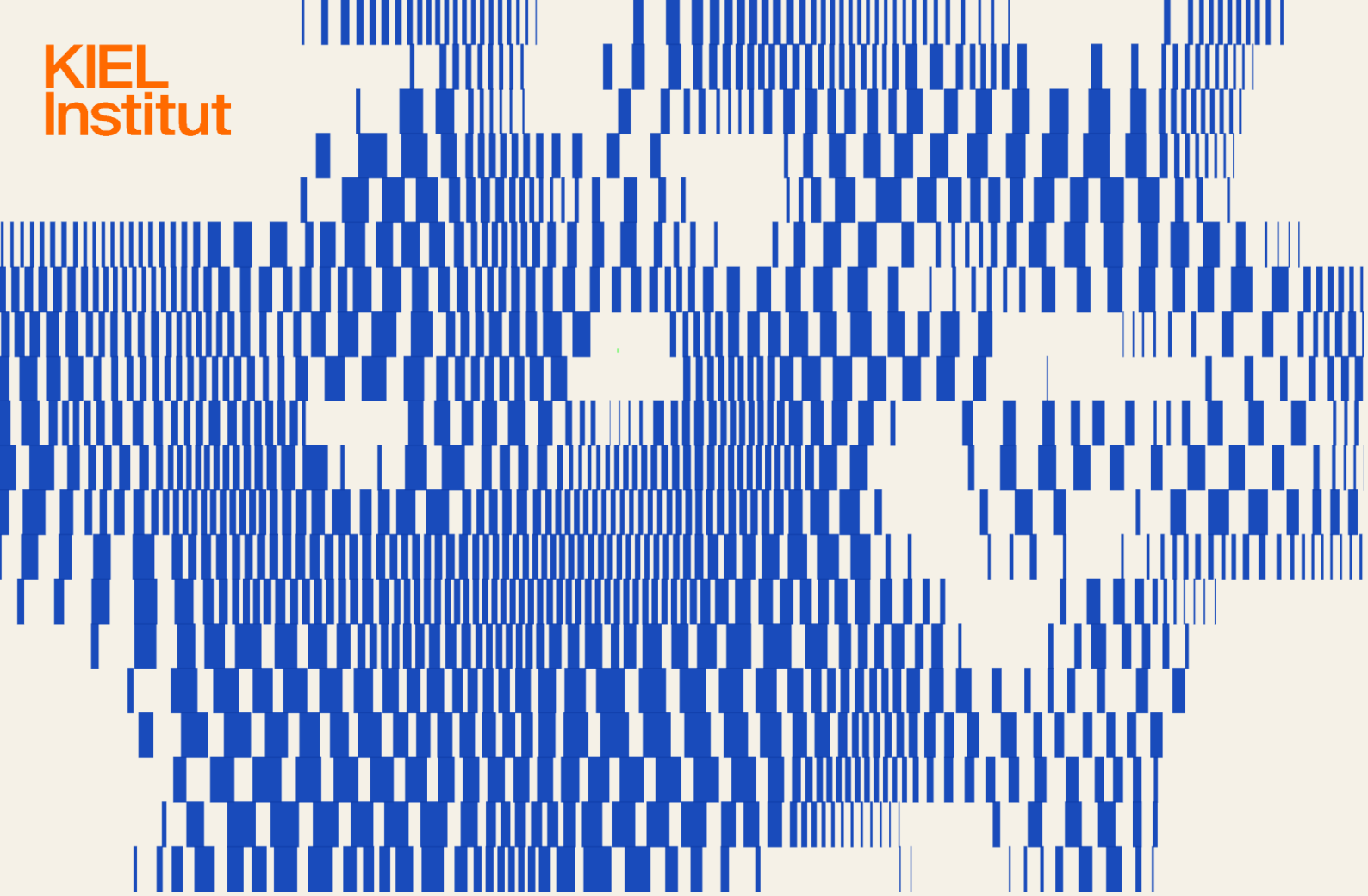

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December 2025

Guns and Butter: The Fiscal Consequences of Rearmament and War

Kiel Working Paper

No. 2310, ISSN 1862-1155
Kiel Institute for the World Economy

Abstract

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What are the fiscal consequences of large military buildups? To address this question, we assemble the *Global Budget Database*, a comprehensive dataset of disaggregated government finances for 20 countries from 1870 to 2022. We identify 114 episodes of military spending booms, in peace and war, and analyze their financing and long-term fiscal legacy. Consistent with theory, wartime booms are financed primarily through debt, while smaller peacetime booms rely on a more balanced mix of debt and taxes. In contrast to the classic notion of "guns versus butter," we find little evidence that social spending is cut during military expansions. Instead, when societies rearm, they tend to choose guns *and* butter, resulting in substantially higher debt and taxes long after the military boom ends. Tax rates and tax revenues remain elevated for 15 years or more, as tax increases during the buildup are not rolled back. Large geopolitical shocks expand the fiscal state and result in a persistently higher tax burden.

Keywords: Military finance, rearmament, war, fiscal policy, taxes, government debt
JELs: E62, H20, H61, H87, N10, N40

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*We thank John Cochrane, Jonathan Federle, Walker Hanlon, Joel Mokyr, Gernot Müller, Ethan Ilzetzki, Michael Porcellachia, Valery Ramey, and Moritz Schularick for helpful comments and suggestions, as well as seminar and conference participants at the Kiel-CEPR Geoeconomics Conference in 2024, Northwestern University, Columbia University, Stanford University, the Federal Reserve Bank of San Francisco, the Bank for International Settlements, the Kiel Institute, Kiel University, Frankfurt University, and SAFE. We are grateful for excellent research assistance from Niklas Döhler, Johannes Dörr, Pietro Ducco, Dante Gaviani, Emilia Güse, Lukas Herchner, Nico Herrlett, Finn Marten, Lisbeth Nordmeyer, and Eli Shapiro, and the outstanding research support by Joost Haddinga, Julius Kölzer, Hannes Mayer, and Thinh Nguyen throughout long periods of this project. We are also grateful to the team at the "ZBW – Leibniz-Informationszentrum Wirtschaft" for their patient assistance in identifying and providing many of the sources used in constructing the Global Budget Database.

The responsibility for the contents of this publication rests with the authors, not the Institute. Since working papers are of a preliminary nature, it may be useful to contact the author of a particular issue about results or caveats before referring to, or quoting, a paper. Any comments should be sent directly to the authors.

1 Introduction

Military spending is rising sharply worldwide, at a pace not seen in decades. In June 2025, NATO member states adopted a new defense spending target of 3.5 percent of GDP, which could double NATO's annual military outlays from currently $1.5 trillion to $3 trillion by 2035 (SIPRI, 2025a).

This paper examines the fiscal consequences of large military buildups in both peace and war. We study how governments finance rapid increases in spending on "guns," focusing on whether they issue more debt, raise taxes, or cut social expenditures ("butter"). We also analyze the long-run fiscal legacies that military buildups leave behind. Our evidence comes from new, comprehensive fiscal data for 20 countries since 1870, covering the major rearmament episodes of modern history. This long-run perspective provides a benchmark to understand the scale and fiscal implications of today's global military boom. The central finding is that governments rarely cut civilian spending to finance rearmament. They instead rely on deficits and higher taxes, resulting in a lasting expansion of the fiscal state.

Geopolitical shocks and wars are often unanticipated and generate large, plausibly exogenous increases in public spending. This makes military finance a natural laboratory for macroeconomic and fiscal research, from the classic contributions of Smith (1776) and Ricardo (1820) to the modern public finance literature. A central insight of Barro (1979), for example, is that large, temporary spending surges such as those induced by wars should be financed primarily through debt in order to smooth distortionary taxation over time. Despite this long theoretical tradition, systematic empirical evidence on the financing and fiscal consequences of large military spending booms remains limited, typically focused on single countries (e.g., Hall and Sargent, 2021; Pflueger and Yared, 2024). A key constraint of empirical work to date has been the lack of long-run fiscal data, particularly data disaggregated by spending and revenue categories.

The cornerstone of our analysis is the *Global Budget Database*, a newly assembled long-run record of central government finances for 20 countries since 1870. It contains more than 115,000 expenditure items and 30,000 revenue items, allowing us to study not only aggregate fiscal trends but also how governments reallocated spending within their budgets, for example whether they cut social programs or foreign affairs to finance the military. The data are hand-coded from primary sources in order to capture disaggregated government accounts and to reduce the measurement errors that affect existing datasets. A key advantage is that we collect consistent data on *realized* rather than planned spending. This allows us to document, for the first time, the often large within-year spending adjustments made during past wars and crises. We also code off-budget operations and special funds, which are omitted

in most existing databases but can account for the lion's share of military and crisis-related spending in turbulent episodes. The result is a more accurate picture of public finance both historically and today.

Based on these data, we present the first comprehensive cross-country analysis of the fiscal implications of large military spending surges. We identify 114 military spending booms since 1870. Of these, 26 occurred during major wars. The remaining 88 took place either in peacetime (64) or during smaller conflicts (24).[1] We then examine how governments financed these booms, using event study estimates and detailed fiscal accounts in a case-by-case autopsy.

The second part of the paper examines the long-run fiscal consequences of military spending booms. To obtain plausibly causal estimates, we restrict the analysis to a subsample of episodes triggered by clearly exogenous geopolitical shocks, which mitigates concerns about endogeneity, confounders, and differential pre-trends. In fact, many buildups in the full sample were initiated for domestic political objectives, for example to consolidate authoritarian rule, or under favorable economic conditions, such as army modernizations during periods of strong fiscal revenues. To exclude such cases, we compile historical narratives and identify military spending booms prompted by external events outside domestic control, such as sudden military attacks or major geopolitical shifts, including the aggressive rearmament of Nazi Germany in the mid-1930s or the shock of the Korean War in the early 1950s. We also draw on the narrative classification of exogenous wars in Federle et al. (2025). Using the resulting sample of exogenous military booms (23 in exogenous major wars and 37 exogenous peacetime buildups), we estimate the long-run impact on debt, taxes, and spending (in real terms) over the 15 years following boom onset. In addition, to interpret our finding of persistently higher taxes after booms, we complement the analysis with detailed tax narratives. For each episode, we searched whether taxes were introduced or increased and whether these measures were later reversed, drawing on tax legislation and case study evidence.

During military booms, fiscal practice aligns closely with classic theory. Large wartime spending surges are financed predominantly through borrowing, with the debt-to-GDP ratio rising by about 40 percentage points on average. Peacetime booms, which are smaller in scale, are financed through a more balanced mix of debt issuance and taxation. Our results also point to broad burden sharing across the population. Tax revenues during military buildups and wars mainly rise through higher income and consumption taxes. In contrast, special war levies, excess profits taxes, or taxes on the wealthy do not play a dominant role,

[1]For simplicity, we refer to these 88 cases as "peacetime booms" going forward. Major wars are defined as conflicts with more than 10,000 own battle deaths, including for example WW1, WW2, the Korean War, or the Russo-Japanese War.

although there is considerable variation across cases.

More striking is the limited role of spending cuts. We find little evidence for the conventional view of "guns versus butter" in this context. In military spending booms, cuts to social programs and other civilian expenditures are rare, both in nominal and in real terms, as social spending typically keep pace with inflation. Spending reductions are not a major component of fiscal adjustment in these episodes. Instead, when countries rearm, they tend to choose guns *and* butter.

The fiscal legacy of these spending choices is large. Public debt rises and then recedes after boom episodes, but the most persistent effects appear on the tax side. More than a decade after boom onset, average tax revenues remain 20–30 percent higher, and top marginal income tax rates remain 10–20 percentage points above pre-boom levels. These patterns hold for both major wars and exogenous peacetime booms. Governments are also significantly more likely to introduce new taxes during periods of rearmament. Our narrative case studies confirm the aggregate results: taxes typically rise during booms but do not decline afterwards. More specifically, tax introductions and tax increases adopted during booms are rarely reversed in full, particularly in the case of income and consumption tax increases, which tend to persist. A notable exception are excess profit taxes or special war levies, which have almost always been temporary.

These findings resonate with a foundational insight in history and political economy: geopolitical pressures shape the fiscal state. The classic notion that "war made states" (Tilly, 1990) is supported by a large literature showing that external conflict spurred governments to expand and strengthen their tax capacity (e.g., Brewer, 1989, Besley and Persson, 2009, Cantoni et al., 2024). A central contribution of this paper is to show that the same mechanism operates in modern history. Since 1870, major geopolitical shocks in both peace and war have led states to expand public spending and to impose a persistently higher tax burden on citizens.

Our analysis focuses on central government finances, that is, the budgetary and financing decisions undertaken by federal governments. This approach follows a long-standing tradition in public economics (e.g., Lindert, 2004; Auerbach et al., 2013) and has several important implications. First, we do not treat the "inflation tax" as a financing instrument in our baseline analysis, as inflation is typically not a direct policy choice of governments, particularly not within the budget process. Consequently, we use real value throughout the analysis and also add the inflation rate as control variable. Moreover, in an extension, we show that inflation increases significantly during military booms, especially in wartime. Second, we exclude sub-national finances, also because military spending and war is a sovereign progorative and decided at the national level. Third, we follow the literature (e.g., Russett,

1982; Ilzetzki, 2025) in defining "butter" as federal government spending on social programs, including welfare, health care, pensions, housing support, and related services, while also considering other civilian spending categories. This fiscal definition is widely used, but narrower than the famous textbook concept of Samuelson (1948) of "butter" as a civilian consumption good. To address this broader interpretation, we also show an extension analyzing private consumption growth around military booms, and find that consumption typically declines, especially for war booms. Finally, we exclude extra-budgetary social security spending from our baseline analysis, as these outlays typically fall outside the federal budgeting process.[2]

Related literature: Our paper contributes to the long-standing literature on optimal taxation and debt management. The debate over tax versus debt financing already took center stage in Smith (1776) and Ricardo (1820), gained urgency during the World Wars (Pigou, 1919; Keynes, 1940; Hicks et al., 1941; Musgrave, 1942; Friedman, 1943), and was revitalized and formalized by the modern tax-smoothing literature (Barro, 1979; Lucas and Stokey, 1983; Baxter and King, 1993; Aiyagari et al., 2002), most recently using HANK models (e.g., Angeletos et al., 2024; Auclert et al., 2025; LeGrand and Ragot, 2025). Compared to the rich theoretical literature, empirical evidence on the tax versus debt trade-off has lagged behind (an exception is Barro, 1987 who focuses on the British case). We provide a systematic assessment of funding choices across a large panel of countries over more than a century, focusing on the largest military spending surges. Our novel data allow us to bridge the literature on debt versus taxes in the tradition of Barro (1974) with research on taxes versus spending cuts for fiscal consolidation (Alesina et al., 2019). These literatures have largely evolved in parallel, and we connect them by jointly studying debt, taxes, and spending reductions within a unified empirical framework.

Our results provide a global perspective on war finance and the fiscal cost of wars. Much of the existing literature on military finance focuses on the United States, with important contributions including Goldin (1980), Ohanian (1997), Zielinski (2016), and Hall and Sargent (2021, 2022, 2025). We complement this work by studying the financing of military buildups in both war and peace across 20 countries and one and a half centuries. We also add a fiscal perspective to the macroeconomic literature on the costs of war, which has a long tradition (Clark 1916) and is now re-emerging (e.g., Glick and Taylor 2010; Federle et al., 2025; Benmelech and Monteiro, 2025).[3]

[2]As a result, health and pension payments not recorded in federal budgets are omitted from our main "butter" measure. This is particularly relevant in countries such as France or Germany, where social insurance schemes are administered by quasi-autonomous agencies and financed through payroll contributions. However, we do collect rich, long-run data on these additional social spending separately and incorporate them in Appendix A6.

[3]Federle et al. (2025) study the effects of war on GDP and inflation since the nineteenth century, while

We also contribute to the small literature on "guns versus butter," which originated during the Cold War (for example, Russett, 1969; Russett, 1982; Mintz, 1989; Mintz and Huang, 1991). Our paper provides the most systematic reassessment of this question to date, using 150 years of fiscal data for advanced economies, including newly compiled time series on social spending and other categories such as foreign affairs or education.

Since the end of the Cold War, macroeconomic research has often used military spending as an exogenous instrument to estimate fiscal multipliers (e.g., Blanchard and Perotti, 2002; Ramey, 2011; Barro and Redlick, 2011; Christiano et al., 2011; Auerbach and Gorodnichenko, 2012; Ilzetzki et al., 2013; Ramey, 2016; Ramey and Zubairy, 2018). We contribute to this literature by opening the black box of how military spending shocks are financed across countries. We also connect to the literature on long-term fiscal adjustments, including work on spending reversals after debt surges (e.g., Peacock and Wiseman, 1961; Bohn, 1998; Corsetti et al., 2012; Kose et al., 2022).

Our dataset is the first comprehensive and disaggregated record of government spending extending back to the nineteenth century and based on reliable primary sources. This complements and substantially expands the seminal work of Lindert (2004), who compiles long-run series on social spending for a limited set of countries and years, and of Singer (1988), who assemble long-run data on military spending but provide no information on other categories.[4] We also build on the fiscal databases of Mauro et al. (2015) and Andersson (2025), as well as Jordà et al. (2017), who compile series of aggregate revenues, spending, deficits, and interest payments. We provide a far more granular annual dataset of government budgets and spending categories for 20 countries over the very long-run, collected, harmonized, and validated directly from primary budgetary sources and without interpolation.

The rest of the paper is structured as follows. We first introduce the comprehensive *Global Budget Database* in Section 2, which we use to classify military spending booms in Section 3. We then study how these military booms were financed, starting with evidence from 114 case studies and followed by event study and panel regressions in Section 4. Afterwards, we turn to the long-run consequences of military spending booms in Section 5 and summarize results for other outcome variables such as inflation and consumption in Section 6. The last section concludes.

we focus on the fiscal consequences. Benmelech and Monteiro (2025) examine the economic consequences of wars after 1945, a period in which civil conflicts in developing countries dominate the sample. We take a longer historical perspective and focus on external wars involving advanced economies, leveraging newly collected, disaggregated fiscal data and examining both wartime and peacetime military buildups.

[4]Reinhart and Reinhart (2009) provide rich historical data on public debt, and Plagge et al. (2011) and Genovese et al. (2016) offer long-run series on top marginal income and inheritance tax rates.

2 The Global Budget Database

Our newly assembled Global Budget Database provides disaggregated time series on central government budgets across 20 countries over the past 150 years. We begin in the 1870s, as this period marks the advent of many modern states and because of important advancement in the statistical reporting of public budgets, taxation, and social spending.[5] The sample covers 20 countries for which detailed, high-quality budgetary statistics are available far back into history. It includes 17 advanced economies, namely Australia, Austria, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States, plus three middle income economies that have been or continue to be major powers: India, Russia, and Turkey.

Our database has two crucial advantages compared to earlier work. First, we compile time series of *realized government spending* from primary sources rather than planned spending or secondary compilations. Existing datasets on public finances typically rely on planned spending as their primary source, which requires ex-post revisions that are not always incorporated. Moreover, historical datasets draw on sources that are often ambiguous or inconsistent in what they report. As a result, they knowingly or unknowingly mix planned and realized spending depending on the country and period, as in the widely used compendia by Mitchell, L'Almanach de Gotha, or The Statesman's Yearbook. Mixing planned and realized figures makes the data difficult to compare over time and across countries. Importantly, time series based on planned expenditures miss within-year spending adjustments, which tend to be particularly large in crises and wars, as we discuss in Appendix A.

Second, we provide a detailed breakdown of government spending by purpose, accounting for off-budget items as well as mergers, splits, and restructurings of government departments and spending sub-categories. Our aim is to construct the most consistent series by spending purpose possible and to minimize the breaks and discontinuities in the original data. Appendix A also explains how we identify and reassign spending outside the regular budget, particularly expenditures recorded through-off budget special accounts, trust funds, or extra-budgetary units such as national railways and state-owned enterprises. In addition, it describes how we trace reorganizations of ministries and government departments over the past 150 years for each country.

To classify spending by purpose, we build on the standard modern expenditure classification approach: the United Nation's COFOG, or "Classification of the Functions of Government" (for details see Eurostat, 2019). Specifically, we assign each spending item in

[5]The early 1870s also precede major global transformations and shocks, in particular the first era of globalization and the World Wars. This makes it a natural starting point for long-run macro analysis.

our dataset to one of seven main functional categories: (i) military affairs, (ii) social affairs, (iii) educational affairs and research, (iv) foreign affairs, (v) interior and economic affairs, (vi) financial affairs, and (vii) interest payments on the public debt. Appendix A2 defines each category in detail.[6] Of the seven categories, the least intuitive are arguably "financial affairs" and "interior and economic affairs." Spending on "financial affairs" includes the cost of running the ministry of finance and the customs offices as well as, importantly, exceptional outlays such as the cost for bank bailouts or one-off transfers to households. This is why financial affairs spending can be surprisingly large in crisis spells such as the Great Depression or the Covid-19 pandemic.[7] "Interior and economic affairs," in turn, covers spending for policing, prisons, courts, civil registration, regulatory agencies, infrastructure investment (e.g., roads, railways, ports), and industrial and agricultural support.

In terms of data sources, we rely almost exclusively on primary documents issued by governments and parliaments. We avoid secondary compilations whenever possible because they are often incomplete, inconsistent, or based on planned rather than realized figures. Our principal source consists of thousands of pages of official budget accounts, which report realized annual expenditures and incorporate within-year adjustments and supplements. A key advantage of this source is that governments are legally required to ensure accuracy, so that substantial administrative effort is devoted to data collection, verification, and parliamentary oversight. 61% of our sample is drawn from these documents. When official accounts are unavailable, we use the next best primary source: governmental statistical yearbooks. Prior to the 1970s, these yearbooks routinely reported detailed public finance data, including the official numbers from the budget accounts. This source accounts for 32% of our sample. In rare cases where neither budget accounts nor government yearbooks exist, we rely on budget plans, which report planned spending (less than 1%), or on secondary sources such as *L'Almanach de Gotha* and *The Statesman's Yearbook* (6% of the sample).[8] For the Russian Empire, we draw on the archival compilations of Zahn (1908) and Holzman

[6]Despite decades of international harmonization efforts, many governments still devote limited effort to report clean COFOG-based time series. We therefore carefully account for national reporting practices when assigning expenditures to the seven spending categories. In countries such as the UK and India, spending has long been reported by functional purpose, which makes the mapping straightforward. In most continental European countries, by contrast, spending is reported by administrative unit, typically by ministry or department, following traditions that date back to the 19th century. Harmonizing the data therefore requires matching ministerial spending to functional categories. For example, expenditures by the ministries of education, science, or technology are assigned to "educational affairs and research."

[7]We thoroughly checked this category to not miss any "hidden" military spending and reassign it if this is the case, e.g., in Nazi Germany where war-related military expenses were listed in the "Allgemeine Finanzverwaltung" chapter of the budget.

[8]Specifically, we rely on budget plans for Austria 1937–1938 and 1946–1954 and for Portugal 1903–1916. We rely on secondary sources such as *L'Almanach de Gotha* and *The Statesman's Yearbook* for Denmark 1878–1890, Italy 1872–1908, Norway 1872–1876, Russia 1909–1917 and 1924–1927, and Sweden 1872–1911.

(1953), which themselves are based on primary budget documents. Appendix A8 provides a detailed breakdown by country and a full list of sources.

To ensure long-run consistency and cross-country comparability, our primary focus is on *central government spending*. Data on central government finances are generally far more reliable and better documented than those for sub-national entities or quasi-governmental agencies. We exclude local government finances as well as spending by standalone social security systems that operate outside the core budgetary process, as in France or Germany.[9] For completeness, however, we also construct broader time series on *general government social spending* from 1949 to 2022 by combining central government social spending, sub-national social spending, and expenditures by independent social insurance agencies (Appendix A6 shows the details).

The final yearly database comprises 112,058 spending items collected at the level of central government spending purposes. In addition, we assemble detailed revenue data for all years with military booms and wars, as described in Section 3. Specifically, we collect about 30,000 revenue items during our sample of military booms, covering all tax categories as well as administrative fees and special revenue sources. This granular data allows us to uncover financing patterns that are obscured in aggregate fiscal statistics.[10]

3 Military spending booms

3.1 Identification of military boom spells

In this section, we identify "military spending booms" defined as periods of substantial increases in military spending. To identify military booms, we use a quantitative approach adapted from the literature on credit booms, but refine the coding results based on historical evidence from more than 300 qualitative sources. This combination of quantitative and qualitative evidence proved crucial to avoid misclassifications and enhance accuracy, as we now explain.

In a first step, we identify spending booms quantitatively by drawing on methodological advances in macro-finance, in particular the literature that identifies credit boom episodes in

[9] In some countries, notably Norway in the late 1960s and Spain in the late 1970s, major social security reforms led to the formal integration of social security spending into central government budgets. Following the International Monetary Fund (2025), we include Norwegian social security spending in our data but exclude Spain's system. In the US, where elements of federal social security spending have shifted on and off budget over time (DeWitt, 2005), we consistently include them for comparability and completeness. Including or excluding off-budget social spending does not materially affect our empirical results.

[10] For example, we find that the 1950s buildup of the German Bundeswehr was financed largely through the reduction of transfers to Allied forces. Instead of compensating the US, the UK, and France for their stationed troops, Germany was permitted to redirect most of these funds to rebuild its own military.

cross country data. Our baseline approach follows Schularick and Taylor (2012) and Gorton and Ordoñez (2019), who scale credit by GDP and classify booms as periods in which credit grows substantially faster than GDP for several consecutive years. More specifically, we adopt the flexible algorithm developed by Gorton and Ordoñez (2019), which imposes few structural assumptions and avoids the well-known endpoint problems of trend-based filters.[11] For robustness, we also apply a second approach used by Mendoza and Terrones (2008), Richter et al. (2021), and Müller and Verner (2024), which detects booms as deviations from trend in real private credit using the traditional Hodrick-Prescott filter or the more recent alternative developed by Hamilton (2018).

For our purposes, the algorithm developed by Gorton and Ordoñez (2019) (hereafter: GO) is best suited because it captures both large wartime spending booms and smaller peacetime buildups in a reasonable and consistent manner. Our overall results are similar, however, when we use an alternative set of military spending boom episodes based on an Hamilton-style filter without scaling by GDP, as shown in Appendix B.

Building on GO, we first calculate the growth rate of military spending relative to GDP for all country year observations, using GDP data from Fouquin and Hugot (2016) and Jordà et al. (2017). To identify exceptionally large increases, we compute the standard deviation of these growth rates after winsorizing them to limit the influence of outliers.[12] The resulting standard deviation is 6.5 percent, which is close to the 5 percent threshold used by GO. We then identify episodes with two consecutive years of growth above this threshold.[13] More specifically, we apply the following algorithm:

- A boom begins when a country records two consecutive years of military spending-to-GDP growth above the 6.5% standard deviation threshold. To reduce short-term volatility, we smooth the annual growth series using two-year averages.
- A boom ends when the two-year average growth rate drops below 0% for two consecutive years, signaling a persistent decline in military spending to GDP.

There are two main limitations of relying on this algorithm only. First, it may spuriously identify booms, particularly during recessions, when GDP contracts but military spending remains stable, or when military spending is volatile, alternating between rapid growth and

[11] Gorton and Ordoñez (2019, p. 624) emphasize that "the HP filter is forward looking [...] [and therefore] does not consider the initial and the final phases of a credit expansion as part of a boom." Their approach addresses these limitations.

[12] We winsorize annual growth rates at the 10th and 90th percentiles before computing the standard deviation. Without trimming, extreme outliers inflate the standard deviation and the algorithm identifies only the World Wars as booms.

[13] We deviate slightly from GO, who require three consecutive years above the threshold. In our setting, two years better capture short but intense buildups such as during the Russo-Japanese War of 1904–05. As shown in the Appendix, our results are similar when applying the three-year criterion used by GO.

sharp declines over several years.

Second, the method may conflate two distinct military boom phases if they occur in close succession or if a country shifts from peace to war. This can yield classifications that conflict with well established historical accounts. One example is the military buildup in Nazi Germany after 1933, which the algorithm identifies as a single, decade-long boom. Historical evidence, however, shows that it comprised three distinct phases (e.g., Tooze, 2006). Phase 1 (1933–1935) was the period of hidden rearmament, financed largely through off-budget mechanisms such as the infamous "Mefo bills" (e.g., Ritschl, 2002). Phase 2 began in 1936, when the Nazis made rapid rearmament official policy, including the Four Year Plan to prepare for war. Phase 3 began in 1939, when Germany shifted to a full war economy.

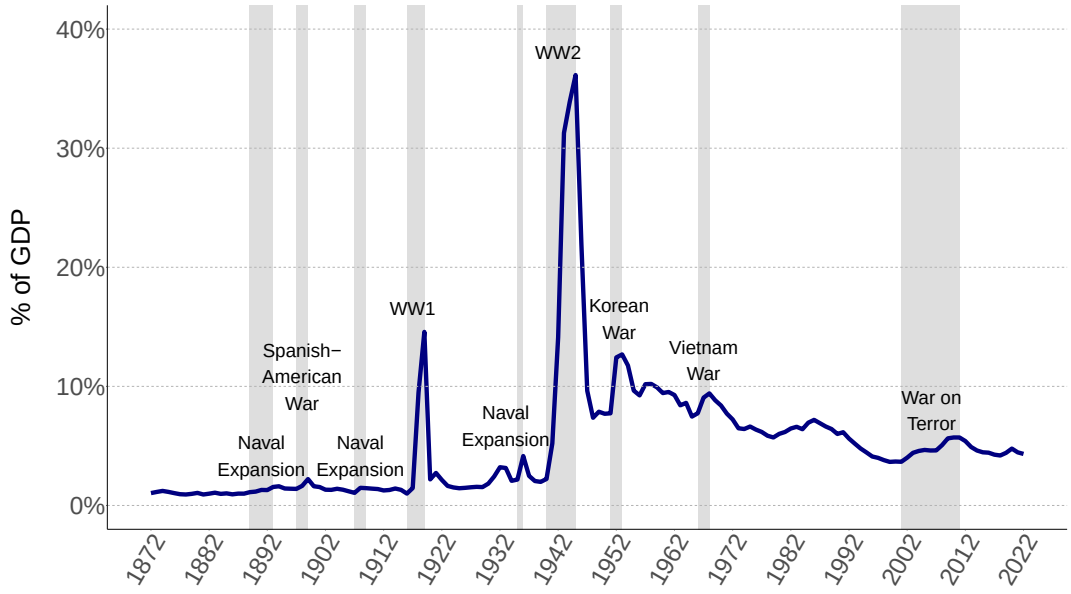
In a second step, we therefore address the limitations of the algorithmic approach by validating each identified boom, along with its start and end dates, against qualitative historical evidence. For this purpose, we draw on a wide range of case-specific sources, including parliamentary records, budgetary documents, as well as contemporaneous and retrospective scholarly work, in particular by military historians. This qualitative cross-checking proved essential for identifying a final set of spending booms that is consistent with both the data and the established historical record. Specifically, the algorithm initially detected 122 booms. Of these, 27 were dropped as spurious (GDP contractions without significant increases in military spending), 36 booms were shortened and 4 were lengthened in line with qualitative historical evidence. In addition, 14 overly long boom spells were split into multiple distinct episodes to avoid erroneously lumping together clearly separate historical cases. Figure B1 provides a detailed overview of these changes.

The final sample includes 114 military spending booms across countries and time. Appendix E presents each case in detail, including the historical context and all sources used. To our knowledge, this Appendix is the most comprehensive overview of the history of rearmament and war finance to date. Table 1 provides a more compact overview, including a summary of the context of each boom.

To provide an illustrative example, Figure 1 presents the boom identification for the United States. As can be seen, our approach dates the main episodes of military buildups in modern US history, starting with the Battleship Act of 1890 that transformed the US navy from a coastal defense force to a powerful blue-water fleet with modern steel ships. Among the booms identified by the algorithm, we excluded the spurious boom in the early 1930s, as it is driven by the decline in GDP during the Great Depression but not a marked increase in military spending. The "Reagan buildup" of the 1980s is comparatively small, and therefore falls slightly below our boom identification threshold.

We conduct a broad range of robustness checks to assess the sensitivity of our results to

Figure 1: United States – military spending booms, 1870–2022



Note: The shaded areas denote the US military spending booms in our sample. In the early 1930s, the spending to GDP ratio rose because GDP declined, and such spurious booms are excluded. The Reagan buildup of the 1980s falls slightly below the threshold.

our boom identification procedure. First, and maybe most importantly, we show that the results are similar when using booms solely identified by an Hamilton-style filter, building on the approach by Mendoza and Terrones (2008) (see Appendix B3)[14]. Second, we lower the boom threshold to half a standard deviation in spending growth, thus adding smaller booms that reach a growth threshold of 3.30% (0.5 SD) instead of 6.50% (1 SD). These minor booms are often hard to visually detect in the time series and rarely feature as periods of rearmament or war in the historical records. Despite this, the results are robust as shown in Appendix B4. Third, we show that the results are similar when using exactly the same algorithm as in the original Gorton and Ordoñez (2019) paper, that is, identifying booms with three instead of two consecutive years of growth and without incorporating historical sources (Appendix B5).

3.2 Stylized facts on military spending booms

This section presents a number of key stylized facts on the final set of 114 military spending booms that we have identified.

We start by asking which of the 114 booms were triggered by wars and mass mobilization. We define "major war booms" as those linked to inter- or intrastate wars with more than

[14]The overlap in boom years is 62% when comparing our baseline sample (which combines the method of Gorton and Ordoñez (2019) and historical evidence).

10,000 battle deaths in the boom country, building on Palmer et al. (2020) and Federle et al. (2025). These major war booms include the World Wars as well as other well-known conflicts such as the Russo-Turkish War (1877–78), the Russo-Japanese War (1904–05), the Korean War (1952–53), or the Vietnam War (escalating in 1967–68).

The remaining 88 booms, which we label "peacetime booms," occur either in peacetime (64) or during episodes involving smaller external or colonial conflicts, support for allies at war (for example in Korea after 1950), or domestic uprisings (24).[15] These conflict episodes typically show few battle deaths, far below the 10,000 threshold used to define "major war" booms. Moreover, the increases in military spending observed in cases with minor conflict are comparable to those in genuine peacetime, with boom sizes being nearly identical.[16] For these reasons, we group both categories under the label "peacetime booms."

We next use our 150 year panel to document the historical incidence of military spending booms. Figure 2 shows that such booms have been a recurring feature of modern history. In a global historical perspective, they are frequent, with pronounced clusters around the turn of the 20th century, during WW1 and WW2, and in the 1950s. Since the 1970s, however, military spending booms have become the exception rather than the norm. This pattern has shifted only recently, as several countries strongly increased their military spending following Russia's full-scale invasion of Ukraine in 2022. In particular, we observe ongoing spending booms in Denmark, Finland, Germany, the Netherlands, Norway, and Sweden in 2023 and 2024. These recent episodes are not included in our baseline sample because reliable budget and financing data are not yet available.

The median boom size for the full sample is 4.0% of pre-boom GDP, with a much higher average size of 22.3%.[17] These full sample figures are driven up by the large wartime booms, especially those in WW1 and WW2.[18] For major war episodes, the median boom reaches 45.3% of pre-boom GDP, with an average of 78.9%. In contrast, the median peacetime boom is only 2.9% of pre-boom GDP, with an average of 5.6%.[19] Major war booms also typically last longer. The median duration is four years compared to three years for peacetime booms.

Although peacetime booms are much smaller than wartime ones, they are still econom-

[15]More precisely, 19 booms involve smaller *external* conflicts or limited military engagements abroad, often in colonial settings or through modest troop deployments to support allies. The remaining 5 booms involve smaller *domestic* conflicts, such as short civil war episodes or localized uprisings.

[16]Specifically, the median boom size is 2.90 percent of pre boom GDP in cases with minor conflict, compared with 2.89 percent in conflict free peacetime booms.

