

TURKISH-RUSSIAN DEFENSE COOPERATION: POLITICAL-MILITARY SCOPE, PROSPECTS AND LIMITS

Can Kasapoğlu, Ph.D. | Director, EDAM Security and Defense Studies Program

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Key Judgements

- Regional security cooperation with the Russian Federation and the acquisition of Russian arms are often conflated by Turkish strategic community. While the former enabled Ankara's key cross-border counter-terrorism campaigns in Syria (*Operation Euphrates Shield and Operation Olive Branch*), the latter, especially in the strategic weapons segment, remains a more complex issue that would inevitably put Ankara at odds with NATO circles.
- Turkey has registered meaningful progress in designing and producing its own arms in recent years. Turkish defense industries manufacture advanced weaponry, including combat-proven armed drones that offer one of the best solutions in the tactical and medium altitude / long-endurance (MALE) classes. Turkish defense industry's capabilities are on the rise in a broad array of categories ranging from corvettes to main battle tanks and multiple-launch rocket systems (MLRS). However, long-range, strategic surface-to-air missile (SAM) systems still remain a shortfall for the burgeoning national military-industrial complex. Moscow's S-400 offer aims to capitalize on this capability gap, while taking advantage of Ankara's strained relations with its traditional NATO allies.
- Without a doubt, the Russian SAM system is not Turkey's only option. At the time of writing, the US' Patriot offer could be a game-changer (*there is also an ongoing cooperation between Turkey and the EUROSAM, but this remains rather for a long-term co-production project*). Besides, the cost of the S-400 acquisition (*first and foremost the risk of putting the F-35 deliveries and the existing F-16 arsenal in jeopardy*) could well dwarf its advantages. However, due to the lack of adequate track 1.5 diplomacy channels in Turkey's transatlantic ties, in addition to the harsh rhetoric of top Western political-military figures, the S-400 issue is now perceived as a national sovereignty matter by the Turkish strategic community, something that is hard to explain in purely rational military-technical terms.
- Russia has to diversify its export markets since China and India (especially Beijing) are increasingly becoming 'saturated' due to these nations' growing industrial capabilities and appetite for more technology transfers in advanced arms. Therefore, Moscow is seeking new markets in Latin America and Southeast Asia. Notably, wealthy Gulf nations also offer lucrative opportunities.
- Entering Turkey's strategic weapons market would provide Russia with strong political leverage over Ankara's Western allies that could even dwarf the defense economics dimension of the S-400 deal. In case Turkey is excluded from the F-35 project and exposed to the US CAATSA (Countering America's Adversaries Through Sanctions Act) sanctions, Ankara's transatlantic ties will be irreparably damaged. This foreign policy 'achievement' carries more value for the Kremlin than any weapons sales could ever have. The S-400 deal is more than an arms deal in this regard.
- Many ideas, ranging from the Su-57 and Su-35 aircraft acquisition to S-500 co-production, were voiced about the

future trajectory and prospects of Turkish – Russian defense cooperation so far. In the near future, however, the most probable category could be short-to-medium range air defense systems to ensure a deep, layered and reliable SAM configuration in case the S-400 deal materializes.

➤ From a political-military standpoint, there is almost no way forward for the Turkish – Russian military cooperation that would not cause NATO reactions. Turkey’s national defense industry now produces high-end tactical, conventional arms and even successfully exports them. In other words, what Ankara needs is more high-tech and strategic weapon systems with a co-production and technology transfers agenda in its military deals. Any Russian cooperation prospects in these fields would be more than enough to provoke Western concerns.

➤ Turkey looked for non-NATO options for its defense needs before. Israel and South Korea were the most notable examples in this regard. The latter is still a key partner for the Turkish defense industry. Ukraine has recently come to the forefront as an attractive non-NATO defense partner too. However, all these actors are, in one way or another, attached to the Western security architecture. Russia, on the other hand, remains the primary challenge and rival to the West. Thus, in the eyes of the transatlantic community, Ankara’s defense partnership with Moscow may not seem like an acceptable non-NATO option, but an anti-NATO one. As mentioned above, track 1.5 and track 2 diplomacy channels are key to overcome this dialogue of the deaf.

Introduction:

Only a couple of years ago, many experts thought that Moscow and Ankara were on a collision course after the downing of the Russian Su-24 by Turkish combat air patrols in November 2015. Notably, in May 2016, Chatham House even convened a round-table to discuss the ways to prevent a conflict between the two states¹.

Yet, contra these dire predictions, Turkish-Russian bilateral ties have shown a drastic comeback in the last two years. Turkey's deep disappointment with its Western allies following the failed July 2016 coup attempt, as well as the drift in Turkish – American relations over Syria, marked important drivers of the rapprochement between Moscow and Ankara.

Until the recent S-400 case, and setting aside the Su-24 incident, the cooperation between Turkey and Russia was generally characterized as a trade partnership championed by the energy sector. In this respect, a 2013 report by the French think-tank IFRI characterized the Russian – Turkish economic ties as follows:

“Finding sources of growth is all the more crucial for Turkey and Russia in light of their respective histories of especially severe economic and monetary crises before achieving some degree of stability in the last decade. Born out of incomplete industrialization, their imbalanced economies encourage them to secure long-term sources of revenue in order to support their respective power strategies. Turkey and Russia have therefore established a complicated and asymmetrical relationship, albeit one that involves certain common interests, particularly with regard to the European Union. The two countries are committed to a strategy of geographical diversification in order to reduce the impact of the European crisis on their foreign trade, but they are minded to retain a long term European focus and therefore to come to an agreement on the revenues from exporting energy to the West”².

This assessment would significantly change if the S-400

deal went through. For one, the acquisition of the Russian strategic SAM system in 2019 could trigger several geopolitical aftershocks, even the expulsion of Turkey from the F-35 project, the imposition of US sanctions, and inevitably, a major break in Ankara's decades-long transatlantic-oriented strategic choices. Furthermore, having a critical NATO nation opting for Russian strategic defensive weapon systems when relations between Moscow and the West are highly problematic could resonate very negatively in many allied capitals.

In fact, Turkey had non-NATO defense partnerships before. Israel was once a key ally that provided the Turkish military with important capabilities ranging from main battle tank modernization to Popeye air-to-surface missiles. South Korea is another non-NATO partner still working closely with Turkish defense industries. Ankara has also developed military cooperation with Kiev that will produce critical results in active protection systems for the Turkish Army's armored platforms. However, given the current conjuncture, Russia is not a 'normal' non-NATO defense partner at all. Some would say that even if the conjuncture were different Moscow would not cut it as a normal non-NATO partner for Ankara. After all, NATO still exists, to a certain degree, in opposition to Russia as the Alliance made clear in its last communiqué in Brussels. This stance has been articulated more clearly in the national security strategy and defense strategy papers of the US.

This study aims to assess the political-military scope, limits, and prospects of the advancing Turkish – Russian defense partnership. In doing so, it will first present a *tour d'horizon* of the Russian arms exports, and then explain why Russian weaponry is 'attractive' to many nations. The second part will analyze the Turkish defense sector and weapons market in detail. The third part will evaluate the S-400 deal. The fourth section will focus on the prospects and future trajectory of the Turkish – Russian defense cooperation. Finally, the study will conclude with its findings.

¹ Xenia, Wickett and Jacob Parakilas. *Transatlantic Rifts: Averting a Turkey / Russia Conflict*, Chatham House, 2016.

² Rémi, Bourgeot. *Russia – Turkey: A Relationship Shaped by Energy*, IFRI, March 2013. Pp.5-6.

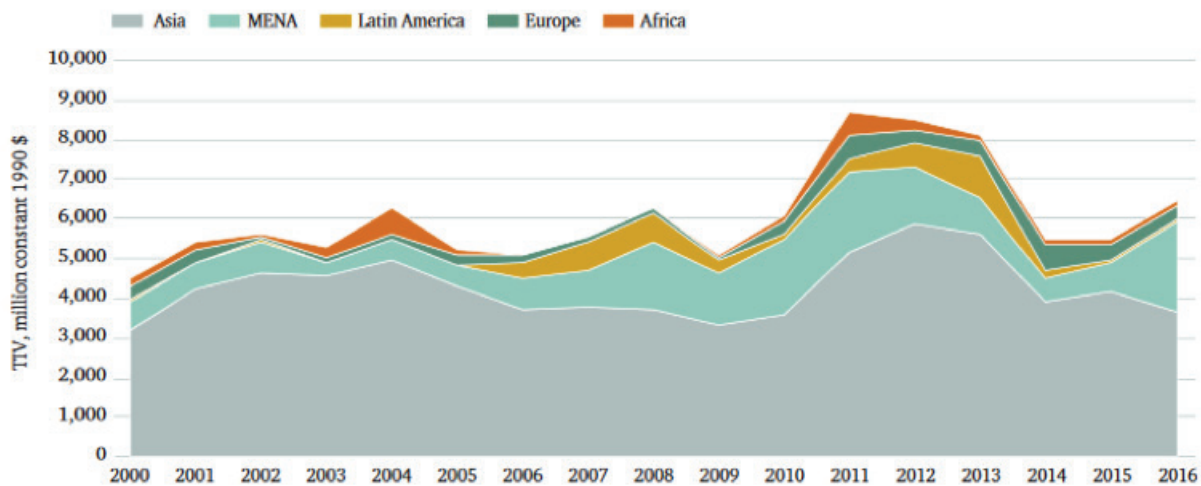
Russian Arms Exports Outlook

Russia is the world's second largest arms exporter after the US. Asia remains the most lucrative market for Russian arms. In 2016, about 21% of the global arms sales were secured by Russian defense industries³. At first glance, the absolute revenues from arms exports might seem little compared to Russia's overall trade volume. In 2016, of \$285.7 billion worth of total exports, Russian defense services and hardware accounted for only 5.2% (some \$15 billion). Moscow's exports largely consist of hydrocarbons, minerals, and raw materials (62%). When hydrocarbon-driven export figures are excluded, the real importance of arms exports become more visible. They make up more than 60% of overall machinery exports of Russia (\$ 15billion / \$24.4 billion)⁴. All in all, defense industries are the epicenter of high-tech sector earnings for the Russian Federation⁵.

The Asian demand for Russian weapons, dominated by China, Vietnam, and India, account for 70% of Moscow's arms exports. Asia is followed by the Middle East and North Africa where Russia faces more competition⁶.

The Russian share in the global arms market shines in particular areas. For example (in the 2010 – 2016 period), in the air defense systems portfolio, Russian industries dominated 41.1% of the overall global exports. In the same period, Russia's share in missiles export was 25.6%, while in the aircraft market its share was 24.7%⁷. All these achievements were well above the Russian average share in all segments in total. Particularly the air defense sale reflects a true success. On the other hand, sensors and artillery systems remained well below average by 8.4% and 7% respectively⁸.

Russian Arms Exports by Region (2000 – 2016)⁹



Sources: SIPRI Arms Transfers Database, 2017; authors' calculations.

³ For a comprehensive study on the Russian arms industry, see: Richard, Connolly and Cecilie Sendstad. Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017.

⁴ Sergey, Denitsev. Russia in the Global Arms Market: Stagnation in a Changing Market Landscape, CSIS, 2017. p.1.

