

## V. Arms production and military services

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### **Overview and key developments in the arms industry, 2015**

Sales of arms and military services as measured by the SIPRI Top 100—a ranking of the world’s largest arms-producing and military services companies (excluding China) according to arms sales—totalled \$371 billion in 2015 (see table 10.7). Compared with 2014, this was a decrease of 0.6 per cent.<sup>1</sup> The Top 100 total in 2015 was 14 per cent lower than the peak sales total of \$433 billion observed in 2010 and marks the fifth consecutive year of decline in real terms.

The modest reduction in Top 100 sales in 2015 compared with 2014 was primarily due to a decrease of 2.9 per cent in the revenues of companies headquartered in the United States (see table 10.8). This is a slightly lower rate of decline than the 4.3 per cent fall observed in 2014. US companies dominate the Top 100 in terms of both the number of companies ranked (39) and the share of total revenues (57 per cent). Moreover, seven US companies are ranked in the top 10.

The USA was not the only country to see a fall in collective arms and military services revenues of its largest arms-producing and military services companies in 2015. There were also reductions in the collective arms sales of companies in Australia, Brazil, Japan, Norway, Poland, Singapore and Switzerland that are ranked in the Top 100. Taken together, these countries have a total of 10 companies ranked in the Top 100 for 2015, and the companies’ combined share of the Top 100 revenues amounted to 3.8 per cent.

Several of the world’s largest arms-producing companies are located in Western Europe. The collective arms sales totals of companies based in France, Germany and the United Kingdom all rose in 2015—by 13, 7.4 and 2.8 per cent respectively. The collective arms sales of companies based in Russia also grew between 2014 and 2015. However, the increase of 6.2 per cent is significantly lower than the 44 per cent rise observed in 2014. Top 100 companies based in other parts of the world are divided between ‘other established’ (i.e. Australia, Israel, Japan, Poland, Singapore and Ukraine) and ‘emerging’ (i.e. Brazil, India, South Korea and Turkey)

<sup>1</sup> SIPRI estimates that several Chinese arms-producing companies are large enough to be ranked in the SIPRI Top 100. However, due to a lack of comparable and sufficiently accurate data, it has not been possible to include them in the rankings. Companies included in the yearly SIPRI Top 100 may change from year to year, especially those situated at lower ranks. Consequently, comparisons between total revenues do not necessarily include the same companies each year. Unless otherwise stated, all arms sales figures in this section are presented in nominal (current) US dollars, while percentage changes and shares are in constant 2015 US dollars (i.e. real terms). For further detail see the SIPRI Arms Industry Database, <<https://www.sipri.org/databases/armsindustry>>.

**Table 10.7.** Trends in arms sales of companies in the SIPRI Top 100 arms-producing companies, 2006–15

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<i>Arms sales in current prices and exchange rates</i>										
Total (\$ b.)	313	349	389	405	419	418	403	405	400	371
Change (%)	8.2	11	12	4.0	3.5	-0.1	-3.6	0.4	-1.2	-7.3
<i>Arms sales in constant (2015) prices and exchange rates</i>										
Total (\$ b.)	353	372	397	428	433	409	390	382	373	371
Change (%)	4.8	5.3	6.7	7.7	1.2	-5.4	-4.6	-2.1	-2.5	-0.6
Cumulative change since 2006 (%)	0	5.3	12	21	22	16	11	8.2	5.5	4.9

*Note:* Figures in this table refer to the companies in the SIPRI Top 100 in each year, which means they refer to a different set of companies each year, as ranked from a consistent set of data.

*Source:* SIPRI Arms Industry Database, <<https://www.sipri.org/databases/armsindustry>>.

producers. Their collective sales totals showed varying trajectories in 2015. Among the other established producers, companies in Australia, Japan, Poland and Singapore showed decreases in their collective sales totals in 2015, while companies in Israel and Ukraine showed increases. Companies located in emerging producer countries all showed significant increases in sales, the notable exception being companies based in Brazil.<sup>2</sup> The collective sales of Brazilian companies dropped by 28 per cent in 2015 as a result of severe domestic, political and economic difficulties during the year.