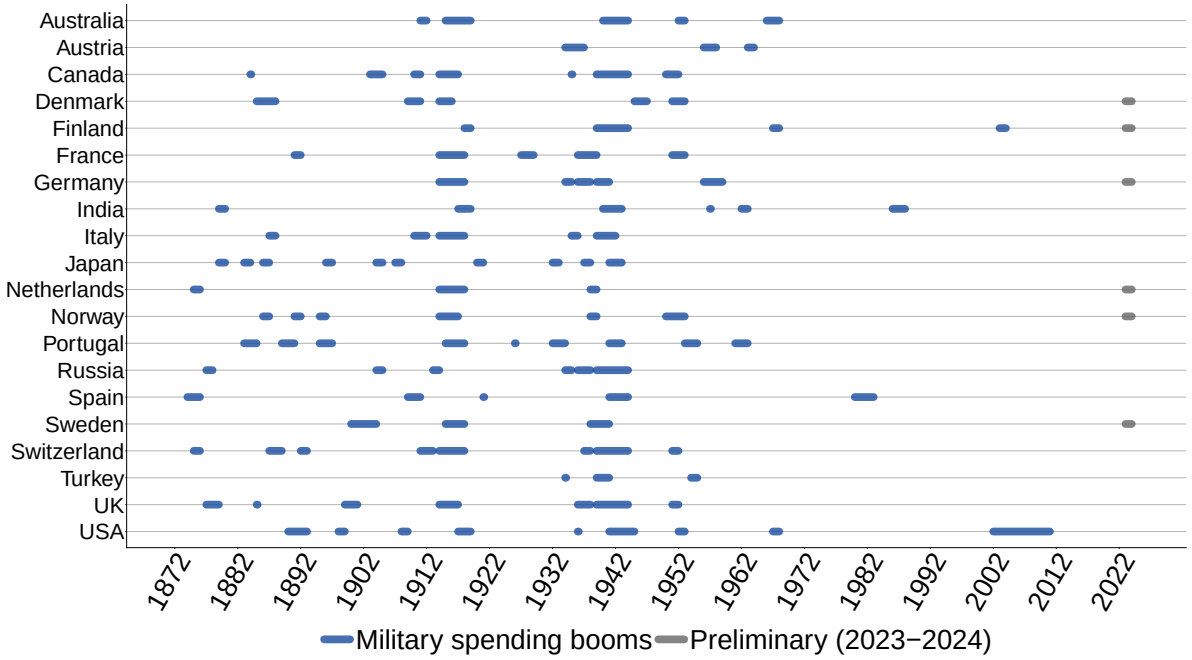
[17]The standard deviation in boom size is 48% of pre-boom GDP. For major war booms it is 78%, and for peacetime booms it is 7.7%.

[18]Figure B5 in Appendix B2 shows the magnitude of wartime booms, with military spending to GDP frequently exceeding 20% of pre-boom GDP and surpassing 100% in a dozen cases.

[19]Appendix B2 reports these medians and averages for major war and peacetime booms as well as for two additional subsamples.

ically significant. For illustration, consider a boom of 2.9% of pre-boom GDP, the median size of peacetime booms, lasting the median duration of three years. Using 2024 GDP figures, this corresponds to military spending expansion of about 850 billion USD for the United States and 125 billion Euros for Germany today — a substantial magnitude. In fact, the German government's 100 billion Euros "Sondervermögen" (off-budget special account), announced shortly after Russia's 2022 invasion of Ukraine, was widely viewed as a major military buildup (The Economist, 2022).

Figure 2: Military spending booms by country



Note: This figure shows all years with military spending booms by country, using our baseline sample. The grey-shaded dots indicate ongoing military spending booms, following Russia's full-scale invasion of Ukraine in 2022. These booms are not included in our baseline sample, as reliable budget and financing data are yet to be released.

4 Financing military booms – case studies and regressions

This section examines how military spending booms are financed as they unfold. We begin with an overview and summarize the main takeaways from all 114 case studies. We then adopt a fiscal accounting perspective and document revenue and expenditure patterns across boom episodes using our newly collected granular budget data. In a third step, we present evidence from panel regressions.

We focus on three main financing channels: (i) public debt, (ii) taxation, and (iii) reductions in social and other non-military expenditures (see Section 6 for a detour of inflation).

To capture borrowing and deficits, we use data on debt-to-GDP ratios and primary balance-to-GDP from Reinhart and Rogoff (2011), Mauro et al. (2015), and Mbaye et al. (2018). Reductions in non-military spending are measured using our disaggregated spending data from our Global Budget Database. For taxation, we rely on total tax revenues as a share of GDP from Andersson (2025). Long-run data on tax rates are only available for top income brackets (Section 5 provides a more detailed analysis of long-run tax effects). Appendix A7 provides a comprehensive overview of all data sources used in our analysis.

4.1 Case studies of 114 military booms

This subsection summarizes the key results from 114 case studies on the financing of military spending booms. For each case, we collected detailed archival material and analyzed the boom's financing patterns using the granular spending and revenue data from our database. To deepen the analysis of the revenue side, we manually coded over 30,000 individual revenue items specifically for these case studies. Our extensive data collection allows us to create the most detailed "atlas" of military buildups and their financing, both historically and in more recent times.

Table 1 below provides a summary overview of all booms. More details are shown in Appendix E, which provides a comprehensive documentation of each of the 114 cases. Specifically, this case-by-case appendix documents the size of each boom, its historical context with more detail on the reason of each boom, and decomposes total spending and revenues for each year of the boom. The main focus is on the dynamics in borrowing and in the size and composition of both public spending and tax revenues. In addition, it also provides narratives about tax introductions and changes during each boom.

A key difficulty when studying the financing of booms is the fungibility of money. In modern budgetary systems, revenues are rarely earmarked, which makes it difficult to link specific spending increases, such as for the military, to corresponding revenue sources. However, historical reporting practices and our case-by-case assessments helped us to find a solution to this problem. In historical budget documents, increases in military spending were often classified as "extraordinary" expenditures and explicitly linked to revenues also labeled "extraordinary," typically new taxes or, more often, borrowing. Similarly, modern budget documents can contain narrative accounts that clarify how major spending increases were financed.

Based on these insights, we make the following assumptions to identify the primary financing source of military spending booms: all increases in tax revenues ("ordinary revenues") are first allocated to cover additional non-military spending ("ordinary spending"). If the increase in tax revenues exceeds the increase in non-military spending, we count that

as a "surplus" and allocate this surplus to fund the increase in military spending (in full or in part). The remainder is financed through borrowing, i.e., debt issuance. In short, if the increase in tax or administrative revenues does not suffice to cover the increase in military spending, we assume the gap to be financed by debt (unless we find evidence for significant spending cuts).

If the tax revenue increase covers more than 66.6% of the additional military spending, we consider the boom as primarily tax-financed. If additional tax revenues account for less than 33.3% of additional military spending, we consider the boom as primarily debt-financed.[20] Every boom in between these values is considered to be mixed-financed. Finally, we create the category "spending cuts" when at least half of the military spending increase is financed through reductions in other, non-military spending.

We use this approach to broadly classify each boom by "main financing method." Table 1 summarizes the results of this classification for each boom. It reports the country, boom period, and boom size, along with a brief description of the reason of the boom and its historical trigger event, an indicator for whether the boom is a major war boom as well as an indicator for whether the boom is triggered by an exogenous geopolitical shock, and its main financing method. Appendix E provides a detailed description of the historical context of each boom that allows us to identify its trigger and motivation, building on over 300 historical sources. The indicator for whether the boom is an exogenous peacetime boom is key to our analysis in Section 5.

Our 114 case studies can be summarized as follows:

- *Major war booms were financed predominantly through debt.* This result is corroborated by the qualitative evidence — including budgetary debates and the historical literature — which consistently identify borrowing as a primary instrument of wartime finance. In most wars, the magnitude and immediacy of military spending made deficit financing the only feasible short-term option. Only three cases deviate from this general pattern.[21]
- *Peacetime booms show a more even mix of debt and tax financing.* Among the 88 cases, 33 are predominantly debt-financed (i.e., more than two-thirds of the additional military spending was funded through new borrowing) and 32 are primarily tax-financed (more than two-thirds covered by higher tax revenues). The remaining 23 cases feature mixed financing (19 cases) or rely primarily on spending cuts (4 cases) on non-military

[20] Appendix E takes a closer look at the financing of each boom.

[21] These are (i) the Korean War in the United States, a well-documented case of tax-based war financing (Ohanian, 1997); (ii) WW2 in the Soviet Union, where spending cuts and hidden ("turnover") taxes were central; (iii) WW2 in Canada, which relied on a mix of taxes and borrowing.

spending.[22]

- *Tax-financed booms tend to occur in periods of economic expansion*, when governments experience rising tax revenues. Of the 32 booms outside major wars, most were preceded by primary budget surpluses that often persist throughout the boom, with the mean surplus statistically different from zero (see Figure B7). The case study evidence supports this pattern, showing that surplus revenues were used during 21 booms to finance rearmament programs and military modernization.
- *Debt-financed booms generally tend to occur amid rising geopolitical tensions* and under less favorable fiscal conditions. According to our case narratives, more than two-thirds of the 33 debt-financed booms outside major war were triggered by rising external threats and/or limited external conflicts such as colonial campaigns. Prominent examples of these debt-financed booms include the European military buildups of the 1930s in response to the rising Nazi threat, the defense expansions in neutral countries during the World Wars, or military buildups in the context of growing regional tensions such as those in Japan and Norway in the late 19th century and in India during the 1980s.
- *Spending cuts, e.g., on social affairs, are rare during military booms.* In total, we only observe 5 out of 114 booms that were mainly financed by spending cuts.[23] Most episodes (83 cases) record continued real growth in non-military spending. Of those 31 cases with any reductions at all, the average declines were small and often statistically insignificant.

In sum, the case studies point to debt as a dominant tool of military finance when countries face wars and escalating war threats. Tax financing is relatively more important in peacetime military buildups, although taxes also complement debt financing in wars or major geopolitical crises, especially in the medium term. By contrast, cuts in civilian spending play only a minor role in both war and peace. The Nazi government's steep reductions in social spending, exemplified by its aggressive slogan "guns rather than butter," are the exception rather than the rule.

[22]The four peacetime booms financed mainly through spending cuts are Austria (1934–1937), Portugal (1883–1885), Spain (1874–1876), and Switzerland (1875–1876).

[23]These are WW2 in the Soviet Union and four peacetime booms, namely Austria (1934–1937), Portugal (1883–1885), Spain (1874–1876), and Switzerland (1875–1876).

Table 1: Overview of military spending booms, 1870-2022

Country	Period	Size *(% of GDP)*	Context and exogenous trigger (if any)	Major war boom?	Exog. geopol. shock?	Main financing method
Australia	1911–12	1.1	Naval buildup and conscription (British imposed demands)		Yes	Taxes
Australia	1915–19	48.4	World War 1 (automatic entry via Britain)	Yes	Yes	Debt
Australia	1940–44	153.6	World War 2 (alliance with Britain; Pearl Harbor)	Yes	Yes	Debt
Australia	1952–53	2.9	Korean War support (US alliance; Communist expansion)		Yes	Taxes
Australia	1966–68	4.3	Vietnam War support (US requests; Communist expansion)		Yes	Mixed
Austria	1934–37	3.0	Buildup and conscription (threat from Nazi Germany)		Yes	Cuts
Austria	1956–58	2.8	Buildup after State Treaty (end of Allied occupation)		Yes	Debt
Austria	1963-64	0.8	Cold War rearmament (Berlin Crisis; Cuban Missile Crisis)		Yes	Debt
Canada	1884	0.3	Militia Act, creation of a permanent force			Taxes
Canada	1903–05	0.5	New Militia Act, expansion of permanent force			Taxes
Canada	1910–11	0.3	Naval buildup (British imposed demands)		Yes	Taxes
Canada	1914–17	27.6	World War 1 (automatic entry via Britain)	Yes	Yes	Debt
Canada	1935	0.2	Modest naval expansion			Debt
Canada	1939–44	215.0	World War 2 (British alliance; attacks on Poland, UK)	Yes	Yes	Mixed
Canada	1950–52	14.2	Korean War support (UN call for intervention; US alliance)		Yes	Taxes
Denmark	1885–88	4.0	Planned defense upgrades and fortifications			Taxes
Denmark	1909–11	1.2	Defense Act of 1909 (German "Flottennovelle" buildup)		Yes	Debt
Denmark	1914–16	4.9	World War 1 (threat of invasion or attacks)		Yes	Mixed
Denmark	1945–47	3.7	Military reorganization			Mixed
Denmark	1951–53	3.5	Buildup after joining NATO (US pressure, Korean War)		Yes	Taxes
Finland	1918–19	6.8	Finnish Civil War (collapse of Imperial Russia)	Yes	Yes	Debt
Finland	1939–44	115.9	Winter War and WW2 (Soviet invasion)	Yes	Yes	Debt
Finland	1967–68	1.3	Planned military modernization			Taxes
Finland	2003–04	0.5	Defense reforms and internationalization			Debt
France	1891–92	1.1	Naval buildup (Bismarck's sacking, Franco-Russian alliance)		Yes	Taxes
France	1914–18	107.1	World War 1 (German invasion)	Yes	Yes	Debt
France	1927–29	4.8	Construction of the Maginot Line		Yes	Taxes
France	1936–39	6.9	Rapid buildup (Nazi rearmament, Rhineland crisis)		Yes	Debt
France	1951–53	15.2	Korean War, Indochina War (multiple external shocks)		Yes	Mixed
Germany	1914–18	139.5	World War 1 (July Crisis, Russian mobilization)	Yes	Yes	Debt
Germany	1934–35	12.3	Hidden Nazi rearmament			Debt
Germany	1936–38	28.5	Open Nazi rearmament			Mixed
Germany	1939–	128.7	World War 2, initiated by Nazi Germany	Yes		Mixed
Germany	1956–59	11.9	Creation of "Bundeswehr" (US and Cold War pressure)		Yes	Taxes
India	1879–80	1.9	Second Anglo-Afghan War (compulsory support for Britain)		Yes	Debt
India	1917–19	2.5	World War 1 (compulsory support for Britain)	Yes	Yes	Debt
India	1940–43	16.7	World War 2 (compulsory support for Britain)	Yes	Yes	Debt
India	1957	0.5	Planned military modernization			Debt
India	1962–63	2.9	Sino-Indian War (brief Chinese attack)		Yes	Debt
India	1986–88	2.6	Planned defense initiatives			Debt
Italy	1887–88	1.9	Colonial expansion			Mixed
Italy	1910–12	4.4	Colonial aims and Italo-Turkish War, initiated by Italy			Taxes
Italy	1914–18	217.4	World War 1 (external pressures and shocks)	Yes	Yes	Debt
Italy	1935–36	13.5	Invasion of Ethiopia, initiated by Italy			Debt
Italy	1939–42	70.1	World War 2 (war outbreak, Nazi alliance)	Yes	Yes	Debt
Japan	1879–80	0.7	Military modernization			Taxes
Japan	1883–84	1.4	Military modernization			Debt
Japan	1886–87	2.1	Ongoing and planned military modernization			Debt
Japan	1896–97	6.8	Military buildup (Triple Intervention, Russian expansion)		Yes	Taxes
Japan	1904–05	10.0	Russo-Japanese War (Russian expansion in Manchuria)	Yes	Yes	Debt
Japan	1907–08	3.6	Buildup for imperial expansion			Debt
Japan	1920–21	2.2	Siberian Intervention (Russian civil war, regional instability)		Yes	Debt
Japan	1932–33	7.0	Imperial expansion in Manchuria, self-initiated	Yes		Debt
Japan	1937–38	30.9	Invasion of China, self-initiated	Yes		Debt
Japan	1941–43	55.7	World War 2 (trade and oil embargo, collapse of diplomacy)	Yes	Yes	Debt
Netherlands	1875–76	2.0	Aceh War (unexpected setbacks and resistance)		Yes	Debt
Netherlands	1914–18	26.9	World War 1 (threat of invasion or attacks)		Yes	Debt
Netherlands	1938–39	4.0	Defensive buildup (threat from Nazi Germany)		Yes	Mixed
Norway	1886–87	0.5	Planned military reorganization			Taxes
Norway	1891–92	0.5	Union crisis with Sweden (coercion threats)		Yes	Debt

(continued)

(continued)

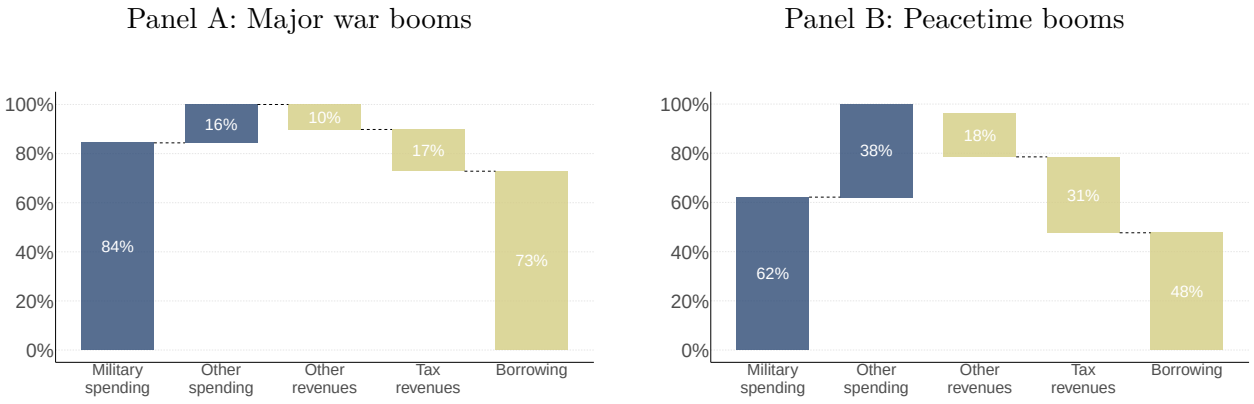
Country	Period	Size *(% of GDP)*	Context and exogenous trigger (if any)	Major war boom?	Exog. geopol. shock?	Main financing method
Norway	1895–96	1.9	Final phase of Union crisis (fear of Swedish attack)		Yes	Mixed
Norway	1914–17	3.7	World War 1 (threats from Germany and Britain)		Yes	Taxes
Norway	1938–39	3.5	Military expansion (Nazi threats)		Yes	Debt
Norway	1950–53	9.1	Rearmament (NATO accession)		Yes	Taxes
Portugal	1883–85	1.1	Colonial control (Scramble for Africa, Berlin conference)		Yes	Cuts
Portugal	1889–91	1.2	Anglo-Portuguese Crisis (colon. threats, British Ultimatum)		Yes	Mixed
Portugal	1895–97	1.3	Colonial consolidation			Mixed
Portugal	1915–18	9.6	World War 1 (German attacks in the colonies)		Yes	Debt
Portugal	1926	1.3	Military coup and authoritarian consolidation			Debt
Portugal	1932–34	3.3	Consolidation of the Estado Novo dictatorship			Taxes
Portugal	1941–43	4.7	World War 2 (Axis threats, Allied Azores demands)		Yes	Taxes
Portugal	1953–55	2.3	Buildup after joining NATO (US pressure, Korean War)		Yes	Taxes
Portugal	1961–63	8.0	Colonial War (African uprisings, loss of Goa)		Yes	Taxes
Russia	1877–78	8.1	Russo-Turkish War (Balkan uprisings, Ottoman collapse)	Yes	Yes	Debt
Russia	1904–05	11.4	Russo-Japanese War (Japanese attack)	Yes	Yes	Debt
Russia	1913–14	3.6	Great Military Program, a planned buildup			Taxes
Russia	1934–35	4.1	Planned rearmament, Five-Year Plan			Mixed
Russia	1936–38	8.2	Prewar militarization (Nazi rearmament, Japanese threat)		Yes	Taxes
Russia	1939–44	42.4	World War 2 (aggressions by Nazi Germany)	Yes	Yes	Cuts
Spain	1874–76	5.9	Third Carlist War with domestic turmoil, uprisings			Cuts
Spain	1909–11	1.9	Melilla War (Rif uprising in northern Morocco)		Yes	Mixed
Spain	1921	0.7	Colonial mobilization (Rif War defeat in Morocco)		Yes	Taxes
Spain	1941–44	10.3	World War 2 (Axis dominance, Allied landing North Africa)		Yes	Debt
Spain	1980–83	3.3	Democratic transition and reforms for NATO accession			Mixed
Sweden	1900–04	5.5	Defense Reform of 1901 and conscription army			Taxes
Sweden	1915–18	7.2	World War 1 (Russian and German threat)		Yes	Debt
Sweden	1938–41	39.5	World War 2 (Nazi threats, Finish & Norway invasions)		Yes	Debt
Switzerland	1875–76	0.8	Federal military reform and centralization			Cuts
Switzerland	1887–89	0.7	Fortification of the Gotthard Pass			Taxes
Switzerland	1892–93	1.1	Planned military modernization			Taxes
Switzerland	1911–13	1.4	Defensive buildup (growing European tensions)		Yes	Mixed
Switzerland	1914–18	16.1	World War 1 (threat of invasion)		Yes	Debt
Switzerland	1937–38	1.5	Defensive buildup (Nazi threat: Rhineland, Anschluss)		Yes	Mixed
Switzerland	1939–44	43.5	World War 2 (German and Italian threat)		Yes	Debt
Switzerland	1951–52	4.6	Defense buildup (Korean War shock)		Yes	Taxes
Turkey	1934	1.3	Planned military modernization			Mixed
Turkey	1939–41	16.0	World War 2 (Axis expansion and growing pressures)		Yes	Mixed
Turkey	1954–55	2.5	NATO-driven rearmament (Korean War, US pressure)		Yes	Taxes
UK	1877–79	1.9	Great Eastern Crisis (Russo–Turkish War, Straits threat)		Yes	Debt
UK	1885	1.7	Imperial emergency spending (Sudan, Afghan frontier)		Yes	Debt
UK	1899–01	10.0	Second Boer War (Boer invasion of British colonies)		Yes	Debt
UK	1914–17	183.1	World War 1 (German invasion of Belgium)	Yes	Yes	Debt
UK	1936–38	8.7	Defensive buildup (Nazi rearmament, Rhineland, Anschluss)		Yes	Mixed
UK	1939–44	227.7	World War 2 (German invasion of Poland)	Yes	Yes	Debt
UK	1951–52	6.3	Korean War and NATO demands (Korea, Cold War threats)		Yes	Debt
USA	1890–93	1.2	Planned naval buildup			Taxes
USA	1898–99	1.4	Spanish-American War (Cuba crisis, USS *Maine*)		Yes	Mixed
USA	1908–09	0.3	Planned naval expansion			Taxes
USA	1917–19	23.9	World War 1 (submarine warfare, Zimmermann Telegram)	Yes	Yes	Debt
USA	1936	2.5	Planned naval modernization			Debt
USA	1941–45	187.7	World War 2 (Japanese attack on Pearl Harbor)	Yes	Yes	Debt
USA	1952–53	11.2	Korean War (North Korean invasion, UN commitments)	Yes	Yes	Taxes
USA	1967–68	3.9	Vietnam War escalation (Tet Offensive)	Yes	Yes	Debt
USA	2002–11	18.6	Afghanistan and Iraq Wars (9/11 terrorist attacks)		Yes	Debt

Note: The table list the booms for each country, the boom period, and size, along with a brief description of the reason of the boom and its trigger event, an indicator for whether the boom is major war boom as well as an indicator for whether a boom is triggered by an exogenous geopolitical shock, and the main financing method of a boom. Appendix E provides a detailed description of the historical context of each boom that allows us to identify its trigger. The size of a boom is defined as the cumulative additional military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

4.2 Fiscal accounting: granular revenues and expenditures in 114 booms

This section presents the fiscal accounting results for the full sample of booms. Rather than classifying booms into broad categories (debt- versus tax-financed) as in the previous section, we now report the precise weights of debt and tax financing, as well as the contribution of spending cuts. Case-specific results for each boom are provided in Appendix E.

Figure 3: Composition of additional spending & revenues during military booms



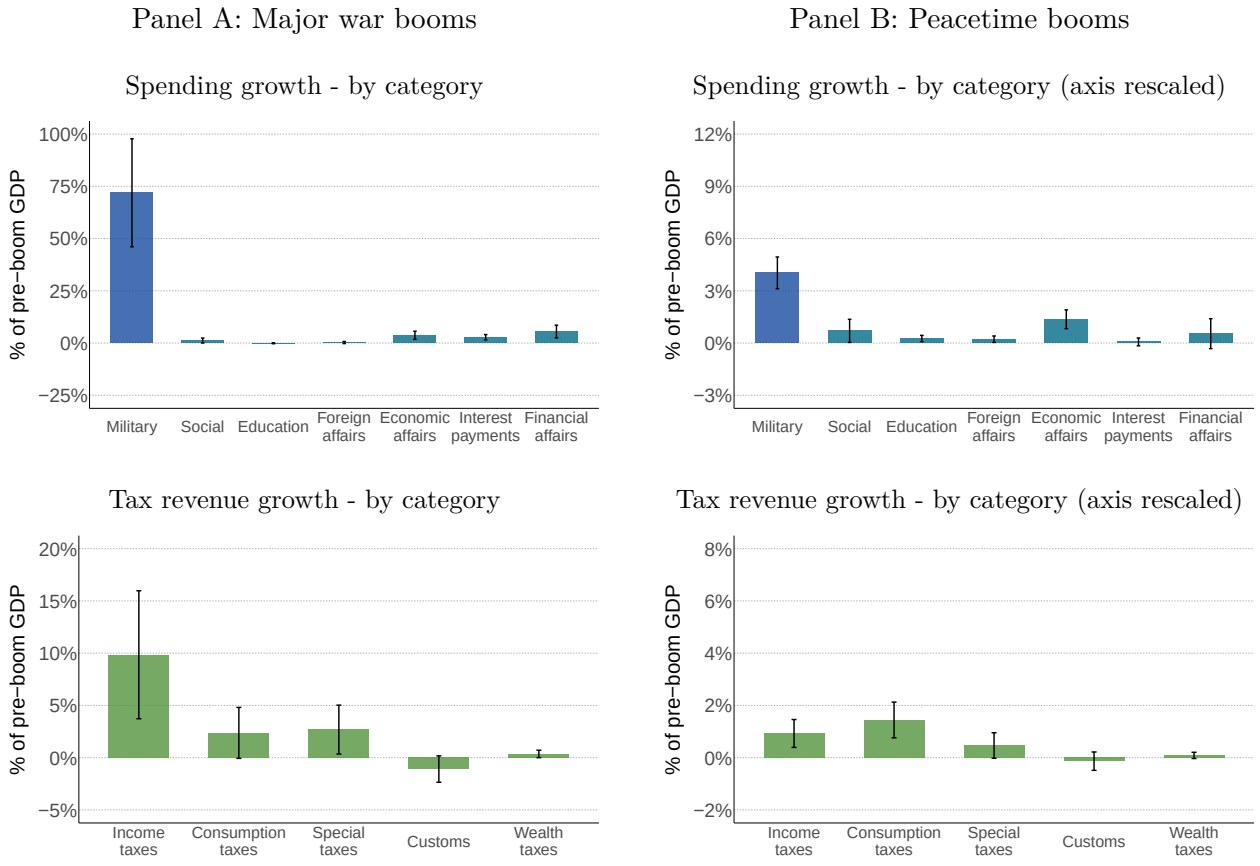
Note: This figure shows a summary of our fiscal accounting exercise on how the additional spending during military booms is financed. The graph collapses all 114 cases, weighting each boom equally. The graphs builds on the granular revenue and spending data from our Global Budget Database.

Figure 3 collapses the case-level fiscal accounting graphs into an aggregate picture, differentiating between major war booms and peacetime booms. Each of the 114 cases enters the average with equal weight. The blue bars display the total spending increase, decomposed into military and non-military components. The yellow bars show the corresponding financing composition, distinguishing between additional borrowing (new debt issuance), additional tax revenues, and other revenue sources such as administrative fees, non-military special accounts, asset sales etc. All spending and revenue values are in real 2015 USD.

The results underline that major war booms are predominantly financed through borrowing. On average, new debt issuance covers more than 70% of the increase in military spending during wars. The remainder is covered by higher tax revenues (average of 17%) and additional revenues from other sources. Spending cuts again do not play a role when averaging across cases.

Peacetime booms exhibit a more balanced mix of financing sources, and the overall budget expansion is not confined to military spending. The extra spending is covered by additional borrowing and higher tax revenues, with the remainder covered by other revenues. Compared to major war booms, tax revenues play a larger role. The small residual share (about 4%) reflects episodes in which governments drew on accumulated primary surpluses.

Figure 4: Disaggregated tax revenues and spending during military booms



Note: The growth in tax revenues and in government spending is measured relative to the last pre-boom year and normalized by pre-boom GDP. Averages are computed across booms in the respective sample. Panel A shows results for major war booms; Panel B for peacetime booms. Whiskers represent 90% confidence intervals. The data comes from the granular revenue and spending data from our Global Budget Database. The category "consumption taxes" combines modern value-added taxes (VAT) and historical excise taxes on goods such as tobacco, alcohol, and fuel. All values are in real 2015 USD.

Spending cuts again play no discernible role on average.

We next examine the composition of extra spending and extra tax revenues in more detail. The upper part of Figure 4 confirms that spending cuts contribute little to the financing of military booms. In both wartime and peacetime episodes, most expenditure categories remain stable or continue to expand.

On the tax revenue side, Figure 4 shows that the bulk of additional tax revenues stems from income and consumption taxes (the "consumption tax" category lumps together value-added taxes, sales taxes, and historical excise taxes on goods such as alcohol, salt, and tobacco).[24] By contrast, revenues from wealth taxes, such as inheritance and property taxes, show no significant increase, nor do customs duties.

[24] An overview of the definitions of the different tax revenue categories, together with the definitions for revenues from borrowing and other sources, is provided in Appendix A2.

The results on special taxes such as war levies and excess profits taxes are also noteworthy. While these taxes play an important role during major wars and at times generate substantial revenues, their overall contribution to wartime spending surges is modest, on average less than 3 percent of pre-boom GDP, though with considerable cross-country variation. In peacetime booms, excess profits taxes or special defense levies on the wealthy or on corporations are comparatively rarer, and revenues remain more limited. Taken together, these results suggest that the additional tax revenue raised during military booms comes primarily from broad-based taxation rather than from special, temporary levies targeted at the wealthy.

4.3 Financing booms: event studies and regressions

We next turn to descriptive event studies and panel regressions to quantify the magnitude of fiscal changes. Compared to the fiscal accounting approach above, this allows us to document how fiscal variables evolve over time and the size of these shifts.

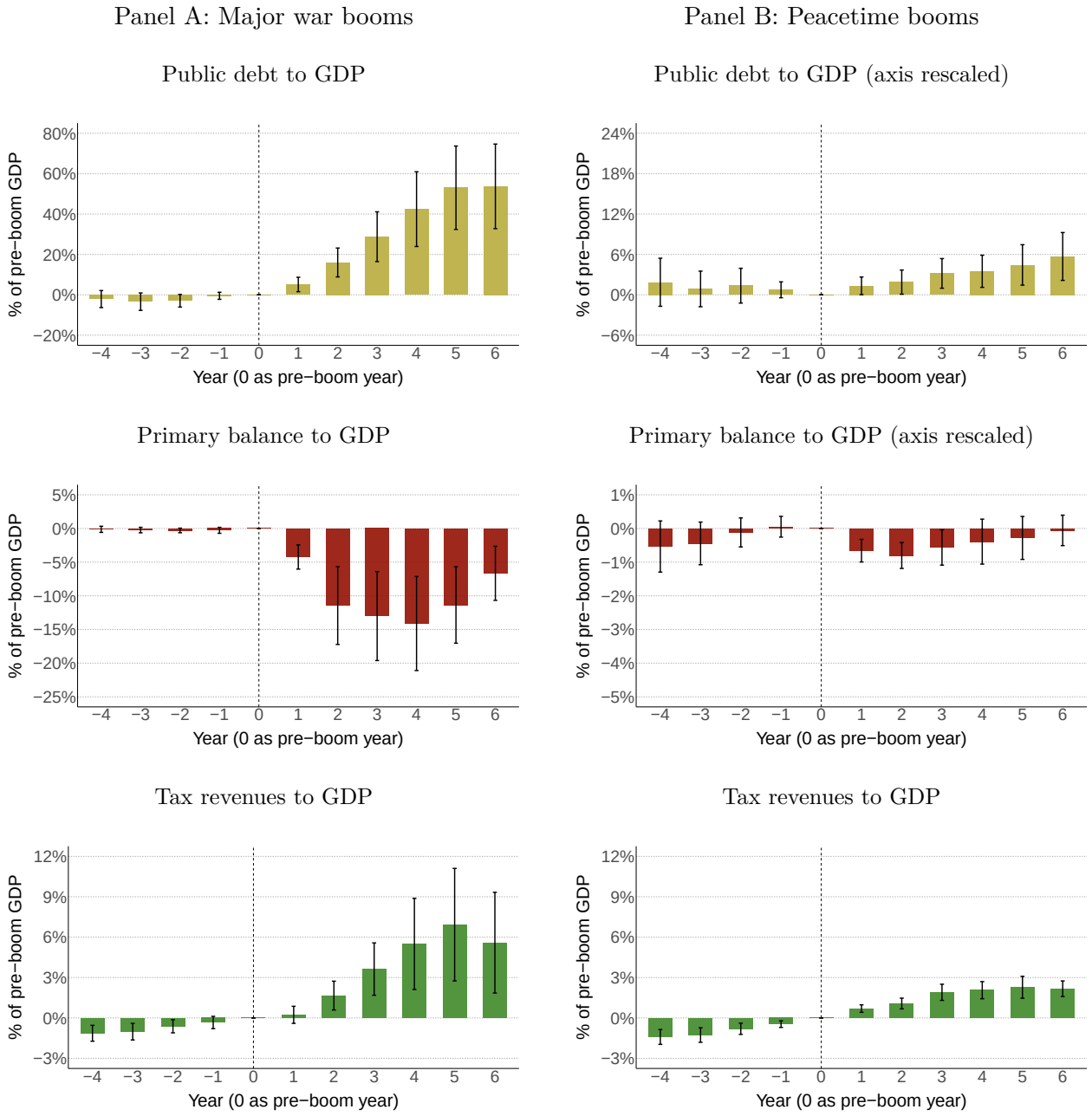
We begin with descriptive event study graphs centered on the start of the boom. Each fiscal variable is expressed in real terms and scaled by pre-boom GDP, following the standard "Hall-Barro-Redlick" transformation (Hall, 2009; Barro and Redlick, 2011; Ramey, 2016). We thus assess fiscal trajectories relative to pre-boom levels.

We start with the main financing indicators: borrowing and taxation. Figure 5 plots the average changes in tax revenues, public debt, and the primary balance, with whiskers showing 95% confidence intervals and the dashed line marking the pre-boom year. We again distinguish between major war booms and peacetime booms.

The patterns are stark. During major war booms, public debt expands rapidly, by more than 50 percentage points of pre-boom GDP, and primary balances fall to below -10% in the early boom years. Tax revenues also increase, but more modestly, by about five percentage points of GDP after six years. Peacetime booms show similar dynamics but on a much smaller scale: debt rises by roughly five percentage points of GDP and tax revenues by about two. This mirrors the relative size of the two types of booms. As shown in Figure 6, military spending rises by about 20 percentage points of GDP per year during major war booms, but only about two percentage points in peacetime booms. Civilian spending also increases in both types of booms, with no evidence of systematic reductions in social or other non-military programs.

