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How to Finance Europe's Military Buildup? Lessons from History

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Executive Summary

- Europe must rapidly increase its military spending, but how? We collect 150 years of data to study what governments in similar situations have done. How were past military buildups financed? What was the relative importance of debt financing, budget cuts, and taxes?
- Our main finding is that budget cuts, e.g. on social or foreign affairs, were rarely used to finance military buildups. Instead, governments typically relied on a mix of deficit financing and higher tax revenues. The larger the buildup, the more dominant debt financing has been.
- In line with history and theory, Germany and Europe should again rely on debt financing to quickly increase its defense spending and military capabilities. To deal with the added debt burden in the medium run, governments could increase taxes, reduce subsidies and tax avoidance, and freeze the growth of social spending.
- Fiscal rules must not stand in the way of the defence of Europe. A warning example is the case of the UK in the 1930s, which refrained from significantly ramping up military expenditure and instead pursued a policy of balanced budgets and appeasement. Consequently, the UK was ill-prepared when Nazi Germany launched its attack.
- Germany should not repeat the errors made by Britain in the 1930s and should invest heavily in defense so as to deter Russia. To achieve this, defense spending should be excluded from fiscal rules both in Germany and Europe. A less clear-cut alternative would be the creation of new debt funds, such as a European financing mechanism or another "Sondervermögen" in Germany.

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How to Finance Europe's Military Buildup? Lessons from History

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1 Introduction

In the face of growing geopolitical threats, Europe needs to rapidly increase its military spending and bolster its industrial defense capacity. This policy brief focuses on the fiscal hurdles towards that goal, i.e. on how to finance the required military buildup. With high levels of public debt, tight government budgets, and a comparatively high tax burden, many European countries face serious hurdles to expand their defense spending. To frame the debate, we will draw on economic theory, as well as on the results of a comprehensive new research paper and data collection effort on the financing of 113 military buildups since 1870 (Federle, Marzian and Trebesch, 2025).

We ask: What did past governments do when faced with the situation that Europe faces today – namely the need to quickly increase military spending and defense capacities? We answer this question based on a unique new, long-run dataset on government spending and fiscal policy - "The Global Budgets Database" by Marzian and Trebesch (2025), which collects detailed government spending data for 22 countries and up to 150 years. Military buildups are identified as episodes in which the ratio of military spending to GDP increases strongly, i.e. by more than one standard deviation. Specifically, we define the start of a military buildup in case military spending to GDP grows by 6.8% for two consecutive years. The buildup spell ends when military spending no longer grows (also for two consecutive years).

Our central insight is that governments rarely financed military buildups through budget cuts, such as spending reductions on social or foreign affairs. Instead, both theory and empirics point to a mix of deficit spending and tax increases. The larger the buildup, the more dominant debt financing has been. We also highlight the case of the UK in the 1930s, which kept a balanced budget throughout the 1930s and shied away from strongly increasing its military spending in the face of Nazi Germany's aggressive buildup. As a result, the UK was not sufficiently prepared when the war broke out.

Our results are very much in line with previous research that focuses on individual country cases, especially military finance in the US (Goldin 1980, Hall and Sargent 2020). Our approach has the advantage of being more representative, as we include all major powers and many key European countries over long horizons.

2 Insights from economic theory

Classic economic theory has clear predictions on the financing of wars and large military buildups, as discussed by Hall and Sargent (2020). Through the lens of a classic Barro (1979) model, governments should increase both taxes and borrowing when military spending is rapidly increased, depending on the expected duration of the shock. Short-term buildups should be financed primarily through borrowing, while long-term spending surges should rely more on tax revenues, with tax smoothing as a key rationale. In contrast, the influential Lucas and Stokey (1983) framework implies that spending surges for the military should be financed entirely through borrowing, regardless of the time horizon, with tax revenues unchanged. In the model, the costs of borrowing are largely dealt with by lowering the ex post returns to bondholders.

