

Arms Exports and Restructuring in the Russian Defence Industry

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THE DEFENCE INDUSTRY HAS BEEN one of the industries most seriously affected by the Russian economic crisis since 1992. The main restructuring policy applied in the industry during the first years of transition was conversion, that is, trying to re-use military resources for productive civil ends. By the mid-1990s, however, such a policy was already considered a failure, and since 1997 the Ministry of Economy has taken over the running of the defence industry and changed the direction of reform. In the summer of 1999 the responsibility for the running of the defence industry was transferred to five independent agencies, and this remains the situation. From 1997 the aim was still to restructure the defence industry, but by using arms production itself as a fundamental reference point.

As in any country which is a massive arms producer, in Russia the existence of the defence industry is essentially conditioned by the supply of arms for internal use to cover the country's security needs. This is why any role arms exports could play, compared with the restructuring of the defence industry, has traditionally been overlooked. Specifically, when defence exports have been analysed, they have either been considered as a commercial flow or as a matter of international security, owing to the destination to which the arms have been sent. Scant attention has been paid, however, to the aspect of arms production itself as a factor which stimulates the defence industry's economic activity. This last point of view is more relevant as we consider the drop in production suffered by the Russian defence industry and, specifically, the fall in the domestic demand for weapons.

The aim of this article is to analyse the role of arms exports in the restructuring of the Russian defence industry. In particular, it tries to show, on one hand, whether there has been a policy related to arms exports that helped the restructuring of the defence industry and, on the other, whether arms exports have had or are having any impact on its restructuring.

In the following section the methodology used for the analysis will be established and then the main results related to weapons exports will be set out, in overall terms, client-by-client and product-by-product. Next, the impact the export policy has had on the defence industry will be explained, and finally, conclusions will be drawn as to the restrictions imposed by the exporting of weapons on the future design of the Russian defence industry and, therefore, on the arms production necessary to satisfy internal demands.

Methodology

This study analyses Russia's exports between 1992 and 2000, this corresponding to the El'tsin period, though also including the year 2000, which was essentially influenced by decisions taken earlier. The analysis concentrates on the specific export orders, especially the larger ones, and uses as its basis information made available in annuals published by the Stockholm International Peace Research Institute (SIPRI).¹ This information is filtered to eliminate any repetition or even orders not in the end completed. This is then supplemented with information from the International Institute for Strategic Studies (IISS),² as well as from some Russian sources, either semi-official or unofficial (Russian press). Next, only the weapons produced to be exported are considered, and not those coming from the Russian army, because the latter have no important implications for the defence industry. The exception to this is when those weapons are modernised before being sold, but these are small-scale modifications with a minimal impact on the activity of the companies in the defence industry.

The information base is made up of 459 export deals which have been completed, wholly or partly, since 1992. Of these, 73 comprise sales of Russian army weapons, which is to say they had been produced earlier (and are left out of the analysis), while 386 are directly related to arms manufacture. These are the really relevant ones for the defence industry as they increase the production rate in the sector. Nevertheless, from within this group of exports, those contracts signed before 1992 must be taken into separate consideration as they derive from the workings of Soviet policy³ and, although they have generated economic activity in the defence organisations during the period under consideration, their future impact on the rebuilding of the military industrial network is arguable. This group of contracts includes 76 export orders. The rest of the transactions, that is to say 310, were agreed between 1992 and 2000 and some have yet to be completed. Owing to the change brought about in March 1997 when the Ministry of the Defence Industry was eliminated and the responsibility for restructuring the industry was taken over by the Ministry of Economy, this period is subdivided into two phases: 1992–97, with 240 export contracts, and 1998–2000, with 70 contracts.

Additionally, it must be made clear that such orders include two types of export contracts, sales of weapons and the granting of production licences. As only 28 examples of this last type of contract have been recorded, it can be seen that they make up a very small proportion and also their impact on the sector is very arguable, as any quantity of financing they may signify is relatively modest. During the first period under consideration there were 19 production permits (contracts signed before 1992 but carried out, at least in part, afterwards), whereas in 1992–97 there were only five and in 1998–2000 only four registered concessions appear.⁴

The results of this analysis of Russian arms exports will be set out in two parts. First, an overall analysis of the exports will be carried out and this activity will be situated within the pattern of growth or contraction of the defence industry. Then the study will be completed by highlighting the clients (geographical areas and countries) and the products (types of weapons). In the second part, using this product information, the weapon manufacturing companies are set out. In this regard an *ad hoc*

defence company data base has been put together with special emphasis placed on the type of arms production. With this information, a list of the most important export companies has been obtained. Then, using the way the sales evolved during the nine years that make up the reference period, some conclusions will be drawn as to the use of arms exports as a tool for restructuring the defence industry. Additionally, the results will show which companies have been the most active exporters, something that will have allowed them for the most part to continue working actively and maintain their production infrastructure, thus enabling them to form the foundations of the future restructuring of the defence industry and the development of new priorities in arms production.

Arms exports in Russia

Overall view

Throughout the 1990s the defence industry was one of the sectors of the Russian economy most seriously affected by the economic crisis. During the first half of the decade the drop in output in the industry was very marked and reached its lowest point in 1998, when production only made up 19.2% of the 1991 level. Although this drop in output was the result of a contraction as much in civilian as in military production, it was the military side which was most seriously affected by the crisis and, indeed, in 1997–98 the level of military production was less than 10% of that reached in 1991. This production drop was even more serious if two factors are taken into account. First, it was military production which made up the greater part of the industry's economic activity, and second, it was an integration mechanism for the civilian production.⁵ The drop in civilian production was also a very marked one and lasted until 1998, when this activity made up 26.5% of the level reached in 1991. The fact that the drop was on such a scale was partly due to the failure of the conversion process.⁶ So, although the civilian production level dropped less than the military and has even shown itself to be more dynamic, during the period under consideration its impact on the main activity of the defence organisations was rather a secondary one.⁷

Two types of production can be distinguished within the military activity which characterises the defence industry: that destined for internal use and exports. Both explain the drop in overall military production, but it is the great reduction in domestic military procurements that determines the trend in military production. That said, arms exports also fell notably. Whereas at the end of the 1980s Russian exports came to a figure greater than \$14 billion a year,⁸ in 1992 they came to only \$2.5 billion and during the rest of the 1990s \$3.5 billion was the highest annual figure reached. Nevertheless, the export of arms began to play a prominent role for the defence industry, as it allowed the upkeep and continued development of part of the most important economic activity and gave significance to the industry's organisations. This becomes obvious on seeing the importance arms exports have in the total military production within the industry (domestic orders plus exports). At its lowest point, this percentage was 41.3% in 1994 and at its highest, 80.7% in 2000. During the period under consideration it has made up, at least, around 60% of total military

TABLE 1
RUSSIAN ARMS EXPORTS

	1991	1992	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total output of the defence industry ^a	100.0	80.4	80.4	64.6	39.2	31.2	22.7	19.7	19.2	25.5	32.0
—Military output ^a	100.0	49.5	49.5	32.5	19.9	16.6	12.8	9.4	9.9	13.5	17.5
—Civilian output ^a	100.0	99.6	99.6	85.6	52.6	41.3	29.1	28.7	26.5	34.1	41.0
Exports of military products (US\$ bn.) ^b		2.5	2.5	3.1	2.7	3.5	3.5	2.5	2.8	3.5	4.0
Exports of military products (R bn) ^b		0.5	0.5	3.1	5.9	16.0	17.9	23.1	27.2	86.5	114.4
Military domestic procurement (R bn) ^b		0.2	0.2	2.1	8.4	10.3	13.2	21.0	17.0	23.8	27.3
Total military production		0.7	0.7	5.2	14.3	26.3	31.1	44.1	44.2	110.3	141.7
Exports/total military production (%)		71.4	71.4	59.6	41.3	60.8	57.6	52.4	61.5	78.4	80.7
(a) Annual cumulative domestic military procurements (R bn)		0.2	0.2	2.3	10.7	21.0	34.2	55.2	72.2	96.0	123.3
(b) Cumulative arrears for domestic military procurements (R bn)		n.a.	n.a.	n.a.	n.a.	n.a.	15.1 ^c	17 ^d	45.6 ^e	33.0 ^f	32.5 ^g
(a – b) Real payments for domestic military procurements (R bn)		n.a.	n.a.	n.a.	n.a.	n.a.	19.1	38.2	26.6	63.0	90.8

Sources: Own calculations using:

^aJulian Cooper, 'Russian Military Expenditure and Arms Production', in SIPRI, *SIPRI Yearbook, 2001. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 2001), p. 318.

