








“Ukraine’s integration into the world arms market”

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UKRAINE'S INTEGRATION INTO THE WORLD ARMS MARKET

Abstract

Hostilities in eastern Ukraine have highlighted the need for accelerated transformation of Ukrainian armed forces and strengthening country's defense capabilities. Ukraine is an active consumer and exporter of weapons, so it needs to improve constantly its position in the international arms market, which, by the way, unlike most markets suffering from the COVID-19 pandemic, is constantly growing. The study aims to assess the prospects of Ukraine's integration into the world arms market to secure its armed forces and achieve the highest possible level of arms exports. Methods of comparative analysis and integrated approach were used in the study. The obtained results demonstrated that Ukrainian arms export has fallen dramatically in recent years (from 1501 million USD in 2012 to 115 million USD in 2020); the largest importers were China (36% of Ukraine's total arms exports), Russia (20%), and Thailand (17%). The main explanation for this is the necessity of transition to more technological weapons. Concerning weapon imports, Turkey, the USA, Great Britain, Poland, and Bulgaria became the main suppliers. It is about ammunition, electronics, including electronic warfare stations, means of communication, sniper rifles, grenade launchers, etc. The study substantiated that Ukraine should implement joint projects with other countries to fully develop its high-tech weapons in accordance with the latest military technologies.

Keywords

arms, military equipment, world arms market, export potential, arms import, defense-industrial complex, joint projects, Ukraine

JEL Classification

F13, F17, M31

INTRODUCTION

The conflict in eastern Ukraine has emphasized the necessity for the transformation of the Ukrainian army and strengthening country's defense capabilities. Ensuring such modernization should take place by the forces of the domestic defense-industrial complex (DIC), which should produce a wide range of weapons and military equipment, perform modernization, and provide a repair of military equipment. Part of the army's needs, which cannot be met by its industry, must be imported.

The supply of the army should be carried out on a competitive basis, of course giving preference to domestic producers, but only if the appropriate quality and competitive value of weapons and military equipment are ensured in comparison with imported samples. One of the ways to reduce the cost of DIC production is the export of weapons, especially since the DIC production capacity, as a rule, exceeds the needs of the Armed Forces of Ukraine. Degradation, and sometimes the collapse of the domestic DIC, which took place before 2014, as well as the needs of own armed forces, which increased significantly with the beginning of the hybrid conflict, led to the displacement of Ukraine from the top ten world leaders in arms exports. Thus, following the results of 2020, the state took only twelfth place in the corresponding ranking. By 2021, a more optimistic picture is forecasted; however,

this is much lower than the indicators that Ukraine should claim. Therefore, the issues of realization of the DIC export potential, taking into account its development and technological growth, are relevant. To do this, it is necessary to understand not only conjunctural but also qualitative structural and technological changes in the international arms market. It is important to determine the correct development vector for the Ukrainian DIC to achieve the highest possible positions in the world market, as well as identify its weaknesses and prospects.

Ukraine has lagged behind the world's leading countries in terms of technology for decades. Most weapons produced by the domestic DIC are the developments of the 70-80s of the last century. At best, they are in some way upgraded with the improvement of some characteristics. In this perspective, it is important to have access to modern weapons, both in the form of assistance from partner countries and the possibility of their free systematic procurement without any restrictions, which in some ways, of course, does not suit the aggressor state that uses any opportunity to address this issue in its favor. It would seem that it is not such a difficult issue, having the funds (although not all is well with it), to import military products selected according to the optimal indicators, but not in this case. Politicians in many countries around the world are trying to distance themselves from Ukraine's problems, considering the armed conflict in Ukraine not a war but a civil confrontation.

Thus, full-scale integration of Ukraine into the world arms market is the most important task of the government and politicians nowadays.

1. LITERATURE REVIEW

Theoretical provisions and practical implications of Ukraine's foreign trade and its structure, which are constantly studied, offer the approaches to overcome imbalances as well as to increase the efficiency of foreign economic operations.

Kaleka and Morgan (2019) researched practical instruments of marketing theory in domestic and foreign trade. Using the cases of different companies, it was proved that the strategy effectiveness can be evaluated using mathematical models and tools. Krammer et al. (2018) argued that negative domestic market conditions can enhance export activity. This somehow contradicts the theory, where mature companies typically enter the international market because of congestion inside the country.

Verhun et al. (2020) profoundly studied the worldwide challenges and problems affecting the level of competitiveness and competitive advantage among different countries in the process of international trade. Kolesnyk et al. (2018) determined the approaches of the Ukrainian sustainable development ensuring its exports potential as well as globalization and strengthening of integration processes.