Conflicting politico-economic pressures characterized the operating environment of arms-producing and military services companies during the first half of the 2010s. Austerity policies in many Western countries led to pressure on government spending, including military spending. However, persistent international tensions, higher threat perceptions, ongoing conflicts and involvement in military operations to some extent shielded Western military budgets and procurement from such pressures.<sup>3</sup> For some oil-exporting countries, such as Russia, the slump in oil prices that started in 2014 reduced anticipated revenues and forced a review of state spending, including military spending. The increase in Russian arms sales within this context of reduced state revenues confirms the priority given to the arms industry by Russia.

<sup>2</sup> 'Emerging' producer countries are countries that have designed and implemented a military industrialization plan with the aim of building significant indigenous arms-production capabilities so as to achieve some greater level of self-sufficiency in arms procurement.

<sup>3</sup> Cabirol, M., 'Terrorisme: la guerre menée par la France exige un effort supplémentaire' [Terrorism: the war waged by France requires an extra budgetary effort], *La Tribune*, 5 Apr. 2016; and Chuter, A., 'After the Brexit, what's next for defence?', *Defense News*, 24 June 2016.

**Table 10.8.** Regional and national shares of arms sales for the SIPRI Top 100 arms-producing companies in the world excluding China, 2015 compared with 2014<sup>a</sup>

Number of companies	Region/Country <sup>b</sup>	Arms sales (\$ b.)		Changes in arms sales, 2015–14 (%)		Share of total Top 100 arms sales, 2015 (%)
		2015	2014 <sup>c</sup>	Nominal <sup>d</sup>	Real <sup>e</sup>	
<b>40</b>	<b>North America</b>	<b>210</b>	<b>216</b>	<b>-2.8</b>	<b>-2.8</b>	<b>57</b>
39	United States	210	216	-2.8	-2.9	57
1	Canada	0.8	0.8	-2.6	11	0.2
<b>26</b>	<b>Western Europe</b>	<b>95.7</b>	<b>103</b>	<b>-6.7</b>	<b>6.6</b>	<b>26</b>
9	United Kingdom	39.4	41.3	-4.5	2.8	11
6	France	21.4	22.6	-5.4	13	5.8
1	Trans-European <sup>f</sup>	12.9	14.5	-11	6.0	3.5
2	Italy	10.7	12.1	-12	5.4	2.9
3	Germany	5.6	6.2	-10	7.4	1.5
1	Sweden	2.6	2.7	-2.6	20	0.7
2	Switzerland	1.7	1.8	-6.1	-0.2	0.5
1	Norway	0.7	0.9	-21	-0.6	0.2
1	Belgium	0.7	0.4	50	78	0.2
<b>11</b>	<b>Eastern Europe</b>	<b>30.1</b>	<b>39.0</b>	<b>-23</b>	<b>6.2</b>	<b>8.1</b>
11	Russia	30.1	39.0	-23	6.2	8.1
<b>10</b>	<b>Other established producers</b>	<b>18.6</b>	<b>20.3</b>	<b>-8.4</b>	<b>3.0</b>	<b>5.2</b>
3	Israel	7.7	7.7	0.3	9.6	2.1
3	Japan	6.2	7.0	-13	-0.8	1.7
1	Australia	1.0	1.2	-21	-6.6	0.3
1	Singapore	1.7	2.0	-17	-9.9	0.4
1	Poland	1.2	1.5	-18	-1.6	0.5
1	Ukraine	0.9	0.8	3.6	28	0.2
<b>13</b>	<b>Emerging producers</b>	<b>15.9</b>	<b>14.7</b>	<b>8.0</b>	<b>16</b>	<b>4.3</b>
7	South Korea	7.7	6.2	23	32	2.1
3	India	5.5	5.0	9.1	9.3	1.5
1	Brazil	0.8	1.5	-45	-28	0.2
2	Turkey	1.9	2.0	-4.5	10	0.5
<b>100</b>	<b>Total</b>	<b>371</b>	<b>393</b>	<b>-5.7</b>	<b>1.2</b>	<b>100</b>

Note: Arms sales figures are in US\$ b., at current prices and exchange rates. Figures do not always add up to stated totals due to conventions of rounding.

<sup>a</sup> Although it is known that several Chinese arms-producing enterprises are large enough to rank among the SIPRI Top 100, a lack of comparable and accurate data makes it impossible to include them.