^bIJSS, *The Military Balance, 2000–2001* (Oxford, Oxford UP, 2000), p. 118.

^c*Krasnaya zvezda*, 15 October 1997, p.3.

^d*Finansovye izvestiya*, 23 July 1998, p.2; and *Russkii telegraf*, 7 July 1998, p.3.

^e*Nezavisimoe voennoe obozrenie*, 1999, 14, p.1.

^f*Vremya-MN*, 28 April 2000, p.3; and *Vedomosti*, 17 January 2002, p.A3.

^g*Vremya novostei*, 1 November 2000, p.4; and *Nezavisimaya gazetta*, 11 January 2001, p.4.

production. Therefore, owing to the modest volume of domestic military procurements, exports have played a vital role in the defence industry.

However, it is worth pointing out that exports played an even more important role if two other factors are taken into account: the arrears on state payments for completed military orders and the purchasing power associated with the possession of or the ability to obtain foreign currency. As regards the first point, during the 1990s the arrears on state payments came to a figure equivalent to domestic military procurements themselves. In 1996, for example, the accumulated arrears made up nearly half the value of the domestic military procurements accumulated since 1992 and were greater than the orders completed that year. In 1999 they represented a third of the internal military orders accumulated until that year.⁹ The accumulation of arrears led to the defence organisations losing interest in gaining military orders from the state, at the same time as there was a reduction in the impact domestic procurements had on the output of the defence industry. This last point is related to the fact that, despite receiving orders from the state, many companies were in no position to complete them owing to the cumulative deterioration of the economy and so carried out the orders inefficiently. On the other hand, given the scarcity of cash, the ability to export represented a revaluation of the activity itself (in this case, exporting) that also allowed payments to be made in cash and thus brought access to goods and services that could only be acquired with money.

These aspects point to the fact that exports represented something very important for the defence industry. However, the essential point for this study is that they allowed some sense of rhythm to be maintained in some parts of the defence industry, which enabled it to avoid some of the symptoms of economic crisis as well as the destructive phenomena associated with it. So, the export of arms became an essential element that has influenced the economic situation of part of the defence industry, and therefore its restructuring ability.

Exports client by client (countries)

Sub-Saharan Africa. Russian exports to sub-Saharan countries are highly concentrated in a few countries. First and most important is Angola, which is a traditional client country and orders armoured vehicles, as well as aeroplanes. Then there is Ethiopia, which has increased its purchases of Russian arms, particularly of aeroplanes and helicopters. Furthermore, Eritrea began to purchase a relatively significant amount of Russian imports during the second half of the 1990s. Nevertheless, one of the basic characteristics of the Russian exports to this geographical area is that the arms have practically all come from old Russian army stock.

Latin America and the Caribbean. Although exports were initially modest, this market opened up in the second half of the 1990s. The first exports were in the field of cargo aviation, and especially of helicopters. Only in a few cases has Russia managed to sell light military equipment (portable missiles) and some planes. Brazil, Colombia, Mexico and Peru are the countries from this area which have completed the most important business deals with Russia.

NATO countries in Europe and the USA. The only NATO country to which Russia has managed to sell arms has been Greece and here the sales have mainly been of anti-air defence systems. On the other hand a number of examples of collaboration between Russia and France can be observed, and although for the moment these have not produced the expected positive results, they could represent a mechanism for generating some new exports in the future.

Non-NATO European countries. The non-NATO European countries are one of the markets where Russia has lost most ground.¹⁰ In fact, it is only necessary to look at the downward trend in the volume of this geographical area's purchases, which practically stopped completely at the end of the 1990s. Not only can we find countries such as the Czech Republic, Croatia, Hungary or Poland here but also Romania and Slovakia. Bulgaria is a different case, as here Russia has maintained part of its influence, although it must be pointed out that the country's economic conditions limit its purchasing ability. On the other hand, Russia has kept up some relations with Finland and has substantially increased its exports to Cyprus (particularly tanks and anti-air systems)

Ex-Soviet republics. The break-up of the USSR brought about substantial changes in relations among the old republics of which it was composed.¹¹ As regards Russia, it can be separated into four sub-areas. First, the Baltic area consolidated its orientation towards the West, with the exception of Lithuania, which completed some purchases from Russia to begin with but subsequently stopped. This area, therefore, with only a limited need to purchase arms, is outside Russian influence. Second, the old European Soviet republics (Belarus, Moldova and Ukraine) have stopped purchasing from Russia. In Moldova's case its reduced size has turned out to be a determining factor in the cessation of orders. Belarus and Ukraine have kept their old Soviet weapons and, in some cases, have tried to compete with Russia in some arms markets, either by selling old army weapons or by being able to produce some weapons systems. Third, the Caucasus area has cut itself off from Russia, with Armenia being the only exception, as it has made some purchases from Russia, albeit a small amount.¹² Fourth, the old Central Asian republics have not all responded in the same way. Tajikistan has been at war and the economic conditions prevalent have stopped it from placing any real arms orders. Furthermore, the country is effectively a Russian protectorate and so any purchasing of arms is irrelevant. Kyrgyzstan and Turkmenistan have frozen their arms purchases, whereas Uzbekistan and Kazakhstan have carried on buying, especially aeroplanes and armoured vehicles.

Far East. The Far East represents one of the most important geographical areas for Russia as far as arms exports are concerned.¹³ During the 1990s two countries became key destinations for Russian arms exports: China and India.¹⁴ Furthermore, they will maintain this privileged position in the future thanks to the signing of agreements on long-term military collaboration between both countries and Russia which cover the sale of a wide range of weapons. Second, there is a group of countries of some importance for Russian arms exports, which includes Bangladesh, Indonesia, Malaysia and Vietnam, whose purchases are basically made up of transport

helicopters and aeroplanes. The two Koreas meanwhile are special cases. First, it must be noted that, while Russian exports to North Korea have been paralysed, South Korea has made more arms purchases from Russia. This is to say that Russia has gained access to a country whose arms supply was dominated by the USA and NATO countries. However, it must be pointed out that South Korea signed the nucleus of the Russian arms purchasing contracts in 1995 and serious doubt therefore exists about Russia's expansion into this market. Third, there is a group of countries which have placed some Russian arms orders. On one hand there are the cases of the Philippines, Sri Lanka and Singapore, who are customers but only on a small scale. On the other hand there are countries which have made some strictly sporadic purchases from Russia, such as Cambodia and especially Laos and Burma, which have limited their purchases to transport helicopters—thereby taking advantage of the good prices offered by the Russians. Together with these last countries, we have the case of Pakistan, which also made a similar purchase but is clearly not a client of Russia.

