Appendix 9C. Developments in the Russian arms industry

JULIAN COOPER

I. Introduction

It is now more than a decade and a half since the size of the vast arms industry of the Soviet Union began to contract, at first in terms of output and employment, and later with respect to the number of production and research facilities. Since the collapse of the Soviet Union in 1991, the administrative structures responsible for the management and oversight of the military sector in Russia have undergone frequent and at times far-reaching change. Over time, Russian military production has become increasingly dependent on export orders, with only modest domestic procurement for the needs of the Russian armed forces. Since Vladimir Putin was elected President of Russia in 2000, military output has recovered to some extent and funding for procurement and research and development (R&D) has increased at a rapid pace. However, this expansion of monetary outlays has not been matched by a corresponding increase in the number of new weapons reaching the armed forces. The principal factor accounting for these developments has been the state of the economy. Notwithstanding substantial earnings from oil and gas exports and an annual average rate of growth of gross domestic product (GDP) of some 7 per cent since Putin took office,[1] the economy remains weak and for the past decade the Russian Government has not been prepared to put economic expansion at risk by increasing the share of GDP devoted to defence. Starved of resources for almost 15 years, the Russian arms industry is now facing some extremely serious structural problems and further contraction is now almost inevitable.

Overall trends of development of the Russian arms industry between the final years of the Soviet Union and 2004 are shown in table 9C.1. It can be seen that the industry has undergone very substantial contraction and its role in the economy as a whole has diminished to a significant degree, whether measured in terms of employment or of output. The size of the industry's labour force has been in relentless decline since the late 1990s while the average age of the remaining personnel continues to rise and is now 54 years. In research institutes the average age is even higher, at 57 years, and 90 per cent of personnel are over 50.[2] A major factor in the industry's inability to recruit new workers is inadequate reward for skilled and responsible work. In Soviet times the military sector offered some of the best employment opportunities and pay; today, while wages have recovered from the very low rates characteristic of the mid-1990s, they are still far below the average for industry as a whole.

[1] Rosstat, 'Dinamika real'nogo ob"ema pronzvedennogo VVP' [Dynamic of real volume of produced GDP], URL <http://www.gks.ru/bgd/free/b01_19/IssWWW.exe/Stg/d000/i000040r.htm>.

[2] Solov'ev, V. and Ivanov, V., Gosprogramma vooruzhenii na 2002–2006 gody provalena [State programme of armaments for 2002–2006 has failed], *Nezavisimoe Voennoe Obozrenie*, 29 July 2005, URL <http://nvo.ng.ru/wars/2005-07-29/>. The retirement age in Russia is 60 for men and 55 for women.

Table 9C.1. The Soviet and Russian military economies, 1990–2004

	Soviet Union, 1990	Russian Federation		
		1990–92	Mid-1990s	2004
Arms industry employment:[a]	7 840 000[b]	4 889 000[b]	2 663 000[b]	1 800 000
Working in industry	6 425 000	3 990 000	2 107 000	1 340 000
Working in R&D	1 415 000	880 000	550 000	452 000
Employment in the arms industry as a share of total employment in the economy (%)	*6.7*	*6.8*	*4.0*	*2.7*
Employment in the arms industry as a share of total industrial employment (%)	*17.8*	*18.7*	*12.9*	*9.5*
Average age of arms industry employees (years)	. .	39[c]	. .	54
Average monthly wage in the arms industry as a share of the average industrial wage (%)	*97*[d]	*85*[e]	*59*[f]	*78*
Investment in the arms industry (as an index, 1992 = 100)	. .	100[g]	7.5[g]	15.5[g]
Share of investment in the defence industry funded by the budget (%)	. .	*55.5*	*20.0*	*14.2*
Arms industry output (as an index, 1991 = 100):	. .	100[e]	20.1[h]	52.5
Military	. .	100	13.9	40.5
Civilian	. .	100	28.5	65.7
Arms industry output as a share of total industrial output (%)	*12*[i]	*8.4*[i]	*7.7*[i]	*5.8*[i]
Military output as a share of total industrial output (%)	*6*[i]	*3.2*[i]	*2.2*[i]	*3.4*[i]
Share of production equipment:				
Under 10 years old (%)	*63*	. .	. .	*25*[j]
Over 15/20 years (%)	*16*[k]	. .	. .	*30*[j l]
Use of production capacity (%)	. .	*64*[m]	*15.7*[m]	*31.2*[m]
Arms exports[n] ($ m.)	16 000	4 800	3 050	5 770
as a share of total exports (%)	*17.6*	*9.4*	*3.0*	*3.2*
Share of total military production exported (%)	. .	*~20*[o]	*35–40*[o]	*74.6*[o]
Number of *voenpredy* (military representatives)	130 000[p]	. .	. .	24 000

Note: This table was compiled from diverse sources and the data are often ill defined. It is presented here in order to illustrate the overall trends of development since 1990.

[a] Total employment figures for the Russian Federation refer to the arms industry excluding the nuclear industry. In some cases the total includes a few thousand 'other' employees.

[b] These figures are for 1988, 1992 and Sep. 1996, respectively.

[c] This figure is for 1990.

[d] In 1985 the share was 105%.

[e] This figure is for 1991.

[f] This figure is for June 1995, when it reached its lowest point.

[g] These figures are for 1992, 1997 and 2002, respectively.

[h] This figure is for 1997.
[i] These figures are for 1990, 1991, 1993 and 2003, respectively.
[j] This figure is for 2001.
[k] This figure is for equipment over 15 years old.
[l] This figure is for equipment over 20 years old.
[m] These figures are for 1993, 1997 and 2003, respectively.
[n] These are official Soviet/Russian figures.
[o] These figures are for 1993–94, 1995–96 and 2003, respectively.
[p] No year is given for this figure; it is the maximum number reached in the Soviet period.