Melnyk et al. (2019) investigated the resource and institutional potential of Ukraine's exports to the Chinese market, including weapons export, and identified ways to promote the effectiveness of Ukraine's export based on a combinatorial approach. It includes the calculation of quantitative indicators of foreign trade in the form of international production and marketing cooperation and estimation of qualitative parameters of export promotion effectiveness. Zadoia (2016) proved the necessity to estimate foreign trade not only based on analysis of export-import flows but the GDP dynamics. Zhuravka et al. (2021) determined the impact of export-import activity and foreign trade balance of Ukraine on a state debt using the ARIMA model.

Ukraine inherited a third of its military-industrial complex from the USSR, so the issues of realizing the capabilities of the DIC and its export orientation have always received considerable attention. These issues are explored in many scientific publications.

Thus, Khanin (2015a, 2015b) and Mikhnenko (2020) investigated the export potential of the Ukrainian defense-industrial complex in the context of the transformation of the world arms mar-

ket. Special attention was drawn to the issue of cooperation with international establishments, e.g. the Zangger Committee, the Nuclear Suppliers Group, the Missile Technology Control Regime, the Stockholm International Peace Research Institute (SIPRI), etc. Didur (2020) studied the approaches to the defense-industrial complex modernization in different countries, both developed and developing.

Matiushenko and Kovalchuk (2011) emphasized the need for research on the world arms market to increase the prospects for the integration of Ukraine's military-industrial complex into international structures. The requirement of a more thorough consideration of qualitative changes in the world arms market is discussed by Salnikova and Sytnyk (2014). They insist on the inexpediency of producing a complete list of major weapons, studying the development trends of the DIC of the world's leading countries, which must be taken into account for the maximum realization of export potential. Yerin (2017) profoundly investigated the dynamics, structure, and main trends of development of the world arms market.

Feinstein (2011) investigated the shadow world of global arms trade and opened the eyes of the world to its behind-the-scenes history. Stohl and Grillot (2013), Johnson (2017), and da Silva et al. (2021) paid great attention to the world leaders in arms exports and imports, arms dealers, military expenditures as well as gray and black trade schemes. Wezeman et al. (2021), Holtom et al. (2012), and Freeman (2018) studied the capacity of the world arms market and trends in international arms transfers.

The conducted literature review indicates the necessity for further research in the field of Ukraine's integration into the world arms market.

2. AIM

Based on the literature review, this study aims to assess the prospects of Ukraine's integration into the world arms market to secure its armed forces and achieve the highest possible level of arms exports.

3. METHODS

The study uses data and statistical information both from scientific articles and the international establishments (arms control regimes), e.g. the Stockholm International Peace Research Institute (SIPRI), the Nuclear Suppliers Group, the Zangger Committee, the Missile Technology Control Regime, the Australian Group, etc.

To assess the efficiency of state mechanisms for encouraging arms exports, the integrated approach was used in the study:

- 1) regulation and export activity indices, which allow evaluating the effectiveness of the regulation results and arms export activity of Ukraine:
 - relative trade preference index;
 - export efficiency coefficient;
 - export/import structure, analyzed with ABC- and XYZ-methods.
- 2) export potential indicators:
 - Integrated Export Promotion Regulatory Efficiency Index ($IEPREI_{index}$), defined according to the expert assessments;
 - Export Potential Indicator (EPI_{index}), which classifies products that the country already exports and that have good perspectives of additional export in a given target market;
 - Product Diversification Indicator (PDI_{index}), which was developed to evaluate the probability of export success of goods that are not currently exported or have minimal export potential.
 - Related targeting criteria, which include technological innovation, stability of export income, and child labor.

All indices were computed based on both official data of the National Statistics Service of Ukraine and information of the international establishments (arms export control regimes).

4. RESULTS AND DISCUSSION

4.1. World arms market analysis

The manufacture and trade of weapons have been developed all over the world since ancient times. The modern world arms market is a very specific sector of relations, the parameters of which are determined by a set of geopolitical, economic, and technological indicators. Global confrontations, the creation and disintegration of military-political and economic alliances, political instability, growing military tensions, and armed conflicts all lead to militarization and an increase in the demand for armaments.

It would seem that in the 21st century, in the age of digital technologies and the global Internet, humanity should come to its senses, learn to live in peace. However, limited resources, the struggle for limited markets for own goods are the factors that again and again stimulate confrontation.

In addition to the actual purchase and sale, the international arms market covers the licensed production, leasing, and free transfer of weapons in the framework of military assistance to states, international organizations, and armed non-governmental groups. All these processes are integrated into the term “arms transfer” (Yerin, 2017). Besides, the arms trade is not always a purely economic gain, the drivers of this process are geopolitical, economic, political, or strategic interests (International arms trade).

The sale of weapons on the world market has certain limitations, which are reflected in modern geoeconomic and geopolitical relations be-

tween individual countries or intergovernmental associations:

- ecological limits of growth of production, use, and utilization of the weapon;
- uneven provision of weapons to individual countries and regions;
- technical and financial impossibility of dimensionless increase in production and utilization of weapons;
- the presence of different economic and political goals of individual countries or military-political blocs;
- energy and resource intensity of weapons production.

