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RUSSIA'S DEFENSE INDUSTRY: FEET OF CLAY

Experts differ in their assessment of the state of the Russian defense industry. The pessimists point out that the production facilities are obsolete and decrepit, that the Soviet-era R&D edge has blunted, the bulk of the defense industry talent has reached pension age, quality standards have slipped, and order delivery deadlines are routinely missed.

But there are also optimists who say that Russian defense exports are rising steadily, Russia's own army is buying much more equipment than it used to, the defense industry itself is undergoing structural reform, several defense contractors have upgraded their production facilities, the government is planning a big wave of military technology refreshment to be completed by 2015, plus there are plans to build a whole new fleet of aircraft carriers.¹ Military exercises have become a much more frequent occurrence, and Russian warships and aircraft are paying regular visits to the far corners of the globe.

So what is the real state of affairs in the Russian defense industry, and what does the future hold for it?

THE ART OF BREATHING UNDER WATER

Starting from 1992, when the Soviet Ministry of Defense ended its financing of the national defense industry, defense contractors entered a long period of struggle just to stay alive.

State funding of the industry had dried up almost overnight. Output plunged by 70–80 percent. A huge sector of the Soviet economy lost its key customer and its means for existence. The Russian armed forces suspended all their procurement programs. The only orders that still trickled in to the defense contractors were for the repair and maintenance of ageing equipment.

A new word, *conversion*, became all the rage. The defense contractors were told to diversify into consumer goods. Missile factories ventured into the brave new world of kitchen utensils and home decoration. Alas, all their teapots and garden implements, with their residual militaristic design, struggled to win consumers' hearts.

Those companies that were lucky enough to have their production facilities somewhere central ended up sprucing them up and becoming landlords. The rent paid by commercial tenants sometimes stretched far enough even to pay the wages of the staff. Moscow residents had no idea that the appearance of a novelty consumer goods store called Bauklots had coincided with the disappearance of a factory that made the S-300 air defense systems. The Russian armed forces did not notice the loss—they had long ago cancelled all their orders for the S-300.

Manufacturing of combat aircraft plummeted to less than six percent of the 1992 level, military helicopters—20 percent, air missiles 4.3 percent, and ammunition to less than one percent.

But neither conversion nor letting could fill the industry's gaping financial hole. During Boris Yeltsin's tenure, the Russian government admitted that arms exports were in fact the only means of survival for the defense industry, and therefore the only means of propping up Russia's national

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security. Not everyone made it. Those who did not heed the president's words were the first to bite the dust. The fate of the industry now hinged almost solely on exports.

Those years were a crash course for Russia on how to get rid of imperial ambitions. In the first years of independence, the Russians balked at selling their most hi-tech weapons abroad, saving them for their own mighty army. Only 10 years ago Russia refused to sell China the latest anti-ship missile systems and high-speed underwater missiles. But, gradually, the restrictions were lifted and Russian defense contractors even started developing the latest weaponry for foreign customers, using those customers' money to fund the required R&D. The Russian defense industry swallowed its pride and started doing what had to be done. Russia's own soldiers will never get their hands on many of the latest and greatest Russian weapons: they were developed and built for those who pay and call the tune.

The Soviet-era competitive edge in military technology was substantial, but it could not last forever. And whereas "unique" and "the world's only" remained the preferred epithets for Russian journalists to describe the latest Russian weapons as recently as the late 1990s, those turns of phrase have now fallen out of use. "Internationally competitive" is the new journalistic cliché, though specialists know very well what hides behind those words. In many respects, Russian military technology is still stuck in the 1970s and 1980s.

The figures in Table 1 suggest that the contribution of defense exports to the Russian economy is fairly modest (less than two percent of the total).

In 1990, Russia's share in the world's exports of high-tech equipment was six percent. By 2000 it had slipped to one percent, by 2007 to about 0.5 percent, and by 2008 to only 0.2 percent. That means that over the past 18 years Russia's share of the world's arms exports pie has shrunk by a factor of 30.

That figure may be surprising to some, but not to specialists. In one military design bureau just outside Moscow, the top managers are all in their late seventies, heads of department in their late sixties, and the average age of designers is 67. Not a single staff member is younger than 60. The bureau used to have several designers working in every project branch. Now, there is only one designer for each.² The young talent, unable to find decent employment at home, is leaving the country in droves. Foreign recruiters are sometimes keeping tabs on promising young students starting from their third year of studies. Up to 75 percent of the graduates of one faculty of the Moscow Bauman University of Military Technology are now working abroad. The figure is 85 percent for the Biology faculty of Moscow State University. The young graduates can hardly be accused of lack of patriotism. The Russian Defense Ministry can offer them neither grants, nor stipends, nor attractive employment.

Every year, researchers and educators tell students not to waste their time on degrees in law, economics, journalism, or political sciences. The labor market is chock-full of unemployed journalists, economists, and lawyers. And every year the students take this advice, then do exactly

Table 1. Defense Exports 1999–2009³

Year	Total Russian exports, billion dollars	Defense industry		
		Exports, billion dollars	Share of total exports, %	Exports in billion rubles ⁴
1999	75.6	3.393	4.49	91.61
2000	105.0	3.681	3.51	103.66
2001	101.9	3.705	3.64	111.67
2002	107.3	4.810	4.48	150.79
2003	135.9	5.568	4.09	170.83
2004	183.2	5.855	3.19	168.68
2005	243.8	6.126	2.51	173.24
2006	303.6	6.464	2.13	175.76
2007	354.4	7.40 ⁵	2.08	191.29
2008	471.6	8.35 ⁶	1.77	207.49
2009 (forecast)		8.56 ⁷	–	–

the opposite. There is certain logic to it: has anyone heard recently of a factory recruiting young engineers? In what industry (apart from oil, gas, and software) can a technology graduate find decent pay, career prospects, and a social security package for himself and his family?

