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Rethinking the Structure and Role of Russia's Airborne Forces

MICHAEL KOFMAN

The Russian Airborne Forces (VDV) compose one of the more important instruments in the General Staff's toolkit, serving as a rapid reaction force for local conflicts, supporting special operations, or striking behind enemy lines in a conventional war. The VDV has proven to be leading edge of Russian (and Soviet) military power in operations from the 1956 intervention in Hungary, to the 2014 seizure and annexation of Crimea. A combat arm distinct from the Land Forces, the VDV may be used tactically, operationally, or play a strategic role, depending on how it is employed. Whether responding to a crisis, or choosing to visit the territory of its neighbor without notice, Russia is likely to lean on the highest readiness units with elite training, and good mobility, which in many cases means the VDV.

Today the VDV consists of two parachute divisions, two air assault divisions, four independent brigades, along with a signals and an independent reconnaissance brigade. Parachute divisions can be air dropped to seize enemy air fields and key points, making them a strategic asset, while air assault units are flown into secured landing zones. Brigades represent a mix, often with one parachute battalion and two assault battalions. The Russian operation in Crimea, together with other military actions have demonstrated that if the VDV can seize an airport then they can fly in supporting battalions, and those follow-on units can secure terrain for Russia's land forces to enter the battle space. In theory, it is a Soviet Airborne, simply cut down to Russian size (VDV Divisions used to have three regiments each, but were long ago reduced to two).

The Russian General Staff has been experimenting with this force since 2016, and according to recent announcements by their commander, Colonel General Andrey Serdyukov, the VDV is in for a rethink. Serdyukov is a well-known figure in Russian military circles. An airborne officer by training, he had seen combat experience in the Chechen wars. As deputy commander and chief of staff of the Southern Military District in 2013, he helped organize the operation to seize Crimea. Serdyukov has also been sanctioned by Ukraine, allegedly for commanding forces in the Donbas 2014-2015. Subsequently promoted to command the VDV in 2016, Serdyukov was seriously injured outside Murmansk in a motor vehicle accident. He was on the way personally to observe Airborne operations, together with several staff members, as part of the wider Zapad 2017 strategic command staff exercise. Having recovered, the VDV commander announced his intention to remodel the force, stating in October 2018 that the Airborne is officially on a "search, testing new forms and methods of force employment to answer the challenges of modern warfare."

And, indeed, not all is well with Russia's airborne forces. Two problems stand out. The first reflects a degree of conceptual confusion. The USSR had two concepts for the VDV: one arm was strategic, composed of parachute divisions, while the other was air assault. In theory, the parachute units answered to the General Staff, while air assault units were subordinate to the military districts and supported their advance on the battlefield. Air assault units would seize key terrain or strike enemy reserves not far from the line of contact with the ground forces. But in practice the VDV always had a third role. Early in the 1960s, and subsequently during the war in Afghanistan 1979-1989, deployed Airborne units were armed with heavy equipment in the role of motor rifle units, receiving tanks and artillery. Basically, they were used as elite mounted infantry. These *ad hoc* changes are similar to the processes shaping the current VDV, though after some improvisation, it increasingly seems that Russia's General Staff is starting to impose an actual vision (even if – *caveat emptor* – General Staff visions tend to change every few years, together with Russian force structures).

Second, despite its service record, and *esprit de corps*, the VDV can be seen as an anachronism: yet another piece of Soviet inheritance that Russians might qualify as a "briefcase without a handle". Rather than parachuting into battle, in practice the VDV has spent most of its time in the role of motor rifle units on lightly armored vehicles. Allegedly, at one point during the New Look reforms, then Minister of Defense Anatoly Serdyukov and then Chief of General Staff Nikolai Makarov even considered cutting the entire combat arm and handing it over to the land forces. The reasons are not difficult to fathom. Russia's airborne and Russia's logistics are woefully misaligned – maintaining an alternate park of airborne infantry fighting vehicles and a host of specialized equipment for the VDV is not cheap – while the force spends much of its time fighting as another form of motor rifle infantry. So it is no surprise that their commander thinks the VDV is due for new operating concepts, and force restructuring.

There are other problems. Optimistically, Russia's military transport aviation (VTA) is at best able to deliver between one and two regiments in a sortie. The aviation park of Il-76 heavy transports is simply not big enough for serious airborne operations, and certainly not in a contested environment. Given that Russia's VDV trains to force generate as battalion tactical groups, more than likely the maximum air lift capacity is for two or three such formations. In practice, this means that Russia has one of the world's largest airborne forces (approx 45,000 strong), but without the air lift to use them in their designated role. Indeed, according to Russian defense journalist Ilya Kramnik if Russia wanted to deliver its airborne in the initial period of war it would have to increase the air transportation park four-fold. This is simply impossible given the current rate of Il-76MD-90 modernization and aircraft production. At best the VTA is likely to tread water on the number of currently available aircraft in the strategic airlift role.

Therefore, the General Staff seems to have chosen an entirely different direction: the VDV's air assault divisions are set to become heavier, with an expanded force structure, tanks, and air defenses, while independent brigades will conduct heliborne operations. Parachute divisions will still train to perform the more strategic air assault mission. At Vostok-2018, 700 soldiers and 50 vehicles were air dropped at Tsugol range, employing roughly 25 Il-76MD transports. While airborne divisions still train for the airborne assault via Il-76, tactical and operational mobility may increasingly come from helicopter based operations and raids behind enemy lines in support of ground forces.

