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Russia's Spending on Nuclear Weapons in a Comparative Perspective[1]

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Having established the volume of spending in Russia on nuclear weapons in roubles, comparison with other nuclear powers can only be undertaken in a meaningful manner if the problem is considered in terms of purchasing power parities. First, as shown in Table 1, total military spending is converted into PPP terms using the OECD's annual conversion rate. Because of data limitations, here the analysis is limited to the cases of Russia, USA, France and the UK. It would be desirable to present similar evidence for China but unfortunately it is not available.[3] For comparative purposes, though, its total military spending in PPP terms is shown in the table.[4]

Table 1 Total military expenditure, 2010-17, in terms of PPP ($ PPP billion)

	2010	2011	2012	2013	2014	2015	2016	2017
Russia	111.3	120.5	135.7	143.5	153.3	174.9	161.8	159.9
USA	698.2	711.3	684.8	639.7	609.9	596.1	600.1	609.8
France	54.6	55.3	55.4	57.9	59.3	61.3	64.3	64.6
UK	53.5	53.3	52.8	52.3	51.5	50.6	50.8	51.6
China	236.7	254.1	282.1	314.2	351.1	383.3	413.6	440.4

Source
Calculated from, Defence spending in national currencies:
https://www.sipri.org/sites/default/files/2_Data%20for%20all%20countries%20from%201988%E2%80%932017%20in%20local%20currency.pdf
Purchasing power parities: https://data.oecd.org/conversion/purchasing-power-parities-ppp.htm#indicator-chart

[1] This is a supplement to the author's publication, *The funding of nuclear weapons in the Russian Federation*, October 2018, *CCW Research Paper*, https://static1.squarespace.com/static/55faab67e4b0914105347194/t/5bb1ea3ee4966b5320fa197c/1538386496442/The+funding+of+nuclear+weapons+in+the+Russian+Federation.pdf

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[3] Even such a detailed analysis as *China's Evolving Nuclear Deterrent. Major Drivers and Issues for the United States*, RAND Corporation, Santa Monica, 2017 presents no estimate of the cost of China's nuclear forces.
[4] See Richard Connolly "Measuring Russian Economic Power", *CCW Russia Brief 3*, September 2018 for an explanation of why PPP is useful for international comparisons of defence spending.

The available data permits estimation of spending on nuclear weapons in each country, as shown in Table 2.

Table 2 Spending on nuclear weapons ($ PPP billion)

	2010	2011	2012	2013	2014	2015	2016	2017
Russia	15.1	16.5	18.7	20.5	23.0	27.0	25.6	25.3
% total milex	13.5	13.7	13.8	14.3	15.0	15.4	15.8	15.8
USA	16[1]	17.8	19.6	21.4	23.1[2]	23.9[3]	25.3	26.8[4]
% total milex	2.3	2.5	2.9	3.3	3.8	4.0	4.2	4.4
France	5.5	5.5	5.5	5.8	6.1	6.4	6.4	6.5
% total milex	10[5]	10	10	10	10	10	10	10
UK	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.1
% total milex	6[6]	6	6	6	6	6	6	6

Sources

Russia: calculated by author.

1. U. S. Nuclear Weapons Budge: An Overview, 27 September 2013 https://www.nti.org/analysis/articles/us-nuclear-weapons-budget-overview/

2. Projected Costs of U.S. Nuclear Forces, 2014 to 2023 https://www.cbo.gov/sites/default/files/113th-congress-2013-2014/reports/12-19-2013-nuclearforces.pdf

3. Projected Costs of U.S. Nuclear Force, 2015 to 2024, https://www.cbo.gov/publication/49870 2015 to 2024

4. Projected Costs of U.S. Nuclear Forces, 2017 to 2026, https://www.cbo.gov/publication/52401 Other years interpolated.

5. Paul Sover, 'Can France still afford its nuclear deterrence?', *The Strategist*, https://www.aspistrategist.org.au, 3 November 2016. Assumed to apply for whole period.

6. Claire Mills, Louisa Brooke-Holland and Noel Dempsey, *The Cost of the UK's Strategic Nuclear Deterrent*, House of Commons Library, Briefing Paper, No. 8166, 6 June 2018, p. 7. Assumed to apply for whole period.

It should be noted that the Congress Budget Office's analysis of spending on nuclear weapons covers the equivalent spending categories as those employed by the author in his research into the Russian case. The US and Russia figures are therefore comparable although the US data are clearly much more accurate. This is not so clear with the summary estimates of spending shares for France and the UK.

To assess the volume of spending it is helpful to look at the strategic nuclear forces of the five countries, as shown in Table 3.[5]

Table 3 The strategic nuclear forces of Russia, USA, France, UK and China, January 2018

	Russia	USA	France	UK	China
Land-based					
ICBMs	318	400	40		131
Warheads	1138	800	40		186
Sea-based					
SSBNs	11	14	4	4	4
SLBMs	176	240	48	48	48
Warheads	768	215	240	215	48
Air-based					
Bombers	50	60	10		
Warheads/bombs	880	616			

Note, the existence of carriers, missiles and warheads does not mean that all are actually deployed on the given date.

Source: World Nuclear Force, chapter 6 of *SIPRI Yearbook 2018. Armaments, Disarmament and International Security*, SIPRI/Oxford University Press, 2018, pp. 235-266.

[5] The data uncertainties of tactical nuclear systems are such that they are excluded here.

Given the relative scale of the forces holdings, the current near equivalence of spending in PPP terms of Russia and the USA is not surprising, as also the fact that France and the UK spend substantially less. In the case of the UK, the carriers and missiles are developed and built in the United States, only the warheads manufactured domestically, reducing the overall resource cost.

Looking to the future it is likely that trends of spending in Russia and the USA will diverge. Implementing the state armament programme to 2020, Russia undertook a rapid modernisation of its nuclear forces, in particular its land and sea based missiles. This continues but the pace of development may now moderate, although a number of costly new programme are underway, namely the bringing into production of the 'Sarmat' heavy ICBM and the new version of the TU-160 strategic bomber, and development and perhaps some limited deployment of the 'Avangard' hypersonic boost-glide system. The 'Poseidon' unmanned nuclear-powered underwater autonomous apparatus and the 'Burevestnik' nuclear-powered cruise missile are likely to remain development projects and the total resource commitment to them may not be that large. But the US has now embarked on its own modernisation programme and annual spending is set to grow quite rapidly. According to the analysis of the US Central Budget Office annual spending on nuclear weapons will increase from $26.8 billion in 2017 (the same in PPP terms) to 29.4 in 2020 and 39.7 in 2025.[6]

It is to be hoped that detailed analysis will be undertaken to establish the spending on nuclear weapons of other nuclear powers and also that the Russian authorities will make available more information permitting a refinement of the estimates made by the present author.

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[6] Projected Costs of U. S. Nuclear Forces, 2017 to 2026, Supplemental Table 3. https://www.cbo.gov/publication/52401