The state corporation *Rostekhnologii* has taken to setting up special departments at leading universities to train its future staff. But, whichever way you look at it, the career path the corporation is laying out before these students is that of bureaucrats, not industry specialists.

Under a program of Russia's social and economic development announced by Dmitry Medvedev at an economic forum in Krasnoyarsk back in 2008, before his election as president, Russia's hi-tech exports were expected to grow by 15–20 percent every year to reach \$60 million–\$100 billion by 2020 (the current figure is \$6 billion–\$8 billion).⁸ It is hard to say whether we are any nearer to reaching those targets than we were back in the 1990s.

Some nations have found a way to adjust their defense industries to serve foreign markets. The Israeli defense sector has to export three-quarters of its output, so that Israel's own army may receive the remaining quarter. The country's compact and high-tech defense industry is very competitive and shaped to cater to the needs of the international arms market. But let us not forget that its success is predicated to a large degree on American military technology used by the Israelis, and on the efforts of 2,000 private Israeli intermediary companies plugging Israeli arms all over the world. Meanwhile, in most NATO countries the national defense industries mainly supply their own national armed forces. In the United States,⁹ our constant competitor, domestic military procurement dwarfs arms exports by a factor of at least 7 (and as high as 10 in some years).

Russia's defense industry is much larger than Israel's. The world arms market is simply not large enough for it. So, in order to win its own place in the sun, Russia, as usual, has chosen its own strategy: state monopoly on arms exports, and a single state-owned arms trading company.

The state-owned intermediaries have been given the full set of instruments to bolster Russian arms exports. They are now backed by Russian diplomats and secret services—even the president himself sometimes lobbies arms exports deals on the highest level.

MARKET IS THE KEY

The international arms market is thought to be very competitive. Rival bidders for defense contracts often have to resort to price-dumping techniques, bribe the potential customers by transferring sensitive technology to them, or make use of political connections to win the contract. Kickbacks, collusion, black PR—all the dirty tricks that fall under the definition of unfair competition—are rife.

But sometimes things are just the other way around: arms exporters abandon the market, leaving it all to their main rivals. It is hard to imagine a situation whereby a huge chunk of the world market for, say, beef or consumer electronics is completely dominated by a sole supplier, who can then dictate the terms and prices. But in the arms trade that is exactly what happens sometimes. For various political reasons—such as the fight for democracy or human rights—Western countries sometimes impose sanctions against countries they do not like. As a rule, these sanctions include restrictions on arms sales.

India fell foul of such restrictions after conducting nuclear tests. The Tiananmen events of 1989, when the Chinese authorities brutally suppressed student protests, led to a ban on the sale of Western arms to China. The list of the countries that are not allowed to buy weapons from Europe or the United States is quite long. Apart from China, it includes Iran, Venezuela, Cuba, Syria, Myanmar, Uzbekistan, Belarus, and others. And for some strange reason this list happens to look very similar to the list of Russia's traditional defense customers. The United States and the EU have essentially made the Russian defense contractors a free and generous gift of the Chinese, Iranian, Venezuelan, Syrian, and even part of the Saudi market, as well as some others. There is a virtual fence around these markets, with a complicated Western exports control system along its entire perimeter. But there are also gaping holes in those fences, through which Russia is driving not just carts but full-size containers.



These countries account for over half of Russia's defense exports. The West has essentially granted Russia a monopoly on arms sales to these countries, turning them into a competition-free haven for Russian defense contractors.

About 10 years ago, Britain, apparently realizing the absurdity of such policy, threw its weight behind the proposed International Arms Trade Treaty (ATT), an old initiative spearheaded by a small group of enthusiasts. The essence of the proposed treaty is that the international community should introduce severe restrictions on arms sales to countries that violate human rights. The list of such countries might well include a good half of Russia's defense customers—in fact, Russia itself appears at risk of being blacklisted.

On December 6, 2006, the UN General Assembly adopted resolution 61/89, "Towards an arms trade treaty: establishing common international standards for the import, export and transfer of conventional arms." Backers of the proposed ATT say it should be legally binding; it should contain clear criteria for denying a country the right to import arms; effective implementation and verification mechanisms; and punishment for those who violate their commitments. The resolution was passed by 153 votes, which suggests that the overwhelming majority of the international community would be interested in such an agreement.

The proposed ATT is nearing the moment of truth, and Russia will soon be forced to make its opposition to the initiative known. Until now, Moscow has been trying to avoid this, for appearances sake. In the meantime, Russia has the gaping holes in the fences all to itself—although countries such as China, Israel, India, Iran, and North Korea are also trying to grab their share of the pie.

COMPONENT ASSEMBLY

In the past 10 years, a new woe has brought sleepless nights to Russian arms makers and concerned members of the public alike: theft of Russian military technology. There have been some examples of daylight robbery, of course. In one of the most flagrant episodes, China signed a contract in 1996 for the licensed assembly of 200 Russian Su-27SK fighter jets under the local brand name J11. But after taking delivery of 95 assembly kits, 180 AL31F engines and all the accessory equipment, the Chinese announced in November 2004 that they no longer needed the Russian parts for the Su-27s.¹⁰ For the next three years, Russian aircraft makers wondered how the Chinese were keeping their planes flying without buying any spare parts from Russia. Then finally, in early 2007, the Chinese demonstrated their own new fighter jet, the J11B, which experts easily recognized as a clone of Su-27. China promptly put the new jets up for sale, and Pakistan became the first buyer. As an option, the Chinese also offer clones of Russian air-to-air missiles, including the latest Russian R-77, which they market as PL12.