Serdyukov announced that experiments during Vostok 2018 strategic manoeuvres (September 11-18) determined the future tactics and overall force development. Those experiments employed a special battalion tactical group, based on the 31st brigade, suggesting that the size and scope of the concept is considerably different from the Soviet 1980s formulation. On the second day of the exercise, VDV units aboard 45 Mi-8 helicopters and two Mi-26 helicopters, practiced three types of air assault: low altitude parachute, repelling, and dismount. Gunship support included eight Ka-52 and fourteen Mi-24 helicopters. The much larger Mi-26 helicopters delivered Tigr light utility vehicles, and recon ATVs, serving as an air mobile reserve for the operation. This is a distinctly large helicopter assault formation, intended to deploy a reinforced VDV battalion, with gunship support, and light reserves.

Recent reporting by journalists like Aleksei Ramm suggests that the 31st brigade has become an experimental unit, with its own army aviation support, composed of two squadrons of Mi-8 and Mi-26 helicopters. This would give the 31st native air mobility, granting the commander freedom to design and execute an operation. Otherwise, the VDV has to negotiate access to army aviation, which is not necessarily assigned to support it, and may have other competing requirements imposed by ground force operations. Not only would this dramatically reduce the time required for VDV to execute a manoeuvre, but it would add considerable flexibility to the force, though heliborne operations would limit the airborne to light utility vehicles. This force structure redesign would allow the VDV to deploy much faster in response to a local conflict, or execute their own raids behind enemy lines in a conventional war. The VDV would also become much more suitable to expeditionary operations where there is a low barrier to entry, and good prospects for elite infantry to make a difference.

Availability may be the driving force behind this force structure redesign. While VTA is in the doldrums, Russia is much richer in helicopters. The Russian armed forces substantially increased their helicopter park during the first State Armament Program (2011-2020), establishing three brigades and six regiments. Russian experts like Anton Lavrov suggest that as many as 1000 helicopters may have been purchased for the armed forces and various ministries through 2017. Each combined arms army is being assigned a supporting helicopter regiment, while every military district will house an independent helicopter brigade. Though the rotary wing park is also not without some problems, given there are no mid-range options between the venerable Mi-8 variants and the giant Mi-26. Nonetheless, Russia bought far more helicopters than 4th generation aircraft, and is steadily filling out new army aviation regiments and brigades.

These changes are primarily, but not solely, intended for the VDV. Land force brigades and divisions will also develop company or platoon size detachments that are certified for air mobile operations – at least in the Southern Military District, if Colonel General Aleksandr Dvornikov has his way (Serdyukov is not the only one with a vision for helicopter assets). Some of these changes may bring nostalgia for the 1980s, when heliborne VDV units were assigned to support operational manoeuvre groups, and select Soviet army detachments were air mobile. In 2002, the army handed over its helicopters to the air force, which then got rolled into the aerospace forces in 2015. They similarly gave up air assault brigades to the VDV, making that

exclusively the VDV's business. Now the army looks to reclaim air mobility, and seems likely to compete for the same helicopter assets that the VDV will need to realize this new concept of operations. The implication for NATO, used to Russian forces getting places via rail, or driving there, is that Western forces will increasingly have to think at the tactical and operational level about a segment of Russian forces becoming air mobile in the initial period of war.

The introduction of tanks into Russian air assault units represents a countervailing trend, sacrificing mobility for firepower. In 2016, the 7th and 76th Air Assault Divisions, together with four brigades, were slated to receive tank companies. Since then, the 7th and 76th are being expanded with tank battalions, while one regiment (331st) will receive Russia's new Sprut-SD airborne tank destroyer as part of a force structure experiment. The VDV is due to add three T-72B3 tank battalions in total. Tanks have been introduced on and off to the VDV throughout the Soviet period, as they have to the Naval Infantry (which is also getting tanks back). It seems almost a matter of tradition that the VDV receives tanks after combat experience demonstrates the need for them to employ heavier firepower in a 'motor rifle' role, they are subsequently removed, only to be reintroduced later.

Generally, the VDV continues to do well in terms of equipment. It has fared well in both State Armament Programmes (2011-2020 & 2018-2027), perhaps as a consolation prize for not receiving an expanded force structure. The former trend continues, while the latter seems finally about to change. In 2015, the head of the VDV at the time, Colonel General Vladimir Shamanov, sought to restore all four divisions to their former three regiment size. This did not happen, since money was prioritized for procuring capabilities and creating new army formations. Nonetheless, as of late 2018, the 76th Air Assault Division in Pskov is slated to receive a third regiment. Meanwhile an independent air assault battalion has already been established in Crimea, the 171st, structurally part of the 7th Air Assault Division. The VDV also received a combat service support battalion in Orekhovo. Hence Russia's airborne has not only gained upgrades in firepower, but it is growing in size as well, and working on new operational concepts for how to make the combat arm relevant in modern conflicts.

But if size and materiel is one measure, what about quality? According to Andrey Serdyukov, the VDV now has 30,000 servicemen and sergeants under contract service, which represents 70% of the force. His goal is to focus the VDV on being able to generate entirely contract staffed battalion tactical groups with an overall contract level for the force of 80%. During the tumult of the military reforms, 2008-2012, the VDV was de facto the only reasonably well staffed force available for handling local conflicts. This is no longer the case, and Russia's airborne must compete for a future role alongside increasingly better equipped and larger ground forces. Although it is once again being saddled with a 'motor rifle lite' role, the General Staff is still positioning the VDV as a high readiness reaction force, and an air mobile component that offers the Russian military new options at operational depths.

