

The European Defence Market — Unevenly Fragmented

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The European defence market has often been characterised as highly fragmented. A widely cited 2017 study from Munich Security Conference (MSC), for instance, found that the 26 European Defence Agency (EDA) members (plus Denmark) used 178 types of major weapon systems compared to 30 types used by the US.¹ This should not be surprising as the European defence industrial base and defence market are organised mainly along national lines. EU member states have their own security policy priorities, shaped by their histories and geostrategic environments. Furthermore, member states with their own national defence industries, generally wish to safeguard these.

However, this fragmentation is often described as a challenge for the European defence industry overall, leading to duplicated capabilities and reduced economies of scale. Long term, this development could pose a risk to the competitiveness of the European defence industry, especially in the light of the modest or stagnant European defence budgets of previous decades.

While not disputing the overall fragmentation of the European defence market, this memo investigates if the picture of aggregated fragmentation becomes more nuanced when analysing the various market segments that comprise the European defence market. The aim of this memo is to examine the market share concentration within key market segments, thereby answering the question if such an analysis could complement the overall picture of fragmentation within the European defence market.

Revisiting the 2017 Munich Security Council Study

Even though the MSC study is fairly recent, it may be worth asking whether or not the results from that study still hold. Note that there are some slight differences in classifications between the MSC study and the update presented in this memo (see Figure 1).² Nevertheless, it becomes clear that the main findings of the MSC study remain valid. The European defence market is far more fragmented than the US one.

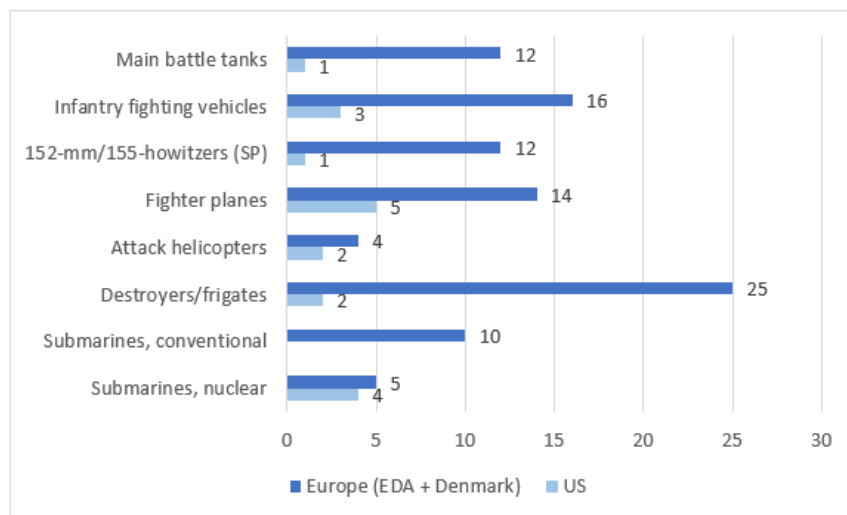


Figure 1: FOI Update of MSC Findings, 2021

- 1 Munich Security Conference (2017) *More European, More Connected and More Capable*. McKinsey&Company and Hertie School of Governance. Similar results in previous study from McKinsey&Company (2013) *The Future of European Defence: Tackling the Productivity Challenge*.
- 2 The Munich Security Conference (2017) study uses data from IISS *The Military Balance* (2017) and this memo use data from IISS *The Military Balance* (2021) for the 26 EDA members plus Denmark. However, this memo only includes self-propelled howitzers. Furthermore, attack helicopters, missiles and torpedoes are excluded from this study.