We complement the descriptive graphs with fixed effects panel regressions that estimate how fiscal variables evolve during military booms relative to non-boom years. For each country i and year t, we define a boom indicator, $Boom_{i,t}$, which equals one in military spending boom years and zero otherwise. The dependent variable $y_{i,t}$ is the annual change

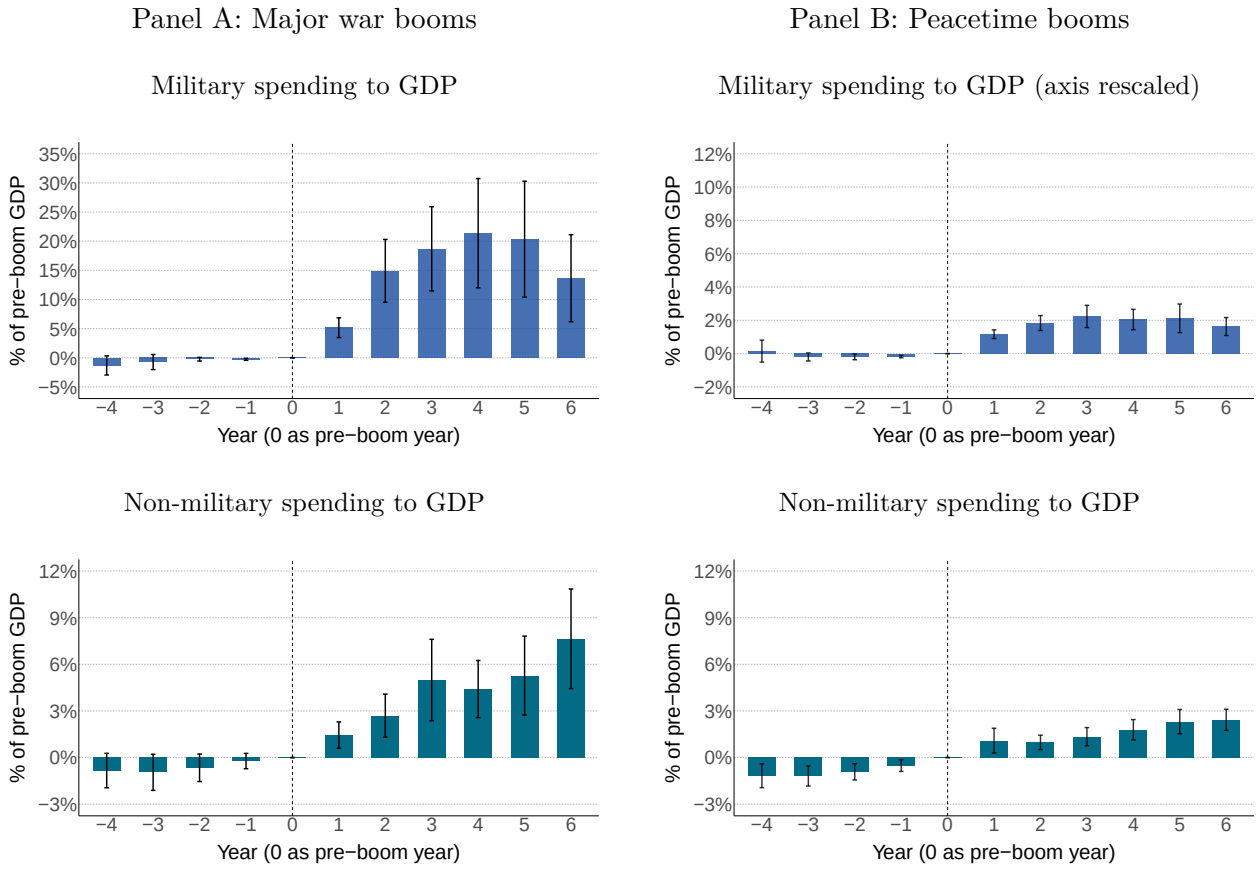
Figure 5: Debt and tax revenue dynamics around military booms



Note: The bars show the average changes in public debt, primary balance, and tax revenues relative to the last pre-boom year and normalized by pre-boom GDP. The whiskers indicate 95% confidence intervals; the dashed vertical line marks the pre-boom year.

in key fiscal aggregates, measured in real 2015 USD. Following Ramey (2016), we normalize by trend GDP rather than actual GDP to mitigate potential biases arising from short-term output fluctuations, which can be substantial during periods of war and geopolitical

Figure 6: Military and non-military spending dynamics around military booms



Note: The bars show average changes in military and non-military (civilian) government spending relative to the last pre-boom year and normalized by pre-boom GDP. The whiskers indicate 95% confidence intervals; the dashed vertical line marks the pre-boom year.

instability.[25] The specification is

$$y_{i,t} = \beta_b Boom_{i,t} + \sum_{l=0}^{1} \boldsymbol{\gamma}_l' \mathbf{X}_{i,t-l} + \alpha_i + \eta_t + u_{i,t}, \tag{1}$$

where $\mathbf{X}_{i,t-l}$ includes contemporaneous and one-year lagged trend GDP growth, population growth, and inflation (log change in the CPI), with results being robust when adding additional lags. The terms α_i and η_t denote country and year fixed effects. Standard errors are computed following Driscoll and Kraay (1998) to account for cross-sectional dependence, using four lags.

The regression results closely mirror the descriptive evidence. During major war booms, public debt and tax revenues grow significantly relative to non-boom years, while primary

[25]For each country, trend real GDP is estimated using the Hamilton filter (Hamilton, 2018). The baseline specification employs one lag, with results robust to alternative lag lengths.

balances deteriorate sharply (Table 2, Panel A). Military spending rises strongly and civilian spending also increases, but mainly through higher interest payments, consistent with rapid wartime debt accumulation. Social spending does not decline, and we again find no evidence of retrenchment across other civilian categories (Table 2, Panel B).

Table 2: Panel regressions – financing military spending booms

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Major war booms	6.97***	0.63*	9.54***	−4.14***	0.84***
	(0.94)	(0.37)	(1.58)	(1.12)	(0.19)
Num. obs.	2,291	2,291	2,362	2,315	2,390
Adj. R^2	0.40	0.09	0.21	0.27	0.22
Peacetime booms	0.96***	0.38**	0.93**	−0.69***	0.25**
	(0.18)	(0.16)	(0.40)	(0.19)	(0.10)
Num. obs.	2,428	2,428	2,496	2,443	2,527
Adj. R^2	0.32	0.08	0.12	0.26	0.17

(B) Reductions in spending? Disaggregation

	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Major war booms	6.97***	−0.05	−0.00	0.06*	0.14	−0.02	0.47***
	(0.94)	(0.06)	(0.03)	(0.03)	(0.16)	(0.26)	(0.12)
Num. obs.	2,291	2,097	1,898	2,204	2,365	2,365	2,099
Adj. R^2	0.40	0.11	0.15	0.04	0.06	0.01	0.12
Peacetime booms	0.96***	−0.02	−0.01	0.06**	0.18***	0.08	0.05**
	(0.18)	(0.04)	(0.02)	(0.03)	(0.06)	(0.10)	(0.02)
Num. obs.	2,428	2,214	2,020	2,346	2,502	2,502	2,236
Adj. R^2	0.32	0.11	0.13	0.04	0.06	0.02	0.11

Note: Panel A focuses on aggregate financing variables, wile Panel B shows a disaggregated breakdown by government spending category. All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

Peacetime booms display similar but more modest fiscal shifts. Debt and tax revenues rise significantly, and the primary balance falls. Civilian spending expands as well, especially on foreign and economic affairs, with no significant reductions in social spending.

Overall, the panel results reinforce the central finding that military booms have been financed primarily through borrowing and, to a lesser extent, higher taxation. This is consistent with the classic view that governments rely on debt to smooth large temporary shocks

(e.g., Barro, 1979; Lucas and Stokey, 1983). Smaller peacetime booms rely on a more balanced mix of debt and tax financing. Across settings, we find little support for the traditional idea of "guns versus butter." Spending cuts on social and other civilian purposes do not play a systematic role in the financing of military booms.

5 The long-run fiscal aftermath: debt, taxation, and spending

Thus far, our analysis examined the short-run fiscal adjustments during military spending booms. We now turn to their long-run fiscal consequences.

Credibly estimating the effects of military spending surges requires isolating episodes that are orthogonal to domestic economic and political dynamics. Many buildups do not satisfy this condition, as they arise during periods of strong growth, are initiated to stimulate domestic activity, or follow political shifts such as the entry of nationalist governments committed to rearmament. These forces are not plausibly exogenous to long-run fiscal trajectories and are likely correlated with unobserved determinants of debt, taxation, and spending. Relying on such episodes risks biasing the estimated responses due to endogeneity, confounders, and differential pre-trends.

To address these concerns, we restrict the analysis to military booms triggered by exogenous geopolitical shocks. We classify a boom as exogenous when the decision to rearm was prompted by events outside domestic political control, in particular abrupt changes in a country's external security environment such as an invasion or escalating interstate rivalry. Appendix E presents these narratives and classifies, case-by-case, whether a boom was induced by a clearly identifiable external geopolitical shock that is straightforward to verify in the historical record. (Table 1 provides a summary).

For booms in major wars, we cross check our classification against the narrative identification of exogenous wars in Federle et al. (2025). In our sample, 23 of the 26 major war booms are classified as exogenous, which closely matches the classification in Federle et al. (2025) for the overlapping cases.[26]

For peacetime booms, we again focus on a subsample of exogenous cases triggered by external geopolitical shocks. In total, 54 of the 88 booms in this sample are classified as

[26]In Federle et al. (2025), 25 of our 26 major war booms are coded as exogenous. Both classifications agree on Japan 1932–33 (the occupation of Manchuria) as endogenous. We additionally classify the war booms of Germany after 1939 (the invasion of Poland and World War 2) and Japan in 1937–38 (the invasion of China) as endogenous. The difference reflects the underlying approach. Federle et al. (2025) classify wars by war event in a multi-country perspective, whereas we adopt a country-specific perspective that codes each country's boom as endogenous or exogenous. Under this approach, WW2 is exogenous for France (due to the external shock of Germany's invasion) but it is endogenous for Nazi Germany (which started an unprovoked war driven by domestic motives).

exogenous, based on the narrative evidence summarized in Table 1. For the main estimation results, we further exclude all cases involving limited conflict, including colonial skirmishes and wars below the 10,000 casualty threshold for "major wars." As a result, we drop exogenous booms associated with smaller conflicts and wars from the "peacetime" sample of Section 4, such as Portugal's buildup in 1961 (Colonial War), Spain's booms in 1909 and 1921 (uprisings in Morocco), the United Kingdom's booms in 1877 and 1899 (Russo Turkish War and the Boer War), and the United States' boom in 1898 (Spanish American War).

The resulting subsample comprises 37 peacetime booms without casualties or conflict. These booms were driven by external threats and shocks and can be interpreted as purely defensive and preventive buildups. This sample provides a cleaner benchmark for peacetime military expansions and is most comparable to Western Europe today, which faces growing threats but is not actively involved in war. Our main results are robust, however, to including all 54 exogenous booms outside the "major war" sample, that is, when adding exogenous booms featuring minor wars and limited conflicts with less than 10,000 casualties. An overview of the different subsamples is provided in Table B1.

We use the final sample of exogenous wars (23 cases) and exogenous peacetime booms (37 cases, without minor wars) to estimate the long-run fiscal consequences of military buildups. Specifically, we use a long-horizon panel local projection framework, as in Jordà et al. (2022) and Antolin-Diaz and Surico (2025), that traces debt, taxation, and spending over the 15 years following boom onset. Following standard practice (Jordà and Taylor, 2025), the specification uses log differences and measures cumulative percentage changes in each fiscal variable (in real terms) relative to the pre-boom year, which is the last period unaffected by the shock. This setup also accommodates the possibility that fiscal outcomes change permanently during a war or major buildup. Local projections allow us to characterize the full time path of fiscal adjustments while flexibly conditioning on macroeconomic controls and country fixed effects. The model can be written as follows:

$$\log(Y_{i,t+h}) - \log(Y_{i,t-1}) = \beta_h \text{Shock}_{i,t} + \sum_{l=0}^{15} \boldsymbol{\gamma}'_{l,h} \mathbf{X}_{i,t-l} + \sum_{l=1}^{15} \boldsymbol{\eta}'_{l,h} \mathbf{Z}_{i,t-l} + \alpha_{i,h} + u_{i,t+h},$$
$$\text{for } h = 0, \ldots, 15, \quad i = 1, \ldots, n, \quad t = 1, \ldots, T$$

where $\log(Y_{i,t+h}) - \log(Y_{i,t-1})$ is the cumulative change in outcome Y (in real 2015 USD) from boom onset t to horizon h. The variable $\text{Shock}_{i,t}$ equals one in the first year of an exogenously triggered military boom so that the coefficient β_h traces the response of Y at horizon h. The vector $\mathbf{X}_{i,t-l}$ includes contemporaneous and lagged log differences of real GDP and population, inflation, a dummy for other military booms, and an indicator for

debt crises. The vector $\mathbf{Z}_{i,t-l}$ contains lags of the outcome and shock variables. Following Olea and Plagborg-Møller (2021), we include up to 15 lags of all controls and state variables, but the results are robust to more parsimonious lag structures. $\alpha_{i,h}$ denotes country fixed effects. Standard errors follow Driscoll and Kraay (1998) with four lags.

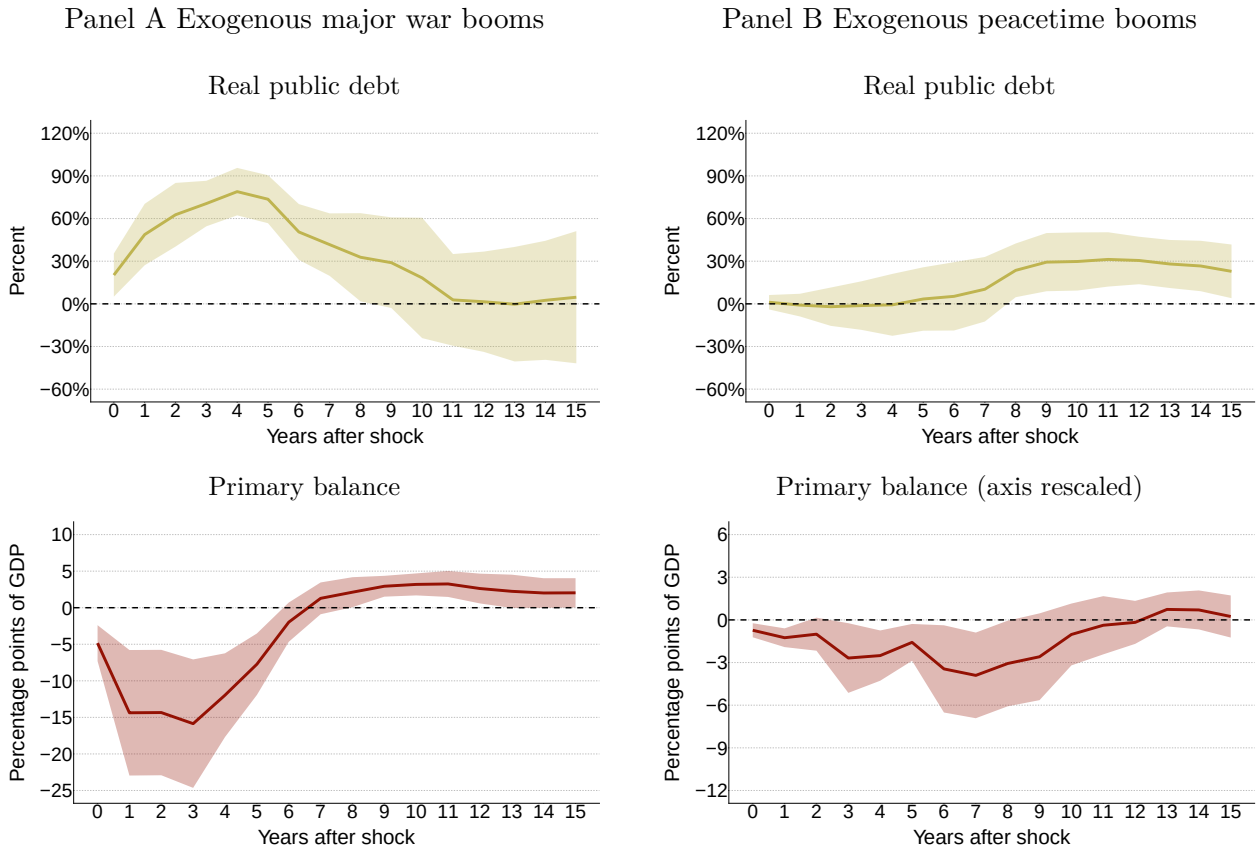
To assess the validity and robustness of our estimates, we conduct a battery of robustness checks, most of which are reported in Appendix C. We show that the results are robust to using an alternative local projection specification (the Hall-Barro-Redlick transformation), which scales variables by pre-boom GDP (Appendix C2). We also show that the findings change little when excluding peacetime military buildups that were followed by World War 1 or World War 2 within ten years of boom onset (Appendix C3). On long-run spending dynamics, we show results broken down by spending sub-category Appendix C4. In addition, we present descriptive event studies that further corroborate the main estimation results (Appendix C1).

5.1 Debt and default

Figure 7 shows the estimated long-run debt dynamics. Both exogenous major war and peacetime booms cause sizable increases in public debt. In major wars, real public debt rises sharply at boom onset, peaks around year four with an average increase of roughly 70 percent, and then gradually declines, returning to its pre-boom level by about year ten. In exogenous peacetime booms, the debt response is smaller and more delayed. Public debt reaches a peak increase of roughly 30 percent close to a decade after onset and begins to decline only from about year 13 onward. The primary balance exhibits a corresponding pattern that reflects the dynamics in military spending (see Subsection 5.3 below). In major war booms, primary deficits widen quickly, reach their minimum in year three, and improve markedly thereafter, with primary surpluses from about year seven onward. In exogenous peacetime booms, primary balances deteriorate more gradually, reach their low point around year seven, and begin to recover only after that. These patterns are similar when scaling the responses by GDP, as shown in Figure C2, or when zooming in on the World Wars (see the case studies in Figure C21).

The rapid decline in public debt after major wars is likely driven in part by sovereign defaults and debt relief. Reinhart and Rogoff (2009) document that defaults on external and domestic debt are common during periods of war and geopolitical turmoil, and post-war debt write offs are frequent as well. Following WW1, large official debts owed to the United States and United Kingdom were suspended under the Hoover Moratorium and largely written off after 1934 (Reinhart and Trebesch, 2016). After WW2, extensive relief was granted to defeated countries such as Germany, Italy, and Japan (Graf von Luckner et al., 2025).

Figure 7: Fiscal legacies (long-horizon LPs) – public debt



Note: Long-run impulse response functions for real public debt levels (in 2015 USD) and the primary balance over a period of 15 years after the onset of exogenous military spending booms. Since the primary balance (% of GDP) can be negative, we use plain differences instead of log differences. Therefore, the resulting coefficients can be interpreted as percentage point changes in GDP. Panel A shows results for the 23 exogenous major war booms and Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

Quantifying the exact contribution of these measures in our sample is difficult, however, because no historical dataset covers the full spectrum of government liabilities (domestic versus external, official versus private) or provides a comprehensive record of associated debt relief events.

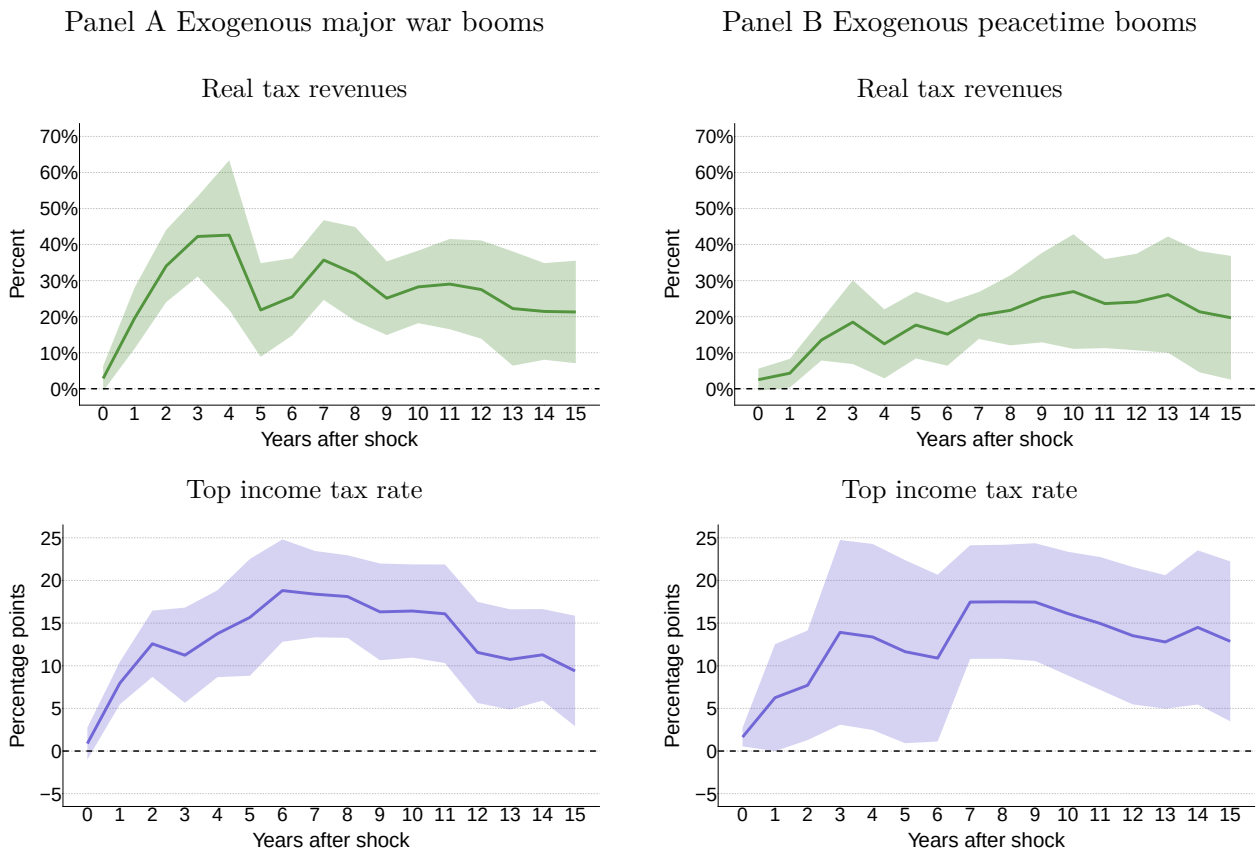
5.2 Tax revenues and tax rates - estimates and case-by-case narratives

We next examine the long-run evolution of taxes after military booms, again focusing on the subset of booms caused by exogenous geopolitical shocks. Figure 8 reports impulse responses for tax revenues and top marginal income tax rates. The revenue series is from Andersson (2025). The rate series is from Genovese et al. (2016), the only long-run dataset on statutory income tax rates, which covers 15 of our 20 countries.[27] More detailed historical data on tax

[27]Countries not covered are Austria, India, Russia, Portugal, and Turkey.

schedules or tax bases are not available before 1990 — a surprising research gap given the voluminous literature on taxes.

Figure 8: Fiscal legacies (long-horizon LPs) – taxes



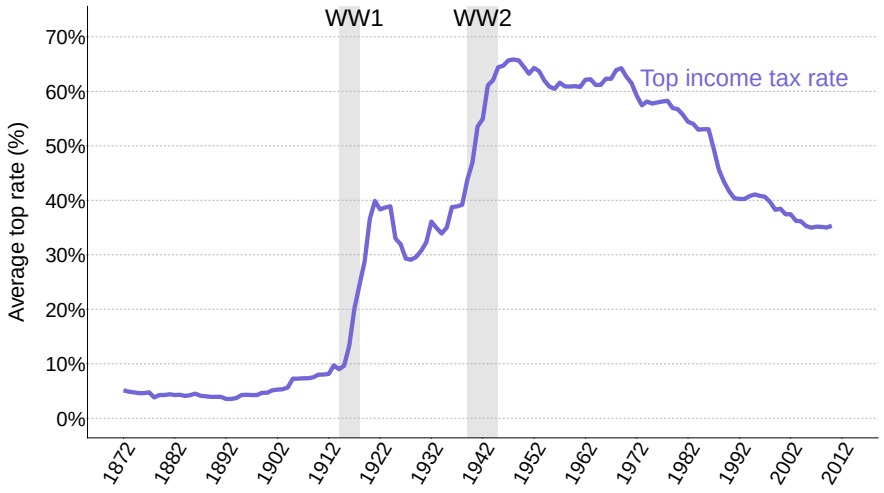
Note: Long-run impulse response functions for real tax revenues (in 2015 USD) and the statutory top income tax rate over a period of 15 years after the onset of exogenous military spending booms. For the top tax rate, we use plain differences instead of log differences so that the coefficients can be interpreted as percentage point changes. Panel A shows results for the 23 exogenous major war booms and Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

Estimation results: In both exogenous major war and peacetime booms, real tax revenues rise strongly and remain elevated for more than 15 years, by roughly 20 to 30 percent on average. This pattern is consistent across specifications, including when scaling revenues by GDP (Figure C3) and in WW1 and WW2 case studies (Figure C21). Moreover, Figure 8 shows that top marginal income tax rates exhibit a strong and persistent increase as well. After 10 to 15 years, top rates are around 15 percentage points higher than their pre-boom levels. This pattern holds for booms driven by wartime mobilization and for those arising from exogenous peacetime shocks.

Motivated by these stark findings, we show the historical evolution of income tax rates in Figure 9, using the average top income tax rate for the 15 countries available in the

dataset of Genovese et al. (2016). The increases during the two World Wars are drastic. The average top income rate rose from below 10 percent to roughly 40 percent in WW1 and then to around 60 percent in WW2, with these elevated rates persisting through the 1970s. These WW1 and WW2 increases were largest among belligerents but were also substantial in non-belligerent states, as shown in Figure C23. These findings suggest that the tax legacy of major geopolitical shocks is large, long lasting, and not confined to countries directly engaged in conflict.

Figure 9: Top income tax rates, country average, 1870-2012



Note: This figure shows the average statutory top marginal income tax rate across the 15 countries for which this data was available. The figure and data build on Scheve and Stasavage (2016) and Genovese et al. (2016).

Case narratives on tax introductions and roll-backs: We next move beyond averages and examine tax policy changes and tax legacies on a case-by-case basis for all 114 spending booms in our sample. For this purpose, we construct new tax narratives based on historical legislation, parliamentary records, and historical case-study evidence. For each episode, we systematically search for (i) new tax introductions, (ii) tax rate increases and tax base expansions, and, crucially, (iii) whether these measures were subsequently reversed, either fully or partially, or left in place.

This narrative approach has two main advantages for understanding the fiscal consequences of military buildups. First, it allows us to examine the scope and composition of tax changes during military booms at a level of detail that existing long-run datasets do not provide. Second, by coding tax roll-backs and tracing tax legislation for a decade or more after each boom, we can assess the persistence of tax changes directly. The narratives thus yield a more immediate measure of policy persistence than tax revenue measures, which may be influenced by macroeconomic fluctuations or pre-trends.

The narratives do not capture every legislative tax change in detail. A complete history of taxation in our sample of 20 countries lies beyond the scope of this paper. Nonetheless, the resulting set of case narratives constitutes the most comprehensive compilation of tax policy adjustments associated with military spending booms across countries and time.

To ensure a tight connection between tax policy changes and military buildups, our classification approach is conservative. We count only those tax measures that can be directly linked to military spending needs, for example, when the text of tax legislation explicitly cites military or wartime expenditures as the motivation for the tax increase. When we find no evidence that a tax change was motivated by defense spending needs, we classify it as spurious and exclude it.

The final case narratives are presented in Appendix E, together with detailed justifications for each coding decision. Table 3 summarizes the main results in compact form. Table C1 provides an overview of tax increases by military spending boom, including the names of the relevant tax acts.

Table 3: Tax increases during military booms - summary of our tax narratives

	Booms		**With tax increases**			**Rolled back?**		
	Nr.	Size in % of GDP	Any increase	New tax(es) introduced	Raised existing	No	Partial	Yes, fully
All booms	114	22.8	63	51	50	19	35	9
Major war booms	26	80.4	24	23	21	5	19	0
Exogenous peacetime booms	54	6.7	31	22	24	9	15	7
Other peacetime booms	34	3.8	9	6	5	5	2	2

Note: Summary table for our narrative coding of tax increases that are related to military spending in boom periods. Tax increases include rate increases and tax base increases. Rollbacks refer to changes after the boom.

The narratives reveal a clear pattern. Tax introductions and tax increases are pervasive during military booms. In wartime episodes, a large majority of countries introduce new taxes and increase existing rates. But also exogenous peacetime booms typically see tax increases. By contrast, there are few tax changes in the wake of smaller, non-exogenous booms. These findings are consistent with Figure C25, which builds on the long-run dataset of major tax introductions compiled by Genschel and Seelkopf (2019).[28] The data confirm a significantly higher probability of new tax introductions, especially during war booms and

[28]Genschel and Seelkopf (2019) cover the introduction year of the following main tax types: (i) private income taxes, (ii) corporate income taxes, (iii) inheritance taxes, (iv) social security taxes, (v) general sales taxes, and (vi) value added taxes. They do not track changes in tax rates or bases, or exceptional taxes such as special war levies. Our narratives therefore importantly extend the available evidence with regard to wars and military booms.

exogenous peacetime booms. What these data does not show, however, is when and whether taxes are subsequently abolished or changed.

Most importantly, our narratives show that tax reversals are rare. In most cases, taxes introduced or raised during large booms remain in place long after the geopolitical crisis ended, at least partially. Full rollbacks are the exception.

Taken together, these exercises show that wars and severe military threats result in large and lasting expansions in tax capacity. Our long-horizon estimates show substantially higher tax revenues and higher top marginal rates for up to two decades after major military booms. The narrative evidence clarifies the mechanism behind: during military buildups, governments introduce new tax instruments and raise rates and tax bases, and these measures are rarely reversed in full. As a result, tax increases adopted in the wake of geopolitical shocks often become a permanent feature of the fiscal system.

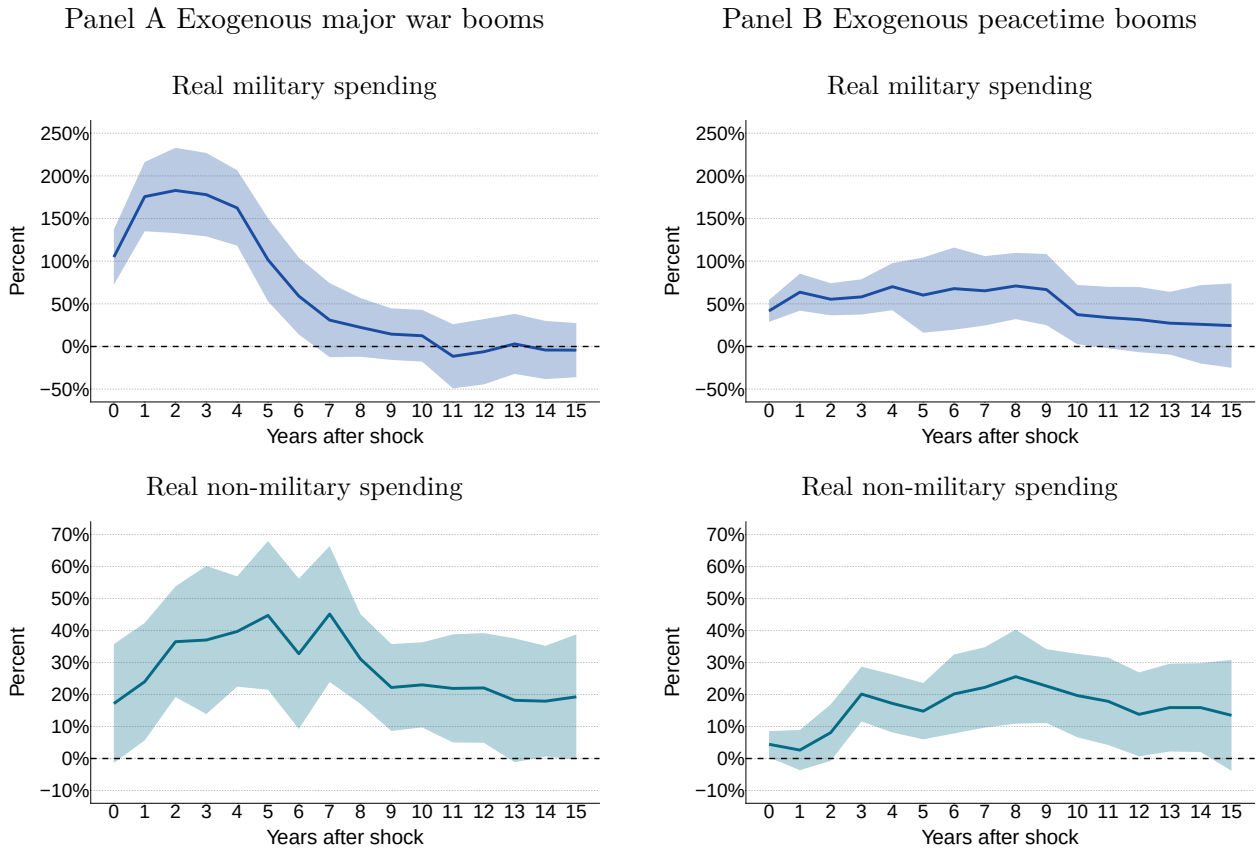
More generally, the evidence shows that the large debt increases during military booms are typically accompanied by significant, often lagged increases in the tax burden. This is consistent with tax smoothing arguments in optimal public finance, as higher taxation helps finance interest payments and debt reduction after large unexpected shocks. As the next section demonstrates, however, the long-run tax increases do more than servicing debts, they support a permanently expanded fiscal state.

5.3 Spending and the size of the fiscal state

We next examine the long-run evolution of public spending, a key measure of the size of the fiscal state. We focus, in particular, on whether spending reverses after military booms and whether governments retrench social or other civilian expenditures to restore fiscal balance and reduce accumulated debt, as in Bohn (1998) and Corsetti et al. (2012).

Figure 10 shows little evidence of such spending reversals. In major wars, military spending returns to pre-boom levels within roughly seven years, while in exogenous peacetime booms it remains elevated for more than a decade. Civilian spending is even more persistent and exhibits no decline below pre-boom levels at any horizon. Part of this reflects higher post-boom interest payments, but Appendix C4 shows that the pattern holds across multiple spending categories. There is no indication of fiscal adjustment through cuts in social or other civilian programs. On average, civilian spending, in real terms, remains 10 to 20 percent above pre-boom levels fifteen years after onset (Appendix C shows similar findings for various subsamples and robustness checks). These results point to a lasting expansion of the fiscal state in the wake of military booms.

Figure 10: Fiscal legacies (long-horizon LPs) – spending



Note: Long-run impulse response functions for real military and non-military (civilian) government spending (in 2015 USD) over a period of 15 years after the onset of exogenous military spending booms. Panel A shows results for the 23 exogenous major war booms and Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

6 Other outcomes: Inflation and consumption

This section extends the analysis beyond the government budget. We examine the evolution of inflation and private consumption, two macroeconomic outcomes that help situate the fiscal responses documented above. Inflation is a well-known mechanism of war finance as governments can rely on monetary expansion or tolerate higher prices to reduce the real debt burden (e.g., Goldin, 1980; Barro, 1987). Private consumption captures the broader "guns versus butter" trade-off in the sense of Samuelson (1948), who highlights the crowding out of civilian living standards beyond the reduction of social expenditures. The full results are reported in Appendix D. We summarize the main patterns here.

Major war booms generate sizable inflationary pressures, with CPI inflation rising by roughly ten percentage points on average. Exogenous peacetime booms also raise inflation, though more modestly, by up to five percentage points. The consumption response is even

more pronounced. Real private consumption falls by as much as 20 percent in major wartime booms, particularly for belligerents during the two World Wars. In exogenous peacetime booms, consumption declines are smaller and not statistically significant. These patterns are consistent with Barro and Ursúa (2008) and Federle et al. (2025), who emphasize that the economic costs of war are borne disproportionately by the populations of belligerent countries and war sites.

7 Conclusion

This paper offers the first broad-based analysis of how advanced economies have financed military buildups, and of the fiscal "scars" that these episodes leave behind. During military booms, our results align closely with canonical theories. Major wars are financed mainly through deficits, whereas smaller and shorter peacetime buildups see a more balanced mix of debt and taxation. In contrast, we find little support for the traditional "guns versus butter" narrative. Social spending is rarely cut. Instead, it typically keeps pace with inflation during military booms, and other civilian spending grows as well. The long-run legacy of these spending choices is a larger fiscal state. Debt rises sharply at first and later declines, but tax revenues and tax rates remain elevated. The tax narratives we compile show why. New taxes introduced during military booms are rarely reversed in full.