The Middle East and North Africa. During the 1990s this area represented an important market for Russia. Throughout the first half of the decade there was an important volume of sales to Iran¹⁵ but these stopped after 1995 as a result of the signing of an agreement between Russia and the USA to limit that country's military potential. However, owing to the revoking of this agreement, in the future Iran may become a very dynamic client.¹⁶ On the other hand, Russia has strengthened its commercial position in countries such as Algeria, Egypt and Syria, where it has exported arms quite frequently. The United Arab Emirates may be included in this group during the 1990s, not only for the volume but also the rhythm of its purchases, as at that time it was equipping its infantry. Yemen, which on the other hand bought no Russian armaments during the 1990s, placed some very important orders for tanks and aeroplanes in 2000. Sales to Kuwait and Turkey have been negligible.

Exports product by product

Aviation. Traditionally, the outstanding export from this area has been the MiG-29 interceptor, and indeed 97 aeroplanes were sold in 1992–99. However, in the second half of the decade sales slowed and it is only after 1998 that several more contracts have been completed (a total of 11 aeroplanes), although it is likely that some of these came from the Russian army. This trend is in total contrast to what has happened to the Su-type aeroplanes. Several lots of Su-27 interceptor aeroplanes were sold throughout the 1990s and in the second half of the decade two more contracts for sale of Su-30 MK aeroplanes to India (40 units) and to China (30 units) were completed. Second, and not so important, are exports of type An-32 Cline transport aeroplanes. The export of helicopters merits special attention. Sales of the Mi-8 transport helicopter or its modernised versions Mi-17 and Mi-171 (this being a civilian helicopter) have been massive (97, 168 and 62 aircraft respectively). The export of a dozen Mi-26 heavy transport helicopters or the light version Mi-34 should also be noted, as should the sale of several Mi-24 attack helicopters. Together with these, ten Ka-27 anti-submarine helicopters have been exported, as has its modernised version, the Ka-31 (36 helicopters).

Naval equipment. Here we can note not only the sale of Sovremennyi type destroyers, project 1135.6 frigates or Tarantul-1 class corvettes but also supplementary equipment for ships, for example guns and missile systems, as well as fire control and surveillance radars. This type of equipment is included in the ships sold but can also be sold on its own to place on craft already in service (to modernise them) or can be built in other countries, as is the case with that supplied to India. Likewise, the recent sale to Greece of Zubr type ships (also known as Pomornik) used to transport infantry troops, as well as the export of Kilo type diesel propulsion submarines (nine during the period under consideration), are important and should be noted.¹⁷

Anti-air systems and artillery. As regards anti-air systems, missile systems such as the S-300PMU1 (SA-10 according to NATO nomenclature) have been exported, but what stands out in this group is the sale of Tor-M1 short-distance missile systems (SA-15) sold to Greece, Cyprus and China. Several armoured vehicles with incorporated anti-air systems, such as the Tunguska or Pantsir, have been sold, as have some BM-23 300 mm Smerch rocket systems or some mobile artillery (such as the 2S3 Nona). Exports of light artillery, either land-to-air such as the Iгла-1 (SA-16) or the Strela-2 (SA-7) or anti-tank such as the Kornet-E (AT-14), are also significant.

Armoured vehicles. During the first half of the 1990s sales of the T-72 tank were important (472 units). At the same time the T-80 began to be exported (a total of 283 vehicles), after the Americans and British bought several of them for observation. This type of last-generation tank, however, has given way to sales of the T-90 (124 units sold to India). The sale of armoured infantry transport vehicles should also be noted, and of these, the BTR (vehicles with 8 × 8 wheels) and BMP (with a chassis equipped with a caterpillar track) are worth mentioning.

Ammunition. As far as sales of ammunition are concerned, the air-to-air missiles, such as the short-distance AA-8 Aphid at the beginning of the 1990s and the AA-11 Archer in the second half of the decade, are the most important, but the medium-range AA-10 Alamo and in some cases the AA-12 Adder are also regularly sold. Air-to-land AS-17 Krypton missiles have also been exported, albeit more sporadically, incorporated in aeroplanes' equipment, and indeed the widespread sale of this type of ammunition is linked to the export of Russian aeroplanes. The export of portable anti-air missiles (SA-16 Gimlet, SA-18 Grouse or SA-19 Grison) as well as anti-tank missiles (AT-4 Spigot, AT-6 Spiral, AT-7 Saxhorn, AT-10 Bastion or AT-11 Sniper) is also important. Lastly, the sale of sea-to-sea and sea-to-air missiles placed on ships, as well as torpedoes for the submarines sold, must be mentioned.

Arms export policy

From the previous analysis, a list of the most important weapons exported by Russia between 1992 and 2000 can be drawn up. Each weapons system can be associated with one or two organisations which are production leaders, and the identification of such organisations reveals that some 60 companies export items related to weapons construction at what can be considered an important level (see Table 2). These

companies control the financial flows linked to payment for the production of weapons for export and establish how the sub-contracts are distributed. In this study only this type of company will be considered a leader, except for those cases in which sub-systems have been sold directly by the sub-contractor (as is the case in the sale to India of equipment used to modernise ships), as these cases work in a different way. It must be pointed out that, even taking into account the main sub-contractors for each of the weapons systems, a large part of the nearly 1,700 companies which, according to official sources, make up the military industrial sector never benefit from exports: weapons exports affect a relatively small part of the Russian defence industry.

The list obtained shows up the main defence organisations which exported from 1992 to 2000. During this period, however, economic policy on weapons exports changed. From 1992 to 1997 the Russian defence industry was run by an administrative structure that was directly inherited from Soviet institutions,¹⁸ and during these years its administrative status was steadily raised until it became a ministry (Minoboronprom) in 1996. In March 1997, however, this ministry was wound up and its responsibilities taken over by the Ministry of Economic Affairs. On the other hand, weapons exporting has been subject to a specific administrative structure. The differing superior managing bodies have undergone changes since 1992, but Rosvooruzhenie, as a state monopoly dedicated to the exporting of weapons, has remained unchanged throughout nearly the whole period. There are two factors, though, which have limited the Rosvooruzhenie monopoly: first, the legal authority of a few companies to export weapons and, second, the creation in 1997 of Promeksport (specialised in the sale of old Russian army weapons) and Rossiiskie tekhnologii (directed at exporting military technology).¹⁹ It must be pointed out that in 1997 the Ministry of Economic Affairs increased its ability to influence the exporting of weapons, albeit working in combination with other administrative bodies.²⁰ Thus in 1997 there was an important change in the administration of the defence industry and in the export of weapons, which altered the focus of the policies applied in these areas.

From 1998 onwards a new way of focusing on the reforms in the defence industry has come into practice. The fundamental idea behind this reform consists of substantially reducing the size of the industry (by expelling organisations from the sector), together with a change to the internal structure (the creation of internally integrated business associations).²¹ As to the policy on the exporting of weapons, there has been a tendency to concentrate external orders in a smaller number of companies and, particularly, to assign orders to only one company from all those that could complete them. This behavioural change appears linked to the programme explicitly launched by the government, although it is not unreasonable to suppose it has been brought on by the declining production level of defence organisations during the first years of the transition.²² Additionally, given the financial restrictions, the policy outlined in the 1998 programme has been put into practice in accordance with such limitations and on the quiet, that is to say without being made public, owing to the conflict between opposing interests generated in the industrial network.