Similar examples are rife: China, North Korea, Bulgaria, Romania, and even Pakistan manufacture and export clones of Russian weapons, created on the basis of technologies they received directly from the Soviet Union or acquired by reverse engineering. Some of them have been taken to court by Russia, but seldom with any success. It is hard to shut down the *Arsenal* plant in Bulgaria, for example, when the Kalashnikovs it produces are bought in huge quantities by the Pentagon for the army in Afghanistan.

To a certain extent, Russia inherited this problem from the Soviet Union, which had the generous habit of bestowing entire weapons plants upon its Communist brethren and other friends abroad. But the Chinese J11B is a very recent affair. China is using the usual method of first buying assembly kits, and then learning all the secrets of manufacturing the required components at home. But that trick is not a Chinese invention. Not so long ago, the Soviet Union itself was making use of it to build up its economic and military muscle.

Large component assembly in its pure form is just an illusion of developing technological prowess at home. Witness the Russian auto industry, crumbling under the pressure of foreign-owned assembly plants. In Izhevsk, where the Soviet-era auto plant is now assembling South Korea's KIA sedans, the locals joke that KIA stands for Kill Izhevsk Auto industry. All that the foreign car-makers want from Izhevsk's own car designers is for them to disappear quietly and with no extra fuss.

On the other hand, cloning poses a serious problem only to those weapons designers who have stopped making any real progress and begun falling behind the leaders. Even Russia's latest AA-12 Adder missile was commissioned back in 1984—which means it is already 15 years old.

I remember a story told by an engineer from *Arsenal*, a Kiev weapons maker, who had travelled to Beijing to read lectures to Chinese students. "When I read the lectures to them two years ago, I did not see a flicker of understanding in their eyes," he said. "But the Chinese are quick learners. Now they understand a lot, and they ask the right questions. I think in three or four years' time we will have nothing left to teach them." That conversation happened 10 years ago.

There is a general opinion among American analysts that during the Cold War America's military technology was 10 years ahead of the Soviets and 25 years ahead of the Chinese. Now they believe that some of the Chinese technology is actually more advanced than Russia's.

There are growing indicators that those whom we scoffed at 10 years ago, dismissing them as mere apprentices of the world's arms smithy, have now learned from the best and started making weapons that beat the Russian competition. It looks as if we are in for some nasty surprises.

TRADE TALENT IS THE KEY

Brief vacillations of Russian arms exports policy in late 2000 ended with the creation of an integrated state-run system, completely dominated by the president's office. This system remains the sole channel of Russia's arms exports to this day. Let us not delve into foreign experience of resolving the issue of competition between the same country's arms manufacturers on the foreign markets. Russia has defeated internal competition by means of complete centralization of the arms trade: in 2000, the number of authorized arms trade intermediaries (all of them state-owned) was cut from three to one.

The ensuing battle between two trends—expanding the number of exporters versus cutting it down—ended with a convincing victory by the second trend. As of late 2006, as many as 23 defense contractors had independent exports rights (five of them were allowed to export finished products, and 18 spare parts, as well as repair and maintenance services). But in January 2007 there was only one company left that had the right to export finished military product—the state-owned intermediary *FGUP Rosoboroneksport*.¹¹ The other four contractors who previously had the same rights (*FGUP RSK MiG*, *GUP Instrument Design Bureau*, *OAO VPK NPO Machine-Building*, and *FGUP Machine-Building Design Bureau*) were allowed to complete the deliveries on their existing contracts, but not to sign any new ones.

Proponents of absolute centralization love to tell stories of how competition between Russian arms exporters (who sometimes offered exactly the same product) had sometimes led to them undercutting each other's prices. But let us also recall that the Committee for Military and Technical Cooperation (FSMTC), renamed in 2004 the Federal Service for Military and Technical Cooperation (FSMTC), had been set up precisely to prevent such unhealthy competition. It could have solved the problem by simple regulatory measures. Absolute centralization of arms exports in the hands of the sole Russian arms exporter is leaving the FSMTC without its reason for existence.

It is widely believed that ending competition between arms exporters by means of creating a single state intermediary has allowed Russia to bolster its arms exports. In truth, exports had been on the rise even before the creation of *Rosoboroneksport*, when Russia still had three state intermediaries. Export sales rose from \$2.4 billion in 1998 to \$3.5 billion in 1999, and \$4 billion in 2000—a growth of almost 70 percent over two years. Such growth figures have seldom been seen in subsequent years.

By becoming a window to the world, or rather a bottleneck for the entire Russian defense industry, *Rosoboroneksport* has also turned into the biggest source of cash for the languishing defense contractors. The company also became the lifeline for many Russian provinces, where the whole economy is centered on defense manufacturing.

Over time, however, the company's mission crept beyond mere arms exports. Its own managers and government officials had come to see it is the savior of the entire Russian defense industry, and possibly even a pillar of national security. The time came to raise the bar.



Table 2.¹² Domestic Procurement¹³ and Exports¹⁴ (Excluding Repair and Maintenance of Existing Equipment)

Category	2006		2007		2008	
	Domestic spending	Exports	Domestic spending	Exports	Domestic spending	Exports
Tanks	30	30	31	64	62	UN register data not published yet
Armored vehicles	153	114	131	74	216	
Cars	3,000	No data	4,000	No data	4,500	
Missiles and launchers (range of 25 km or more)	1 Iskander-M division (9 launchers)	1,093	1 Iskander-M division	1,498	4 Iskander-M launchers	
Artillery systems	No data	100	No data	16	152	
Combat aircraft	1	14	2	40	18	
Combat helicopters	3	21	–	15	5	
Warships	–	2	–	–	4	

The creation of the state corporation *Rostekhnologii* became the next logical step in the process of defense industry centralization. The tip of *FGUP Rosoboroneksport* separated from the mother company and started to expand, swallowing defense contractors by the dozen, loss-making and profitable alike. The new goliath has now consolidated 340 defense companies (440 facilities), and digested its erstwhile exports competitors along the way. *Rosoboroneksport*, which was its parent company, is now itself a subsidiary. Some observers have dubbed the resulting giant a commercial ministry.

