
8. Russian defence firms and the external market

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I. Introduction

In the Soviet period practically all the economic activities of enterprises were centralized. They were the preserve of sectoral ministries and departments, to which enterprises were strictly subordinate.¹ If this was the case for domestic state orders, it was even truer for relations with foreign clients, which were the exclusive prerogative of central government. More generally, the effectiveness of defence enterprises was not judged in terms of their earning money but rather in terms of how efficiently they were able to meet deadlines and fulfil targets established by the central planning authorities. Performance was the key to future financing and development but it was not measured according to market principles.

It is true that under the previous system military–scientific production complexes played a significant role in the state defence procurement system. In parallel with these military–scientific complexes, enterprises also coordinated the manufacturing development of new products, participated in working out production plans and pursued quality assurance on behalf of the state. However, interviews with defence industry managers confirm that the old procurement system was highly centralized and formal and lacked certain forms of systematic information exchange. For example, the failure to identify existing or overlapping capacities led to the development of duplicate facilities to meet different state orders. There was little emphasis on identifying areas of potential horizontal cooperation between enterprises.

After the dramatic changes which occurred in Russia after 1989–90, both these basic conditions changed. Domestically, there has been a major shift away from the principle that the government alone should set the priorities for arms production. Within the Russian industrial sector in general there are now enterprise-level initiatives regarding the development of production profiles, market research and the search for industrial partners, customers and suppliers. The sector which produces arms and military equipment has also seen the emergence of enterprise-level initiatives. At the same time, both the manufacturing sector and trading companies that specialize in selling products that they

¹ See chapter 3 in this volume.

* This chapter draws on the results of a research project funded by the British Economic and Social Research Council on the economic transformation of the Russian defence sector, for which interviews with defence industry managers were carried out by the author in St Petersburg, Nizhny Novgorod and Sverdlovsk Oblast in 1994–95.

do not themselves manufacture have acquired some rights to operate in international markets.

There has been a very significant structural shift within the Russian defence industry brought about by privatization, changed company status, and the gradual formation of financial–industrial groups and transnational companies. Overall, there has been a major shift in terms of the discretion available to enterprise directors and a corresponding decrease in central control. It is true that the process of privatization (or the preparations for privatization) have not been as far-reaching in the defence sector as in other areas of economic life. However, some of the new patterns of behaviour can also be observed in enterprises still wholly owned by the state. The most important factor has been the apparent inability of the central authorities to exercise coordination or regulation in a consistent or effective manner within those enterprises that they still own. While the old instruments of state control have been transformed or eliminated, no new system has emerged to replace them.

The directors and chief designers who were interviewed for the research on which this chapter is based were careful to emphasize that the old system, while rigid and bureaucratic, was characterized by clear-cut laws and rules regarding the relations between different levels in the hierarchy. The dismantling of the system took away from most defence enterprises the pool of knowledge and experience of external economic activities. They lacked information about both supply and demand in the international and domestic markets. To this was added a new lack of information and clarity regarding the government's own procurement strategy. For defence enterprises, therefore, survival depended not only on the technical parameters of the firm, but also on the ability of directors and specialists to adapt and reorganize to meet the challenge of these changed circumstances.

No clear picture has emerged of this element of Russia's industrial base. There remain major gaps in our understanding resulting from the lack of clarity as regards central issues such as ownership patterns and the financial mechanisms and operations whereby defence enterprises manage to survive.

It could be concluded that, far from being directed by the state, the strategic management of defence enterprises has in effect gone underground. At present the reality of defence industry management can only be described effectively by case-study methods, as quantitative measurement is likely to be unreliable and is unlikely to develop sufficiently complex categories of data. However, since the operations of enterprises are frequently convoluted and often seem to be specific to a particular case, no single instance can serve as a basis for generalization.

This chapter offers a tentative assessment of how some enterprises have reacted to the new conditions with special attention to the external dimensions of their economic activities. This includes both industrial cooperation and foreign sales. However, it is first necessary to describe briefly the domestic conditions in which the new Russian managers have had to construct their business strategies.

II. Confusion in state defence procurement

As explained in chapter 3, military production for domestic and foreign customers was integrated into a single state order during the Soviet period. Within that overall state order, the needs of the Soviet armed forces were the most important element.

According to interviews in a series of defence enterprises in St Petersburg, Nizhny Novgorod and Sverdlovsk Oblast, as well as in federal and regional policy-making bodies and financial institutions, at present orders from the Russian Government are no longer seen as desirable by industry, on account of chronic late payment. Moreover, whereas with commercial orders the only limit on what may be paid to employees is the size of the order itself, with government orders there is a stipulation that no one may earn more than six times the minimum wage—which is itself hardly attractive. The state has thus increasingly come to be seen as a short-sighted and untrustworthy partner in business. Worse still, enterprises which work on state orders have become notorious for causing delays in the supply chain because of their financial paralysis due to non-payment by the government. As a result, enterprises which are not working for the government have become unwilling to deal with those that are. This is one factor which helps to explain the slow pace of integration of defence enterprises with other sectors of the economy (which have already left the system of dependence on state orders, with its associated problems) as well as some of the difficulties faced by defence enterprises attempting to enter the open market.

The domestic procurement process

One of the peculiarities of the procedure for issuing state procurement orders for defence is that these are set out before the start of the calendar year, and therefore before the finance to pay for equipment ordered has been appropriated. The customers of the Russian defence industry include not only the Ministry of Defence but also the Ministry of Atomic Energy, the Ministry of the Interior, the Federal Security Service, the Federal Border Troops and the merchant fleet. The power of procurement is now placed with these ministries rather than with the State Committee on Defence Industries (later the Ministry of Defence Industry and the Ministry of the Economy), which assists with the identification of suppliers and coordination of horizontal ties between enterprises.² Agreements on annual equipment requirements are concluded with the leading enterprises concerned and the enterprises, for their part, now conclude agreements with suppliers of components, raw materials and energy. What is supposed to happen next is for the combined state defence order to be confirmed in the state budget and the necessary funds appropriated.

² 'Industrial restructuring and defence conversion in Russia', TACIS [Technical Assistance to the Commonwealth of Independent States] and the Commission of the European Communities Delegation in Moscow, Moscow, May 1995, p. 6.

Table 8.1. Official Russian defence budgets, outlays and deficits/surpluses, 1992–95
 Figures are in current m. roubles.

Year	Defence budget	Defence outlay	Deficit/surplus
1992	384	855	471
1993	8 327	7 210	– 1 117
1994	40 626	28 028	– 12 598
1995	59 379	47 600	– 11 779

Source: International Institute for Strategic Studies, *The Military Balance 1996–1997* (Oxford University Press: Oxford, 1996), p. 108.