Taken together, one and a half centuries of fiscal history show that large geopolitical shocks, in both peace and war, expand the scope of the state and leave a persistently higher tax burden for citizens.

Many questions remain unanswered. Why do governments almost always adjust through debt and taxes rather than through cuts in civilian spending? How does the financing mix during spending booms shape macroeconomic outcomes such as growth or inflation? And what are the distributive consequences of military buildups? We leave these questions for future research.

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Online Appendix

Military spending booms: details and robustness checks

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Contents

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A. The Global Budget Database

This appendix discusses our Global Budget Database in more detail.

- Appendix A1 contains a discussion of how we constructed and cleaned the dataset.
- Appendix A2 follows with the definitions of the spending and revenue categories employed throughout the main paper.
- Appendix A3 presents the country–year coverage of the Global Budget Database.
- Appendix A4 illustrates the importance of off-budget special accounts (included in our database) and the distinction between planned and realized spending.
- Appendix A5 compares and benchmarks the Global Budget Database with other existing databases.
- Appendix A6 displays descriptive statistics on general government social spending — defined as the sum of social spending at the local, state, and federal levels, as well as spending from social security systems — together with the sources on which we draw to get these data.
- Appendix A7 provides an overview of the data sources for the other variables used in the analysis.
- Appendix A8 lists the country-specific sources from which we drew the data to construct the Global Budget Database.

A1. Construction and cleaning of the database

This section describes how we address important sources of measurement error when categorizing and tracing spending by purpose across countries and time. A first main concern are mergers, splits, and restructurings of government departments that create discontinuities and bias in the spending time series. To address this, we carefully traced functional reorganization over the past 150 years for each country using the primary sources and additional country sources cited in Appendix A8. We then reassigned spending whenever appropriate, thus reducing breaks and noise in the series.

A second major concern is spending outside the regular annual budgets of central governments — particularly those recorded through off-budget special accounts, trust funds, or extra-budgetary units such as national railways and state-owned enterprises. Capturing these expenditures is essential, especially during wars and crises when governments often bypass the regular budget process. Notable examples include Japan's special accounts in WW2, Swiss off-budget operations in WW1 and WW2, the Nazi's infamous Mefo Bills in WW2 (e.g., Ritschl, 2002), Germany's recent "Sondervermögen" for off-budget defense and infrastructure spending, or various Covid-related funds in 2020-21 (see Appendix A4). We made a concerted effort to document such off-budget spending. While wartime and crisis-related special spending was generally well-documented, tracking the annual spending of state-owned enterprises or entities like national railways during peacetime proved more difficult. These units often appear inconsistently in the historical record, as they were

privatized, restructured, or re-integrated into the formal budget at various times. If they appear inconsistently, we exclude spending of these units for the entire observation period.

A third challenge is the deliberate misreporting of fiscal data, particularly in authoritarian regimes. In the case of Russia and the Soviet Union, we find the data from 1872 to 1952 to be of high quality: figures are consistent across multiple independent sources, and the spending time series show no irregularities. After 1952, however, the reported data — most notably on military spending — exhibit implausibly low variation. As historians have noted, Soviet budgetary figures became increasingly unreliable, as secrecy and propaganda grew in importance (Bakanov, 2021). Although the collapse of the Soviet Union improved data availability and reporting standards, concerns about reliability in the post-Soviet era persist until today. We therefore limit our dataset for Russia and the Soviet Union to the 1872–1952 period. For China, concerns over data reliability are persistent from the founding of the People's Republic to the present, leading us to exclude the country from the dataset entirely. In the case of Nazi Germany, the key challenge is not fabrication but secrecy. The regime continued to record its finances in detail, but stopped releasing this information publicly after the onset of World War 2. Fortunately, many of these classified documents are now available in archives. The primary difficulty was locating the relevant records. Once compiled, however, the combined series — covering both budgetary and extra-budgetary items — exhibit no suspicious anomalies or structural breaks relative to the prewar period, increasing our confidence in their reliability.

A2. Definitions of spending and revenue categories

Throughout the paper, we decompose total central government spending and revenues into distinct categories to enable a detailed analysis of spending dynamics. In constructing our spending categories, we follow the United Nations Classification of the Functions of Government (COFOG) framework (see Eurostat, 2019 for details). In general, we collected the spending data at the level of central government departments or — when such information was unavailable — at the level of disaggregated spending purposes. Due to the level of detail in our sources, it was often possible to identify mergers or splits of departments when substantial deviations in spending figures occurred.

To avoid distortions, however, we work with relatively broad categories in our analyses. Specifically, we assign each spending item to one of seven main categories: (i) military affairs, (ii) social affairs, (iii) educational affairs and research, (iv) foreign affairs, (v) interior and economic affairs, (vi) financial affairs, and (vii) interest payments on the public debt.[1] These categories are defined as follows:

Military affairs spending includes all spending from departments or budget items clearly associated with the military. This definition encompasses spending by ministries or departments

[1]Note that, in principle, one can also construct more disaggregated categories from the original data.

of war or defense, the army, navy, and air force, as well as military pensions and special war or military accounts.

Social affairs spending encompasses all spending associated with the provision of welfare, social insurance, public health, housing support, and related services. This includes spending by ministries or departments of labor, social welfare, social security, public health, family and community services, as well as dedicated pension and retirement funds. It also covers government contributions to pension schemes, unemployment benefits, social assistance, housing subsidies, healthcare services, and child or family-related allowances. Expenditures related to displaced persons, integration, and programs targeting vulnerable populations are likewise included.

Educational affairs and research spending includes all expenditures related to the provision, administration, and promotion of education, culture, and scientific research. This encompasses spending by ministries or departments of education, public instruction, science and technology, as well as culture where linked to educational or research purposes. The category includes funding for primary, secondary, and tertiary education, vocational and technical training, scholarships and student aid, research institutions, universities, science councils, and national academies. It also covers outlays for basic and applied research across disciplines, cultural and scientific grants, and support for educational infrastructure and innovation.

Foreign affairs spending covers all spending linked to the conduct of diplomacy, international relations, and non-military foreign aid. This includes spending by ministries or departments of foreign affairs, embassies, consulates, and diplomatic missions abroad. The category also encompasses contributions to international organizations, development assistance, humanitarian aid, and spending related to foreign service training and protocol. When identifiable, we include cultural diplomacy and international broadcasting if they are administered by foreign affairs institutions.

Interior and economic affairs spending includes all spending that relates to domestic governance, public administration, law and order, infrastructure, agriculture, and the promotion of economic activity. This category comprises spending by ministries or departments of the interior, justice, police, transport, infrastructure, commerce, industry, agriculture, statistics, and other domestic administrative bodies. It covers spending for policing, prisons, courts, civil registration, regulatory agencies, infrastructure investment (e.g., roads, railways, ports), and industrial and agricultural support. It also includes spending on economic planning, trade promotion, and tourism.

Financial affairs spending comprises all spending related to the administration of public finances, taxation, and state-owned financial institutions. This includes spending by ministries

or departments of finance, treasury, revenue, and customs. The category also encompasses administrative costs for tax collection, customs enforcement, financial regulation, management of government assets and liabilities, auditing bodies, and national statistical institutes where budgeted under the financial administration. In addition, it covers spending for crisis relief if related measures are not already part of specific departments or spending purposes.

Interest payments on public debt include all expenditures related to servicing the government's outstanding debt obligations. This comprises interest payments on domestic and external loans, bonds, and other debt instruments issued by the central government. The category includes regular debt servicing costs and interest payments managed by ministries of finance, debt management offices, or treasury departments. It excludes debt repayments and any debt-related spending recorded under other functional categories unless clearly identified as interest.

We apply a similar categorization approach to our granular revenue data, which cover the years during and around the 114 identified military spending boom episodes. Our classification follows the revenue categories outlined in the IMF's Government Finance Statistics Manual 2014 (International Monetary Fund, 2014). Many budget accounts and statistical yearbooks provide summary tables that report revenues by source, including different tax types, borrowing, administrative fees, and other items such as revenues from special accounts or state-owned enterprises. Overall, the level of detail in these data is high and, in principle, would allow for an even more granular classification than the one employed here. For clarity and the purpose of long-run comparisons, we again focus on seven categories to capture governments' main revenue streams.

Borrowing comprises revenues derived from the issuance of public debt instruments or other forms of credit used by the central government. This category includes domestic and external borrowing through the sale of bonds, treasury bills, and notes, proceeds from temporary or long-term loans, advances from financial institutions, and other credits raised through extraordinary or capital accounts. It also covers loan receipts earmarked for investment, infrastructure, or war-related purposes, and transfers from loan or sinking funds. Note that we obtain borrowing as a net value by balancing these inflows with recorded debt repayments.

Income tax revenues comprise receipts from taxes levied on the income, profits, or earnings of individuals, corporations, and other entities. This category includes personal and corporate income taxes, payroll and withholding taxes; taxes on dividends, interest, rents, and royalties, and other direct levies on wages, professional earnings, and business profits. It also covers extraordinary or supplementary income taxes imposed on high incomes or excess earnings.

Wealth tax revenues capture receipts from taxes levied on property, capital, and wealth

holdings. This category includes taxes on land, buildings, and other real estate, inheritance, estate, and gift taxes, capital gains and transfer duties, and taxes on financial assets, corporate capital, or net worth. It also covers extraordinary or temporary levies on property or capital appreciation.

Consumption tax revenues comprise receipts from taxes on the sale, production, or use of goods and services. This category includes excise duties on alcohol, tobacco, fuel, sugar, and other commodities, general sales and turnover taxes, value-added and service taxes, and levies on entertainment, lotteries, and luxury consumption. It also covers monopoly profits and fees related to the production or distribution of taxed goods.

Custom duty revenues comprise receipts from taxes and fees levied on the import and export of goods. This category includes import and export duties, border and tonnage charges, harbor and shipping fees, and other levies on traded merchandise. It also covers surcharges, compensatory duties, and revenues from customs administration and licensing related to foreign trade.

Special tax revenues primarily cover receipts from temporary or extraordinary taxes introduced to finance wars, national defense, or other exceptional needs when they do not consistently fall under one of the previous tax revenue categories. This category includes war and defense taxes, excess profits and war-profits taxes, and crisis or emergency levies linked to wartime mobilization and reconstruction. It also encompasses vehicle and road taxes, as well as surcharges on existing taxes during periods of conflict. Other temporary or exceptional taxes — such as solidarity, public salvation, or financial stabilization levies — are also included.

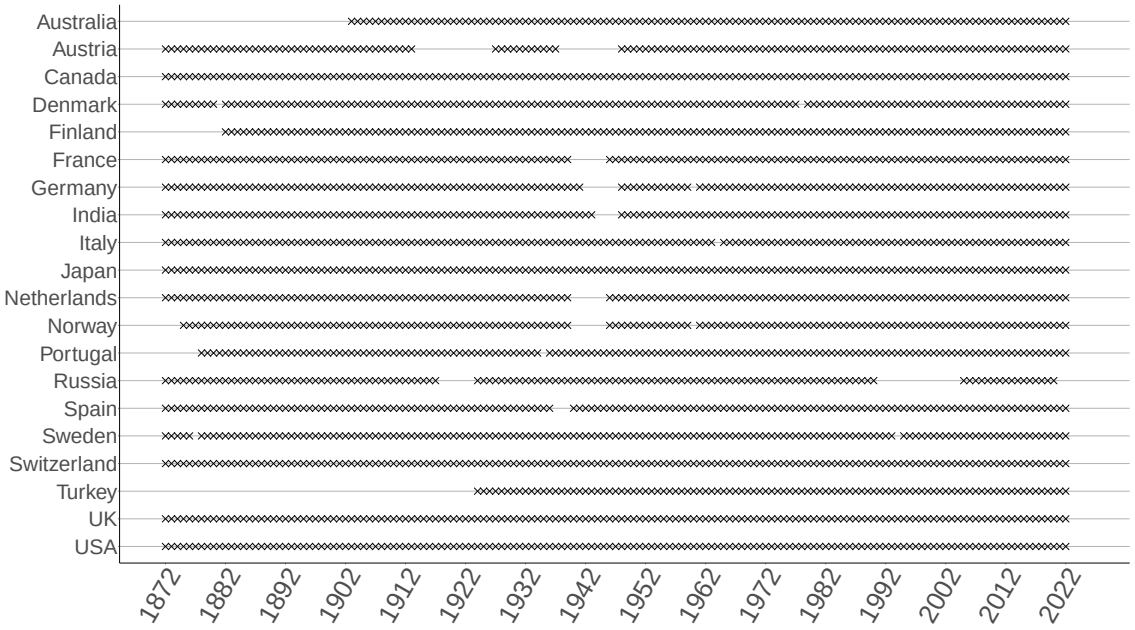
Other revenues cover all remaining government receipts not classified under the main tax or borrowing categories. This includes administrative fees, social security contributions, and income from state enterprises, as well as interest earnings, refunds, and transfers from special or trust funds. The category also captures proceeds from postal and telecommunication services and other non-tax sources of revenue.

A3. Data coverage

In this subsection, we present details on the data coverage of our Global Budget Database. Figure A1 shows the country-year coverage of the database. The "X"s indicate years with available data. Some country-year pairs are excluded from the analysis in the main part of the paper. For example, we exclude Austria-Hungary (1872–1913) due to missing GDP data; France (Vichy), Norway, and the Netherlands during WW2 due to occupation-related disruptions; and Russia post-1952 due to reliability concerns. One-year gaps reflect mismatches between financial and calendar years. While interpolation is feasible, we omit these years. Data for Australia before 1903 and

Turkey before 1924 are only partially available. We have also collected spending data for China (1952–2022) but excluded them from this analysis due to their coverage being on the general rather than central government level and reliability concerns. Moreover, we have also collected data for Argentina (1872–2022) but excluded them as well due to issues with historical exchange rates and currency changes.

Figure A1: Country-year coverage of our Global Budget Database



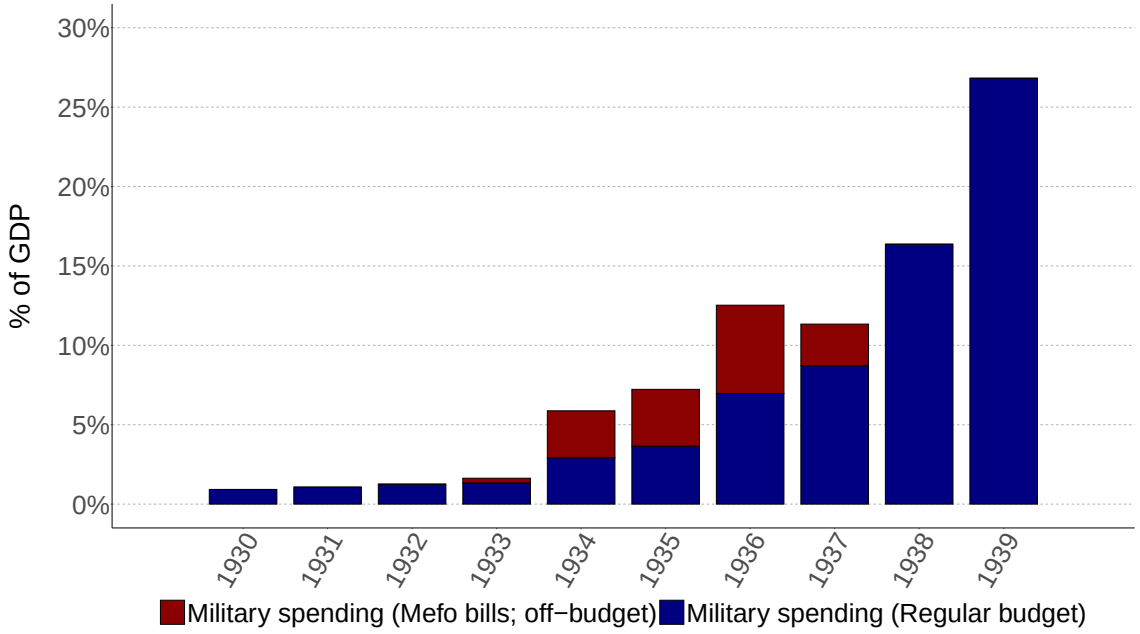
Note: This figure provides an overview of the country–year coverage of our Global Budget Database. An "X" indicates a year for which data are available.

A4. Off-budget special accounts and planned vs. realized spending

This subsection provides three illustrative examples on measuring military spending: two demonstrating the importance of capturing off-budget special accounts, and another highlighting discrepancies between planned and realized spending values. Figure A2 plots military spending in Nazi Germany financed through the regular budget alongside spending from off-budget accounts — so-called Mefo bills — expressed as a percentage of GDP. Data on Mefo bills are taken from Ritschl (2002). In the mid-1930s, Mefo-financed military spending accounted for roughly 40% of total military expenditure.[2]

[2]Mefo bills operated as follows: the arms industry produced military equipment and, in lieu of immediate payment, accepted bills issued by the "Metallurgische Forschungsgesellschaft" (Mefo) and endorsed by private banks. Companies holding these bills could retain 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. Mefo bills thus constituted a form of credit from the arms industry and the private sector to the Nazi government.

Figure A2: On- and off-budget military spending in Nazi Germany



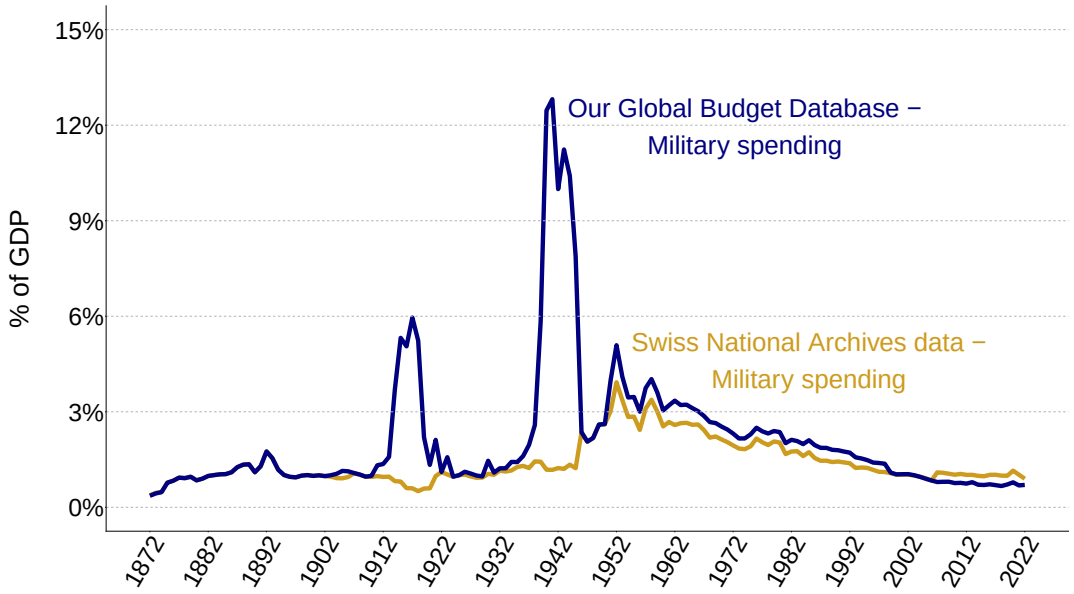
Note: Military spending in Nazi Germany financed from the regular budget as well as from off-budgetary "Mefo bill" accounts as a percentage of GDP. The data on Mefo bills comes from Ritschl (2002). The Global Budget Database includes this additional spending.

Switzerland during World War 1 and 2 presents a second example that illustrates the critical importance of identifying and integrating extra-budgetary spending into government spending series (see Figure A3). At the time, both extraordinary spending and revenues related to the wars were recorded by Swiss authorities in a separate balance sheet of "artificial" assets and liabilities, outside the general account. This unique accounting practice is carefully documented by Mann (1921). Most existing datasets — including the Correlates of War project (Singer, 1988), or the Global Military Spending Dataset by Barnum et al. (2025), and even the data released by the Swiss National Archives (2024) — miss these off-budget expenditures for Switzerland, despite their substantial size. As a result, the historical time series has long given the impression that Switzerland, as a neutral country, did not significantly rearm. This could not be further from the truth: our data show that Swiss military spending surged from under 2% of GDP to nearly 10% during WW2.

These two cases highlight how failing to incorporate extra-budgetary accounts can seriously misrepresent fiscal and military mobilization. The Global Budget Database incorporates off-budget special accounts whenever such data are available.

Next, Figure A4 illustrates the differences between planned and realized spending values using the example of Sweden over the period 1912–1962. During the World Wars, realized military spending (Panel A) — used in our Global Budget Database — is substantially higher than both planned figures and the Correlates of War (COW) data. Pre-1940, we collected the planned

Figure A3: Coverage gaps in existing datasets – the example of Switzerland



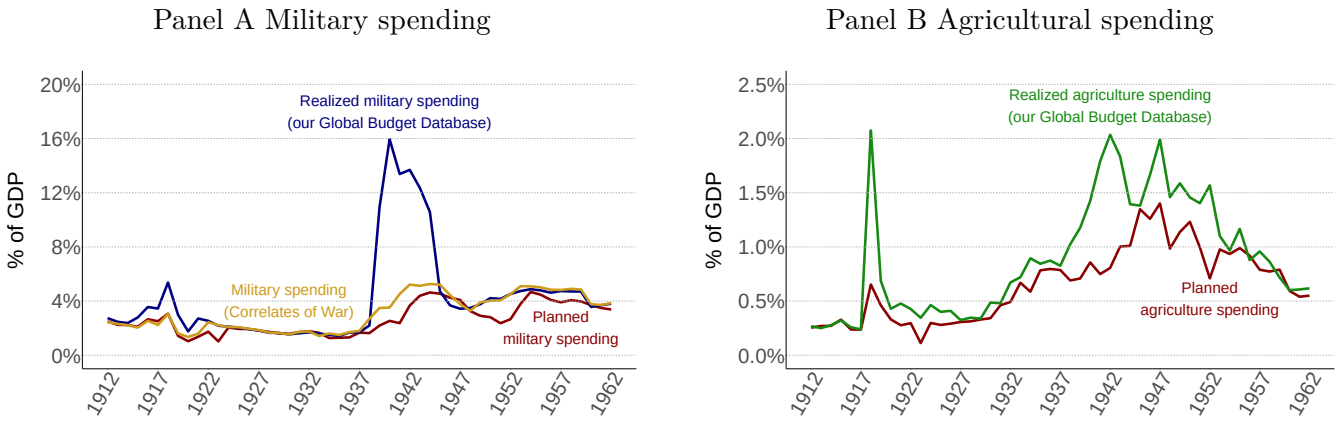
Note: Differences in military spending as a percentage of GDP for Switzerland between an official dataset from the Swiss National Archives and our own data. Military spending in our Global Budget Database is far higher because we identify and include military spending in off-budget accounts.

values from L'Almanach de Gotha and The Statesman's Yearbook; after 1940, we used country-specific sources. Between 1912 and 1940, the COW project also relies on these sources, and the discrepancies during this period likely stem from differences in exchange rates.[3] After World War 2, the COW series aligns closely with our estimates, as it draws on data from SIPRI who also use realized spending.

For comparison, Panel B presents planned spending on agriculture from the same sources mentioned above alongside realized values from our database. Similar to the case of military spending, the differences are substantial, particularly during the World Wars.

[3]As noted by the COW project, the original exchange rate file is no longer available. Hence, it is not possible to identify the exact reason for the discrepancies.

Figure A4: Planned vs. realized spending – the example of Sweden



Note: Panel A compares planned and realized military spending as a percentage of GDP, alongside data from the Correlates of War project. Panel B illustrates the divergence between planned and realized agricultural spending, particularly in crisis periods, where realized values substantially exceed planned figures.

A5. Comparison with existing databases

In this section, we summarize existing datasets and benchmark our data against them. A main challenge is that data on government spending are scattered across multiple sources and difficult to locate for many countries and years. Given the central importance of government spending for macroeconomics and public finance, the lack of comprehensive and consistent data is striking. Even for the post-1980 period, compiling a cross-country panel remains cumbersome, as spending data are fragmented across institutions such as the IMF, World Bank, OECD, and Eurostat, each using distinct coverage, classification schemes, and update practices.[4]

For historical periods, the data availability is even more challenging. Previous research by Flora et al. (1983), Tanzi and Schuknecht (2000), and Lindert (2004) provide valuable long-run data, but all have limitations: Flora et al. (1983) cover disaggregated spending for no more than 12 countries with substantial country-specific gaps; Lindert (2004) is restricted to specific types of spending and periods, such as social spending from 1880 to 1930; and Tanzi and Schuknecht (2000) provide data only for a few exemplary years. Most importantly, all three studies offer very limited or no coverage for major war periods such as during or right after the World Wars.

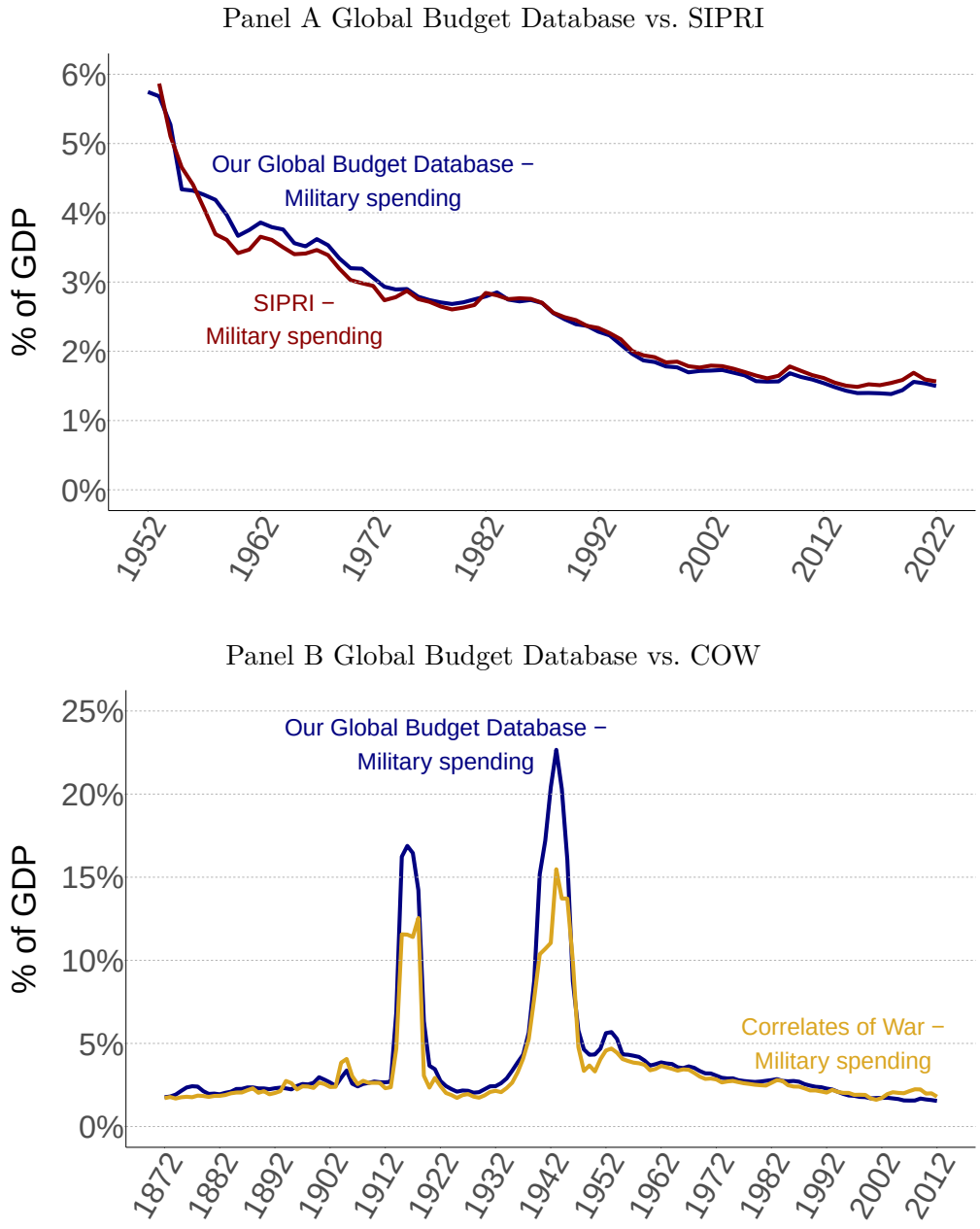
Moreover, secondary sources — such as the public spending databases of the OECD and IMF, or historical compendia like Mitchell's International Historical Statistics — can suffer from biases, missing data, and unexplained structural breaks. Some data inconsistencies in these sources are hard to explain. Others become evident when cross-validating across sources — especially when zooming into primary sources such as official government budget accounts. Our validation exercises suggest that the most serious shortcomings in secondary data stem from lax reporting practices. When governments submit data — for example, to the OECD or historical predecessors (private compendia) — they do not consistently report realized spending. As a result, the datasets contain a mix of planned and realized spending — depending on the country and year. Similar problems arise in case of ministerial restructurings, mergers, or the creation of new spending entities, which are not always reported. The same is true for off-budget items such as special accounts or trust funds, which are especially relevant in crises and wars.

A key contribution of our dataset is to correct these shortcomings: we consistently search for data on realized rather than planned spending, fill data gaps and reconcile structural breaks, often by coding and comparing multiple sources for the same entry. The result is a harmonized and cross-validated "consensus database" of long-run public spending by purpose for 20 countries.

For benchmarking purposes, an ideal reference point is military spending, as it is clearly the most thoroughly documented category of government spending in both history and today. Historians and political scientists have long invested substantial effort in compiling detailed data on military budgets across countries and over extended historical periods. For our comparisons, we

[4]Gethin (2024) merges the data from these institutional sources and provides a consolidated database of expenditure by type for 177 countries since 1980.

Figure A5: Military spending in our Global Budget Database vs. SIPRI vs. COW



Note: Panel A compares our military spending series with SIPRI, while Panel B compares it with the data from the Correlates of War project. The series track each other closely overall, with notable divergences during the World Wars and the Korean War, when our estimates are higher. These differences likely reflect our more systematic identification of off-budget military accounts. Moreover, for the pre–World War 2 period, COW relies heavily on planned rather than realized expenditure figures, contributing to discrepancies in wartime values.

draw in particular on two widely used sources: the SIPRI Military Expenditure Database SIPRI, 2025b, which covers the post–WW2 era, and the Correlates of War (COW) project (Singer, 1988), which provides military spending data extending back to the 19th century.[5]

[5]Our definition of "military affairs" builds on the COFOG categories and closely aligns with that used by the COW project. It includes spending from departments or budget items associated with the military, such as

Our benchmarking reveals considerable overlap with the SIPRI data. Figure A5 illustrates that our estimates show slightly higher military spending levels in the 1950s and 1960s, while SIPRI reports slightly higher figures over the past 20 years. Our time series also closely aligns with the Correlates of War data, although we observe much higher military spending during the two World Wars. The discrepancy during WW1 and WW2 likely arises because the COW dataset primarily relies on secondary sources such as L'Almanach de Gotha and The Stateman's Yearbook, which mainly report planned rather than realized spending and do not appear to capture special war funds or extra-budgetary military spending well — key elements emphasized in our data collection.

The differences are even larger when comparing our data to the recent dataset by Bharti et al. (2025), which was developed independently and in parallel to our own. Their dataset has a very broad coverage — spanning many more countries and reaching back to 1800. An important methodological difference is that their data draw primarily on secondary sources. In addition, they rely on interpolation to fill data gaps, which we do not. Lastly, they lack the granular, 115,000-item-level expenditure data and, therefore, only report aggregate categories. As a result, there are notable differences in the time series. As Figure A6 shows, our data yields military expenditures twice as high, on average, than those captured by Bharti et al. (2025). During the two World Wars, our numbers are up to ten times higher, likely because we draw on detailed primary sources and archival material that allows us to fill existing coverage gaps, and to consider and account for off-budget items and special war spending. Comparisons with spending series other than military are not possible due to definitional differences, and because Bharti et al. (2025) collect data at the general government level.

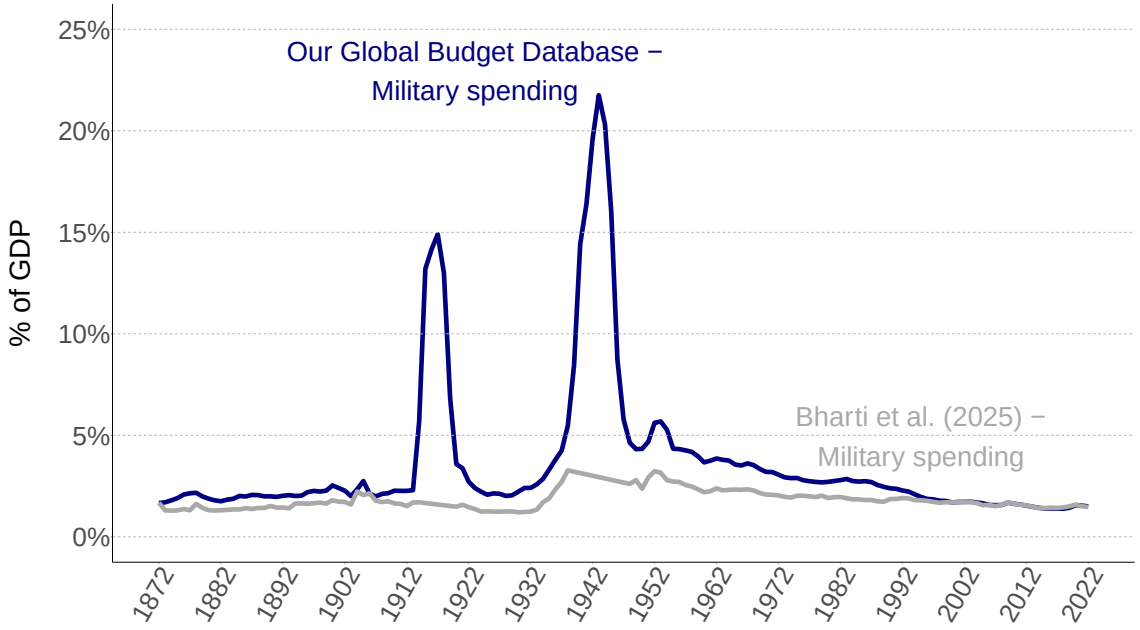
A6. Social spending at the general government level

This subsection presents social spending data at the general government level, defined as the sum of social spending by local, state, and federal governments, and spending from social security systems. Figure A7 displays country-specific time series to illustrate the evolution of social spending over time, alongside an impulse response function from a local projection regression capturing the response of general government social spending to the onset of military spending booms. We compile general government social spending as a share of GDP using a combination of harmonized international and national sources:

- For 1980–2022, we rely on data from Gethin (2024), who provides harmonized general government spending on health and social protection. These data are derived from international sources such as the IMF and OECD, and offer broad coverage across countries and time.

ministries or departments of war or defense, the army, navy, and air force, as well as military pensions and special war accounts (also see Appendix A2). Specifically, COW (Singer, 1988) defines military spending as financial resources allocated to the military, including special war appropriations and off-budget items, but excluding civil pensions, police forces, and merchant marine spending. The definition of SIPRI (2025b) also includes spending on peacekeeping and paramilitary forces, military R&D and infrastructure, military aid to foreign governments, military space activities, and defense-related spending by other government agencies.