Military and political tensions due to economic competition for resources and markets on the world stage lead to an increase in the number of military conflicts that occurred in 39 countries in 2020 alone, as shown in Figure 1, which is 5 more than in 2019.

Figure 1 shows that the largest number of military conflicts (20) in 2020 took place in sub-Saharan Africa. This level of tension has led to an increase in global military spending over the past 15 years from 1,466 trillion USD in 2005 to 1,981 trillion USD in 2020, as shown in Figure 2.

Despite the COVID-19 pandemic, causing the deteriorating situation in many markets, the trend of increasing military spending in the world has continued. At the same time, the share of GDP

Source: Developed by the authors using SIPRI (2021).

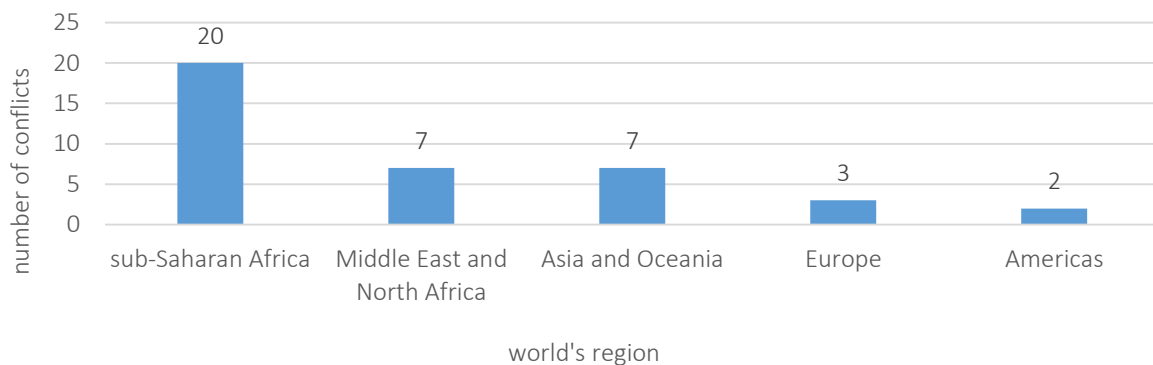


Figure 1. The number of military conflicts in 2020 by regions of the world

Source: Developed by the authors using Statista (n.d.).

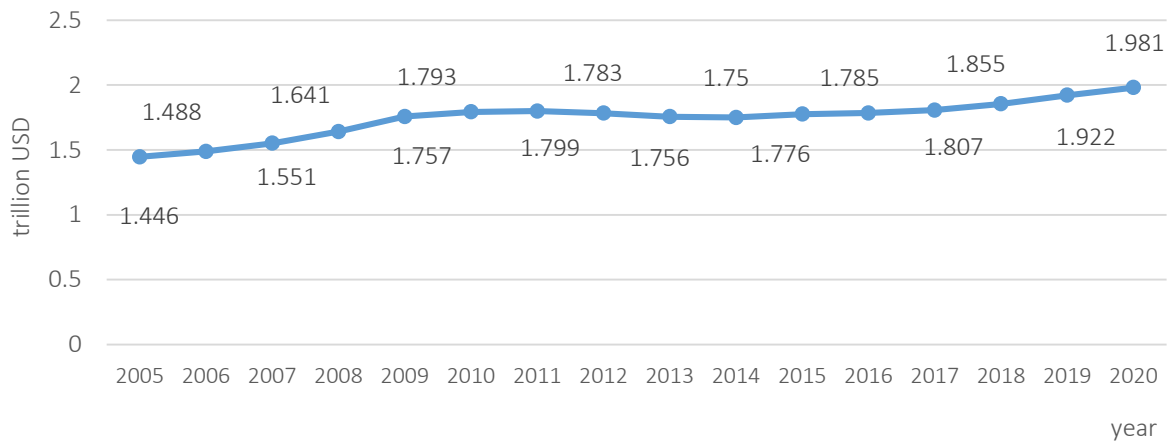


Figure 2. Military expenditures in the world in trillion USD (2005–2020)

allocated by countries for defense also has an upward trend. If in 2019 this figure averaged 2.19%, in 2020 it was already 2.35%, as shown in Figure 3. This can be explained by the fact that due to the effects of the pandemic, the GDP of most countries in the world has decreased, but this has not affected the desire to increase their military arsenal.

From Figure 4, one can see that in 2020, the country with the highest military spending, as always, is a strategic partner of Ukraine – the United States (39% of world military spending). The main volume of expenditures on the international arms market falls on economically developed democracies, the strategic strengthening of which gives hope as for further strengthening of international security and growth of stability in economic markets, as for the possibility of ensuring the sovereignty and territorial integrity of Ukraine through political pressure on the aggressor state. At the same time, the growing military power of coun-

tries with authoritarian and totalitarian regimes (e.g. Russia and North Korea) is provoking chaos in the world economy and international politics. China’s significant military spending is also not a positive signal given the persistent resource shortages in this country.

