foreign exchange and found Soviet-style “softish” goods (e.g., industrial machinery, weapon systems) desirable. They were also keen to engage in countertrade. Thus, offsets, and especially countertrade, were prevalent under Soviet-type international trade. This applied also to much of intra-block trade in weapon systems.¹

With such a history, it is not surprising that Poland, and perhaps other former communist countries, finds defense offsets a familiar and comfortable way of doing business. The recently agreed export of Polish tanks to Malaysia is an example of a Soviet-type offset arrangement (see below).

Post-communist transition

Decline in spending and trade

The collapse of the Soviet economic order in 1989–91 was catastrophic for the Polish NDIB (Piatkowski, 2003). Domestic sources of demand shrank by almost half, and the decline in exports was calamitous. Domestic military expenditure for 1989–97 declined in real terms (constant 1997 prices) by nearly 44 percent (from złoty 17.4 billion to 9.8 billion). In 1991, the share of military expenditure in GDP was 2.3 percent. It had decreased to a nominal 2 percent in 2000—in reality 1.5 percent since the Ministry of Defense budget had to absorb the cost of military-related health care and pensions previously borne by other sectors. New equipment acquisitions, investment in facilities, and military (in-house) R&D declined over the first post-communist decade to a low of about 12 percent of the defense budget in 2000 (from about a third in the late 1980s). The only large domestic acquisitions made during that time (PT-91 tanks and W-3 multi-role combat helicopters) had been on order since the 1980s. By the mid-1990s, exports of defense materiel accounted for only 0.2 percent of all exports or US\$40–50 million (in constant 1996 dollars). With the collapse in military capital investment, defense imports declined to zero in 1992 to “recover” to about US\$60 million (in constant 1996 dollars) in 1996—or 0.2 percent of all imports (Nelson, 2003, table 4.3, p. 81).

Decline in NDIB activity

By 1997, defense production as a percentage of all industrial production had decreased to 0.4 percent (Nelson, 2003, table 4.6, p. 86). NDIB employment declined to 135,000 in 1991, 71,000 in 1997, and 35,000 in 2001 (Piatkowski, 2003, p. 161). A 1999 ministerial directive identified 63 NDIB entities of which 38 were state-owned production enterprises, three were trading enterprises, 12 were military maintenance/repair facilities, and 10 were research and development centers (DU, 1999c). There are disagreements, however, as to which firms actually comprised the NDIB as the directive excluded a number of small, but often efficient, private manufacturing firms supplying the Polish Armed Forces (PAF) as well as some military R&D entities trading on their own account.

The huge decline in NDIB activity 1989–2000 was a product of many factors. First, the economy was exposed to import competition, the Polish złoty became convertible, and fiscal and monetary policies reduced domestic demand (Nelson, 2003). Traditional heavy industries, including *zbrojeniowka*, could not withstand the shock. Many enterprises sold their marketable assets and then borrowed heavily. The decline of *zbrojeniowka* has been most catastrophic at the local (community) level in one-factory towns. The former Soviet Union and other bloc countries themselves experienced a massive collapse in production activity and could no longer offer export opportunities to Polish industry. Second, exports to “friendly” developing countries also declined as the cold war ceased. There was a reluctance to export arms to potential enemies of NATO and the European Union, i.e., countries such as Libya and Iraq. But foreign buyers of equipment were also reluctant to purchase weapons that might not be supported in future

by manufacturers whose survival prospects were uncertain. Third, the technological gap between Polish-produced and western weapon systems widened rapidly in the 1990s. Imported equipment was technologically superior and the prospect of joining NATO meant that the PAF would have to become interoperable with other alliance members, especially the USA. It made little sense for the Polish military to buy modified Soviet legacy systems, and *zbrojeniowka* was not in a position to produce a new generation of equipment. Fourth, the civil production output of *zbrojeniowka* also declined but not as much as military products. Thus, the share of civil production in total output of *zbrojeniowka* increased to 75 percent in 1995 (Nelson, 2003, table.5, p. 86). There is clearly a question mark about the continuing military designation of several firms in this sector.