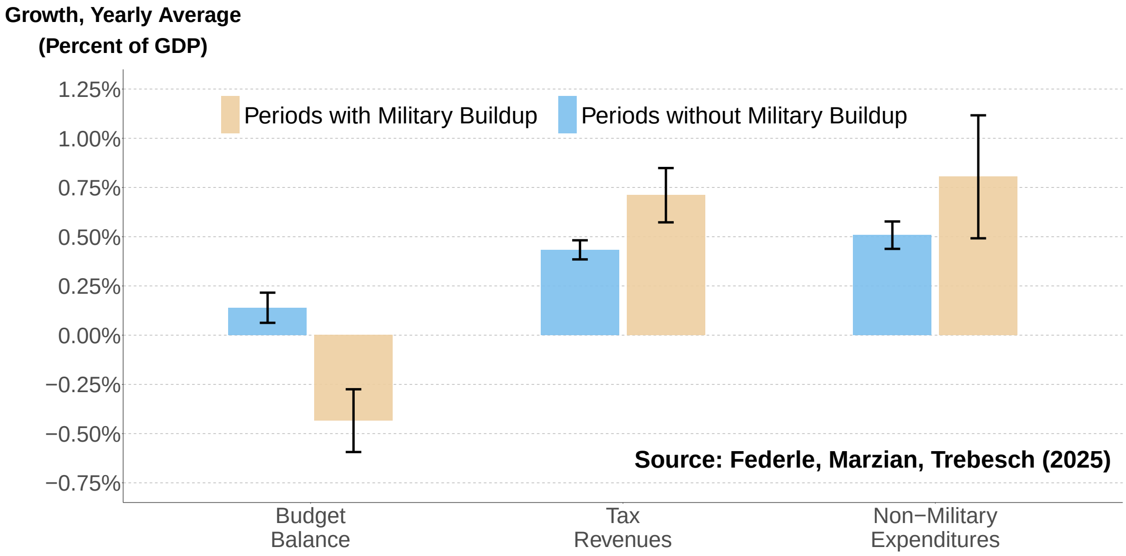
3 How are military buildups and wars financed? Lessons from new historical data

Figures 1 and 2 show results from our ongoing research project by Federle, Marzian and Trebesch (2025) - the first systematic long-run analysis on the financing of military buildups and wars since the 19th century. The analysis builds on a major data collection effort on detailed government spending statistics for 22 countries and across 150 years ("The Global Budgets Database" by Marzian and Trebesch). We combine our newly collected spending data with existing data on taxes and debt (e.g., Andersson and Brambor, 2022; Reinhart and Rogoff, 2011).

In a first step, we identify 113 episodes of military buildups, 1870-2020 (excluding the exceptionally large military buildups in World War 1 and 2). The average military buildup takes 5 years and increases military spending by about 1.5 percentage points to GDP, with many booms larger than that. In a second step, we then study the financing of these buildups by focusing on key fiscal variables (deficits, taxes, spending cuts).

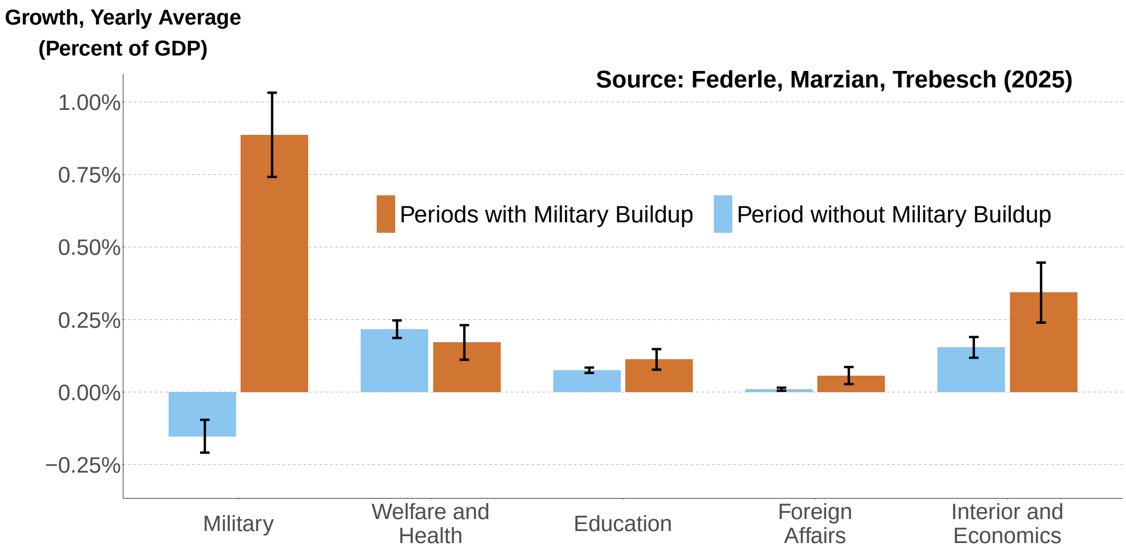
The main insight from Figure 1 is that military buildups are largely financed by deficits and increased tax revenues (Bar 1 and 2), but not by cutting other government spending purposes (Bar 3 shows that non-military expenditures grow, on average, rather than decline). Figure 2 further shows that periods with large military buildups see only limited budget reallocation away from welfare or education spending, and, if anything, increases in foreign affairs spending.