⁵ Ibid.

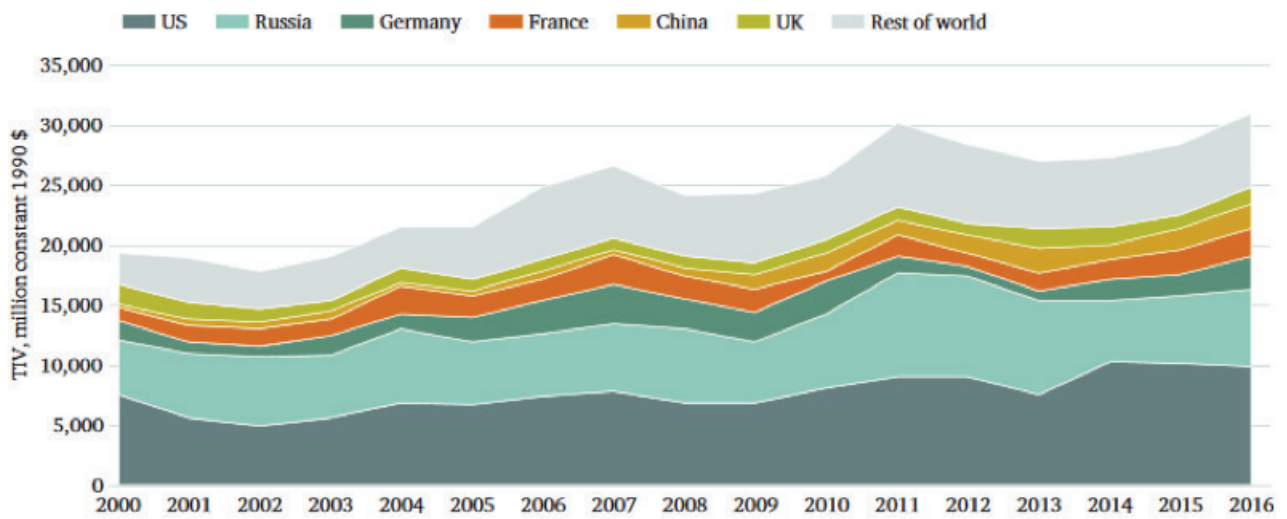
⁶ Richard, Connolly and Cecilie Sendstad. Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017.

⁷ Ibid. pp.6-9.

⁸ Ibid.

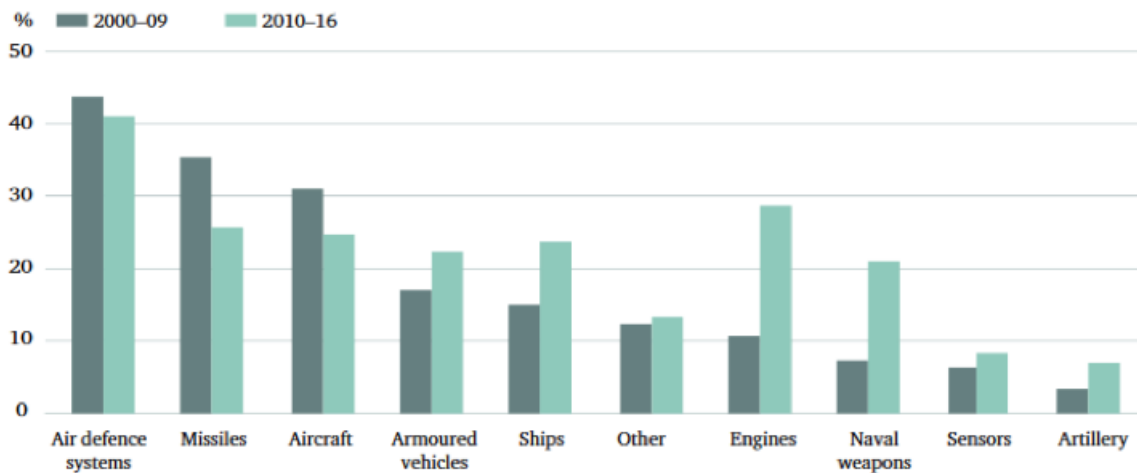
⁹ Retrieved from: Richard, Connolly and Cecilie Sendstad. Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017. p.10.

Share of Global Arms Exports (2000 – 2016)¹⁰



Source: SIPRI Arms Transfers Database, 2017.

Russia's Share of Global Arms Exports in Selected Weaponry¹¹



Source: SIPRI Arms Transfers Database, 2017.

Despite this shining record, Russia still needs to explore new markets and foster its defense revenues. Above all, China and India are rapidly being 'saturated' since these two nations, in particular Beijing, have industrial and technological capabilities that make them demand more

tech-transfers and lucrative co-production deals each time. There is little room for Moscow to improve its share in the Indian, and especially, Chinese markets (due to the self-sufficiency of Beijing in many weapons systems) in the future. The Russian military's requirements, namely the

¹⁰ Retrieved from: Richard, Connolly and Cecilie Sendstad. Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017. p.7.

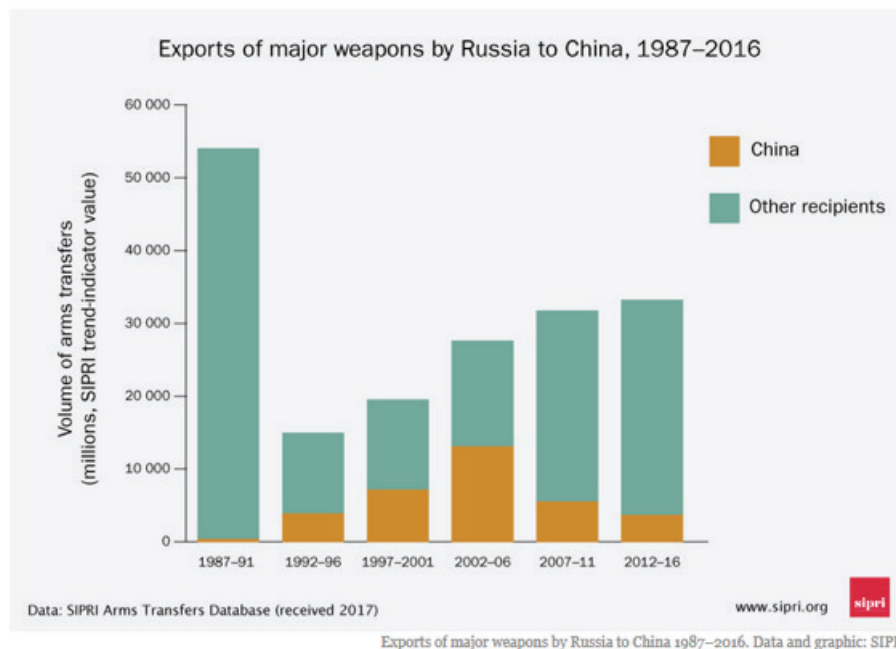
¹¹ Retrieved from: Richard, Connolly and Cecilie Sendstad. Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017. p.8.

state orders, have registered an important increase over the last two decades. This 'domestic factor' also stresses the industries' export capabilities. In addition, Russia's defense industry is plagued with an ageing manpower problem¹².

Besides, the arms market is getting crowded with new players, thereby in many segments, Russia is facing more competition. China's flexible arms sales policy is an

important factor in this sense.¹³ One attractive opportunity for the Russians could be the Gulf Arab nations. The UAE already signed a deal for a package including Pantsir S-1 air defense systems. Qatar and Saudi Arabia also showed interest in the procurement of the S-400. Like Turkey, these markets would also bring about 'political gifts' since they are traditional customers of Western weaponry¹⁴.

Major Arms Sales from the Soviet Union / the Russian Federation to China¹⁵



As seen in the figure, the 2002 – 2006 column marks the peak of the Sino-Russian arms trade. Since then, Chinese reverse engineering efforts, Beijing's improving military-technological know-how, and other factors led to a gradual decline in the major Russian arms exports to China.

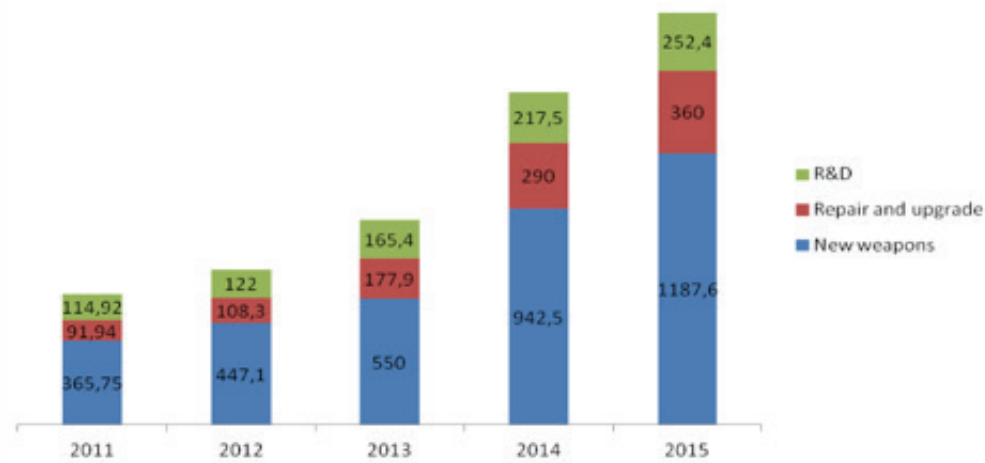
¹² Richard, A. Bitnizger. Russian Arms Transfers and Asian Military Modernisation, RSIS, December 2015. p.11.

¹³ Sergey, Denitsev. Russia in the Global Arms Market: Stagnation in a Changing Market Landscape, CSIS, 2017. pp. 17-

¹⁴ Anna, Borshchevskaya. The Tactical Side of Russia's Arms Sales to the Middle East, the Jamestown Foundation, 2017, <https://jamestown.org/program/tactical-side-russias-arms-sales-middle-east/>, Accessed on: December 10, 2018.

¹⁵ Retrieved from, Siemon, T. Wezeman. "China, Russia and the Shifting Landscape of Arms Sales", SIPRI, July 2017, <https://www.sipri.org/commentary/topical-background/2017/china-russia-and-shifting-landscape-arms-sales>, Accessed on: December 08, 2018.

Defense Procurement of the Armed Forces of the Russian Federation (in Russian Rubles)¹⁶



	2011	2012	2013	2014	2015
Total	574,61	677,4	894	1450	1800
R&D	114,92	122	165,4	217,5	252,4
New weapons	367,75	447,1	550	942,5	1187,6
Repair and upgrade	91,94	108,3	177,9	290	360

Russian Defense Procurement and Arms Exports Proportions (in million US Dollars)¹⁷



	2010	2011	2012	2013	2014	2014
Defense procurement, min USD	574,61	677,4	894	1450	1800	1800
Arms exports, min USD	114,92	122	165,4	217,5	252,4	252,4
Exchange rates, roubles/USD	367,75	447,1	550	942,5	1187,6	1187,6

¹⁶ Retrieved from: CAST, http://www.cast.ru/For_pdf/2016_eng.pdf, Accessed on: December 06, 2018.