Sources: **Employment, 1988**: V. E. Genin (ed.), *The Anatomy of Russian Defense Conversion* (Vega Press: Walnut Creek, Calif., 2001), p. 58; International Labour Office, 'Disarmament and employment programme', Working Paper no. 16, Geneva, Mar. 1990, p. 12; industry and R&D calculated using shares of 1991 in *Moscow News*, no. 7, 1992, p. 7; **1992**: *Segodnya*, 1 Feb. 1994; **1996**: TS-VPK, Nov. 1997, URL <http://server.vpk.ru/www-vpk/reports/>; **2004**: calculated from estimated 2000 data and known decline in 2000–2004; data for 2000 calculated from TS-VPK, URL <http://ia.vpk.ru/vpkrus/kadri/>, and known employment in 2000 in aviation and shipbuilding industries, TS-VPK, URL <http://i.vpk.ru/vpkrus/otrasli>, and *Krasnaya Zvezda*, 12 Jan. 2002, URL <http://www.redstar.ru/2002/01/12_01/>; decline in 2000–2004 from *Problemy Prognozirovaniya*, no. 6, 2003, p. 72 and TsEK, *Rossiya*, no. 1, 2005, p. 63; industry and R&D, using data for 2003, TS-VPK, *VPK Rossii: strukturnye pokazateli 2003* [MIC of Russia: structural indicators 2003] (TS-VPK: Moscow, 2005), URL <http://ia.vpk.ru/localfonds/vpk_struct_demo/2003/>; **Share of total employment and total industrial employment, 1988**: Goskomstat SSSR, *Narodnoe khozyaistvo SSSR v 1990 g.* [National economy of the USSR in 1990] (Finansy i statistika: Moscow, 1991), p. 100; **1992, 2004**: Goskomstat Rossii, URL <http://www.gks.ru/bgd/regl/brus05/IswPrx.dll/Stg/06-03.htm>; **1996**: Goskomstat Rossii, *Rossiiskii statisticheskii ezhegodnik 2000* (Goskomstat Rossii: Moscow, 2001), p.112; **Average age, 1990**: TS-VPK, Kadrovyi potentsial VPK v 2000 godu [Cadre potential of the MIC in 2000], URL <http://ia.vpk.ru/sbornik_2000/kadri/kadri.htm>; **2004**: Solov'ev, B. and Ivanov, B, 'Gosprogramma vooruzhenii na 2002–2006 gody provalena' [State programme of armaments for 2002–2006 has failed], *Nezavisimoe Voennoe Obozrenie*, 29 July 2005, URL <http://nvo.ng.ru/wars/2005-07-29/>; **Average monthly wage as % average wage in industry, 1985, 1990**: *Voprosy Ekonomiki i Konversii*, no. 4, 1991, p. 95; **1991**: *Komsomolskaya Pravda*, 14 Apr. 1993; **1995**: *Krasnaya Zvezda,* 23 Sep. 1995; **2004**: TsEK, *Rossiya*, no. 1, 2005, p. 63; **Investment index**: TS-VPK, *VPK Rossii: strukturnye pokazateli 2002* (as above); **Share of budget-funded investment, 1992, 1997**: TS-VPK, 25 Jan. 2003, URL <http://i.vpk.ru/fin/>; **2002**: TS-VPK, *VPK Rossii: strukturnye pokazateli 2002* (above); **Output index, 1991, 1997**: Institute of Economics of the Transition Period, *Rossiiskaya ekonomika v 2001 godu: tendentsii i perspektivy* [Russian economy in 2001: tendencies and perspectives] (Institute of Economics of the Transition Period: Moscow, Mar. 2002), section 2.7; **2004**: TsEK, *Rossiya: ekonomicheskaya kon"yunktura* [Russia: economic conjuncture], various issues (TsEK: Moscow, 2000–2005); **Arms industry output as share of industrial output and military share, 1990**: *Nezavisimaya Gazeta*, 9 Oct. 1991, p. 4 and Goskomstat USSR, *Narodnoe khozyaistvo SSSR v 1990 g*. (above), p. 5; and *Izvestiya*, 17 Oct. 1991, p. 2; **1991**: calculated from the known 2001 share, TS-VPK, *VPK Rossii: strukturnye pokazateli 2001* (as above); **1993**: BBC, Summary of World Broadcasts, SU/2154 S1/6, 16 Nov. 1994; **2003**: TS-VPK, *VPK Rossii: strukturnye pokazateli 2003* (above); **Age of production equipment, 1990**: ed. Genin (above), p. 60; **2001**: TS-VPK, 'Proizvodstvennyi potentsial VPK Rossii v 2001 godu' [Production potential of the MIC in 2001], URL <http://ia.vpk.ru/sbornik_2001/proizvodst/page_5_3.htm>; **Use of production capacity, 1993**: TsEK, *Rossiya*, no. 1, 1998, p. 134; **1997, 2003**: TS-VPK, *VPK Rossii: strukturnye pokazateli 2002* (above) **Arms exports, 1990**: *Delovye Lyudi*, no. 3, 1999, p. 32; **1991**: TS-VPK, 6 Apr. 2004, URL <http://www.vpk-news.ru/>; **1995**: *Profil'*, no. 4, 2004, pp. 82–88 (CAST data); **2004**: ITAR-TASS news agency, 15 June 2005; **Share of total exports, 1990**: *Rossiiskii Ekonomicheskii Zhurnal*, no. 1, 1993, p. 58; **1991**: Goskomstat Rossii, *Rossiiskii statisticheskii ezhegodnik 1994* (Goskomstat Rossii: Moscow, 1995), p. 421; **1995, 2004**: Goskomstat Rossii, URL <http:/www.gks.ru/bgd/regl/brus05/IswPrx.dll/Stg/25-03.htm>; **Share of total military production exported, 1993–94, 1995–96**: *Finansy*, no. 9, 1999, p. 4; **2003**: TS-VPK, URL <http://ts.vpk.ru/>, 23 Jan. 2004; **Number of military representatives, peak**: Babkin, A., 'Voennaya priemka otkryvaet tainy' [Military acceptance reveals its secrets], *Nezavisimoe Voennoe Obozrenie*, 29 July 2005, URL <http://nvo.ng.ru/armaments/2005-07-29/1_secret.html>; **2004**: Inter-regional Foundation for Information Technologies (MFIT), Obzor po materialam VPK no. 23 (4–11 June 2004), URL <http://www.mfit.ru/defensive/obzor/ob11-06-04-1.html/>.

Table 9C.2. Administrative structures of the Russian arms industry, 1991–2004

Years	Structure
1991	Nine Soviet arms industry ministries, including the Ministry of Atomic Power and Industry (nuclear weapons)
1991–92	Ministry of Industry (with defence industry departments); Minatom[a]
1992–93	Roskomoboronprom[b]; Minatom[a]
1993–96	Goskomoboronprom[c]; Minatom[a]
1996–97	Minoboronprom[d]; Minatom[a]
1997–98	Minekonomiki[e]; Minatom[a]
1999–2004	Two-tiered system: Minekonomiki[e]; later Minpromnauki[f] plus 5 agencies (Aerospace, Conventional Arms, Munitions, Shipbuilding and Control Systems); Minatom[a]
2004–	Two-tiered system: Minpromenergo[g] plus two federal agencies, Rosprom[h] and Roskosmos[i]; Rosatom[j]

[a] Minatom is the ministry of atomic energy.
[b] Roskomoboronprom is the Russian committee of the defence industry.
[c] Goskomoboronprom is the state committee of the defence industry.
[d] Minoboronprom is the ministry of defence industry.
[e] Minekonomiki is the ministry of economy.
[f] Minpromnauki is the ministry of industry and science.
[g] Minpromenergo is the ministry of industry and energy
[h] Rosprom is the federal agency for industry.
[i] Roskosmos is the federal space agency.
[j] Rosatom is the federal agency for atomic energy

Source: Burenok, V. M., Babkin, G. V. and Kosenko, A. A., 'Oboronno–promyshlennyi kompleks: sostoyanie i perspektivy razvitiya' [Defence–industrial complex: state and perspectives of development], *Voennaya Mysl'*, no. 6, 2005, p. 36.

While the rate of renewal of production equipment has shown some increase during the past five years, funded to a large extent by export earnings, there is much worn and obsolete machinery, making it difficult to meet present-day quality standards. According to a source in the Defence–Industrial Complex Department of the Russian ministry of industry and energy, Minpromenergo, 70 per cent of the basic assets of the arms industry are worn out.[3] In the past much arms industry investment was funded from the state budget, but today budgetary sources account for less than 15 per cent of all investment. There are no data on the rate of use of production capacity in Soviet times, but there is no doubt that it was substantially higher than today since the level is currently only half that of 1993. With substantial unused capacity, enterprises have high overhead costs and, with limited production runs for weapons, unit costs have risen sharply. Many enterprises of the arms industry have experienced severe financial problems. In 2003, 35 per cent of industrial enterprises and over 10 per cent of R&D organizations were loss making, while 90 enterprises were sub-

[3] Inter-regional Foundation for Information Technologies (MFIT), 'Voenno–promyshlennyi kompleks: sostoyanie i perspektivy' [Military–industrial complex: state and perspectives], Obzor po materialam SMI no. 32 (20–26 Aug. 2005), URL <http://www.mfit.ru/defensive/obzor/ob26-08-05-1.html#o3>.

ject to official bankruptcy procedures.[4] The output of the arms industry has been recovering since 1999 but remains far below the level of 1991, which in turn was below the peak Soviet output of 1987–88. However, exports of military goods have shown an impressive increase and have played a major role in securing the survival of facilities vital to the future of the Russian arms industry.[5]

Procurement for the domestic armed forces has contracted to a very considerable extent. One indirect indicator of this is the number of military representatives (*voenpredy*) employed at enterprises to oversee the fulfilment of contracts for the Ministry of Defence (MOD). The precise number in Russia in 1991 is not known, but it must have been at least 90 000 (i.e., 75 per cent of the Soviet Union total of 130 000). Now little more than one-quarter of this number of representatives remain.[6]

The principal factors responsible for the contraction of the Russian arms industry can be readily identified. Most significant has been the serious economic decline associated with post-communist transformation, which has given rise to severe pressure on government spending. There has also been considerable institutional flux, not least because of the process of rapid, wholesale privatization in the early 1990s. Military requirements have changed as the Russian armed forces have been reduced in scale and security priorities have been reassessed. At various times the Russian Government has attempted to implement policies designed to restructure the arms industry to meet the country's new requirements, but these initiatives have had little success. Inadequate funding has played a significant role, as has the limited administrative capability of the government—exacerbated by frequent changes in the management structures responsible for the arms industry, which have led to a progressive weakening of central control.

