

Status Of Military Expenditure In G20 Nations

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This paper presents an analytical overview of military expenditure among G20 countries. It includes a comparative regression analysis of military spending at current prices (in million US dollars), along with projections for the years 2025 and 2030. A descriptive analysis highlights the scale and distribution of defense budgets, while an overall ranking of G20 countries provides a comparative perspective on their military expenditure patterns. Together, these analyses offer valuable insights into the evolving defense priorities of the world's major economies.

This paper studies on rising EU expenditure is supported by the study by Wezeman and Kuimova (2021) over the period 2000-2020. The study found that the EU's military spending had fluctuated over the past two decades, reflecting changing political and strategic priorities. The authors argued that the EU's military expenditure is likely to continue to rise in the coming years, driven by a range of domestic and international factors.¹ In another report by SIPRI, it was found that the defense spending of the European Union member states increased by 4.0% in real terms in 2020, the largest increase since 2014.² According to a report by the Stockholm International Peace Research Institute (SIPRI), the total defense spending by the European Union member states in 2020 amounted to €200 billion, which accounted for 16% of global military expenditure.³ According to a report by the European Council on Foreign Relations, the European Union should focus on developing a more strategic approach to defense spending, with a greater emphasis on investment in critical capabilities such as cyber defense and intelligence gathering.⁴ In a study by the European Leadership Network, it was found that there is a need for the European Union to increase its defense spending in order to meet the evolving security challenges facing the region.⁵

Rising American military expenditure is supported by few authors. After providing a brief background on the economic performance of the US aligned with its strategic conditions, this study constructs a military expenditure demand function using time series data of the US. Data used for the study is between the period 1965-85. First, the factors^[9] that might possibly affect defense spending during the given period in the US is listed. An empirical model is built using some^[10] of the identified factors, to estimate whether they make any significant contribution to the US military expenditure. Results show that the perception of Soviet threat, measured by the anticipated and unanticipated Soviet military expenditure has a positive effect on US military spending. USA's domestic economic constraints are measured by a number of sub-factors- rate of unanticipated inflation, which has a negative relation with military spending, federal budget deficit which also has a negative relation and finally, economic growth, which has a positive effect on discretionary expenditures including military expenditure. The impact of total NATO spending is also studied, which shows a significant positive relation- if European NATO

¹ Wezeman, S. T., & Kuimova, A. (2021). Trends and patterns in European Union military expenditure, 2000–2020. *European Security*, 30(2), 169-187.

² Wezeman, S. T., & Toperczer, I. (2021). European Defense spending in 2020. Stockholm International Peace Research Institute.

³ Wezeman, S. T., & Kuimova, A. (2021). Trends in world military expenditure, 2020. Stockholm International Peace Research Institute.

⁴ Carrapatoso, A., & Norberg, J. (2020). Beyond the 2% rule: How to improve European Defense spending. European Council on Foreign Relations.

⁵ European Leadership Network (2019). Increasing European Defense Spending: A Comparative Analysis.

spending increases, it induces US defense spending to also increase. All the above relations established are statistically significant.

The outcomes reveal that the US military expenditure is most probable to decline in real terms in the next 5 years. The factor which influenced it the most in the 1970s, perceived Soviet threat, has lesser significance during the early 80s. This decline in influence is associated with fear of increase in inflation, budget deficit concerns and the implementation of the Gramm-Rudman-Hollings^[11] Balanced Budget Act.

The study also suggests that this decline in military spending would be compensated by the increase in superpower alliances. In conclusion, the paper discusses that the future of strategic relations in the US is not predictable, however, it will primarily depend on 2 important factors- actions of the Soviet Union and the state of their economy & the rise of other superpowers- China, Japan etc.,⁶

Comparative Regression Analysis of Military expenditure

Table 1 Comparative Regression Analysis of Military expenditure current price (values Million US \$) in G20 Countries