¹⁷ Retrieved from: CAST, http://www.cast.ru/For_pdf/2016_eng.pdf, Accessed on: December 06, 2018.

Why Russian Arms are Attractive?

Russia remains an important alternative to nations who have strained political relations with the West, or have a limited defense budget, but in need of a serious military modernization effort. As underlined by a 2017 CSIS report:

“...after Western states responded to the Tiananmen protests with an embargo on arms exports, China was left with Russia as its only source of military technologies. Let us also recall the U.S. sanctions imposed on India after that country conducted nuclear weapons tests. Those sanctions did not last very long, but they strengthened the Indian government’s resolve to pursue military cooperation with Russia. It was during the 1998–2001 period, when the U.S. sanctions were in place, that Russia and India signed crucial deals on the licensed production of Su-30MKI fighter jets and T-90 tanks, as well as joint-development of the BrahMos missile system. Russia, meanwhile, has never imposed any restrictions on the export of its defense technologies to China or India. In this way, previous technological collaboration has been a very important driver of Russia’s military and technical cooperation with the two countries”¹⁸.

Moscow enjoys some key advantages as an arms supplier and defense partner. First, the military-technological base developed in the late Soviet period has paved the ground for many current Russian export weaponry, such as the Su-30MK family of fighter jets, T-90 main battle tanks, and the S-300 SAM systems line. Second, Russian arms depend on an advantageous design philosophy that makes them relatively inexpensive, easier to operate when compared to their Western competitors, and they are well suited to the needs of developing nations’ armed forces. Third, unlike the West, the Russians are pretty flexible and have much less political constraints in technology transfers and joint ventures. In fact, Moscow played these cards well

to hold onto the Indian and Chinese markets¹⁹. Finally, Russia has a lot more ease in exporting a broad category of arms, including technologically advanced and militarily game-changer ones (such as SS-26 Iskander short-range ballistic missiles and S-400 SAM systems)²⁰. In addition, unlike the early post-Soviet era in the 1990s, at present, the Russian industry offers better after-sales services (MRO – maintenance, repairs, and overhaul) along with upgrades²¹.

There are two additional reasons for explaining the Russian arms sales boost in the Middle East and North Africa (even after the total collapse of a lucrative market, Libya²²).

For one, there is the “Syria effect” that gave a strong boost to Moscow. The transformation of the Armed Forces of the Russian Federation into an expeditionary warfighting actor, married to the frequent presence of the Russian arms in combat zones, also attract customers. Russia’s intervention in Syria highlighted key combat capabilities augmented by robust weapon systems. Especially, A2/AD weaponry (such as the S-400, S-300 variants, Pantsir S1 air defense weapon systems, and Bastion coastal anti-ship missiles), combat aircraft, and long-range precision strike asset Kalibr cruise missiles are very important in this respect²³. Many Russian weapons, which saw their battlefield debut in Syria, have become more and more popular.

Finally, some traditional customers of Western arms in the region, for example Saudi Arabia and the United Arab Emirates, do not want to put “all of their strategic eggs in the American basket”²⁴. In fact, in some weapon systems categories, first and foremost ballistic missiles and armed drones, the Gulf nations have faced various limitations and constraints imposed by the West up until today. This is why the United Arab Emirates ended up with Chinese drones, and the Saudis with Chinese intermediate range ballistics

¹⁸ Sergey, Denitsev. Russia in the Global Arms Market: Stagnation in a Changing Market Landscape, CSIS, 2017. pp.13-14.

¹⁹ Ibid.

²⁰ Richard, Connolly and Cecile Sendstad. Russia’s Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017. p.9.

²¹ Richard, A. Bitnizger. Russian Arms Transfers and Asian Military Modernisation, RSIS, December 2015. p.11.

²² Some experts estimate that the collapse of Libya cost Russia some \$7 billion in defense contract packages –which is tantamount to nearly half of Moscow’s arms exports in 2016 –. Sergey, Denitsev. Russia in the Global Arms Market: Stagnation in a Changing Market Landscape, CSIS, 2017. pp. 17-21.

²³ Tim, Ripley. “Moscow’s Missions: Russian Expeditionary Warfare Capabilities”, Jane’s Defence Weekly, January 2019.

²⁴ Chuck, Frellich. “How Russia is Taking Over the Middle East One Country at a Time”, Harvard Kennedy School Belfer Center for Science and International Affairs, July 2018, <https://www.belfercenter.org/publication/how-russia-taking-over-middle-east-one-country-time>, Accessed on: January 31, 2019.

missiles. The trends in the advanced fighter aircraft segment are even more noteworthy, especially at a time when the fourth generation aircraft are gradually being replaced by the fifth generation ones. In result, the UAE²⁵ and Qatar²⁶ have recently shown interest in the Russian supermaneuverable aircraft Su-35. Indeed, the Gulf states' intentions to procure Russian air platforms could be a game changer for the future of the arms market in the Middle East and North Africa.

The Su-35S, an advanced variant of the line, remains the first Russian – produced fighter aircraft with engines built for sustained supersonic cruise operation. This feature was, until then, exclusive to the F-22 Raptor of the United States. As a result, Su-35S has critical advantages in maneuverability and combat persistence against a very broad range of competitors²⁷. According to military-technical assessments, the Su-35S is very lethal in beyond visual range (BVR) combat situations as it combines a large payload of missiles with various seekers, supercruise, one of the longest ranging radars ever installed in a fighter aircraft, as well as radiofrequency and passive infrared sensors²⁸.

These attributes, naturally, brought about serious concerns among the Western military strategic community. A November 2018 piece published in the American magazine *National Interest* did a good job in elaborating the chief worries that could trouble Russia's competitors in air warfare:

“The Su-35 is at least equal—if not superior—to the very best Western fourth-generation fighters. The big question, is how well can it perform against a fifth-generation stealth plane such as the F-22 or F-35? The maneuverability of the Su-35 makes it an unsurpassed dogfighter. However, future aerial clashes using the latest missiles (R-77s, Meteors, AIM-120s) could potentially take place over enormous ranges, while even short-range combat may involve all-aspect missiles like the

AIM-9X and R-74 that don't require pointing the aircraft at the target. Nonetheless, the Su-35's speed (which contributes to a missile's velocity) and large load-carrying abilities mean it can hold its own in beyond-visual-range combat. Meanwhile, the Flanker-E's agility and electronic countermeasures may help it evade opposing missiles. The more serious issue, though, is that we don't know how effective stealth technology will be against a high-tech opponent. An F-35 stealth fighter that gets in a short-range duel with a Flanker-E will be in big trouble—but how good a chance does the faster, more-maneuverable Russian fighter have of detecting that F-35 and getting close to it in the first place?”²⁹

The rumors revolving around the Su-35 show how the Russians exploit the gap emanating from the Western arms sales restrictions in critical regions that are ready to spend huge amounts in defense procurements. Especially, as mentioned earlier, in the age of 5th generation aircraft, strict arms sales policies of the European nations and the US will probably boost the market share of the Russian platforms. Given Washington's unwillingness to sell the F-22, coupled with the 'limited number of seats reserved' for the F-35 acquisition, many nations – first and foremost the wealthy Gulf states – could work more closely with Moscow³⁰. Even more notably, open-source pieces of evidence suggest that the United Arab Emirates could very soon enter into a cooperation with Russia to develop a fifth-generation fighter, based on the Su-35³¹.

In Turkey's case, a risk-averse calculus resembling the Gulf motivation of diversifying the baskets for “strategic eggs” remains one of the underlying reasons for Ankara's quest to procure S-400s. Meaningfully, in this respect, the Turkish press even proposed a potential Su-35 (or Su-57, though it would be more speculative) acquisition option for the national defense agenda to compensate for any F-35 delivery

²⁵ Bloomberg, <https://web.archive.org/web/20170319183720/https://www.bloomberg.com/news/articles/2017-02-20/u-a-e-to-build-russian-warplane-as-iran-stokes-mideast-tensions>, Accessed on: February 02, 2019.

²⁶ TASS, <http://tass.com/defense/992351>, Accessed on: February 02, 2019.

²⁷ Carlo, Kopp. “Sukhoi's Su-35S – not Your Father's Flanker”, *Defence Today*, March 2010.

²⁸ Ibid.

²⁹ Sebastien, Roblin. “Russia's Su-35 Fighter: The World's Best 'Dogfighter'?”, *The National Interest*, November 2018, <https://nationalinterest.org/blog/buzz/russias-su-35-fighter-worlds-best-dogfighter-36112?page=0%2C1>, Accessed on: February 02, 2019.

³⁰ Military Watch, <https://militarywatchmagazine.com/article/su-35-for-both-sides-uae-and-qatar-both-look-eastwards-to-arm-themselves-amid-worsening-relations>, Accessed on: February 02, 2019.

³¹ Chuck, Frellich. “How Russia is Taking Over the Middle East One Country at a Time”, *Harvard Kennedy School Belfer Center for Science and International Affairs*, July 2018, <https://www.belfercenter.org/publication/how-russia-taking-over-middle-east-one-country-time>, Accessed on: January 31, 2019.

drawbacks³². However, Turkey's defense procurement parameters are not similar to the Gulf Arab nations. In order to make a pinpoint prediction for the defense ties between

Ankara and Moscow one should first grasp the Turkish defense sector's structure and current conditions.

Turkey Defense Sector Outlook

Turkey's defense industries have drastically transformed over the past two decades. The Turkish administration's long-term strategic planning, coupled with the economic uptrend in the early 2000s, made a successful military modernization program possible. Moreover, Turkey's political leadership has not changed during the referred periods³³. President (and previously Prime Minister) Recep Tayyip Erdogan's broad public support is extended to the endorsement of Turkey's designated defense expenditures and expeditionary operations. Besides, the country's weapons market is very lucrative for investment and foreign trade. Open-source surveys suggest that Turkey had a total defense spending of \$12.98 billion in 2018, ranking 18th globally and 7th within the NATO alliance³⁴.

Due to several economic reasons, the country's defense budget/GDP ratio fell from 2% in 2005 to 1.5% in 2017³⁵. Nevertheless, the Turkish administration managed to meet most of its military modernization goals, especially during the 2007 – 2011 period. At the time, defense exports grew by 75%, and indigenous production rose from 42% in 2009 to 52% in 2011. Based on the 2007 – 2011 success, the 2012 – 2016 strategic plan was designed to boost more aspirant involvements of Turkish firms in national defense programs and defense exports.³⁶ The Turkish administration has pursued this understanding through the 2017 – 2021 strategic plan (with the motto of “technological depth and

global efficiency”). Finally, the 2018–2022 sectoral strategic plan prioritized “technology and sub-systems ownership to facilitate a sustainable defense industry” that would function as a strategic powerhouse both for the Turkish military and arms exports³⁷.

Starting from the 2000s, Ankara has gradually shifted from a licensed production dominant model for its national defense industries to a more ambitious one that aims to produce military solutions based on genuine indigenous design, advanced human resources, and promising engineering capabilities. This roadmap not only provided the Turkish Armed Forces with nationally produced arms, but also led to an export uptrend in various weapons. For example, in 2006, Turkey's defense exports accounted for \$487million, and in 2016, the country recorded \$1.953 billion in arms exports³⁸.