By dint of securing a monopoly on arms exports, the top managers of *Rosoboroneksport* (ROE), who have also become the top managers of *GK Rostekhnologii*, have also monopolized the right to decide the future of the Russian defense industry. Export monopolists turned arch-managers now have the complete freedom to reform the entire defense sector. Its future now depends solely on the competence and professionalism of the former ROE people, the new superhumans from *Rostekhnologii*.

Part 1 of the business plan drawn up for the industry by the *Rostekhnologii* managers had all the hallmarks of a commercial enterprise. Of the 350 companies that had become subsidiaries of the new corporation, quite a few were to be put up for sale (together with those companies, the corporation received the title to 15,833 properties and 1,243 land plots). The proceeds were to be channeled into modernizing the remaining companies, those that were deemed the most promising.

But the world financial crisis has thrown a spanner in those plans. Property prices have collapsed, and even the most attractive companies will not become saleable again for another three or four years. *Rostekhnologii* will now have to rely on budget funding: the state weapons development program, army procurement, federal programs, and export revenue of its subsidiaries.

Rostekhnologii is now busy reorganizing its numerous subsidiaries. The corporation now owns several civilian air carriers, 157 various defense companies, and 173 research institutes and design bureaus. The corporation is planning to set up 19 holding companies in four key sectors:

- ❑ ammunition and special chemicals—five integrated structures and 57 organizations;
- ❑ radioelectronic industry—seven integrated structures and 144 organizations;
- ❑ conventional arms manufacturing—four integrated structures and 43 organizations; and
- ❑ aerospace industry—three integrated structures and 43 organizations.

All the 19 holding companies will be monopolists in their own sector of the market.

The need for this kind of reform of the defense industry had become obvious 15 years ago. The government is making a belated step in the right direction. But *Rosoboroneksport's* early success

could yet prove its downfall. Freed from the pressure of competition, the state monopolist has become a lifeline for successful companies, and a beacon of hope for the failing ones. But is the monopolist's experience of operating in a relatively competition-free market enough to succeed in a business whose nature is quite different from just selling arms? Arms traders tend to look down on defense manufacturers: it is the state intermediary who keeps those manufacturers afloat. But running the actual defense sector, taking care of all the funding problems and keeping the workers paid on time—that is quite a different thing.

Of course, one of the benefits of setting up *Rostekhnologii* is that the top defense industry managers will now be able to look at the problem of after-sales service of Russian equipment from the point of view of the manufacturer rather than the exporter. It is the manufacturers who are now facing all the red tape trying to sell their wares abroad. Repair and maintenance is a huge segment of the world arms market, and the main source of income for the Israeli defense industry. But the Russian weapons makers have tended to ignore this segment, because it involves too much meticulous work and too much bureaucracy.

“As of now, the *Rostekhnologii* people have not really shown themselves to be a successful team of managers,” says Vladimir Rozhankovskiy, a senior analyst with *Tsentrinvest*. “Take for instance *VSMPO Avisma*. After *Rostekhnologii* took it over, it somehow contrived to make a loss even as the world prices for titanium sponge (one of *Avisma*'s main exports) were on the rise.” Rozhankovskiy believes that the corporation suffers from excessive centralization of management: all the decisions are made in Moscow, while the local managers can only do what they are told.¹⁵

The corporation is now preoccupied with structural reform. But once that reform is complete it will have to get down to the business of making and developing new weapons. Without serious funding, that will be a tall order. There is little hope for private Russian investment in the industry. *Rostekhnologii* has traditionally relied on two strategies here:

- asking for state funding (witness the frequent dollops of state aid dispensed to *AvtoVAZ*); and
- setting up joint ventures with more successful foreign counterparts.

The examples are many:

- the sale of a stake in *AvtoVAZ* to *Renault*;
- the transfer of a 25-percent stake in *Sukhoi Civilian Aircraft* to Italy's *Alenia Aeronautica*;¹⁶
- the construction of a new facility on joint assembly of *Augusta* helicopters by *Rostekhnologii* and *Augusta*;¹⁷
- a joint aircraft parts venture between *Boeing* and *VSMPO-Avisma*, a titanium producer;¹⁸
- a joint venture with Italy's *Finmeccanica*, an engineering holding, to produce carbon fiber components;¹⁹
- a consortium between Italy's *SELEX Sistemi Integrati* and *OAO Rossiyskaya Elektronika* to produce security systems for high-security facilities;
- a tire production joint venture with *Pirelli*;²⁰
- a joint venture with *Hyundai* to manufacture heavy engines at the *Yaroslavl* tractor plant,²¹ and
- the sale of a 10-percent stake in *KAMAZ* to Germany's *Daimler*.²²

Director General of *Rosoboroneksport* Anatoly Isaykin had this to say about attracting foreign capital: “The defense industry has long had a lot of spare capacity. That is explained by the crisis of the 1990s, during which the defense industry was obviously the hardest hit. Overcoming the effects of that crisis is a long process, and it will take serious financial injections. We need to attract investors, including private investors, possibly even non-residents. The important thing is to make sure they are strategic partners.”²³

And although Russian defense industry captains are still sticking to the traditional line that foreign capital has no place in the Russian defense industry, President Dmitry Medvedev signaled a major shift during a sitting of the Commission for Military and Technical Cooperation on July 11, 2008:



We cannot always go it alone in terms of military and technical cooperation facilities. We have a good potential, but nevertheless, cooperation is always needed. Especially during crisis, cooperation helps us reduce the financial burden and step up scientific and technical exchange. So our task is to make practical steps in this area.²⁴

Rostekhnologii could well be formulating the framework of such cooperation now. Let us hope that we will soon see new joint ventures in the defense sector being set up with India, France, Germany, and Israel.