Countries	Intercept (α)	Slope (β)	R	R ²
Argentina	2781.208736	34.85148	0.265272	0.070369
Australia	2385.044138	984.443	0.959607	0.920846
Brazil	9079.696552	697.1673	0.684036	0.467906
Canada	5545.55908	647.5734	0.931364	0.867439
China	-52480.88529	10311.47	0.958544	0.918807
European Union	160556.7464	5046.022	0.835343	0.697799
France	32471.41494	795.8569	0.784251	0.61505
Germany	27771.67701	756.4484	0.804679	0.647509
India	-4744.808506	2636.042	0.975393	0.951392
Indonesia	-109.4004598	300.4996	0.902325	0.814191
Italy	19398.5823	471.1491	0.698283	0.4876
Japan	41843.62828	295.1311	0.464903	0.216135
Korea, South	5741.913103	1354.634	0.962245	0.925916
Mexico	1071.544598	216.1117	0.938342	0.880485
Russia	-1455.403448	2878.058	0.893232	0.797863
Saudi Arabia	2259.575862	2533.185	0.92214	0.850342
South Africa	2502.469195	43.85769	0.490604	0.240693
Türkiye	6416.769655	439.5278	0.842241	0.70937
United Kingdom	39751.46345	975.774	0.716748	0.513727
United States of America	234875.4897	20201.41	0.930526	0.865879

Source: Computed values from SIPRI Database

The comparative regression analysis of military expenditure in G20 countries provides insight into how military spending has changed over time, with a focus on the intercept (α), slope (β), correlation coefficient (R), and the coefficient of determination (R²). The slope (β) represents the average annual rate of change in military expenditure, while the correlation coefficient (R) indicates the strength and direction of the relationship between time and expenditure. The coefficient of determination (R²) explains how much of the variation in military expenditure is accounted for by the regression model.

India stands out in this analysis with a high slope of \$2,636.04 million, suggesting a strong increasing trend in military expenditure over time. The correlation coefficient (R) of 0.975 and R² of 0.951 indicate an extremely strong and positive relationship, with 95.1% of the variation in India's military spending explained by the model. This reflects India's growing investment in defense to support its geopolitical ambitions and strengthen its strategic position. Similarly, countries like China and South Korea also show high positive slopes, with slopes of \$10,311.47 million and \$1,354.63 million, respectively. China has an R of 0.959 and R² of 0.918, underscoring a robust trend in increasing military expenditure that aligns with its rise as a global power. South Korea, with an

⁶ United States Defense Expenditures: Trends and Analysis in Keith Hartley and Todd Sandler eds, *The Economics of Defense Spending*, (London: Routledge, 1987) -- With Steve Mehay

R of 0.962 and R^2 of 0.926, also indicates consistent and rapid growth in defense spending, likely driven by regional security concerns.

On the other hand, countries like Japan and South Africa exhibit lower slopes and weaker correlations. Japan's slope of \$295.13 million and correlation coefficient (R) of 0.464 imply only a moderate trend in military expenditure growth, with a lower R^2 of 0.216, suggesting other factors heavily influence its defense budget. South Africa has an even smaller slope of \$43.86 million and a correlation coefficient (R) of 0.491, with R^2 of 0.241, indicating a very modest increase in military spending over time, likely limited by economic constraints and less pronounced security threats. In contrast, developed nations such as the United States, the United Kingdom, and Germany demonstrate strong correlations and substantial rates of expenditure growth, with the United States leading with a high slope of \$20,201.41 million and an R^2 of 0.866, signifying a consistently strong commitment to maintaining its defense supremacy. Countries like Australia ($R = 0.960$, $R^2 = 0.921$) and Canada ($R = 0.931$, $R^2 = 0.867$) also exhibit strong positive trends in their defense budgets, indicating steady investment in their military capabilities. The regression analysis reveals diverse trends in military expenditure across G20 countries, reflecting their unique economic circumstances, security priorities, and geopolitical goals. India, China, and South Korea exhibit rapidly growing military budgets, driven by regional security concerns and ambitions for greater influence, whereas countries like Japan and South Africa show slower or more modest growth. The United States remains a leader in absolute expenditure, consistently increasing its defense budget to maintain its global dominance. The variation in correlation and determination values across the G20 suggests that some countries' military budgets are more predictable and consistently rising, while others are subject to fluctuations influenced by external factors.