In 2020, 1,603 trillion USD, or more than 80% of all allocations, falls on 15 countries. The top five are the United States (778 billion USD), China (252 billion USD), India (72.9 billion USD), Russia (nearly 61.7 billion USD), and the United Kingdom (nearly 59.2 billion USD), as shown in Figure 5.

In 2020, Ukraine entered the top 40 countries in the world in terms of military spending. During the year, Ukraine rose in the ranking from 35th place in 2019 to 34th place in 2020. A record 5.9 billion USD was spent on defense in 2020. Compared to 2019, Ukraine’s spending increased by 11%, and compared to 2011 – by 198%! On a global scale,

Source: Developed by the authors using The World Bank (n.d.).

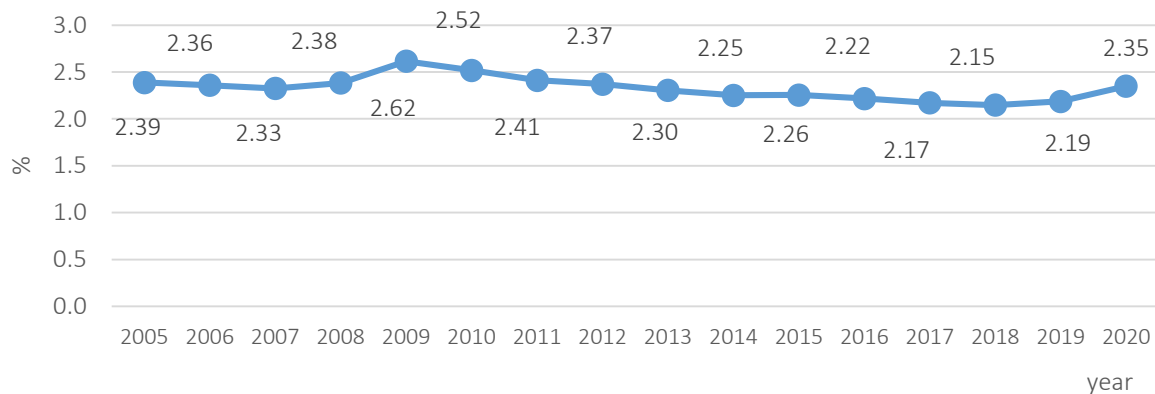


Figure 3. Military expenditure (% of GDP) in the world (2005–2020)

Source: Developed by the authors using Statista (2020).

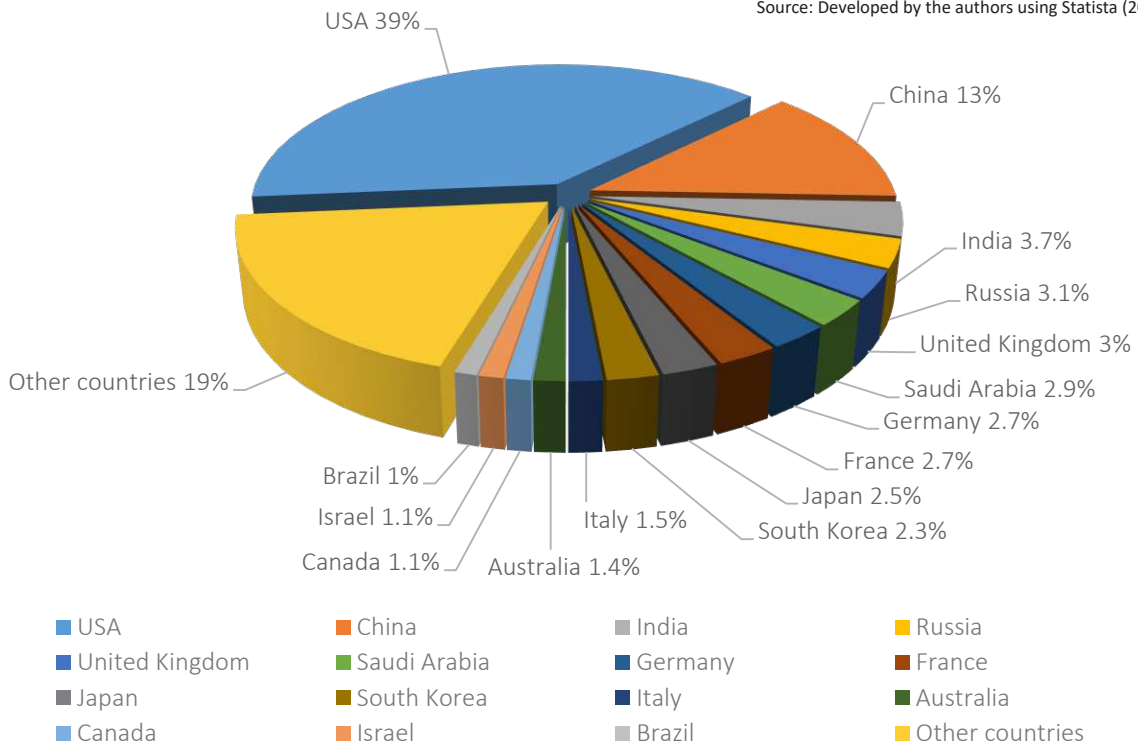


Figure 4. Distribution of military spending worldwide in 2020, by country

in 2020, Ukraine’s military spending is 0.3% of all similar spending of all countries of the world combined (da Silva et al., 2021).