FIRST DRONE

The contract to purchase Israeli-made Hermes drones for the Russian Defense Ministry has brought to light some of the chronic problems of Russia's army and its defense industry.

Soviet engineers were among the pioneers of research into pilotless aircraft. Back in the early 1960s, the Soviet army received the first samples of the La-17P drones, based on a flying target, and of the Tu-123 drones (long-range photo and radio reconnaissance complex DBR-1 Yastreb) based on a cruise missile. In the early 1980s, the Soviet Union was manufacturing drones by the hundred.

The years immediately after the collapse of the Soviet Union saw rapid progress in unmanned aerial vehicles (UAV) all over the world. The leaders in the sector are the United States, Britain, Israel, France, Germany, and Sweden—but not Russia.

The situation was further complicated by the transfer in 2002 of Army aviation to the Air Force. That decision by the Defense Ministry deprived UAVs of their main potential customer, and created a strange situation: while drones were rapidly gaining recognition and funding in the rest of the world, in our country the area became the preserve of enthusiasts. The top brass were adamant that in a real war, drones would be useless.

Those who could put the drones to the best use—the Army—have by now lost the specialists who could formulate a coherent set of requirements and specifications for the Russian manufacturers. The Air Force probably does still have the necessary expertise—but it just fails to see the point of UAVs, and cannot get its head around the idea of a plane without pilot.

The last time the Russian armed forces took delivery of a drone was more than 30 years ago. Those who understood the tactics of using that weapon and could formulate the technical specifications and requirements for it have now reached pension age. What is more, our defense contractors have fallen far behind the rest of the world in this area. There is now simply no point in trying to improve the existing engines, photo sensors, communication, and navigation systems—all of that has to be designed from scratch.

The Russian top brass may be right after all: buying the Israeli drones could allow them to “better understand the principles of their use,” as deputy defense minister Vladimir Popovkin put it. And the Russian designers will now be able to have a close look at the key parts and components of the drones.

But the deal has given the general public a glimpse of the truth about the real state of the Russian army's technology. There had been plenty of information even before that, but hope still lingered that one day our country would pull together and overcome these problems. But the drones have become the first problem to which no domestic solution was found. The Russian army has been forced to admit that Russia's own defense contractors cannot fulfill its requirements, while the contractors received further proof of the degradation of the army's specialists. The deal is a symbol of the Russian defense industry's decline, and of the breakdown of relations between the armed forces and the industry, between the authorities and the Russian defense companies, and between the government and the military.

We have of course heard assurances that this is a one-off purchase which will only help Russia's own designers. But the facts suggest otherwise. What Russia has bought from *Elbit Systems* is not the latest technology, which our defense contractors could really put to good use. Instead, it has bought a fairly aged drone—and the money eagerly expected by the Russian designers of UAVs has been sent to Israel instead. What hope remains that the next batch of drones bought by the Russian army will be made in Russia itself?

Drones are not the only technology Russia has lost or failed to develop. Which is why this will not be the last time that Russia's army and its weapons designers will have to seek help from abroad.

It is already becoming a trend. The Emergencies Ministry, the Interior Ministry, and the secret services have long taken to shopping abroad for their equipment and technology. Russia's defense contractors themselves also import many components, including French thermal vision systems for tanks and helicopters, and Israeli electronics for Russian aircraft. The Israeli Hermes drones are only unique in a sense that this is the first time the Russian Defense Ministry has bought a finished weapons system rather than a component. And the contract was signed despite the fact that almost a dozen Russian companies (from small outfits created by model airplane enthusiasts to Sukhoi design bureau) are developing their own drone technology.

There is an Arab saying: What has happened once may never happen again, but what has happened twice certainly will happen a third time. So let us keep an eye on further developments and hope that *Rosoboroneksport*, the Russian arms exporter, will not one day turn into an arms importer.

MIDDLE-AGE CRISIS

No matter how hard Russian bureaucrats try to play down the scale of the crisis in the Russian defense industry, they cannot put a smokescreen around the numerous setbacks that have plagued Russian arms exports in recent years. Problems with supplying Russia's own army can be classified and swept under the rug. But blunders with Russian arms exports promptly become known from foreign sources.

The list below contains just a few most notable examples:

- ❑ In 2008, Algeria returned 15 MiG-29 fighter jets which Russia delivered in 2006–2007. The Algerians said the jets had been made “using second-hand and low-quality parts and components.” At first, Russian specialists blamed the incident on politics. But in 2009 a group of Russian suppliers were indicted on criminal charges for supplying substandard parts for the assembly of the jets for Algeria.
- ❑ The Indian Air Force has said it will not buy any more of the Russian Il-78 aerial refueling tankers, which the country has been using since 2003. The Indians say the planes do not meet their requirements. Instead, they will buy Airbus A330 MRTT from Europe's EADS. The Indian military have also been complaining about the Russian arms exports system.
- ❑ Delays and cost overruns on the contract to deliver the aircraft carrier *Admiral Gorshkov* to the Indian Navy have led to a conflict between the two sides. The initial budget of \$1.5 billion (which included the carrier-borne aircraft and other weapons systems) has spiraled to \$2.9 billion dollars, and the delivery deadline has been pushed back from 2008 to 2012, because of the wrong initial estimate of the costs and the falling purchasing power of the dollar. So far, India has not agreed to make any extra payments, and negotiations have already been dragging on for several years.
- ❑ A \$1 billion contract signed in 2005 between *FGUP Rosoboroneksport* and the Chinese government to supply 38 Il-76 MD and Il-78 MK military transports is on the verge of collapse due to financial and organizational problems faced by the Russian supplier. Vladimir Putin has said he will personally monitor the situation.
- ❑ The \$1.6 billion contract to build three frigates of the 11356 design for the Indian Navy was plagued by disputes over costs, delivery deadlines, and quality. The delivery of the frigates was pushed back by a year due to problems with the Shtil air defense systems.