Figure A6: Our Global Budget Database vs. Bharti et al. (2025) military spending



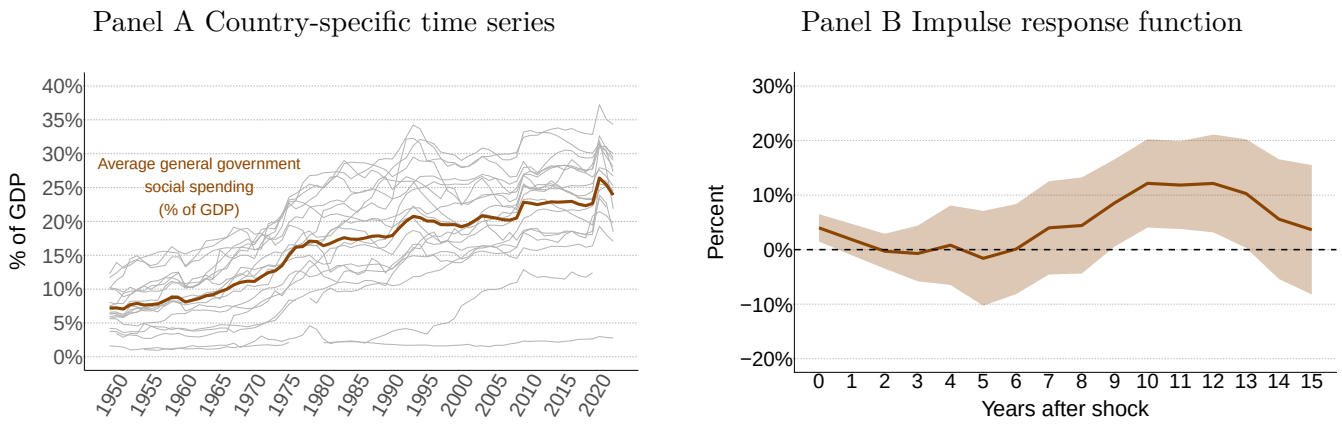
Note: Comparison between the average military spending-to-GDP ratio across all overlapping country-year pairs in our Global Budget Database and the dataset compiled by Bharti et al. (2025). Over the most recent three decades, the two series are closely aligned. In earlier periods, however, our Global Budget Database consistently reports higher military spending than the Bharti et al. (2025) series. This divergence reflects differences in underlying sources and construction methods.

- For 1949–1980, we use the International Labour Organization's (ILO) "Cost of Social Security" database, specifically the series on "Total expenditure (excluding transfers)", which includes a wide range of public social security functions across countries. The ILO defines social spending broadly to include public health, pensions, family support, and benefits for war victims, with data collected through standardized country questionnaires.
- Several country-specific adjustments were made to improve consistency:
  - For Japan, we use data from the National Institute of Population and Social Security Research, which better align with OECD and ILO figures.
  - For France (1967–1970) and Denmark (1976), we substitute OECD data due to missing or inconsistent values in the ILO records.
  - For Canada, Austria, Turkey, and Denmark, we handle a transition period in reporting in the early 1980 by comparing Gethin (2024), ILO, and OECD data to select the most reliable series.
  - For Switzerland, we made an adjustment to the GDP series to align the timing of a known data break with our database structure.
  - All OECD values come from multiplying nominal social spending by our nominal GDP series, except for the final years where we use GDP directly from the OECD database.

Figure A7, Panel A, presents the resulting country-specific time series together with the sample

average. Due to the limited availability of data for the pre–World War 2 period, our analysis focuses exclusively on the post–World War 2 era when examining the response of general government social spending to the onset of military spending booms.

Figure A7: General government social spending – trends and military boom response



Note: Panel A presents country-specific time series of general government social spending and the cross-country average. Panel B shows the impulse response function of real general government social spending following the onset of military spending booms. The local projection specification is the same as in Section 5. Shaded areas indicate 90% confidence intervals, with Driscoll and Kraay (1998) standard errors using four lags.

Panel B reports the impulse response function estimated from the following local projection regression also used in Section 5.

$$\log(Y_{i,t+h}) - \log(Y_{i,t-1}) = \beta_h \cdot \text{Shock}_{i,t} + \sum_{l=0}^{15} \boldsymbol{\gamma}'_{l,h} \cdot \mathbf{X}_{i,t-l} + \sum_{l=1}^{15} \boldsymbol{\eta}'_{l,h} \cdot \mathbf{Z}_{i,t-l} + \alpha_{i,h} + u_{i,t+h},$$
$$\text{for } h = 0, \ldots, 15, \quad i = 1, \ldots, n, \quad t = 1, \ldots, T$$

where $\log(Y_{i,t+h}) - \log(Y_{i,t-1})$ denotes the cumulative change in the real 2015 USD outcome Y from the first boom year t to horizon h. The variable $\text{Shock}_{i,t}$ is a dummy equal to one at the onset of a military boom and zero otherwise. As controls $\mathbf{X}_{i,t-l}$, we include contemporaneous and lagged log differences of the population size and real GDP as well as inflation (log change in the CPI), a dummy indicating military booms other than those analyzed, a dummy for debt crises, along with lags of the outcome and shock variable in $\mathbf{Z}_{i,t-l}$. Following Olea and Plagborg-Møller (2021), we include a large number of lags — up to 15 — of the outcome, shock, and control variables. The coefficient β_h captures the dynamic response of Y to a military spending boom at horizon h, while $\alpha_{i,h}$ denotes country fixed effects and $u_{i,t+h}$ the error term. Standard errors are computed following Driscoll and Kraay (1998) with four lags.

The results do not indicate a significant decline in general government social spending in the fifteen years following the onset of a boom. This pattern supports our conclusion that there is little empirical evidence for the notion of "guns vs. butter" in financing military spending booms.

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A7. Overview of other data sources

Table A1 presents the data sources for the additional variables used in our analyses that are not drawn from our Global Budget Database. In some cases, we supplemented these data with other sources to fill gaps. Wherever possible, we relied on primary sources, such as country-specific statistical yearbooks, for this purpose to obtain the most precise figures available. We also carefully examined the time series from the original sources listed above to avoid discontinuities or breaks. These supplements are discussed below.

Table A1: Additional variables used in the analyses – description and main sources

Variable	Description	Main sources
Nominal GDP, 1872–2022	Nominal GDP in local currency	Fouqin and Hugot (2016), Jordà et al. (2017), World Bank (2025b)
Real GDP, 1872-2022	Real GDP in 2015 US Dollar, based on real GDP per capita index (2005 = 100)	Funke et al. (2023) building on Barro and Ursúa (2008), Jordà et al. (2017), Bolt and van Zanden (2024). Updates from World Bank (2025a).
Public debt, 1872-2022	Central government debt; nominal local currency values or as percentage of GDP	Reinhart and Rogoff (2011), Mauro et al. (2015), Mbaye et al. (2018)
Primary balance, 1872-2022	Difference between revenues and non-interest spending as percentage of GDP	Mauro et al. (2015)
Total tax revenues, 1872-2022	Nominal central government tax revenues in local currency	Andersson and Brambor (2019) updated with International Monetary Fund (2025a)
Introduction of major taxes, 1872-2018	Introduction dates of new major taxes	Genschel and Seelkopf (2019)
Top tax rates, 1872-2010	Top marginal income tax rates	Plagge et al. (2011) and Genovese et al. (2016)
Private consumption, 1872-2022	Real private consumption in 2015 US Dollar, based on real private consumption per capita index (2006 = 100)	Barro and Ursúa (2008)
Inflation, 1872-2022	Annual change in log CPI	Funke et al. (2023) building on Jordà et al. (2017) and Reinhart and Rogoff (2009). Updates from International Monetary Fund (2025b).
Population, 1872-2022	Annual population numbers	Jordà et al. (2017), Bolt and van Zanden (2024), International Monetary Fund (2025b)
Crises, 1872-2014	Types: banking, currency, sovereign debt; event dummies: 1 = year with ongoing (or outbreak of) crisis	Funke et al. (2023) building on Jordà et al. (2017) and Reinhart and Rogoff (2009)

Notes on data supplements and transformations:

Nominal GDP: For Germany from 1940 to 1944, we use Ritschl and Spoerer (1997). For historical data on Turkey, we rely on the figures from Reinhart and Rogoff (2011). For Russia, we rely on the work of Kuboniwa et al. (2019) and Kuboniwa et al. (2020).

Real GDP: We compute the real 2015 US-Dollar GDP values from the real GDP per capita (index, 2005 = 100) data from Funke et al. (2023), who build on Barro and Ursúa (2008), Jordà et al. (2017), Bolt and van Zanden (2024) with updates and constant 2015 US-Dollar GDP values from World Bank (2025a). The formula to compute the annual values is as follows:

$$\textit{Real GDP (in 2015 USD)}_t = \textit{GDP per capita}_{2015} \cdot \frac{\textit{Real GDP Index}_t}{\textit{Real GDP Index}_{2015}} \cdot \textit{Population}_t$$

Public debt: For the following countries and years, we add data from country-specific statistical yearbooks: Australia pre-1949, Denmark 1892-1949, Finland pre-World War 1, France pre-World War 1, Germany 1872-1880, 1915-1922, and 1942-1944, Netherlands 1914-1922 and 1946-1955, Norway 1877-1879, Spain 1872-1885, Switzerland 1872-1928 and 1984-1985. In addition, we take central government debt data from L'Almanach de Gotha for Denmark 1872-1891 and Norway 1875-1876. The country-specific statistical yearbooks are listed in the references below.

Primary balance: For a few years with missing data, major war events, or off-budget financing, we also compute the primary balance from statistical yearbooks or budget accounts. These are: Denmark 1872-1877 and 1946-1953, Finland 1882-1917, France 1872-1879, 1914-1924, and 1938-1939, Germany 1872-1879, 1914-1921, and 1932-1941, Japan 1872-1874, Netherlands 1914-1922, Norway 1875-1880, and Portugal 1872-1879 and 1914-1918, and Switzerland 1872-1898 and 1914-1924. Again, we also use data from L'Almanach de Gotha in few instances: Netherlands 1872-1879 and Russia 1924-1928. Moreover, we build on the extensive work of Zahn (1908) for the Russian Empire 1872-1884 and Holzman (1953) for the Soviet Union 1928-1952.

Tax revenues: Again, for a few years with missing data, major war events, or off-budget financing, we also collected tax revenues from statistical yearbooks or budget accounts. These are: Australia 1910-1919, 1940-1945, 1951-1959, and 1964-1969, Austria 1955-1960, France 1912-1920, Netherlands 1912-1918 and 1972, Norway 1912-1919, Sweden 1912-1920 and 1937-1946, Spain 1972, Switzerland 1874-1877, 1885-1895, 1909-1928, and 1935-1953, and UK 1898-1901 and 1946-1953. Moreover, we build on the extensive work of Zahn (1908) for the Russian Empire 1872-1884 and Holzman (1953) for the Soviet Union 1928-1952. For Turkey, we use the official data from the finance department.

Computation of real 2015 USD values: A final note concerns the construction of our real 2015 USD time series. Each country's dataset includes both nominal and real 2015 USD GDP series. Using these, we compute, for every country–year pair, the ratio of real 2015 USD GDP to nominal local currency GDP, yielding a country–year-specific conversion factor that we apply to all other nominal spending variables to obtain real 2015 USD values. Note that our results are

also robust to converting nominal values into real 2022 country-specific currency values using the CPI/inflation data from above.

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A8. List of country-specific sources

In this subsection, we present the sources used to construct our Global Budget Database. We rely almost exclusively on primary sources issued by governments. The principal source consists of thousands of pages of official budget accounts, which report realized annual spending and account for mid-year adjustments and supplements. A key advantage of this source is that governments are legally required to ensure accuracy, and substantial administrative effort is devoted to data collection, verification, and parliamentary oversight. Approximately 61% of our sample is drawn from this source. When official budget accounts are unavailable, we use the next-best primary source: country-specific statistical yearbooks issued by governments. These yearbooks contain detailed public finance data and constitute 32% of the sample. Importantly, they also present official numbers from the budget accounts and not only planned budget figures. In rare cases where neither government budget accounts nor statistical yearbooks are accessible, we rely on budget plans (including budget supplements wherever possible) — reflecting planned rather than realized spending (1% of the sample), or secondary sources such as L'Almanach de Gotha and The Stateman's Yearbook (6% of the sample). We generally avoid secondary sources due to their noisiness and sometimes incompleteness. For the Russian Empire, we rely on the comprehensive archival compilations of Zahn (1908) and Holzman (1953), themselves based on primary budget documents. For some countries, only a few publications were required, while for others, multiple volumes had to be consulted. While many of the sources had already been digitized, a substantial portion had not. In many cases, they had remained untouched in archives and libraries, from which we retrieved and digitized them. Below, we list the sources alphabetically by country.

Australia

(1) Commonwealth Bureau of Census and Statistics (1960–1965). *Official Year Book of the Commonwealth of Australia.* Prepared under the direction of the Treasurer by K. M. Archer, Commonwealth Statistician. Commonwealth Bureau of Census and Statistics, Canberra. Used to extract interest payments for the years 1960–1965.

(2) Commonwealth of Australia, Department of Finance (1984–1986). *Portfolio Program Estimates, Budget Papers.* Circulated by the Minister for Finance for the information of Honourable Members on the occasion of the federal budget. Commonwealth of Australia, Canberra.

(3) Commonwealth of Australia, The Treasury (1903–1961). *The Budget: Papers Presented by the Treasurer for the Information of Honourable Members.* Printed and published by the Government Printer for the State of Victoria and other official printers, Canberra.

(4) Commonwealth of Australia, The Treasury (1962–1983). *Estimates of Receipts and Summary of Estimated Expenditure: Papers Presented by the Treasurer for the Information of Honourable Members.* Printed and published by the Commonwealth Government Printer, Canberra.

(5) Parliamentary Budget Office, Australia (2023). Historical Australian Government Data – Table 7: Expenses by Function and Sub-function, 1964–2022. https://www.pbo.gov.au/publications-and-data/data-and-tools/data-portal/historical-fiscal-data. Data extracted from the 2023–24 MYEFO release. Accessed on July 6, 2025.

Austria

(1) Republik Österreich (1937–1938). *Bundesvoranschlag für das Jahr ...* Österreichische Staatsdruckerei, Wien. Accessed via ALEX – Historische Rechts- und Gesetzestexte Online: https://alex.onb.ac.at/static_tables/bud.htm.

(2) Republik Österreich (1946–1954). *Bundesvoranschlag für das Jahr ...* Österreichische Staatsdruckerei, Wien. Accessed via ALEX – Historische Rechts- und Gesetzestexte Online: https://alex.onb.ac.at/static_tables/bud.htm.

(3) Österreichischer Rechnungshof (1930–1936). *Bundesrechnungsabschluß / Republik Österreich.* Österreichischer Rechnungshof, Wien. Printed by: Österr. Staatsdruckerei, Wiener Zeitung.

(4) Österreichischer Rechnungshof (1955–2022). *Bundesrechnungsabschluß / Republik Österreich.* Österreichischer Rechnungshof, Wien. Printed by: Österr. Staatsdruckerei, Print Media Austria AG, Wiener Zeitung.

(5) Österreichisches Statistisches Zentralamt (1923–1929). *Statistisches Handbuch für die Republik Österreich.* Österreichisches Statistisches Zentralamt, Österr. Staatsdruckerei, Wien.

Canada

(1) Government of Canada (1872–1901). Sessional Papers of the Dominion of Canada, Several Volumes. Government of Canada, MacLean, Roger, Ottawa. Used for certain spending data from 1872–1902. Source: Library and Archives Canada. More information upon request. Available at https://n2t.net/ark:/69429/m0kk9474735w.

(2) Government of Canada (1872–2022). Public Accounts of Canada: Details of Expenses and Revenues. Government of Canada, Receiver General for Canada, Ottawa.

Denmark

(1) Almanach de Gotha (1878–1890). Almanach de Gotha: Annuaire généalogique, diplomatique et statistique, various years. Unfortunately, it was not possible to obtain data for WWI and the Russian Revolution as well as for the early 1920s.

(2) Finansministeriet, Danmark (1872–1877). Statsregnskab: for finansåret ... Schultz, København.

(3) Finansministeriet, Danmark (1954–2022). Statsregnskab: for finansåret ... Schultz, København.

(4) Statens Statistiske Bureau (1896–1953). Statistisk Aarbog / Annuaire Statistique. Statens Statistiske Bureau, København. The 1896 volume contains retrospective data starting from 1891.

Finland

(1) Statistics Finland (1882–2022). Suomenmaan Tilastollinen Vuosikirja (Statistical Yearbook of Finland). Published by Tilastollinen Toimisto, later by Statistics Finland (Tilastokeskus), Helsinki. Some early versions contain retrospective data.

France

(1) Assemblée Nationale (2006). Rapport général portant règlement définitif du budget de 2005. `https://www.assemblee-nationale.fr/12/rapports/r3155.asp`. Prepared by M. Gilles Carrez, Rapporteur général. Used for the year 2005. Accessed on July 5, 2025.

(2) Assemblée Nationale and Ministère du Budget (2006–2023). Projets de loi de règlement du budget de l'État, années 2005–2022.

(3) Institut National de la Statistique et des Études Économiques (INSEE) (1961). *Annuaire Statistique de la France: Rétrospectif, Nouvelle Série — No. 8.* Imprimerie Nationale / Presses Universitaires de France, Paris. Used for the period 1872–1960.

(4) Institut National de la Statistique et des Études Économiques (INSEE) (1962–1990). *Annuaire Statistique de la France.* Imprimerie Nationale / Presses Universitaires de France, Paris.

(5) Ministère de l'Économie, des Finances et du Budget, Direction de la Comptabilité Publique (1990–2004). *Balance Générale des Comptes.* Ministère de l'Économie, des Finances et du Budget, Paris.

Germany

(1) Bundesministerium der Finanzen (1950–1971). Bundeshaushaltsrechnung: für das Rechnungsjahr ... Bundesministerium der Finanzen, Bundesdruckerei, Bonn.

(2) Bundesministerium der Finanzen (1972–1991). Haushaltsrechnung und Vermögensrechnung des Bundes für das Haushaltsjahr ... (Jahresrechnung ...). Bundesministerium der Finanzen, Bundesdruckerei, Bonn.

(3) Bundesministerium der Finanzen (1998–2008). Haushaltsrechnung und Vermögensrechnung des Bundes für das Haushaltsjahr ... Bundesministerium der Finanzen, Bundesdruckerei, Berlin.

(4) Bundesministerium der Finanzen (2009–). Haushaltsrechnung des Bundes für das Haushaltsjahr ... Bundesministerium der Finanzen, Bundesdruckerei, Berlin.

(5) Bundesregierung (1992–1997). Haushaltsrechnung und Vermögensrechnung des Bundes für das Haushaltsjahr ... (Jahresrechnung ...). Bundesregierung der Bundesrepublik Deutschland, Bundesdruckerei, Bonn / Berlin.

(6) Deutsches Reich (1871–1909). Allgemeine Rechnung nebst Nachweisung der Etatsüberschreitungen und außeretatsmäßigen Ausgaben. Deutsches Reich, Reichsdruckerei, Berlin.

(7) Deutsches Reich (1910–1943). Reichshaushaltsrechnung über den Haupthaushaltsplan. Deutsches Reich, Reichsdruckerei, Berlin.

(8) Statistisches Reichsamt (1880–1942). Statistisches Jahrbuch für das Deutsche Reich. Deutsches Reich, Various publishers: Puttkammer & Mühlbrecht (1880–1920); Verlag für Politik und Wirtschaft (1921–1925); Hobbing (1926–1934); Schmidt (1942). Used only when the official *Haushaltsrechnung* was not available. However, the data presented in this source comes from the official *Haushaltsrechnung*.

(9) Verwaltung des Vereinigten Wirtschaftsgebietes (1948–1949). Haushaltsrechnung der Verwaltung des Vereinigten Wirtschaftsgebietes: für das Rechnungsjahr ... Verwaltung des Vereinigten Wirtschaftsgebietes, Berlin.

India

(1) Government of India, Finance Department (1939–1941). *Budget of the Government of India*. Manager of Publications, Delhi.

(2) Government of India, Finance Department (1942–1943). *Finance Accounts and Audit Report*. Manager of Publications, Delhi and Simla.

(3) House of Commons (1872–1880). *Finance and Revenue Accounts of the Government of India*. India Office, London.

(4) India Office (1881–1910). *Financial Statement of the Government of India*. Henry Hansard and Son, London.

(5) India Office (1911–1930). *East India (Financial Statement and Budget)*. His Majesty's Stationery Office, London.

(6) India Office (1931–1938). *East India (Budget)*. His Majesty's Stationery Office, London.

(7) Ministry of Finance (1950–1993). *Budget of the Central Government of India*. Government of India, New Delhi.

(8) Ministry of Finance (1994–2022). Annual Financial Statement. Government of India, New Delhi.

Italy

(1) Almanach de Gotha (1872–1908). Almanach de Gotha: Annuaire généalogique, diplomatique et statistique. Gotha: Perthes, Ettinger, and Dieterich.

(2) Direzione Generale della Statistica, Ministero dell'Interno (1909–1923). Annuario Statistico Italiano. Ministero dell'Interno, Direzione Generale di Statistica; Tipografia Elzeviriana, Rome.

(3) Ministero dell'Economia e delle Finanze (1924–2010). Rendiconto Generale della Amministrazione dello Stato. Senato della Repubblica, Tipografia del Senato, Rome. Accessed on July 5, 2025. Available at https://www.rgs.mef.gov.it/VERSIONE-I/attivita_istituzionali/formazione_e_gestione_del_bilancio/rendiconto/.

(4) Ministero dell'Economia e delle Finanze – Ragioneria Generale dello Stato (2011–2022). Annuario statistico della Ragioneria Generale dello Stato. Ministero dell'Economia e delle Finanze, Rome. Accessed on July 5, 2025. Available at https://www.rgs.mef.gov.it/VERSIONE-I/pubblicazioni/pubblicazioni_statistiche/annuario_statistico_della_ragioneria_generale_dello_stato/.

Japan

(1) Almanach de Gotha (Various Years). Almanach de Gotha: Annuaire généalogique, diplomatique et statistique. Gotha: Perthes, Ettinger, and Dieterich. We used this source only for few years to obtain interest payments.

(2) Bank of Japan Statistics Department (Various Years). Honpō-keizai-tōkei (Economic Statistics of Japan). Bank of Japan Statistics Department (Nihon Ginkō Tōkei Kyoku), Tokyo. Original publisher unknown.

(3) Department of Finance, Japan (Various Years). The Financial and Economic Annual of Japan. Rizaikyoku (Ministry of Finance), Tokyo; Government Printing Office.

(4) Kazushi Ohkawa and Miyohei Shinohara and Mataji Umemura (2025). Long-Term Economic Statistics (LTES) Database – Series 7: Government Expenditures. Institute of Economic Research, Hitotsubashi University. Originally published by Toyo Keizai Shinposha, 1965–1988. Accessed on July 5, 2025. Available at https://d-infra.ier.hit-u.ac.jp/English/ltes/a000.html.

(5) Mauro, P., Romeu, R., Binder, A., and Zaman, A. (2015). A modern history of fiscal prudence and profligacy. *Journal of Monetary Economics*, 76:55–70. We used these data for some years to obtain interest payments.

(6) Ministry of Finance Japan (2025). Historical Fiscal Statistics: Table 8. Settlement of Special Accounts. Ministry of Finance Japan, Tokyo. Used to derive the spending from Japanese Special Accounts for the period 1890–2022. Accessed on July 5, 2025. Available at https://www.mof.go.jp/policy/budget/reference/statistics/data.htm.

(7) Statistics Bureau of Japan (1950–2022). Nihon Tōkei Nenkan (Japan Statistical Yearbook). Statistics Bureau, Ministry of Internal Affairs and Communications, Tokyo. Accessed for years

after 2011 via https://www.stat.go.jp/english/data/nenkan/index.htm. Years before 2011 accessed via historical archives and libraries.

Netherlands

(1) Centraal Bureau voor de Statistiek (1899–1923). *Jaarcijfers voor het Koninkrijk der Nederlanden*. Belinfante, 's-Gravenhage. Contains data for the years 1879 to 1923 as well.

(2) Centraal Bureau voor de Statistiek (1924–1940). *Jaarcijfers voor Nederland*. De Haan, Utrecht.

(3) Ministerie van Financiën (1946–2001). Miljoenennota. Digital archive available at https://www.rijksfinancien.nl/archief/2024/1945.

(4) Ministerie van Financiën (2002–2022). Financieel jaarverslag van het rijk. Digital archive available at https://www.rijksfinancien.nl/archief/2024/1945.

(5) Vereeniging voor de Statistiek in Nederland (1872–1878). *Staatkundig en Staathuishoudkundig Jaarboekje*. E.S. Witkamp, Amsterdam.

Norway

(1) Almanach de Gotha (1872–1876). Almanach de Gotha: Annuaire généalogique, diplomatique et statistique, various years.

(2) Det Statistiske Centralbyrå (1877–1978). Statistisk Årbok for Norge (Statistical Yearbook of Norway). Published by Det Statistiske Centralbyrå, Oslo.

(3) Finans- og tolldepartementet (1979–2022). Statsregnskapet og Trygderegnskapet for Budsjettterminen …. Published as annexes to parliamentary reports (St. meld.). See: https://www.stortinget.no/no/Saker-og-publikasjoner/Stortingsforhandlinger/Saksside/?pid=1970-1981&mtid=100&vt=b&did=DIVL99944. Accessed on July 6, 2025.

Portugal

(1) Instituto Nacional de Estatística (1878–1924). *Anuário estatístico de Portugal*. Imprensa Nacional, Lisboa.

(2) Ministério das Finanças (1903–1916). *Orçamentos de Estado*. Imprensa Nacional, Lisboa.

(3) Ministério das Finanças e do Plano, Direcção-Geral da Contabilidade Pública (1925–2022). *Conta Geral do Estado*. Imprensa Nacional, Lisboa.

Russia

(1) Almanach de Gotha (1909–1928). Almanach de Gotha: Annuaire généalogique, diplomatique et statistique, various years. Unfortunately, it was not possible to obtain data for WWI and the Russian Revolution as well as for the early 1920s.

(2) Bakanov, S. A. (2021). State Budget of USSR in 1950s—80s: Dynamics and Structure of Expenditures. *Nauchnyi Dialog*, 5:304–326.

(3) Holzman, F. D. (1953). The Soviet Budget, 1928-1952. *National Tax Journal*, 6(3):226–249.

(4) Institute of Economic Research, Hitotsubashi University (2020). Asian Historical Statistics, Volume 10: Russia, Chapter 7 (Public Finance). Compiled by Masaaki Kuboniwa, Kazuhiro Kumo, and Yoshisada Shida. Toyo Keizai Shinposha, Tokyo. Data retrieved from the Long-Term Economic Statistics Project of the Institute of Economic Research, Hitotsubashi University.

(5) Zahn, F. (1908). *Die Finanzen der Grossmächte: Deutschland, Österreich, Ungarn, Italien, Frankreich, Russland, Grossbritannien, Vereinigte Staaten von Amerika, Japan, url = https://catalog.hathitrust.org/Record/008955562.* C. Heymann, Berlin. We used this reference to get the data for the Russian Empire between 1872-1908. The author collected the data from primary sources.

Spain

(1) Instituto de Estudios Fiscales, Ministerio de Hacienda (1976). *Clasificación económico funcional de los gastos e ingresos del Estado.* In: *Datos básicos para la historia financiera de España, 1850–1975*, Vol. 1. Instituto de Estudios Fiscales, Ministerio de Hacienda, Madrid. Used for the years 1872–1900 and 1940, and for interest payments from 1872–1957.

(2) Instituto Nacional de Estadística (INE) (1900–1984). *Anuario estadístico de España.* Instituto Nacional de Estadística (INE), Madrid. Accessed via INEBase: `https://www.ine.es/inebaseweb/libros.do?tntp=25687#`.

(3) Ministerio de Hacienda y Administraciones Públicas (1985–2022). *Presupuestos Generales del Estado.* Gobierno de España, Ministerio de Hacienda y Administraciones Públicas, Madrid.

Sweden

(1) Almanach de Gotha (1872–1911). Almanach de Gotha: Annuaire généalogique, diplomatique et statistique, various years.

(2) Ekonomistyrningsverket (ESV) (2023). Tidsserier, statens budget m.m. 2022. `https://www.esv.se/press-och-publicerat/publikationer/2023/tidsserier-statens-budget-m.m.-2022`. Publication number ESV 2023:33. Tables 10.4 and 10.5 used.

(3) Kungliga Statistiska Centralbyrån, Sverige (1914–1993). Statistisk Årsbok för Sverige. Kungl. Boktryckeriet P. A. Norstedt Söner, Stockholm. The 1914 volume contains retrospective data starting from 1912.

Switzerland

(1) Eidgenössische Finanzverwaltung (1991–2022). *Staatsrechnung / Schweizerische Eidgenossenschaft*. Eidgenössische Finanzverwaltung, Bern.

(2) Schweizerische Eidgenossenschaft (1872–1950). *Eidgenössische Staatsrechnung / Compte d'état de la Confédération Suisse*. Published in: *Bundesblatt / Schweiz*. Schweizerische Eidgenossenschaft, Bern.

(3) Schweizerischer Bundesrat (1951–1986). *Botschaft des Bundesrates an die Bundesversammlung zur Staatsrechnung der Schweizerischen Eidgenossenschaft / Message du Conseil Fédéral à l'Assemblée Fédérale concernant le compte d'état de la Confédération Suisse*. Schweizerischer Bundesrat, Bern.

(4) Schweizerischer Bundesrat (1987–1990). *Botschaft zur Staatsrechnung der Schweizerischen Eidgenossenschaft / Message concernant le compte d'état de la Confédération Suisse*. Schweizerischer Bundesrat, Bern.

Turkey

(1) T.C. Hazine ve Maliye Bakanlığı (2023). Bütçe Gider-Gelir Gerçekleşmeleri (1924–2022) – 4.BÖLÜM: Kuruluşlar İtibarıyla Bütçe Ödenekleri ve Harcamaları. Available at: `https://www.hmb.gov.tr/bumko-butce-buyuklukleri-ve-butce-gerceklesmeleri`. Accessed July 6, 2025.

United States

(1) United States Bureau of the Budget and United States Office of Management and Budget (1921–1952). Budget of the United States Government. Executive Office of the President, Office of Management and Budget, US Government Printing Office, Washington, D.C.

(2) United States Department of the Treasury (1953–2022). Monthly Treasury Statement of Receipts and Outlays of the United States Government. Department of the Treasury, Financial Management Service, US Government Printing Office, Washington, D.C.

(3) United States Department of the Treasury, Fiscal Service (1872–1920). Treasury Combined Statement of Receipts, Expenditures, and Balances of the United States Government. United States Department of the Treasury, Executive Agency Publication, SuDoc Class T 9.1:, Washington, D.C.

United Kingdom

(1) HM Stationery Office (1872–1961). Revenue Departments Appropriation Accounts. Great Britain. Parliament. House of Commons, London.

(2) HM Stationery Office (1872–1964b). Army Appropriation Accounts. Great Britain. Parliament. House of Commons, London.

(3) HM Stationery Office (1872–1964c). Navy Appropriation Accounts. Great Britain. Parliament. House of Commons, London.

(4) HM Stationery Office (1872–1993a). Civil Appropriation Accounts (Multiple Classes). Great Britain. Parliament. House of Commons, London.

(5) HM Stationery Office (1918–1964a). Air Services Appropriation Accounts. Great Britain. Parliament. House of Commons, London.

(6) HM Stationery Office (1940–1945). Vote of Credit Appropriation Accounts: Expenditure Arising out of the War. Great Britain. Parliament. House of Commons, London.

(7) HM Stationery Office (1965–1993b). Defence Appropriation Accounts. Great Britain. Parliament. House of Commons, London.

(8) HM Stationery Office (Various Years). Several Vote of Credit Appropriation Accounts. Great Britain. Parliament. House of Commons, His Majesty's Stationery Office, London. These accounts have been accessed at `https://parlipapers.proquest.com` by annual search for appropriation accounts. The respective titles can be obtained from the granular item names and upon request.

(9) HM Treasury (2025). Public Expenditure Statistical Analyses (PESA): Public Expenditure Data, 1994–2022. HM Treasury, `https://www.gov.uk/government/collections/public-expenditure-statistical-analyses-pesa`. Accessed on July 5, 2025.

(10) House of Commons (Various Yearsa). *Finance Accounts of the United Kingdom*. His Majesty's Stationery Office, London.

(11) House of Commons (Various Yearsb). *Public Income and Expenditure*. Henry Hansard and Son, London.

(12) Office for Budget Responsibility (2025). Historical Public Finances Database: Central Government Debt Interest Payments (1872–1997). Office for Budget Responsibility, `https://obr.uk/data/`. Accessed on July 5, 2025.

B. Military spending booms: Identification and robustness on boom financing

This appendix provides additional details and alternative approaches to our military spending boom identification strategy discussed in Section 3.

- Appendix B1 presents the baseline set of identified boom spells for each country, together with the corresponding military spending-to-GDP time series. It also illustrates how incorporating historical narratives informed adjustments to the booms initially identified by the algorithm described in Subsection 3.1.
- Appendix B2 displays the distribution of boom sizes across major war and peacetime boom samples. Furthermore, it shows bar charts comparing the average and median boom sizes and durations between major war and peacetime booms, as well as between the 37 exogenous peacetime booms and the remaining 51 other peacetime booms. It includes a graph showing the average primary balance before and during tax-financed peacetime booms. Finally, Table B1 summarizes the booms included in the main samples and subsamples of our analyses.
- Appendix B3 introduces an alternative boom-identification method following Mendoza and Terrones (2008), but replacing the HP filter with a Hamilton filter.
- Appendix B4 covers the set of booms identified when applying a lower threshold for military spending-to-GDP growth in the boom identification algorithm.
- Appendix B5 presents booms obtained using the original, plain version of the identification algorithm from Gorton and Ordoñez (2019), which underlies our approach in a slightly modified version. Appendix B3-Appendix B5 also provide robustness checks for the financing results discussed in Section 4.
- Appendix B6 reports robustness checks for the financing results excluding all minor war and conflict booms from the peacetime booms sample.
- Appendix B7 (advanced economies only) and Appendix B8 (pre– vs. post-World War 2) present additional financing robustness checks for different subsamples of the data.
- Appendix B9 shows the financing results for the sample of 37 exogenous peacetime booms that do not relate to minor wars or conflicts as well as for the remaining other 51 peacetime booms.

The robustness checks build on the following panel OLS specification that is identical to the one used in Section 4:

$$y_{i,t} = \beta_b \text{Boom}_{i,t} + \sum_{l=0}^{1} \boldsymbol{\gamma}_l' \mathbf{X}_{i,t-l} + \alpha_i + \eta_t + u_{i,t}, \tag{2}$$

where the dependent variable, $y_{i,t}$, is the annual growth rate of key fiscal variables, such as public debt and tax revenues, measured in real 2015 USD terms and scaled by trend real GDP. Following

Ramey (2016), we normalize by trend GDP rather than actual GDP to mitigate potential biases arising from short-term output fluctuations, which can be substantial during periods of war and geopolitical instability.[6] $\mathbf{X}_{i,t-l}$ comprises contemporaneous and lagged values (one lag) of trend real GDP growth, population growth, and inflation (log change in the CPI), with results being robust when adding additional lags. The terms α_i and η_t denote country and year fixed effects, respectively. Standard errors are computed following Driscoll and Kraay (1998) to account for cross-sectional dependence, using four lags. This regression specification is identical to the one used in Subsection 4.3 of the main paper.

B1. Main sample of military spending booms

In this subsection, we show the baseline set of identified boom spells for each country alongside the corresponding military spending-to-GDP time series. To identify a military spending boom, we proceed as follows.

We begin by calculating the growth rate of military spending relative to GDP for all country-year observations. To mitigate the influence of outliers, we winsorize the annual growth rates at the 10th and 90th percentiles before computing the standard deviation.[7] The resulting standard deviation is 6.5%, which closely aligns with the 5% growth threshold employed by Gorton and Ordoñez (2019). Based on this, we define miliary spending booms as periods characterized by exceptionally high growth in military spending relative to GDP, as follows:

- A boom begins when a country records two consecutive years of military spending-to-GDP growth above the 6.5% standard deviation threshold. To reduce short-term volatility, we smooth the annual growth series using two-year averages.
- A boom ends when the two-year average growth rate drops below 0% for two consecutive years, signaling a persistent decline in military spending to GDP.

There are two main limitation of relying on this algorithm only. First, it may spuriously identify booms — particularly during recessions, when GDP contracts but military spending remains stable, or when military spending is highly volatile, alternating between rapid growth and sharp declines over several years. Second, the method may erroneously conflate two military buildup phases as one, in case they follow shortly after another, or in case a country moves from peace to war. This can produce classifications that conflict with the detailed findings of historians.