Turkey's indigenous weaponry have become sources of national pride due to their impressive combat records during the Syria campaigns (Operation Euphrates Shield and Operation Olive Branch). A broad array of arms, ranging from multiple launch rocket systems to attack helicopters and armed UAVs, were successfully deployed during these efforts. Ankara's military achievements in Syria's pressing hybrid warfare environment pushed the confidence of Turkey's decision-makers and defense sector stakeholders sky-high³⁹.

³² Yeni Şafak, <https://www.yenisafak.com/gundem/s-400den-sonra-su-ucaklari-3344132>, Accessed on: February 02, 2019.

³³ Indeed, many defense modernization agendas, such as building a blue water navy or producing indigenous 155mm class how-itizers were a legacy from previous Turkish administrations. On the other hand, it is a clear fact that the Erdogan administration had a determining role in key defense modernization topics, for example, Turkey's unmanned systems revolution.

³⁴ IHS Jane's, Navigating the Emerging Markets. Turkey, October 2018, p.4.

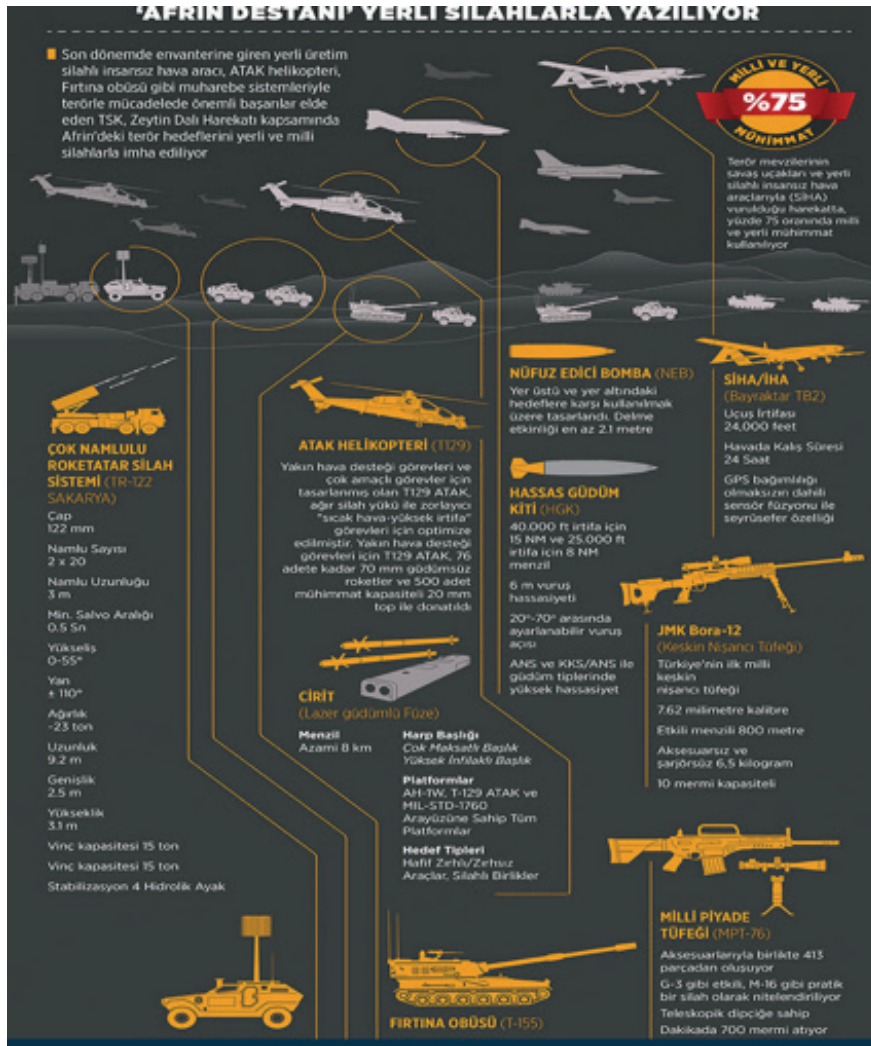
³⁵ Andrew, Galer. et.al. Turkey: Weapons Production and Procurement 2018 – 2027 Turkish Weapons, IHS Markit Jane's, March 2018.

³⁶ Ibid.

³⁷ T.C. Cumhurbaşkanlığı Savunma Sanayii Müsteşarlığı, 2018 – 2022 Savunma Sanayii Sektörel Strateji Dokümanı,.

³⁸ T.C. Cumhurbaşkanlığı Savunma Sanayii Müsteşarlığı, 2018 – 2022 Savunma Sanayii Sektörel Strateji Dokümanı,.

³⁹ Anadolu Agency, <https://www.aa.com.tr/tr/turkiye/afrin-destani-yerli-silahlarla-yaziliyor/1076912>, Accessed on: De-cember 06, 2018.



Turkey's Anadolu Agency reporting that the 'Legend of Afrin' was written by indigenous weapons during Operation Olive Branch⁴⁰.

In the literature, the main drivers of Turkey's military modernization are thought to be the Syrian Civil War and its regional spillover, counterterrorism operations against the PKK, NATO obligations, disputes with Greece, and until recently, the ISIS buildup along the border areas⁴¹. However, given the burgeoning forward-basing posture across the Horn of Africa to the Gulf, as well as the intentions to operate

the forthcoming Amphibious Assault Vessel *TCG Anadolu* as a mini-aircraft carrier, Turkey apparently pursues a more aspiring power projection and regional dominance agenda⁴². Without a doubt, these geopolitical aspirations have to be supported by robust defense industrial and military capabilities.

⁴⁰ Anadolu Agency, <https://www.aa.com.tr/tr/turkiye/afirin-destani-yerli-silahlarla-yaziliyor/1076912>, Accessed on: De-cember 06, 2018.

⁴¹ Andrew, Galer. et.al. Turkey: Weapons Production and Procurement 2018 – 2027 Turkish Weapons, IHS Markit Jane's, March 2018.

⁴² Can, Kasapoglu. Turkey's Forward-Basing Posture, EDAM, 2017.

The Intra-war Deterrence Gap

Although Ankara has performed pretty well in improving its conventional warfighting capabilities – as well as its military efficiency in low-intensity conflicts and hybrid warfare–, still, there are significant shortcomings in its strategic weapons systems and intra-war deterrence capacity.

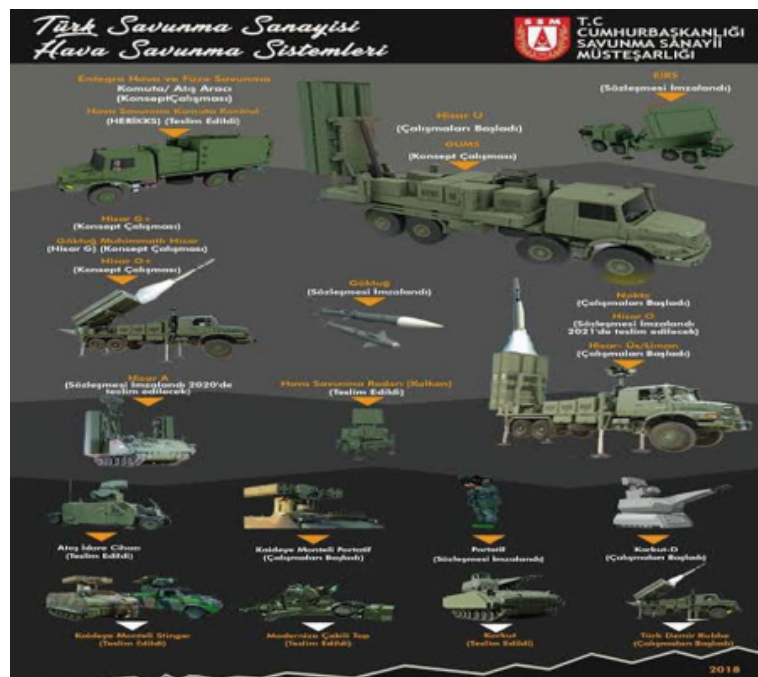
War Studies writings depict the concept of intra-war deterrence as a “process of explicit or tacit bargaining within an ongoing war that still has key limits or thresholds that have not been crossed”⁴³. Military history of the Middle East in the 20th century showcases many examples of ‘bargaining within an ongoing war’ through the use of ballistic missiles coupled with the deliberate ambiguity in the warhead payload of choice (especially, the threat of non-nuclear weapons of mass destruction given the widespread chemical and biological warfare programs)⁴⁴.

Defensive strategic weapons systems, in particular long range/high altitude air and missile defense systems, is a segment that Turkey’s national design and manufacturing capabilities cannot cover fully at present. Thus, Turkey, as

a NATO nation that hosts tactical nuclear weapons (TNW), and as a reliable party to many of the known non-proliferation regimes for offensive strategic weapons systems (chemical-biological-nuclear-radiological weapons and ballistic missiles as their delivery means), preferred fostering allied missile defense solutions along with an ‘under the radar’ support to the TNW burden-sharing⁴⁵ to cover its deficit in this area.

At present, Ankara opts for developing its own defensive strategic weapons capabilities. The S-400 deal is related to this defense modernization calculus, as a stopgap measure until the Turkish defense industry could produce high altitude / long range systems in kind. However, in the absence of a networked architecture, it is highly doubtful whether the Russian system could offer any ballistic missile defense solutions, or could be deployed as a standalone air defense asset to give relief to combat air patrols. While the latter seems more plausible, militarily, opting for a Russian defensive strategic weapons system could have immense political setbacks for a NATO member nation.

Turkey’s Current and Future Air Defense Assets



⁴³ W. Andrew, Terril. Escalation and Intra-war Deterrence during Limited Wars in the Middle East, The US Army Strategic Studies Institute, 2009, p.4.

⁴⁴ Ibid.

⁴⁵ Tim Nichols [ed.]. et.al. Tactical Nuclear Weapons and NATO, The US Army Strategic Studies Institute, 2012, p.64.

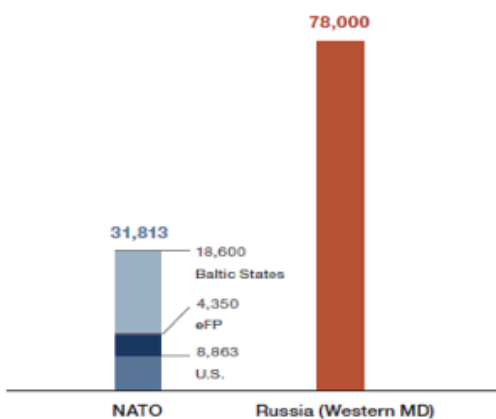
The S-400 Procurement and the Turkish Defense Sector

Given the outlook of the Turkish military's capability development plans and Russian defense exports portfolio, it is not a coincidence that the two nations' paths intersected at the air defense segment.