Rosatom set for Rapid Global Expansion

NAZRIN MEHDIYEVA

Rosatom is a strategic, vertically integrated and fully state-owned company, which manages the assets of the Russian nuclear industry at all stages of the nuclear fuel cycle. Rosatom is present in all segments of the civil nuclear market: from mining uranium deposits in Russia and abroad to producing nuclear fuel commodities through conversion and enrichment, and building reactors and power plants, often with bespoke technological solutions. The company coordinates the work of a large network of engineering, infrastructure and construction companies as well as research institutes and technology parks.

The president appoints Rosatom's director general – in 2016, Putin appointed First Deputy Minister of Economic Development Alexei Likhachev to replace Sergei Kiriyenko, who was appointed First Deputy Chief of Staff of the Presidential Administration – and members of its supervisory board. The company's business strategy is developed based on the goals set by the state for the civilian branch of the Russian nuclear industry and approved by the government. One of Rosatom's key goals in the current strategy is to increase its international market share and establish itself among the top three world leaders in every segment of the global nuclear market by 2030. Indeed, since its creation in 2007 from the Russian Atomic Energy Ministry, the company has set itself on this path, consolidating its positions as a leading international player for nuclear technologies and generating substantial overseas revenue from nuclear power plant (NPP) construction, nuclear fuel fabrication and uranium enrichment. As part of the industry reform, the company has benefitted from the “vertical integration”, which has enhanced Russia's competitiveness in the global nuclear market by improving coordination in the activities of over 350 enterprises and organisations that comprise Rosatom, cutting costs and creating economies of scale. At the same time, the company's close affiliation with the Russian state has offered distinct advantages that have propelled Rosatom's global expansion.

Access to state funding has been a critical asset underpinning many of Rosatom's projects and driving its rapid international growth. Estimates suggest that Rosatom underbids its Western competitors by between 20% and 50%, in large part thanks to government subsidies. Consequently, it has successfully secured over 60% of recent global reactor sales and 67% of the world NPP construction market (in signed contracts and intergovernmental agreements). The financial backing from the state has allowed Rosatom to offer large long-term loans to customers who under regular circumstances would not have been able to afford the high costs of NPP construction.

Not all has been plain sailing for Rosatom in its ambitious bid for rapid expansion. In South Africa, for instance, its plans were dealt a blow in 2017 after the High Court ruled to cancel a 2014 intergovernmental agreement to build eight nuclear reactors in the country. The agreement was deemed “unconstitutional and unlawful”; and in mid-2018, despite openings from Putin in a meeting with President Cyril Ramaphosa, South Africa proceeded to cancel all plans to add nuclear power by 2030. Nuclear power has been ruled out as too expensive and the government under Ramaphosa is now opting to generate additional electricity from natural gas, wind and other energy sources. Rosatom responded quickly to such setbacks and the changing political environment, signing in January 2018 a hydro scheme in Mpumalanga, in what became its first energy contract in South Africa.

By the end of 2017, Rosatom's 10-year portfolio of overseas orders amounted to \$133.6 billion – more than the order books of all its Western competitors combined. The company expected to sign foreign contracts worth another \$26 billion in 2018. In its global activities, Rosatom is focusing heavily on NPP construction: of the \$133.6 billion portfolio of overseas orders, \$97.6 billion are for power plant construction. Indeed, Rosatom has emerged as the undisputed market leader by the number of simultaneously implemented nuclear reactor construction projects: it is currently building (or has under contract) six reactors in Russia and 36 abroad.

At the same time, Rosatom's reputation has been a constraining factor to its growth in Europe. Seen as an arm of the Kremlin, the company is often assumed to be acting at the behest of the Kremlin, seeking to advance Russia's political goals notwithstanding economic costs. Despite this widespread perception, an analysis of Rosatom's expansion pattern shows that the company remains attuned to the customer's ability to repay loans with interest. In cases where the aspiring state is unable to pay for the NPP, the parties tend to come up with alternative arrangements. For instance, in Jordan, the initial agreement with Rosatom for a \$10 billion nuclear

power plant signed in 2015 was replaced in May 2018 with a plan to construct a Small Modular Reactor for which a joint feasibility study is being conducted. In other instances, projects have been postponed, cancelled or downscaled.

Rosatom's build-operate-own business model has attracted harsh criticism from the West spurred by the fears that it would give Russia access to critical energy infrastructure on the territory of another state. In this model, Russia finances the construction of NPP and trains personnel to operate the facilities. The criticism has nevertheless not precluded Turkey from adopting the model at the \$20 billion Akkuyu NPP, which is currently under construction. At Akkuyu, Rosatom has not sought to retain a 100% ownership of the plant and was actively negotiating with a Turkish consortium the sale of a 49% stake. The talks collapsed in February 2018 after the parties reportedly failed to agree commercial terms. The assurances of Russian Energy Minister Alexander Novak that Rosatom would complete the project alone if necessary were taken by critics as yet another "proof" of the politically motivated nature of this build. However, among the economic factors that played a role in the decision to proceed with the construction were Rosatom's \$3 billion investment undertaken prior to the collapse of the talks and its ability to recoup the costs through the guaranteed long-term electricity price.