In a second step, we therefore address the limitations of the algorithmic approach by validating each identified boom, along with its start and end dates, against qualitative historical evidence. For this purpose, we draw on a wide range of case-specific sources, including contemporaneous parliamentary records, budgetary documents, as well as retrospective monographs and scholarly

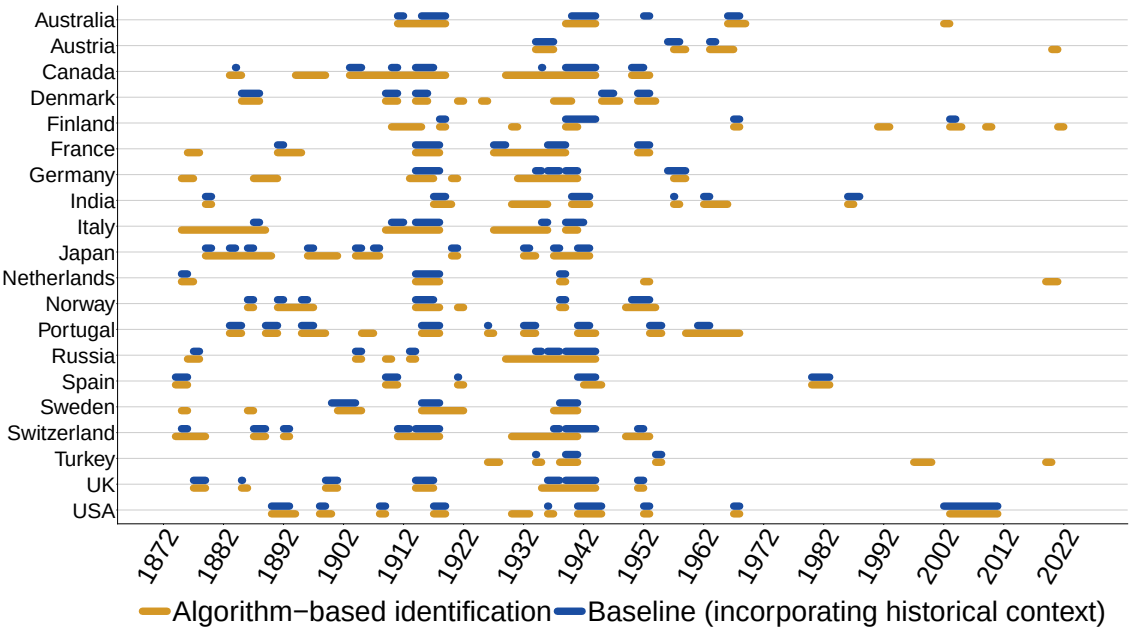
[6] For each country, trend real GDP is estimated using the Hamilton filter (Hamilton, 2018). The baseline specification employs one lag, with results robust to alternative lag lengths.

[7] Retaining untrimmed outliers leads to an inflated standard deviation, which restricts boom identification almost entirely to the two World Wars.

work by historians. This qualitative cross-checking proved essential for identifying a final set of spending booms that is consistent with both the data and the established historical record.

Figure B1 provides an overview of the corrections. The orange segments are the spells identified by the algorithm. The blue segments represent the final sample of booms that serves as our baseline in the analyses (see also Figure 2). The graph illustrates that the historical sources helped to address two main problems of the purely algorithmic identification. First, spurious booms in spending-to-GDP that were driven by GDP collapses rather than spending increases, most visibly in the early 1930s and in the Covid-19 years of 2020/21; and second, unrealistically long boom spells. The algorithm often produced extended booms spanning up to 20 years, which could not be reconciled with the rich historical record on rearmament and war episodes.

Figure B1: Algorithmic boom identification and baseline sample after incorporating historical context



Note: The orange segments indicate military booms identified solely by the algorithm. The blue segments show all military booms identified from the algorithm's initial boom spells, which we then refine by using historical evidence from more than 300 separate sources, including parliamentary papers, budgetary documents, and scholarly historical work.

In more detail, the algorithm originally identified 122 military boom spells. Out of these, 27 were dropped entirely because they were spurious — with a GDP decline but no significant increase in military spending. Almost all of these spurious booms were clustered around the Great Depression, the financial crisis of 2008, and the Covid-19 crisis. 36 boom spells were shortened based on the historical, qualitative record, and 4 where lengthened. In addition, in 14 cases, we split erroneously long boom spells into multiple, distinct booms. In detail, these include the military booms in Australia in the 1910s, Canada from 1900-1920 and 1930-1945, France from 1925-1940, Germany in the 1930s, Italy in the 1910s, Japan in the 1880s, 1900s, and 1930s, Norway in the

1890s, the Soviet Union in the 1930s, Switzerland in the 1910s and 1930s/40s, as well as in the UK in the 1930s.

An overview of each of the 114 final booms, including the references providing their historical context, is presented in Appendix E. To our knowledge, this appendix is the most comprehensive overview of the history of rearmament and war finance to date. Table 1 in the main paper provides a more compact overview, including a brief summary of the reason and information on whether an exogenous trigger initiated the boom.

Figure B2-Figure B4 present the resulting boom spells for each country in the context of their respective military spending-to-GDP time series.

Figure B2: Baseline military spending booms by country

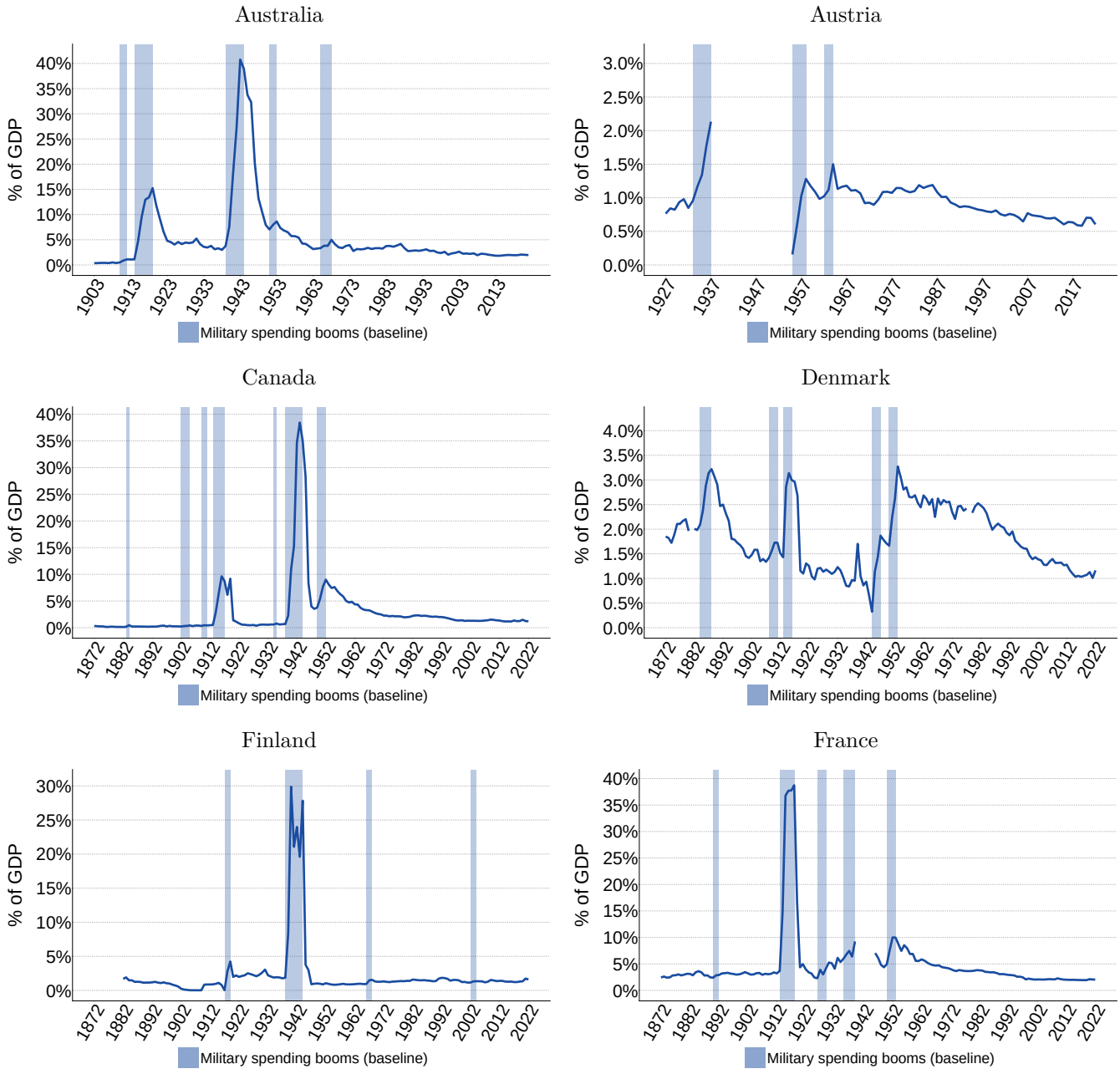


Figure B3: Baseline military spending booms by country (continued)

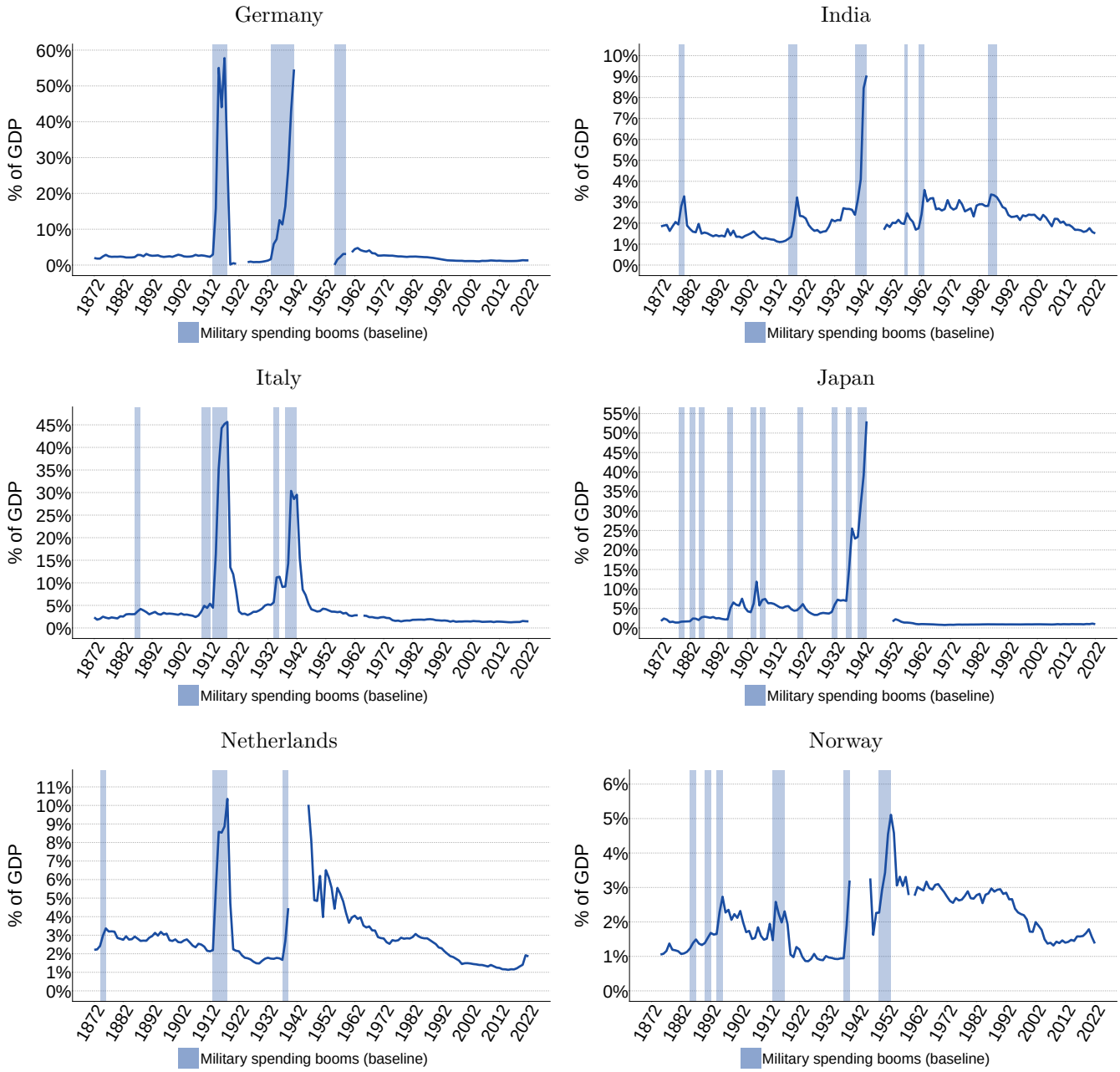
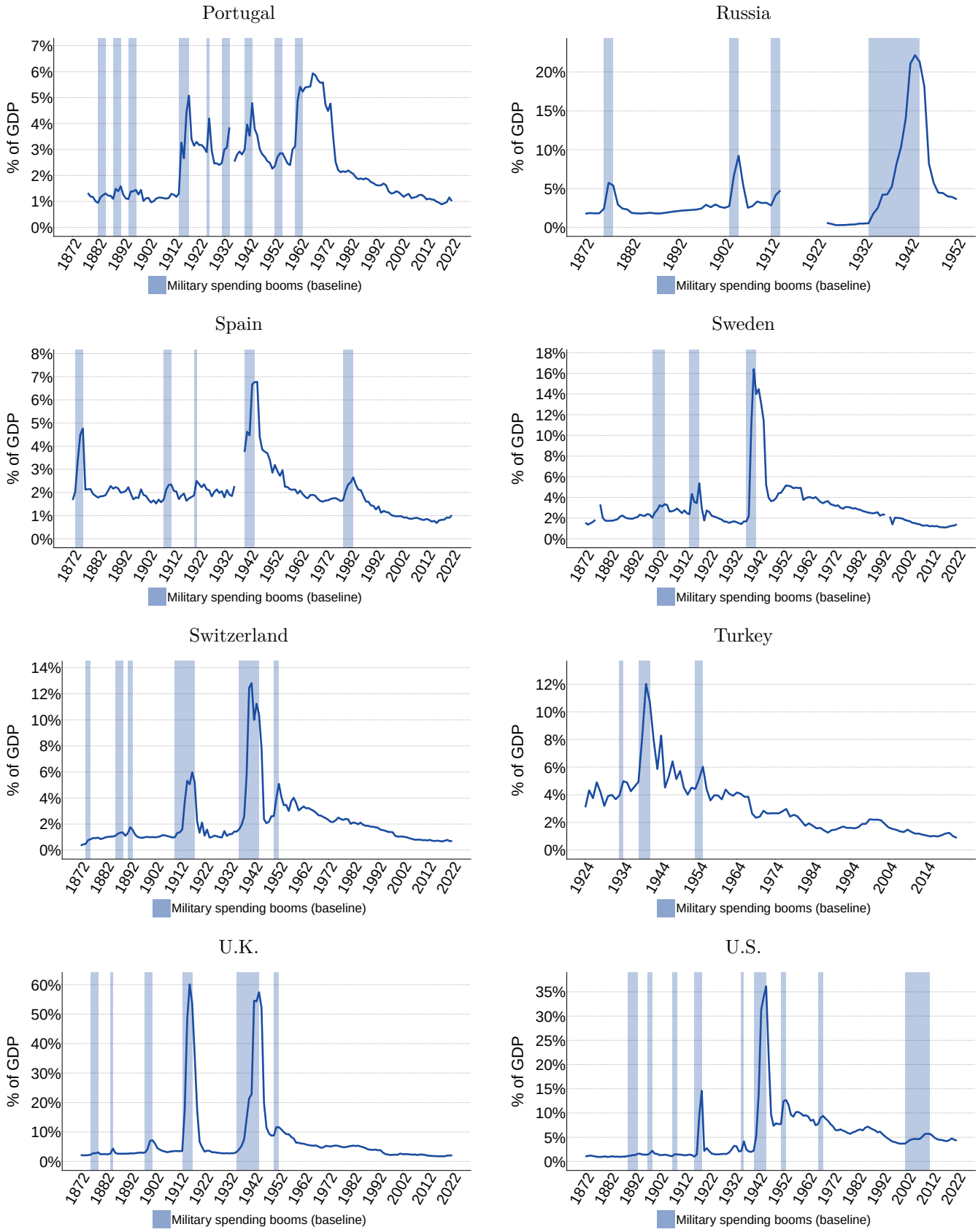


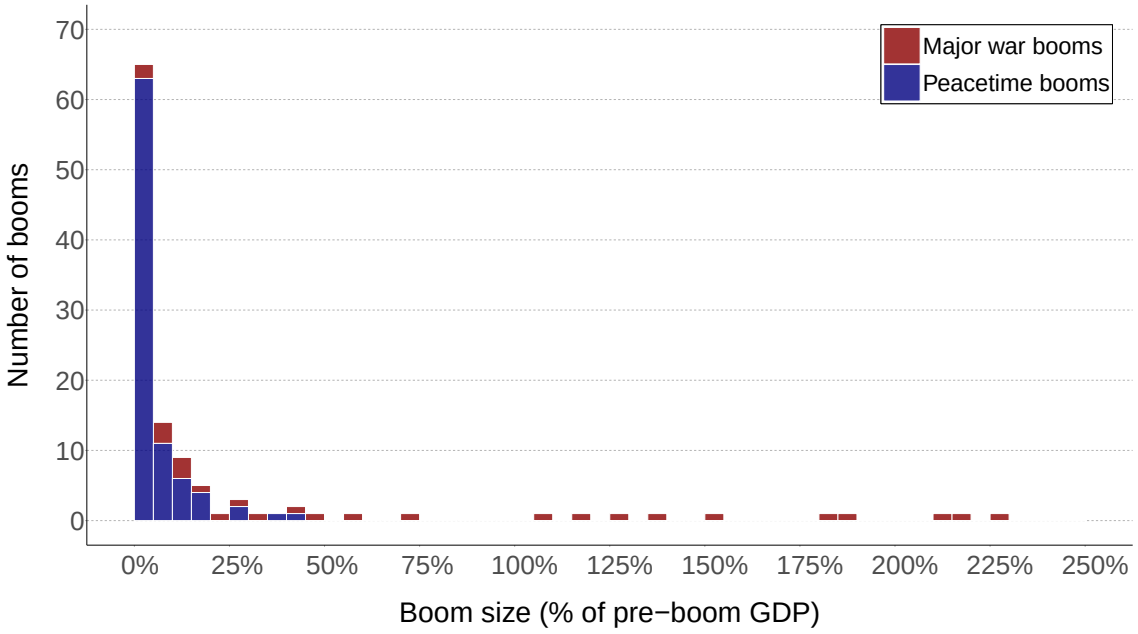
Figure B4: Baseline military spending booms by country (continued)



B2. Boom sizes, lengths, and other descriptives

Figure B5 displays the distribution of boom sizes for the major war (26 booms) and peacetime booms (88 booms) sample. Figure B6 further presents the average and median boom sizes and durations across certain subsamples used in this paper. Boom size is defined as the cumulative increase in real 2015 USD military spending relative to the pre-boom level, expressed as a share of pre-boom real 2015 USD GDP. The average boom size amounts to 78.9% of pre-boom GDP in the major war booms sample and 5.6% in the peacetime booms sample. The corresponding medians are 45.3% and 2.9%, respectively. In the full sample, the average boom size is 22.3% and the median 4.0% of pre-boom GDP. In the sample of the 37 exogenous peacetime booms (without minor wars), the average boom size is 7.3% of pre-boom GDP, and the median boom size is 3.6%. In the sample of the remaining 51 other peacetime booms, the average boom size is 4.3% of pre-boom GDP, and the median size is 2.1%. The median boom durations are four years for major war booms, three years across all peacetime booms, and three years for the subset of all exogenous peacetime booms excluding exogenous minor war booms as well as two years for the subset of the remaining other peacetime booms.

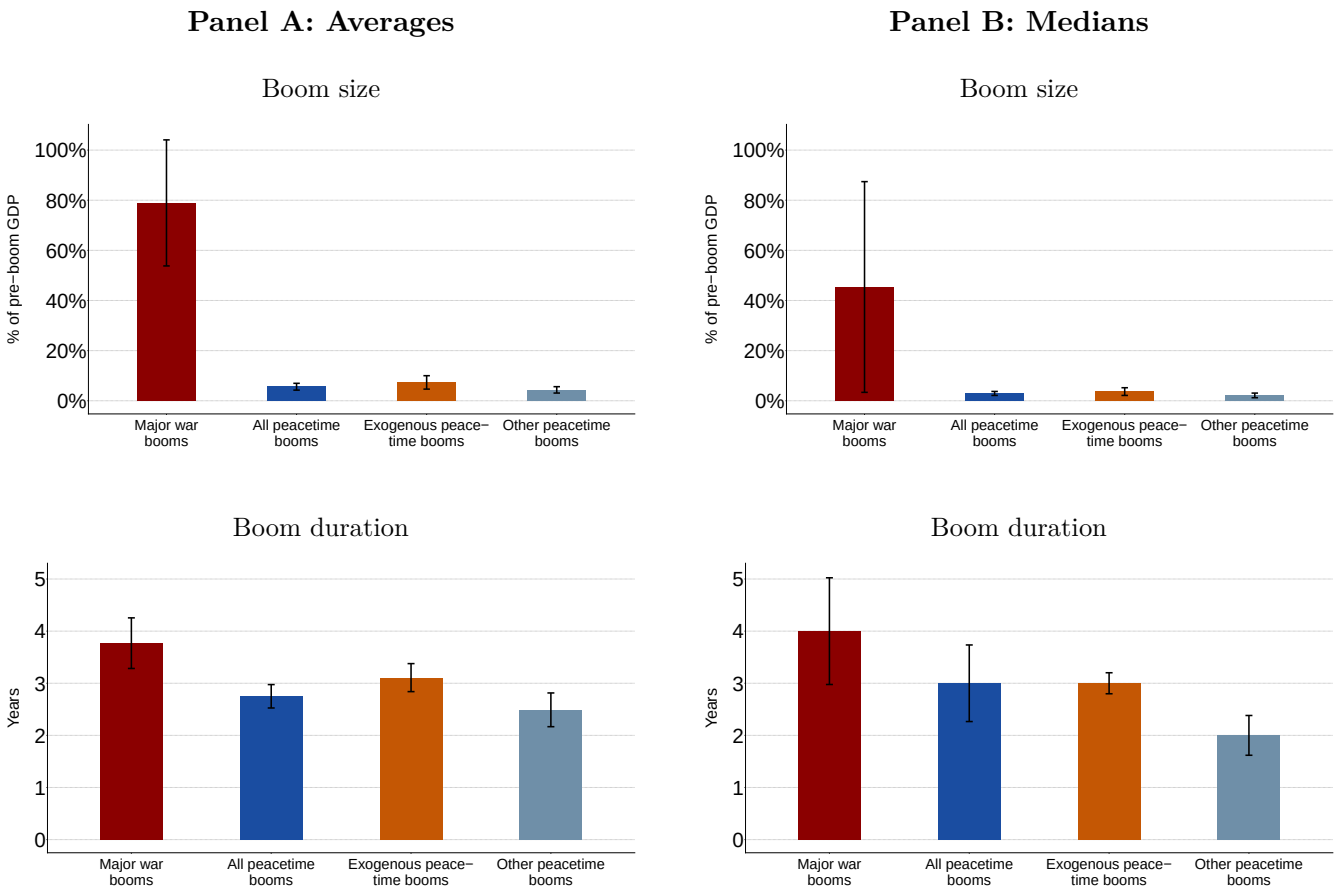
Figure B5: Distribution of boom sizes



Note: This figure plots the distribution of boom sizes (in % of pre-boom GDP) for the major war and peacetime booms sample.

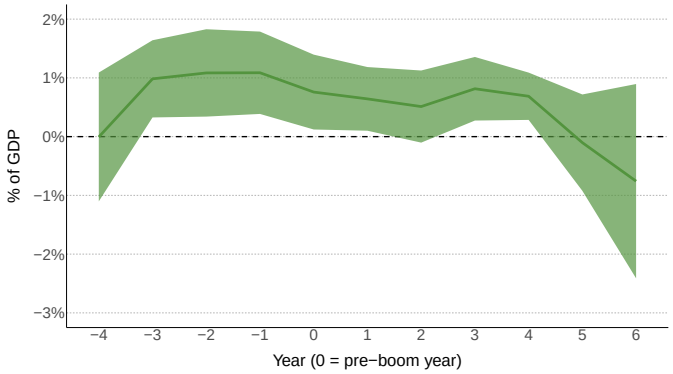
In addition, Figure B7 depicts the average primary balance around tax-financed peacetime military booms. Of these 32 tax-financed peacetime booms, 21 were primarily financed by primary budget surpluses that often persist throughout the boom, with the mean surplus statistically different from zero.

Figure B6: Average and median size and duration in different boom samples



Note: Panel A shows average boom sizes and durations across different boom samples, while Panel B reports the corresponding medians. The exogenous peacetime booms sample (37 booms) and the other peacetime booms sample (51 booms) are subsamples of the "all peacetime booms" sample (88 booms). Whiskers indicate 90% confidence intervals (bootstrapped standard errors with 1,000 draws for the median), and the dashed vertical line marks the pre-boom year.

Figure B7: Average primary balance around tax-financed peacetime booms



Note: This figure shows the average primary balance around tax-financed peacetime military booms.

Table B1: Overview of military boom samples and subsamples, 1870-2022

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Period	Major war booms	Exogenous major war booms	Peacetime booms	Exogenous peacetime booms	Exogenous peacetime booms (without minor wars)	Exog. peacetime booms (without minor wars & without WW1& 2)
Australia	1911–12			Yes	Yes	Yes	
Australia	1915–19	Yes	Yes				
Australia	1940–44	Yes	Yes				
Australia	1952–53			Yes	Yes		
Australia	1966–68			Yes	Yes		
Austria	1934–37			Yes	Yes	Yes	
Austria	1956–58			Yes	Yes	Yes	Yes
Austria	1963-64			Yes	Yes	Yes	Yes
Canada	1884			Yes			
Canada	1903–05			Yes			
Canada	1910–11			Yes	Yes	Yes	
Canada	1914–17	Yes	Yes				
Canada	1935			Yes			
Canada	1939–44	Yes	Yes				
Canada	1950–52			Yes	Yes		
Denmark	1885–88			Yes			
Denmark	1909–11			Yes	Yes	Yes	Yes
Denmark	1914–16			Yes	Yes	Yes	Yes
Denmark	1945–47			Yes			
Denmark	1951–53			Yes	Yes	Yes	Yes
Finland	1918–19	Yes	Yes				
Finland	1939–44	Yes	Yes				
Finland	1967–68			Yes			
Finland	2003–04			Yes			
France	1891–92			Yes	Yes	Yes	Yes
France	1914–18	Yes	Yes				
France	1927–29			Yes	Yes	Yes	
France	1936–39			Yes	Yes	Yes	
France	1951–53			Yes	Yes		
Germany	1914–18	Yes	Yes				
Germany	1934–35			Yes			
Germany	1936–38			Yes			
Germany	1939–	Yes					
Germany	1956–59			Yes	Yes	Yes	Yes
India	1879–80			Yes	Yes		
India	1917–19	Yes	Yes				
India	1940–43	Yes	Yes				
India	1957			Yes			
India	1962–63			Yes	Yes		
India	1986–88			Yes			
Italy	1887–88			Yes			
Italy	1910–12			Yes			
Italy	1914–18	Yes	Yes				
Italy	1935–36			Yes			
Italy	1939–42	Yes	Yes				
Japan	1879–80			Yes			
Japan	1883–84			Yes			
Japan	1886–87			Yes			
Japan	1896–97			Yes	Yes	Yes	Yes
Japan	1904–05	Yes	Yes				
Japan	1907–08			Yes			
Japan	1920–21			Yes	Yes		
Japan	1932–33	Yes					
Japan	1937–38	Yes					
Japan	1941–43	Yes	Yes				
Netherlands	1875–76			Yes	Yes		
Netherlands	1914–18			Yes	Yes	Yes	Yes
Netherlands	1938–39			Yes	Yes	Yes	
Norway	1886–87			Yes			
Norway	1891–92			Yes	Yes	Yes	Yes

(continued)

(continued)

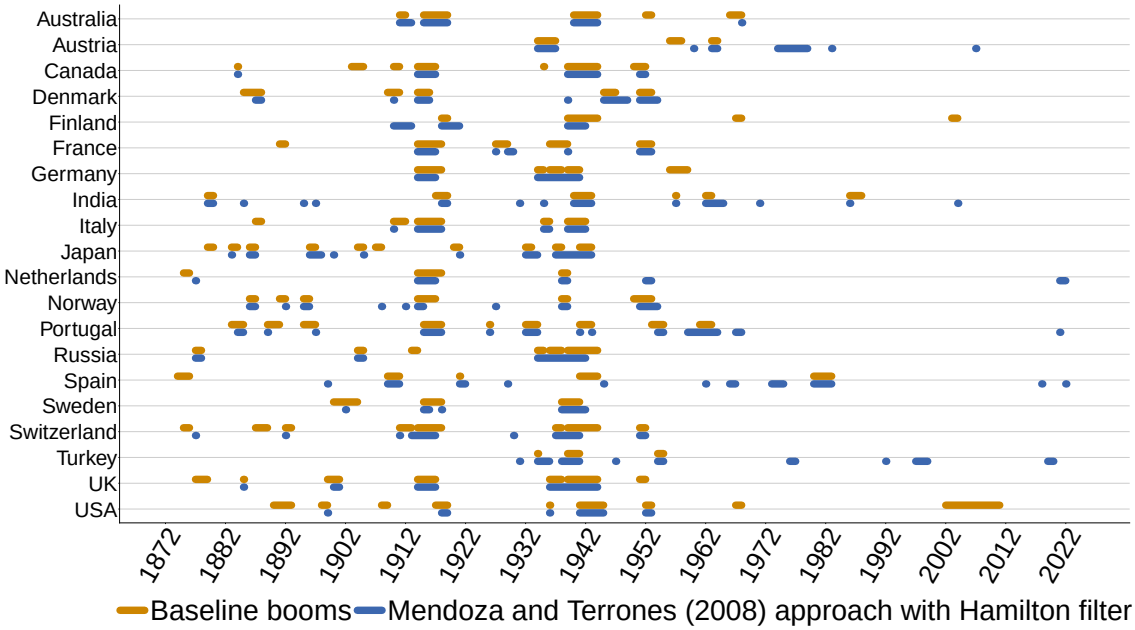
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Period	Major war booms	Exo. major war booms	Peacetime booms	Exo. peacetime booms	Exo. peacetime booms w/o minor wars/conflicts	Exo. peacetime booms w/o minor wars/conflicts and subsequent WWs
Norway	1895–96			Yes	Yes	Yes	Yes
Norway	1914–17			Yes	Yes	Yes	Yes
Norway	1938–39			Yes	Yes	Yes	
Norway	1950–53			Yes	Yes	Yes	Yes
Portugal	1883–85			Yes	Yes	Yes	Yes
Portugal	1889–91			Yes	Yes	Yes	Yes
Portugal	1895–97			Yes			
Portugal	1915–18			Yes	Yes		
Portugal	1926			Yes			
Portugal	1932–34			Yes			
Portugal	1941–43			Yes	Yes	Yes	Yes
Portugal	1953–55			Yes	Yes	Yes	Yes
Portugal	1961–63			Yes	Yes		
Russia	1877–78	Yes	Yes				
Russia	1904–05	Yes	Yes				
Russia	1913–14			Yes			
Russia	1934–35			Yes			
Russia	1936–38			Yes	Yes	Yes	
Russia	1939–44	Yes	Yes				
Spain	1874–76			Yes			
Spain	1909–11			Yes	Yes		
Spain	1921			Yes	Yes		
Spain	1941–44			Yes	Yes	Yes	Yes
Spain	1980–83			Yes			
Sweden	1900–04			Yes			
Sweden	1915–18			Yes	Yes	Yes	Yes
Sweden	1938–41			Yes	Yes	Yes	Yes
Switzerland	1875–76			Yes			
Switzerland	1887–89			Yes			
Switzerland	1892–93			Yes			
Switzerland	1911–13			Yes	Yes	Yes	Yes
Switzerland	1914–18			Yes	Yes	Yes	Yes
Switzerland	1937–38			Yes	Yes	Yes	Yes
Switzerland	1939–44			Yes	Yes	Yes	Yes
Switzerland	1951–52			Yes	Yes	Yes	Yes
Turkey	1934			Yes			
Turkey	1939–41			Yes	Yes	Yes	Yes
Turkey	1954–55			Yes	Yes	Yes	Yes
UK	1877–79			Yes	Yes	Yes	Yes
UK	1885			Yes	Yes		
UK	1899–01			Yes	Yes		
UK	1914–17	Yes	Yes				
UK	1936–38			Yes	Yes	Yes	
UK	1939–44	Yes	Yes				
UK	1951–52			Yes	Yes		
USA	1890–93			Yes			
USA	1898–99			Yes	Yes		
USA	1908–09			Yes			
USA	1917–19	Yes	Yes				
USA	1936			Yes			
USA	1941–45	Yes	Yes				
USA	1952–53	Yes	Yes				
USA	1967–68	Yes	Yes				
USA	2002–11			Yes	Yes		
Number of booms		26	23	88	54	37	28

Note: This table gives an overview of the booms included in the different samples that we use throughout the analysis.

B3. Identification of boom spells: Mendoza and Terrones (2008) approach

Figure B8 present the resulting boom spells for each country when applying the identification approach of Mendoza and Terrones (2008). The respective booms are shown as orange segments. For comparison, the figure also displays the booms from our baseline sample (blue segments), which are based on our algorithmic identification method and incorporate historical context. We adapt the Mendoza and Terrones (2008) framework to military spending by replacing the Hodrick–Prescott (HP) filter with the Hamilton filter (due to the HP filters limitations, see Hamilton (2018) for a discussion) to extract the long-run trend. For each country, we log real per capita military spending in real 2015 USD and compute the Hamilton trend as the average of the previous four years' spending values. The deviation of log spending from its Hamilton trend then gives the cyclical component. To prevent extreme wartime observations from inflating the benchmark, we compute the standard deviation of this component after trimming the top and bottom 0.5% of country-specific values. We identify a boom year when the cyclical component exceeds one country-specific standard deviation above trend. Based on this approach, we identify 124 booms. Table B2 confirms the robustness of our financing baseline results to this alternative specification. Since this boom identification approach does not incorporate historical context, we present results only for the full sample and for a version excluding the World War 1 and 2 years.

Figure B8: Boom identification based on the Mendoza and Terrones (2008) approach



Note: The orange segments indicate military booms identified using the approach by Mendoza and Terrones (2008) with a Hamilton instead of a HP filter. The blue segments show all military booms from the baseline sample.