There are growing problems with the quality of Russian-made weapons. In 2006, foreign importers of Russian military equipment raised 1,586 complaints, including 443 concerning planes and aviation equipment, 646 concerning air defense systems, 144 concerning conventional arms and 353 concerning ships and naval equipment.²⁵ The costs of fixing the quality problems found during the manufacture, testing, and operation of Russian military equipment sometimes reach 50 percent of the initial production costs. The figure for foreign competitors is less than 20 percent.²⁶



The situation is compounded by the rising costs (wages, energy prices, materials, and components), which translate into rising export prices without any discernible improvement in performance or reliability.

Unless these trends are reversed, Russia risks becoming completely uncompetitive on the international arms market in terms of quality, price, and delivery time. In the past, foreign buyers praised Russian arms for being roughly equal to Western rivals in terms of performance, while also being 30–40 percent cheaper. That competitive edge has now all but disappeared.²⁷ This sad state of affairs is reflected in figures.

Russia's decline as an arms exports power has been registered by *Defense News*, an influential American weekly which compiles an annual rating of the 100 biggest international defense contractors. There is not a single Russian company in the Top 10 of that list. In 2007, the top Russian entry was *PVO Almaz-Antey* (ranked 24th), followed by the *Sukhoi* holding (37th), *NPK Irkut* (47th), *OAO Tactical Weapons Systems* (50th), *OAO Russian Helicopters* (62nd), *Ufa Engine Building Concern* (72nd), *OAO Aerospace Equipment* (80th), *Instrument Design Bureau* (81st) and *MMPP Salyut* (84th).²⁸ None of the Russian defense contractors is expected to make it to the Top 20 in 2008, though the list will probably include *Almaz-Antey* and some aerospace companies that are part of the *United Aircraft-Building Corporation* (OAK).

For various reasons—most of which have to do with the difficult state of the defense industry—experts do not expect a serious rise in Russian arms exports in the next few years. Suffice it to look at recent statistics. In 2006, Russia signed \$14.43 billion worth of defense contracts (the corresponding U.S. figure was \$18.45 billion). In 2007, Russian exports fell to \$6.74 billion (while the American rose to \$40.41 billion). In 2008, Russian arms sales fell even further to \$6.03 billion, while U.S. exports rose to \$59.34 billion.²⁹ From its second ranking in the world league table of arms exporters in 2006, Russia sank to fourth in 2008, falling behind France with \$13.86 billion and Germany with \$8.85 billion. The other nations in the Top 10 are Australia, Italy, Israel, the Netherlands, Britain, and China. The total arms exports turnover in 2008 was \$101.314 billion dollars. Russia's share of it was just 5.95 percent.

The figures in Table 3 are not inflation-adjusted, so if we assume that the average annual inflation over that period ran at 10 percent (the actual figure is much higher than that), then the growth in ruble equivalent turns into real-terms stagnation.

The picture becomes even bleaker if we take into account the rising costs of manufacturing arms for exports, primarily due to the growing imports of foreign-made components. These components tend to be very expensive, because they determine the performance characteristics of the finished product. They include targeting systems (from Israel), avionics (from France), and jet engines (from Ukraine). About 70 suppliers from eight CIS nations (Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Uzbekistan, and Ukraine) are involved in the manufacturing of the Russian Su-27 and Su-30 fighter jets. This means that Russia is seriously dependent on imports, and relies on foreign suppliers for the manufacture of much of the military equipment it exports or builds for its own army. And given Ukraine's plans to

Table 3. Russian Arms Exports in 1999–2009, in Rubles*

Year	Exports, in billion rubles ³⁰	Growth, in ruble equivalent, %
1999	91.61	
2000	103.66	13
2001	111.67	7
2002	150.79	35
2003	170.83	13
2004	168.68	–1.6
2005	173.24	2.7
2006	175.76	1.5
2007	191.29	8.8
2008	207.49	8.5

Note: *Data for total exports calculated using balance of payments method.

join NATO, the situation with the import of foreign-made components becomes even more worrying.

The woeful state of the Russian defense industry, which also translates into serious problems with arms exports, leaves little hope for a speedy recovery. In 2006, Russia signed \$17.8 billion worth of arms exports contracts. In 2007, the figure fell to \$8.5 billion. The portfolio for 2008 was \$10.97 billion (provided that the delivery deadlines did not slip). The figure for 2009 was \$7.96 billion, and is \$6.36 billion for 2010.³¹

Experts believe that five or six billion dollars in annual arms exports is all Russia can reasonably hope for. This figure will remain unchanged (or maybe even start falling) until the Russian defense industry can come up with new modern technology and weapons that are internationally competitive.³²

The key problem is that up to 75 percent of the industry's manufacturing capacity needs replacing, but no more than one percent of it is actually replaced each year. The minimum annual replacement rate should be at least 8 percent–10 percent.³³

SKIMMING THE DRY RATIONS

Pervasive corruption and lack of financial discipline in all government institutions is further compounding the already disastrous state of affairs in the Russian defense industry. The most frequent manifestation of corruption in the industry itself is kickbacks and phony tenders, in which only one supplier is allowed to bid for the contract.