4.2. Exports of weapons from Ukraine

At the time of the collapse of the USSR, Ukraine had 1,810 enterprises of the military-industrial

complex, 6,500 tanks, 7,000 other armored combat vehicles, 7,200 artillery systems, more than 500 ships and vessels, and 1,100 combat aircraft. The technologies of Ukrainian companies made it possible to produce 12 of the 20 most powerful missile technologies of the Cold War, including the unparalleled “Satan” (developed by the design bureau “Southern” Dnipro). Ukraine was therefore actually doomed to trade in arms and mili-

Source: Developed by the authors using Statista (2020).

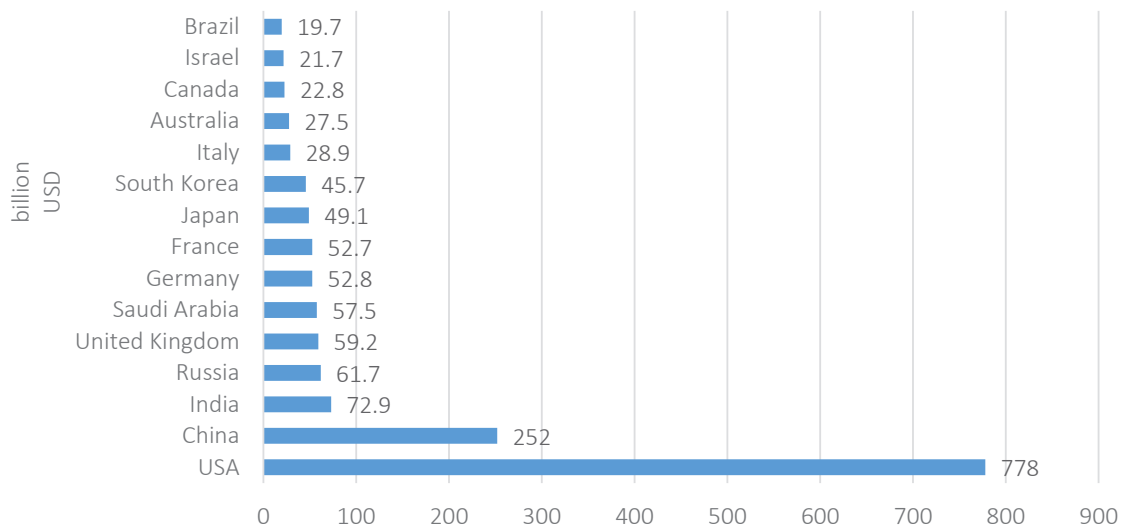


Figure 5. Countries with the highest military spending worldwide in 2020 (in billion USD)