Table B2: Regressions on boom financing – Mendoza and Terrones (2008) identification

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Full sample	2.07^{***}	0.46^{**}	3.01^{***}	-1.16^{***}	0.30^{***}
	(0.53)	(0.19)	(0.89)	(0.40)	(0.09)
Num. obs.	2,525	2,525	2,586	2,539	2,624
Adj. R^2	0.30	0.09	0.17	0.22	0.21
Excluding World Wars	0.91^{***}	0.50^{**}	1.36^{**}	-0.34^{**}	0.23^{**}
	(0.19)	(0.24)	(0.56)	(0.15)	(0.10)
Num. obs.	2,331	2,331	2,392	2,352	2,415
Adj. R^2	0.26	0.08	0.11	0.25	0.18

(B) Reductions in spending? Disaggregation

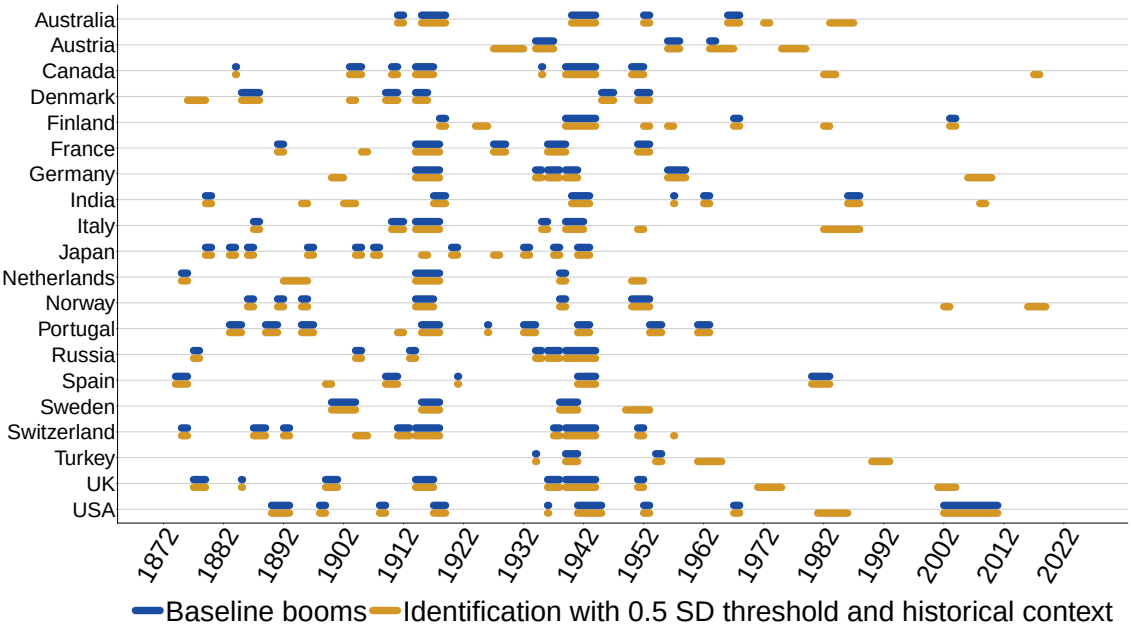
	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Full sample	2.07^{***}	0.02	−0.00	0.07^{***}	0.16^{**}	0.06	0.11^{**}
	(0.53)	(0.09)	(0.02)	(0.02)	(0.07)	(0.10)	(0.05)
Num. obs.	2,525	2,288	2,081	2,425	2,599	2,599	2,315
Adj. R^2	0.30	0.11	0.15	0.04	0.07	0.01	0.09
Excluding World Wars	0.91^{***}	0.05	0.01	0.06^{**}	0.13	0.13	0.04
	(0.19)	(0.11)	(0.03)	(0.03)	(0.09)	(0.10)	(0.03)
Num. obs.	2,331	2,133	1,938	2,257	2,405	2,405	2,153
Adj. R^2	0.30	0.11	0.12	0.04	0.05	0.02	0.10

Note: Panel A reports the impact of military spending booms on broad spending and financing categories. Panel B presents a disaggregated breakdown of spending categories. The results are shown for the full sample and a sample excluding the World War years. The samples are based on the 124 military booms identified using the boom identification method from Mendoza and Terrones (2008) with a Hamilton instead of a HP filter. All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

B4. Identification of boom spells: lower SD threshold

Figure B9 presents the resulting boom spells for each country when using a lower military spending-to-GDP growth rate threshold of 0.5 standard deviations *and* when incorporating historical context to identify booms. These booms are shown as orange segments. For comparison, the figure also displays the booms from our baseline sample (blue segments), which are based on the algorithmic identification method and likewise incorporate historical context. In total, 36 additional peacetime military spending booms are identified under the lower threshold, yielding a sample of 150 booms in total. Table B3 confirms the robustness of the financing results of our baseline booms to this alternative specification.

Figure B9: Boom identification based on a lower military spending-to-GDP threshold



Note: The orange segments indicate military booms identified using a lower military spending-to-GDP growth threshold (0.5 SD) and incorporating historical context. The blue segments show all military booms from the baseline sample.

Table B3: Regressions on boom financing – identification with lower SD threshold

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Major war booms	6.92***	0.61*	9.28***	−4.08***	0.81***
	(0.91)	(0.35)	(1.49)	(1.08)	(0.19)
Num. obs.	2,177	2,177	2,248	2,211	2,276
Adj. R^2	0.41	0.09	0.21	0.27	0.22
Peacetime booms	0.73***	0.43***	0.80**	−0.64***	0.17**
	(0.15)	(0.12)	(0.34)	(0.15)	(0.07)
Num. obs.	2,428	2,428	2,496	2,443	2,527
Adj. R^2	0.32	0.09	0.13	0.26	0.17

(B) Reductions in spending? Disaggregation

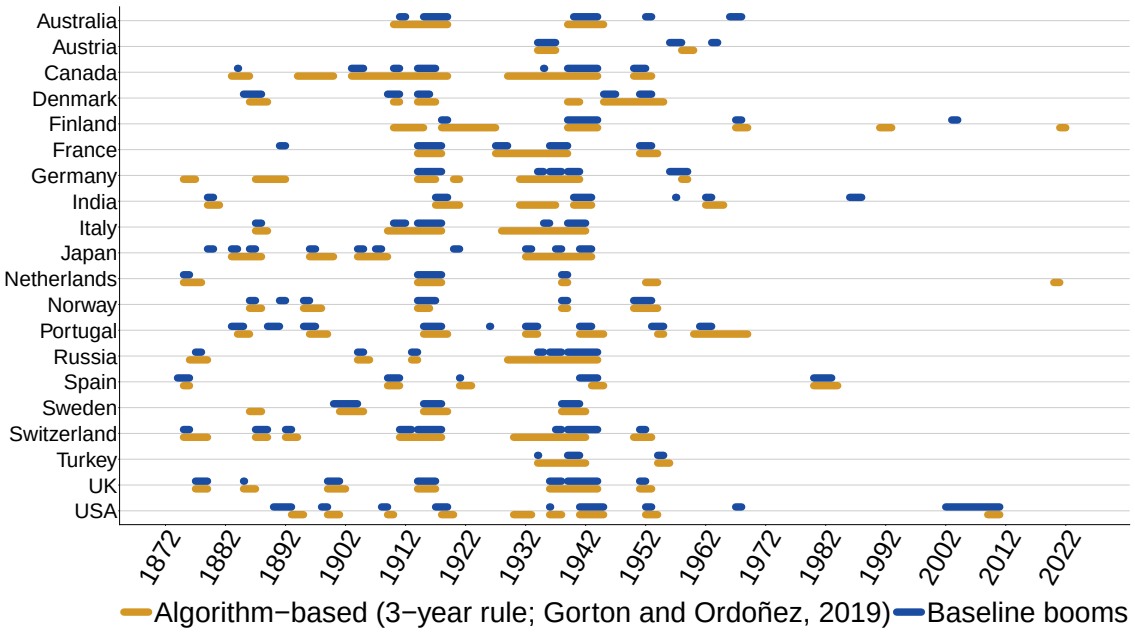
	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Major war booms	6.92***	−0.04	−0.00	0.06*	0.14	−0.06	0.46***
	(0.91)	(0.06)	(0.03)	(0.03)	(0.16)	(0.26)	(0.12)
Num. obs.	2,177	1,994	1,800	2,095	2,251	2,251	2,004
Adj. R^2	0.41	0.11	0.15	0.04	0.06	0.01	0.12
Peacetime booms	0.73***	0.05	0.01	0.04**	0.17***	0.08	0.04**
	(0.15)	(0.04)	(0.02)	(0.02)	(0.04)	(0.08)	(0.02)
Num. obs.	2,428	2,214	2,020	2,346	2,502	2,502	2,236
Adj. R^2	0.32	0.11	0.13	0.03	0.06	0.02	0.11

Note: Panel A reports the impact of military spending booms on broad spending and financing categories. Panel B presents a disaggregated breakdown of spending categories. The results are shown for the major war booms (26 booms) and peacetime booms (124 booms) sample. The samples are based on the 150 military booms identified using a lower military spending-to-GDP growth threshold of 0.5 standard deviations of all annual military spending-to-GDP growth rates. All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

B5. Identification of boom spells: plain Gorton and Ordoñez (2019) approach

Figure B10 presents the resulting boom spells for each country when applying the original identification algorithm of Gorton and Ordoñez (2019). The respective booms are shown as orange segments. For comparison, the figure also displays the booms from our baseline sample (blue segments), which are based on our algorithmic identification method and incorporate historical context. Compared to our slightly adjusted version, the plain, original algorithm requires three consecutive years — rather than two in our case — of military spending-to-GDP growth rates above the threshold as the starting condition for a boom (see Appendix B1 for the algorithm). Moreover, the boom identification does not incorporate historical context. In total, this plain algorithmic approach identifies 94 military spending booms. Table B4 confirms the robustness of our baseline financing results to this alternative specification. Since this boom identification approach does not incorporate historical context, we present results only for the full sample and for a version excluding the World War 1 and 2 years.

Figure B10: Boom identification using the plain Gorton and Ordoñez (2019) algorithm



Note: The orange segments indicate military booms identified using the plain Gorton and Ordoñez (2019) approach. The blue segments show all military booms from the baseline sample.

Table B4: Regressions on boom financing – plain Gorton and Ordoñez (2019) identification

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Full sample	1.32^{***}	0.21^{**}	1.76^{***}	-0.81^{**}	0.33^{***}
	(0.46)	(0.11)	(0.59)	(0.34)	(0.10)
Num. obs.	2,525	2,525	2,586	2,539	2,624
Adj. R^2	0.28	0.08	0.16	0.22	0.21
Excluding World Wars	0.57^{***}	0.16	0.99^{**}	-0.24^{**}	0.24^{***}
	(0.16)	(0.12)	(0.43)	(0.10)	(0.09)
Num. obs.	2,331	2,331	2,392	2,352	2,415
Adj. R^2	0.29	0.08	0.11	0.27	0.18

(B) Reductions in spending? Disaggregation

	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Full sample	1.32^{***}	-0.03	-0.01	0.04^{***}	0.10^{*}	-0.02	0.10^{***}
	(0.46)	(0.04)	(0.02)	(0.01)	(0.05)	(0.07)	(0.03)
Num. obs.	2,525	2,288	2,081	2,425	2,599	2,599	2,315
Adj. R^2	0.28	0.11	0.15	0.03	0.07	0.01	0.09
Excluding World Wars	0.57^{***}	-0.02	-0.01	0.03^{*}	0.05	-0.00	0.05^{***}
	(0.16)	(0.05)	(0.02)	(0.01)	(0.06)	(0.07)	(0.02)
Num. obs.	2,331	2,133	1,938	2,257	2,405	2,405	2,153
Adj. R^2	0.29	0.11	0.12	0.03	0.05	0.02	0.10

Note: Panel A reports the impact of military spending booms on broad spending and financing categories. Panel B presents a disaggregated breakdown of spending categories. The results are shown for the full sample and a sample excluding the World War years. The samples are based on the 94 military booms identified using the original boom identification method of Gorton and Ordoñez (2019). All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

B6. Financing booms (robustness): peacetime without minor conflicts

In the main part of the paper, we divide our baseline set of booms into a major war booms sample (war booms with more than 10,000 battle deaths) and a peacetime and minor conflict booms sample (referred to as peacetime booms). For the latter, Table B5 shows that the findings remain robust when excluding minor conflicts and war booms, defined as booms associated with domestic uprisings or smaller conflicts abroad. In total, this exclusion removes 25 booms from the sample and leaves 63 peacetime booms.

Table B5: Regressions on boom financing – peacetime without minor conflicts

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Peacetime	0.96***	0.38**	0.93**	−0.69***	0.25**
	(0.18)	(0.16)	(0.40)	(0.19)	(0.10)
Num. obs.	2,428	2,428	2,496	2,443	2,527
Adj. R^2	0.32	0.08	0.12	0.26	0.17
Excl. minor conflicts	0.94***	0.40***	1.20**	−0.69***	0.27**
	(0.22)	(0.12)	(0.46)	(0.24)	(0.14)
Num. obs.	2,364	2,364	2,432	2,379	2,463
Adj. R^2	0.32	0.10	0.12	0.26	0.17

(B) Reductions in spending? Disaggregation

	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Peacetime	0.96***	−0.02	−0.01	0.06**	0.18***	0.08	0.05**
	(0.18)	(0.04)	(0.02)	(0.03)	(0.06)	(0.10)	(0.02)
Num. obs.	2,428	2,214	2,020	2,346	2,502	2,502	2,236
Adj. R^2	0.32	0.11	0.13	0.04	0.06	0.02	0.11
Excl. minor conflicts	0.94***	0.01	−0.00	0.02*	0.21***	0.05	0.05
	(0.22)	(0.04)	(0.02)	(0.01)	(0.07)	(0.07)	(0.03)
Num. obs.	2,364	2,172	1,970	2,284	2,438	2,438	2,177
Adj. R^2	0.32	0.11	0.13	0.04	0.05	0.03	0.11

Note: Panel A reports the impact of military spending booms on broad spending and financing categories. Panel B presents a disaggregated breakdown of spending categories. The results are shown for the full peacetime booms sample (88 booms) and the peacetime booms sample excluding minor conflicts and war booms (63 booms). All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

B7. Financing booms (robustness): advanced country sample

In this subsection, we present the results for the sample of advanced countries. Specifically, we exclude India, Russia (including the Russian Empire and Soviet Union), and Turkey from the dataset. This reduces the sample by 331 observations and 15 booms (5 major war booms and 10 peacetime booms), leaving a total of 99 booms. As shown in Table B6, the results remain robust.

Table B6: Regressions on boom financing – advanced countries sample

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Major war booms	7.44***	0.91**	9.97***	−4.54***	0.97***
	(1.05)	(0.35)	(1.92)	(1.13)	(0.24)
Num. obs.	2,021	2,021	2,120	2,096	2,117
Adj. R^2	0.43	0.08	0.27	0.30	0.22
Peacetime booms	0.97***	0.30*	0.77*	−0.74***	0.18*
	(0.20)	(0.17)	(0.45)	(0.21)	(0.11)
Num. obs.	2,153	2,153	2,248	2,227	2,249
Adj. R^2	0.32	0.09	0.17	0.30	0.19

(B) Reductions in spending? Disaggregation

	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Major war booms	7.44***	−0.07	−0.01	0.07*	0.23	0.06	0.52***
	(1.05)	(0.06)	(0.02)	(0.04)	(0.19)	(0.25)	(0.13)
Num. obs.	2,021	1,862	1,660	2,007	2,095	2,095	1,933
Adj. R^2	0.43	0.11	0.12	0.04	0.04	0.01	0.13
Peacetime booms	0.97***	−0.04	−0.01	0.06**	0.13**	0.07	0.04*
	(0.20)	(0.05)	(0.02)	(0.03)	(0.06)	(0.12)	(0.02)
Num. obs.	2,153	1,973	1,774	2,142	2,227	2,227	2,070
Adj. R^2	0.32	0.12	0.13	0.04	0.06	0.02	0.11

Note: Panel A reports the impact of military spending booms on broad spending and financing categories. Panel B presents a disaggregated breakdown of spending categories. The results are shown for the major war booms sample (21 booms) and the peacetime booms sample (78 booms). All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

B8. Financing booms (robustness): pre- vs. post-1945 sample

Next, we present the results for the pre- and post-1945 samples. We exclude the World War booms (18 cases) from these two samples, yielding 72 booms in the pre-1945 and 24 booms in the post-1945 sample. Table B7 shows that our baseline results remain robust across these subsamples.

Table B7: Regressions on boom financing – pre- and post-1945 sample

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Pre-1945 boom	1.03***	0.39*	1.98***	−0.76***	0.32***
	(0.25)	(0.21)	(0.54)	(0.22)	(0.10)
Num. obs.	1,043	1,043	1,030	1,002	1,046
Adj. R^2	0.32	0.05	0.05	0.20	0.19
Post-1945 boom	0.97***	0.32	0.74**	−0.53**	0.20*
	(0.27)	(0.24)	(0.35)	(0.25)	(0.11)
Num. obs.	1,378	1,378	1,451	1,431	1,459
Adj. R^2	0.33	0.10	0.25	0.33	0.25

(B) Reductions in spending? Disaggregation

	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Pre-1945 boom	1.03***	−0.02	0.01	0.09**	0.13**	0.12	0.05**
	(0.25)	(0.03)	(0.01)	(0.04)	(0.05)	(0.15)	(0.02)
Num. obs.	1,043	764	740	899	1,043	1,043	945
Adj. R^2	0.32	0.07	0.23	0.02	0.07	−0.02	0.07
Post-1945 boom	0.97***	−0.05	−0.05	−0.01	0.22	0.08	0.05
	(0.27)	(0.10)	(0.05)	(0.02)	(0.13)	(0.08)	(0.03)
Num. obs.	1,378	1,445	1,274	1,443	1,452	1,452	1,285
Adj. R^2	0.33	0.11	0.11	0.06	0.07	0.04	0.12

Note: Panel A reports the impact of military spending booms on broad spending and financing categories. Panel B presents a disaggregated breakdown of spending categories. The results are shown for the pre-1945 (72 booms) and post-1945 (24 booms) sample. Note that the World War booms (18 booms) are excluded from both samples. All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

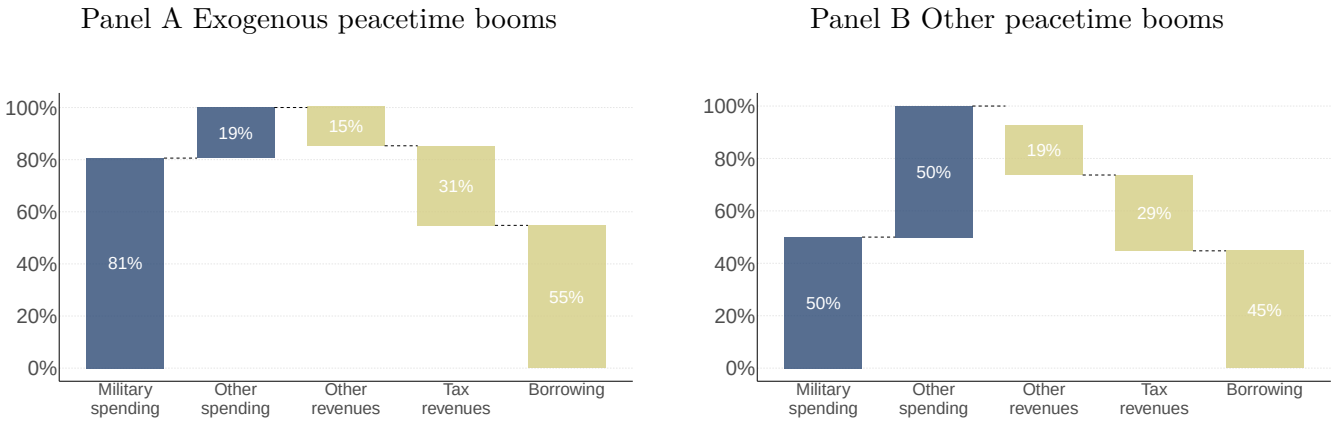
B9. Financing booms (robustness): Exogenous vs. non-exogenous peacetime

This Appendix distinguishes between exogenous peacetime booms triggered by external geopolitical shocks (37 cases, see below) and peacetime booms that arise endogenously, as a result of domestic economic or political dynamics (51 cases). Figure B11, Figure B12, Figure B13, and Table B8 show the complete set of results on the financing of military booms, presented separately for these two subsamples.

Exogenous peacetime booms show a more heavy reliance on debt financing than other peacetime booms. The debt increase and the decline in the primary balance is more pronounced for exogenous peacetime buildups, while the dynamics of taxes is broadly similar. This is also reflected in Figure B11, which shows that, on average, 55% of additional spending during exogenous peacetime booms is financed by borrowing and 31% by tax revenues. These results underline that exogenous shocks and major war threats are more clearly associated with large-scale debt financing.

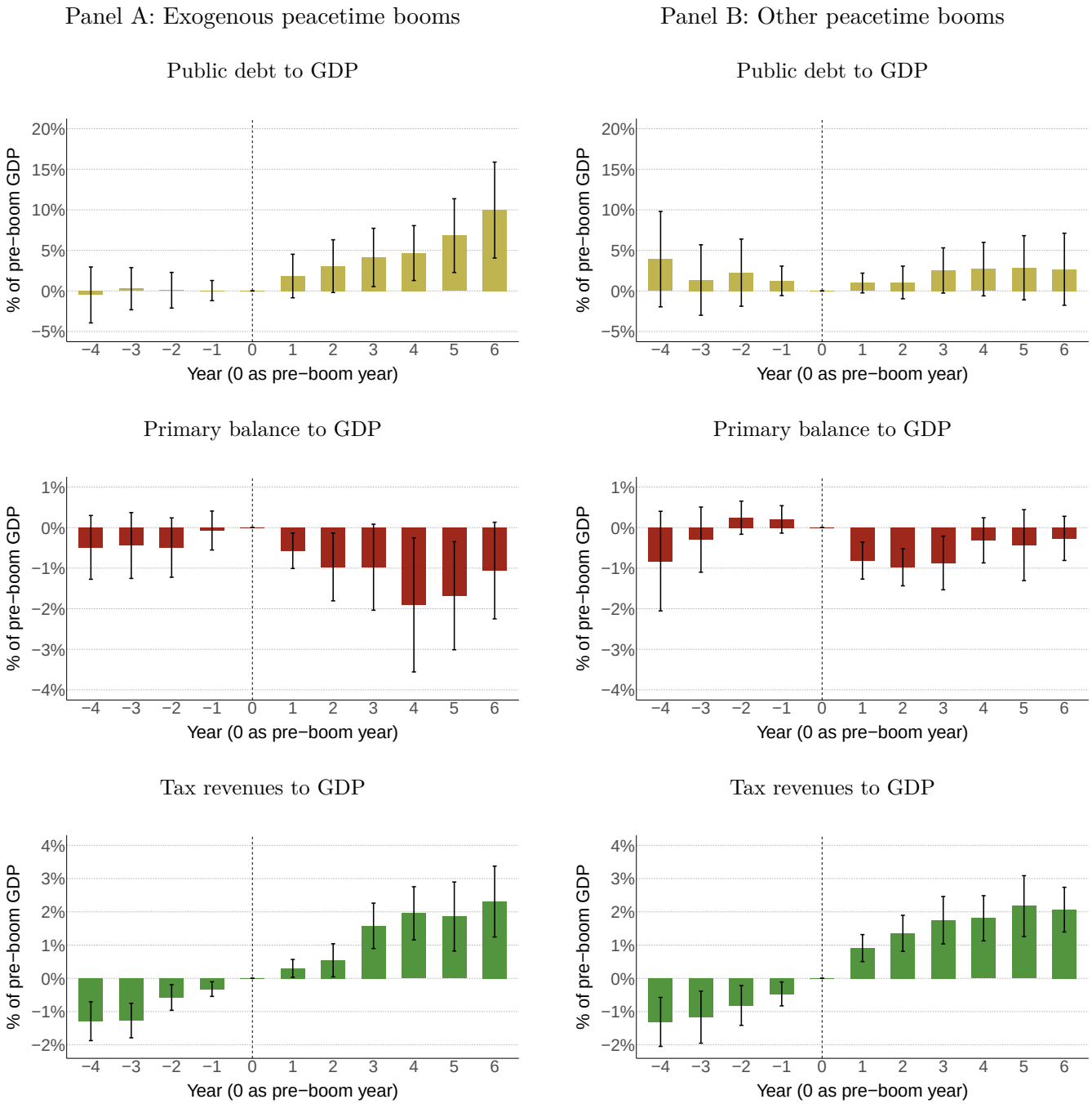
In the regressions, the only notable difference to the baseline sample is the coefficient on tax revenue growth in the exogenous peacetime booms sample, which is statistically insignificant and small in magnitude. Hence, the tax revenue growth rate during exogenous peacetime booms does not differ substantially from that in non-boom years. Given that exogenous peacetime booms have a median duration of three years (see Figure B6) and exhibit relatively weak real tax revenue growth in the first two boom years (see Figure B12 and Figure 8), this result is reasonable. Moreover, our case-by-case analysis of boom financing (see Table 1 and Appendix E) reveals a heterogeneous financing pattern with respect to taxes. The remaining peacetime booms also display a heterogeneous financing mix and many of these booms were financed through previous or current surpluses (see Appendix E).

Figure B11: Peacetime booms – composition of additional spending & revenues



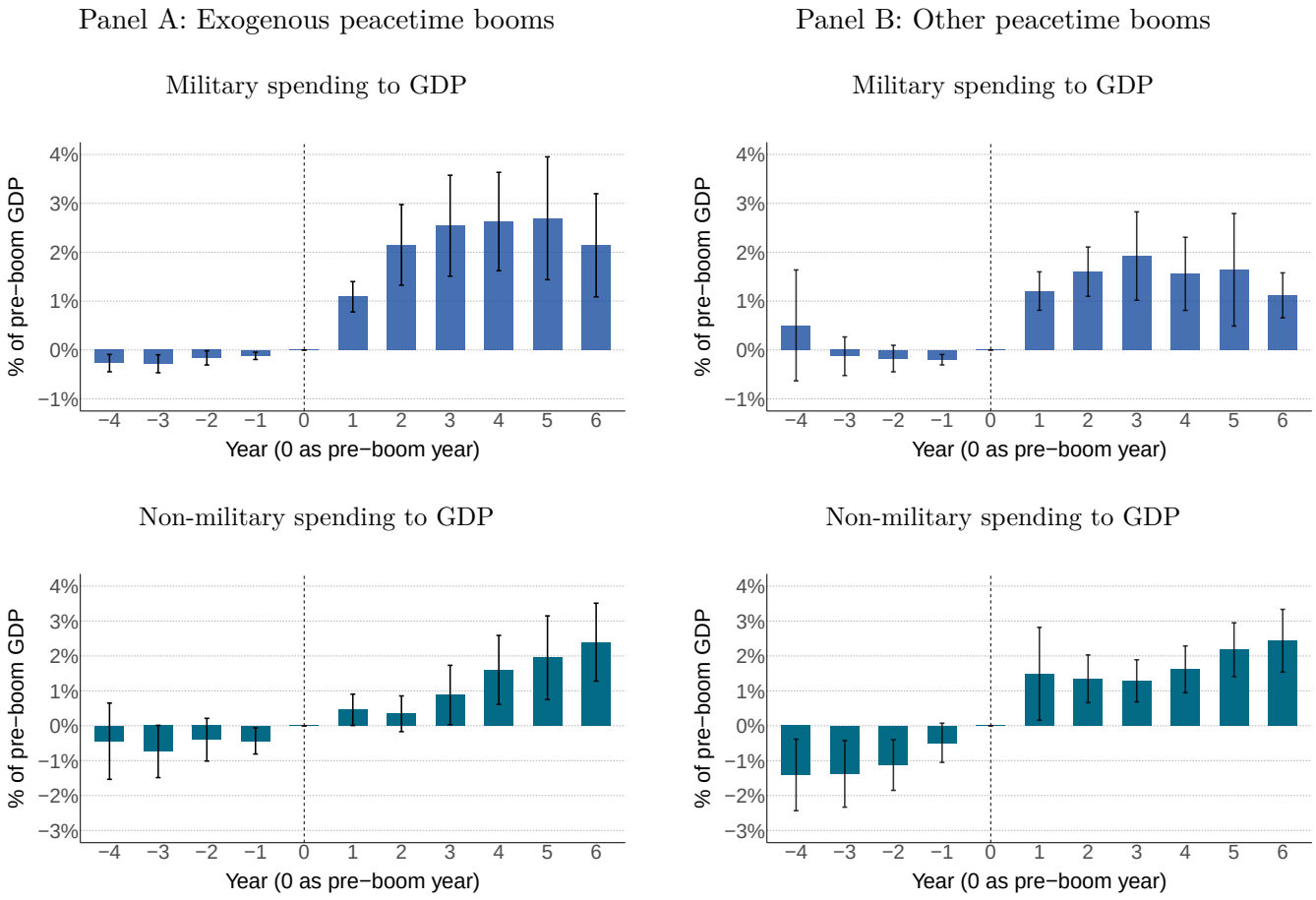
Note: Composition of additional military spending and its financing, based on the granular revenue and spending data from our Global Budget Database for the exogenous peacetime booms sample without minor wars (37 booms) in Panel A and the sample of all other remaining peacetime booms (51 booms) in Panel B. When averaging, booms are equally in the respective sample.

Figure B12: Exogenous peacetime booms – debt and tax revenue dynamics



Note: The bars depict average changes in public debt, primary balance, and tax revenues relative to the last pre-boom year and normalized by pre-boom GDP. The whiskers indicate 95% confidence intervals; the dashed vertical line marks the pre-boom year. Panel A shows the results for sample of all exogenous peacetime booms without minor war booms (37 booms) and Panel B for the sample of all other remaining peacetime booms (51 booms).

Figure B13: Exogenous peacetime booms – government spending dynamics



Note: The bars depict average changes in military and non-military (civilian) government spending relative to the last pre-boom year and normalized by pre-boom GDP. The whiskers indicate 95% confidence intervals; the dashed vertical line marks the pre-boom year. Panel A shows the results for sample of all exogenous peacetime booms without minor war booms (37 booms) and Panel B for the sample of all other remaining peacetime booms (51 booms).

Table B8: Exogenous peacetime booms – regressions on boom financing

(A) Main variables – spending, debt, taxes

	$\frac{\Delta\text{Military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Non-military spen.}}{GDP_{t-1}}$	$\frac{\Delta\text{Public debt}}{GDP_{t-1}}$	$\frac{\Delta\text{Primary balance}}{GDP_{t-1}}$	$\frac{\Delta\text{Tax revenues}}{GDP_{t-1}}$
Exogenous peacetime booms	0.94^{***}	0.22	1.57^{**}	-0.71^{**}	0.13
	(0.22)	(0.15)	(0.62)	(0.29)	(0.19)
Num. obs.	2,362	2,362	2,379	2,326	2,407
Adj. R^2	0.33	0.10	0.12	0.26	0.16
Other peacetime booms	0.99^{***}	0.43^{*}	0.43	-0.69^{***}	0.35^{***}
	(0.22)	(0.24)	(0.47)	(0.18)	(0.09)
Num. obs.	2,367	2,367	2,389	2,335	2,413
Adj. R^2	0.32	0.10	0.13	0.27	0.18

(B) Reductions in spending? Disaggregation

	$\frac{\Delta\text{Military}}{GDP_{t-1}}$	$\frac{\Delta\text{Social}}{GDP_{t-1}}$	$\frac{\Delta\text{Education}}{GDP_{t-1}}$	$\frac{\Delta\text{Foreign}}{GDP_{t-1}}$	$\frac{\Delta\text{Economic}}{GDP_{t-1}}$	$\frac{\Delta\text{Financial}}{GDP_{t-1}}$	$\frac{\Delta\text{Interest pay.}}{GDP_{t-1}}$
Exogenous peacetime booms	0.94^{***}	-0.02	-0.02	0.03^{**}	0.14	0.00	0.06
	(0.22)	(0.03)	(0.03)	(0.01)	(0.10)	(0.09)	(0.04)
Num. obs.	2,362	2,124	1,922	2,234	2,382	2,382	2,124
Adj. R^2	0.33	0.11	0.13	0.04	0.05	0.03	0.11
Other peacetime booms	0.99^{***}	-0.04	-0.00	0.09^{*}	0.23^{***}	0.10	0.04
	(0.22)	(0.06)	(0.02)	(0.04)	(0.07)	(0.16)	(0.03)
Num. obs.	2,367	2,112	1,934	2,236	2,387	2,387	2,131
Adj. R^2	0.32	0.11	0.12	0.04	0.05	0.03	0.12

Note: Panel A reports the impact of military spending booms on broad spending and financing categories. Panel B presents a disaggregated breakdown of spending categories. The results are shown for the exogenous peacetime booms sample without minor wars (37 booms) and the sample of all other remaining peacetime booms (51 booms) All regressions include country and year fixed effects. We use Driscoll and Kraay (1998) standard errors with four lags.

C. Fiscal legacies: additional results

This appendix presents a battery of robustness checks on the fiscal aftermath of military spending booms.

- Appendix C1 presents descriptive evidence that corroborates and extends the findings reported in the main part of the paper.
- Appendix C2 reports results from an alternative local projection specification in which the outcome variable is normalized by pre-boom GDP — known as "Hall-Barro-Redlick" transformation. The findings are similar to those from our baseline specification.
- Appendix C3 shows results using two alternative subsamples: (i) exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (a sample of 28 booms) and (ii) non-exogenous peacetime booms, meaning booms that were not triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motivations (a sample of 20 booms).
- Appendix C4 studies the fiscal aftermath of military booms across seven different government spending categories. We present spending-to-pre-boom-GDP ratios as well as local projection estimates. We again find little evidence of spending reversals and most spending categories remain elevated.
- Appendix C5 presents descriptive results from World War 1 and 2 event study analyses. This subsection complements our findings on major war booms.
- Appendix C6 focuses on the tax legacies of military spending booms. We present a more detailed overview of our narrative coding of tax increases as well as supporting evidence on tax introductions.

C1. Descriptive long-run graphs

In this section, we present descriptive event study graphs for the key fiscal variables in two main ways — (i) as plain averages across booms (in percent of contemporaneous GDP) and (ii) as changes relative to pre-boom values, normalized by pre-boom GDP. We show four pre-boom years and fifteen years following boom onset. We focus on exogenous booms, i.e. the 23 exogenous major war and 37 exogenous peacetime booms.

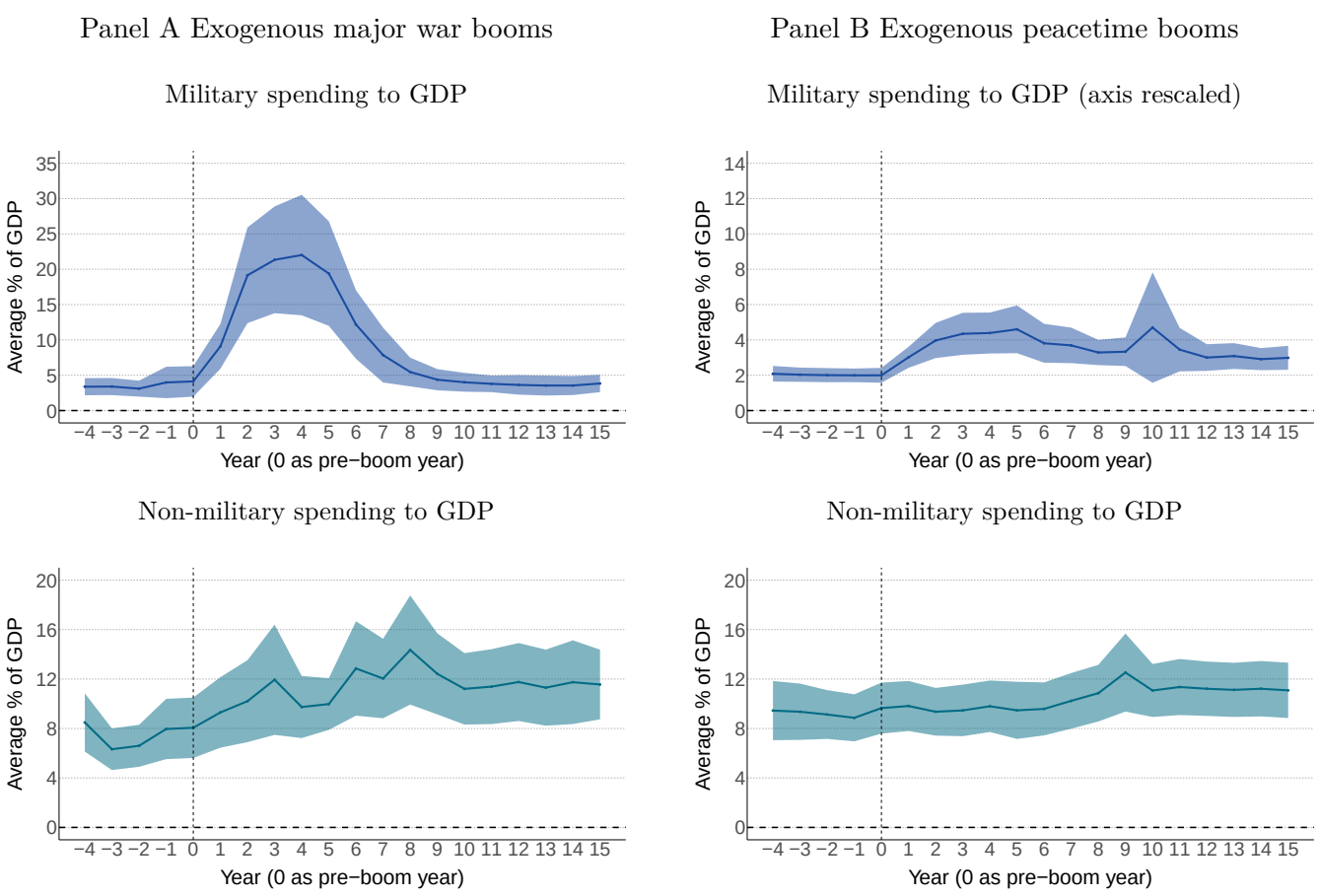
After major war booms, government spending, public debt, tax revenues, and the top marginal income tax rate all increase substantially (see Panel A in Figure C1-Figure C3). While the share of military spending in GDP converges back to its pre-boom level, non-military (civilian) spending remains elevated. Primary balances deteriorate but subsequently recover.