This system has not been revised in line with the realities of a more stringent financial climate. In the years 1992 and 1993, state defence orders were not reduced in line with reductions in the defence procurement budget, although this was explicable by the fact that the budget was not agreed until months after the initial deadline. At this stage it was clear that issues of military manpower and spending on equipment were secondary to macroeconomic objectives such as control of state expenditure.³ In 1994 the budget was not agreed until August for similar reasons and in 1995 the budget was agreed in March but subsequently revised twice towards the end of the year.⁴

To add to the problems of industry, not only are some agreements not funded but the money which is allocated to defence within the framework of the national budget is not always paid in full. According to the data in table 8.1, the defence budget has not been paid in full since 1992.

As a result of these failures to pay out budgeted funds to meet commitments, there is a large mismatch between orders issued, finances assigned and defence production. More is being produced than has been ordered but not necessarily according to any logical set of priorities. As the money runs out, some production which would have been deemed necessary is not taking place, whereas much that would perhaps have been regarded as unnecessary is produced. Customer–supplier relationships throughout the defence industry have become characterized by mutual debt and paralysis.

The reverse problem also exists: plants considered strategically important are maintained without sufficient orders to utilize more than a small proportion of available capacity. The manager of the Votkinsk Mechanical Plant in Udmurtia, producer of long-range ballistic missiles, noted in an interview, ‘I am supposed to maintain the entire production process for the sake of the two missiles that are ordered from us’.⁵

³ Bergstrand, B.-G. *et al.*, ‘World military expenditure’, *SIPRI Yearbook 1994* (Oxford University Press: Oxford, 1994), pp. 421–31.

⁴ George, P. *et al.*, ‘Military expenditure’, *SIPRI Yearbook 1996: Word Armaments and Disarmament* (Oxford University Press: Oxford, 1996), pp. 333–38.

⁵ General Director Viktor Tolmachev, interviewed on Moscow NTV, 1 Nov. 1996 in Foreign Broadcast Information Service, *Daily Report–Central Eurasia* (hereafter FBIS-SOV), FBIS-SOV-96-222, 1 Nov. 1996.

Table 8.2. The level of state debt to the defence industry, 1993–96

Figures are in 1996 b. roubles.

Date	Debt
24 Dec. 1993	700
16 Sep. 1994	2 100
1 Jan. 1995	15 000
10 Jan. 1996	9 000
15 May 1996	6 300

Sources: Moscow Mayak Radio Network, 24 Dec. 1993 in FBIS-SOV-93-247, 28 Dec. 1993, p. 11; *Military Technology*, Feb. 1995, pp. 68–69; and *New Europe*, 25 Feb.–2 Mar. 1996, p. 8.

The scale of the problem is reflected in data of the State Committee on Statistics (Goskomstat) for the year 1992. According to these data, the total value of defence production to meet state orders in 1992 was 30 per cent higher than the amount approved in the budget. Significant discrepancies exist for all the years up to 1996. One consequence of this practice of ordering goods for which no funds are approved in the budget has been a growth in government debt to industry. Table 8.2 summarizes some of the publicly available information about levels of indebtedness arising out of late payments. At worst these figures suggest a mounting stockpile of redundant armaments and military technology produced at a substantial loss by defence enterprises, which must therefore have an even greater incentive than otherwise to seek external customers for their products.

In the period before the 1996 Russian presidential election, reducing the level of government debt to the defence industry was one issue which received some priority. According to Deputy Minister for Defence Industry Yuriy Glybin, the Central Bank of Russia was instructed to transfer 5000 billion roubles to repay debts incurred through under-funding of the state defence order in 1996. According to an article published in November 1996 using data provided by the state trading company Rosvooruzhenie, the debt owed by the Ministry of Finance to the defence industry for work already contracted for amounted to \$600 million which, compared with the situation in May, represented a reduction of around \$1 billion.⁶ If correct, these data would suggest that the government debt to industry was reduced significantly in 1996. However, other statements by Russian officials give a contradictory impression. For example, in testimony before the Duma, Deputy Minister for Defence Industry Yuriy Starodub said that in the first 10 months of 1996 the government had covered only 29.4 per cent of the value of contracts awarded.⁷ If correct, this would mean that the problem of payments has not been solved but only temporarily alleviated and can be expected to re-emerge in 1997.

⁶ Tarasova, O., [Rosvooruzhenie calls for unity], *Segodnya*, 1 Nov. 1996 (in Russian).

⁷ Interfax, 26 Nov. 1996 (in English) in FBIS-SOV-96-229, 26 Nov. 1996.

Micro- and macroeconomic strategies and the defence industry

The main source of contradiction between the economic policies of government and the economic strategies of defence enterprises lies in the apparent arbitrariness of the former and the (ultimate) subordination of the latter. There is still little clarity or cooperation in relations between government and defence enterprises and the long-term strategy remains somewhat opaque. This combination of a lack of clear policy from above with a mass of enterprise-level survival strategies from below has not helped to resolve the situation, whether through conversion, entry onto the world market or outright closure.

The contradiction shows itself most sharply in the case of scientific institutes involved in defence, in the 70 or so one-factory towns and in those sectors in which the manufacturing cycle involves a whole supply chain of different enterprises and organizations.

According to N. I. Kvasha, former Director of TsKB Lazurit, a leading designer of submarines):

the majority of defence firms are put in the same difficult position—on their knees, with no prioritization whatsoever. We don't have any idea how many of our products will be in demand in five or 10 years' time, and what's more nobody else does. Do we actually need an army or a fleet? So far there is no programme for the future and we are paralysed by uncertainty. We're forbidden to do anything and we have no investment capital for changing our product profile. My colleagues and I need at least some clarity from the state and then we can decide our development strategy.⁸

The fact that Kvasha spoke of being forbidden to take certain steps underlines the fact that there are many areas in which the Russian Government continues to monitor and regulate the defence industry. This was confirmed in the Law on Defence adopted on 1 June 1996. By that law the Ministry of Defence is tasked with ensuring that state-owned enterprises in fields such as communications and transport are able to meet the needs of national security.⁹ There are also many areas in which government policies are either not yet formed or contradictory.

First, there is a general lack of agreement or cohesion on what should be the appropriate macroeconomic policy for the defence industry between the Ministry of Defence, Ministry of the Economy, Ministry for the Defence Industry and Ministry of Finance. There are also some differences between these ministries and the Duma (particularly where the financing of state orders is concerned).

Second, budget constraints prevent the armed forces from achieving the level of modernization needed. This discourages potential foreign buyers of Russian armaments, since they do not have the reassurance that systems have been bought by the country's own armed forces.