Since 1991 there have been frequent reforms of the government's administrative structures for managing the arms industry. The principal changes are shown in table 9C.2. Almost every restructuring has resulted in a reduction in the number of government officials involved with the military sector and the incessant reorganizations have greatly complicated the pursuit of a coherent state policy. One important government ministry has undergone relatively modest change and has probably been the single most important actor determining the fate of the Russian arms industry: the Ministry of Finance. With the backing of successive presidents and prime ministers, this ministry has for over a decade maintained very strict limits on expenditure on defence and arms procurement.

II. The Russian arms industry and its administration today

With the reorganization of the Russian Government following the appointment of Mikhail Fradkov as prime minister in March 2004, the administrative arrangements for the arms industry underwent yet another change. The five agencies that had overseen the industry since 1999 were abolished and most of the state-owned enterprises were transferred to a new federal agency for industry, Rosprom. This new agency, under the leadership of Boris Alyoshin, has responsibility for the oversight of almost

[4] TS-VPK, *VPK Rossii: strukturnye pokazateli 2003* [Military–industrial complex (MIC) of Russia: structural indicators 2003] (TS-VPK: Moscow, 2005), URL <http://ia.vpk.ru/localfonds/vpk_struct_demo/2003/>, section 8.1.

[5] See chapter 10 in this volume.

[6] See table 10C.1. Russia accounted for 70% of the Soviet Union's arms industry output and 90% of its military R&D. *Inzhernaya Gazeta*, no. 51 (Apr. 1992).

all Russian industry, the military sector being only a part of its very large portfolio. Within the agency, which has a staff of 495, are departments for the main branches of the arms industry, based on the five former agencies and often with some of the same personnel. Rosprom is subordinated to Minpromenergo, under Viktor Khristenko, whose Defence–Industrial Complex Department is headed by the former head of the Aerospace Agency, Yury Koptev. Minpromenergo, which has a staff of 920, is responsible for the development of policy for the arms industry; implementation is in the hands of Rosprom.[7] In addition, there is a separate federal space agency, Roskosmos, with a staff of 210. Headed by Anatoly Perminov, who has a military background, Roskosmos is responsible for enterprises and R&D organizations of the space and missile industry.[8] Minatom, the former ministry of atomic energy, has been converted into a lower-status federal agency, Rosatom, under Aleksandr Rumyantsev, with a total staff of 500. Rosatom continues to be responsible for the development and production of nuclear warheads and devices.[9] It has two directorates concerned with the nuclear weapon industry, overseen by Ivan Kamenskikh, deputy director of the agency.[10] Both Roskosmos and Rosatom answer directly to the prime minister.

These changes mean that the number of government officials with responsibility for the arms industry is now at a new low. Whereas in Soviet times the nine arms industry ministries probably employed over 10 000 personnel, today the equivalent number appears to be little more than 500. Since the adoption of these new administrative arrangements, there have been frequent complaints that the state has effectively lost control of the arms industry; it is alleged that the agencies are understaffed and that there is a lack of clarity as to the respective responsibilities of Minpromenergo and Rosprom.[11]

In addition, the ministry of economic development and trade, Minekonomrazvitiya, under German Gref, retains responsibility for a number of important military economic activities, including the system of mobilization planning in the event of war and the elaboration and implementation of the annual State Defence Order (Gosudarstvennyi Oboronnyi Zakaz, abbreviated as Gosoboronzakaz or GOZ) for arms development and procurement. Within Minekonomrazvitiya is the Department for the Economics of Programmes of Defence and Security, with a staff of up to 194 headed by a military officer, Vladimir Putilin, who answers directly to Gref.[12] Under the MOD are the Federal Agency for Military Technical Cooperation, headed by Mikhail Dimitriev; the federal service responsible for the GOZ, Rosoboronzakaz, which is

[7] Minpromenergo, News item, 10 Oct. 2005, URL <http://www.minprom.gov.ru/>.

[8] Roskosmos, News item, 10 Oct. 2005, URL <http://www.roscosmos.ru/>.

[9] This downgrading is deeply resented by many in the nuclear industry. Sergei Brezkun, a leading member of the Sarov Research Institute of Experimental Physics, Russia's leading nuclear weapon centre, is not alone in calling for a rapid restoration of ministerial status. He also calls for resumption of nuclear testing. Brezkun, S., 'Kraeugol'nyi kamen' nezavisimosti Rossii'' [The cornerstone of Russia's independence], *VPK*, 24–30 Aug. 2005, URL <http://www.vpk-news.ru/article.asp?pr_sign=archive.2005.98.articles.weapon_02>. In Nov. 2005 Rumyantsev was replaced by Sergei Kirienko, who served as prime minister for a few months in 1998.

[10] Rosatom, News item, 10 Oct. 2005, URL <http://www.minatom.ru/>.

[11] When challenged that the 2004 administrative reform had paralysed the management of the arms industry, Boris Alyoshin denied it but did acknowledge that the reform had created problems. In his view, the difficulties arose mainly from the limited number of personnel now involved. Nikol'skii, A., 'Deistvuyushchie litsa. Interv'yu: Boris Aleshin, rukovoditel' Federal'nogo agenstva po promyshlennosto' [Dramatis personae. Interview: Boris Alyoshin, leader, Federal Agency for Industry], *Vedomosti*, 19 July 2005.

[12] Minekonomrazvitiya, News item, 10 Oct. 2005, URL <http://www.economy.gov.ru/>.

headed by Andrei Belyaninov, the former head of the arms exports company Rosvooruzhenie; and the Federal Agency for Technical and Export Controls. Rosoboronzakaz is concerned with orders for conventional arms and other military hardware, oversees competitive tenders and plays a growing role in quality management and control.

Rosprom and Roskosmos are now responsible for the oversight of all the enterprises and R&D organizations of the arms industry that was previously undertaken by five agencies; the number of facilities that the two agencies are responsible for appears to be much the same, although there is a lack of detailed data.[13] However, not all the facilities are involved in military work and over time there has been a gradual conversion to civilian production. Rosprom and Roskosmos now devote more attention to a set of enterprises and organizations that are directly involved in arms-related work. These are listed in a summary register of facilities involved directly in arms development, manufacture, testing and repair, the latest edition of which was approved in September 2004. Details are shown in table 9C.3.

In November 2005 the administrative arrangements for the arms industry underwent an unexpected change: Sergei Ivanov, while retaining his post as minister of defence, was appointed deputy prime minister with responsibility for oversight of the arms industry and its relations with the armed forces. There was speculation that Ivanov would replace Fradkov as chair of the Commission of the Government for Military–Industrial Questions, a body which meets rather infrequently to consider policy issues facing the arms industry, but this did not happen.[14] However, in March 2006 there was a significant new development: Putin approved the formation of a Military–Industrial Commission (Voenno–Promyshlennaya Komissiya, VPK) of the Russian Government. Ivanov was appointed chair, although he retains his other posts and day-to-day leadership will be exercised by the first deputy chair of the VPK, Vladislav Putilin, who until then, as noted above, had headed the military economic activities of Minekonomrazvitiya. The VPK is to be a permanent body exercising oversight of the overall development of the arms industry, the mobilization system and the production of arms for export orders.[15] At the time of writing the terms of reference and staff numbers of the VPK have yet to be agreed by the government, but it appears that it will have supra-ministerial authority similar to that exercised by its Soviet-era counterpart of the same name.