Modern NPPs have a planned operating life span of 60 years with potential extensions of up to 40 years. This means that Russia will supply goods and services to the foreign NPPs that it builds not only during their construction but throughout their lifespan. Once the plant is built, switching to another fuel supplier is possible but is usually associated with additional costs and can cause difficulties during transition. The plant's probable lifelong dependency on the external fuel supplier is yet another reason that motivates Rosatom to build NPPs abroad. Operating and supplying fuel to NPPs forms part of Rosatom's economic assessment when planning new builds because the provision of these goods and services generates long-term revenue, allowing projects to go ahead which otherwise would have been deemed unprofitable.

Yet, unsurprisingly, reliance on Russian supplies has led to fears in Brussels and Washington that Moscow could use nuclear fuel supply to its reactors in Eastern Europe to assert its political influence. Five EU member-states – Bulgaria, the Czech Republic, Hungary, Slovakia and Finland – operate Russian VVER reactors on their territory. VVERs are pressurised water reactors, which use light water as a coolant and moderator. There are four VVER-1000 and 14 VVER-440 type units in the EU. All receive fuel supplies exclusively from Rosatom's subsidiary, TVEL. In the context of deteriorating Russian-Western relations, the EU sponsored a project aimed at diversifying nuclear fuel sources for Russian-designed reactors.

The Western sanctions imposed on Russia over the annexation of Crimea in 2014 do not apply to the nuclear industry and Rosatom's operations have not been directly affected. Nevertheless, an EU project known as the European Supply of Safe Nuclear Fuel has indirectly sought to limit Rosatom's presence over the medium and long term. The project, sponsored under the aegis of Euratom's Research and Training Programme (2014-18), was conducted by Rosatom's competitor, Westinghouse Electric Company, and its eight European partners. Its successful completion was announced in March 2018 when the consortium stated that it had developed "a conceptual fuel design and determined how the manufacturing and supply chain can be re-established to build and ship VVER-400 fuel assemblies". The political atmosphere that has prevailed since 2014 will constrain Rosatom's opportunities in Europe, both in supplying nuclear fuel and constructing new reactors.

Bulgaria exemplifies this. In June 2018, Sofia lifted the ban on the construction of the country's second power plant in Belene and announced its intention to hold a new international tender. Local media reports identified Rosatom and China National Nuclear Corporation as the most likely contenders to bid for the project, with Framatome and General Electric interested only as subcontractors. However, awarding the contract to Rosatom, no matter how economically attractive, would be politically controversial. The government cancelled this very project in 2012, bowing to pressure from Washington and Brussels, which insisted on reducing Russia's role in the country's energy sector. Rosatom took the case to the international arbitration court and won, forcing Bulgaria to pay \$620 million in compensation.

Nonetheless, Rosatom's involvement in Europe in the post-2014 environment should not be ruled out *a priori*. Hungary's agreement with Rosatom to expand its Soviet-era nuclear power station at Paks got the green light from the EU in March 2017, three years after the initial deal had been agreed between Prime Minister Viktor Orban and President Putin. Budapest successfully used the "technical exclusivity" argument, claiming that an

open tender was unnecessary because only Rosatom could meet the project's specific technical requirements. Under the agreement, Rosatom will build two new reactors at Paks, and 80% of this €12.5 billion project will be financed with a Russian loan.

Despite the growing difficulties of working in Europe, Rosatom will persevere in its attempts to compete in Western markets. Reputational gains from supplying Western customers – and meeting stringent safety requirements – are not to be underestimated at a time when the company is actively marketing its expertise to the countries of Asia and the Middle East. In 2016, Rosatom made much of its success signing a commercial contract for the supply of fuel to Swedish operator Vattenfall. Credentials earned in the West give Rosatom advantages in an increasingly direct competition with Chinese and South Korean nuclear technology providers in the NPP construction and operation segments of the market. Enhancing its competitiveness in Asia is important as demand for NPP construction comes primarily from that region due to its rapidly growing electricity demand, both actual and projected.

Rosatom shares and promotes the Kremlin's objective of turning nuclear power into Russia's major export industry. Growing exports of Russian nuclear technologies bring a sizable high-tech element into the country's overall export structure. Modernising the Russian economy and increasing the value-added of its exports is in line with the Kremlin's stated interests. The export of nuclear technologies and associated services provides the country with a new source of tax income, which is less prone to boom-and-bust price cycles than hydrocarbons. Indeed, the contribution that Rosatom makes to the state budget has grown considerably since 2014. Rosatom emerged as Russia's eight largest taxpayer in 2016 (after five oil and gas companies, Sberbank and Russian Railways) and remained in the top 10 the following year with tax payments to the budgets of various levels amounting to 148.5 billion roubles. The fact that foreign projects made up almost a half in revenue and tax means that state support for Rosatom has broader economic objectives.

Rosatom's foreign investments also enhance Russia's political influence but in ways significantly subtler than Kremlin critics suggest. For instance, in Turkey, Russia is working with the government to draft regulations for the nuclear industry, which will apply to its own Akkuyu plant. This creates the risk of regulatory capture. Government-to-government loans and large-scale strategic projects, such as Akkuyu and TurkStream, the pipeline to transport Russian gas to Europe via Turkey, elevate inter-state relations to a fundamentally new level. They also make involvement in other strategic projects significantly easier. Rosatom's sprawling presence in Asia and the Middle East promotes Moscow's preferred self-image as a great power with enormous scientific know-how and ability to attract newcomers to the civil nuclear market as part of its wider effort to build a new international order.