Fifth, the former cadre of defense industry managers left in control after the collapse of communism were often too old and ill-equipped to adapt to new market realities, especially in export markets. They continued to look to government to sustain their firms through domestic orders and were strongly supported by trade unions that opposed any form of radical restructuring (Piatkowski, 2003; Nelson, 2003). Sixth, industrial self-reliance continued to be regarded as a strategic imperative well into the late 1990s. Thus, several locally-designed weapon systems remained under active consideration by military planners resulting in a waste of scarce development resources on unrealistic R&D programs and the neglect of more viable production opportunities (Piatkowski, 2003). Seventh, in the post-communist transition, governments changed frequently and in the early 1990s, short-lived governments were reluctant to initiate a radical restructuring of *zbrojeniowka*. Right-of-center governments hoped for a market-led solution, including commercialization and privatization of the NDIB. Left-of-center governments were sympathetic to populist calls for sustaining the endogenous, government-owned arms industry. But there was no clear vision for the future of the PAF and the defense industry as its fourth arm.² Several transformation plans were proposed and either rejected or not implemented as governments changed (e.g., DU, 1999b). It was only Polish accession to NATO in 1999 that forced a change of attitude (see below). In 2001, a six-year plan was approved by the Polish parliament and, subject to some further modifications, is now being implemented (DU, 2001a; 2001b). And eighth, there was considerable reluctance and a great deal of inconsistency in successive governments' responses to foreign direct investment (FDI) in *zbrojeniowka*. Under the 1999 structural reform and privatization initiative, foreign investors were to be offered shares in 29 restructured defense firms with the Polish state retaining 100 percent ownership of another 6 production and 3 trading enterprises. By the end of 2001, when another government coalition came to power and changed the program, only two entities had been privatized and sold to foreign investors, both in the aerospace sub-sector (Piatkowski, 2003).³

The re-structuring program adopted by the Council of Ministers in May 2002 sanctions the formation of two “industrial (capital) groupings” (*grupy kapitałowe*), one led by a private trading entity PHZ BUMAR and the other by the Agency for Industrial Development (*Agencja Rozwoju Przemysłu*). The Polish State Treasury (*Skarb Państwa*) is to retain controlling interest in both groups (Luczak, 2003a; 2003b). Another 13 enterprises, which are not included in the two groupings, are to be privatized and the rest of the sector is to fend for itself.

NATO and European Union

The 1999 Polish membership of NATO has already forced Polish governments to provide resources for the military and adopt NATO standards in force structure development and weapon procurement. Under the six-year plan, changes in the PAF—which is to become smaller, more professional, and capital intensive—will lead the transformation of the domestic supply chain. The use of offsets to assist and/or develop domestic industry is seen in Poland as an established NATO practice which should be followed (Piatkowski, 2003; DU, 2001a).

In 2004, Poland is also expected to join the European Union (EU). While the EU is generally opposed to mandatory civil offset requirements, arms trade and defense offsets are normally exempt from the World Trade Organization Agreement on Government Procurement that most EU countries have signed.

Offset legislation and administration

Defense procurement and other related legislation

Acquisitions of military equipment, consumables, and logistic support services are regulated by the Public Procurement Act of June 1994, which applies to all public sector agencies (DU, 2002a). Under the Act, five basic principles are to apply to all public sector procurement: universality (general applicability to all public agencies), transparency, accountability, open and fair competition, and compliance with international law. Open and fair competition provides the main mechanism for ensuring that all suppliers are treated equitably and supplies are sourced on a value-for-money basis. But the 1994 Local Preference Directive applies local preference margins to give Polish suppliers a 20 percent price advantage over imports in all public sector tenders (DU, 1994). Also, the 2002 Special Public Procurement Directive (DU, 2002b) exempts defense materiel and other security-related products from certain provisions of the 1994 Act, i.e., the need to maintain transparency in defense acquisitions, the obligation to reveal deliverables, delivery schedules, and the particulars of successful tenderers, a tenderer's right of appeal, and the need to justify the use of acquisition procedures other than competitive tendering. Selective tenders dominate military acquisitions. While procurement of defense materiel must in principle comply with the provisions and intent of the 1994 Public Procurement Act, the 2002 Directive provides a waiver that could easily be used by those keen on engaging in the smoke-and-mirrors world of arms deals and offsetting arrangements. However, with Poland's 2004 accession to the European Union, progressive convergence of Polish and EU (public) procurement regulations is also envisaged under the (amended) 1994 Act.