Therefore, between the beginning and the end of the 1990s there was a change in the assignation of export-based production when substitute products were concerned,

TABLE 2.
PRODUCERS OF RUSSIA'S EXPORTABLE ARMS

<i>Producers</i>	<i>City</i>	<i>Region</i>	<i>Military sector</i>	<i>Type of arms</i>	<i>Political Priority</i>
1. Admiralteiskie verfi — TsKB morskoi tekhniki < Rubin >	Saint Petersburg	Leningrad	Shipbuilding	Submarine (Kilo Class)	High
2. Arsen'evskoe aviatsionnoe proizvodstvennoe ob"edinenie (PO)	Arsen'ev	Primorsky	Aviation	Attack helicopter Ka-50 and ship to ship missile (SS-N-22 Sunbur — Moskit)	High
3. Arzamasskii mashinostroitel'nyi zavod	Arzamas	Nizhny Novgorod	Armament	Armoured personnel carrier (BTR-70, 80, 90)	High
4. Baltiiskii zavod	Saint Petersburg	Leningrad	Shipbuilding	Ship (frigates)	Low
5. Barrikady PO	Volgograd	Volgograd	Armament	Ship artillery (SA-N-7 Shtil')	Not clear
6. Dolgoprudenskoe nauchno-proizvodstvennoe predpriyatie (NPP)	Dolgoprudnyi	Moscow	Aviation	Ship missiles (Buk-M and Shtil')	Not clear
7. Finansovaya promyshlennaya gruppa (FPG) < Oboromitel'nye sistemy >	Moscow	Moscow	Radio	Air defence missile system (S-300PMU and S-125 Pechora)	High
8. Firma < Kamov >	Moscow	Moscow	Aviation	Anti-submarine (Ka-27, Ka-31) and transport (Ka-32) helicopters	High
9. GosNPO < Al'tair >	Moscow	Moscow	Shipbuilding	Ship artillery and missile (Klimok or Shtil')	High
10. Gosudarstvennoe NPP < Bazal't >	Moscow	Moscow	Ammunition	Anti-tank missile (AT-10, AT-11)	High
11. Gosudarstvennoe NPP < Splav >	Tula	Tula	Ammunition	Multiple-launch rocket system (Smerch)	Not clear
12. Gosudarstvennyi nauchno-proizvodstvennyi tsentr (GNPTS)	Korolev	Moscow	Aviation	Ship to ship missile (SS-N-25) and air to surface missile (AS-17 Kripton)	High
13. Irkutskoe aviatsionnoe PO (AVPK < Sukhoi >)	Irkutsk	Irkutsk	Aviation	Fighter (Su-27, Su-30) and transport (An-28 and An-32) aircraft	High
14. Izhevskii elektromekhanicheskii zavod	Izhevsk	Udmurtiya	Radio	Air defence missile system (SA-15 Tor-M1) and fire control radar	High
15. Izhevskii mekhanicheskii zavod	Izhevsk	Udmurtiya	Armament	Air defence missile (Igla)	Not clear
16. Izhmash	Izhevsk	Udmurtiya	Armament	Light arms and ammunition (Krasnopol')	Low
17. Kaluzhskii priborostroitel'nyi zavod < Taifun >	Kaluga	Kaluga	Shipbuilding	Ship surveillance radar	High
18. Kazan'skii optiko-mekhanicheskii zavod	Kazan'	Tatarstan	Armament	Optical instruments	Not clear
19. Kazanskoe vertoletnoe PO	Kazan'	Tatarstan	Aviation	Transport helicopter (Mi-8 and Mi-17)	Not clear

20.	KB priborostroeniya Kirovskii zavod <Mayak >	Tula Kirov	Tula Kirov	Armament Armament	Guns and anti-tank missiles Portable missile (anti-tank AT-4 Spigot) and air-defence vehicle (Tunguska and Osa)	High Low
22.	Kolomenskoe KB mashinostroeniya	Kolonna	Moscow	Armament	Air-defence missile (Strela-2, Strela-3, Iгла-1) Fighter aircraft (Su-27 and Su-30)	High High
23.	Komsomol'skoe-na-amure aviatsionnoe PO (AVPK <Sukhoi >)	Komsomol'sk on Amur	Khabarovsk	Aviation	Control fire radar for navy	Not clear
24.	Konstruktorskoe byuro (KB) <Ametist > — Zavod <Topaz >	Moscow	Moscow	Shipbuilding	Light arms and ammunition Anti-submarine (Ka-27, Ka-31) and transport (Ka-32) helicopters	Low High
25.	Kovrovskii mekhanicheskii zavod	Kovrov	Vladimir	Armament Aviation	Infantry combat vehicle (BMP-1,2,3)	High
26.	Kumertaukoe aviatsionnoe PO	Kumertau	Bashkortostan	Radio	Radar for air defence missile system (S-300 and Tor-M)	Not clear
27.	Kurganskii mashinostroitel'nyi zavod	Kurgan	Kurgan	Aviation	Air to ship and ship to ship missile (SS-N-2 Styx and SS-N-22 Sunbur-Moskit)	Not clear
28.	Mariiskii mashinostroitel'nyi zavod (Kontsern <Antei >)	Yoshkar-Ola	Mari-El	Aviation	Missiles for air-defence system (S-300, Tor-M and Osa)	High
29.	Mashinostroitel'noe KB <Raduga >	Dubna	Moscow	Space	Naval gun (AK-100 and AK-130)	Low
30.	Mashinostroitel'noe OKB <Fakel > (FPG <Oboronitel'nye sistemy >)	Khimki	Moscow	Aviation	Short and medium-range air to air missile (AA-10, AA-11, AA-12)	High
31.	Mashinostroitel'nyi zavod <Arsenal >	Saint Petersburg	Leningrad	Aviation	Aircraft radar A-50 (Airborne early-warning and control)	Not clear
32.	MKB <Vympel >	Moscow	Moscow	Radio	Artillery (2S23 <Nona-SVK >)	High
33.	Moskovskii Nauchno-issledovatel'skii institut (NII) priborostroeniya	Moscow	Moscow	Armament Ammunition	Tank and anti-tank ammunition	High
34.	Motovilikhinskii zavod	Perm'	Perm'	Radio	Aircraft radar (Kope to update MiG-21)	Not clear
35.	NII mashinostroitel'nyi institut	Moscow	Moscow	Aviation	Fighter aircraft MiG-29UB and update of MiG-21	Low
36.	NII radiostroeniya (NIIR)	Nizhny Novgorod	Nizhny Novgorod	Space	Anti-ship missile (SS-NX-26 — Yakhont)	High
37.	Nizhegorodskii aviatsionnyi zavod <Sokol >	Reutov	Moscow	Aviation	Short-range air to air missile (AA-8) Missile for navy.	Low Low
38.	NPO <Mashinostroyeniya >	Moscow	Moscow	Armament	Tank (T-80)	Low
39.	NPO <Molniya >	Moscow	Moscow	Aviation		
40.	OKB <Novator >	Ekaterinburg	Sverdlovsk	Aviation		
41.	Omskii zavod transportnogo mashinostroeniya	Omsk	Omsk	Armament		

TABLE 2.(continued)