In 2001 the Russian Government adopted the Programme for the Reform and Development of the Defence–Industrial Complex in 2002–2006.[16] This sets out ambitious plans to reorganize the arms industry on the basis of so-called ‘integrated structures’ in the form of vertically integrated holding companies. According to the original plan, over 70 such structures were to be created, but implementation has been extremely slow. The number of structures actually created is given variously as three

[13] In 2003 there were 1487 enterprises and organizations under the 5 agencies and a further 24, considered to be part of the arms industry, under the Ministry of Industry, Science and Technology. TS-VPK (note 4), section 1.1.

[14] Petrov, N., ‘VPK obrel superlobbista’ [The VPK has a super-lobbyist’], Strana.ru, 16 Nov. 2005, URL <http://www.strana.ru/stories/02/11/14/3206/265199.html>.

[15] Russian Federation, Presidential Decree no. 231, 20 Mar. 2006, URL <http://document.kremlin.ru/doc.asp?ID=032784>

[16] Federal Special Purpose Programmes, ‘Programma “Reformirovanie i razvitie oboronno-promyshlennogo kompleksa (2002–2006 gody)”’ [Programme ‘reform and development of the defence industrial complex (2002–2006)’], 2001, URL <http://www.programs-gov.ru/cgi-bin/index.cgi?prg=125>

Table 9C.3. Numbers of registered enterprises and organizations of the Russian military–industrial complex, 2005

Sector	All	Form of property		Type of activity		
		State	JSC[a]	Production	R&D	Other[b]
Defence industry[c]:	933	404	529	492	412	29
Aviation	191	38	153	104	77	10
Space and missile	97	72	25	34	58	5
Armaments	101	44	57	48	49	4
Munitions	104	83	21	63	34	7
Shipbuilding	112	49	63	72	39	1
Radio[d]	135	41	94	63	71	1
Communications	92	45	47	44	47	1
Electronics	96	27	69	62	34	0
'Special purpose'[e]	5	5	0	2	3	0
Nuclear industry[f]	63	53	10	27	27	9
Ministry of Defence[g]	190	190	0	141	30	19
Civilian industry[c h]	55	24	31	33	16	6
Total	**1 241**	**671**	**570**	**693**	**485**	**63**

JSC = Joint stock company; R&D = Research and development.

[a] Some JSCs have majority state share holdings.

[b] 'Other' activities are test facilities, training centres, information agencies and centres for design of industrial facilities.

[c] The 'defence industry' and 'civilian industry' sectors cover enterprises and organizations subordinated to or overseen by Rosprom, the federal agency for industry, and Roskosmos, the federal space agency.

[d] The 'radio' sector includes air defence and radar systems.

[e] Some cross-branch enterprises and institutes are designated as 'special purpose'.

[f] The 'nuclear industry' sector covers enterprises and organizations subordinated to or overseen by Rosatom, the federal agency for atomic energy.

[g] This sector appears to include most, if not all, of the industrial and research organizations under the Ministry of Defence, including some that are not concerned with weapons but with, e.g., cartography, food supply and construction.

[h] The 'civilian industry' sector includes mainly military vehicles, electrical equipment, instruments, chemicals and materials.

Source: TS-VPK, 'Reestr predpriyatii VPK Rossii (demo-versiya)' [Register of enterprises of the Russian MIC (demonstration version)], 29 June 2005, form 1.S, URL <http://ia.vpk.ru/localfonds/reestr_demo/enterprises/forms/form_1_s.htm>. Register as approved by Minpromenergo in Sep. 2004. As of Oct. 2005 the register included 1279 organizations.

or five.[17] The obstacles have been numerous, including clashes between privately owned and state-owned companies, disputes with regional authorities, the weakness

[17] According to Igor Garivadsky of Minpromenegro, of 75 integrated structures to be created during 2002–2004 only 3 'fully formed' structures were created. Babakin, A., 'Oboronno–promyshlennyi kompleks: krizis ili vyzdorovleniee' [Defence–industrial complex: crisis or recovery], *Nezavisimoe Voennoe Obozrenie*, 22 July 2005, URL <http://nvo.ng.ru/armament/2005-07-22/>. According to another report, of the 40 to be created in 2002–2004, only 5 existed in 2005. Samarova, E., 'Marsh-brosok: strategiya razvitiya oboronno–promyshlennogo kompleksa nuzhno bystrymi tempami' [Forced march: a strategy of

of the former agencies overseeing the arms industry and a lack of clarity on the type of structures required. Alyoshin, the head of Rosprom and a leading advocate of the creation of corporate structures, claims that when implementation of the programme started in 2002 vertically integrated structures were favoured, but even then he and others thought that horizontally integrated holding companies were preferable.[18] Now Alyoshin is the lead promoter of the most ambitious corporate structure to date, the Unified Aircraft Corporation, intended to bring together all the country's main companies for building fixed-wing aircraft, both military and civilian, together with the main design bureaux. It is envisaged that the state will initially own 75 per cent of the shares of the holding company, but this stake may later be reduced to 51 per cent.[19] This project is proving difficult to realize since it is coming up against powerful vested interests. It may also create problems for some of the privately owned companies set to be included. Not least of these is Irkut, the most successful of all Russian aircraft builders, in which the European Aeronautic Defence and Space Company (EADS) has active involvement and in late 2005 acquired a 10 per cent ownership stake.[20] A separate holding company is being created for helicopter production in a project led by Oboronprom, the joint-stock investment company of the state-owned arms export firm Rosoboroneksport. According to Sergei Chemezov, general director of Rosoboroneksport, the state export company now intends to take an ownership stake in all the newly created integrated companies of the arms industry.[21] In his view this participation is needed in order to secure the successful completion of export orders in terms of time and quality.[22]

In creating new holding companies the intention is to retain a state ownership stake of at least 51 per cent.[23] This reflects what appears to be a growing determination that the state must retain control of companies of the arms industry that are considered vital to the country's security. In 2004, of the 1462 enterprises comprising the arms industry, 594 were entirely state owned, 74 had state holdings of 50–99 per cent, 177 had state holdings of 25–49 per cent, and the remaining 617 had state holdings of less than 25 per cent.[24] According to analysis undertaken by the Centre for Analysis of Strategies and Technologies, Moscow, the 20 largest arms companies in terms of sales in 2004 had total revenues of $8529 million, of which no less than 71 per cent ($6070 million) was earned by wholly state-owned firms. In 2002 the equivalent share was 59 per cent.[25]

development of the defence–industrial complex needs a rapid pace], Minpromenergo, 25 Oct. 2005, URL <http://www.minprom.gov.ru/activity/defence/pub/0/>.

[18] Nikol'skii (note 11).

[19] TS-VPK, 18 Oct. 2005, URL <http://ia.vpk.ru/>.

[20] EADS paid over $65 million for the 10% stake. 'Evropeiskaya aerokosmicheskaya korporatsiya poluchila 10% Irkuta i davit Aeroflot' [European aerospace corporation has obtained 10% of Irkut and will put pressure on Aeroflot], Open Economy, 19 Dec. 2005, URL <http://www.opec.ru/news_doc.asp?d_no=59099>.

[21] TS-VPK, 19 Aug. 2005, URL <http://ia.vpk.ru/>.

[22] Gertsev, O., 'Pyatiletie "Rosoboroneksporta": dostizheniya i perspektivy' [Five years of 'Rosoboroneksport': achievements and prospects], *VPK*, 26 Oct.–1 Nov. 2005, URL <http://www.vpk-news.ru/article.asp?pr_sign=archive.2005.107.articles.company_01>.

[23] Reis, A., Minpromenergo deputy minister, cited by TS-VPK, 14 Nov. 2005, URL <http://ia.vpk.ru/>.