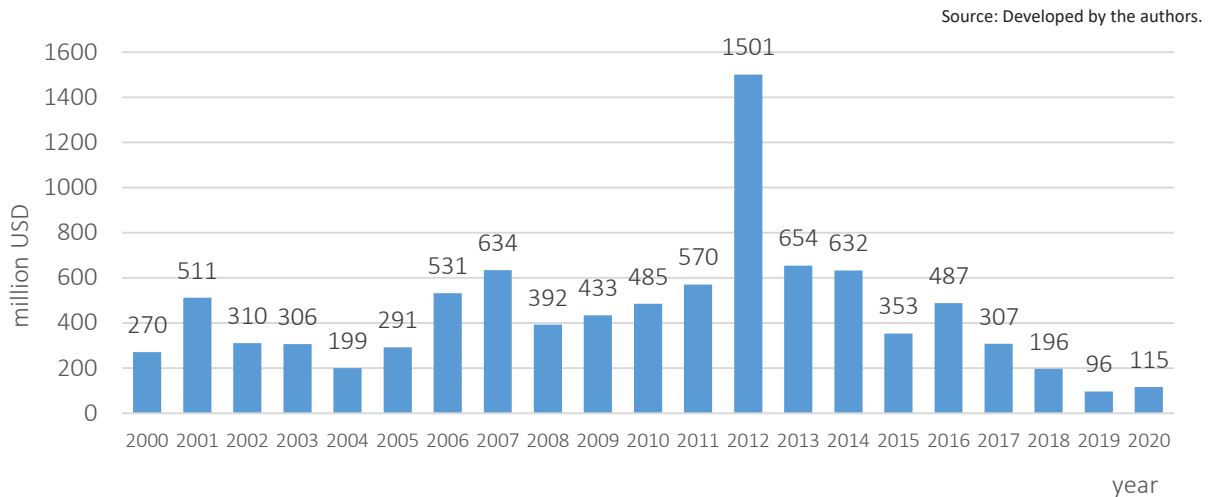


Figure 6. Ukraine’s arms exports in 2000–2020, million USD

tary technology. From 1992 to 1996, during the period of Ukraine’s establishment as an independent state, 113 enterprises were actually engaged in the arms trade, in most cases using so-called gray schemes. This critical sphere of business was taken under state control only in October 1996, when the “Ukrspetsexport” enterprise was established. Subsequently, the right to export weapons was granted to several other enterprises, including “Spetstechnoexport”, “Ukroboronservice”, “Ukrinmash”, “Progress”, “TASKO-export”, and “Promoboronexport”.

As of today, since August 2018, the Cabinet of Ministers has simplified the procedure for granting Ukrainian enterprises the right to export and import military goods and weapons. This greatly simplified market entry for private defense companies, which formerly exported military products only through state-owned companies (Zhyrokhov, 2020; Zhyrokhov & Maksymchuk, 2021). Until 2014, the sale of aircraft and the provision of services for its modernization and repair occupied a leading position in military exports. Armored vehicles took second place.

The situation of arms exports has changed dramatically since the start of the armed conflict in 2014. Ukraine urgently needed large volumes, so all the resources of the defense-industrial complex were used to staff the Ukrainian army. For the same reason, the execution of part of the export contracts was temporarily suspended, and the National Guard received T-64 tanks and BTR-3 that had to be exported to Angola and Thailand.

After 2015, the situation on the domestic market stabilized, but Ukraine did not reach the former export volumes. The war devastated weapons depots left over from the USSR. The basis of exports is now high-tech (from the point of view of the Ukrainian defense-industrial complex) products such as guided anti-tank missiles. Today, the main source of income for the defense industry of Ukraine is the sale of anti-tank systems “Corsair” and “Stugna-P”, as well as other high-precision ammunition developed mainly by the Kyiv design bureau “Luch”.

Among the main importers of Ukrainian weapons in 2019 were China, India, Saudi Arabia, and Turkey. The largest importers of weapons from Ukraine in the period 2016–2020, according to SIPRI (2021), were China (which accounts for 36% of Ukraine’s total arms exports), Russia (20%), and Thailand (17%). Despite its military aggression against Ukraine, it is not the first time that Russia has become one of the leaders in Ukrainian arms exports, according to SIPRI (2021). The fact is that the only export item is the interaction between Ukraine and Russia within the framework of the agreement on the production by Russia of 15 An-148-100E aircraft. These agreements were reached in 2011–2013; the delivery of goods was planned in 2013–2017. However, SIPRI (2021) experts “assume” that the Ukrainian parts could be provided to Russia from 2015 to 2018.

Ukraine’s arms exports in 2000–2020 are shown in Figure 6.

Source: Developed by the authors.

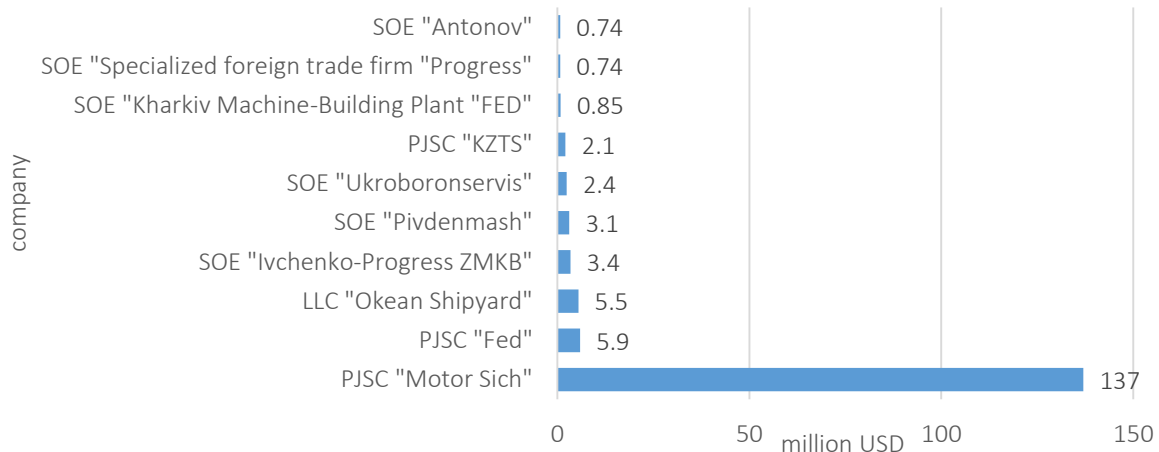


Figure 7. Top 10 Ukrainian companies-exporters of military products in 2020, in terms of income

These indicators, however, do not include revenues from services for the repair and modernization of military equipment, as well as the supply of components.