<i>Producers</i>	<i>City</i>	<i>Region</i>	<i>Military sector</i>	<i>Type of arms</i>	<i>Political Priority</i>
42. Rossiiskaya samoletostroitel'naya korporatsiya < MiG > Rostvertol	Moscow	Moscow	Aviation	Fighter aircraft (MiG-29)	Low
43. Serpukhovskii radiotekhnicheskii zavod < Radep >	Rostov on Don	Rostov	Aviation	Combat (Mi-24) and transport (Mi-26) helicopters	Not clear
44. Severnaya verf'	Serpukhov	Moscow	Shipbuilding	Fire control radar for navy	Not clear
45. Smolenskii aviatsionnyi zavod	Saint Petersburg	Leningrad	Shipbuilding	Destroyers (Sovremennyi)	High
46. Sredne-nevskii sudostroitel'nyi zavod	Smolensk	Smolensk	Aviation	Light aircraft (Yak class)	Low
47. Sudostroitel'naya firma < Almaz >	Saint Petersburg	Leningrad	Shipbuilding	Mine-sweeping ship (Natiya)	Low
48. Sudostroitel'nyi zavod < Krasnoe Sormovo >	Saint Petersburg	Leningrad	Shipbuilding	Patrol craft and landing hovercraft (Pomornik class)	Not clear
49. Sudostroitel'nyi zavod < Vimpel >	Nizhny Novgorod	Nizhny Novgorod	Shipbuilding	Submarines (Kilo class)	Low
50. TANKT < Berieva > (AVPK < Sukhoi >)	Rybinsk	Yaroslavl'	Shipbuilding	Fast attack craft (Tarantul class)	High
51. TsNII < Granit >	Taganrog	Rostov	Aviation	Aircraft radar A-50 (airborne early warning and control)	High
52. Tulamashzavod	Saint Petersburg	Leningrad	Shipbuilding	Fire control radar for navy	Not clear
53. Tul'skii oruzhenyi zavod	Tula	Tula	Armament	Guns for ships (AK-230 and AK-630) and vehicles (BMP-3 or Tunguska)	Not clear
54. Ulian-udenskoe aviatsionnoe PO	Tula	Tula	Armament	Anti-tank missile (AT-5)	Low
55. Uli'yanovskii mekhanicheskii zavod	Ulian-Ude	Buryatiya	Aviation	Transport helicopter (Mi-8 and Mi-171)	Not clear
56. Ural'skii zavod transportnogo mashinostroeniya	Uli'yanovsk	Uli'yanovsk	Radio	Air defence missile system (Tunguska and Buk-M)	Not clear
57. Uralvagonzavod	Ekaterinburg	Sverdlovsk	Armament	Artillery	Low
58. Zavod < Dvigatel' >	Nizhny Tagil	Sverdlovsk	Armament	Tank (T-72 and T-90)	High
59. Zavod im. V.A. Degtyareva	Saint Petersburg	Leningrad	Shipbuilding	Torpedo (for Kilo class submarines)	High
60. Zelenodol'skii sudostroitel'nyi zavod im. A.M. Gor'kogo	Kovrov	Vladimir	Armament	Portable missile (anti-tank missiles—Kornet-E- and SAMs — Iglar-)	High
61. Zelenodol'skii sudostroitel'nyi zavod im. A.M. Gor'kogo	Zelenodol'sk	Tatarstan	Shipbuilding	Frigates and patrol craft	Low

Source: Own compilation.

so that it was only one company that took on responsibility for production. For this reason the list in Table 2 would be much shorter if compiled at the end of the 1990s.

There are several examples illustrating this tendency to concentrate orders. First, in the area of aviation, fighter planes are one of the most important sales. From 1992 to 1997 export orders were distributed between MiG-29 light interceptors, produced by the RSK <MiG> group, and the heavy Su-27 ones, made by the AVPK <Sukhoi> group. Between 1998 and 2000 sales of the first type fell substantially, whereas those of the second remained steady, at the same time as the promotion of the Su-30 type aeroplane led to greater sales of these. This points to the fact that there was a clear tendency in the second half of the 1990s to concentrate foreign sales around the Su models at the cost of the traditional MiG and, as a result, to support one industrial group over another.²³

As regards transport helicopters, there are two companies sharing the market and whose production is similar, the Kazanskoe vertoletnoe PO (Kazan') and the Ulanudenskoe aviatsionnoe PO (Ulan Ude). Both used to produce Mi-8 helicopters; however, the first company has specialised in constructing its modernised, more military version, the Mi-17, while the second is specialising in making a more modern, civilian model, the Mi-171.²⁴ It must be pointed out that foreign demand gives a certain dynamic rhythm to both companies, although it is possible that orders could be concentrated in one company only. As the Kazan' plant has the capacity to produce all the Mi types of transport helicopter and as its military line is more developed, the Ulan-Ude factory could possibly be removed from the defence industry.²⁵

At the beginning of the 1990s attack aeroplanes were equipped with short-range AA-8 Aphid air-to-air missiles, produced by NPO <Molniya> (Moscow), and AA-11 Archer ones, made by MKB <Vimpel> (Moscow). During the second half of the decade foreign sales of air-to-air missiles were concentrated around the second type. It must be pointed out that NPO <Molniya> is a factory specialised in space equipment and where only one active missile production line was maintained, the one corresponding to the previously mentioned AA-8 Aphid.²⁶ The MKB <Vimpel> organisation, however, is fully specialised in the design and construction of air-to-air missiles of differing ranges.²⁷ Therefore, at the end of the 1990s exports were concentrated in MKB <Vimpel> at the expense of NPO <Molniya>. There is also a production overlap in the MKB <Fakel> (Khimki, Moscow region) and MKB <Novator> (Ekaterinburg) design centres, as both are specialised in land-to-air and sea-to-air missiles.²⁸ Nevertheless, while the first centre has maintained a regular level of exports during the 1990s, and has even improved from 1998 onwards, OKB <Novator> has had a more modest export record. The use of missiles depends on the type of anti-air system used and there is not only support for producing systems whose missiles are made by MKB <Fakel> but also a tendency towards homogenisation whereby one missile can be used in several systems. This means that OKB <Novator> is in a more delicate situation and its survival could be called into question.²⁹

Another area of production overlap is that of the design and production of anti-ship missiles (air-to-ship and ship-to-ship). In this area GNPTS <Zvezda-Strela> (Korolev, Moscow region), specialised in the production of air-to-surface missiles,

exports the SS-N-25 missile,³⁰ while the NPO < Mashinostroeniya > company (Reutov, Moscow region), specialised in the production of artificial satellites, heavy and strategic missiles as well as torpedoes, constructs the anti-ship Yakhont and Al'fa missiles to be exported.³¹ In third place there is MKB < Raduga > (Dubna, Moscow region), specialised in air-to-surface missiles and producing the SS-N-22 (Moskit).³² Additionally, some of these centres' other production lines overlap with those of OKB < Novator >, and indeed some of their current products and production development lines do so noticeably. Given the country's economic situation, it is impractical to keep up all these centres and it is likely that export policy will concentrate production for foreign orders in only some of these centres. It must be pointed out that any decision making by the Russian authorities in this area is difficult owing to this type of company's high level of specialisation, the comparatively notable technical progress (notable in relation even to NATO member countries) and the great power enjoyed by the production centres.³³

As to the export of armoured vehicles, only two of the different models produced in Russia have been sold since the beginning of the transition period: the BMP (with caterpillar tracks) and the BTR (wheeled). One important case is that of armoured vehicles with caterpillar track used for transporting infantry, and particularly the fact that sales of the BMD produced in the Volgogradskii traktorny zavod (Volgograd) have been displaced, so that although such models are still offered, this seems to be a mere formality.³⁴ The sales of this type of vehicle have been concentrated in the Kurganskii mashinostroitel'nyi zavod (Kurgan) factory where the BMP are made.³⁵ There appears to have been a decision, therefore, to promote sales of the BMP only, to the detriment of the BMD. Tanks are another important export line and two factories have covered export orders since 1992. On one hand there is Uralvagonzavod (Nizhnii Tagil, Sverdlovsk region), producer of the T-72 and the T-90, and on the other there is Omskii zavod transportnogo mashinostroeniya (Omsk), which made the T-80. Up to 1996–97 the industrial policy pursued was characterised by the sharing out of orders between both companies, but from that time on there has been a substantial change in that exports have been concentrated in the first factory, to the cost of the second, which has lost its orders.³⁶ This situation has been made quite clear with the repeated offers of the T-90 tank by Rosvooruzhenie, which have ended in the sale of an important batch of these tanks to India.³⁷