[24] These 1462 enterprises are those formerly under the 5 agencies and Minpromnauki, the ministry of industry, science and technology. Centre for Analysis of Strategies and Technologies, 'Ownership structure in Russian defense industry', *Moscow Defense Brief*, no. 2, 2005, URL <http://mdb.cast.ru/mdb/2-2005/facts/owner/>.

[25] Centre for Analysis of Strategies and Technologies (note 24).

Table 9C.4. Output, employment and investment in the Russian arms industry, 1991–2004

Figures are given as an index, set as 100 in 1991 for output and employment and as 100 in 1992 for investment, all at constant prices.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Output:	100	78.7	63.6	39.1	31.4	23.1	20.1	21.7	28.8	36.1	37.8	43.8	50.9	52.5	54.1
Military	100	62.6	49.3	30.3	25.1	18.8	13.9	16.6	22.7	29.4	29.1	35.8	42.4	40.5	43.1
Civilian	100	96.4	82.9	51.0	39.9	28.9	28.5	28.3	36.4	43.8	49.0	51.7	58.6	65.7	64.2
Employment	100	90.3	77.1	64.9	54.5	46.9	41.0	36.0	33.4	34.1	33.5	31.8	30.7	29.4	. .
Investment	–	100	53.1	28.3	16.2	11.3	7.5	7.0	8.9	11.7	15.3	15.5	. .	. .	. .

Sources: **Total, military and civilian output, 1991–2000**: TS-VPK data, as presented in Institute of Economics of the Transition Period, *Rossiiskaya ekonomika v 2001 godu: tendentsii i perspektivy* [Russian economy in 2001: tendencies and perspectives] (Institute of Economics of the Transition Period: Moscow, Mar. 2002), section 2.7; **2005**: Calculated from Minekonomrazviya data in *Ob itogakh sots'ialno-ekonomicheskogo razvitiya RF za 2005 god i zadachakh ekonomicheskoi politiki Pravitel'stvo RF na 2006 god* [On the results of socio-economic development of RF in 2005 and tasks of economic policy of the government of RF for 2006] (Minekonomrazvitiya: Moscow, 22 Feb. 2006), URL <http://www.economy.gov.ru/wps/portal/law/docmert>, p. 149; **Total and civilian output, 2001–2004**: TsEK, *Rossiya: ekonomicheskaya kon"yunktura* [Russia: economic conjuncture], various issues (TsEK: Moscow, 2000–2005); **Military output, 2001–2004**: calculated from total and civilian output data using a civilian : military ratio of 40 : 60 for each year (based on TsEK and Minekonomrazvitiya data suggesting civilian output fluctuated between 37 and 42 per cent of total output); **Employment, 1992–2002**: TS-VPK, *VPK Rossii: strukturnye pokazateli 2002* [MIC of Russia: structural indicators 2002] (TS-VPK: Moscow, 2005), URL <http://ia.vpk.ru/localfonds/vpk_struct_demo/2002/>, section 5.1; **Employment, 2002–2004**: TsEK data in *Rossiya*, no. 1, 2005, p. 63; **Investment, 1992–2002**: TS-VPK, *VPK Rossii: strukturnye pokazateli 2002* [MIC of Russia: structural indicators 2002] (TS-VPK: Moscow, 2005), URL <http://ia.vpk.ru/localfonds/vpk_struct_demo/2002/>, section 8.1.

III. The output of the arms industry

Since the early 1990s there have been two principal sources of data on the output of the Russian arms industry: the Teleinformatsionnoi Seti Voenno–Promyshlennogo Kompleksa (TS-VPK, the teleinformation network of the military–industrial complex), the industry's information agency; and the Tsentr Ekonomicheskoi Kon'yuntury Pri Pravitel'stve Rossiiskoi Federatsii (TsEK, the economic conjuncture centre of the government of the Russian Federation), the government's economic conjuncture centre. The two series of data have been reasonably consistent, but neither organization has provided information on the methodologies employed for what are presented as constant price data. Nothing is known about the price deflators employed. However, given that Rosstat, the federal state statistics service, publishes data on producer prices for the individual branches of civilian industry, it is likely that similar price series are produced for each branch of the arms industry. In recent years access to the TS-VPK data has been limited; they are now available only to subscribers, a change that appears to be designed—at least in part—to restrict access by foreigners. In the case of TsEK data, since 2001 information has been provided only on total and civil production, making it necessary to estimate the trend of military output using scat-

tered and not always consistent data on military and civil shares. What is thought to be a reasonably consistent and accurate series derived from these data is presented in table 9C.4.

Since the 1998 financial crisis in Russia the economy has recovered and from 2000 has grown at an average annual rate of approximately 7 per cent.[26] The arms industry's output has also recovered, although with considerable variation between sectors. The total output of the arms industry (both military and civilian) increased by more than 80 per cent in 1999–2004. The most rapid growth was shown by the shipbuilding industry, boosted by orders from China and India, which increased by 150 per cent, and the radio industry, which increased by 140 per cent. The least rapid growth in 1999–2004 was in the munitions industry, which grew by 20 per cent and is now in serious crisis, while the aviation industry grew by 70 per cent and the space and missile industry by 60 per cent.[27] However, as noted above, employment continues to decline, and investment—which fell to a more dramatic extent than either output or employment—had by 2002 recovered only modestly, severely limiting possibilities for the renewal of the industry's seriously degraded production base.

IV. Arms procurement in Russia

The leadership of the Russian military has become accustomed to seeing the latest products of the arms industry sold abroad in substantial quantities while few, if any, of the same weapons are delivered to the domestic forces. Instead, the Russian military has to rely on diminishing stocks of Soviet-era equipment. As noted above, funding for arms procurement has been increasing rapidly since Putin became President, but the volume of new weapons actually reaching the forces has increased only modestly. This state of affairs has become an issue of lively debate.

Domestic arms procurement, military-related R&D, and the repair and modernization of arms and other military equipment take place within the framework of the annual State Defence Order, the GOZ. This is approved by the government and president soon after the adoption of the federal budget for each year. The GOZ is drawn up on the basis of the State Programme of Armaments (Gosudarstvennyi Program Vooruzheniya, GPV), a document covering a 10-year period but drawn up in detail only for the first five years. The GPV is elaborated by the MOD, in consultation with other armed forces outside the MOD, and is based on an economic forecast supplied by Minekonomrazvitiya. The GPV sets annual targets for the scale of procurement and R&D and outlines policy and plans for armaments for each branch of the armed forces. The first such programme was adopted in the Soviet Union in 1984 and covered the period 1986–95. A successor programme for 1991–2000 was drafted but never adopted. In Russia, the first programme was for the period 1996–2005 (GPV-2005) and was approved by President Boris Yeltin in November 1996.[28] The GPV-2005 was fatally flawed from the outset: it was based on an extraordinarily overoptimistic macroeconomic forecast and provided for spending on defence of over 5 per cent of GDP. The annual GOZ diverged from the programme almost immedi-

[26] Rosstat (note 1).

[27] TsEK, *Rossiya: ekonomicheskaya kon"yunktura* [Russia: economic conjuncture], various issues (TsEK: Moscow, 2000–2005).

[28] Moskovskii, A., 'Uvernnost' v zavtrashnem dne' [Confidence in tomorrow], *VPK*, 10–16 Mar. 2004, URL <http://www.vpk-news.ru/article.asp?pr_sign=archive.2004.26.articles.weapon_01>.

Table 9C.5. Planned expenditure on the State Defence Order of the Russian Ministry of Defence, 1992–98 and 2003–2006[a]

Figures in roubles are given in current prices. Figures in US$ are in constant 2003 prices.