⁸ Author's interview with N. Kvasha, then Director of TsKB Lazurit, Nizhniy Novgorod, Sep. 1995.

⁹ *Defense News*, 24–30 June 1996, pp. 4, 74. However, First Deputy Minister of Defence Andrey Kokoshin stressed in parliamentary hearings that the Ministry of Defence would prefer to carry out this task through increased allocations to enterprises—paying them to retain certain capacities—rather than by administrative decision. Interfax, 25 July 1996 in FBIS-SOV-96-145, 26 July 1996, p. 11.

Third, the economic situation—characterized by rapid increases in prices, high taxation and high costs in terms of energy, transport, raw materials and components—works against successful export whether of military or of civilian hardware. The high costs of production reduce the competitiveness of Russian products on world markets, despite the low wage levels in Russia.

These high input costs mean that even where arms can be sold their profitability is low and they do not generate revenues that can be used for investment. According to Viktor Glukhikh, former Chairman of the State Committee on Defence Industries (Goskomoboronprom), speaking at a press conference in January 1996, some armaments only make 6 per cent profit when exported. His successor Zinoviy Pak (Glukhikh was dismissed in January 1996) gave the figure of a 35 per cent loss on defence sales, whether domestic or for export, on account of high production costs.¹⁰ This could only mean that items were being sold at prices below the cost of production to maintain some cash flow and/or win market shares. This does not of course rule out the possibility that some enterprises may earn profits through arms sales and, in any case, Russian profit margins should be treated with caution as there is little incentive to report a profit and the distribution of production costs is not entirely transparent.

Finally, there are substantial areas of contradiction between the main pieces of legislation governing the area, notably the Law on State Procurement, the Basic Propositions of the Military Doctrine, the Law on Conversion, presidential decrees on privatization of defence industry enterprises and the Law on the Formation of Financial–Industrial Groups.¹¹

III. The position of the defence industry

There are many competing definitions of the Russian defence industry complex and many conflicting statements about its size. For the purposes of this paper, the definition applied is that used by the former State Committee on Defence Industries. According to Viktor Glukhikh, the sector consists of 1800 enterprises and organizations and officially employs 3 million persons. Of these 500 000 are in scientific institutes. According to these data, the defence industry accounts for only 4 per cent of the nation's industrial potential but as much as 65 per cent of its scientific potential.¹²

Table 8.3 shows the fall in defence industry production between 1991 and 1994/95 (over 60 per cent) according to data from the information and statistics directorate of the State Committee on Defence Industries (published in January 1996). It can be seen that according to these data there has been a fall in the

¹⁰ *Kommersant Daily*, 9 Feb. 1996.

¹¹ Denezhkina, E., 'Problems of conversion and the military–industrial complex of St Petersburg', eds P. Opitz and W. Pfaffenberger, *Adjustment Processes in Russian Defence Enterprises Within the Framework of Conversion and Transition*, Beiträge zur Konversionsforschung no. 2 (Literatur Verlag: Münster, 1994) (in English).

¹² Press conference by V. Glukhikh, Moscow, Jan. 1996.

Table 8.3. Index of production volumes in the Russian defence industry as classified by the Ministry of Defence Industry, 1991–96

Year	Total output	Civilian output	Military output
1991	100.0	100.0	100.0
1992	80.4	99.6	49.5
1993	64.6	85.6	32.5
1994	39.2	52.6	19.9
1995	31.2	41.3	16.6
1996 (est.)	22.9	27.1	14.3

Source: *Krasnaya Zvezda*, 3 Aug. 1996, p. 3 (in Russian) in FBIS-SOV-96-152, 6 Aug. 1996, pp. 13–14.

volume of both civil and military production. However, the scale of the reduction has been greater in the military sector.

How far do the figures reflect the real position? They reflect the change in the volume of production, not sales, profit or capacity utilization. However, they do accord with the anecdotal evidence from interviews and case studies, and it seems reasonable to use them as a rough guide to the changing pattern of production.

The largest falls in production, according to data up to November 1995, have been in the communications industry (40.8 per cent), armaments (24.9 per cent), radio (24.2 per cent) and electronics (24.2 per cent). Shipbuilding was the only sector which recorded an increase (141.4 per cent) from the start of 1995. This relatively strong performance is reflected in the higher salaries paid in the shipbuilding sector, where, according to data from October 1995, the average salary is 594 000 roubles, compared with a defence industry average of 401 000 roubles.¹³ According to a number of senior managers in shipbuilding firms in St Petersburg and Nizhniy Novgorod who were interviewed in August and September 1995, this increase in activity reflects the fact a number of vessels which had been delayed for between three and five years were launched in 1995.

Data released by the Ministry of Defence Industry in August 1996 suggested that in 1996 the fall in the volume of production in the defence sector was continuing. Three sectors—electronics, shipbuilding and aviation—recorded particularly steep reductions.¹⁴

The overall fall in production reflects not only cutbacks in military procurement at home but also the failure of the Russian defence industry to make inroads into new markets abroad.

The general process of restructuring the pattern of ownership of manufacturing industry, which has been an important element of economic reform, has also affected the defence industry. Central control over decision making has been

¹³ *Kommersant Daily*, 26 Dec. 1995, p. 2 (in Russian) in FBIS-SOV-95-248, 27 Dec. 1995, pp. 21–22.

¹⁴ Vitaliy Vitebskiy, Head of Economics Department, Ministry of Defence Industry, interviewed in *New Europe*, 1–7 Sep. 1996, p. 12.

diluted. According to Viktor Glukhikh, 36 per cent of defence production is still carried out in wholly owned state enterprises, 34 per cent in joint-stock companies which are partly state-owned and 30 per cent in joint-stock companies without any state involvement. Defence science is still primarily undertaken in state-owned establishments and primarily commissioned by state-owned industrial organizations. Only 14–16 per cent of defence scientific work is carried out for private joint-stock companies, as opposed to 70 per cent for state-owned defence enterprises. The remaining 15 per cent of work by defence science establishments is commissioned by civilian users.