The Russian Economy: Performance and Prospects

RICHARD CONNOLLY

Last year, the Russian economy continued its slow but steady recovery from the 2015-16 recession. Estimates indicate that the Russian economy grew at a rate of between 1.6-1.8% over the course of 2018, roughly in line with the previous year's performance when GDP expanded by 1.6%. It is also within the range of official GDP forecasts made at the beginning of the year by the likes of the IMF and World Bank, as well as Russia's Central Bank (CBR) and Ministry for Economic Development.

Perhaps most importantly, this rate of growth is close to the limit of what most economists consider to be Russia's potential growth rate of 2%. This relatively low ceiling on growth is due to a shrinking labour force, a relatively low investment-to-GDP ratio, and conservative fiscal and monetary policies, all of which limit the potential for economic expansion.

Nevertheless, the economy grew nearly as fast as even the most optimistic forecasts made at the beginning of 2018 would have predicted despite encountering serious headwinds in 2018. These headwinds included the imposition of fresh U.S. sanctions in April, a diplomatic crisis caused by Russia's alleged use of chemical weapons in the UK, an emerging trade war between the U.S and China which threatens to harm the global economy, and the continuation of tighter monetary policy in the U.S that is driving up interest rates. The importance of the latter should not be underestimated: most low- and middle-income countries experienced turbulence in 2018 as actions by the U.S Federal Reserve prompted capital outflows from so-called emerging economies. The fact that growth did not appear to slow down given the external environment will have pleased the country's leadership.

Although slow growth is better than no growth, it will still be a source of concern to the country's political leadership that Russia's share of global economic activity continues to decline. According to the IMF, the global economy is estimated to have grown at a rate of approximately 3.7%, which means that Russia's share of global output – 1.9% in current USD, or 3% at purchasing power parity (PPP) – declined for the fifth consecutive year. We know that this is a source of concern to policymakers because one of the stated objectives of official economic policy is to raise the rate of growth so that it reaches or even surpasses the global growth. Policymakers are not, however, unrealistic: this convergence with the global rate of growth is not expected to happen until 2024 at the earliest.

Oil and the Russian economy

It is almost cliché to suggest that Russia's economic prospects are shaped by the price of oil. Every recession since 1996 has been preceded by a sharp decline in the price of oil, while periods of faster growth have been accompanied by a high or rising price of oil. However, the strong correlation between the oil price and economic performance has weakened over the last two years. In 2017, the annual average price of oil (Urals blend) rose by around 25%, and in 2018 grew by roughly 35%. In previous years, this has generated a much faster pace of economic growth than that observed over the past two years.

There are several explanations for this decoupling of oil and growth in Russia. First, since the global financial crisis of 2008-9, Russian policy makers have deliberately resisted the temptation to use rising export revenue receipts to fund an expansion of government spending. This dampened one obvious source of growth. Second, the Ministry of Finance's 'fiscal rule' means that oil receipts in excess of just over \$40 p/b are 'sterilised' through the sale of rubles in exchange for foreign currencies. This has the effect of weakening the value of the ruble, which in turn prevents Russians from embarking on an import binge whenever oil prices rise, something that contributed to the brisk rate of growth prior to the global financial crisis a decade ago.

Together, these factors have dampened the stimulus traditionally provided by rising oil prices. While this may seem to be a counter-intuitive strategy, it has some benefits: by removing the link between government spending and historically volatile oil prices, state finances are put on a much more predictable and therefore stable course. If oil prices were to plummet, the impact on both federal government and consumer expenditure would probably be much less severe than in the past. Moreover, because excess export receipts are used to purchase foreign currency, Russia's official foreign exchange reserves are steadily rising. At the end of 2018,

they reached \$466 billion. This gives policymakers a considerable reserve to fall back on should Russia experience economic turbulence in the future.

Key economic indicators

A relatively low rate of investment in fixed capital (i.e. investment in machinery and facilities) has been a chronic source of weakness for the Russian economy and remains so. A country of Russia's income level should, all things being equal, look to invest around 25-30% of GDP annually if it is to experience something approximating economic modernization and diversification. Without this expansion of the capital stock, the necessary upgrading of machinery and infrastructure used in the economy will not take place. According to official Russian statistics, investment in fixed capital currently amounts to nearly 22% of GDP, which is some way off where policymakers would like to see it. Nevertheless, after experiencing a slump in investment between 2013 and 2016, it grew at an annual rate of 4.8% in 2017, and could well have grown faster in 2018 after reports of an unexpected surge in investment at the end of the year. Perhaps the key challenge will be to raise the annual rate of investment growth to closer to 10%.

Living standards continued to recover slowly from the recession of 2015-16. Inflation, which registered a post-Soviet low of 3.7% in 2017, is largely unchanged, although it will change in 2019 due to tax rises. The level of unemployment declined from 5.2% in 2017 to approximately 4.8% in 2018. Although this is a comparatively low level, it should be noted that Russia's labour force has been shrinking since 2010, something that helps keep unemployment down. Instead of unemployment, Russia's problem is more likely to be a shortage of workers. As consumer confidence edged slightly higher, retail sales also look to have risen faster in 2018 (2.6% year-on-year in the first three quarters) than in 2017 (1.3%).