The fleet, and specifically the production of submarines, provides an example of the change in export policy. Up to 1996 orders for diesel-powered submarines were assigned either to Admiralteiskie verfi (Saint Petersburg) or to Krasnoe sormovo (Nizhny Novgorod). From that year on foreign orders have been covered only by the former. Problems also arise in the area of military ships.³⁸ First, exports of small ships have been concentrated among a very reduced number of companies.³⁹ Of the three that have sold to foreign countries, Zelenodol'skii sudostroitel'nyi zavod im. A.M. Gor'kogo (Zelenodol'sk, Tatarstan)⁴⁰ has lost export orders and, as to the other two exporters, Sudostroitel'nyi zavod < Vimpel > (Rybinsk, Yaroslavl' region) and Sudostroitel'naya firma < Almaz > (Saint Petersburg), it seems that exports of small ships (motorboats and patrol boats) will be concentrated in the first of these in the future.⁴¹ Second, as regards large ships, there were three traditional shipbuilders: Zavod < Yantar > (Kaliningrad), Baltiiskii zavod (Saint Petersburg) and Severnaya

verf' (Saint Petersburg). However, in 1997, when foreign demand began, the first of these three companies was excluded from any military exports.⁴²

One of the defence industry's most important restructuring lines is the tendency to concentrate foreign orders in the organisations which deal with domestic weapons orders. Indeed, this concentration of military orders deprives organisations of their status as members of the defence industry.⁴³ In this way, the burden of arms production will fall more heavily on the organisations which are members of the defence industry, but the financing will come not only from domestic sources but also from the export of weapons. Although with this latter method of financing the financial flow may be indirect (as the business administration is carried out through an intermediary state company such as Rosvooruzhenie or Rosoboronekспорт and the revenue gained from exports is initially included in the state budget), organisations involved in exporting arms will nonetheless receive financial resources to enable them to complete the orders and thus sustain part of their output, if the aim is to maintain the capacity to export.

Given the relative scarcity of domestic financing, the inflows resulting from exports are essential for the organisations' survival.⁴⁴ It seems likely that a restructuring policy which uses domestic finances to back those high-priority armament programmes that cannot receive foreign financing (for example, nuclear missiles) will be pursued. Likewise, those organisations that develop high-priority programmes that do have the capacity to export may receive state financing. However, for these last programmes (and organisations), as well as for those of medium or low-level priority, the financial flows resulting from exports will be important. Indeed, those organisations whose production is only of medium or low-level priority will not be able to survive if they do not export. It is likely, furthermore, that arms producers of medium or low-level priority for the state and with the capacity to export will oust those with no possibility of selling on the foreign market from the scale of government priorities.

Domestic priorities, therefore, seem to be conditioned by exports, either at the moment of choosing between alternative weapons systems or by eliminating armaments which do not have sufficient financial backing, and to this end it is useful to point to two conditioning factors that limit internal decision making. First, weapons systems may be developed to order and then adopted by the Russian army itself. Such is the case with the development of modernised versions of the Su-30 aeroplane, but the Su-34 development programme may be stopped. Second, Russia may collaborate in the development of other countries' weapons systems, later to incorporate them into the Russian army. There are several cases of just such collaboration,⁴⁵ but one successful example has been that begun in 1998 between NPO < Mashinostroeniya > and an Indian company to modernise the SS-NX-26 (Yakhont) shipboard missile, which seemingly will result in missile production for Russia as well as India.⁴⁶ In both cases part of the definitive shape of the defence industry seems to be conditioned by foreign needs, at the same time as there has been a change in the traditional Soviet aim of being at the forefront of the armaments field, which has developed into the conception of shared military technology.

On the other hand, it must be underlined that the exclusion of organisations, particularly those of low priority for the state, will not be immediate, especially when

they have a genuine export capacity. This is to say that, in this case, a contradiction between domestic and foreign priorities would arise. In this type of situation the organisations may be permitted to engage in foreign collaboration or exports and, if the company survives, its position within the defence industry would subsequently be reconsidered.

What is clear is that one of the most important lines in the industry's restructuring policy is that of concentrating orders, particularly export orders, in one group of weapons systems and the cessation of orders for other similar ones. That means that any duplication in arms production is being avoided. The advantage of this policy revolves around the fact that, although there is less variety of production, the country's defensive capacity is not reduced. However, it means paralysing the production of an important number of organisations, not only of those responsible for the production of the weapons system as a whole but also the different sub-contracted companies. Therefore, this policy is becoming a very powerful tool in the restructuring of the defence industry, as it leads to the exclusion of a significant number of production organisations.

Nevertheless, in the current situation there are several factors that may limit the contribution of exports to the restructuring of the defence industry. First, there is the fact that most of the financing derived from exports is lost in the state intermediaries and the state budget, so that the producers themselves are left without financing. Second, there is the rivalry that exists in the army over the resources linked to arms exports, either because the funds resulting from exports go towards reorganising the army or because the sale of weapons from old army stock is promoted instead of new production. Third, export reorganisation partly depends on decisions made by the central authorities but influenced by the defence organisations themselves.⁴⁷ On one hand, pressure from below may change state policy on the defence industry's restructuring and, on the other hand, it may bring about confrontations between business groups which, if they go on for any length of time, could be very destructive for the groups in question. Among the most recent business conflicts has been one caused by TsKB <Almaz> design centre, which was one of the most important centres in the GFI <Oboronitel'nye sistemy> group, which had been designated by the Russian authorities as the leading group in the construction of anti-air systems. Recently the design centre has left the group, thus calling the group's existence into question, and has joined its main competitor, Kontsern <Antei>, creating the new industrial group <Almaz-Antei>.⁴⁸ Another example of this conflict is the confrontation between the large-scale ship builders Baltiisky zavod and Severnaya verf'. The latter is beginning to receive state orders for ships and, therefore, is becoming the essential company in the defence industry in this field. At the end of 2001 and beginning of 2002 a dispute arose over the assignation of an order for two destroyers to be exported to China,⁴⁹ which would result in Severnaya verf' being consolidated as leader in this area of the defence industry. This is the reason why the conflict between the two companies has become markedly more serious and may alter the initial decisions taken by the Russian authorities.

Conclusions

1992 saw the start of a very important reduction in the defence industry's level of military output. This was due to the fall not only in domestic armaments demand but also in the volume of exports. The reduction in both types of demand has given exports a strategic value in the maintenance of economic activity in part of the defence industry. Those organisations that have managed to export have become the industry's most dynamic focal points, due to the fact that such production has meant that the effects of the decline in output have been softened. After nearly ten years, the Russian defence industry's production capacity is in very bad health, but the situation in those companies most closely connected to exporting is better. This is the reason why such companies form an essential part of the nucleus of the future defence industry and what they produce (type of weapons built) is the basis of future production, even that used to meet domestic needs. Therefore, weapons exports represent an economic restriction that will condition the make-up of the future military priorities and the restructuring of the defence industry.