Figure 1: Military buildups were financed by deficits and taxes



Note: The graph shows average yearly growth rates during military buildups vs. other years. The median military buildup takes 5 years and increases military spending by about 1.5 percentage points to GDP. We identify 113 military buildups from 1870-2020 (excl. episodes in WW1&2). The black lines show 90% confidence intervals. The main data source is "The Global Budgets Database" by Marzian and Trebesch.

Figure 2: Budget cuts in welfare or foreign affairs are the exception



Note: The graph shows average yearly growth rates in central government spending categories during military buildups vs. other years (excl. epsiodes in WW1&2). Military spending strongly increases during buildups, but cuts in other spending categories are rare. The black lines show 90% confidence intervals. The data are from "The Global Budgets Database" by Marzian and Trebesch.

In Federle, Marzian, and Trebesch (2025), we go beyond these descriptive facts and conduct a comprehensive econometric analysis of the financing of military booms, employing panel OLS and local projection regressions. The findings are very similar after controlling for unobserved time and country factors, as well as for economic and political fundamentals. Furthermore, we demonstrate the robustness of our results across different specifications, including the inclusion of the World Wars, analyses of the pre- and post-World War II periods, and the exclusion of emerging countries.

4 Historical case studies

Financing major wars - WW1, WW2 (heavy debt financing) and Korea (tax financing): The data show that major wars such as WW1 and WW2 are predominantly financed by debt, with drastic increase in public debt to GDP of many combatant countries. In addition, we find that multiple countries raised taxes, especially during the world wars (Hicks et al. 1941, Stasavage and Scheve 2014) and that cuts on social and other non-military purposes were rare (with the exception of a few countries at the height of WW2).

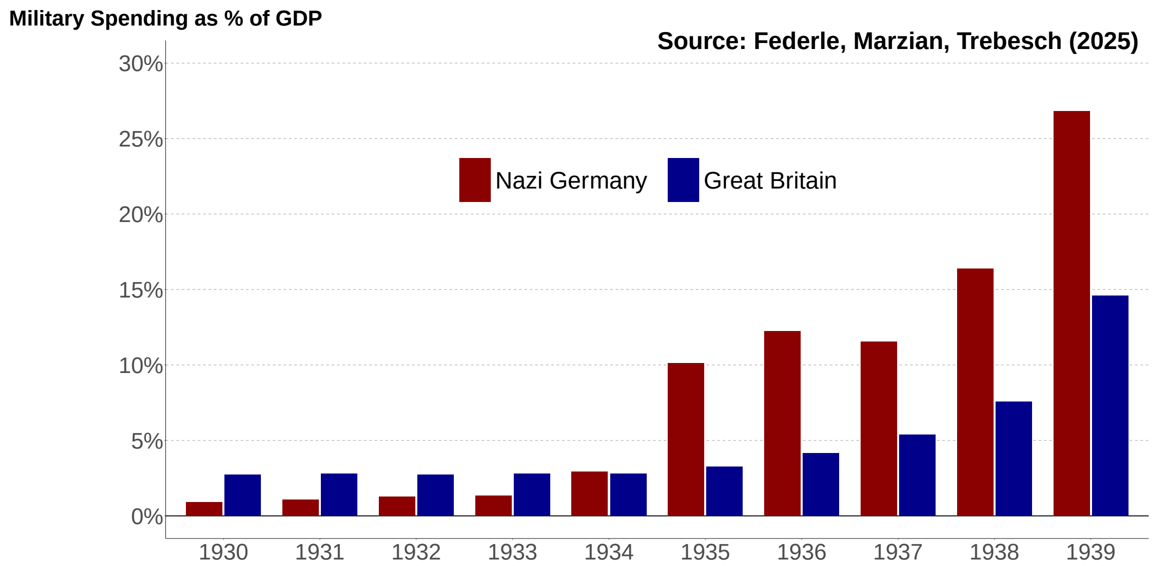
In sum, during the largest wars, debt financing clearly dominates, while both taxes and fiscal cuts play a secondary role. An important outlier is the Korea war, which the US predominantly financed by raising taxes. During that war, US capital tax rates rose by more than 10 percentage points, to an average of 62%, while labor taxes rose from 16% to 20%. Ohanian (1997) finds that the heavy focus on tax financing during the Korean war reduced US welfare and consumption, compared to a scenario of debt financing.