The year ahead

Maintaining the rather modest current rate of growth over the next year may prove challenging. There are several obvious risks. First, any further escalation of U.S sanctions could generate greater uncertainty in the Russian economy, especially in relation to foreign direct investment in Russia and in the market for Russian debt (both corporate and government). Second, and more importantly, is the prospect of oil prices significantly declining. In 2018 oil prices rose for most of the year, peaking at just over \$80 p/b before falling sharply at the end of the year. While the current level of around \$60 p/b will probably satisfy policymakers in Moscow, a serious and sustained period of sub-\$40 p/b prices would be cause for concern. Third, the implementation of President Putin's election agenda for socio-economic development is likely to cause some complications for the economy, at least over the course of the next year.

Economic policy is currently dominated by plans to execute Putin's so-called 'May Decrees'. These amount to 13 national projects that are designed to modernise and expand Russia's key infrastructure, to improve health and demographic outcomes, and to make Russia the fifth largest economy (at PPP – see CCWRB3) in the world. It is envisaged that over Rb 13 trillion of federal government funds will be spent on these projects.

To finance this, budget revenues are scheduled to rise by 12% (c. Rb 2.3 trillion, or £27 billion) between 2018 and 2021. Most of this is likely to come from an increase in VAT from 18% to 20%. VAT receipts are expected to rise from an estimated Rb 5.9 trillion (5.8% of GDP) in 2018 to Rb 6.9 trillion (6.5% of GDP) in 2019, and rising to Rb 8 trillion in 2021 (6.7% of GDP).

Because of these tax rises, economic growth is expected to weaken over the next year, slowing to 1.3% in 2019. Inflation, currently at a post-Soviet low, is also expected to rise. Nevertheless, as government spending on the projects identified in Putin's May Decrees rises, annual growth is expected to rise to 2% and 3.1% in 2020 and 2021 respectively. This, according to official forecasts, is expected to boost all major economic indicators – investment, real incomes, and retail sales – as momentum builds over the next few years.

The minister for economic development, Maxim Oreshkin, who is charged with helping to design and implement these policies, believes that the past two years of slow recovery from the recession of 2015-16 provide a stable foundation on which to build a sustainable and broad-based acceleration of growth. According to Oreshkin, "Russia's institutions and macroeconomic systems work effectively", and "the [current] situation is stable, the economy is growing and gaining momentum". Oreshkin's confidence is interesting because, in

many ways, his views represent those of a wider technocratic elite in Russia comprising relatively young (Oreshkin is 36 years old) and well-educated individuals who are charged with formulating economic policy within the confines of the existing institutional order. This new generation of officials appears content not to appeal for systemic change, but instead focus on improving the efficiency of the existing system.

Some Aspects of Russia-China Military Relations

JULIAN COOPER

The Chinese participation in the recent 'Vostok-2018' strategic exercise served to draw attention to the increasingly close military cooperation between Russia and China. This is not new, but its scope and significance have changed over time and new dimensions are emerging. It is not the purpose of this short paper to cover all the ground: the aim is to focus on some aspects that could have considerable importance for future relations.

Arms transfers and industrial cooperation

In November 2018, it was reported by the Interfax news agency, citing Russian defence industry sources, that China had received the last of the twenty-four Su-35 multi-role fighters supplied according to a contract worth \$2.5 billion signed in 2015. Apparently, there are other elements of the contract such that it will not be implemented fully until 2020, perhaps including pilot training and the organisation of a service centre. There is also the 2015 c. \$3 billion contract to supply S-400 air defence systems. In July, the Chinese PLA took delivery of the first regimental set and the second is expected soon. These were interesting deals because they involved the latest systems still being delivered to the Russian armed forces. Russia has usually been wary of supplying advanced hardware to China because of (justifiable) concerns that it will in time be reverse engineered and put into production, then exported, as a domestic product. In these two cases, political considerations probably played a large role. But the Russian leadership may also have considered that successor systems were under advanced development anyway, namely the Su-57 fifth generation fighter and the S-500 air defence system, minimising the potential dangers of Chinese 'copying'.

Registering its opposition to these deals with Russia, in September the United States added the Chinese Equipment Development Department, Rosoboronekспорт's partner in the deals, and its director Li Shangfu to its list of sanctioned individuals and organisations, making it impossible for them to have dealings of any kind with the USA. The producer of the Su-35, the Komsomol'sk-na-Amure aircraft plant, was also added to the list. The Almaz-Antei corporation, building the S-400, had already been listed in 2014.

Nevertheless, other recent deals have been agreed. In 2016 and 2017 China bought nine Ka-32 multi-role helicopters, plus pilot training for them. The delivery of aero-engines of the Al-31 family, fitted to a number of Chinese combat aircraft, continues but this is likely to be phased out before long as China's own engine manufacturing capability steadily improves. Overall, Russia is by far the largest foreign supplier of armaments and other military equipment. According to the well-informed Moscow Centre for Analysis of the World Arms Trade, during 2010-17, in current \$US terms, Russia accounted for almost 90 per cent of all Chinese imports of arms, followed by Ukraine at 10 per cent. During the same period, China accounted for 8 per cent of Russia's total arms exports, but with the recent deals the share has risen to 13 percent in 2017 and a forecast 20 per cent in 2018.