As for the largest Ukrainian companies-exporters of weapons and military equipment, in 2020 the first place was taken by PJSC “Motor Sich”, with revenue of 137 million USD. Among the main company’s importers were China (65% of exported goods) and the United Arab Emirates (10%). The second place was taken by the PJSC “Fed” with revenue of 5.9 million USD and China as a major importer (90%). LLC “Okean Shipyard” earned 5.5 million USD and took third place, the main importers were the Netherlands (60%) and Panama (40%). Other companies can be seen in Figure 7.

4.3. Ukraine’s arms import

Arms supplies are a special issue for many countries, as there is a certain code of conduct on military-political issues. One of the components of this code is to avoid arms supplies to conflict zones. The world community reacts especially negatively to the supply of lethal weapons to the parties to the conflict; double attention is paid to civil confrontation. Therefore, to avoid misunderstandings, many countries are simply trying to move away from arms supplies to Ukraine without delving into the essence of the conflict.

In principle, formally, the supply of lethal weapons to Ukraine is not prohibited. To do this, there

must be some sanctions, embargoes from the United Nations, or individual organizations that would prohibit the supply of such weapons.

If a state violates any norms of international law, as was in the case of Sudan, a ban is imposed on the state itself. If a conflict means a civil war, for example, in Zimbabwe, where the parties to the conflict are the government on the one hand and the armed groups on the other, an embargo is imposed on such groups.

The current level of conflict in the east allows to deal with it without providing imported lethal weapons, but the concentration of the aggressor’s troops on the border with Ukraine poses a constant threat of global conflict. Lethal weapons are needed to prevent an increase in the scale and intensity of hostilities by Russia, not separatists. This is a deterrent to the enemy: it sees that it will suffer great losses and at the same time, it is a means of preventing Ukrainian losses if the global conflict in the East does begin.

To increase its defense capabilities, Ukraine first needs to import anti-tank, anti-aircraft equipment, sniper weapons, and mine action systems. In addition, vehicles, means of communication, means of electronic warfare, and drones are needed.

Mass purchases of weapons, ammunition, and equipment from abroad for the first time in the history of independent Ukraine began in 2014. Every year the percentage of armed imports in-

creases. The state defense order in 2020–2022 provides for the purchase of 90% of military equipment from Ukrainian suppliers, imports will account for about 10%.

Turkey, the United States, Great Britain, Poland, and Bulgaria became the main suppliers. It is about ammunition, electronics, including electronic warfare stations, means of communication, sniper rifles, and grenade launchers.

By 2018, only for the purchase of radio stations from the Turkish company Aselsan, about 100 million USD has been allocated. In addition, a batch of medium reconnaissance and strike drones Bayraktar TB2 was bought in Turkey for 69 million USD, 200 BMP-1AK and self-propelled artillery (SAU) 2C1 “Hvozdyka” were bought in Eastern Europe.

Since the beginning of Russia’s aggression against Ukraine, the United States has provided Ukraine with more than 2.5 billion USD assistance. As part of the assistance, 4 American patrol boats of the class “Island” were also provided, 2 were received in 2018, and 2 arrived in Odessa on November 23, 2021. Also, a significant amount of ammunition is supplied to Ukraine from Lithuania, Bulgaria, Poland, and Montenegro.

4.4. Joint projects

As abovementioned, Ukraine generally does not have the necessary resources to fully develop its high-tech weapons, and in many cases, the technological level of Ukrainian enterprises does not allow it to do so with the latest military technology. The way out of this situation is joint projects.

Despite the war, foreign investors are providing significant funds for the development and modernization of weapons, for example, for the money of Saudi Arabia, a large amount of work was carried out on the missile system “Hrim-2”. The modernization of the ZRK S-125 took place with the use of funds from Ethiopia.

Cooperation with foreign investors allows the development of models for the armament for the army, while all developments remain the intellectual property of Ukrainian companies. There are many striking examples of such cooperation.

The development of the active, semi-active, and passive homing warheads for “ground-to-air”, “air-to-air” and “air-to-ground” missiles by the “Radionix” research and production enterprise has raised the domestic defense-industrial complex to a new level in this direction.

Special mention should be made of cooperation in the military sphere with Turkey. Ukraine has been buying “Bayraktar” strike drones (model Bayraktar TB2) from Turkey since 2019. In the conditions of modern war, they have shown high efficiency – in particular in the Armenian-Azerbaijani conflict in Nagorno-Karabakh.

Ukraine and Turkey have recently signed agreements on joint production of these unmanned aerial vehicles (UAVs). One of the options for their equipment is the use of Ukrainian engines, which are already supplied to Turkey, and Ukrainian missiles as weapons. The first use of this UAV in the Donbas took place on April 10, 2021, and on October 28, 2021, Bayraktar destroyed the separatist howitzer. Of course, this provoked another outrage of the Kremlin, but at the same time, it showed the effectiveness of the new Ukrainian weapons.