Military buildups in good times – Germany 1955-63, shifting spending from hosting allies to the Bundeswehr: More than a dozen buildups in our dataset took place in periods of prosperity and high economic growth. An example of such a military buildups in "good times" is Germany in the period 1955 to 1963, during which it built up the Bundeswehr and procured hundreds of Starfighter jets. The military buildup was eased considerably since Germany was able to shift expenditures away from hosting allied troops and towards domestic defense purposes, thus opening the fiscal space for rearmament (see Appendix Figure A2). In addition, Germany benefited from rapidly growing tax revenues, which continued to rise during this period of high GDP growth.

Great Britain in the 1930s - The danger of "fiscal first" policies when faced with an aggressor: Great Britain in the 1930s is an example of a military buildup that took place in unfavorable economic conditions. In the mid-1930s, Great Britain was suffering from the aftermath of the Great Depression, faced a public debt burden above 150% of GDP (a legacy of WW1) and had unemployment rates above 10%. In this situation, the government remained largely passive in its response to Nazi Germany's aggressive military buildup.

Britain offers a warning example. Despite massive external threats, it maintained a balanced budget and reduced its debt to GDP ratio until the late 1930s. It thus places concerns of debt sustainability and currency stability above the growing concerns of war. Our data show that Britain clearly prioritized military spending in the mid-1930s, by halting any further growth in non-military expenditures (freezing spending on education or social affairs). But the UK Treasury regularly vetoed further, urgent spending requests by defense experts, thus contributing to the British appeasement policy. Shay (1977) shows how UK Treasury officials took strict control of defense spending and were not willing to compromise on the balanced budget principle that had so long dominated British economic thinking. As a result of Britain's cautious fiscal policy, military spending as a share of GDP grew very slowly and only accelerated after 1937, when Britain also started to run large deficits.