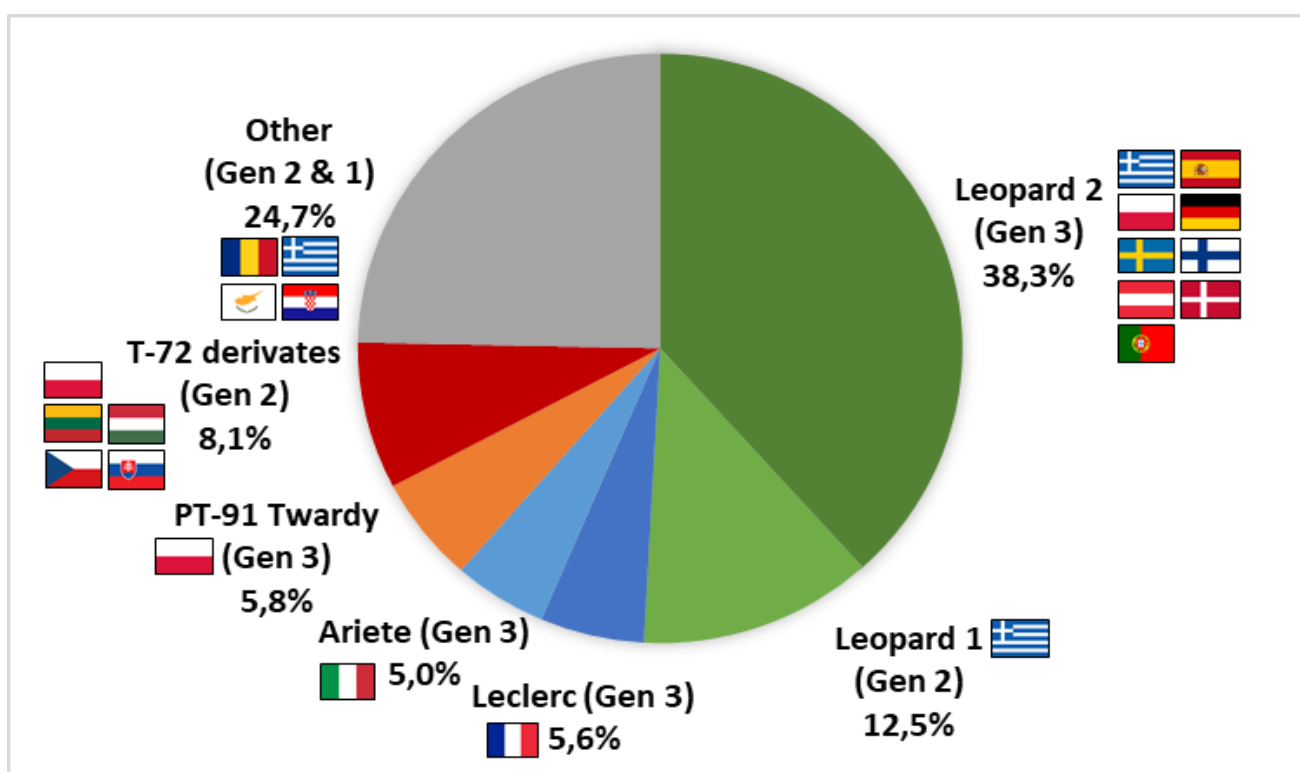
When examining the degree of fragmentation within different market segments, however, the overall picture seems to become more differentiated.³

Fragmentation by Market Segment

This memo uses data from the International Institute for Strategic Studies (IISS) *The Military Balance 2021* for the market segments of tanks, infantry fighting vehicles, self-propelled howitzers, fighter aircraft, destroyers and frigates, and conventional submarines in active service within the armed forces of the 26 EDA members and Denmark. The analysis focuses on the market shares of various types of equipment within each of the included European defence market segments.