It has already become the norm for the government not to pay the defense contractors the full amount they are owed. Payment delays are rife, and contractors are forced to spend an inordinate amount of time begging for the money that is due to them under the contracts. It is not unusual for first yearly payments to start arriving towards the middle of the year, by which time all the production plans and targets have already been missed. In 2009, it took the Russian president's personal intervention for the money owed to the defense contractors to be disbursed from the state budget.

Here are a few typical stories we have heard from defense industry captains:

- ❑ "The numbered [secret defense industry] facilities were created specifically for the purpose of repair and maintenance of the Navy ships. But now, any Moscow firm can win the tender, after paying kickbacks to the right people apparently, and then they come to us and look for someone to do the actual work—and they make a tidy profit on the whole operation of course."³⁴
- ❑ "What is the purpose of the Defense Ministry's tenders and auctions if the required product is produced by only one company in the whole country? We prepare the bid, do all the paperwork, and in the end it turns out that we are the only bidder! We lose up to two months trying to outbid ourselves, and then another two months to agree the price three times over."³⁵

It stands to reason that a certain increase in Russian military procurement spending coincided with a huge leap in the prices of military equipment and components. The price of some aircraft parts had doubled or tripled in the space of three years. According to the first deputy head of armament at the Russian Defense Ministry, Lt. Gen. Vladimir Mikheev, the price of a tank supplied by *Uralvagonzavod* was 42 million rubles in late 2006. In January 2007, it rocketed to 58 million.³⁶

In 2008, the Audit Chamber reported numerous cases of financial irregularities, to the total sum of almost three billion rubles, after the audit of budget spending on national security. Almost 695 million rubles of public funds were misused. More than 462 million rubles have been reimbursed to the public coffers following the audit.³⁷

ASYMMETRIC PATTERN

Russia today is not the Soviet Union, which was prepared to stand almost alone against the entire capitalist world, and bear the brunt of the Warsaw Pact's military spending. The defense sector



accounted for up to 80 percent of the entire Soviet industrial output. Civilian industries and agriculture were almost an afterthought. Hardly anyone would advocate a return to those days.

As Russia plans to deter any potential adversary by the threat of an asymmetric strike, it should keep in mind that Russian defense spending makes up only three or four percent of the world total, whereas the Pentagon's share is 47 percent, with the remaining NATO nations accounting for a further 21 percent.

In 2006, the Russian government formulated the state program of weapons technology development (WTD) for the period to 2015, and allocated 4.939 trillion rubles (\$186 billion) for these purposes. Some 63 percent of that sum (\$117 billion) will be spent on buying new weapons for the Russian army, and the remaining 37 percent (\$69 billion) on R&D. The funding of this ambitious program is comparable to what America spends on its military in one year: in 2007 the figure stood at \$134 billion for procurement and \$77 billion for military R&D. Another review of the WTD program is now under way in Russia, and so far it is not clear what the new spending plans will be, given the effects of the financial crisis.

Russia's military spending is comparable to that of China or Britain, which means that for the next few years at least, we shall not be able to shell out tens of billions of dollars on developing an ABM system or uniting all Russian combat units under a single command system dubbed "Combat Systems of the Future." Even the GLONASS satellite navigation system is proving a bit too expensive for now—though the Europeans are not finding their own *Galileo* system cheap either.

Similar doubts exist regarding the feasibility of the plans to build six new aircraft carriers: each one would cost \$4.5 billion. Considering the saga of *Admiral Kuznetsov* (Russia's only heavy carrier), it is hard to imagine that the new carriers will be much cheaper to build or operate. The annual running cost of *HMS Invincible* was about 60 million to 70 million pounds (\$110 million).³⁸ This suggests that the six carriers will cost the Russian budget about \$660 million every year.

With such levels of spending on military procurement, it is not the United States or NATO that the Russian army will soon be catching up with, but third world countries.

Nevertheless, the Russian defense industry must spend what is, by international standards, a shoe-string defense budget wisely and efficiently—especially considering the vast territory that needs defending. This means that the Russian defense contractors will have to learn frugality.

Table 4. Russia's Military Spending, Procurement Budget and Exports in 2000–2009*

Year	Total military spending, billion rubles	Procurement budget	Procurement share in military spending, %	Procurement compared with exports, %
2000	201.248	19.473	9.68	18.78
2001	291.464	32.326	11.1	28.95
2002	322.721	29.437	9.12	19.52
2003	442.477	77.313	18.3	45.26
2004	589.787	121.929	20.7	72.28
2005	658.965	119.840	18.2	69.18
2006	815.933	116.116	14.2	66.07
2007	942.042	143.083	15.2	74.72
2008**	1186.92	225.5	18.99	92.01
2009**	1300.0	332.0	25.54	129.3

Notes: *According to deputy defense minister Vladimir Popovkin, in 2009 the Russian Defense Ministry would buy 49 new and upgraded aircraft (the figure probably includes the planes returned by Algeria; reports in late 2008 said the Defense Ministry had allocated an additional 20 billion rubles to buy equipment for the Air Force), 31 helicopters, and 304 armored combat vehicles.³⁹ **Figures for 2008–2009 are based on a statement by Deputy Prime Minister Sergey Ivanov, who said that total military spending in 2008 was 28 percent up on 2007, and procurement made up 19 percent of total spending. According to the same statement, military spending in 2009 would be 1,300 billion rubles, with 332 billion rubles allocated for buying new arms and equipment.⁴⁰

In 1912, labor productivity in Russia stood at one-quarter of the U.S. figure, and one-third of the German. Surprising as it is, almost a century on, those proportions have not changed at all. An average Russian worker still produces one-quarter to one-third of what his average Western colleague does in the same period. Russia's inefficient industry needs reform, and what we are witnessing today is yet another attempt to begin a new reform, since we cannot seem to finish all the previous ones.