Figure 3: 1930s: The Nazi's military buildup was much larger

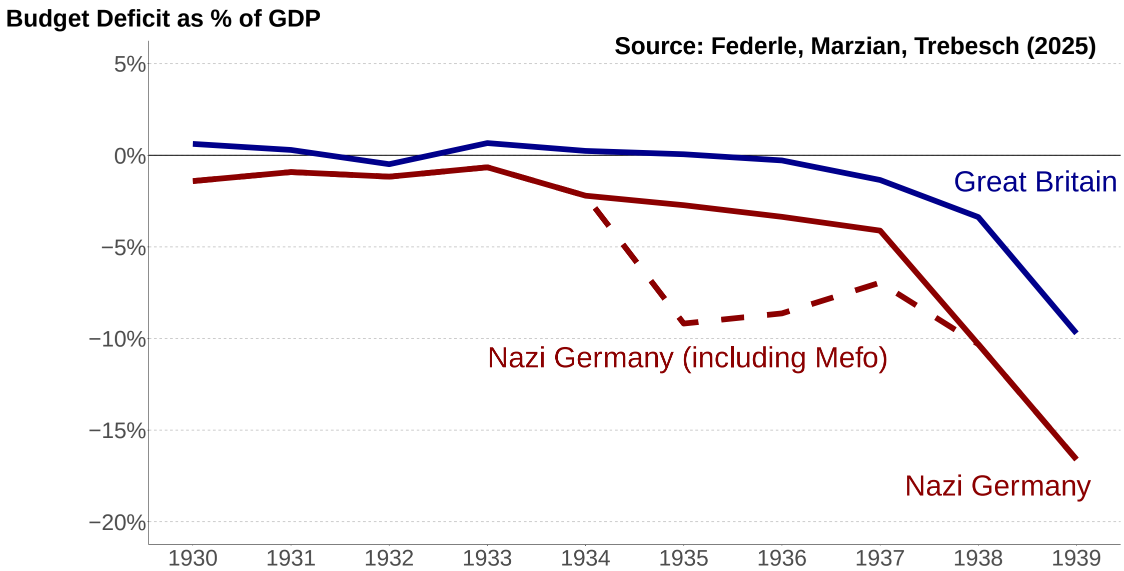


Note: The graph shows the annual military expenditures of Nazi Germany and Great Britain in the 1930s. The bars for Nazi Germany also include military spending financed through Mefo bills. While Nazi Germany significantly increased its military spending from 1934 onwards, Great Britain responded delayed.

When compared with Nazi Germany, it is evident that the drastic Nazi military buildup was many times larger than the timid British one (see Figure 3), and it was to a large extent debt financed (see Figure 4). During the mid-1930s, in particular, the Nazis financed their military expansion in large part through the infamous off-balance "Mefo bills" set up by Reichsbank governor Hjalmar Schacht (see Figure 4 and appendix Figure A1). When looking at the budget data, it is no surprise that Great Britain was not sufficiently prepared for war when Germany attacked Poland.

With the benefit of hindsight, Britain's "fiscal first" policy of the 1930s was a grave mistake. As Karl Polanyi summarizes it in his seminal book The Great Transformation (1944, p. 246): "England's military unpreparedness was mainly the result of her adherence to gold standard economics."

Figure 4: Great Britain had a balanced budget - the Nazis large deficits



Note: The graph shows the annual budget deficits in Germany (red line) and Great Britain (blue line) during the 1930s. Right after the Nazi takeover in 1933, the German budget deficit began to grow notably, especially when accounting for financing through Mefo bills (dashed red line). In contrast, Great Britain adhered for a long time to a balanced budget policy, only starting to increase its deficits considerably in the late 1930s. The data are from "The Global Budgets Database" by Marzian and Trebesch.

5 Policy Recommendations

Our ongoing research, presented in this policy brief, yields three key findings: 1. Military buildups are rarely financed through budget cuts. 2. Instead, deficit financing and tax increases play a major role. 3. The larger the military buildup, the more governments rely on deficit and debt financing. These findings are consistent with economic theory, which suggests a mix of deficit and tax financing, with deficit financing playing a dominant role in large, short-term buildups.

In the short term, Europe and Germany should rely on debt financing to rapidly increase defense spending and military capabilities. Defense expenditures should therefore be exempt from fiscal rules, both in Germany and across Europe. A less clear-cut alternative would be new debt-financed funds, such as a European financing mechanism or another German "Sondervermögen". Ultimately, however, it will be decisive how effective newly borrowed money will be spent, in particular which weapons systems are purchased and how efficiently they are procured.

To manage the resulting debt burden in the medium term, governments could raise taxes, reduce tax avoidance and exemptions, and temporarily freeze the growth of consumptive government spending, such as social transfers and subsidies. Additionally, defense spending could have growth-enhancing and innovation effects, thereby increasing GDP and tax revenues while lowering the debt-to-GDP ratio (Ilzetzki, 2025).

Relying primarily – or exclusively – on budget cuts as a financing tool would speak against 150 years of history. The German government, in particular, should avoid repeating Britain's grave mistakes of the 1930s and should not insist on a balanced budget policy, as doing so increases the likelihood that the military buildup will be too small to counter growing Russian aggression. For Europe's democracies, the key lesson from the 1930s is to react decisively and quickly, as a wider war in Europe would be many times more costly than investing in effective deterrence (Federle et al., 2024).

References

Andersson, Per F. and Thomas Brambor (2022). "Financing the State: Government Tax Revenue from 1800 to 2012". Unpublished Manuscript.

Barro, Robert J. (1979). On the Determination of the Public Debt. *Journal of Political Economy* 87.5, pp. 940–971.

Federle, Jonathan, Johannes Marzian, and Christoph Trebesch (2025). "Guns vs Butter". Unpublished Manuscript.

Federle, Jonathan, André Meier, et al. (2024). *The Price of War*. Discussion Paper 18834. CEPR.