Responsibility for developing a new relationship between government and industry has been contested by several different agencies. For example, under the Law on Privatization of State-owned and Municipal Enterprises of 3 July 1991, the State Committee for the Management of State Property (Gosudarstvenny komitet po upravleniu imushchestva, GKI) was authorized to initiate the privatization process in enterprises.¹⁵ However, whether the authority of the GKI should extend to defence enterprises was a controversial question from the outset. In November 1993 a presidential decree 'On particular aspects and extra measures regarding privatization and state regulation of the operations of enterprises and organizations of the defence sectors of industry' provided an official basis for classifying defence enterprises into 'core military suppliers' and 'civilian enterprises which produce some military products'.¹⁶ The former were exempted from privatization until at least the end of 1995 while the latter (over 70 per cent of the enterprises comprising the defence sector) would have been eligible for privatization.¹⁷

There have been cases of overlapping or contradictory competence for this aspect of policy. Moreover, a new factor has to be taken into account: the wishes of the major enterprises themselves, some of which prefer to be privatized even though they are core elements of the defence sector. Some enterprises heavily engaged in arms production have been privatized without the consent of the State Committee on Defence Industries or the Ministry of Defence. In 1995 it transpired that the main firms involved in the production of Sukhoi fighters, KA-50 helicopters and even some strategic weapons had been privatized by auction. Fears that this would compromise government policy and the security of armaments programmes led to 30 privatizations being reversed by presidential decree no. 541 of 13 April 1996.¹⁸

¹⁵ Busza, E., 'Strategies for privatization: the options', ed. M. McFaul, *Can the Russian Military-Industrial Complex be Privatized? Evaluating the Experiment in Employee Ownership at the Saratov Aviation Plant*, Report of the Russian Defence Conversion Project (Center for International Security and Arms Control: Stanford, Calif., May 1993).

¹⁶ Denezhkina, E., 'Is there a future for Russia's defence industry? Conversion in the context of current economic reforms', Lectures and Contributions to East European Studies at the Swedish National Defence Research Establishment, no. 7, Stockholm, 30 Aug. 1994.

¹⁷ For a detailed discussion, see Denezhkina (note 11), pp. 49–66.

¹⁸ *Military Parade*, July–Aug. 1996, p. 116; and *Segodnya*, 23 July 1996, p. 1 (in Russian) in FBIS-SOV-96-143, 24 July 1996, p. 31.

IV. External economic operations of Russian defence firms

Analysis of the workings of a series of defence enterprises shows that there are four main types of external economic activity: (a) through the government and the various federal agencies involved in the management of Russian arms exports; (b) wholly or partly independently by the enterprise after the ownership of a firm has been changed to that of a joint venture or a financial–industrial group; (c) through receipt of international grants by tender, or through foreign direct investment; and (d) illegally, for example, by establishing ‘phantom firms’ or through illegal financial operations, smuggling, or illegal trade via third countries.

Although each of these types of foreign economic activity is characterized by a distinct set of administrative procedures and financial mechanisms, it is not always possible to distinguish them from each other in practice. Any specific transaction may have elements of more than one of these types of operation.

Access to foreign markets via the government

One of the main instruments for accessing foreign markets has proved to be trade exhibitions, where defence firms display their products but where Rosvooruzhenie is responsible for all contracts made with foreign clients.¹⁹

The process of export licensing is described in chapter 6 of this volume; the documents which form the basis for the process are reproduced in appendix 3. On the basis of this description and documentation, it might appear that there are no deficiencies in the system of controlling and coordinating organs that has been built up in Russia. However, from an industrial perspective several directors of defence firms stated in interviews that the system is characterized by a lack of clarity and by shortcomings which hold back the entry of Russian defence industry into the world arms market.

First, while it is true that there is a high degree of centralization of decision making, the way in which the various roles and functions are dispersed among a whole range of federal organs diminishes the responsibility of any single agency for the final result.

The defence manufacturers themselves do not believe that the post-Soviet system has solved the problem of equitable distribution of the receipts from foreign sales. For example, the sale in 1995 of S-300 (SA-10) air defence systems via Rosvooruzhenie failed to deliver the expected profit to the factory which produced them. For several months after the items were delivered, the factory received no payment from the Ministry of Finance. Under current conditions in Russia, long delays before payment is made to producers also mean that inflation reduces the real value of the money received.

The tax aspects of international sales are also unsatisfactory from the point of view of arms producers. Another major problem for producers is the practical

¹⁹ *Krasnaya Zvezda*, 7 Apr. 1995 (in Russian).

aspects of money transfers and subsequently the safe keeping of money received. The banks dealing directly with Rosvooruzhenie include Vneshtorgbank, Onaksimbank, Tokobank, Inkombank, Limbank and others. However, the fact that there are many delays and transfer problems in the Russian banking system gives producers an incentive to find alternatives. They may operate in cash, place balances in Western bank accounts or resort to barter trading. According to Vadim Yeremichev, Deputy Director of Rosvooruzhenie, 'barter is a necessary means of military-technical cooperation with countries which are unable to pay for armaments in hard currency'.²⁰

Since arms exports remain low, Rosvooruzhenie is obliged by a presidential decree of 18 November 1993 to use its own resources to make direct investments in defence enterprises where these are necessary with a view to increasing international competitiveness.

Since 1994 a few defence enterprises have been given more independent room for action in foreign sales. Among the entities to have received permission to undertake independent initiatives are some major production associations including MiG-MAPO and Rosvertol.²¹ However, for its part, Rosvooruzhenie has been sceptical about the idea of liberalizing access to the international market for defence enterprises and has frequently pointed out that past experiences have not been encouraging. According to the then Director-General of Rosvooruzhenie: 'The right of independent access to the market was granted to, for example, AO [joint-stock company] Kalashnikov, the republican firm Baikal, VO Proshenetorg and a number of others. However, in 1992-93 these enterprises, not having proper external economic experience, and not possessing the appropriate structures or suitably qualified staff failed, unfortunately, to use this right to realise any significant sales abroad'.²²

Industrialists, however, would prefer to persist with the strategy of giving greater freedom to industry since this could bring success over the longer term. According to specialists at the Nizhniy Novgorod aerospace firm Sokol, which is involved in the sale of MiG-29 aircraft abroad, the reward gained from foreign contacts consists not only of profits, but also of the experience of strategy formulation and reorganization that go along with operating in these markets.²³

Second, in industry there is a perceived lack of flexibility in the way the state organs deal with military exports. For example, it is claimed that in the United Arab Emirates (UAE)—a market in which Russian enterprises are very interested—it is expected that any arms contract will be accompanied by an offset arrangement that leads to an investment in the UAE by the seller of a sum not less than 60 per cent of the value of the contract. Compliance with offsets is

²⁰ *Military Parade*, July-Aug. 1995.

²¹ See appendix 3 of this volume, documents 15-22.

²² Alexander Kotelkin in *Military Parade*, May-June 1994.

²³ Author's interviews in Nizhniy Novgorod, Sep. 1995.

monitored by a group set up by the UAE Ministry of Defence in 1991.²⁴ For example, the French firm Aérospatiale, alongside its sale of Exocet anti-ship missiles, set up Tamko, a 49 per cent French-owned joint venture, to provide technical support to UAE civilian shipping. GIAT, supplier of Leclerc tanks, is building an air conditioner factory and a training facility in the UAE. Russian suppliers of similar equipment found the Russian Government unwilling or unable to help them compete in this type of market.