	Total expenditure		Procurement[b]		Research and development	
Year	m. roubles	US$ m.	m. roubles	share (%)	m. roubles	share (%)
1992[c]	191	1 571	115	*60.2*	76	*39.8*
1993[c]	795	1 841	570	*71.7*	225	*28.3*
1994	10 875	10 637	8 442	*77.6*	2 433	*22.4*
1995	15 211	11 250	10 275	*67.5*	4 936	*32.5*
1996	19 688	10 489	13 213	*67.1*	6 475	*32.9*
1997	35 538	7 431	20 963	*59.0*	11 575	*41.0*
1998	27 848	3 660	17 048	*61.2*	10 800	*38.8*
2003	109 817	3 578	64 331	*58.6*	45 486	*41.4*
2004	137 677	4 010	85 777	*62.3*	51 900	*37.7*
2005	187 783	5 013	127 646	*66.4*	63 137	*33.6*
2006	236 700	. .	164 000	*69.3*	72 700	*30.7*

[a] Equivalent data for 1999–2002 are not available.

[b] Procurement includes repairs and modernization. In 2005 these amounted to 42 115 million roubles, 22.4% of total expenditure.

[c] There was extremely high inflation in 1992 and 1993 and the budgets were approved without account of it.

Sources: **1992–93**: *Vedomosti Syezda Narodnykh Deputatov Rossiiskoi Federatsii i Verkhovnogo Soveta Rossiiskoi Federatsii* [Proceedings of the Congress of People's Deputies and the Supreme Soviet of the Russian Federation], no. 22, 1993, article 794; and no. 34, 1992, article 197942; **1994–98, 2003**: *Sobranie zakonodatelstva Rossiiskoi Federatsii* [Collection of legislative acts of the Russian Federation], no. 52, 2002, article 5132, appendix 32; no. 13, 1998, article 1464; no. 9, 1997, article 1012; no. 1, 1996, article 21; no. 14, 1995, article 1213; and no. 10, 1994, article 1108; **2004–2005**: Russian Ministry of Finance, Federal'nyi Byudzhet [Federal budget], URL <http://www.minfin.ru/budjet/budjet.htm>; **2006**: *Izvestia*, 17 Jan. 2006, p. 5.

ately and was soon abandoned. The MOD has estimated that during 1996–2000 actual spending on procurement and R&D was just 23 per cent of that planned in the GPV-2005.[29]

The next armaments programme, GPV-2010, was approved by President Putin in January 2002 and was apparently based on much more realistic assumptions.[30] The level of funding fell far below the MOD's expectations. Given this, the GPV-2010 focused on R&D for the development of new weapons and the repair and modernization of the existing stock of arms in the expectation that the volume production and

[29] Korotchenko, I., 'Minfin gotovit sekvestr oboronnogo byudzheta' [Minfin is planning sequestration of the defence budget], *Nezavisimoe Voennoe Obozrenie*, 11 July 2003, URL <http://nvo.ng.ru/armament/2003-07-11/>; Burenok, V. M., Babkin, G. V. and Kosenko, A. A., 'Oboronno-promyshlennyi kompleks: sostoyanie i perspektivy razvitiya' [Defence industrial complex: state and prospects for development], *Voennaya Mysl'*, no. 6, 2005, pp. 37–38; and Bulavinov, I. and Safronov, I., 'Novosti: Prezident zaprogrammiroval vooruzheniya na 2.1 trln rublei' [News: President has programmed armaments to 2.1 trillion roubles], *Kommersant-Daily*, 24 Jan. 2002, p. 2.

[30] Bulavinov and Safronov (note 29).

procurement of new systems will take place after 2006.[31] At first the annual GOZ was much in line with the targets of the GPV-2010, but the MOD now claims that substantial underfunding is beginning to appear.[32] Work is under way on drafting the GPV-2015, but progress has been delayed by the lack of an agreed long-term economic forecast. The new programme is expected to be approved in the first half of 2006.[33]

While the funding of the annual GOZ may not correspond to the spending outlined in the longer-term GPV, this is not the only problem. In establishing a level of funding for procurement and R&D—and budget spending on defence as a whole—the Ministry of Finance is obliged to base its calculations on a forecast rate of inflation set by Minekonomrazvitiya. There is no specific price deflators for total spending on defence or the purchase of weapons; instead, the consumer price index is used. In reality, year after year, the rate of price increases for activities covered by the annual GOZ is far in excess of the forecast level. This has clearly been a major factor in the failure to secure anything beyond a modest increase in the number of weapons procured; but there are other factors. As Igor Garivadsky, the former deputy head of Rosprom and at the time responsible for oversight of the arms industry, has acknowledged, cost increases arise also because of 'the natural striving of enterprises to include in the price of finished goods outlays on the maintenance of non-working capacities'.[34] Almost certainly, this applies not only to the enterprises and R&D establishments of the arms industry, with their substantial underused capacity, but also to the repair works of the MOD, to which a sizeable proportion of the annual GOZ is allocated. There is also evidence that a large number of worthless research projects are funded in order to maintain the staff of R&D institutes.[35] Thus, money intended for arms procurement and R&D is being used in part to maintain facilities that are of a scale beyond the country's ability to sustain them.

In the early 1990s, as funding contracted sharply, the impact of the cuts was experienced most acutely in R&D. In line with the priorities of the GPV-2010, the share of resources devoted to R&D increased from 2001, but now, as shown in table 9C.5, the trend is once again in a direction favouring procurement, repairs and modernization.[36] This trend may threaten some of the current high-priority development programmes. There is already evidence that the fifth-generation combat aircraft project, led by the Sukhoi holding company, is being delayed by funding problems that are exacerbated

[31] Tul'ev, M, 'Perspektivy gosoboronzakaza' [Perspectives of the state defence order], *VPK*, 18–24 Feb. 2004, URL <http://www.vpk-news.ru/article.asp?pr_sign=archive.2004.23.articles.defence_01>.

[32] Inter-regional Foundation for Information Technologies (MFIT), 'Voenno–promyshlennyi kompleks: sostoyanie i perspektivy' [Military–industrial complex: state and perspectives], Obzor po materialam SMI no. 23 (18–24 June 2005), URL <http://www.mfit.ru/defensive/obzor/ob24-06-05-1.html#o3>. According to Aleksei Moskovsky, the MOD's head of armament, underfunding over the past 5 years amounts to 160–70 billion roubles ($5.5–5.9 billion).

[33] Inter-regional Foundation for Information Technologies (note 32); and TS-VPK, 12 Aug. 2005, URL <http://ia.vpk.ru/>.

[34] Babakin (note 17) (author's translation).

[35] Poroskop, N., 'Nikakoe real'noe voennoe stroitel'stvo v Rossiy ne vedetsysa' [No real military construction is being undertaken in Russia], *Vremya Novostei*, 9 Aug. 2005.

[36] Data on the structure of the annual GOZ for 1999–2002 are incomplete, but according to MOD sources the R&D share was just over 25% in 2000, rising to 41% in 2001. Scientific Research Institute of the Economics of Planning and Management (NIIÉPU), 28 Dec. 1999, URL <http://www.avias.com/news/>; and *Krasnaya Zvezda*, 19 Feb. 2002, URL <http://www.redstar.ru/2002/02/19_02/>, p. 1.

by the fact that few, if any, complete Sukhoi combat aircraft were exported in 2005.[37] Another priority is the new submarine-launched ballistic missile, the R-30 Bulava,[38] being developed by the Moscow Institute for Thermal Technology (MITT). The MITT is also responsible for the land-based Topol-M intercontinental ballistic missile, now entering service at a stable rate of six or seven a year and a major claimant on the procurement budget.[39] It is planned that the latter missile will be adopted for the Russian Navy by the end of 2007, but construction of the first submarines in which it is to be installed has yet to be completed.[40] Other priority development programmes include the S-400 Triumf air defence missile system developed by Almaz-Antei, to be available for procurement with its full range of missiles by 2008,[41] and the X-555 long-range non-nuclear cruise missile developed by the Takticheskoe Raketnoe Vooruzhenie (TRV, tactical missile armament) Corporation for the Tu-160 bomber aircraft and tested successfully in 2005.[42]

V. Problems of quality and foreign dependence

The MOD's Armaments Directorate and Rosoboronzakaz, the recently created federal service for the GOZ, have signalled mounting concern that the Russian arms industry is increasingly unable to supply high-quality weapons and that the new systems being developed incorporate a growing share of imported components. The quality-management systems of most enterprises are clearly inadequate: only 1 per cent of enterprises on the official register have the ISO 9001 international certificate of quality, which is increasingly essential if export orders are to be secured.[43] There may be reluctance on security grounds to undergo the independent audit required for ISO 9001 certification. Many enterprises appear to prefer quality-management certification under voluntary domestic schemes, in particular the Military Register system operated by the MOD since 2000, the Oboronsertifika system set up the former State Committee of the Defence Industry in 1994 and the Russian Register certification

[37] Pronina, L., 'No Sukhoi fighters to be delivered this year', *Moscow Times*, 18 Oct. 2005, URL <http://moscowtimes.ru/stories/2005/08/18/051.html>. The SIPRI Arms Transfers Project estimates that 5 Su-27 combat aircraft were delivered to Eritrea in 2005.