Goldin, Claudia D. (1980). "War". *Encyclopedia of American Economic History: Studies of the Principal Movements and Ideas*. Ed. by Glenn Porter. Vol. 1. C. Scribner's Sons, pp. 935–957.

Hall, George J. and Thomas J. Sargent (2020). *Debt and Taxes in Eight U.S. Wars and Two Insurrections*. Working Paper 27115. NBER.

Hicks, John, Ursula Hicks, and Laszlo Rostas (1941). *The Taxation of War Wealth*. Oxford: Calderon Press.

Ilzetzki, Ethan (2025). *Guns and Growth: The Economic Consequences of Defense Buildups*. 2. Kiel Report, Kiel Institute for the World Economy.

Lucas, Robert Jr. and Nancy L. Stokey (1983). Optimal Fiscal and Monetary Policy in an Economy Without Capital. *Journal of Monetary Economics* 12.1, pp. 55–93.

Marzian, Johannes and Christoph Trebesch (2025). "The Global Budgets Database Project".

Ohanian, Lee (1997). The Macroeconomic Effects of War Finance in the United States: World War II and the Korean War. *American Economic Review* 87.1, pp. 23–40.

Reinhart, Carmen M. and Kenneth S. Rogoff (2011). From Financial Crash to Debt Crisis. *American Economic Review* 101.5, pp. 1676–1706.

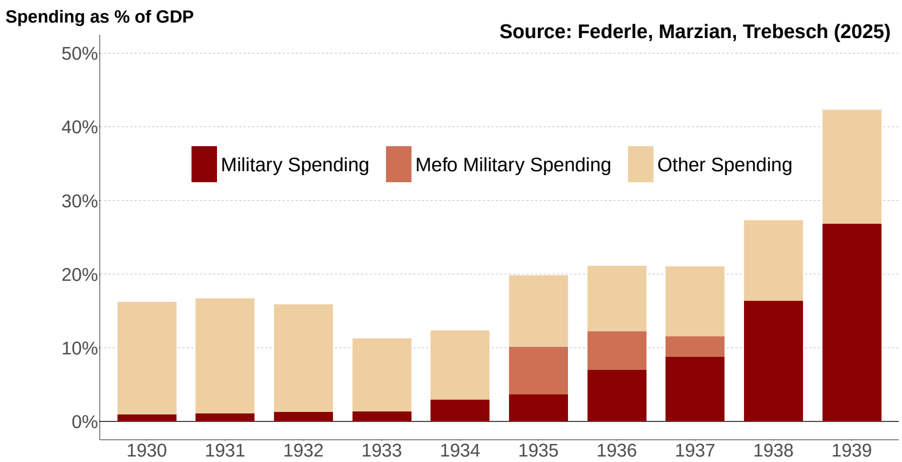
Scheve, Kenneth and David Stasavage (2010). The Conscription of Wealth: Mass Warfare and the Demand for Progressive Taxation. *International Organization* 64.4, pp. 529–561.

Shay Robert Paul, Jr. (1977). *British Rearmament in the Thirties: Politics and Profits*. Princeton Legacy Library. Princeton University Press.

A Appendix

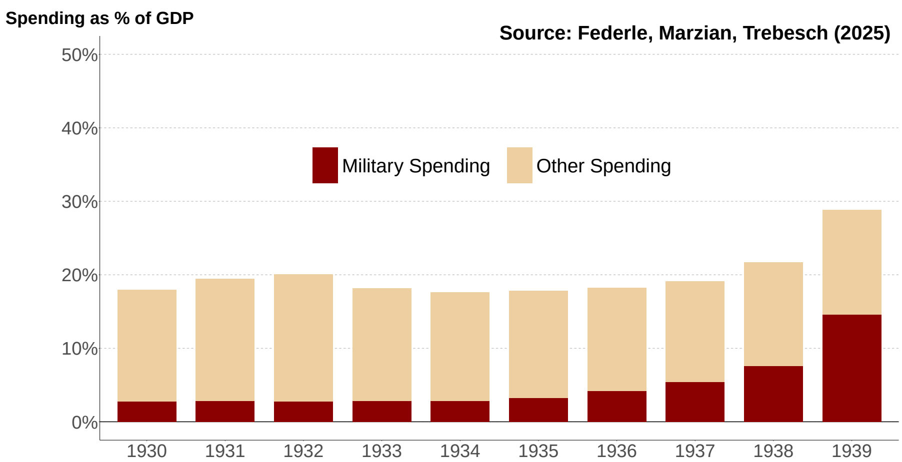
Figure A1: Neither Nazi Germany nor the UK cut "Butter" to finance the military buildup