But there are also civilian technology partnerships that have potential future military applications. One is the joint project to develop and build a heavy lift helicopter, which could in time provide a modern replacement of the Mi-26 in use with the Russian armed forces, and the development of a long-haul passenger plane, the CR-029, to be built jointly in Shanghai, could provide technologies and experience aiding the development of a future heavy military transport aircraft. In the words of a *South China Morning Post* article last September, 'China has become less of an arms client and more of a cutting-edge defence technology partner with Russia', although 'is becoming' would be more accurate at the present stage. As if in recognition of this trend, Russia has invited China to be partner this year in organising Russia's major aerospace show, 'MAKS-2019'. In November, the leader of a Rostekh (parent company of Rosoboronekспорт) delegation to China reported that three more arms contracts had been signed but no details were released, perhaps because of sanction pressures.

On the other side, Russia imports hardly any military-related technology from China. There was an expectation that Russia would replace some ship power units no longer available from Ukraine and Germany by Chinese manufactured equivalents, but this has now been ruled out. A few Chinese engines, based on old German designs, were imported but trial use revealed that they were unreliable and not suited to naval use. Now it has been decided to source the power units from Russian companies, even though this will lead to a delay in commissioning a number of new naval ships.

In principle, one system that Russia could benefit from importing is strike UAVs, still not in domestic production. In this case, it may well be that Russia has an eye to future competition on the world arms market. The first heavy strike UAV, the Sukhoi-developed 'Okhotnik' is likely to undergo its first flight test early next year and at least two other systems are at an advanced stage of development. Russia is already exporting reconnaissance drones and may have expectations that this market presence will be increased before long, though one of its established customers, Algeria, has acquired Chinese strike UAVs. For all their growing cooperation in the military sphere, therefore, Russia and China remain competitors when it comes to arms exports.

Another competitive development is the agreement between the Ukrainian 'Motor Sich' company, before the annexation of Crimea a major exporter to Russia of engines for fixed wing planes and helicopters, and the Chinese Skyrizon corporation to build a factory in China for the manufacture of a range of aero-engines including, possibly, one that will power the future Russia-Chinese heavy-lift helicopter. But this may be offset by the fact that Russia and China are now discussing the establishment of a joint venture for building aero-engines for the new CR 929 long-range passenger aircraft.

Space collaboration

In November 2017, Russia and China signed a programme of space collaboration for the period 2018-22. This includes such strategically important themes as joint work for the creation of space vehicles, electronic components for them, and, according to an agreement concluded in late 2018, the joint development and use of the GLONASS and Beidou navigation systems for non-military purposes. Also in late 2018, a protocol was signed for joint development work on liquid-fuelled rocket engines. The 'Chang'e-4' spacecraft that landed on the reverse side of the moon in January this year was powered by a radioisotope source supplied by Russia's Rosatom. While civil in nature, in time this joint work may find military applications.

Armed forces collaboration

It is a sign of the importance of close military relations with China that Russia has been willing to share information about the MOD's advanced National Centre for Defence Management (NTsUO), established in 2014. Already in March 2013, Chinese President Xi Jinping met Russian Defence Minister Sergei Shoigu on a visit to Moscow, and was the first leader of a foreign state to be shown the Central Command Post of the armed forces, a year later incorporated into the new NTsUO, where he met Russian Chief of the General Staff Valerii Gerasimov, who outlined the Centre's advanced technology and its functional possibilities.

In 2016, the Chinese equivalent of the NTsUO was revealed, when it was visited by President Xi Jinping. This is the Central Military Commission's Joint Campaign Command Centre, deep in the mountains to the northwest of Beijing. This has computer terminals and large visual display units and is known as the 'brain' of the People's Liberation Army as, like the Russian centre, it is a focus of military decision making.

General Wei Fenghe, the newly appointed defence minister of China visited Russia in April 2018, his first foreign visit shortly after appointment, and met Shoigu. Later in the year, in August, Shoigu held a meeting at the NTsUO with the Chief of the Joint Staff of the Chinese Military Commission, Li Zuocheng, who was thanked for his decision to direct a Chinese military contingent to the forthcoming 'Vostok-2018' exercise. During the exercise, in which 3,500 Chinese servicemen participated, Shoigu briefed Wei Fenghe on the work of the NTsUO and its role in coordinating operations in real times in distant theatres of military action, including much of the Vostok-2018 exercise itself. There may now be a direct line of communication between the NTsUO and the Chinese JCCC.

Joint computer command post exercises have become a feature of Russia-China cooperation relations. In May 2016, the first 'Aerospace-Security' exercise was held, based at the Central Research Institute of 'Troops of Air-Space Defence, Tver'. This involved joint manoeuvres and operations of anti-aircraft and anti-missile defence units of Russian and China against ballistic and cruise missiles. The second was held in China in December 2017 at the Air and Missile Defence Research Institute of the Air Force Academy of the PLA in Beijing. This also involved troops from operational and tactical levels.

A distinguishing feature of many of the joint activities is their high-technology character. In the past, there was reluctance to acknowledge that China possesses capabilities in science and technology comparable with those of Russia; after all, it was the Soviet Union that helped to transform its Eastern neighbour from a poor to a more modern country, and paternalistic attitudes lived on. This has now changed and there is a wider appreciation in Russia that in some strategically important fields China has not only caught up, but even overtaken Russia. There is now potential for mutually beneficial cooperation and as it develops the military relationship may steadily deepen.