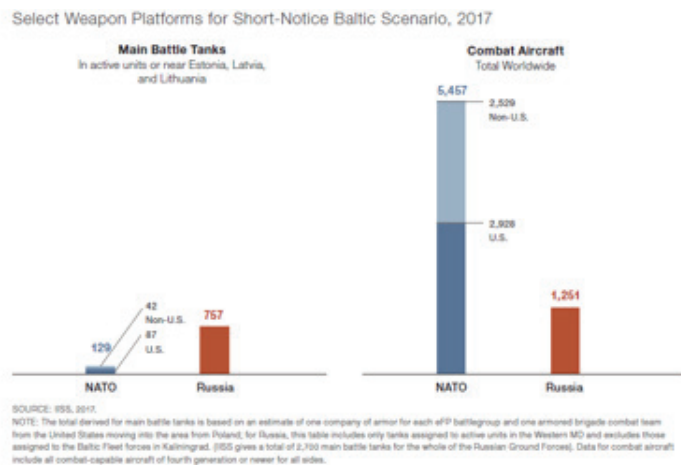
As discussed earlier, air defense solutions lead Russian arms exports with more than 41% share in the overall defense sales (based on the 2016 updates)⁴⁶. Russia is definitely considered to be an industrious 'factory' of ground-based air defenses. Russian arms manufacturers successfully offer a broad array of solutions ranging from man-portable air defense systems (MANPADS, i.e. SA-18 'Grouse', SA-24 'Grinch') to short-to-medium altitude mobile air defenses (i.e. the Pantsir family of air defense systems and Tunguska variants), and to strategic SAMs, such as the S-300 variants and the S-400 Triumph⁴⁷.

Not only Russian sources, but also Western writings confirm that Russia's air defense assets are highly capable. This sharp and very deterrent capability emanates from Moscow's current concept of operations (CONOPS). In the event of a conflict with NATO, in a conventional force-on-force fashion, Russian military planners aim to limit the freedom of action of NATO's combat aircraft through a set of strategic SAMs, electronic warfare (EW) measures, as well as medium and short-range air defenses⁴⁸. This is because Russia notably enjoys a local superiority in its Western Military District over those NATO forces deployed in eastern Europe. Besides, Moscow's large armed forces with various combined-arms units have a numerical advantage over NATO's eastern flank members' (Baltic States and Poland) manpower in total⁴⁹.

Russian Local Superiority in Its Western Military District over NATO Ground Forces⁵⁰



SOURCE: IISS, 2017; NATO, 2017a; Grau and Bartles, 2016.



As shown in the figures above, the Armed Forces of the Russian Federation enjoy a local, conventional ground forces superiority in the Western Military District over NATO ground forces deployed in the eastern flank. While the Alliance has an overall advantage in the number of available combat aircraft, the Russian strategy depends on isolating the area of operations, and denying it to NATO's (chiefly the US) superior airpower. This military paradigm necessitates robust, survivable, and reliable SAM systems augmented by EW assets. This is why strategic SAMs, such as the S-300 variants and the S-400, remain at the epicenter of Russian warfighting understanding.

⁴⁶ Richard Connolly and Cecillie Sendstad. Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017, pp.6-9.

⁴⁷ Oscar, Widlund. "The SAM Factory: Russian Air-Defence Capabilities", Jane's Defence Weekly, October 24, 2018.

⁴⁸ Justin, Bronk. Next Generation Combat Aircraft: Threat Outlook and Potential Solutions, RUSI, 2018, pp.10-11.

⁴⁹ Scott, Boston. et.al. Assessing the Conventional Force Imbalance in Europe: Implications for Countering Russian Local Superiority, RAND, 2018.

⁵⁰ Scott, Boston. et.al. Assessing the Conventional Force Imbalance in Europe: Implications for Countering Russian Local Superiority, RAND, 2018. pp.7-8.

Russian Strategic SAM Systems and NATO Designations⁵¹

Russian Designation	NATO Designation
S-300P/PT	SA-10A Grumble A
S-300PS	SA-10B Grumble B
S-300PM/PMU	SA-10C Grumble C
S-300V	SA-12A/B Gladiator / Giant
S-300PMU1	SA-20 Gargoyle A
S-300PMU2 Favorit	SA-20 Gargoyle B
S-300VM/Antey-2500	SA-23A/B Gladiator / Giant
S-400 Triumph	SA-21 Growler A
S-500 Triumfator	

EDAM previously analyzed the capabilities and the technical characteristics of the S-400 system in detail⁵². The S-400 Triumph (NATO designation SA-21 Growler) is a fourth generation air and missile defense system. Compared to its predecessors, the S-400 enjoys highly automated crew stations and more advanced target-engagement algorithms. The system uses flexible missile choices (i.e. very long range 40N6, 48N6 variants, and 9M96 variants). A launcher can carry a mixture of these missiles. The S-400 is expected to form the backbone of Russia's air defenses until the early to mid-2020s⁵³. Open-source writings suggest that the system has 250km (with the 40N6 missile the range could increase up to 400km against some targets) maximum range against aerodynamic targets, and 60km range for ballistic targets⁵⁴. However, one should note that Russian test results are not transparent at all, and the S-400 has no combat record so far.

Several Western studies conclude that S-400 has better refinements in radar, software, and missile types compared to its predecessors. Especially, as noted above, the availability of flexible missile choices enables a multi-layered capability

within the SAM system itself. Besides, the S-400 has strong electronic warfare countermeasures to protect its acquisition and engagement radars that make it more resistant against jamming attempts. It is reported that the S-400 even enjoys some capabilities to detect stealth aircraft. We must note however that detection and accurate, 'weapons-grade' target cueing to engage are different things in military terms. While the S-400 anti-ballistic missile capacity cannot be compared to the US THAAD system (thanks to the latter's unique design philosophy that is tailored for both endo-atmospheric and exo-atmospheric interceptions), a 2015 US Army Strategic Studies Institute report considers the Russian SAM to be more capable than the Patriot series in mobility, performance, and survivability⁵⁵. As a reliable reference, Russian military planners field the S-400 for protecting key areas and sites around Moscow. In other words, the S-400 is the weapon of choice to protect the capital of the Russian Federation. Would these features register the system as a lethal weapon? Definitely yes. Would this lethal weapon suit well Turkey's political-military interests? This is highly doubtful, as explained below.

⁵¹ Keir, Giles. Russian Ballistic Missile Defense: Rhetoric and Reality, The US Army Strategic Studies Institute, 2015, p.15.

⁵² Can, Kasapoglu. Turkey's S-400 Dilemma, EDAM, 2017; Can, Kasapoglu and Sinan Ulgen, Is Turkey Sleepwalking out of the Alliance? An Assessment of the F-35 Deliveries and the S-400 Acquisition, EDAM, 2018.

⁵³ IHS Markit Jane's, S-400, July 2017.

⁵⁴ Ibid.

⁵⁵ Keir, Giles. Russian Ballistic Missile Defense: Rhetoric and Reality, The US Army Strategic Studies Institute, 2015, pp.15-18.

What could the S-400 Acquisition Add to Turkish Defense Programs?

A possible S-400 acquisition would affect three critical areas for Turkey. These are the concept of operations (CONOPS); international defense cooperation and NATO; and weapons market dimensions.

From a CONOPS standpoint, the S-400 procurement would hint at a doctrinal alteration in Turkey's counter-air planning along with other long-range air and missile defense programs currently in progress (the cooperation with EUROSAM, efforts to produce a long-range [U] variant for the indigenous Hisar family of SAMs, and the recently declared 'Siper' [trench] system). Traditionally, Turkish counter-air strategy has depended on the air force's strong fighter squadrons and their air-to-air combat capabilities. The F-16 arsenal has played a central role in this respect. However, the current complex threat landscape, coupled with a problematic pilot-to-cockpit ratio⁵⁶ in the air force urge Turkish defense planners to adopt a more balanced force posture between fighter aircraft and SAM systems (namely, between offensive and defensive counter-air strategies)⁵⁷. In fact, leaving aside political-military drawbacks about the S-400 acquisition, a fighter aircraft & SAM combination for air defense planning is a reliable approach in many cases⁵⁸.

Each platform and weapons system has its pros and cons, thus, if managed well, a balanced approach could indeed foster combat capabilities. While fighter aircraft need runways and complex facilities, mobile SAM systems can field more flexible solutions with less logistical requirements. Besides, military aircraft should depend on a sufficient pilot pool with adequate flight-hours and combat experience. Force generation for SAM systems is easier. In terms of initial

acquisition and operational costs, procuring air defense systems are also cheaper than building 4th generation, and especially 5th generation fighter squadrons. Besides, except for hunting down SAM launchers in high-risk territory and conducting intelligence-surveillance-reconnaissance (ISR) activities, combat aircraft are not effective against ballistic missile threats (though the F-35 could soon change this understanding due to its unique capabilities)⁵⁹.

Although they prove to be very advantageous in many aspects of warfare, SAM systems also have some operational and functional limitations. For example, fighter aircraft offer more options for political-military decision-makers in escalations, crises, and eventually warfare. In topographically challenging theaters, SAM systems necessitate airborne early warning & control aircraft (the S-400 would have a serious interoperability problem with the Turkish Air Force's AWACS aircraft). Finally, SAM systems cannot conduct some fighter aircraft functions, such as deep-penetration into hostile airspace, escort, and ground-attack⁶⁰.

All in all, Turkey, due to its geographical landscape and its military posture (which is getting increasingly expeditionary due to Ankara's aspirant forward basing strategy and regional stance), could not build its air order of battle primarily on SAM systems. Unlike a small island nation, a country of Turkey's size and topography cannot fully rely on surface-to-air missile systems for airspace control. Moreover, the strategic cultural formation of the Turkish Air Force has long been characterized by a pilot-first understanding. Nevertheless, one should not underestimate the key role of SAM systems in modern warfare⁶¹.

⁵⁶ "Following the failed coup attempt of July 2016, the Turkish press reported that more than 260 pilots were dismissed, which caused a decrease in the pilot-to-cockpit ratio to 0.8:1 (0.8 pilot per seat). Probably, the hostile use of aircraft during the failed coup attempt (35 fixed-wing and 37 rotary-wing aircraft were reported by the press sources) coupled with possible infiltrations into the Air Force compelled Ankara to such drastic measures.

Although Turkish defense planners opted for rotationally commission former military civilian airliner pilots and tried other way-outs (such as training new pilots from non-flying personnel pool), the Turkish Air Force's combat capabilities need to be seriously augmented. There are various approaches to the pilot-to-cockpit ratio in the doctrine and literature. A healthy average of 1.25 crew per cockpit is generally assumed effective for sustaining a combat-capable and air deterrent". Can, Kasapoglu. *Turkey's S-400 Dilemma*, EDAM, 2017, p.10.

⁵⁷ Can, Kasapoglu. *Turkey's S-400 Dilemma*, EDAM, 2017, pp.8-12.