Panel A: Nazi Germany Government Spending in % of GDP



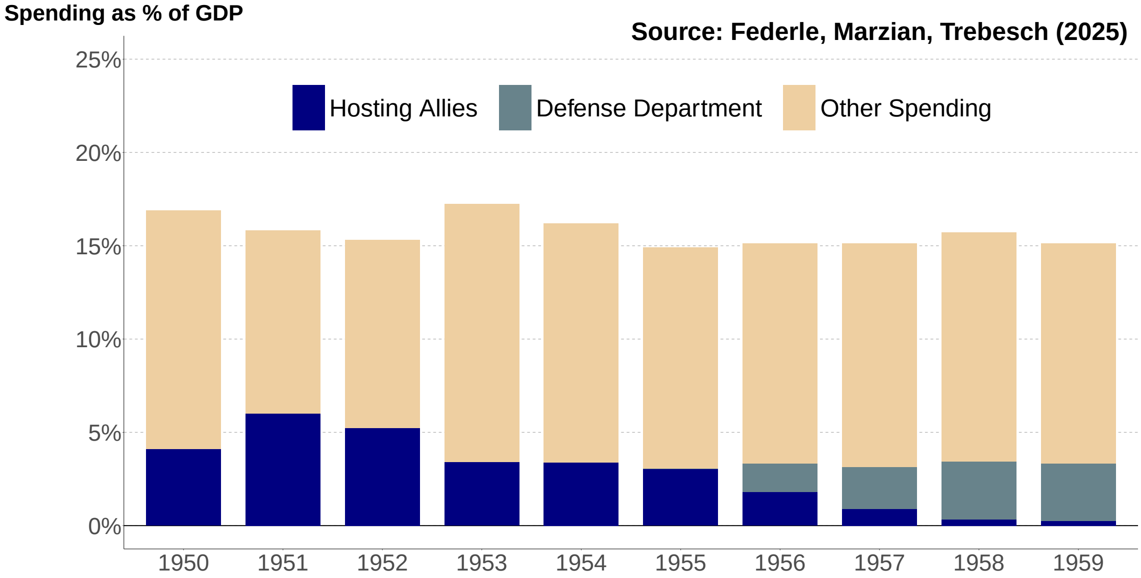
Note: Mefo bills functioned as follows: The arms industry produced military equipment and, to receive payment, signed bills with the "Metallurgische Forschungsgesellschaft" (Mefo) and third-party private banks. Companies holding these bills could either keep them or cash them at private banks. The banks, in turn, often kept the bills on their books but could always rediscount them at the German Reichsbank. Thus, Mefo bills can be considered a form of credit from the arms industry and the private sector to the Nazi government.

Panel B: Great Britain Government Spending in % of GDP



Note: The graph shows the annual central government spending as % of GDP in Nazi Germany (Panel A) and Great Britain (Panel B) during the 1930s. The red bars represent military spending, and the light brown bars other types of spending, including social, foreign, or interior affairs as well as interest payments. The light red bars in Panel A in 1935 to 1937 show the Nazi's military spending financed by Mefo bills. These bills played a key role in accelerating the Nazi buildup. The data are from "The Global Budgets Database" by Marzian and Trebesch.

Figure A2: Germany, 1950-1959: Shifting spending from hosting Allies to the Bundeswehr



Note: The graph shows the annual central government spending as % of GDP in Germany during the 1950s. The blue bars represent expenditures for the so-called "Verteidigungslasten," which were used to host allied troops. The light brown bars indicate other types of spending, including social, foreign, and interior affairs, as well as interest payments. The light blue bars depict expenditures from "Einzelplan 14" (the defense budget) of Germany, starting from the foundation of the Bundeswehr in 1955. The graph illustrates a shift in funds from hosting allied troops toward the Bundeswehr. The data are from "The Global Budgets Database" by Marzian and Trebesch.

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