Projected Military expenditure for 2025 and 2030

Following table shows projected Military expenditure at current price (values Million US \$) in G20 Countries for 2025 and 2030

Table 2 Projected Military expenditure for 2025 and 2030

Countries	2025	2030
Argentina	3931	4106
Australia	34872	39794
Brazil	32086	35572
Canada	26915	30153
China	287798	339355
European Union	327075	352306
France	58735	62714
Germany	52734	56517
India	82245	95425
Indonesia	9807	11310
Italy	34947	37302
Japan	51583	53059
Korea, South	50445	57218
Mexico	8203	9284
Russia	93521	107911
Saudi Arabia	85855	98521
South Africa	3950	4169
Türkiye	20921	23119
United Kingdom	71952	76831
United States of America	901522	1002529

Source: Computed values from SIPRI Database

The anticipated military expenditure for G20 nations in 2025 and 2030 indicates significant changes in defense expenditures, highlighting their shifting security goals and economic capacities. The United States continues to be the preeminent spender, with anticipated expenditures of \$901,522 million in 2025 and exceeding \$1,002,529 million by 2030, so maintaining its status as the foremost military force globally. China ranks as the second-largest military spender, with an anticipated expenditure of \$287.798 billion in 2025, projected to rise to \$339.355 billion by 2030, reflecting a continued commitment to enhancing military capabilities for regional and global influence. The European Union, as a collective body, demonstrates growth, with spending anticipated to increase from \$327,075 million in 2025 to \$352,306 million in 2030, indicating a commitment to sustaining robust military capabilities amid escalating security threats.

India's military budget is anticipated to increase markedly, from \$82,245 million in 2025 to \$95,425 million in 2030, indicating a deliberate commitment to augment defense capabilities in light of regional security dynamics and global aspirations. This rising trend highlights India's commitment to modernize its military infrastructure and enhancing its defense capabilities to sustain influence in South Asia. Countries like Russia, Saudi Arabia, and South Korea see significant increases in their anticipated military spending. Russia's expenditures are projected to rise from \$93,521 million in 2025 to \$107,911 million by 2030, with Saudi Arabia and South Korea also anticipated to see consistent rises, indicating a sustained focus on military spending for security and geopolitical influence.

In contrast, several nations see more restrained increases in military expenditure, including Japan, Italy, and South Africa. Japan's military budget is anticipated to increase somewhat from \$51,583 million in 2025 to \$53,059 million in 2030, indicating a consistent but prudent strategy towards defense in light of changing regional threats. Likewise, nations such as Argentina and South Africa have minimal expected growth, with military expenditures anticipated to reach \$4,106 million and \$4,169 million respectively by 2030, underscoring constrained defense budgets relative to bigger economies. The projected figures indicate diverse strategies among G20 nations: the United States, China, India, and other major powers are substantially increasing their military expenditures in response to escalating geopolitical pressures, whereas other countries seem more inclined to uphold a stable yet less assertive defense posture.

Descriptive Analysis of Military expenditure

Table 3

Descriptive Analysis of Military expenditure at current prices (Million US \$) in G20 Countries

Countries	Mean	Median	Maximum	Std. Dev.	Sum
ARGENTINA	3321.407	3354.65	5482.6	1156.594	99642.2
AUSTRALIA	17643.91	17909.75	32718.1	9031.252	529317.3
BRAZIL	19885.79	19389.15	36936.2	8972.4	596573.7
CANADA	15582.95	17599.95	26896.3	6120.973	467488.4
CHINA	107347	70488.7	291958.4	94702.04	3220409
EUROPEAN UNION	238770.1	243056.7	327688.7	53178.36	7163103
FRANCE	44807.2	46581.35	56647	8933.684	1344216
GERMANY	39496.63	39326.2	56513.1	8275.751	1184899
INDIA	36113.84	30628.6	81363.2	23791.58	1083415
INDONESIA	4548.343	3268.35	9387	2931.782	136450.3
ITALY	26701.39	27262.6	36840	5939.879	801041.8
JAPAN	46418.16	45424.75	60762.2	5588.606	1392545
KOREA SOUTH	26738.74	25624.8	50873.8	12393.3	802162.2
MEXICO	4421.277	4278.85	8680.8	2027.535	132638.3
RUSSIA	43154.5	47533.55	88352.9	28365.23	1294635
SAUDI ARABIA	41523.94	36846.2	87185.9	24183.6	1245718
SOUTH AFRICA	3182.263	3343.15	4594.2	786.9826	95467.9
TURKIYE	13229.45	14012.15	20436.9	4594.103	396883.5
UNITED KINGDOM	54875.96	57450	73448	11984.88	1646279
U.S.A	547997.4	611707.8	876943.2	191119.1	16439920