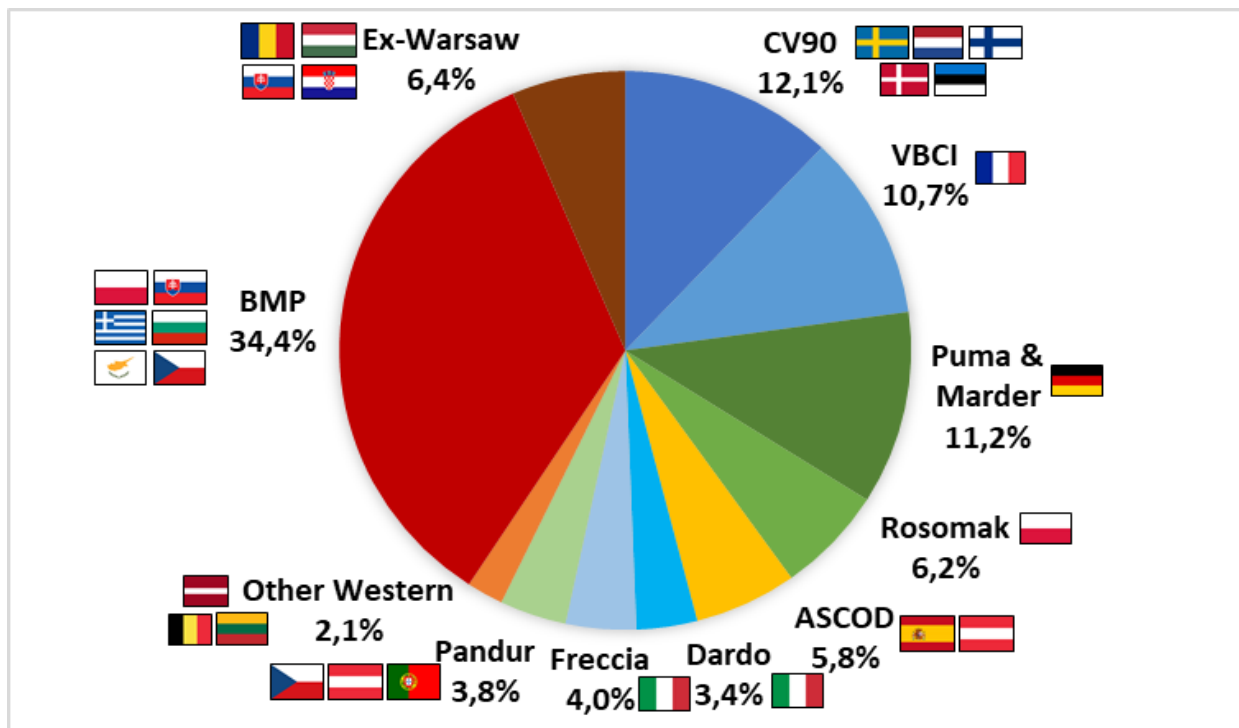
Main Battle Tanks

While the included 27 European countries operate 12 different tanks, the European main battle tank (MBT) market segment is dominated by a single system (see Figure 2). Different German Leopard 2 variants account for 38 per cent of all European tanks, amounting to 70 per cent of modern third generation MBTs. Besides the Leopard 2, the French Leclerc and Italian Ariete are the only domestically developed third generation European tanks. The rest of the MBT market consists of legacy equipment, including several German Leopard 1, Soviet T-72 and T-55 upgrades or derivatives as well as some older French and American tanks. This legacy equipment necessitates multiple



Figur 2: Market Segment Main Battle Tanks, 2020

³ This memo does not have a strict classification of various degrees of fragmentation. But if 1-2 systems or producers cover half of the market segment, it is seen as concentrated. If 3-4 systems cover half of the market, it is seen as moderately fragmented. If 5 or more covers half of the market, it is seen as highly fragmented.