Third, since the end of the cold war there have been contradictions in Russian foreign policy which have in turn created contradictions in arms export policy. For example, the government has declared the development of relations with the states around the Persian Gulf to be a very high foreign policy priority. However, from the perspective of arms transfers, most of the Arab states in the subregion already have long and close associations with individual Western countries. In practice, Russia's aim of increasing arms transfers and military–technical cooperation with countries in this region is hindered by its ambiguous foreign policy approach regarding relations with Iran and Iraq—which most of the states on the Arabian peninsula regard as their primary security threats.

Another way for industry to enter the international arms market is through bilateral military–technical cooperation agreements, a number of which have been signed in recent years—notably with countries of the ‘near abroad’ and the former allies in East–Central Europe. After 1989 military–technical cooperation with countries in the region ended abruptly with the dissolution of the WTO and the CMEA. However, in 1995 there was some evidence that bilateral government-to-government agreements with at least some former allies might provide the umbrella under which industrial ties could be restored.²⁵

Since the dissolution of the Soviet Union, defence industrial cooperation has been discussed in the framework of the CIS.²⁶ Moreover, the restoration of closer military–technical cooperation within the CIS is likely to accelerate.

The Russian Government has also concluded some agreements with West European countries regarding specific contracts. According to Alexander Kotelkin, Director-General of Rosvooruzhenie, agreements have been made with French, German and Italian firms, including one with a Franco-German joint venture to develop a new radio navigation system to be used on the version of the T-80 main battle tank offered to export customers.

²⁴ Redlich, A. and Miscavage, M., ‘The business of offset: a practitioner’s perspective’, ed. S. Martin, *The Economics of Offsets: Defence Procurement and Countertrade* (Harwood: Amsterdam, 1996), pp. 390–91.

²⁵ In Mar. 1995 an agreement was made between the Russian and Bulgarian ministries of defence ‘On coordination in the area of the development of armaments and military technology’ and an analogous agreement was signed with Romania the following month. *Krasnaya Zvezda*, 3 Apr. 1995 (in Russian); *Krasnaya Zvezda*, 11 Mar. 1995 (in Russian); and *Krasnaya Zvezda*, 6 Apr. 1995 (in Russian). The restoration of these ties is discussed in more detail in chapter 10 of this volume.

²⁶ *Krasnaya Zvezda*, 24 Mar. 1995 (in Russian). Agreements on military–technical cooperation have been concluded with Armenia, Belarus, Georgia, Kazakhstan and Ukraine. Cooperation in the framework of the CIS is discussed in detail in chapter 9 of this volume.

Establishment of joint ventures and financial–industrial groups

The establishment of joint ventures and financial–industrial groups is also seen as a means of improving access to export markets. Some of the new industrial units being created will be very large and several, in particular those in the aircraft industry, are making products which have a history of export success.²⁷

In most cases the aim of joint ventures between Russian producers and foreign partners is to produce, sell and maintain civilian products developed through dual-use technology—that is, civilian technology which can have military applications. There have been many examples of joint ventures of this kind including those involving leading defence firms, with manufacturers of helicopters particularly prominent. In many cases the role of the Western partner is primarily seen as filling those functions in which Russian defence firms are weakest: marketing, sales and distribution.

Another important aspect from the perspective of the Russian producer may be the desire to leave part of the earnings in Western bank accounts and thereby avoid paying tax in Russia. This type of cross-border arrangement could even be described as amounting to a de facto financial–industrial group.

The development of financial–industrial groups in practice generally has little in common with the model of the financial–industrial group advocated by the League of Assistance to Defence Enterprises. Its President, Alexander Shulanov, describes financial–industrial groups as ‘monopolistic conglomerates capable of producing both civil and military products. The integration of a wide range of activities and functions should permit Russian firms to rationalize, reorganize and enter world markets more effectively’.²⁸

According to the Science and Technology Department of the former Ministry of Defence Industry, Russia will create around 30 military financial–industrial groups over the next few years.²⁹

Illegal methods

At present the mechanisms by which large corporations or groups conclude and meet export agreements are far from transparent and are often concealed altogether. This leads to the fourth type of export strategy mentioned above: the use of illegal methods. In most cases a specially founded joint venture creates one means of concealing the details of financial transactions. The top management of a firm usually handles all sales agreements directly, whether the agreement in question is with a bank clerk, a buyer or an intermediary. Where there is no transparency there is no way to measure whether profits derived

²⁷ E.g., the MiG-MAPO financial–industrial group (manufacturer of the MiG-29). Kogan, E., *Russian Defence Conversion and Arms Exportation*, PRIF Report no. 41 (Peace Research Institute Frankfurt: Frankfurt, Nov. 1995), pp. 11–23.

²⁸ Author’s interview with Alexander Shulanov, Sep. 1995.

²⁹ *Defense News*, 8–14 July 1996, pp. 1, 27; and *Defense News*, 29 July–4 Aug. 1996, p. 11.

from a sale return to the firm or contribute towards the future development of the business.

The activities of arms-trading companies which sell items they do not produce have also attracted attention in frequent articles detailing the sale of arms from, for example, the inventories of armed forces units stationed in Russia, Belarus and Ukraine. These sales—which are illegal—are usually mediated through third countries and often seem to have been directed towards local conflicts and terrorist or paramilitary groups.

The scale of illegal sales is impossible to measure. However, anecdotal evidence suggests that arms shipments made without the necessary approvals and permits are not particularly rare. In one such case, an An-72 military transport aircraft was sent to Estonia containing weapons from the Smolensk army base. Such examples, often involving either the Baltic states or newly independent states in the Caucasus, are now routinely reported in the Russian press.³⁰

The illegal trade in weapons is a two-way process and there are examples of foreign weapons being illegally imported into Russia.³¹ The war in Chechnya has added to the demand for weapons.

Rosvooruzhenie was itself made the subject of criminal proceedings by the Procurator General of the Russian Federation, charged with concealing earnings for tax evasion purposes and carrying out illegal currency dealings.³²

For some producers and trading companies the present regulations and tax system provide few incentives to make legal sales. A reduction in the costs of legitimate transactions could reduce the level of criminality. According to the commercial director of one defence firm, 'there is not, unfortunately, today, a sufficiently strong incentive for honest work'.³³

V. Examples of reorganization of Russian defence firms: the view from within

Among the best-known examples of Russian military technology in terms of actual or potential exports are the Sukhoi and MiG fighter aircraft, Kamov helicopters, conventional submarines (the Kilo Class but also miniature submarines of the Piranha type), surface warships and the S-300 series air defence system.