<sup>b</sup> Figures for a country or region refer to the arms sales of the Top 100 companies headquartered in that country or region, including those in its foreign subsidiaries. They do not reflect the sales of arms actually produced in that country or region.

<sup>c</sup> Arms sales figures from 2014 refer to companies in the SIPRI Top 100 for 2014, and not to the companies in the Top 100 for 2015. Figures are given at current (2014) prices and exchange rates.

<sup>d</sup> This column gives the change in sales 2014–15 in current US dollars.

<sup>e</sup> This column gives the change in sales 2014–15 in constant (2015) US dollars.

<sup>f</sup> The company classified as trans-European is EADS (Airbus).

Source: SIPRI Arms Industry Database, <<https://www.sipri.org/databases/armsindustry>>.

### **The largest arms producers and military services providers**

SIPRI has collected data on the top 100 arms-producing and military services companies for 14 years, which means it is now possible to provide some improved insights into the structure and main characteristics of the industry. Most notably, an examination of the data over the longer term reveals the remarkable constancy in companies ranked at the top of the list. Companies occupying the top 50 to 70 positions in 2002 mostly remained within the SIPRI Top 100 over the 14-year period. Often, it was only when a company was bought by another firm or exited the military market completely (typically after a divestment) that it dropped out of the rankings.<sup>4</sup> At the top of the ranking, a total of 12 companies occupied the first 10 positions between 2002 and 2015; 9 are headquartered in the USA and 3 are based in Western Europe. Together, the top 10 account for a significant share of the yearly Top 100 arms revenues, with 56 per cent of the total on average for the period covered by the database.

However, the data also shows that the top 10 share of total revenues has been steadily eroding over the past 14 years, from 60 per cent in 2002 to 52 per cent in 2015. It also highlights the fact that the top (rank 1) and the bottom (rank 100) sales figures both steadily increased over time. In 2002 the company ranked first showed total arms sales of \$31.0 billion, whereas in 2015 the highest arms sales figure was \$36.4 billion. Similarly, for the 100th position, the total arms sales figure rose from \$395 million in 2002 to \$640 million in 2015. This evolution of top and bottom lines is observed despite 2015 being the fifth consecutive year of decrease in SIPRI Top 100 arms sales, and is indicative of an overall 37 per cent rise in total Top 100 arms sales between 2002 and 2015.

Various factors explain these evolutions. But while identifying causes of fluctuations requires closer scrutiny at country/company level, four major drivers of change in the arms industry are well known and have been widely discussed in the literature on the subject.<sup>5</sup> The first driver, which is arguably one of the most decisive, is size of the domestic market. The national ministry of defence, or the equivalent national agency in charge of arms procurement, in a company's country of origin is in many cases the main purchaser of that company's arms or military services. Therefore, a company's arms sales will tend to correlate with national procurement spending levels in the country in which it is headquartered. The second major driver shaping the arms

<sup>4</sup> An example of a company that has exited the Top 100 because of declining sales is AM General, which did so in 2012.

<sup>5</sup> Kapstein, E. B., *The Political Economy of National Security: A Global Perspective* (McGraw Hill: New York, 1992); and Hartley, K., 'The arms industry, procurement and industrial policy', eds. T. Sandler and K. Hartley, *Handbook of Defense Economics*, vol. 2 (Elsevier: Amsterdam, 2007), pp. 1139–76.

industry relates to mergers and acquisitions at national level. These can lead to greater concentration by creating large groups involved simultaneously in several production segments.<sup>6</sup> The third driver is the cost increase associated with new generations of large weapon systems. The main hypothesis here is that greater technological sophistication is emphasized to achieve improved performance, which in turn increases production costs and reduces the number of units ordered.<sup>7</sup> Finally, a country's participation in armed conflict may create unanticipated and urgent needs for certain types of weapons—as was clearly demonstrated during the recent wars in Afghanistan and Iraq—and boost the sales of some companies. This was the case, for instance, for producers of light armoured vehicles, such as Navistar, and military services providers, such as KBR, which ranked highly in the Top 100 in 2003–12 as a result of war requirements.