Figur 3: Market Segment Infantry Fighting Vehicles, 2021

maintenance lines, but can also give a false impression of fragmentation among current producers. Instead, the current European MBT market is relatively concentrated to a handful of producers, with German Leopard 2 tanks having a clear market dominance.

Infantry Fighting Vehicles

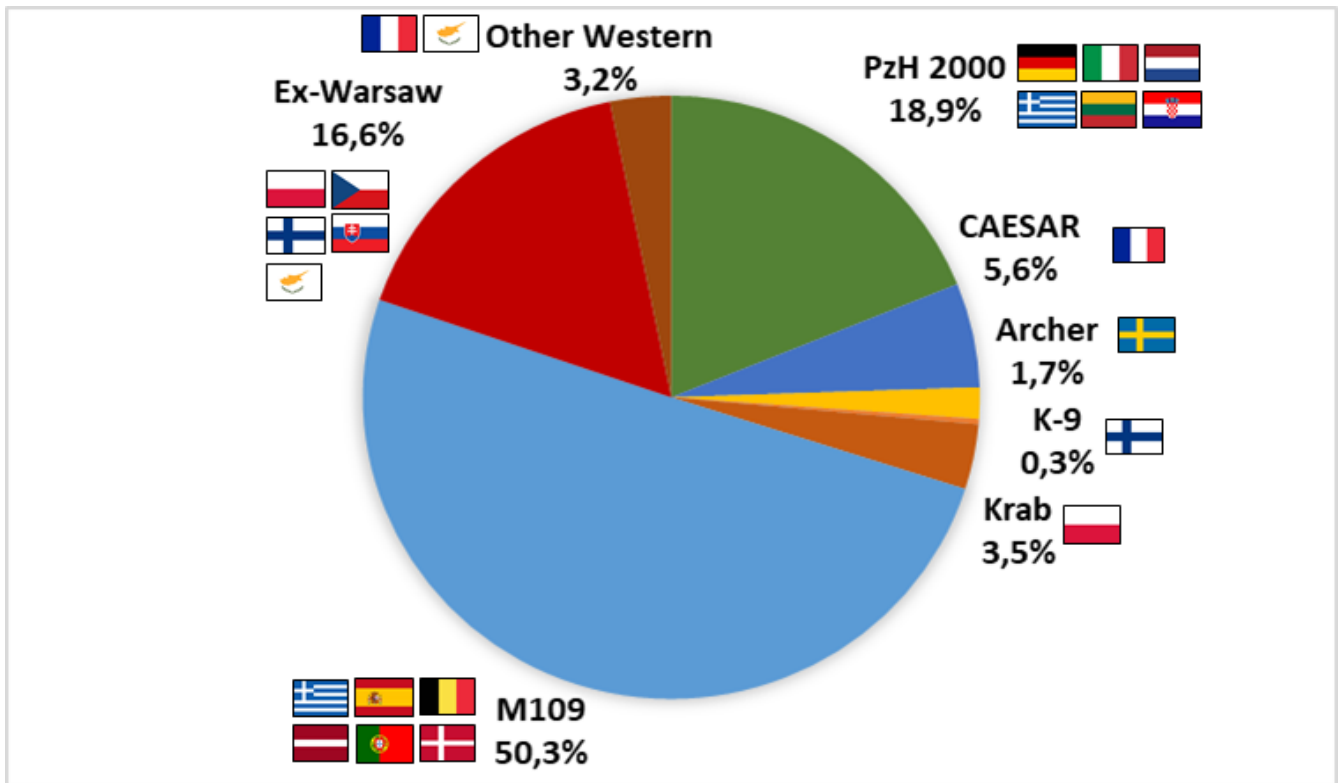
The European market segment for infantry fighting vehicles (IFVs) on the other hand is more fragmented (see Figure 3).⁴ Similarly to MBTs, a large part of the fragmentation can be explained by the presence of legacy IFVs such as former Warsaw Pact IFVs and Soviet BMPs. These make up over 40 percent of the current European inventory. But unlike MBTs, no modern IFV type dominates the market segment. Among modern European IFVs, the Swedish CV90 is the most common. It is operated by five countries and makes up 12 per cent of the market segment or 20 per cent of all modern IFVs. The French wheeled VBCIs as well as German tracked Pumas and Marders are not