In any new weapons development program, cost savings must be the paramount concern. The time has come for standard platforms. In 2008, the Russian Air Force operated 2,800 airplanes and helicopters. Many of them will remain in service for another decade or two. "The Air Force now places a separate order for an individual upgrade package for each type of its aircraft, including MiG-29, MiG-31, Su-24, Su-25, Su-27 and Su-30," says Alexey Shulunov, former president of the League of Defense Contractors. "That is a waste of resources. What we need is a standard upgrade kit that can be fitted onto any plane, as and when the need arises. Mass production of such kits would save significant costs and simplify the upgrade program."⁴¹

The Russian armed forces have no other choice but to adopt a modular design, building various weapon systems from standard navigation, communication, radiolocation, electronic warfare, and firepower Lego blocks. With limited military spending, only mass production can ensure an adequate defense capability for a huge country such as Russia, and keep its military technology up to date. The combination of such blocks can vary for each individual combat unit, but they must all come from the same basket of modern Russian-made components (the absence of such components is another key problem).

In order to implement that strategy, the power to place orders for arms and military equipment must lie with a single body rather than dozens of sundry agencies. That body must be made up of qualified technical specialists who will channel the procurement flow using unified technical solutions.

Such an approach would be far more effective for optimizing procurement and saving costs than a system of phony tenders. Attempts to create such a body have already been made. Several years ago the government set up the Federal Agency for Military and Special-Purpose Procurement (Rosoboronpostavka)—but until now, that agency has not made its presence known in any discernible way.

Gigantic defense factories and design bureaus appear, for the most part, to be a thing of the past. America's experience suggests that the development of new technologies and materials, and especially the research into "next-generation technologies", is largely concentrated in the hands of two groups: first, the non-profit state corporations, universities, colleges, state-funded and private laboratories, and federal contract centers; and second, small companies (associations, partnerships, cooperatives, joint ventures, and start-ups funded by venture capital). The bulk of the new American discoveries and inventions over the past 30–40 years (five in every six, in fact) were made by specialized small and medium firms. Small firms account for 25 percent–40 percent of Pentagon and NASA spending on blue-sky research and conceptual design in the areas of civilian and military technology and R&D programs. U.S. legislation contains provisions aimed at supporting small businesses, including a compulsory quota (of up to 50 percent) for small business subcontractors in contracts awarded to large corporations.⁴²

Most of Russia's defense contractors long ago switched into survival mode: 45 percent of them are getting by on zero-margin army procurement contracts, another 45 percent operate on margins of eight percent or less, and only a few can boast margins of up to 15 percent. In such a situation, not many defense companies can afford to take out a bank loan and pay 20-percent interest. "The contractors that supply the Russian army under the state procurement program are given a deflator of six percent," says Alexey Shulunov. "But annual inflation is running at 9–14 percent, and they have to pay the market price for all the materials and components. That is why they are simply forced to operate at a loss, they cannot make a profit with these six percent. Their costs are high, regardless of whether they are working on a state procurement contract or not. So the conclusion is simple: we need to sort out the prices."⁴³

In the United States, the prices charged by defense contractors are also fixed. So it would appear that the U.S. defense companies working on army procurement contracts are in the same bind as their Russian counterparts: such contracts do not bring quick profits. But in the United States there is an entire system of tax breaks and other preferences for the defense contractors. That makes it possible for companies working on government procurement programs to turn the same




kind of profit their rivals make in the open market. Defense procurement in America is based on a federal system of contracts which provides employment for more than 300,000 people who sort out the legal, economic, organizational, and managerial issues. The United States has been developing that system for over 80 years.⁴⁴ Russia is only making its first steps along that path.

CONCLUSION

The Russian defense industry is in a deep systemic crisis. For 17 years, since the collapse of the Soviet Union, its survival has depended on exports. But this well has now almost dried up.

The Russian defense industry today still remains nothing more than a huge chunk of the Soviet defense complex, the only difference being that Soviet industry created modern military equipment, while the Russian builds mostly obsolete Soviet-era weapons. The system needs profound and costly reform.

Russia's own defense procurement must be the engine of recovery. But on its own it probably will not be enough to turn the industry into a compact and efficient sector of the Russian economy. It will take strong will on the part of the Russian leadership to overcome the inertia of the past and find a solution to the three key problems plaguing the Russian defense industry: staffing, funding, and technology.

Analysts from the Federation of American Scientists have provided this assessment: "If Russia does not undertake a massive increase in military spending soon, their military will be about as capable as the Pope's Switzers—nice to look at, but no threat to anyone."⁴⁵ 

NOTES

¹ The plan is to begin the construction of five or six carriers in two or three years' time—they are expected to become the core of Russia's Northern and Pacific fleets.

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³ Analysis prepared as part of the research project by the Institute of World Economy and International Relations of the Russian Academy of Sciences, "Russia's military and technical cooperation with foreign countries and prospects for bolstering Russia's political and economic standing in a multipolar world," with the support of the Russian Humanitarian Scientific Foundation (project No 09-03-00807 a/P).

⁴ Converted into rubles using the Russian Central Bank's average yearly exchange rate: 1999 – 27.0; 2000 – 28.16; 2001 – 30.14; 2002 – 31.35; 2003 – 30.68; 2004 – 28.81; 2005 – 28.28; 2006 – 27.19; 2007 – 25.85; 2008 – 24.85; See: Key economic indicators, Central Bank of the Russian Federation, http://www.cbr.ru/statistics/print.aspx?file=macro/macro_08.htm&pid=macro&sid=oep (last accessed July 28, 2009).

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