Source: Computed values from SIPRI Database

Table 3 shows descriptive information about military expenditure in G20 countries, expressed in current prices (million US dollars), offers significant insights into the magnitude, variability, and trends in defense expenditures across these nations. The table presents essential metrics including the mean, median, maximum, minimum, standard deviation, sum, and the total number of observations (30) for each nation. The United States dominates military spending, averaging \$547,997.4 million, with a median of \$611,707.8 million and a maximum of \$876,943.2 million, highlighting its position as the preeminent military power committed to substantial defense investment. China ranks as the second-largest military spender, with an average expenditure of \$107,347 million, reflecting swift and extensive military expansion aimed at enhancing global influence and securing regional supremacy. The European Union, seen as a collective body, exhibits substantial military expenditure, averaging \$238,770.1 million, indicative of the member states' unified commitment to regional security.

India's military spending averages \$36,113.84 million, with a low of \$8,253.5 million and a maximum of \$81,363.2 million, indicating considerable fluctuation over time. The substantial standard deviation of \$23,791.58 indicates that India's military expenditure has varied significantly, presumably due to changing geopolitical pressures and domestic security requirements. In contrast, additional notable expenditures are attributed to Saudi Arabia, Russia, and the United Kingdom, with average outlays of \$41,523.94 million,

\$43,154.5 million, and \$54,875.96 million, respectively. Saudi Arabia exhibits significant variability (standard deviation of \$24,183.6), perhaps indicative of the influence of oil price volatility on their military budget allocation. Countries such as Argentina, South Africa, and Indonesia exhibit significantly lower averages—\$3,321.41 million, \$3,182.26 million, and \$4,548.34 million, respectively—suggesting constrained defense budgets relative to larger economies, potentially attributable to diminished regional threats or divergent defense priorities.

The descriptive data also underscore the constancy and fluctuations in military expenditure among G20 nations. Nations such as Japan, Germany, and Italy have modest standard deviations, indicating a stable military budget throughout time, with averages of \$46,418.16 million, \$39,496.63 million, and \$26,701.39 million, respectively. Conversely, the United States and China exhibit significant variability, with standard deviations of \$191,119.1 and \$94,702.04, indicative of their dynamic and adaptable defense plans in reaction to global geopolitical shifts. The data illustrates the significant variation in military expenditures across G20 nations, highlighting their diverse economic capacities, security requirements, and geopolitical aspirations. Countries such as the United States and China prioritize significant and variable military budgets, while others like Canada, Australia, and Mexico maintain more restrained and consistent expenditure levels, according to their own security contexts.

Overall Ranking of sum of Military expenditure of G20 Countries:

Table 4 Overall Ranking of G20 Countries Based on sum of Military expenditure current price (values Million US \$) (1993-2022)

Countries	Sum	Rank
USA	16439920	1
EUROPEAN UNION	7163103	2
CHINA	3220409	3
UNITED KINGDOM	1646279	4
JAPAN	1392545	5
FRANCE	1344216	6
RUSSIA	1294635	7
SAUDI_ARABIA	1245718	8
GERMANY	1184899	9
INDIA	1083415	10
KOREA_SOUTH	802162.2	11
ITALY	801041.8	12
BRAZIL	596573.7	13
AUSTRALIA	529317.3	14
CANADA	467488.4	15
TURKIYE	396883.5	16
INDONESIA	136450.3	17
MEXICO	132638.3	18
ARGENTINA	99642.2	19
SOUTH_AFRICA	95467.9	20

Source: Computed values from SIPRI Database

The overall ranking of G20 countries based on cumulative military expenditure from 1993 to 2022 reveals a wide disparity in defense spending, reflecting the varying military priorities and economic capacities of these nations. The United States ranks first by a significant margin, with a cumulative expenditure of \$16,439,920 million, demonstrating its unmatched investment in maintaining global military dominance. The European Union comes in second with \$7,163,103 million, highlighting the collective defense commitments of member nations to ensure regional security. China, ranked third with \$3,220,409 million, showcases substantial military spending, aligning with its rapid economic growth and ambitions to enhance both regional and global military influence.