far behind the CV90 in terms of numbers, but are only operated by their respective home countries. The Polish Rosomak version of the Finnish AMV-360, Spanish-Austrian ASCOD, Italian tracked Dardo and wheeled Freccia are also used by their respective armed forces. The Austrian Pandur II is used by Austria, but also Portugal and the Czech Republic, though not in large numbers. Furthermore, Latvia uses British Scimitar, Belgium uses the Swiss Piranha III and Lithuania uses German Boxer armoured personnel carrier equipped with an autocannon as an IFV.

Self-Propelled Howitzers

Among self-propelled howitzers, the different variants of the US M109 make up half of this market segment in Europe (see Figure 4). The M109 is operated by six countries, but new types will likely replace some of these in the near future. A sizable part of the market is also made up of former Warsaw Pact or Soviet pieces, such as the Gvodzika. The most common modern European self-propelled

⁴ There is not always a clear distinction between IFV and APC. This study includes armoured vehicles armed with 25-40mm autocannons, but since it has not always been possible to confirm the armament, the classification also relies on the classification made by IISS.



Figur 4: Market Segment Self-Propelled Howitzers, 2021

howitzer is the German PzH-2000, which is operated by six countries, making up 19 per cent of the market segment and a majority of current modern self-propelled artillery. However, the French CAESAR, currently used by France alone, will soon be introduced into the Danish, Belgian and Czech armies. Sweden is in the process of introducing 48 Archer of which only half were in service at the time the data was collected. Finland is in the process of introducing 48 South Korean K-9 Thunder, and Estonia has signed a contract for at least 18 of the same artillery piece, so the

market share of this system is also bound to increase.⁵ Poland uses a locally produced and modified version of the K-9, called Krab, which is also being introduced in significant numbers to become one of the three most common modern self-propelled howitzer in Europe. The self-propelled howitzer market is currently dominated by a non-European artillery piece, but given that there are a number of competing systems being taken into service, the degree of fragmentation within this market segment looks quite uncertain in the near future.

⁵ Outside of the included countries, Norway has also chosen the K-9 Thunder as its new self-propelled howitzer.