Review of Lukin, R. *Russia and China. The New Rapprochement.*

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Donald Trump's unpredictable foreign policy, confusing statements and the readiness to use sanctions when negotiations would most probably achieve more, brought Moscow and Beijing closer than they have been since the 1950s. This rapprochement has been registered in Europe and the US but the number of experts able to analyse this increasingly harmonious relation in depth, using original language sources of both countries, is very small. This is only one of the reasons why *Russia and China. The New Rapprochement* is a timely and interesting book. Its author, Alexander Lukin, is one of the world's top experts on Russo-Chinese relations. He is an academic-practitioner with two PhDs. He worked for the Soviet Foreign Ministry in Beijing and at the Institute of Oriental Studies of the Soviet Academy of Sciences. Between 1990 and 1993 Lukin worked as a deputy of the Moscow City Council. He also studied and taught on both sides of the Atlantic. In 2009, President Hu Jintao awarded Alexander Lukin a medal for the "Outstanding Contribution to the Development of Sino-Russian Relations".

The author is also an astute and critical observer of the Western scholars studying China and Russia. In the preface, Lukin provides a lengthy list of shortcomings of Western scholars looking at the two countries, criticising (rightly) many of their analysis and their linguistic competences. In the sub-chapter "The West" (pp. 2-16) the author's criticism of the West is particularly strong. His points are fair and well-argued although this book is probably not the right venue for author's understandable anger. His brief look at the Russia-sceptic sinologists who are unimpressed with the close cooperation between the two countries is also fair and interesting.

One of the most interesting subjects covered by the author is the way the two countries are trying to form of a community of people who will in the future be able to understand and interpret the policies and intention of the "other side". Chinese is one of the most attractive study subjects for all young people who want to be gainfully employed and are not scientifically or mathematically inclined. In Russia, in 2016, there were twenty applicants for every place at the Chinese faculty of Moscow State Pedagogical University. Chinese is taught in 123 Russian educational institutions in 34 regions (p.137). The total number of young people learning Chinese in Russia is about 17,000 of which approximately 5,000 study at the secondary school level. More than 900 bilateral educational partnerships, involving 120 Russian and about 600 Chinese universities have been established between Russian and Chinese universities. About 1,000 Chinese students studying in Russian are supported financially by the Chinese grants. In 2013-14, 18,200 Chinese students studied in Russia. In 2015, 16,197 Russian students studied in China. Moscow and Beijing plan to increase student exchanges to 100,000 by 2020. The study of Russia in China is well planned and funded by the government in Beijing and both the government and business profit from it. That is not the case in Russia. One Russian sinologist recently wrote that in Russia the government and business communities complain about the lack of Chinese experts and the experts complain about a lack of funding. Despite the competition for places to learn about China, the community of China experts in Russia is apparently declining.

Lukin's coverage of the Shanghai Cooperation Organisation is quite elaborate. But one wonders if the organisation is not becoming a club to which the co-owners China and Russia invited too many members who have very few common interests, several serious bilateral differences and who treat the organisation as a warning to the West, rather than something which they can build on their economic development.

The author was not in the position to comment on the latest US sanctions aimed at Moscow and Beijing, although the book does include a brief chapter on "Donald Trump and the Future of Russian – Chinese Relations". His assessment of the future relations between the two countries looks very realistic and to the point. No one more than Donald Trump is likely to improve relations between Moscow and Beijing by continuing his policies. In spite of the meeting he had with Putin in Helsinki, Trump's policies towards Russia are on the whole hostile and unpredictable. And on 7 November 2018, during a press conference, Trump declared that he is offended by the Chinese strategy "Made in China 2025" which is to make China the World first economic power. This will not happen, declared Trump.

Lukin very convincingly tackles the myth of the Chinese demographic expansion in Russia, especially the alleged illegal Chinese immigration to the Russian Far East. He also sees the future of Russo – Chinese relations realistically and describes well the challenges and interests which could complicate the relationship. At the moment, Russia has little to offer to China beyond raw materials and some Russian advanced weapons systems. In the past, Russia was also an important transit route for the Chinese – European trade. In 2013, 99% of the Chinese transit to Europe went through Russia. At the beginning of 2017, that figure was reduced to 15%. Moscow and Beijing have different disagreements with Washington: China is perceived by the US mainly as an economic challenger and Russia as a potential military threat. Beijing, therefore, may not be too happy with the US policies but will be reluctant to get involved in any Russo – US disagreements. Although China is already a target of the US sanctions, its close economic cooperation with Russia could bring about new US sanctions, something which China would rather avoid.

Indeed, the author covered probably every issue which might be of interest to watchers of China – Russian relations but some of them are slightly too briefly addressed. The book is partly an expanded version of two articles published by the author in Western outlets in 2016. This could be the reason why some subjects covered by the author are disappointingly short, such as the coverage of both Koreas, two countries which have been very important for both Beijing and Moscow for many years. Moreover, the reaction of both capitals to the Arab revolutions merited only one page. And the arrangement of the chapters and slightly repetitive presentation of some of the subjects could again suggest that the book is an expanded version of several very interesting articles not always put together with editorial care.

Nevertheless, this a highly informative book packed with interesting information, names and statistics. Lukin's sources and analysis are very good and his knowledge of China is most impressive. He is particularly good at identifying the most important features of every field of the Russo-Chinese relations. The chapters covering political, military, economic and energy issues are particularly good. The author's conclusions after every chapter are also excellent and are likely to be used by many governments and business briefers around the world.

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