International trade in defense materiel and other sensitive products comes under the provisions of the International Trade in Strategic and Security-Related Goods, Services, and Technologies Act 2000 (DU, 2000; DU 2001c). The Act provides a legal framework for the application of export and import controls, licensing of exporters and importers, international leasing arrangements, loans, and gifts. The Ministry of the Economy (MoE) has carriage for the administration and control of international trade in defense materiel (DU, 2002c) while military procurement is the responsibility of the Ministry of National

Defense (MoND), in particular its Armed Forces Procurement Branch (AFPB). Normally, defense materiel may only be purchased from domestic firms. Thus, foreign firms wishing to supply the PAF must seek local partners and/or licensed importers (see AMV offset below). The legislation also places restrictions on Polish producers that may deter them from seeking export opportunities (Piatkowski, 2003).

Offset legislation

The Offsets Act 1999 (DU, 1999a) requires all foreign acquisitions of military materiel above €5 million (from the same foreign supplier over three years) to provide at least 100 percent offsets in the form of compensatory transactions involving local production (content), countertrade, and/or bundling. Half the requirement must take the form of direct offsets aimed at benefitting *zbrojeniowka*. Depending on the value of an offset to the national economy, the value of the offset may be further increased (or decreased) using multipliers of 0.5 to 2 and, exceptionally, of up to 5. (For details of offset valuation and the application of multipliers see DU, 2002d.) An offset agreement cannot exceed 10 years and, once entered, neither side can terminate it. In case of contractual default, the offset provider may be liable for liquidated damages equivalent to 100 percent of the outstanding offsets obligation.

Under the 1999 Act, defense offsets are demanded to restructure and develop the Polish economy in general and defense-related industry in particular, diffuse new technologies, provide new export opportunities, create jobs, especially in areas of high unemployment, and support in-country R&D activities (DU, 1999a, article 5). Offsets arising out of a number of major foreign equipment acquisitions planned for the next few years (e.g., F-16s, AMVs) are expected by the government to provide the domestic defense industry with orders sufficient to allow it to survive in the short run, restructure, integrate into the US and west European division of labor, and develop technological competencies to make it internationally competitive in the long run. This strategy may be described as an offset-led industrial recovery.

Offset administration

Figure 12.1 shows the typical arrangement for negotiating and implementing an offset agreement. This is a particularly complex scheme involving a government-to-government agreement, as in the case of US F-16 acquisition (see below). Smaller



Figure 12.1: Illustrative offset transaction

procurement deals are likely to be less complex but may involve a Polish partner or subsidiary of the foreign prime contractor. In the figure, the Polish and US governments and the US prime contractor negotiate the purchase of a weapon system (primary transaction). Negotiations concerning the offset package are conducted in parallel. Primary contract negotiations are shown in the figure as step (a) and offset negotiations as step (b).

The negotiated offset obligation may be general, i.e., x\$ worth of offsets to be provided by the foreign prime, or specific, where a number of well-defined offset projects are agreed at the time the primary contract is signed under the Master Offset Agreement. In the general case, at step (c), the prime must arrange an offset transaction with a third party foreign offset provider and a Polish offset recipient. The prime must ensure that the value of agreed offset deliverables is sufficient to meet its offset obligation, otherwise penalties in the form of liquidated damages may apply. The MoE is responsible for overseeing offset implementation, step (d). This involves the authorization of each specific offset proposal or project and validation and/or acceptance of the associated offset credit. The latter is not related to the actual cost of offset provision and is supposed to reflect the value of the offset to the Polish economy. At step (e), the offset transaction is implemented and, when completed and audited by the Polish Offset Authority, the prime contractor's offset obligation is discharged.

Recent offset agreements

In this section we provide three examples of recent offset arrangements. Two of these, the F-16 and AMV, involve purchases of imported equipment by Poland and,

Table 12.1: F-16 master offset agreement

<i>Offset type</i>	<i>Direct offsets</i>		<i>Indirect offsets</i>	
	(1)	(2)	(3)	(4)
Purchase of goods and services	16	1.701 (22)	n/a	3.450 (45)
Technology transfer and training	5	0.740 (10)	n/a	0.537 (7)
Direct financial or in-kind contribution	5	0.199 (3)	n/a	0.291 (4)
Other	1	n/a	n/a	0.810(10)
Total	27	2.665 (34)	47	5.086 (66)

Notes: (1) and (3) number of offset obligations; (2) and (4) US\$ billion net (percent of total offset value).

Source: Holdanowicz and Hypki, 2003, p. 14.

thus, come under the 1999 Offset Act. The third is an example of offset requirements that Polish industry must comply with in its export markets.