Rosvooruzhenie bears the main responsibility for managing the export of such products. But where do the actual producers stand in relation to the design and manufacture of military technology for export, and how have they met the challenge of modernization? A tentative answer to these questions is suggested by an examination of the main activities and attempts at reorganization of a number of leading Russian defence firms.

³⁰ ITAR-TASS, 11 Apr. 1996 in FBIS-SOV-96-071, 11 Apr. 1996, p. 22; and ITAR-TASS, 6 May 1996 in FBIS-SOV-96-088, 6 May 1996, p. 30.

³¹ *Kommersant Daily*, 6 Apr. 1995 (in Russian).

³² *St Petersburgskiy Vedomosti*, 28 Apr. 1995 (in Russian).

³³ Author's interviews, Yekaterinburg, Oct. 1995.

AO Baltiyskiy Zavod

The AO Baltiyskiy Zavod shipyard in St Petersburg was founded in 1856 after the Crimean War to build warships and was to build over 100 before 1917, including most of the leading ships (such as the *Admiral Nakhimov* and the *Admiral Ushakov*) of the tsarist navy. Production spanned a wide range of different types and classes, from battleships to submarines. Baltiyskiy Zavod was one of the main centres of Soviet naval shipbuilding, producing nuclear-powered ice-breakers, research vessels and tankers as well as warships— notably missile cruisers such as the *Kirov*. One of the last ships of the Kirov Class, the *Pyotr Velikiy*, remained unfinished for several years owing to lack of money until it was finally launched in 1995. The proportion of the work at the shipyard covered by defence orders fell rapidly, from 80 per cent in 1988 to 7 per cent in 1993. This fall has (as at most defence enterprises) been largely ‘spontaneous’ rather than reflecting a deliberate or strategic programme of conversion.

Today Baltiyskiy Zavod finds itself in a relatively stable financial position, largely thanks to foreign orders. In 1993 the yard received an order from Germany for 12 chemical tankers, followed by a comparable order from Norway. According to company president O. B. Shulyavskiy, there has been a profound conflict between the economic interests of the enterprise and the commitment to fulfil the state orders: for example, the state failed to pay for the *Pyotr Velikiy* while the company faced bills from a whole range of suppliers, whose prices were rising all the time. This put the company in a critical position. Shulyavskiy noted: ‘If the Ministry of Defence doesn’t recognize the nature of the temporary economic situation— so that there is a major hiatus regarding defence orders— then the shipyard will reorganize itself so that defence orders will no longer be viable. There will no longer be sufficient skilled labour in the shipyard, or in the defence industry generally’.³⁴

The client for the unfinished ice-breaker *Ural* is Murmansk Parakhodstvo, with finance provided by the Ministry of Transport and the Department of the Fleet. However, the ability of these state customers to pay is little better than that of their military equivalents.

It can be argued that the reorganization of the shipbuilding sector and its increasing orientation to the international market did not suddenly emerge, but had been developing for some time even before the dramatic changes since 1991. Technological and organizational obsolescence was frequently masked by the steady stream of state orders which had paid in full for the high costs of production. According to Shulyavskiy: ‘We have been using techniques to build ships that are several times more expensive than those in Europe, to say nothing of South Korea or Japan. Now that there is a taxation regime and rising prices for energy and materials, our products are frequently uncompetitive. There is

³⁴ *St Peterburgskiy Vedomosti*, 16 Nov. 1994 (in Russian).

only one way out and that is investment, profitable sales abroad, and technical modernization'.³⁵

This view is echoed by other shipbuilding firms. Thus, S. Karmanovskiy, Deputy Director of the AO Almaz, sees the best strategy for progress as being to work simultaneously in several different directions including fulfilling state defence orders (for example, building patrol hovercraft), designing commercial and scientific vessels for private clients at home or abroad, and buying licences to build and export shipbuilding components. According to Karmanovskiy, 'such a path of development will allow us to have varied sources of finance, continual market research at home and abroad, and the experience of international business cooperation'.³⁶

KB Malakhit

The KB Malakhit (Malachite Design Bureau) was established in Leningrad in 1948 to build submarines with energy sources independent of atmospheric oxygen. In 1952 this objective was revised by order of the government to mean building nuclear submarines. Within five years the *Leninskiy Komsomolets*—the first such submarine operated by the Soviet Union and designed by Malakhit—was built at Severodvinsk and launched into the Arctic Ocean.

In the late 1950s the *Volna*, the first Soviet submarine armed with ballistic missiles and with a non-nuclear propulsion system, was completed. Later the design bureau developed the high-speed cruise missile-carrying Papa Class submarine with a titanium hull as well as the Alpha Class submarine.

At recent exhibitions Malakhit has been showing the miniature submarines Piranha and Triton, the creations of chief designer Yuriy K. Mineyev. Weighing as little as 1.5 tonnes, the Triton has been adopted by the Russian Navy.³⁷

The workforce at Malakhit contracted by more than one-third between January 1992 and June 1996. The organizational structure has been changed as have the economic mechanisms for dealing with customers and suppliers. A number of conversion programmes are in progress, including designs for vessels for geological survey and fish farming. As a *kazyonny* ('Treasury') enterprise, Malakhit is state-owned but with some degree of economic freedom. However, it is currently in a very weak financial state.³⁸

A distinguishing characteristic of the work at Malakhit (as of other submarine design bureaux such as the TsKB Rubin in St Petersburg and the TsKB Lazurit in Nizhniy Novgorod) is that the designs demand inputs from skilled workers and technicians from almost all the engineering and scientific disciplines. Equally, when the submarines reach the phase of manufacture, they require

³⁵ *Konversiya, Politika i Vooruzhenie* 2 May 1994 (in Russian).

³⁶ Author's interviews with S. Karmanovskiy, Deputy Director of AO Almaz, Sep. 1994, Sep. 1995.

³⁷ Author's interviews with Yuriy Mineyev, Chief Designer, KB Malakhit, Sep. 1993, Oct. 1994.

³⁸ Author's interview with V. Barantsev, Deputy Director, KB Malakhit, Oct. 1995. *Kazyonny* enterprises are those exempted from the privatization programme by presidential decree.

cooperation from production enterprises spread across the territory not only of Russia but also of some other members of the CIS.

One response to the problem of managing these relationships under the new conditions is the setting up of a project-based management system, the temporary work collective. According to Deputy Director V. I. Barantsev, this marks a major departure in principle from earlier forms of work organization in the enterprise.