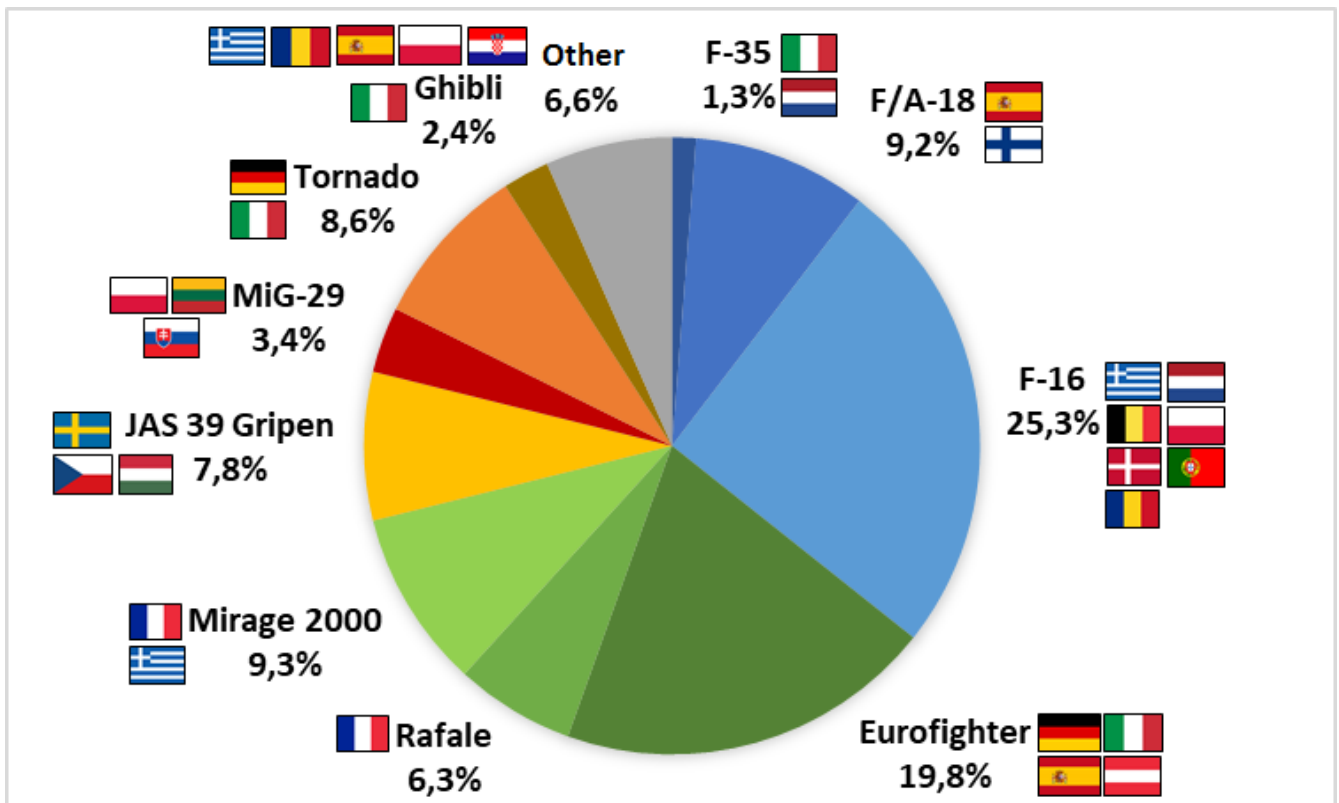


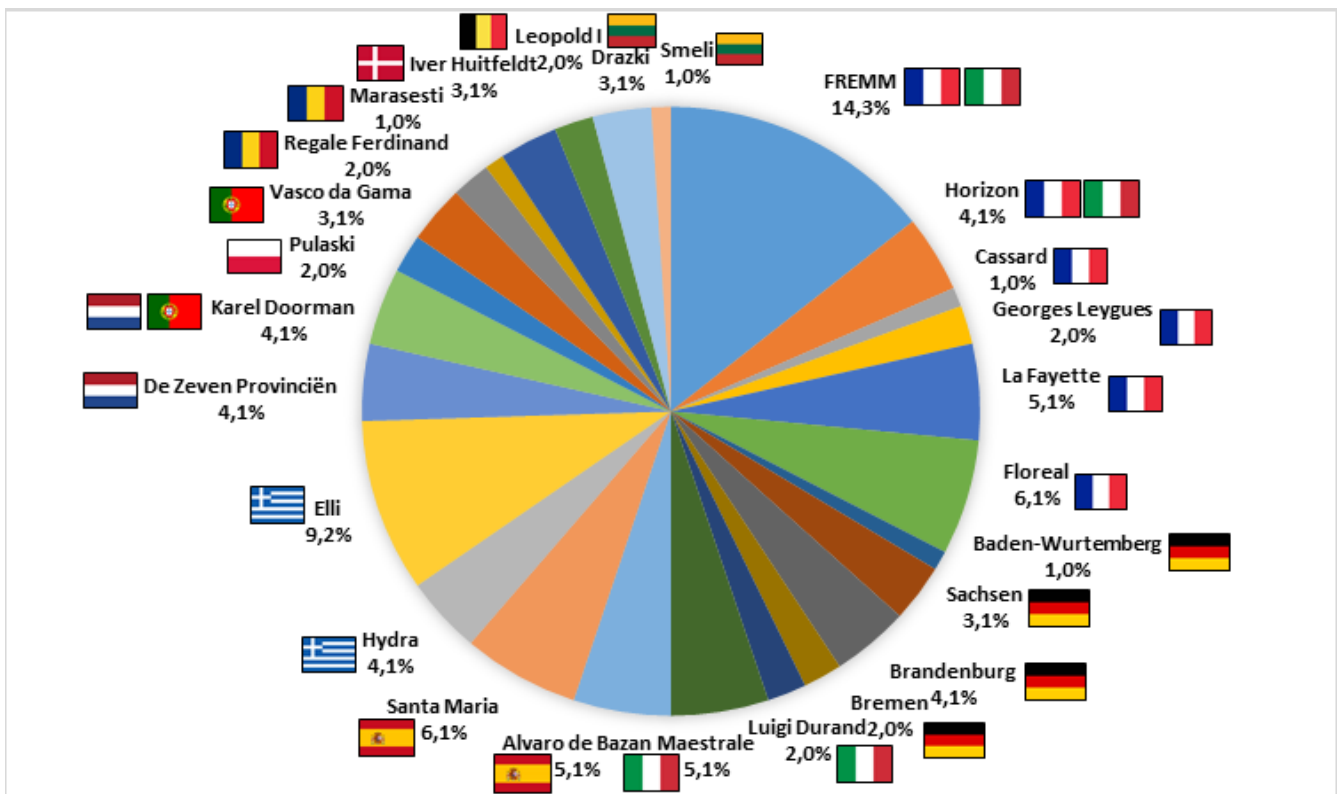
Figure 5: Market Segment Fighter Aircraft, 2021