[38] The US designation for the R-30 is SS-N-30 or SS-NX-30, with X standing for 'experimental' since the missile is not yet in production. The Bulava is also known under the Russian industrial designation 3M14.

[39] The US designation for the Topol-M is SS-27. The R-30 is a submarine-launched version of the Topol-M. In 2006, 7 of the new mobile version of the Topol-M are to be procured. It has been reported that the cost of the Topol-M missile has increased by 250% since 2000. TS-VPK, 2 Sep. 2005, URL <http://ia.vpk.ru/cgi-bin/ia/chronicle/>. The Moscow Institute for Thermal Technology is now the sole developer of intercontinental ballistic missile in Russia; the Soviet Union had 4 such organizations.

[40] Kedrov, I., 'Pervoe popadanie "Bulavy"' [First strike of 'Bulava'], *VPK*, 5–11 Oct. 2005, URL <http://www.vpk-news.ru/article.asp?pr_sign=archive.2005.104.articles.army_01>

[41] The US designation for the S-400 Triumf is SA-21 or SA-X-21. It sometimes referred to as the SA-20 in Western sources.

[42] Inter-regional Foundation for Information Technologies (MFIT), 'Razrabotka, modernizatsiya i ispytaniya vooruzhenii i voennoi tekhniki' [Development, modernization and testing of armaments and military hardware], Obzor po materialam SMI no. 28 (23–29 July 2005), URL <http://www.mfit.ru/defensive/obzor/ob29-07-05-3.html#o4>; and *Izvestiya*, 4 Oct. 2005, p. 5.

[43] Samarova (note 17). In general, Russian firms and organizations have been relatively slow in adopting ISO 9001 certification: as of Dec. 2004 there were 3816 certifications, compared with 50 884 in the United Kingdom and 132 926 in China. International Organization for Standardization (ISO), *The ISO Survey of Certifications 2004* (ISO: Geneva, 2005), pp. 9–10; a summary is available at URL <http://www.iso.org/iso/en/commcentre/pressreleases/2005/Ref967.html>.

association.[44] As output fell in the 1990s, many enterprises appear to have run down their quality-management systems. Issues of quality were addressed at a major conference of the arms industry and the MOD at Rostov-on-Don in February 2005. According to Aleksandr Rakhmanov, deputy chief of the Russian armed forces' Armaments Directorate, 21 per cent of the output of arms industry enterprises is rejected: 9 per cent by the enterprises' own quality-control systems and a further 12 per cent by the MOD's military representatives.[45] The MOD's discontent has been voiced by Ivanov, the minister of defence. In his words, some enterprises of the arms industry boast that their products correspond to the world level, but 'not infrequently this is a myth'. He added that the MOD's relations with the military–industrial complex were 'far from peaceful'.[46] As deputy prime minister, Ivanov will now be expected to improve this relationship.

There is evidence that Russia is having to depend to an increasing extent on foreign-sourced components in the development and production of new armaments. This is strongly disapproved of by the military establishment, which has always insisted on entirely domestic supply or—since the disintegration of the Soviet Union—supply from countries considered totally dependable, in particular Belarus. In 2003 Rakhmanov noted that 22 000 different components were then being imported from other member countries of the Commonwealth of Independent States.[47] While he welcomed the positive relations, he also observed that it was necessary to secure maximum independence for the Russian arms industry in the manufacture of the basic types of armaments.[48] Growing dependence applies above all to electronic components. Recognizing this reality, the MOD has established its own centre for certifying foreign-produced components and materials for use in domestically built weapons; it is based at the MOD's 22nd Central Scientific Research and Testing Institute at Mytishchi, near Moscow.[49] The events in Ukraine in 2004–2005 appear to have prompted some reconsideration of the wisdom of depending on what is perceived to be an unreliable neighbour for the supply of key inputs. In July 2005, for example, it was decided that gas turbines for ships, previously a Ukrainian monopoly, would be built in Russia by a consortium headed by the Saturn works in Rybinsk, better known as a leading supplier of aircraft engines.[50] It is notable that, in its latest long-term forecast of the development of the Russian economy to 2020, the respected Centre for Macroeconomic Analysis and Short-term Forecasting acknowledges a serious risk that after 2010 the high-technology sector of the economy, above all the arms industry, will

[44] See the websites of the Military Register at URL <http://www.voenreg.ru/> (in Russian); Oboronsetifika at URL <http://www.center-qualitet.ru/> (in Russian); and the Russian Register at URL <http://www.rusregister.ru/eng/>.

[45] Lenta.ru, 15 Feb. 2005, URL <http://www.lenta.ru/>.

[46] Knyaz'kov, S., '"Bulava" derzhavy'' ['Bulava' of the state], *Krasnaya Zvezda*, 27 Aug. 2005, URL <http://www.redstar.ru/2005/08/27_08/1_03.html> (author's translation).

[47] The member states of the Commonwealth of Independent States are listed in the glossary in this volume.

[48] 'Bolee 20 tys. komplektuyushchikh dlya sozdaniya Rossiiskogo oruzhiya zavozitsya iz strany SNG—ekspert' [More than 20 thousand components for creation of Russian armaments are imported from CIS countries—an expert], *Defence Express*, 4 Apr. 2003, URL <http://www.defense-ua.com/rus/news/?id=5976>.

[49] Borisov, A. A., '22-mu Tsentral'nomu nauchno-issledovatel'skomu ispytatel'nomu institutu MO RF: 50 let'' [The 22nd Central Scientific Research and Testing Institute of the MOD of the Russian Federation: 50 years], *Voennaya Mysl'*, no. 6, 2005, p. 79.

[50] '"Saturn" v nebesakh i na more' ['Saturn' in the sky and on the sea], *Krasnaya Zvezda*, 9 July 2005, URL <http://www.redstar.ru/2005/07/09_07/4_02.html>.

have exhausted its inherited stock of technological possibilities and Russia will find itself excluded from traditional arms markets and unable to enter new ones. It adds that 'the production of Russian armaments will become critically dependent on the import of major components'.[51]

Over the past decade the attitudes of both Russian authorities and the public towards foreign participation in the Russian arms industry appear to have hardened. In a nationwide poll undertaken in July 2005, 80 per cent expressed the view that there should be no foreign ownership stake in any company of the arms industry and only 2 per cent considered it acceptable to have no limits on ownership.[52]

In May 2005 President Putin called for new legislation on limiting access of foreign investors to strategic sectors of the economy, including the arms industry. The law was to have been elaborated by Minpromenergo before 1 November 2005, but was delayed by disagreements with Minekonomrazvitiya, which argues for a more liberal approach.[53] However, the outcome is likely to be strict limits on foreign firms' ownership of companies in the Russian arms industry.