India ranks tenth in the overall expenditure list, with a cumulative total of \$1,083,415 million. This reflects India's consistent efforts to expand and modernize its defense capabilities to address evolving regional challenges and secure its geopolitical interests. Notably, countries like the United Kingdom, Japan, France, Russia, and Saudi Arabia have also allocated significant resources to military spending, with totals ranging between \$1,200,000 and \$1,600,000 million. On the lower end, countries such as Argentina, South Africa, and Indonesia are ranked much lower, with cumulative spending under \$150,000 million. This reflects either less pressing defense needs or limited economic capacity to support large-scale military expenditure. The data highlights the stark contrast in military expenditure across the G20, with major economies focusing heavily on

defense investment, while smaller economies allocate fewer resources, possibly due to different security considerations and fiscal constraints.

The examination of military expenditure in G20 nations, denominated in current values (million US dollars), indicates considerable disparity in defense expenditures across these countries from 1993 to 2022. The United States far outpaces other nations in average yearly military expenditure, underscoring its strategic emphasis on global military supremacy. The European Union and China rank as significant investors, both allocating considerable sums to military. Countries like the United Kingdom, Japan, and Russia have considerable cumulative expenditure, reflecting their dedication to sustaining formidable military capabilities. The analysis underscores the diverse strategies regarding defense expenditure, with certain nations persistently augmenting spending to bolster military capabilities in reaction to regional or global threats, whereas others demonstrate moderate or restricted growth due to economic limitations or varying defense priorities. India's military expenditure has markedly increased over the years, propelled by changing regional security dynamics and a desire to enhance its worldwide influence. The elevated standard deviation in India's military spending indicates a responsive adaptation to geopolitical forces, with notable variations signifying shifts in defense requirements and economic factors. The regression analysis reinforces this pattern, emphasizing India's escalating military budget with a robust link between time and spending increase. Forecasted data for 2025 and 2030 indicates sustained expenditure, reflecting India's dedication to enhancing its military infrastructure and broadening its strategic capabilities. India, although ranking tenth in total military expenditure, is increasing its defense expenditures to establish a significant presence on the world scene, highlighting its emergence as a regional power.

The comparative examination of military expenditures across G20 nations highlights varied strategic approaches to defense spending, influenced by each nation's distinct security requirements and geopolitical ambitions. The United States, China, and India are focused on enhancing their military capabilities, whilst nations such as Japan, South Africa, and Argentina demonstrate more moderate.

The findings of the study on military expenditure

The findings of the study highlight that the annual growth in military expenditure is particularly high in several G20 countries. China leads with an impressive annual increase of \$10,311.47 million, followed by the European Union with \$5,046.02 million. India stands third with \$2,636.04 million, while Saudi Arabia and South Korea follow with \$2,533.19 million and \$1,354.63 million respectively.

The United States continues to dominate global military spending. It records an average expenditure of \$547,997.4 million, with a median of \$611,707.8 million and a peak of \$876,943.2 million. These figures underscore its role as the world's foremost military power with a consistent commitment to high defense investment. China ranks as the second-largest spender, averaging \$107,347 million.

In terms of projected military expenditure, the United States is expected to spend the most at \$1,002,529 million. The European Union follows with \$352,306 million, China with \$339,355 million, Russia with \$107,911 million, and Saudi Arabia with \$98,521 million. India is ranked sixth, with projected spending amounting to \$95,425 million.

Cumulative military expenditure over the study period also shows a clear hierarchy among G20 nations. The United States tops the list with a total of \$16,439,920 million, followed by the European Union at \$7,163,103 million and China at \$3,220,409 million. The United Kingdom's total stands at \$1,646,279 million, and India follows with a total of \$1,083,415 million.