For each project a group of specialists is brought together, representing all the organizations involved—whether science, design or production. This group then hires the minimum number of staff required to carry out the job, coordinates the work and takes full responsibility for the project as a whole in terms of deadlines and quality. Payment is made according to results achieved by target ‘milestones’ which are subject to inspection. This innovation builds stronger links between the stages of the manufacturing cycle and between the partner organizations involved, as well as making the process as a whole more flexible and responsive. As Mineyev explains, ‘we have almost ceased going to see civil servants in Moscow; instead we go direct to our partners, communicating horizontally, not vertically as before. We are now much more confident about being able to fulfil any order, including export orders’.³⁹

As regards mechanisms for entering the international market, the Malakhit specialists interviewed are sceptical. In their view the selection of items displayed at international exhibitions and the fact that they are often presented abroad in an unprofessional way by government agencies—rather than by specialists from the design bureau itself—go a long way towards explaining the slow progress in international markets. Information about the scheduling and content of exhibitions is the property of federal departments. According to the enterprise representatives, they have been asked for technical documentation as late as two or three days before the exhibition. This is only available in Russian. The official government representatives who attend the exhibitions usually know little about what is on display.

At the same time, according to one senior manager of the design bureau, civil servants actively hinder the establishment of direct contacts between enterprise representatives and colleagues from other countries. For example, a project with US partners was discussed at a high level within government for more than six months without the necessary decisions being approved. In the eyes of industry, against the background of chronic non-payment for state orders, this kind of behaviour underlines that the government lacks any sense of responsibility either as a partner or as a client. At the same time, it insists on maintaining its role as a source of control.

As regards information about potential foreign clients or partners, the information department at Malakhit had put together a database containing the designs of products offered by potential competitors. However, they had very little data on potential foreign customers for either civilian or military products.

³⁹ Author’s interviews with Yuriy Mineyev, Chief Designer, KB Malakhit, Sep. 1993, Oct. 1994.

Catalogues and directories of potential foreign cooperation partners, although essential in contemporary Russia, are in very short supply and expensive.

TsKB Lazurit

Similar views on the problems of developing exports are voiced by the management of Russia's other two submarine design bureaux, TsKB Rubin (the Ruby Central Design Bureau) and TsKB Lazurit. TsKB Lazurit (the Azure Central Design Bureau) was founded in 1953 in Nizhniy Novgorod, specializing in ocean-going diesel-powered submarines and (later) in designing cruise missile-launching submarines. It also took part in the development of submarines with a titanium hull. From the 1960s it worked on various sub-systems including integrated search and rescue systems to respond to submarine accidents. Its submarines have pioneered the use of hydro-acoustic robot technology for navigation. Among its conversion projects are deep-sea resource exploitation applications, undersea restaurants, medical technologies, undersea oil exploration and transport. Together with a Canadian firm, Lazurit has developed a design for a deep-sea submarine, *Ocean Shuttle*, intended as a research vessel for use in the Atlantic, Arctic and Pacific oceans. The project has been seen as having major potential significance for global environmental research.

The Director of Lazurit, N. I. Kvasha, underlined that all the main commercial functions for trading internationally were concentrated in the central government. Moreover, Lazurit was obliged to abide by strict rules and licensing procedures in this regard. At the same time, there was a lack of clarity regarding any programme of strategic development for the military shipbuilding sector despite the need for external (including foreign) investment.⁴⁰ Within the design bureau a series of conversion programmes had been developed which were geared to the international market. These projects were intended to be the basis for discussions with Western investors aimed at putting together a workable business plan that was independent of state orders. To this end the design bureau prepared a marketing prospectus, parts of which were published in Russian and foreign journals. However, because of the status of the design bureau and its extensive use of dual-use technologies, all draft contracts first had to be agreed with the relevant Russian central authorities.⁴¹

The management at Lazurit has experienced the same lack of information and of financial support from its regional administration. It might have been expected that the regional consultancy firms set up in recent years would facilitate the reorganization of defence firms and the search for markets for high-technology products. Instead, according to the management of Lazurit and other defence enterprises in Nizhniy Novgorod, the interests of the defence sector have taken second place to the ambitions of regional leaders. According to Kvasha, entering foreign markets becomes extremely complicated when a firm

⁴⁰ Author's interview with N. Kvasha, Director of Lazurit, Sep. 1994.

⁴¹ Author's interview with Yu. V. Postnov, Deputy Director of Lazurit, Aug. 1995.

has both local bureaucrats and central authorities to deal with. Under these conditions ‘the drowning person must save himself by his own hands, and not count on anybody else’.⁴²

Kamov

The Kamov scientific–technical complex is one of the two leading helicopter firms in Russia. Founded in 1940 by order of the People’s Commissar of the Aviation Industry, the firm set about building the first helicopter in the country. The Director was N. I. Kamov, his deputy M. L. Mil. In October 1941 the factory was evacuated to the Sverdlovsk Oblast (region) in the Urals and in 1943 it was disbanded. In 1946 OKB-2 was established at Sokolniki in the Moscow Oblast to design light helicopters, moving to Moscow in 1955. Here light helicopters such as the Ka-8 (1948), Ka-15 (1953), Ka-18 (1956), Ka-25 (1961) and Ka-26 (1965) and the Ka-22 heavy helicopter (1940) were developed. From the late 1970s onwards work was carried out on the design of combat helicopters in cooperation with a number of scientific research institutes and enterprises.

In contrast to submarine construction, where the basic product has proved to be difficult to adapt for non-defence purposes, helicopters can relatively easily find civil applications. Thus, according to S. V. Mikheyev, its chief designer, Kamov has been able to move quickly into the international and domestic civilian market. For example, Ka-27 helicopters and their derivatives have been adapted successfully for civil transport purposes, off-loading ships’ cargoes (the Ka-32T) and accompanying convoys on Arctic shipping routes (the Ka-32C). In 1994 the firm concluded an agreement with the Moscow City Government to lease to the latter helicopters (the Ka-32-003) adapted for fire-fighting. The Ka-126, Ka-226 and Ka-62 helicopter types are all oriented specifically to the export market. At the same time work continues on orders for the Russian Ministry of Defence, for example, on the design of the Ka-31 VKRFLF radio-locational helicopter.

Kamov was where the Ka-50 fighter helicopter, known worldwide through international exhibitions, was originally developed. Work on the Ka-50 started at Kamov in 1977 with the aim of replacing the Mi-24 attack helicopter in Soviet service. The new design was based on analyses by Kamov specialists of the vulnerability of helicopters in Afghanistan and Viet Nam as well as the availability of new materials and weapon systems.