VI. Transparency in relation to the military economy

It was only in the final years of the Soviet Union, under President Mikhail Gorbachev, that the almost impenetrable veil of secrecy over the military economy began to be cautiously lifted. Since 1991 there has been much greater transparency in relation to the arms industry, arms exports and military expenditure, but progress has been uneven, with occasional reverses. Today the situation is much improved but there are still limits and Russia still has some way to go to meet the standards of transparency typical of developed democratic countries. In particular, much military expenditure, especially that relating to procurement and R&D, is still classified and details are only available to those members of the Federal Assembly, Russia's parliament, who have security clearance. Official information on arms exports is still strictly controlled, and data on the arms industry are still relatively inaccessible to outside observers. New commercial secrecy considerations to some extent reinforce the traditional inclination to restrict the availability of information.[54] Russia continues to report annually to the United Nations on conventional arms exports and military expenditure, but with a minimum of detail in the case of arms exports and no explanation of the meaning and scope of the data provided on expenditure, which are difficult to reconcile with data published in other sources.[55]

[51] Belousov, A. R., *Dolgosrochnye trendy Rossiiskoi ekonomiki: stsenary ekonomicheskgo razvitaya Rossy do 2020 goda* [Long-term trends of the Russian economy: scenarios of economic development of Russia to 2020] (Centre for Macroeconomic Analysis and Short-term Forecasting: Moscow, Oct. 2005), p. 104 (author's translation).

[52] Balatskii, E., 'Svoe–chuzhoe: spravimsya sami' [Our own–foreign: let's manage it ourselves], *Vedomosti*, 29 Aug. 2005, URL <http://www.vedomosti.ru/newspaper/article.shtml?2005/08/29/96336>.

[53] Smirnov, K., 'No place for investment', *Kommersant Vlast'*, 31 Oct. 2005, URL <http://www.kommersant.com/doc.asp?idr=528&id=622328>.

[54] E.g., Irkut states in its financial report for 2002 and 2003 that its operations 'related to the construction and sale of military aircraft are subject to the Law of the Russian Federation on State Secrets signed by the President of the Russian Federation on July 21, 1993.' Irkut, 'Consolidated financial statements December 31, 2003 and 2002', 27 Aug. 2004, URL <http://www.irkut.com/en/for_investors/reports/>, p. 8.

[55] For the UN Register of Conventional Arms (UNROCA), there are missing data on Russian export deliveries, in particular to China, and few details are provided of the type of arms delivered. However, in

One significant step forward is the fact that all government agencies in Russia are now expected to provide information on their websites. The websites of Minekonomrazvitiya, Minpromenergo, Roskosmos and Rosprom provide much useful material relating to military economic issues, but other government agencies have been less forthcoming.[56] In October 2005 in a landmark legal decision a local court in St Petersburg upheld a complaint by the Institute for the Development of Freedom of Information that some federal executive bodies were in breach of a government decree of February 2003 obliging them to create official websites and provide on them information on their activities according to a specified list.[57] In the military economic field, agencies identified as having purely formal websites not meeting the terms of the decree included Rosoboronzakaz and the Federal Agency for Military Technical Cooperation.[58] The Institute for the Development of Freedom of Information has already achieved success in court in relation to other government bodies, so this latest court decision may well lead to greater transparency. Finally, one significant advance in transparency that should not be overlooked is the fact that many leading firms of the Russian arms industry now have their own informative websites: good examples include those of Almaz-Antei, Irkut, Saturn and the TVR Corporation.[59]

VII. Conclusions: further reforms?

While Russian military spending has been increasing in recent years and the output of the Russian arms industry has shown rapid growth, recovering some of the ground lost during the 1990s, there remains considerable anxiety about the state of the industry and its future prospects. The ambitious plans of 2001 for creating large corporate structures have not been realized. There is also mounting awareness that, with an ageing labour force and much obsolete equipment, it will be difficult to secure volume production of new weapons of a high technological level and quality when conditions finally permit domestic procurement on a scale adequate for a meaningful

these respects Russia is not alone and it could be argued that it is to Russia's credit that reports are still being submitted to this voluntary register when such countries as China and Iran do not. In reporting spending, it is not made explicit whether the data refer to actual or planned outlays; spending on the development and procurement of nuclear warheads and devices is omitted; and some spending, especially on R&D, is clearly neither actual nor budgeted but simply allocated between services on a percentage basis without change of the shares over a number of years. On transparency in military economic matters in present-day Russia see Cooper, J., 'Society–military relations: the economic dimension', eds S. L. Webber and J. G. Mathers, *Military and Society in Post-Soviet Russia* (Manchester University Press: Manchester, forthcoming 2006). See also chapter 7, appendix 9D and chapter 11 in this volume.

[56] See the websites of Minekonomrazvitiya, URL <http://www.economy.gov.ru/>; Minpromenergo, URL <http://www.minprom.gov.ru/>; Roskosmos, URL <http://www.roscosmos.ru/>; and Rosprom, URL <http://www.rosprom.gov.ru/>.

[57] Press service of the Russian Committee for the UNESCO Programme Information for All, 'Sud postanovil, chto organov vlasti otkryvayutsya ne "dlya galochki"' [Court has decreed that the sites of organs of power are opened not for 'ticking boxes'], 18 Oct. 2005, URL <http://www.nacbez.ru//article.php?id=1390>.

[58] At the time of writing the website of Rosoboronzakaz, URL <http://www.fsoz.gov.ru/>, is a purely 'Potemkin village' site, with virtually no content of any value. The website of the Federal Agency for Military Technical Cooperation, URL <http://www.fsvts.gov.ru/>, provides limited information but is improving.

[59] See the websites of Almaz-Antei, URL <http://www.almaz-antey.ru/> (in Russian); Irkut, URL <http://www.irkut.com/en/>; Saturn, URL <http://www.nposaturn.ru/default/>; and the TVR Corporation, URL <http://www.ktrv.ru/>.

re-equipment of the armed forces. Recognizing that the 2001 Programme for the Reform and Development of the Defence–Industrial Complex in 2002–2006 has achieved only modest results,[60] Minpromenergo is now finalizing a new federal state programme for the period to 2010, the FGP-2010, which will have a sub-programme for the nuclear industry. It is intended that the new programme will be fully compatible with the new armaments programme, the GPV-2015. The main goals of the FGP-2010 will be: (*a*) the completion of the reorganization of the core of the arms industry into 40–45 holding companies, embracing about half the enterprises and organizations in the register of the military–industrial complex; (*b*) the technical re-equipment of the industry and creation of production capacities for the manufacture of new weapons; and (*c*) the retention and development of critical technologies considered vital for the GPV-2015. It is envisaged that the implementation of the new programme will create conditions that allow the volume production of new armaments to commence in 2011. According to Koptev, head of the Defence–Industrial Complex Department of Minpromenergo, both the FGP-2010 and the GPV-2015 should be adopted by the second quarter of 2006. However, there are already concerns that inadequate funding will delay the start of the arms industry programme until 2007.[61]

It is now over 15 years since President Gorbachev started the process of halting the growth of the Soviet military economy and then, at first cautiously, began to reduce its scale. This process gathered momentum in the new conditions of post-communist Russia but an end point is still not in sight. It can now be concluded that, whereas the Soviet Union had a highly militarized economy, the same cannot be said of contemporary Russia. However, in some respects the Soviet legacy is still apparent: the Russian arms industry remains relatively isolated from the rest of the world with an evident reluctance at the official level to establish transnational partnerships for the development and production of weapons, let alone permit any sizeable foreign ownership stake in the domestic industry. While the arms industry and military economic issues in general are more open than in the past, the level of transparency still lags behind that accepted as normal in democratic countries.

[60] Federal Special Purpose Programmes (note 16).

[61] Mikhailov, V., 'Pyatiletka dlya "oboronki"' [A five-year plan for the defence industry], *VPK*, 24–30 Aug. 2005, URL <http://www.vpk-news.ru/article.asp?pr_sign=archive.2005.98.articles.weapon_01>; Samarova (note 17); and TS-VPK (note 33).