The annexation of Crimea led to the loss of most of Ukraine’s warships. Since then, the Ukrainian armed forces have been building a “mosquito fleet” – missile boats, as well as looking for opportunities to buy ships from Western partners.

The Ukrainian-Turkish agreements provide for joint production of ADA-class corvettes with Turkey. A corvette is the most common type of light warship, which can have different types of weapons: anti-submarine, anti-ship, and air defense. The first corvette will be made in Turkey, and further, they will be made jointly, at the shipyard “Okean” in Mykolaiv. Moreover, Ukraine and Turkey are discussing joint production of the Ukrainian An-178 military transport aircraft at the facilities of the “Antonov” enterprise.

On June 21, 2021, aboard the Royal Navy’s HMS DEFENDER missile destroyer in Odesa, the Minister for Defense Procurement of the United Kingdom Jeremy Quin and the Deputy Minister

of Defense of Ukraine Oleksandr Myronyuk signed a Memorandum on the implementation of maritime partnership projects between the industry consortium of the United Kingdom and the Ukrainian Navy, which provides for the joint design and construction of warships in Ukraine and the United Kingdom, as well as the construction of two Ukrainian naval bases.

Hopefully, this is only a part of the joint military projects of Ukraine with the leading countries of the world in technical ensuring of its security and increase of export potential at the expense of weapons, because in the military sphere not all projects reach the media.

An important component of modernization and support of its defense industry, both for developing countries and for the world's leading economies, is the use of offset agreements for arms imports, the condition of which is to set counter-requirements for investing part or even the entire contract amount in the economy of importing country. There are plenty of examples of such cooperation:

- Saudi Arabia, during the purchase of three frigates worth 18 billion francs from France in 1989, put forward a condition of reinvesting 35% of the contract value in the economy of the importer;

- Norway's purchase of five frigates worth 2 billion USD from the American world's leading arms supply company "Lockheed Martin" and Spain's "Empresa Nacional Bazan" in 2000 took place under the condition of reinvesting in the Norwegian economy 100% of the contract value within ten years;
- Italy in 2020 signed a contract to build a new generation FFG frigate for the US Navy, and undertook to build a series of 20 ships not in Italy but in the US, which means creating jobs for Americans and settling much of the money spent in the US economy;
- India and Turkey, when concluding arms import agreements, in most cases require the transfer of technology of purchased weapons and the establishment of joint ventures to service and manufacture such equipment. For example, India's purchase of AH-64 Apache combat helicopters in the United States provided for the creation of a joint venture with the American company Boeing for the production of spare parts.

In addition, the future terms of contracts for the construction of frigates by the United Kingdom for Ukraine, according to preliminary information, should provide for the possibility of their construction at Ukrainian shipyards.

CONCLUSION

The study aimed to assess the prospects of Ukraine's integration into the world arms market to secure its armed forces and achieve the highest possible level of arms exports.

The obtained results showed that Top-10 leaders of the world arms market (as of the end of 2020): the United States of America (39.0%), China (13.0%), India (3.7%), Russia (3.1%), the United Kingdom (3.0%), Saudi Arabia (2.9%), Germany (2.7%), France (2.7%), Japan (2.5%), and South Korea (2.3%).

The current situation in the defense-industrial complex of Ukraine is characterized by a significant deterioration of the material and technical base of research and production structures, the lack of modern scientific and technological developments, a serious rupture in relations between science and industry. The structure of expenditures of the security and defense sector in the draft budget for 2022 provides for an increase in total expenditures by 19.5% (from 267.3 to 319.4 billion UAH) compared to 2021; at the same time expenditures for the Ministry of Defense will grow much less – only by 11.5%. The situation is similar in the comparison of the budgets of 2021 and 2020. In 2019, Ukraine ranked 35th among the top countries in the world in terms of military expenditures, moving to 34th place in 2020.

Ukrainian weapon export has fallen dramatically in recent years (from 1501 million USD in 2012 to 115 million USD in 2020). The largest importers were China (36% of Ukraine's total arms exports), Russia (20%), and Thailand (17%). The main explanation for this is the necessity of transition to more technological weapons. As for weapon imports, Turkey, the USA, Great Britain, Poland, and Bulgaria became the main suppliers.

Ukraine generally does not have the necessary resources to fully develop its high-tech weapons, and in many cases, the technological level of Ukrainian enterprises does not allow it to do so with the latest military technology. The way out of this situation is the joint projects with other countries. Besides, an important component of modernization and support of own defense-industrial complex, both for developing countries and for the world's leading economies, is the use of offset agreements for arms imports, the condition of which is to set counter-requirements for investing part or even the entire amount of the contract in the economy of the importing country.

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