The F-16 offset

In 2003, the Polish government agreed to buy 48 of Lockheed Martin's F-16C/D advanced air fighters for US\$3.5 billion, the largest defense contract by a former Soviet bloc member since communism's collapse.⁴ The planes are to be delivered between 2006 and 2008. To facilitate the deal, the US Congress authorized a US\$3.8 billion loan with interest-only payments during 2002–10 and repayments of principal deferred until 2011–15 (for discussion see Evans, 2003). On the Polish side, a special Aircraft Acquisition Act caps the annual cost of F-16 related debt service in 2002–10 at 0.05 percent of GDP (DU, 2001d).

At the same time an offset agreement was struck, valued by Poland at over US\$6 billion (in current dollars) over the next 10 years. Liquidated damages (penalties for failure to meet offset obligations) were a particularly sticky point in arranging the deal. A senior Polish official commented that "we understand that penalties are a key problem for Lockheed. One can imagine [the problems for] a company with US\$6 billion of potential penalties that is publicly listed" (DJ, 2003). Another sticking point was the use of multipliers. According to Polish sources, the US\$6 billion offset deal represents "a nominal value of US\$5.456 billion and indicates the government used an average multiplier at the lower end of the 1–5 range" (DJ, 2003). The marginal cost of offsets to Lockheed Martin is likely to be a small percentage of their stated net value as many obligations will be discharged by other companies.

To "nail down hard commitments," Poland proposed a package of 74 offset projects, aimed specifically at channeling resources into the biotechnology, information technology, and telecommunications sectors. Lockheed Martin preferred an "open agreement" rather than nominating specific projects (DJ, 2003). The Master Offset Agreement comprises 44 "initial" projects representing 74 offset obligations valued by the Americans at "net" US\$7.751 billion or "gross" US\$12.547 billion when multipliers are applied (Holdanowicz and Hypki, 2003). (All figures are in current dollars.) Direct offsets comprise 16 projects valued at net US\$2.665 billion (34 percent of all initial offsets), and indirect offsets 28 projects are valued at net US\$5.086 billion (66 percent of all initial offsets).⁵ This amounts to less than the 50 percent of direct offsets required under the 1999 Offset Act. Table 12.1 shows the structure of the Master Offset Agreement.

In the true smoke-and-mirrors tradition of offset arrangements, a senior Polish official valued the direct offsets at about 50 percent of US\$6 billion (Rochowicz, 2003). Estimates appear to differ as details of the deal are not available and the use of multipliers is not transparent (see Holdanowicz and Hypki, 2003; Luczak, 2003b). According to Polish officials, 51 percent of the offset package by value (US\$3 billion) represents the buyback of goods and services from Polish companies (mostly those owned by US firms). We define this as the local content offset. A further 20 percent is described as "new investment," which may also be local content but some could be described as a bundling offset. Technology transfers account for 10 percent (bundling) and the rest are exports—the countertrade offset (DJ, 2003).

US\$3 billion worth of obligations will be discharged by 2006, another US\$2 billion by 2009, and the balance by 2013 (Holdanowicz and Hypki, 2003). Liquidated damages are set initially at 4 percent for four years—not 100 percent as required under the Act—and subsequently at 3 percent. As observed by a senior Polish official, Lockheed Martin could easily elect to pay the penalty rather than discharge its offset obligations (Holdanowicz and Hypki, 2003, p. 15). This is not likely, as many countertrade and local content transactions should be quite profitable per se and the enlargement of the Polish footprint should be a profitable long-term investment for US firms.

The AMV offset

Another major transaction is the delivery of 690 armored vehicles (AMV) in 2004–13 by the Finnish Patria Vehicles, fronted in Poland by WZM Siemianowice Śląskie, which will in future assemble and part-manufacture the vehicles (Holdanowicz and Luczak, 2003). As part of the deal, the Italian Oto Melara will supply 313 turrets Hitfist 30 (for €0.3 billion). The first 40 specially modified turrets will be made in Italy and the rest in Poland. The total deal is worth €1.18 billion and is to be funded by the MoND.

The associated offset package is worth over €1.611 billion gross and comprises 71 offset projects (Holdanowicz, 2003a). Patria Vehicles will be responsible for 33 offset projects worth €1.0857 billion gross. These will involve technology transfer, the training of Polish production workers, the eventual transfer of the entire production line to Poland, and some buyback arrangements. Over 20 percent of the offset value represents the transfer of technology, 67 percent purchase of Polish goods and services, and the balance represents various forms of direct and financial investment in Poland (Holdanowicz, 2003a). The vehicle is to be progressively “polonized” with the local content to grow from about 1 percent in the first year to nearly 53 percent in 2010 (Holdanowicz and Luczak, 2003).