Fighter Aircraft

The European fighter aircraft market is moderately fragmented (see Figure 5). The most common fighter aircraft in active service among included air forces is the US F-16 Fighting Falcon, operated by seven nations and accounting for 25 percent of the market segment. Several countries are also currently in the process of acquiring and introducing the fifth generation US F-35 Lightning II.⁶ The Eurofighter is the most common European fighter aircraft. It is operated by four of the included countries, accounting for almost 20 percent of the market segment. The Swedish JAS 39 Gripen

is operated by three European countries, accounting for about 8 percent of the market segment. The French Rafale has about 6 percent of the market share, but is used only by France, at least in Europe. Meanwhile, the older French Mirage 2000 is used by France and Greece, within the European market. The rest of the included aircraft are older types, either being phased out or likely to be phased out in the near future. While there are 14 fighter aircraft currently operated by the EDA members and Denmark, there are only six that can be considered modern, i.e. fourth or fifth generation. In sum, the European fighter aircraft market is fragmented, but not as severely as it may first appear.

⁶ These include Italy, the Netherlands, but also Belgium, Denmark, Poland, which did not have F-35s operational when the data was collected. Furthermore, the non-EU countries of Norway and the UK are also operators of F-35s.



Figur 6: Market Segment Destroyers and Frigates, 2021

Destroyers and Frigates

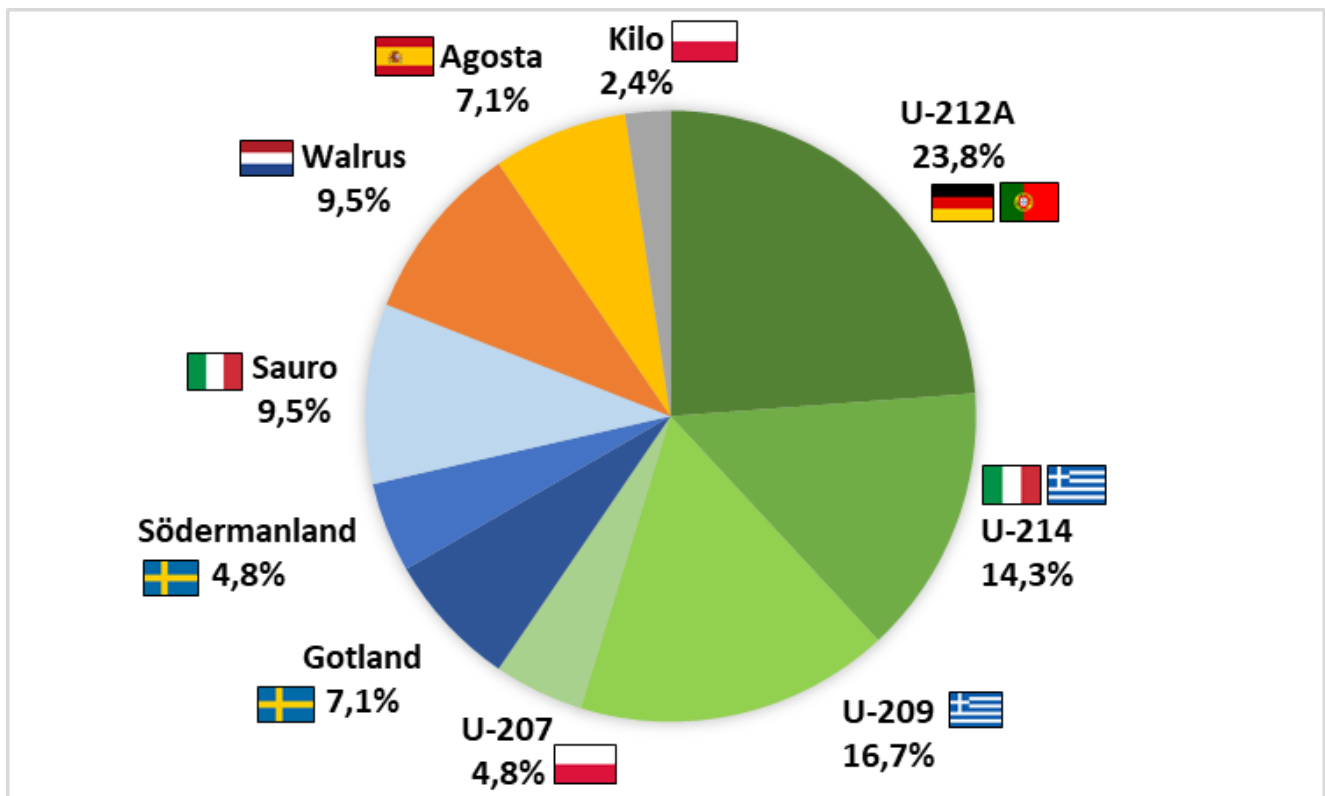
The market segment of destroyers and frigates is highly fragmented along national lines (see Figure 6). The most common European larger surface combatant is the French-Italian FREMM frigate, which only accounts for 14 percent of the market segment. The Horizon and Karel Doorman classes are also operated by two countries, but the remaining destroyer and frigate classes are each operated by a single country. Several countries operate more than one class. One possible explanation for this level of fragmentation is that most European countries still have their own shipbuilding capabilities which they wish to preserve. This market fragmentation is also likely due to the nature of shipbuilding, where new ships are often built in small batches and customised, rather than produced in large series.

Conventional Submarines

Within the conventional submarine market segment, German Thyssen-Krupp Marine Systems (TKMS) has a clearly dominant market position, with modern U-212 and U-214 variants making up 38 percent of European conventional submarines (see Figure 7). The second most common types are the German U-207 and U-209, which make up a further 21 percent of the market segment. Taken together TKMS,⁷ account for almost 60 percent of European conventional submarines.⁸ The Södermanland and Gotland submarines of Swedish Kockums make up 11 percent of the market, but these submarines are operated by Sweden alone. The older Italian Sauro, Dutch Walrus and Spanish Agosta class submarines are also operated only by their respective navies.

7 Or rather the subsidiaries of TKMS, such as Howaldtswerke-Deutsche Werft and Nordseewerke.

8 It is worth noting that Norway also operates 6 Ula U-210 submarines and has ordered 4 U-212D submarines produced by predecessors to TKMS.



Figur 7: Market Segment Conventional Submarines, 2021

An Unevenly Fragmented Defence Market

The European defence market is undoubtedly fragmented, but unevenly fragmented (see Figure 8). As demonstrated above, the degree and nature of this fragmentation varies greatly between market segments. The modern European MBT market is dominated by a single tank design, while the IFV market segment is more fragmented along national lines. The European market for self-propelled howitzers is currently dominated by a US artillery piece.

The European fighter aircraft market is moderately fragmented with US aircraft possessing a significant share. The European destroyer and frigate market is the most fragmented among the included segments, divided almost entirely along national lines. Meanwhile, the current European submarine market is fairly concentrated to one producer.

Europe may operate 12 tanks versus only 1 for the US, but that does not mean that the European tank market is 12 times more fragmented. The current market fragmentation is in large part due to legacy systems making up a significant part of the inventories of European countries.

While a large number of legacy systems will reduce the economies of scale with regard to maintenance and may impact military capabilities and interoperability, it may also exaggerate the number of active producers and degree of fragmentation.