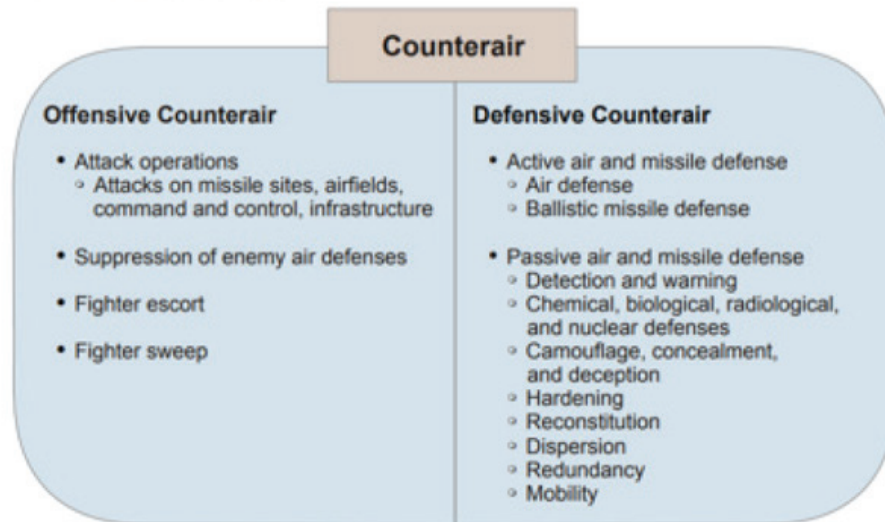
⁵⁸ For several fighter aircraft-dominated and SAM-dominated air defense configurations, see: Michael J. Lostumbo et.al. *Air Defense Options for Taiwan: An Assessment of Relative Costs and Operational Benefits*, RAND, 2016.

⁵⁹ Can, Kasapoglu and Sinan Ulgen. *Strategic Weapon Systems in the Turkey – Russia – US Triangle*, EDAM, January 2019.

⁶⁰ Shangsü, Wu. "Can Surface-to-Air Missiles Replace Fighters in Southeast Asia?", *The Diplomat*, February 2017, <https://thediplomat.com/2017/02/can-surface-to-air-missiles-replace-fighters-in-southeast-asia/>, Accessed on: December 25, 2018.

⁶¹ Can, Kasapoglu and Sinan Ulgen. *Strategic Weapon Systems in the Turkey – Russia – US Triangle*, EDAM, January 2019.

Counterair Framework



Retrieved from: *The US Joint Chiefs of Staff, Joint Publication 3 - 01 Countering Air and Missile Threats, 2017.*

From an international defense cooperation and NATO standpoint, open-source indicators suggest that the S-400 acquisition could do more harm than good. The unclassified extract of the Pentagon Report submitted to the US Congress on Turkey's S-400 acquisition and F-35 deliveries hint at a potentially very costly outcome for Ankara should the sale go through. For one, in December 2018, President Recep Tayyip Erdogan announced that the total number of F-35s Turkey would acquire would be 120⁶². In addition to the known 100 F-35As, the President's remarks suggested that 20 additional F-35Bs would be purchased for the forthcoming amphibious assault ships of the Turkish Navy – if true, a strategic move that could turn them into 'mini-aircraft carriers' –. All in all, the F-35 remains an important part of the Turkish military's future capabilities. Therefore any move that could jeopardize this sale or Turkey's participation in the F-35 program would seriously harm its long-term strategic plans.

In the eventuality of the S-400 sale going through, Washington's reaction will probably be harsh, and could go well beyond the Joint Strike Fighter issue. The Pentagon report underlines that apart from the F-35 deliveries, a broad and crucial portfolio such as CH-47 Chinook heavy-lift helicopter, UH-60 Black Hawk utility helicopter, and the

F-16 Fighting Falcon aircraft programs could be affected by the S-400 procurement⁶³. Probable CAATSA (Countering America's Adversaries Through Sanctions Act) sanctions may bring about a potentially heavy burden on the Turkish defense industry.

Whereas any setbacks in the Land Forces' rotary-wing army aviation programs (CH-47 and UH-60) could adversely affect air-mobility capacity, obstructions in the F-16 segment can have more serious repercussions, especially at a time when Athens is pursuing F-16V Viper standard modernization for its F-16 fleet⁶⁴. Turkey also needs its F-16s for air-ground operations in the 2nd Army area of responsibility, as well as beyond its borders (the 2nd Army – through its subordinate units augmented with the Special Forces – remains the principal force in Turkey's cross-border operations into Iraq and Syria).

In fact, Ankara's optimistic calculus about the F-35 deliveries has primarily stemmed from the cost of excluding Turkey from the project, in addition to the Pentagon's positive stance about its NATO ally. Indeed, several Turkish companies manufacture \$12 billion worth of components for the F-35s, including some its key parts⁶⁵.

⁶² Habertürk, <https://www.haberturk.com/istanbul-haberleri/17167112-erdogan-f-35ler-yapiyor-amerika-onlardan-bize-de-gelecek-120-tane-onlarin-bile-belli>, Accessed on: December 25, 2018.

⁶³ The US DoD, FY19 NDAA Sec 1282 Report, Unclassified – Cleared for Open Publication, November 26, 2018.

⁶⁴ Jane's 360, <https://www.janes.com/article/79703/update-greece-moves-ahead-with-f-16-modernisation>, Accessed on: December 09, 2018.

⁶⁵ Robert, Levinson. "Lockheed's F-35 has a Turkey Problem", Bloomberg, October 2018, <https://www.bloomberg.com/news/articles/2018-10-05/lockheed-s-f-35-has-a-turkey-problem>, Accessed on: December 09, 2018

That the risks of a severe backlash against Turkey in case the S-400 sale goes through are prohibitively high was recently made clear by the remarks of top US defense officials. Upon the delivery of the Pentagon report, Ellen Lord, Undersecretary of Defense Acquisition, Technology, and Logistics, told Reuters that Turkey's plans to buy the S-400 system were "extremely problematical"⁶⁶. Even worse news came from Heidi Grant, the US Air Force's deputy undersecretary for international affairs. Deputy Undersecretary Grant said that if a policy decision to exclude Turkey were made, there would be no "devastating impact" on the F-35 program⁶⁷. More importantly, according to the Defensenews story, "*On Jan. 7, Grant will take over as head of the Defense Technology Security Administration, the Defense Department's lead agency for ensuring that sales of weapon systems to foreign nations will not endanger U.S. technological advantages. As director of DTSA, Grant said she expects to play "an even more active role" on the question of whether to export* the F-35 to Turkey*"⁶⁸.

Last but not least, at the time of writing, a key development took place. On December 19, 2018, the US DSCA (Defense Security Cooperation Agency) notified Congress about potential foreign military sales of Patriot missiles to Turkey⁶⁹. Turkey's experience with Patriots is not new at all. However, unlike the notification back in 2009⁷⁰, this time, Washington kept offset options open, which is a high priority for Ankara. Congress did not object to the DCSA's plans within the 15 days window, and therefore, the deal could now proceed if certain difficulties, first and foremost the S-400 procurement, are resolved.

The proposed package offers 60 PAC-3 MSE (*Missile Segment Enhancement*) and 80 Patriot MIM-104E GEM-T missiles (*Guidance Enhanced Missiles*)⁷¹. The GEM-T

variant is built on the Patriot PAC-2 basis. It provides higher effectiveness against air-breathing targets. Its ballistic missile defense capability is greater than the PAC-2, yet not as effective as the PAC-3 MSE⁷². The PAC-3 MSE has the critical hit-to-kill capability⁷³. Furthermore, this variant's ability to operate at a higher altitude than the Patriot PAC-3 (*40km reported for the PAC-3 MSE18, which is approximately twice the capacity of the standard Patriot PAC-3*) marks a notable advancement against ballistic missile threats. The PAC-3 MSE's increased maneuverability and speed bring about serious advantages in ballistic missile defense⁷⁴.

The Patriot (especially through its new variants) enjoys a number of advantages over the S-400. The Patriot family, for decades, has been shaped by the experiences gained in combat zones. In the Middle East, Israel and Saudi Arabia used these systems intensively against real threats. Raytheon affirms that since its combat debut, the Patriot has marked more than 200 engagements. Over the last three years, Patriot systems intercepted more than 100 ballistic missiles⁷⁵. Although the S-400 was deployed under real conflict conditions, it has no combat record.

Furthermore, NATO-compatible Patriots would link-up Turkey's terminal phase ballistic missile defense capabilities to the allied architecture. This connectivity would enable multi-layered interception capacity, including the exo-atmospheric level. In the S-400 option, there will be no such capability. Being standalone, the Russian SAM will only have limited early-warning, tracking and monitoring capabilities. Due to defense economics constraints, as well as political and technological difficulties, Turkey cannot compensate for NATO's integrated air and missile defense architecture in short to mid-term. Therefore, the S-400 option will be doomed to unfulfilled potential.

⁶⁶ Reuters, <https://www.reuters.com/article/us-turkey-usa-lockheed/pentagon-report-on-turkeys-f-35-program-delivered-to-congress-idUSKCN1NK33T>, Accessed on: December 09, 2018.

⁶⁷ Defensenews, <https://www.defensenews.com/air/2018/12/04/no-devastating-impact-to-f-35-industrial-base-if-turkey-pushed-from-program-air-force-official-says/>, Accessed on: December 09, 2018.

⁶⁸ Ibid. *Although the news story used the term 'export', Turkey is not to receive the F-35s under a foreign military sale, but as a production partner.

⁶⁹ DSCA, <http://www.dsca.mil/major-arms-sales/turkey-patriot-missile-system-and-related-support-and-equipment>, Accessed on: December 25, 2018.

⁷⁰ DSCA, <http://www.dsca.mil/major-arms-sales/turkey-patriot-advanced-capability-3-guided-missiles>, Accessed on: December 25, 2018.

⁷¹ DSCA, <http://www.dsca.mil/major-arms-sales/turkey-patriot-missile-system-and-related-support-and-equipment>, Accessed on: December 24, 2018.

⁷² IHS Markit Jane's, Patriot, November 2018.

⁷³ IHS Markit Jane's, Patriot, November 2018.

⁷⁴ Lockheed Martin, <https://www.lockheedmartin.com/content/dam/lockheed-martin/mfc/pc/pac3-mse/mfc-pac-3-mse-pc.pdf>, Accessed on: December 24, 2018.

⁷⁵ Raytheon, <https://www.raytheon.com/capabilities/products/patriot>, Accessed on: December 24, 2018.

Turkish defense planners' rhetoric suggests that Ankara would opt for proceeding with the S-400 and the Patriot acquisitions at the same time. However, current political dynamics in the US, as well as the Pentagon report, make this an extremely difficult option if not an impossible one. In fact, the Patriot offer, interestingly, could even increase the risk of being exposed to CAATSA sanctions if Turkey finalizes the S-400 procurement. President Donald Trump enjoys a waiver option over the sanctions decisions taken by the Congress. Yet, when the administration notified the

Congress about the prospects of Patriot sale to Turkey, it also informed lawmakers that Ankara would come under the CAATSA regime if the S-400 deal were realized⁷⁶. It seems that due to the lack of adequate track 1.5 diplomacy channels in Turkey's transatlantic ties, in addition to the harsh rhetoric of top Western political-military figures, the S-400 issue is now perceived a national sovereignty matter by the Turkish strategic community, something that is hard to explain in purely rational military-technical terms.

How the S-400 Procurement Could Affect the Turkish Defense Market?

If realized, the S-400 procurement will have a profound effect on Turkey's weapons market. As shown below in graphs, the SAM system sale could give an important share to Russia. The nature of Moscow's defense partnerships, especially with traditional Western allies that have strained relations with the US (most notable of those are the Gulf states and Egypt under the Sisi presidency), is to translate military trade cooperation into political rapprochements. Turkey, a crucial NATO nation bordering Iran, Iraq, and Syria, would be a very lucrative prospect for the Kremlin.