There are important methodological caveats to consider when using the Top 100 arms database to compare data over time. The first caveat is that the pool of companies ranked annually in the Top 100 changes every year, especially at lower ranks. This means that although aggregated Top 100 figures can provide some insights into the evolution of the arms industry at a combined level, caution is recommended when comparing countries/companies year on year. Indeed, a country's collective share of Top 100 arms sales can fluctuate not only because of changes in revenues, but also because of significant events at domestic or company level (such as bankruptcy, divestiture, merger/acquisition, privatization etc.), which can modify the profile of the national arms industry.<sup>8</sup>

Another methodological choice made by SIPRI for the arms industry database was to assign sales figures to the country where the company is headquartered, despite the fact that in the case of several companies in the Top 100 a significant part of those companies' arms sales is generated in other countries. One of the most cited examples of this type of situation is BAE, which is headquartered in the UK but derives a significant amount of sales from its US subsidiary. In order to partially address this issue, SIPRI includes estimated sales for subsidiaries when they are available. Lastly, as is the case for all databases, currency conversion and adjustments to constant US dollar figures can distort sales figures. Such conversions and adjustments are especially relevant when looking at country and regional estimates.

<sup>6</sup> Examples of such companies in 2015 are BAE, Finmeccanica/Leonardo, Lockheed Martin and Saab.

<sup>7</sup> Hartley, K. and Solomon, B., 'Special issue: defence inflation', *Defence and Peace Economics*, vol. 27, no. 2 (2016), pp. 172–75.

<sup>8</sup> This was the case for the USA in the 1990s or Russia in the late 2000s and 2010s.

*The United States*

Despite a fifth consecutive year of decline in the combined arm sales of US companies in the Top 100, the USA remained by far the largest arms-producing country in 2015. The combined total for US companies in the Top 100 fell in 2015 to \$210 billion, a decrease of 2.9 per cent. The collective drop in revenue of the 39 US companies in the 2015 rankings can be attributed to spending limitations imposed by the Budget Control Act (BCA) of 2011, which also affected spending on arms procurement.<sup>9</sup> However, short-term legislation (specifically the Bipartisan Budget Act of 2013) raised the budget ceilings for 2014 and 2015, which explains why the rate of decrease in the combined arms sales of US companies slowed over the past two years.

In 2015 there were three new US-based entrants to the Top 100: CSRA (ranked 41st), Engility (ranked 64th) and Pacific Architects and Engineers (PAE) (ranked 99th). All are services companies that were divested from larger arms companies. CSRA is the result of a merger in 2015 between SRA International and a spin-off from military services company Computer Science Corporation. Engility was spun off from L3 Communications in 2012. PAE was bought by Lockheed Martin in 2006 but was sold to an equity fund in 2011. Greater demand for information technology (IT) services in the 2000s from the US Department of Defense (DOD) and other federal agencies, such as the Department of Homeland Security, led several large prime contractors and systems integrators to add IT government services capabilities to their activities, often by acquiring smaller, specialized IT companies.<sup>10</sup> However, regulations on organizational conflict of interest enacted in 2010 as well as an anticipated contraction in US procurement spending following the end of major wars caused many companies to reassess the addition of IT government services capabilities to their activities.<sup>11</sup> Since 2011 several companies have either sold part of their IT services activities to other companies or have divested them, which has led to the creation of new companies. In many cases the decision to move away from these activities was based not only on forecasts of reduced sales but also on observations of incompatibilities between some of these activities and core production.<sup>12</sup>

The evolving market for government IT services activities highlights the growing diversity among military services companies. Previously, military services were almost exclusively associated with private military contractors such as Blackwater (renamed Academi in 2011) and KBR. Several military services providers ranked in the Top 100 consolidated in 2015. The

<sup>9</sup> For further detail see chapter 9, section II, in this volume.

<sup>10</sup> Witte, G., 'Defense giants Lockheed, Northrop to buy IT firms', *Washington Post*, 19 Feb. 2005.

<sup>11</sup> US Department of Defense, Defense Acquisition Regulations System, Defense Federal Acquisition Regulation Supplement; Organizational Conflict of Interest in Major Defense Acquisition Programs, 48 CFR Parts 209 and 252, DFARS Case 2009-D015, 29 Dec 2010.