However, Kamov has attracted few foreign orders for its helicopters. One reason for this is that the (since 1992) impoverished Ministry of Defence has not been able to replace its complement of helicopters with the Ka-50, but has instead continued to order the old Mi-24 attack helicopters. Seven Mi-24s were purchased in 1995, although two Ka-50s were said to be on order for 1996. The decision to purchase new models of the Mi-24 has come in for criticism, given that the model was planned to be 80 per cent phased out by 2005.⁴³

⁴² Author’s interview with N. Kvasha, Director of Lazurit, Aug. 1995.

⁴³ *Krasnaya Zvezda*, 8 Feb. 1996 (in Russian).

The failure of the Ministry of Defence to buy newly developed defence products has the effect of making potential foreign buyers wary. As a result, much of the latest technology in the Russian defence industry is produced only on a one-off basis, which fails to provide an incentive to production enterprises in the sector which have traditionally been geared to long production runs.

OKB Sukhogo (Sukhoi)

The OKB Sukhogo (Sukhoi Experimental Design Bureau) aviation complex was founded by P. O. Sukhoi, who was also its chief designer from 1939 to 1975. It was always geared to the international market via exhibitions and competitions, and its products were aimed to match specific Western aircraft. Thus the Su-24 bomber was meant as a direct competitor to the US F-111; the Su-27 fighter was ranged against the F-14, F-15, F-16 and F-18.

According to M. P. Simonov, chief designer from 1983, the development of the Su-27 was far from straightforward. During tests it did not meet the performance standard of the F-15, but it had already been put into batch production. The management, on their own initiative but with the approval of the then Deputy Minister for Aviation Industry, I. S. Silayev, had production of the aircraft halted (despite outstanding orders from the state) after 12 had been produced. A complete redesign then took place. The designers involved later said that all that then remained of the original design was the ejector seat and the tyres for the main wheels.⁴⁴ Thus an initiative 'from below' created an almost entirely new aircraft which was to break 34 world records in terms of performance and quality of weaponry, and which was to be the first of a whole new family of high-performance aircraft. The ability to modify the basic design became, as in Western aircraft, a selling-point. Sukhoi's designs allow for a wide variety of modifications to suit client preferences, permitting considerable flexibility in the world market.

The Su-24 bomber was exported to Iran, Iraq and Libya by the Soviet Union. Since 1992 the Su-27 has been exported to both China and Viet Nam.

Flexibility has also come to characterize the business organization at Sukhoi. For example, the single-seater Su-26 sports aircraft, the two-seater Su-29 and the new Su-31 have all been exported via a US distribution firm. Every year Sukhoi has been able to lower its costs and prices to stimulate demand (currently running at 20 aircraft per year at prices of \$170 000–200 000 each). As production increases new suppliers (such as the machine construction factory at Dubno, near Moscow) have been engaged and the international reputation of the firm is further consolidated.

Success in export markets has helped to create interest at home. As a result, one of the most stable financial-industrial groups has been established, bringing together all the enterprises involved in the design and manufacture of Su-series military, training or sports aircraft around the Sukhoi bureau which provides the

⁴⁴ *Vooruzheniye, Politika, Konversiya*, vol. 2, no. 5 (1994) (in Russian).

core of the group. Among the enterprises involved are the aerospace factories of Komsomolsk-na-Amure, Novosibirsk, Irkutsk and others. The financial part of the financial–industrial group is represented by the commercial bank Yalobank which also has the function of attracting new participation by other banks.

Sukhoi demonstrates the extent to which a defence firm can carry through reorganization both of its business arrangements and of the technical content of its product and do so as a means of independently finding its niche in international markets. This is one example of a growing tendency within the Russian defence industry—increasing independence from the state in terms of finance, strategy and marketing, combined with increased development and use of military and dual-use technologies aimed at export markets.

AO Irkutsk Aviation Production Association

Founded in the 1930s, the Irkutsk Aviation Production Association (IAPO) is a production facility making aircraft of different types, including Su-, MiG-, An-, Il- and Yak series. Its production processes are therefore geared towards multifunctionality and integration of large systems. Having all the necessary production equipment for the different types of aircraft, IAPO is capable of unit production of one-off models and flexible batch production of existing models with a wide range of modifications possible. For example, the facilities allow for switching of production between military and civil versions of Antonov and Ilyushin aircraft designs. According to the General Director of IAPO, Aleksey Fyodorov, the enterprise has all stages of the manufacturing cycle under its control and this provides the basis for flexible production. One example was the Su-27UB new-generation fighter (sometimes called the Su-30) which was test-flown in March 1985 and was in full production at IAPO by the middle of 1986.

Along with better-known classes of aircraft, IAPO has also been at the centre of the development of less well-known types, such as the Be-200 wing-in-ground effect or amphibious aircraft (to the design of TANTK BeriyeV), the light four-seater Yak-112 and the Delta GALS-5.

In spite of this record of production, however, IAPO has no experience of exports or of sales to domestic buyers, including the Ministry of Defence. The facility has had 60 years of experience in aircraft manufacture and has a reputation for reliability. However, according to Fyodorov, ‘for us, entering the market—including the export market—means a search for new paths of development’.⁴⁵

VI. Conclusions

It is clear from these examples of leading defence industry enterprises what an incentive they have to establish themselves in export markets. Some specialize in the export of military technology, while others (the majority) seek to export

⁴⁵ *Military Parade*, July–Aug. 1995.

civilian products embodying dual-use technology. The extent to which they are able to produce in a sufficiently flexible fashion to meet the demands of government or commercial clients depends very much on the extent to which they have successfully reshaped their organizational structures and procedures to encourage flexible operation.⁴⁶

As far as the defence industry and arms exports as a whole are concerned, the picture is a contradictory one. On the one hand, there continues to be a lack of strategy or cohesiveness of any sort on the part of the government regarding the future of the Russian defence industry. It is neither being closed down nor supported. Under these conditions it has proved particularly difficult to rationalize and modernize. The same applies to its major potential clients, the armed forces. This lack of clarity also affects arms exports. While some support is given, on balance it may be said that government policy has worked to the detriment of exports (whether military or civilian) from Russian defence enterprises. This is particularly true of the financial regime within which defence enterprises are supposed to trade.

In this climate, where government influence is increasingly seen in negative terms by defence industry management, the initiative is passing increasingly to enterprises themselves to find a means of survival. The export of civilian technology is for them a high priority but, given that this frequently consists of production technologies that have both civilian and military applications, this may represent greater cause for concern than a more conventional arms export policy coordinated by the government.

⁴⁶ Denezhkina, E., 'Economic and managerial aspects of defence industry transformation', *Conversion in Machine-Building*, no. 2 (1996).