In the Turkish military's doctrinal order of battle, air defense is not organized as a separate branch. Apart from the

short-range, low altitude air defenses of the army and the air defense weapons of the navy, SAM systems mainly fall under the air force.

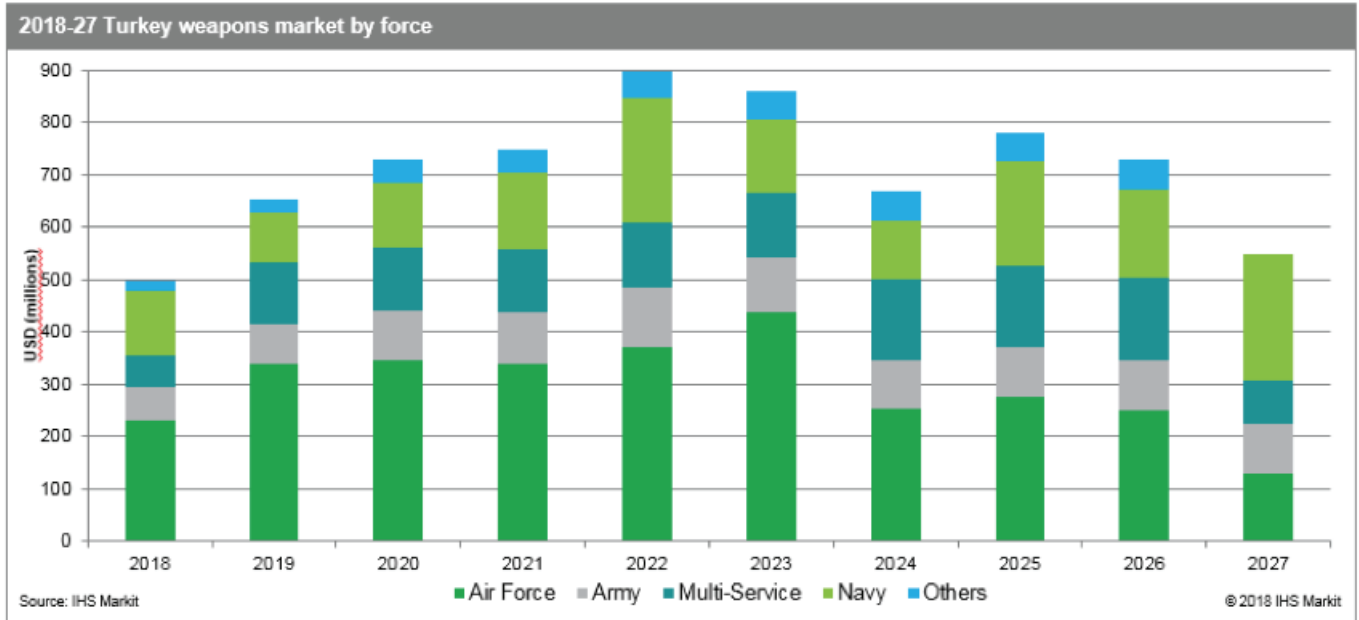
Of all the branches of the Turkish Armed Forces it is the air force that has the largest proportion allocated to it in weapons expenditure (especially when including the future S-400 procurement). According to the Turkish defense officials, the initial stage of deploying the Russian SAM system will kick-off in Fall 2019⁷⁷. In case the S-400 deal is finalized, the Russian defense industry giant JSC Almaz-Antey is expected to have more than 13% supplier share in the Turkish weapons market⁷⁸.

⁷⁶ Can, Kasapoglu and Sinan Ulgen. Strategic Weapon Systems in the Turkey – Russia – US Triangle, EDAM, 2019.

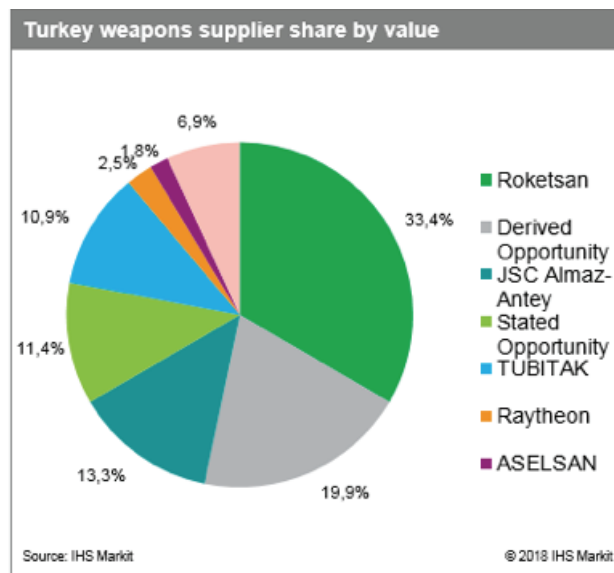
⁷⁷ Anadolu Agency, <https://www.aa.com.tr/tr/vg/video-galeri/s-400lerin-kurulum-calismalarina-ekim-2019da-baslanacak/2>, Accessed on: December 09, 2018.

⁷⁸ Andrew, Galer. et.al. Turkey: Weapons Production and Procurement 2018 – 2027 Turkish Weapons, IHS Markit Jane's, March 2018.

Turkey's Weapons Market (including 2018 - 2027 Forecast of IHS Markit Jane's) by Branch⁷⁹



Turkey Weapons Supplier Share⁸⁰



⁷⁹ Andrew, Galer. et.al. Turkey: Weapons Production and Procurement 2018 – 2027 Turkish Weapons, IHS Markit Jane's, March 2018.

⁸⁰ Andrew, Galer. et.al. Turkey: Weapons Production and Procurement 2018 – 2027 Turkish Weapons, IHS Markit Jane's, March 2018.

As this paper will touch upon subsequently, the S-400 deal can be followed by other procurement packages. The Pantsir short-to-medium range air defense system remains a plausible option in this respect. Thus, the Russian share in the Turkish weapons market could witness a boost in the coming years.

At this point, the politicized nature of the Russian arms sales should be taken into consideration. As a 2017 Chatham House report highlights:

“...the zeal shown by Russian firms in expanding arms exports to countries beyond their traditional client base

– such as to Saudi Arabia, Turkey or the Philippines – is surely as much to do with the possibility of weakening ties between those countries and their traditional allies in the West. It is in this respect that Russia’s future performance as an arms exporter might have truly strategic significance. If Russia is able to expand its influence beyond its traditional markets, we should expect to see Russia’s broader political influence in those regions rise. In this sense, the motives underlying the strenuous Russian efforts to expand arms exports might well go beyond simple commercial concerns or a desire to place the defence-industrial complex at the centre of efforts to modernize the Russian economy”⁸¹.

Prospects and Sustainability of Turkish – Russian Defense Cooperation

Experts predict that air defense, electronic warfare, airborne early warning and control (AEW & C) and C4ISR⁸² aircraft, and radar systems will be priority areas for the Turkish defense modernization roadmap given the maturation in tactical conventional weapons and combat-proven success in other areas⁸³. However, especially in communications, electronic warfare systems, and advanced missile sub-systems, large technology transfer opportunities are not easy to secure.

Furthermore, the capacity of the demander country’s industries to receive and co-work on advanced technology presents another restraining factor. In some Russo – Indian defense deals, primarily the Su-30MKI joint production case, for example, New Delhi’s limited capabilities in developing adequate manufacturing industry for high-tech requiring parts and lack of enough skilled labor to digest Russian technology brought about setbacks. Due to these setbacks, Hindustan Aeronautics fell short of producing the Su-30MKI

totally on its own⁸⁴. This is a rational drawback for Turkey’s defense industry as well.

The scope and limits of the Russian – Turkish defense cooperation are ambiguous. Available writings on the issue are plagued with a lack of clear information and professional assessments. A quick glimpse into the heavy influx of news can do more harm than good for any objective assessment. Turkish press, for example, even claimed that Turkey could soon opt for Su-35 or Su-57 acquisition⁸⁵. These speculations resonated with some international news outlets, suggesting Ankara could procure Su-57 in case the F-35 deliveries fail⁸⁶. Sputnik Turkish, in tandem, claimed that a large package for the Su-35s (between 80 to 100 aircraft) could be offered to Turkey with prospective offset options for the Turkish defense industry. This project, according to the Russian outlet, could extend to joint production of 5th generation aircraft for the Turkish Air Force based on the Su-57⁸⁷.

⁸¹ Richard, Connolly and Cecilie Sendstad. Russia’s Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, 2017 p.28.

⁸² Command, control, communications, computers, intelligence, surveillance, and reconnaissance.

⁸³ Andrew, Galer. et.al. Turkey: Weapons Production and Procurement 2018 – 2027 Turkish Weapons, IHS Markit Jane’s, March 2018.

⁸⁴ Russia Beyond, https://www.rbth.com/defence/2017/03/15/minor-obstacles-hamper-transfer-of-military-technology-from-russia-to-india_720123, Accessed on: December 08, 2018.

⁸⁵ Yeni Şafak, <https://www.yenisafak.com/gundem/s-400den-sonra-su-ucaklari-3344132>, Accessed on: December 08, 2018.

⁸⁶ Business Insider, <https://www.businessinsider.de/us-denied-turkey-f-35s-now-may-buy-russian-su-57-in-a-nato-nightmare-2018-6?r=UK&IR=T>, Accessed on: December 08, 2018.

⁸⁷ Sputnik, https://tr.sputniknews.com/rus_medyasi/201811271036355338-rusya-turkiye-askeri-teknik-isbirligi-alani/, Accessed on: February 02, 2019.

In fact, the F-35 – Su-57 comparison highlighted the lack of technical and professional defense guidance among the Turkish press sources, since the Joint Strike Fighter is much more than a stealth aircraft. The F-35 is designed to function as a flying battlefield manager and node of network-centric operations. Unlike the Su-57, with its design philosophy centered on air superiority and attack roles, the F-35 is primarily an information superiority asset with more than 8 million lines of software code and ‘cloud-based’ networking system (ALIS – Autonomic Logistics Information System)⁸⁸. All in all, leaving political and inventory planning considerations aside, while procuring the Su-57 (which has many production issues already) would bring about key capabilities in supermaneuverability, the F-35 is about superior situational awareness, networking capacity, and, as mentioned above, information superiority⁸⁹. As a 2016 RUSI report highlights, *“the F-35’s open software architecture, powerful sensors, unprecedented automatic data fusion and analysis capabilities, combined with its low-observability should, in time, unlock combat tactics and options previously impossible for combat aircraft”*⁹⁰.

Moreover, the Turkish pilots, as well as the ground crews, have been accustomed to working with Western aircraft for generations. This choice not only built technical familiarity, but has also shaped a strategic cultural understanding.

Causing a tectonic shift by injecting advanced Russian aircraft into the Turkish Air Force’s inventory may produce inefficient results, at least in the short to medium term.