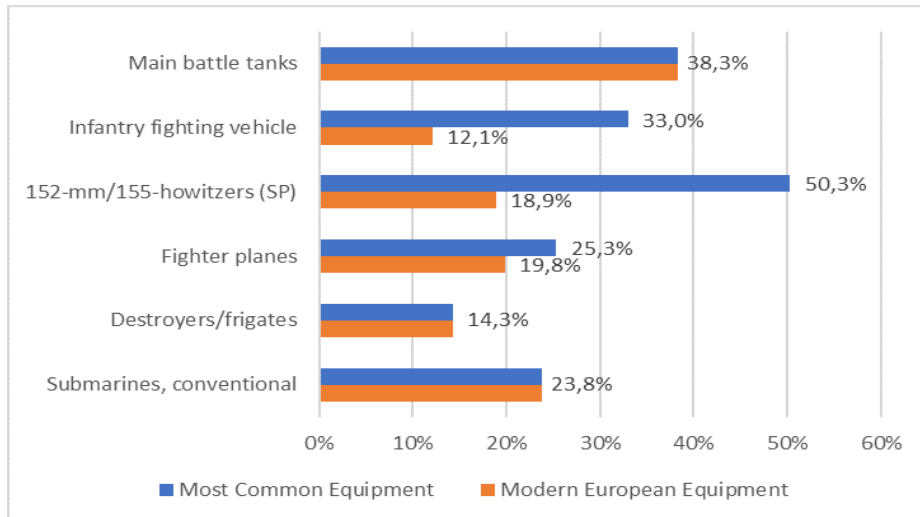
What Could the Future Hold?

Without trying to speculate in future trends, it may be worth outlining some conditions and possible developments for each market segment. With the merger of German Krauss-Maffei Weggman and French Nexter to develop a new generation of MBTs, the European tank market may consolidate further. However, it remains unclear whether or not Italy and Poland will or can join the German-French initiative.⁹ The future consolidation of the European tank market also depends of the success of non-European producers, such as the US or South Korea.¹⁰

The IFV market currently consists of a handful of prime contractors and remains rather fragmented. It is likely to remain so in the near future. A closer cooperation between Germany and France may lead to some joint initiative, but

⁹ The same is true for the UK, which currently operates and has chosen to upgrade the Challenges 2 as a stopgap measure until these tanks can be replaced.

¹⁰ The US sold M1A2 Abrams to Poland and South Korea is bidding K2 Black Panther to Norway in competition with German Leopard 2A7.



Figur 8: Market Concentration, Market Share of Most Common and Modern Equipment Type, 2020¹⁰

any such initiative will still face several strong competitors, both from within and outside of Europe. The European self-propelled howitzer market seems to contain three to five prime contractors. The German PzH2000 currently has somewhat of an advantage, while the French CAESAR and South Korean K-9 Thunder are set to capture increased market shares. The Polish Krab and Swedish Archer have so far not been exported. However, all of aforementioned systems could increase their market shares in this contested market.¹¹

For fighter aircraft the European market is divided between four prime contractors. With two competing initiatives for future combat aircraft together with the ongoing introduction of the US F-35, this trend will likely continue in the future. The level of fragmentation should not be exaggerated, however, even the US operates two fifth generation aircraft and is currently developing two parallel sixth generation projects. Nevertheless, the European fighter aircraft market will consist of several legacy systems and national projects, which given a much smaller air force budget compared to the US likely translates into a disadvantage. The market for destroyers and frigates are highly fragmented and this will most likely be the case for the foreseeable future. This can largely be attributed to the national nature of the shipbuilding industry.

The European submarine market on the other hand is relatively concentrated, but the future is uncertain. So far, no significant consolidation is in sight and outcomes may come down to competition, where the continued

dominance of TKMS depends on whether or not France and Sweden can challenge Germany's incumbent advantage.

Concluding Remarks

This memo demonstrates that the overall picture of fragmentation becomes more differentiated when examining the various market segments. The study does not take a normative stance on the question of whether a fragmented market is less desirable than a consolidated one. A fragmented market may reduce the potential economies of scale for the 27 European countries included in this study. However, a consolidated market may also have its drawbacks as consolidation may reduce competition and provide a smaller range of military systems for any potential enemy to focus on.

If one is concerned by the fragmentation of the European defence market, this memo offers some good news and some bad news. The good news is that when the market share concentration within each market segment is analysed, the fragmentation does not seem as severe as when just looking at the overall number of different types of equipment. The bad news is that there is no clear trend towards consolidation in the near future. Recent initiatives, most notably the European Defence Fund (EDF), have the expressed goal of encouraging cooperation and reducing fragmentation within the European defence market. Whether or not this will actually lead to further consolidation remains to be seen. ■

¹¹ Based on data from IISS (2021) *The Military Balance 2021*.