<sup>12</sup> Thompson, L., 'Exodus: big defense companies are exiting federal services', *Forbes*, 4 Aug. 2015.

end of several large IT DOD contracts led companies to buy smaller rival companies to consolidate their position and to capture future programmes.

The US presidential election and subsequent transition period in late 2016 generated some degree of uncertainty about the USA's future military spending. The last defence budget submitted by President Barack Obama planned for increased procurement between 2017 and 2021, including the modernization of nuclear delivery systems and other large ongoing programmes such as new aircraft carriers. However, this budget was not adopted.<sup>13</sup> Despite the fluidity of politico-economic dynamics in the USA after the election, reports in late 2016 indicated that the major US arms companies were confident the new administration, and especially an economic policy focused on promoting US-based manufacturing activities, would benefit them.<sup>14</sup>

### *Russia*

In 2015 the combined sales of the 11 Russian companies ranked in the Top 100 reached \$30.1 billion, an amount far below the arms sales of US companies and closer to the levels of arms sales of British and French companies. Combined sales in 2015 increased by 6.2 per cent over 2014 as a result of continuing domestic procurement and some deliveries to foreign customers such as Algeria, China and Egypt.<sup>15</sup> However, this is a significantly slower rate of growth than the 44 per cent growth rate between 2013 and 2014. The slowdown is due partly to sanctions applied to Russia following the start of the conflict in Ukraine in 2014, which reduced Russian companies' access to imports of materials needed for arms production. Broader management problems and inefficiencies in production have also had an effect.<sup>16</sup> One of the main impacts of sanctions has been the adoption of an import substitution programme, especially since some subsystems and components needed for Russian weapons are produced in Ukraine.<sup>17</sup> The devaluation of the rouble also affected Russian arms sales during 2015.

Russian arms companies underwent a process of transformation following the implementation in the second half of the 2000s of a major programme to modernize the Russian arms industry. This process included the consolidation of production capacities under large companies, such as UralVagonzavod, or the combination of production capabilities under larger

<sup>13</sup> US House of Representatives, Committee on Appropriations, 'Short term continuing resolution to maintain government operations released', Press release, 6 Dec. 2016.

<sup>14</sup> Mehta, A., 'Defense industry expecting boost from Trump election', *Defense News*, 9 Nov. 2016.

<sup>15</sup> For further detail see the SIPRI Arms Transfers Database, <<https://www.sipri.org/databases/armstransfers>>.

<sup>16</sup> Zudin A. and Forrester, C., 'Russian ministers admit arms industry hit by sanctions', *Jane's Defence Industry*, 20 July 2015.

<sup>17</sup> Anderson, G., 'Russia awards naval gas turbine contract as import substitution efforts continue', *Jane's Defence Industry*, 16 July 2015.

groups.<sup>18</sup> Comprehensive military industrialization projects often require a significant and long-term commitment from the domestic customer.<sup>19</sup> This commitment may be jeopardized by unexpected changes in economic and political circumstances, both of which happened within a relatively short time frame in Russia. Nonetheless, the industrialization programme and allocation of associated resources for the military remain priorities for the Russian Government.

### *Western Europe*

A total of 26 companies based in Western Europe were ranked in the Top 100 for 2015. The combined arms sales of West European companies ranked in the Top 100 grew to \$95.7 billion in 2015, an increase of 6.6 per cent. This was the first increase in combined arms sales of the largest arms-producing companies in Western Europe for five years. Companies from eight different West European countries—plus one trans-European company (Airbus Group)—feature in the Top 100 for 2015. Of these companies, only those in Switzerland and Norway show slight decreases in their respective collective totals. The upturn in Western Europe is mainly due to (a) a 68 per cent surge in arms sales for France's Dassault Aviation Group, which produces the Rafale combat aircraft, following deliveries to Egypt and payment for future deliveries by Qatar; (b) a 15 per cent rise in German company Rheinmetall's arms sales, which the company attributes to higher demand for combat systems; and (c) a 20 per cent rise in the arms sales of Swedish company Saab, which can be attributed to a growth in export sales (notably the sale of JAS Gripen aircraft to Brazil) and the impact of the acquisition in 2014 of submarine shipyard Kockums.<sup>20</sup> British firm BAE Systems, which was ranked third in the Top 100 in 2015, saw its arms sales rise by 6.7 per cent. This increase is linked to the transfer of Typhoon aircraft to Saudi Arabia.<sup>21</sup>

In recent years calls from some decision makers and military institutions in West European countries for increased military expenditure, partly to support anticipated arms modernization programmes, have often clashed with the austerity policies in place in those countries. These competing politico-economic pressures are clearly visible in France, where calls for increased military spending, and particularly procurement spending, have

<sup>18</sup> Isakova, I., 'The Russian defense reform', *China and Eurasia Forum Quarterly*, vol. 5, no. 1 (Feb. 2007), p. 79.