As a consequence of the change in how exports and the defence industry are organised, two time periods can be distinguished on the basis of the policy put into practice. During the first, 1992–97, the policy in place was one conditioned by the Soviet inheritance and characterised by the distributing of foreign orders among several of the companies able to meet them. As a result, exports did not become a mechanism for slowing down the fall in output suffered by the defence companies. From 1997 onwards, in spite of the fact that there has been no explicitly stated export policy, a certain regularity in the behaviour of the Russian authorities (export policy carried out in practice) has been revealed simply by observing the facts. To be specific, the tendency arose to concentrate export orders in only one of the possible producing companies. This policy is a very controversial one and, therefore, has been put into practice *de facto* but not *de iure*, which is to say there has been no explicit statement.

The motivation for the export policy is a evidently a combination of political decisions and economics factors. When multiple producers of a similar type of weapon exist, one of the producers is selected; however, in cases when external demand has been concentrated on a type of weapon, this economic factor conditions the political decision. In cases where there are both product differentiation and a certain external demand, the political decision is postponed, as shown in Table 2 (political priority column).

Therefore, the companies in which export orders are being concentrated will go on to constitute one of the most important pillars of the future Russian defence industry. Furthermore, their products will be the basis on which domestic needs are covered and some of the most important Russian arms development programmes are established. The policy of weapons exports has thus been used as an economic tool to restructure the defence industry and, in the future, it seems that it will play a much more dynamic role in this regard.

¹ SIPRI, *SIPRI Yearbook, 1993. World Armaments and Disarmament* (Oxford, Oxford UP, 1993); SIPRI, *SIPRI Yearbook, 1994* (Oxford, Oxford UP, 1994); SIPRI, *SIPRI Yearbook, 1995. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 1995); SIPRI, *SIPRI Yearbook, 1996. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 1996); SIPRI, *SIPRI Yearbook, 1997. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 1997); SIPRI, *SIPRI Yearbook, 1998. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 1998); SIPRI, *SIPRI Yearbook, 1999. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 1999); SIPRI, *SIPRI Yearbook, 2000. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 2000); and SIPRI, *SIPRI Yearbook, 2001. Armaments, Disarmament and International Security* (Oxford, Oxford UP, 2001).

² Boris Kuzyk *et al.*, *Rossiia na mirovom rynke oruzhiya* (Moscow, Voennyi parad, 2001); International Institute for Strategic Studies (IISS), *The Military Balance, 1996–1997* (Oxford, Oxford UP, 1996); and International Institute for Strategic Studies (IISS), *The Military Balance, 2000–2001* (Oxford, Oxford UP, 2000).

³ Yurii Kirshin, 'Conventional Arms Transfers during the Soviet Period', in Ian Anthony (ed.), *Russia and the Arms Trade* (Oxford, Oxford UP, 1998), pp. 38–70; and Ian Anthony, 'Economic Dimensions of Soviet and Russian Arms Exports', in Ian Anthony (ed.), *Russia and the Arms Trade* (Oxford, Oxford UP, 1998), pp. 71–92.

⁴ The economic impact of the most recently granted licences may be arguable as they could limit Russia's capacity to export. This is the case with the granting of a production licence to India for Su-30MK aeroplanes, which could call Russian exports of this class of aeroplane into question after 2003.

⁵ Julian Cooper, 'The Civilian Production of the Soviet Defence Industry', in R. Amann & J. Cooper (eds), *Technical Progress and Soviet Economic Development* (Oxford, Basil Blackwell, 1986), pp. 31–50.

⁶ Antonio Sánchez-Andrés, 'The Transformation of the Russian Defence Industry', *Europe-Asia Studies*, 47, 8, December 1995, pp. 1269–1292.

⁷ For some defence organisations, which have traditionally had a smaller role to play in military production, civilian activity has permitted them to reactivate part of their production capacity. In many cases the development of new civilian activities has brought about the creation of small businesses within the large defence organisations, so that growth in production has not been beneficial to the defence company as a whole. The development and impact of civilian production on the defence industry are not, however, the subject of this article; on this issue see Antonio Sánchez-Andrés, 'Privatisation, Decentralisation and Production Adjustment in the Russian Defence Industry', *Europe-Asia Studies*, 50, 2, March 1998, pp. 241–255.

⁸ SIPRI, *SIPRI Yearbook 1993*, p. 444.

⁹ Other information about this aspect appears in Viktor Tema & Vasilii Potapenko, 'Voenno-ekonomicheskaya bezopasnost', *Svobodnaya mysl'-XXI*, 2001, 10, p. 73.

¹⁰ Irina Kobrinskaya & Peter Litavrin, 'Military-Technical Cooperation Between Russia and Countries of East-Central Europe', in Anthony (ed.), *Russia and the Arms Trade*, pp. 177–193.

¹¹ Alexander Sergounin, 'Military-Technical Cooperation Between the CIS Member States', in Anthony (ed.), *Russia and the Arms Trade*, pp. 146–176.

¹² However, it must be pointed out that there has been a relatively sizeable illegal sale of weapons to Armenia, although the weapons came from the Russian army; see Ian Anthony, 'Illicit Arms Transfers', in Anthony (ed.), *Russia and the Arms Trade*, pp. 224–225.

¹³ Alexander Sergounin & Sergey Subbotin, *Russian Arms Transfers to East Asia in the 1990s* (Oxford, Oxford UP, 1999).

¹⁴ Alexander Sergounin & Sergey Subbotin, 'Sino-Russian Military-Technical Cooperation: A Russian View', in Anthony (ed.), *Russia and the Arms Trade*, pp. 194–216; and Aleksandr Mazin, 'Gorizonty VPK Rossii', *Svobodnaya mysl'-XXI*, 2001, 11, pp. 56–69.

¹⁵ *Military parade*, January–February, 1995, pp. 10–11.

¹⁶ *Nezavisimoe voennoe obozrenie*, 2001, 1, p. 6.

¹⁷ Vladimir Lyashchenko, 'Rossiya v mirovoi trgovle oruzhiem: bor'ba za <mesto pod solntsem>', *Voennyi parad*, 2000, 6, p. 12.

¹⁸ Antonio Sánchez-Andrés, 'The First Stage of Privatisation of the Russian Military Industry', *Communist Economies & Economic Transformation*, 7, 3, September 1995, pp. 353–367.

¹⁹ Rosvooruzhenie was created in 1993 and disappeared at the end of 2000, when it was merged with Promeksport to create Rosoboroneksport. It must be pointed out that at that moment Promeksport (in April 2000) had taken over Rossiiskie tekhnologii; see 'Ukaz prezidenta RF <O sozdanii kompanii po eksportu i importu vooruzhenii <Rosvooruzhenie>', no. 1932, 25 November 1993; 'Ukaz Prezidenta RF <O reorganizatsii federal'nogo gosudarstvennogo unitarnogo predpriyatiya

<Promeksport> v forme prisoedineniya k nemu federal'nogo gosudarstvennogo unitarnogo predpriyatiya <Rossiiskie Tekhnologii>', no. 750, 27 April 2000; 'Ukaz prezidenta RF <O sozdanii federal'nogo gosudarstvennogo unitarnogo predpriyatiya <Rosoboroneksport>', no. 1834, 4 November 2000; and Vladimir Kudashkin, 'Voenno-tekhicheskoe sotrudnichestvo', *Svobodnaya mysl'*, 1998, 8, pp. 56–67.

²⁰ Vladimir Lyashchenko, *Torgovlya oruzhiem v Rossii: nekotorye voprosy organizatsii i ekonomiki* (Moscow, Novyi vek, 2001), pp. 108–112.