Otomelara and its main subcontractors will be responsible for 38 offset programs valued at €0.525 billion, of which 26 percent represent technology transfer and training, and 74 percent the purchase of Polish goods and services (local content) (Holdanowicz, 2003a).

The sale of PT-91M tanks to Malaysia

In this case Poland is an offset provider. This contract involves the sale of 48 PT-91M battle tanks and support vehicles to Malaysia in 2006–07 for US\$370.5 million (Holdanowicz, 2003b). The associated Malaysian offset requirement involves two contracts of US\$ 111 million each. The first contract comprises about 40 projects most of which have not been revealed at the request of the Malaysian buyer. They include, however, the delivery of horse breeding technology as well as some maritime surveillance technologies (Holdanowicz, 2003b). The second contract is a classic countertrade transaction and will require Poland to purchase US\$ 111 million worth of palm oil.

Conclusions

What lessons can be drawn from the recent Polish offset experience? Perhaps rather surprisingly, the experience of Soviet-style foreign trade has largely been forgotten, although, as the example of export to Malaysia shows, skills in arranging countertrade transactions have not been lost. Offsets related to the F-16 and AMV acquisitions have been seen as an opportunity to reverse the flagging fortunes of *zbrojeniowka*. The use of direct offsets in this case is similar to the use of a tariff in support of an infant industry except that it applies to firms suffering from an age-related decline (a senescent industry). In this respect, Polish offset policy is similar to that used by many west European countries to compensate their industry for the loss of business.

Unlike many other countries, Poland has taken offsets seriously and attempted to strike a good bargain by insisting on specific offset obligations tied to the primary acquisition. Polish negotiators have gone into the process with their eyes wide open, and the debate on offsets in the national media shows that the difference between promises and delivery is well understood. The underutilized F-16 assembly plant in Turkey has been compared unflatteringly with the successful Dutch and Belgian plants (Rochowicz, 2003). It is the Dutch model that has clearly inspired Polish policymakers. In the smoke-and-mirrors world of compensatory arrangements, the Poles appear to be finding their way with greater ease than most.

It remains to be seen whether direct offsets deliver on their promise and provide the basis for a sustained recovery of *zbrojeniowka*. Indirect offsets are more promising, and Finland's Nokia has been mentioned as a successful firm that did benefit from offset-related technology transfer (Choroszy, 2003). The experience of countries such as Australia, however, shows that investments in defense-related industry capabilities are difficult to sustain over time as export opportunities are limited while domestic demands are small and often very capricious (see Markowski and Hall, 2004b).

Notes

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1. During the final two decades of the Soviet bloc, most bloc countries abandoned transaction-by-transaction swapping of goods for goods and instead used bilateral clearing arrangements. These involved adopting historic prices from east-west trade—periodically adjusted—expressed in convertible currencies to calculate the value of exports and imports over a year. At the end of the year, severe imbalances often emerged as bilateral trading partners failed to

- deliver or reneged on earlier commitments and other countries became involuntary lenders (see Markowski, 1973).
2. For a discussion in Polish see Piatkowski, 2003, and for a comment in English see Nelson, 2003.
 3. PZL Warsaw-Okecie S.A., acquired by EADS, and WSK PZL Rzeszow, acquired by Pratt & Whitney (United Technologies).
 4. Poland chose the F-16 in preference to JAS-39 Gripen, offered by the BAE Systems-Saab consortium, and the French Mirage 2000–5. The acquisition cemented Poland's relations with the USA but drew criticism from EU countries who felt that Poland, an EU member-in-waiting, was more focused on its ties with the USA than those with its EU neighbors.
 5. Direct offsets will include projects such as Pratt and Whitney's (United Technologies) assembly of engines for F-16s at its PZL Rzeszow plant; Northrop Grumman's commitment to build radar systems for the plane; the purchase of aircraft parts from PZL Swidnik by companies such as Textron (Bell); the teaming agreement with Alberta Aerospace to develop the Phoenix jet trainer; Motorola's commitment to build an emergency communications network TETRA; and promises of assistance in obtaining FAA certification for and marketing of the Polish M-28 Skytruck aircraft and the W-3 Sokol and SW-4 helicopters. Indirect offsets are to include General Motor's upgrade of its Polish (Opel) car plant to treble its vehicle exports, the modernization of a fuel refinery in Gdansk, a pharmaceuticals project to produce synthesized human insulin, and work on laser research.

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