Unlike the highly speculative Su-57 hype, Sputnik came up with another news story that, militarily, makes real sense. In April 2018, the Russian news outlet considered Pantsir short-to-medium range, mobile air defense systems to be a ‘logical next step’ for Turkey to augment the capabilities of the S-400 acquisition. Indeed, if procured as a standalone system excluded from Turkey’s NATO-compatible air defense network, the S-400 Triumf would still need a layered SAM configuration that would protect the strategic weapons system from low-flying cruise missiles, drones, and SEAD (suppression of enemy air defenses) threats.

Pantsir S-1 (NATO designation SA-22 Greyhound) was intended to protect high value, strategic targets against a broad array of threats. Over time, the system’s design philosophy morphed into a different context. Today, the Pantsir line is used for tackling tactical threats and providing strategic SAMs with layered backup, and considered to be a replacement for the Tunguska air defense system⁹¹. It uses two 30mm automatic anti-aircraft cannons coupled with 12 surface-to-air missiles (9M335 SAM or 57E6 SAM choices are available).⁹²



*Sputnik’s News Story and Analysis about why Turkey’s S-400 Package could include Pantsir short-to-medium range air defense system*⁹³.

⁸⁸ For a detailed assessment by EDAM, see: Can, Kasapoglu and Sinan Ulgen. Is Turkey Sleepwalking out of the Alliance? An Assessment of the F-35 Deliveries and the S-400 Acquisition, EDAM, 2018.

⁸⁹ Justin, Bronk. Next Generation Combat Aircraft: Threat Outlook and Potential Solutions, RUSI, 2018, pp.7-8.

⁹⁰ Justin, Bronk. Maximum Value from the F-35: Harnessing Transformational Fifth-Generation Capabilities for the UK Military, RUSI, 2016, p.10.

⁹¹ IHS Markit Jane’s, Land Warfare Platforms: Artillery & Air Defence – Pantsyr Family, October 2018.

⁹² CSIS Missile Threat, Pantsir S-1, <https://missilethreat.csis.org/defsys/pantsir-s-1/>, Accessed on: December 08, 2018.

⁹³ Sputnik, <https://sputniknews.com/analysis/201804271063964243-russian-pantsir-s400-turkey/>, Accessed on: December 07, 2018.

The Pantsir line enjoys a good export portfolio. Not only traditional Soviet / Russian arms exports clients such as Algeria, Vietnam, and Syria, but also important markets with a Western inclination, like the United Arab Emirates, Jordan, and Saudi Arabia are among current and near-future customers of the system⁹⁴. Furthermore, Russian military planners have deployed the Panstir line in real warfighting environment as part of the SAM configuration protecting the Hmeimmim Base in Syria⁹⁵. There, the system has acquired a good combat record. More importantly, the January 6, 2018 'swarm' drone attack against the Russian base showed that the Pantsir proved to be effective in counter-drone missions which remain a key advantage in modern warfare⁹⁶.

Hypothetically, and assuming that the S-400 deal will materialize with first deliveries arriving in late 2019, a follow-up Pantsir deal between Turkey and Russia seems plausible. Nevertheless, one should keep in mind that Russian short to medium range air defense systems might have recently lost a lucrative competition in India. During the trials in late 2018, it is reported that the South Korean K30 outperformed

the Russian Pantsir and Tunguska-M1⁹⁷. For the time being, according to defense media sources, Moscow is lobbying in India to prevent New Delhi to make its final decision in favor of the South Korean air defense system⁹⁸.

Finally, in an interview with the Turkish press, Turkey's President Recep Tayyip Erdogan said that he proposed Russia a co-production deal for the future S-500 systems⁹⁹. Sputnik depicted the offer 'exotic' referring to a Russian defense expert's comments¹⁰⁰. The S-500, not in service yet, is designed to function as a complete anti-ballistic missile system. Thus, it is not intended to replace the S-400, but to work in conjunction with it. The S-500 will have a broad range of targets including the intercontinental ballistic missiles with nuclear warheads¹⁰¹. Some studies suggest that it will be capable of engaging satellites (low-orbit) and stealth aircraft too¹⁰². Thus, the S-500 will be a true strategic system and a geopolitical game-changer. At present, a Russian – Turkish co-production venture for the S-500 does not appear to be a high probability scenario.

Conclusion and Key Findings

Assessing the future of Turkish - Russian defense partnership is not easy. There are many interrelated parameters at political, military-strategic, defense planning, and diplomatic environments. Each factor influences others in many ways, in a 'complex adaptive systems fashion'. Besides, the trajectory of bilateral ties between Ankara and Moscow have followed drastic fluctuations in recent years. This adds utmost hardship to any forecast.

However, there are clear facts too. For one, it is obvious

that the defensive strategic weapon systems segment is an area where Turkey has to overcome serious shortcomings. In addition, as discussed earlier, the problematic pilot-to-cockpit ratio in the Turkish Air Force necessitates a more balanced counter-air posture. In this respect, Ankara needs to augment its strategic air defense capabilities with stopgap measures while investing in mid-to-long term planning for building indigenous industrial capabilities. Notably, the Russian defense industry is very competent in the SAM systems category.

⁹⁴ Ibid.

⁹⁵ Ruptly, <https://www.youtube.com/watch?v=aJpKJ--ZPq8>, Accessed on: December 08, 2018.

⁹⁶ Sebastien, Roblin. "Russia just might Have the Perfect Weapon to Crush 'Swarm' Attacks, the National Interest, January 2018, <https://nationalinterest.org/blog/the-buzz/russia-just-might-have-the-perfect-weapon-crush-swarm-24144>, Accessed on: December 08, 2018.

⁹⁷ Defense World, http://www.defenseworld.net/news/24016/South_Korean_Air_Defence_System_Beat_Russian_Tunguska_M1_Pantsir_in_Indian_Trials#.XFYHtWNCcuU, Accessed on: February 02, 2019.

⁹⁸ Ibid.

⁹⁹ For the interview, see: <https://www.youtube.com/watch?v=-FmMVdq6-nI>, Accessed on: December 10, 2018.

¹⁰⁰ Sputnik, <https://tr.sputniknews.com/savunma/201806141033864145-rus-uzman-cumhurbaskani-erdogan-s500-teklifi/>, Accessed on: December 10, 2018.

¹⁰¹ Keir, Giles. Russian Ballistic Missile Defense: Rhetoric and Reality, The US Army Strategic Studies Institute, 2015, pp.21-23.

¹⁰² Sebastien, Roblin. "Who Cares about the S-300 or S-400: The S-500 could be the Real Killer", the National Interest, October 2018, <https://nationalinterest.org/blog/buzz/who-cares-about-s-300-or-s-400-s-500-could-be-real-killer-32697>, Accessed on: December 10, 2018.

Although it does not have a reliable combat record (or transparent test results by Western standards), in the literature it is widely assumed that the S-400 would provide a robust deterrent for its users. In Turkey's case, the system could offer little in ballistic missile defense due to the absence of an integrated architecture. However, leaving aside political ramifications, it can offer militarily robust air defense capabilities.

On the other hand, the authorities must realize that the S-400 deal comes at a price. Defense acquisitions, especially strategic weapon systems packages, cannot be properly assessed without reference to the context in which they take place or without reference to the general strategic environment in contemporary international affairs. Furthermore, in this specific case, a NATO member will be purchasing a defensive strategic weapon system from the organization's main rival and the risk of the system to compromise NATO's military secrets is nearly certain. For many reasons, the Transatlantic Alliance and the Russian Federation are going through tense and adversarial times. Procuring a Russian strategic SAM is already not ideal for a crucial NATO flank nation with NATO-compatible radar and sensors infrastructure. The fact that this procurement will take place in the middle of a crisis period when Moscow is engaged in open aggression in Ukraine, annexed part of the latter's territory and when Russia is pursuing hybrid warfare efforts in NATO's eastern flank would likely jeopardize Turkey's position in the Atlantic Alliance.

As mentioned earlier, the unclassified version of the Pentagon's report for the US Congress regarding Turkey's S-400 acquisition and the fate of the F-35 deliveries included very serious warnings. In case Washington decides to punish Ankara for such a purchase as is likely, the measures it might undertake could bring about significant outcomes that would go well beyond the Joint Strike Fighter deliveries. A number of key defense projects could be affected. This can lead to a crucial capability gap – at least for a decade – that no alternative supplier, including Russia, could swiftly compensate.

If Turkey finalizes the S-400 deal, then, as Sputnik claimed, a follow-on procurement package of the Pantsir line could be likely. Apart from this potential sale, any other forecasts for the Turkish – Russian military cooperation would be speculative. Still, there could be room for some other transactions, such as Moscow's interest in procuring a limited number of tactical armed drones from Turkey as a

stopgap, or Ankara's interest in procuring a limited number of advanced Russian MANPADS.

The S-400 deal, given its potential repercussions, is more than an arms deal between a NATO and non-NATO nation. Indeed, 2019 could witness a major break in Turkey's transatlantic ties. Such a development remains more lucrative than any S-400 price tag for Moscow. As explained various times in this chapter, the F-35 is a coalition warfare asset. Depriving Turkey of this advanced combat aircraft would be tantamount to partially isolating the Turkish Air Force from future NATO operations. Besides, in case the S-400 procurement triggers CAATSA sanctions, this would very negatively resonate among the Turkish strategic community. If Ankara finds itself sanctioned by the US, something which would powerfully hit its F-16 arsenal in addition to the forthcoming F-35 fleet, then the Kremlin could play the 'safe alternative' role, although it cannot adequately support the Turkish Air Force in short time.

Indeed, Turkey opted for non-NATO options before. Israel and South Korea were the most notable examples in this regard. Seoul is still a key partner for the Turkish defense industry. Ukraine has recently come to the forefront as an attractive non-NATO defense partner too. However, all these actors are, in one way or another, attached to the Western security architecture. Russia, on the other hand, remains the primary challenge to the West. Thus, in the eyes of the transatlantic community, Ankara's defense partnership with Moscow may not seem like a usual non-NATO option, but an anti-NATO one.

At this point, the problem, or a good part of it, is Turkey's huge shortfalls in track 1.5 and track 2 diplomacy capabilities. Clearly, the Turkish administration currently does not have the means to surpass conventional diplomatic channels to anticipate the reactions of NATO circles. Ankara knows that the S-400 acquisition 'might' trigger the CAATSA sanctions, but it does not fully understand how real the risk is and the CAATSA sanctions could really hit hard. Turkey has very few real think-tanks that can raise these issues and present comprehensive analyses in an effort to present the pros and cons of such a decision. In fact, unconventional diplomacy channels remain a must for Ankara to defend, and if necessary to change, its military policy. What is more critical, the S-400 now seems to have triggered the vicious cycle of sovereignty debates in Turkey. The Turkish public opinion and the political elite perceive Western objections to that sale as direct interference in Turkey's sovereign

national defense decisions. Very interestingly, procuring a Russian SAM system with no technology transfer or offset options became a weird manifestation of patriotic pride. Without a doubt, top NATO and US political-military figures' threatening rhetoric have also consolidated this negative

perception. The mutual failure to understand each other led to a dialogue of the deaf in Turkey's transatlantic relations. This is why the S-400 is not only a SAM system procurement, but a geopolitical test between NATO, Russia, and Turkey even if Ankara did not mean so at the outset.



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PROSPECTS AND LIMITS**

Can Kasapođlu, Ph.D. | Director, EDAM Security and Defense Studies Program