²¹ Antonio Sánchez-Andrés, 'Restructuring the Defence Industry and Arms Production in Russia'. *Europe-Asia Studies*, 52, 5, July 2000, pp. 899–902.

²² The results of an analysis of the situation and behavioural changes in the Russian defence industry can be found in Alexei Izyumov, Leonid Kosals & Rosalina Ryvkina, 'Defence Industry Transformation in Russia: Evidence from a Longitudinal Survey', *Post-Communist Economies*, 12, 2, June 2000, pp. 215–228; Alexei Izyumov, Leonid Kosals & Rosalina Ryvkina, 'Privatisation of the Russian Defence Industry: Ownership and Control Issues', *Post-Communist Economies*, 12, 4, December 2000, pp. 485–496; and Alexei Izyumov, Leonid Kosals, Rosalina Ryvkina & Yurii Semagin, 'Market Reforms and Regional Differentiation of Russian Defence Industry Enterprises', *Europe-Asia Studies*, 54, 6, September 2002, pp. 959–974.

²³ This decision means the removal not only of the SRK <MiG> group from the defence industry but also of one of the main MiG aeroplane producing companies, not integrated in the group, Nizhegorodskii aviatsionnyi zavod <Sokol>. This company sold 22 aeroplanes between 1992 and 1996 but only exported a total of three from 1997 to 2000 (see *Izvestiya*, 15 January 1999, p. 4; and *Kommersant*—Daily, 15 October 1999, p. 5). However, in this case, the loss of priority for the group is due more to a fall in external demand than to a previous political decision.

²⁴ Leonid Belykh, 'U-UAZ — 60 let v stroyu', *Voennyi parad*, 1999, 4, pp. 28–29; and Vladimir Spasibo, 'Restrukturizatsiya oboronno-promyshlennogo kompleksa', *Vlast'*, 2001, 7, p. 33.

²⁵ It must be pointed out that the production capacity of these factories is 60 units in Kazan' and 50 in Ulan Ude; see *Kommersant*—Daily, 13 October 1999, p. 5.

²⁶ *RIKA*, 1994, 2, pp. 2 and 3.

²⁷ *Nezavisimoe voennoe obozrenie*, 1997, 43, p. 6; and Kuzyk *et al.*, *Rossiya na mirovom rynke oruzhiya*, pp. 653–655.

²⁸ *Voennyi parad*, 1997, 6, pp. 119–121.

²⁹ Vladimir Svetlov, 'Mashnostroitel'noe OKB <Fakel> imeni akademika P.D. Grushina', *Vooruzhenie. Politika. Konversiya*, 1999, 1, pp. 31–35; and Pavel Kamnev & Nikolai Klein, 'Rossiiskaya ZRS S-300V Amerikanskii ZRK <Patriot>: Kto vpered?' *Voennyi parad*, 1997, 6, pp. 119–121.

³⁰ Yurii Novikov, 'Rakety nauchno-proizvodstvennogo tsentra <Zvezda-Strela>', *Vooruzhenie. Politika. Konversiya*, 1997, 1, pp. 29–33.

³¹ 'Rasporyazhenie pravitel'stva RF', no. 1846-r, 31 December 1997; and Steven J. Zaloga, 'Russia's Enigmatic Gem: the Yakhont/Oniks Supersonic ASM', *Jane's Intelligence Review*, 10, 2, February 1998, pp. 17–20.

³² *Nezavisimoe voennoe obozrenie*, 2000, 22, p. 6.

³³ Aleksandr Grebenok & Vladimir Bezmenov, 'Novoe polozhenie rossiiskikh kompleksov s protivokarabel'nymi krylatymi raketami', *Voennyi parad*, 2000, 5, pp. 32–34.

³⁴ Valerii Khvatov, 'Chempiony v legkom vese', *Voennyi parad*, 1999, 4, pp. 92–93.

³⁵ *Voennyi parad*, 2000, 4, pp. 39–43.

³⁶ In this case the concentration of export orders in the company in Nizhny Tagil is due to political rather than economic decisions.

³⁷ Steven Zaloga, 'T-90: The Standard of Russian Expediency', *Jane's Intelligence Review*, 9, 2, February 1997, pp. 58–64; and *Kommersant*—Daily, 3 November 1999, p. 3.

³⁸ *Kommersant*—Daily, 13 December 1995, p. 9; and *Nezavisimoe voennoe obozrenie*, 1999, 19, p. 1.

³⁹ In fact, other companies such as Khabarovskii sudostroitel'nyi zavod (Khabarovsk) or Sosnovskii sudostroitel'nyi zavod (Sosnovka, Kirov region) have been left out of the export business in spite of having production levels similar to those companies that have exported.

⁴⁰ *Vremya novosti*, 8 February 2001, p. 5.

⁴¹ Aleksandr Shlyakhtenko & Valer'yan Korol'kov, 'Raketnye korabli na vozduzhnoi podushke proekta 1239 <Sivuch>', *Voennyi parad*, 2000, 5, pp. 36–39; *Voennyi parad*, 1999, 4, pp. 128–129; and *Kommersant*—Daily, 11 July 1998, p. 4.

⁴² To be precise, the order was for three frigates for India, construction of which was assigned to Baltiiskii zavod, and two destroyers for China built by Severnaya verf'; see Oleg Shulyakovsky,

‘Eksportnye fregaty stroyatsya na baltiiskom’, *Voennyi parad*, 2000, 5, pp. 28–30; *Ekspert*, 1999, 16, p. 42; *Ekspert*, 2002, 1–2, p. 50; *Kommersant*”-Daily, 21 January 2002, pp. 1 and 4.

⁴³ Furthermore, and as is pointed out in the 1998 law on conversion, it is foreseeable that the conversion funds will also be concentrated in the organisations of the defence industry itself in order to diversify and maximise its production capacity and guarantee its survival; see ‘Federal’nyi zakon < O konversii oboronnoi promyshlennosti v Rossiiskoi Federatsii >’, no.60-FZ, 13 April 1998.

⁴⁴ Compared with the Soviet period, there is a strategic change in the role played by exports within the defence industry; see Kelvin O’Prey, *Cooperation Approaches to Export Management and Defense Conversion* (Washington, DC, Brookings Institution, 1995), p. 5.

⁴⁵ Of these, the construction of the Mi-38 transport helicopter, the Ka-50-2 attack helicopter and the MiG-AT and Yak-130 military training aeroplanes are the most significant; see *Nezavisimaya gazeta*, 30 April 1999, p. 6; *Kommersant*”-vlast’, 2000, 40, pp. 24–26; and Maksim Pyadushkin, ‘< Nepravil’nyi > postavshchik’, *Delovye lyudi*, 2001, 120, pp. 82–86.

⁴⁶ Michael Jasinski, ‘Russia and India Step Up Cruise Missile Co-operation’, *Jane’s Intelligence Review*, 14, 3, March 2002, pp. 34–36; and Rahul Bedi, ‘India, Russia Test Fire PJ10 Anti-ship Cruise Missile’, *Jane’s Defence Weekly*, 37, 20, 15 May 2002, p. 16.

⁴⁷ Anatolii Yanukevich, ‘Voennaya ekonomika v period reform’, *Vlast*’, 2001, 9, p. 48.

⁴⁸ *Ekspert*, 2001, 25, p. 4; and *Ekspert*, 2002, 14, pp. 30–31.

⁴⁹ *Kommersant*”-Daily, 21 January 2002, pp. 1 and 4; and *Kompaniya*, 2002, 11, p. 17.