<sup>19</sup> Fleurant, A., 'Arms production and military services', *SIPRI Yearbook 2016*, pp. 553–58.

<sup>20</sup> Rheinmetall Group, 'Sales growth and significant increase in consolidated result', Press release, 5 Nov. 2015; MacDonald, A., 'Brazilian Gripen deal pushes SAAB sales to new high', *Jane's Defence Industry*, 10 Feb. 2016; and Mustafa, A., 'Qatar, France complete Dassault Rafale fighter jet deal', *Defense News*, 29 Mar. 2016.

<sup>21</sup> BAE Systems, 'Preliminary announcement 2015', 18 Feb. 2016; and Williams-Grut, O., 'Selling Typhoon jets to Saudi Arabia gave BAE a big boost', *Business Insider*, 18 Feb. 2016.



been frequent. However, in the context of modest economic growth and extensive operations overseas, France is unlikely to be able to provide the funding required to support both a significant conventional modernization programme and the renewal of the French nuclear arsenal for the foreseeable future. In the UK, the 2016 referendum on the UK's membership of the European Union (EU), which led to a vote in favour of leaving the EU, has created uncertainty about how the UK's withdrawal will affect the British arms industry and its relationships with EU partners and suppliers. The decision to withdraw from the EU led to significant depreciation of the pound against the US dollar in 2016, which increased procurement costs for parts bought from US-based suppliers.

### **Other established producers and emerging producers**

Arms sales in 2015 of companies based in the 'other established' and 'emerging' producer categories were varied and underline the importance of their respective national markets for their activities. The combined arms sales of the Top 100 companies in the six other established producer countries represent a 5.2 per cent share of total Top 100 arms sales. Collectively, the companies based in Australia, Japan, Poland and Singapore showed decreases in their arms sales, while those in Israel and Ukraine showed increases. Ukraine's sole representative in the Top 100, UkrOboronProm, displayed a significant 28 per cent growth in arms sales between 2014 and 2015. This increase reflected the impact of the acquisition of Antonov (the last independent major arms producer in Ukraine) and high demand in the context of the conflict in the eastern part of the country.

Two of the three Japanese companies ranked in the Top 100 in 2015 showed significant reductions in arms sales. Arms sales by Mitsubishi Heavy Industries and Mitsubishi Electric Corporation fell by 14 and 3.0 per cent respectively. By contrast, Kawasaki Heavy Industry's sales rose by 25 per cent. Japan lifted its arms export ban in 2014.<sup>22</sup> However, this is unlikely to lead to a growth in foreign arms sales in the short term (although it may do so in the medium term). An additional factor that may be acting as a brake on Japanese arms sales is the fact that the large Japanese companies involved in arms production, such as those listed in the Top 100, are very large, diversified groups primarily involved in civilian markets.

The arms sales of companies based in countries falling under the emerging producers category (Brazil, India, South Korea and Turkey) all increased in 2015, except for Brazilian aircraft manufacturer Embraer, which reported a 28 per cent drop in arms sales that year. Reports attributed this sharp decline to large public spending cuts made in the context of the economic

<sup>22</sup> Reuters, 'Japan relaxes arms export regime to fortify defense', 1 Apr. 2014.

and political crises in Brazil.<sup>23</sup> The growth in arms sales by companies based in other emerging producers reflects the high levels of domestic procurement spending required to support the development of a comprehensive indigenous arms industry.

<sup>23</sup> Ostrove, B., 'Brazilian economic crisis limits defense spending', Forecast International, 26 Sep. 2016; and IHS Markit, 'South American defense spending continues to decline with Brazil's latest cut the largest in a decade', 17 June 2016.