After exogenous peacetime booms (Panel B of Figure C1-Figure C3), both military and non-military spending-to-GDP ratios remain elevated long after boom onset. The debt-to-GDP ratio, however, remains broadly stable — rising modestly in the later years before converging back to its

pre-boom level. The deterioration in primary balances is much smaller than in major war booms. Exogenous peacetime booms also leave a lasting legacy of higher tax revenue-to-GDP ratios and higher top income tax rates.

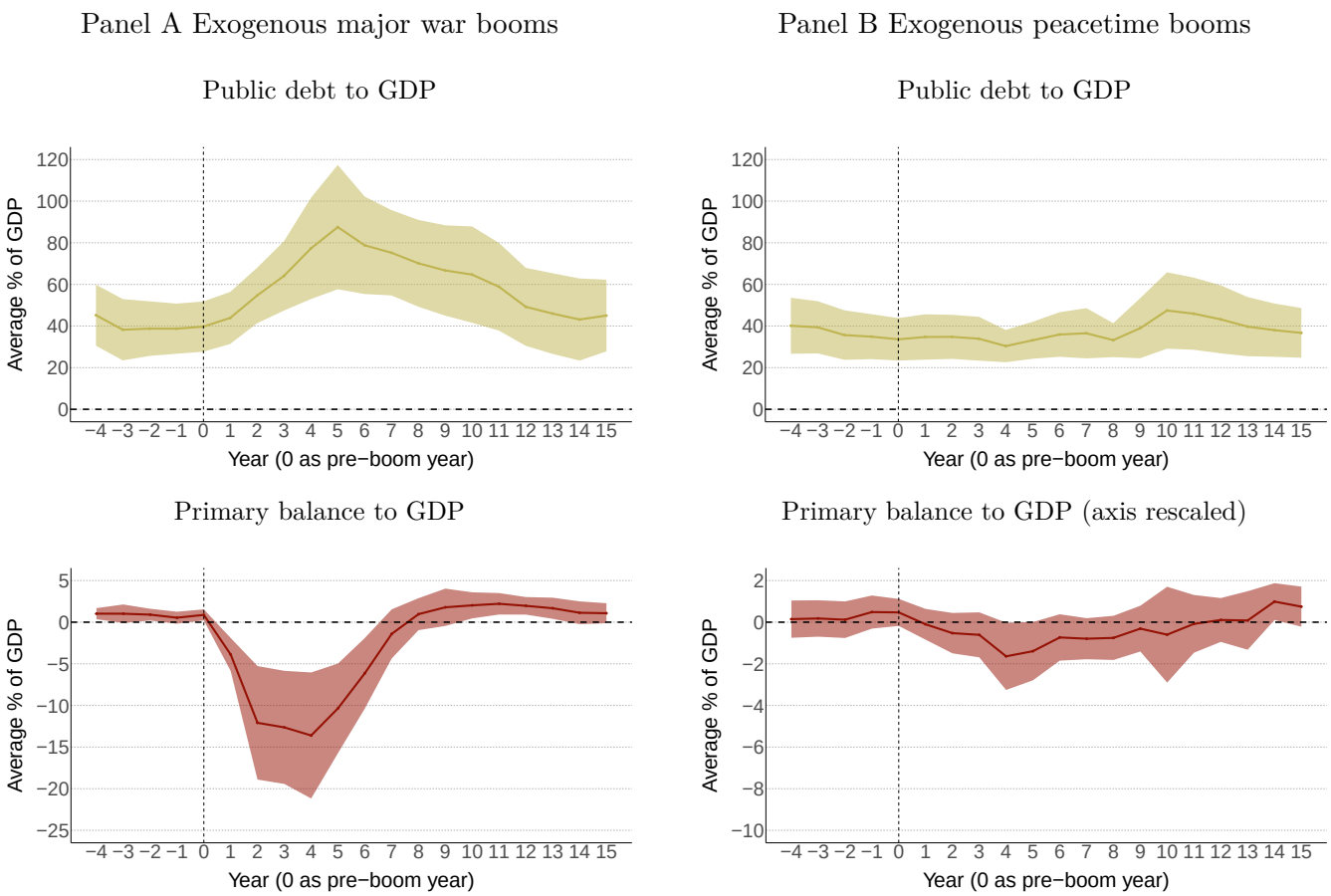
Figure C4-Figure C6 corroborate these findings by showing average changes to pre-boom levels. Following both major war and exogenous peacetime booms, real debt remains elevated for an extended period. However, while real debt levels increase, the debt-to-contemporaneous-GDP ratio (see Figure C2) initially rises but subsequently declines after major war booms, converging back to its pre-boom level. This pattern reflects strong GDP growth and, in part, debt forgiveness after the World Wars. In the case of exogenous peacetime booms, Figure C2 shows that the debt-to-contemporaneous-GDP ratio remains broadly stable, again suggesting strong GDP growth.

Figure C1: Averages – GDP ratios for military and non-military spending



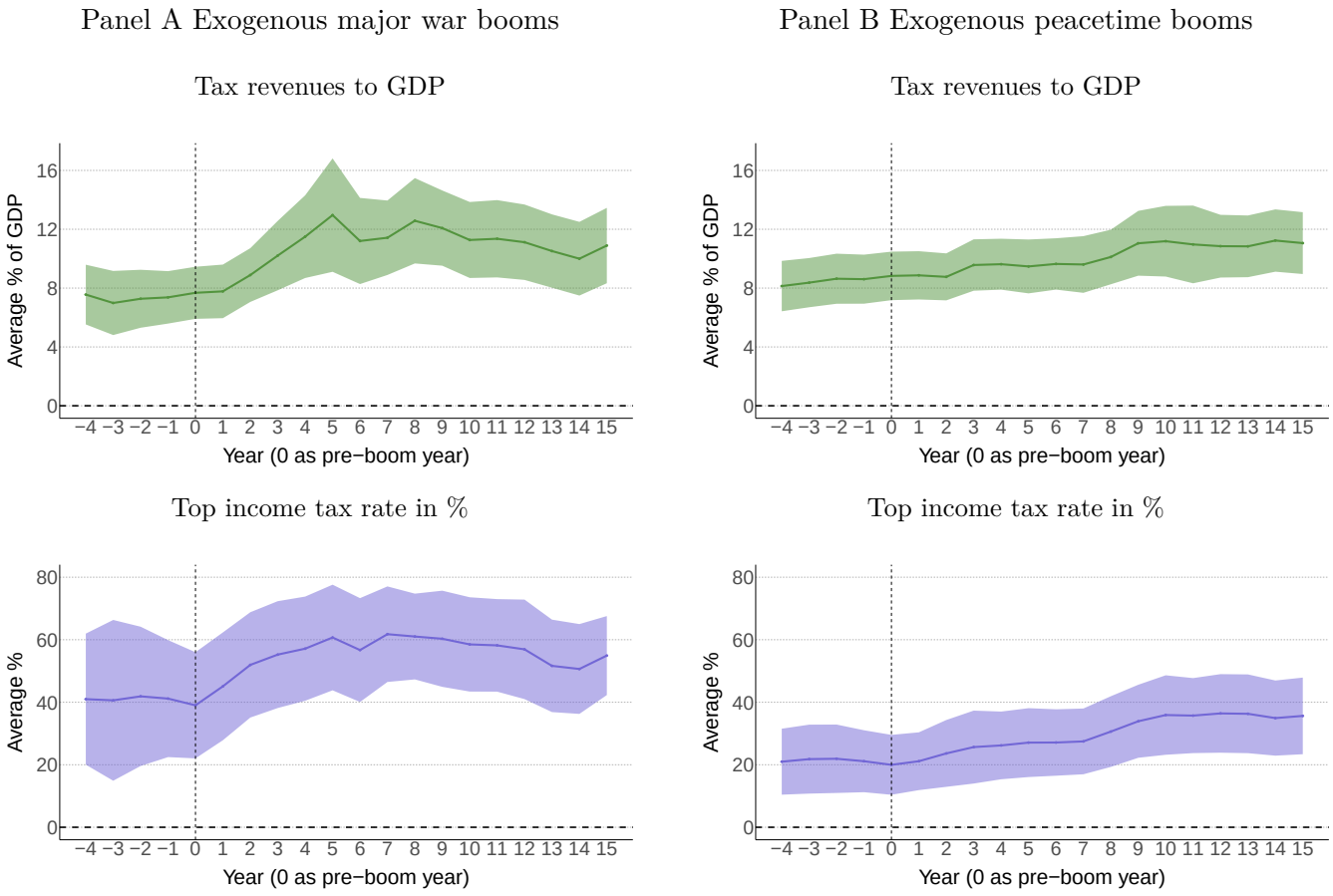
Note: Average military and non-military (civilian) government spending to (contemporaneous) GDP over a 15-year period following the onset of military spending booms. Shaded areas correspond to 90% confidence intervals. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). The dashed vertical line marks the pre-boom year.

Figure C2: Averages – debt-to-GDP ratios and primary balances



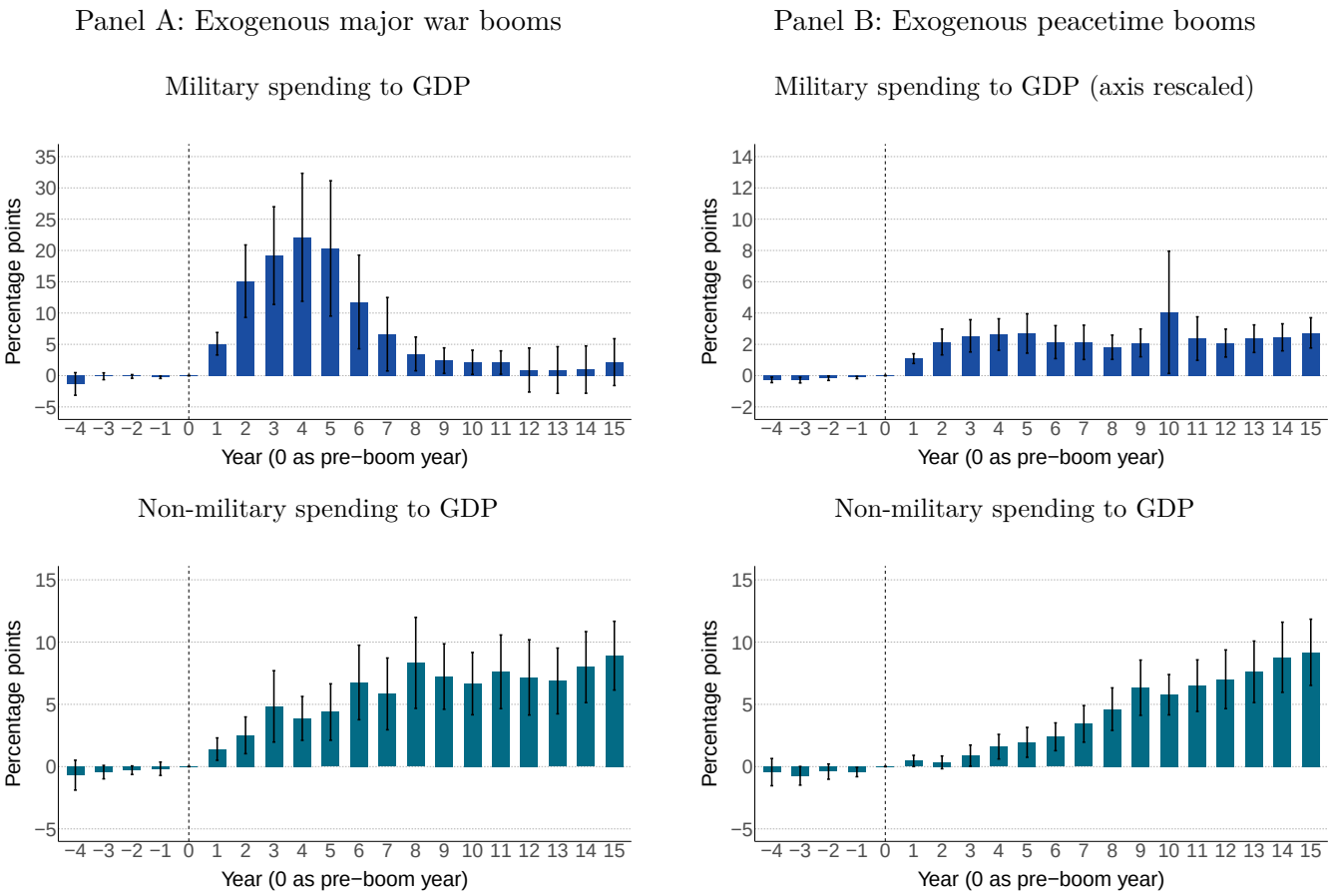
Note: Average public debt and primary balance to (contemporaneous) GDP over a 15-year period following the onset of military spending booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C3: Averages – tax revenues to GDP and top income tax rates



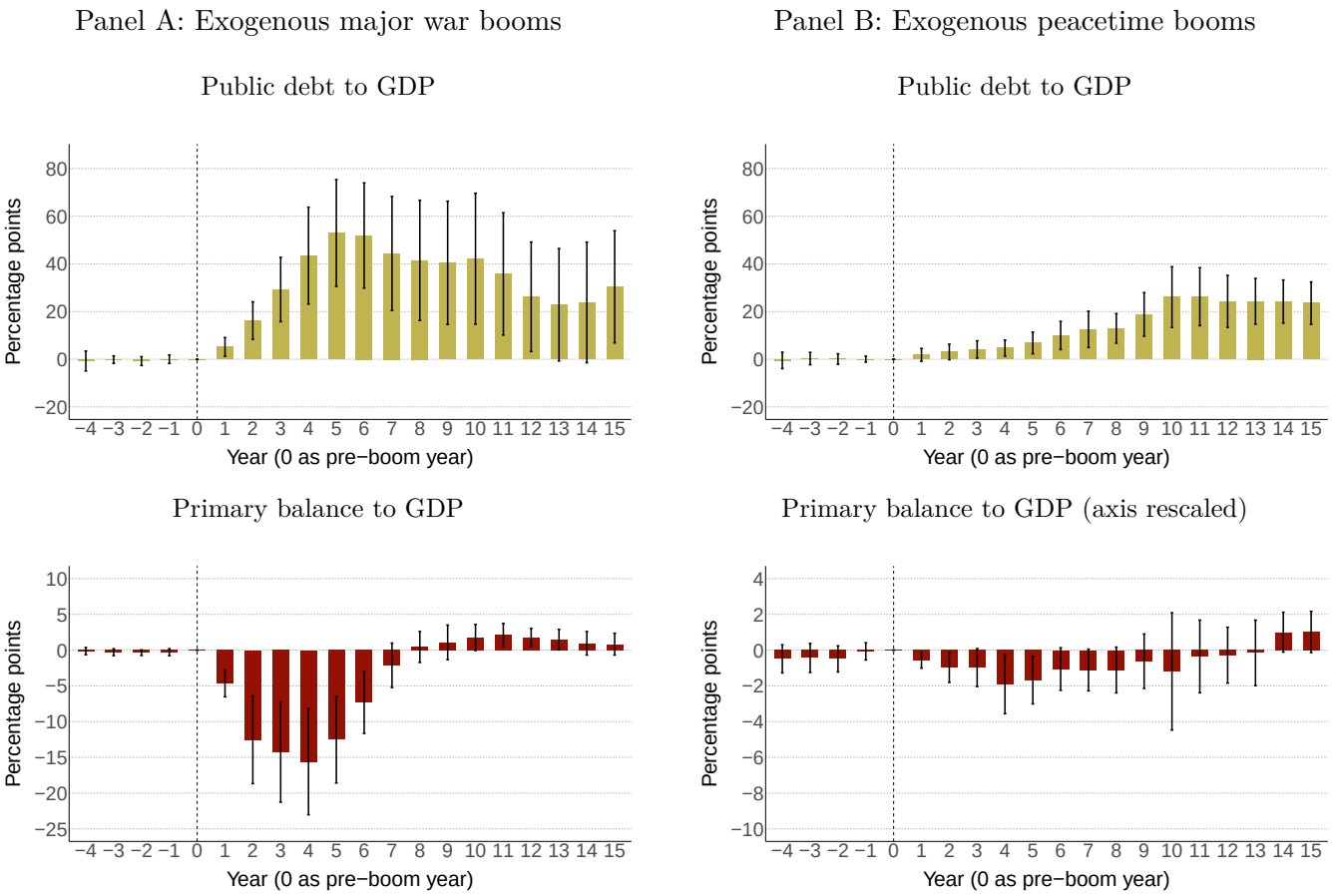
Note: Average tax revenues to (contemporaneous) GDP and average statutory top marginal income tax rates over a 15-year period following the onset of military spending booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C4: Event studies (changes to pre-boom levels) – public spending



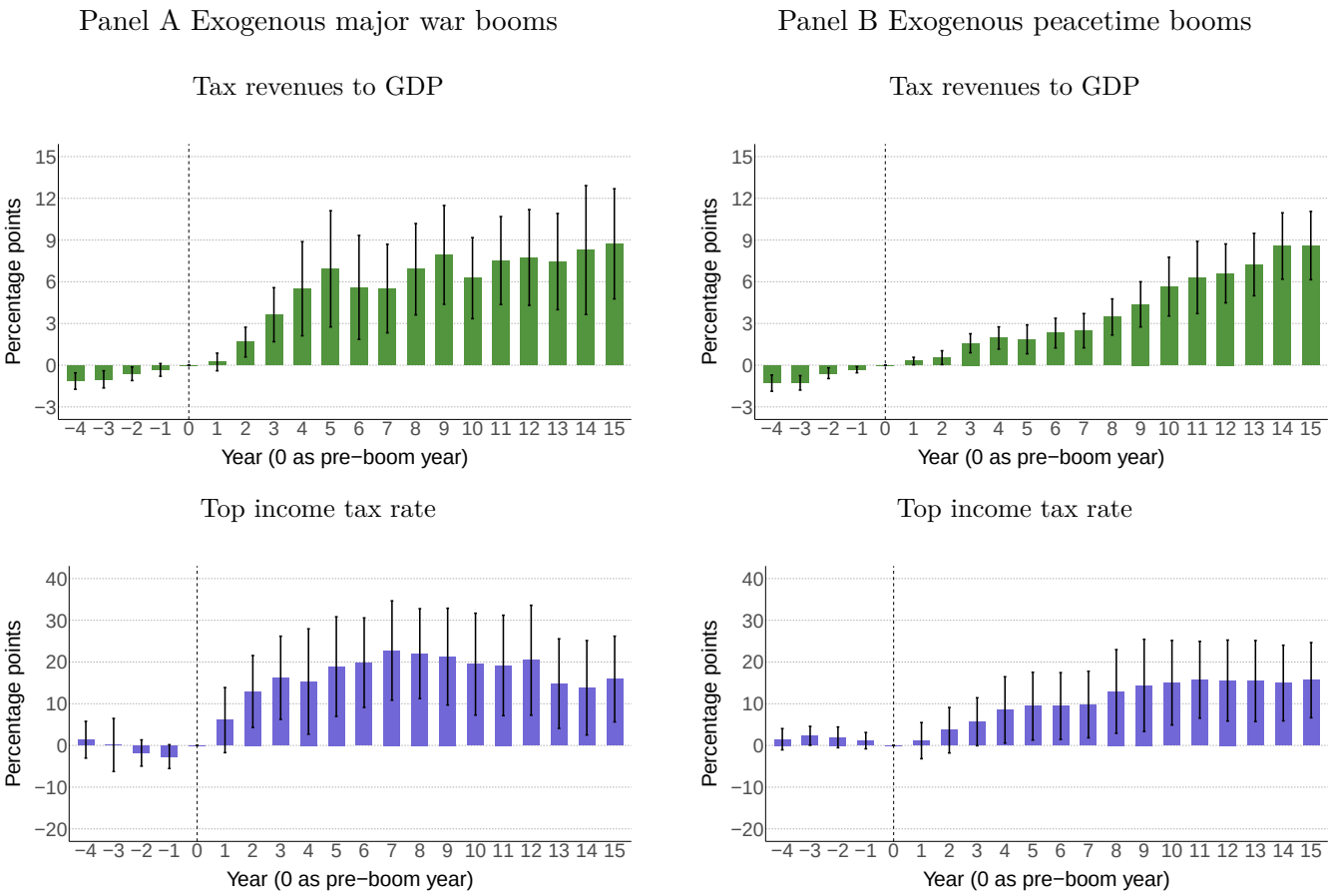
Note: Military and non-military (civilian) government spending dynamics around military booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). The bars depict changes in real 2015 USD spending relative to spending in the pre-boom year, normalized by pre-boom real 2015 USD GDP, and averaged across all booms in the sample. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C5: Event studies (changes to pre-boom levels) – debt and primary balance



Note: Public debt and primary balance dynamics around military booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). The bars depict changes in real 2015 USD debt and primary balance relative to their levels in the pre-boom year, normalized by pre-boom real 2015 USD GDP, and averaged across all booms in the sample. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C6: Event studies (changes to pre-boom levels) – tax rates and revenues



Note: Tax revenues and statutory top marginal income tax rate dynamics around military booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). The bars depict changes in real 2015 USD tax revenues and the top marginal income tax rate relative to their levels in the pre-boom year, normalized by pre-boom real 2015 USD GDP, and averaged across all booms in the sample. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year.

C2. Local projections: normalizing by pre-boom GDP

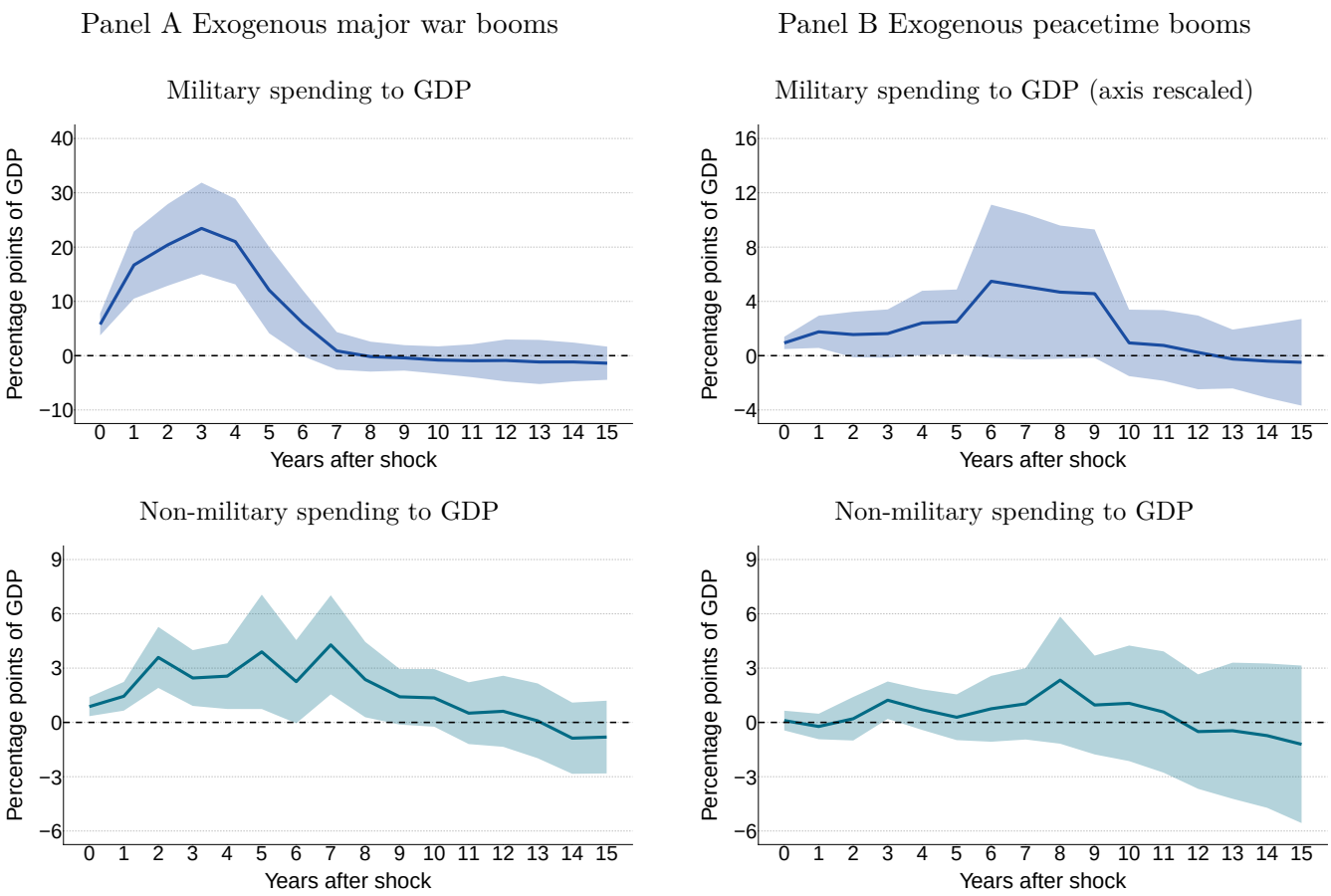
In addition to the log-difference local projection specification used in the main part of the paper, we also estimate a long-horizon panel local projection model of the following form:

$$\frac{\Delta_h Y_{i,t+h}}{GDP_{i,t-1}} = \beta_h \cdot \text{Shock}_{i,t} + \sum_{l=0}^{15} \boldsymbol{\gamma}'_{l,h} \cdot \mathbf{X}_{i,t-l} + \sum_{l=1}^{15} \boldsymbol{\theta}'_{l,h} \cdot \mathbf{Z}_{i,t-l} + \alpha_{i,h} + u_{i,t+h} \quad (3)$$
$$\text{for } h = 0, \ldots, 15, \quad i = 1, \ldots, n, \quad t = 1, \ldots, T$$

$\Delta_h Y_{i,t+h}$ denotes the cumulative change in the real 2015 USD outcome Y from the first boom year t to horizon h, normalized by real GDP in the last pre-boom year (thus adopting the "Hall-Barro-Redlick" transformation as above). The variable $\text{Shock}_{i,t}$ is a dummy equal to one at the onset of a military boom and zero otherwise. $\mathbf{X}_{i,t-l}$ includes real GDP growth, population growth, inflation (log CPI), a dummy indicating military booms other than those analyzed, and a dummy for debt crises. Following Olea and Plagborg-Møller (2021), we include a large number of lags — up to 15 — of the outcome variable as well as 15 lags of the outcome, shock, and control variables $\mathbf{Z}_{i,t-l}$.[8] The coefficient β_h captures the dynamic response of Y to a military spending boom at horizon h, while $\alpha_{i,h}$ denotes country fixed effects. Standard errors are computed following Driscoll and Kraay (1998) with four lags. Figure C7-Figure C9 display the resulting impulse response functions, which remain qualitatively consistent with our baseline results.

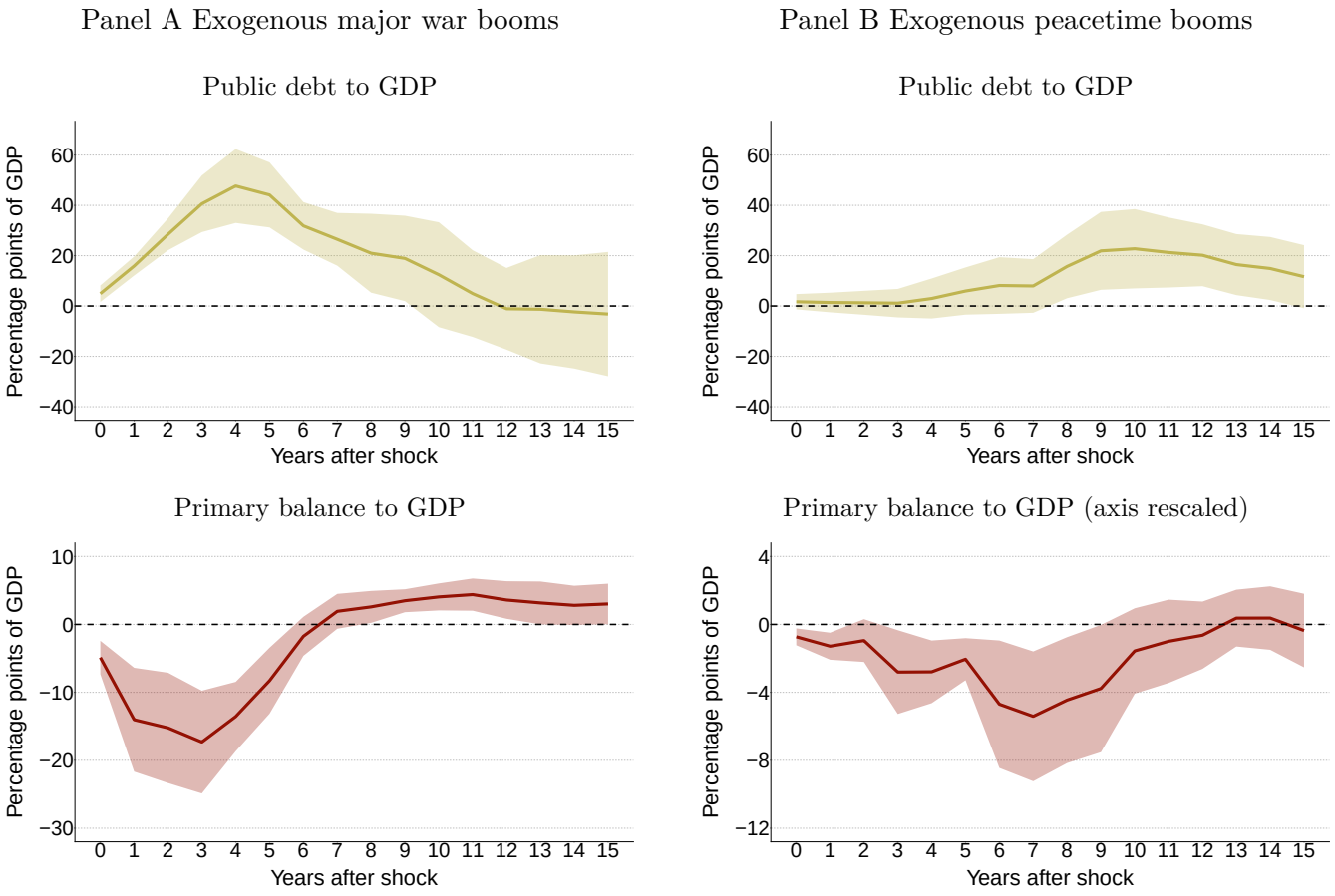
[8] The results are robust to using fewer lags.

Figure C7: Spending – long-horizon LPs when normalizing by pre-boom GDP



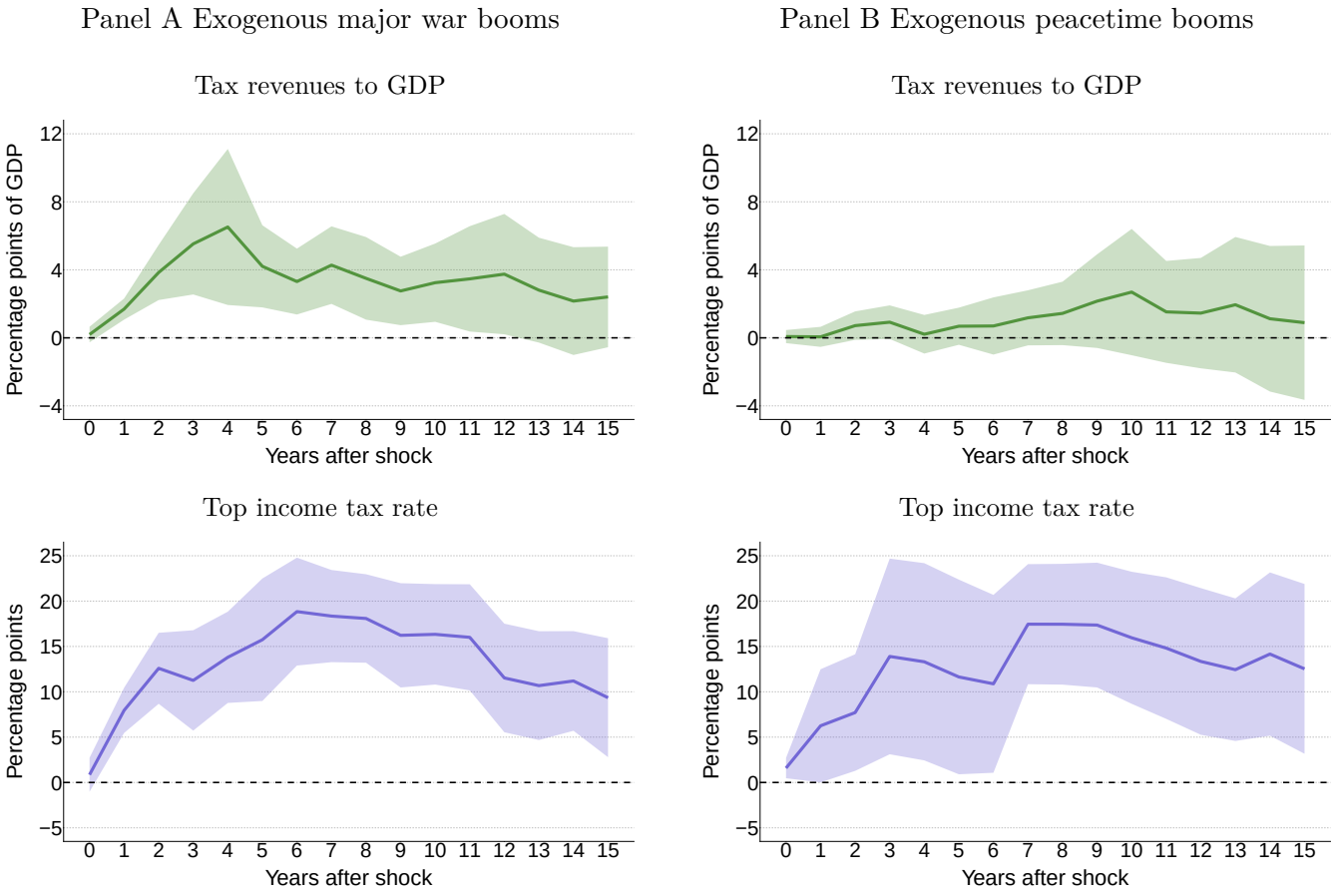
Note: Long-run impulse response functions for real 2015 USD military and non-military (civilian) government spending, normalized by pre-boom GDP, over a period of 15 years after the onset of military spending booms. Panel A shows results for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

Figure C8: Debt and primary balance – long-horizon LPs when normalizing by pre-boom GDP



Note: Long-run impulse response functions for real 2015 USD public debt and primary balance, normalized by pre-boom GDP, over a period of 15 years after the onset of military spending booms. Panel A shows results for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

Figure C9: Tax rates and tax revenue – long-horizon LPs when normalizing by pre-boom GDP



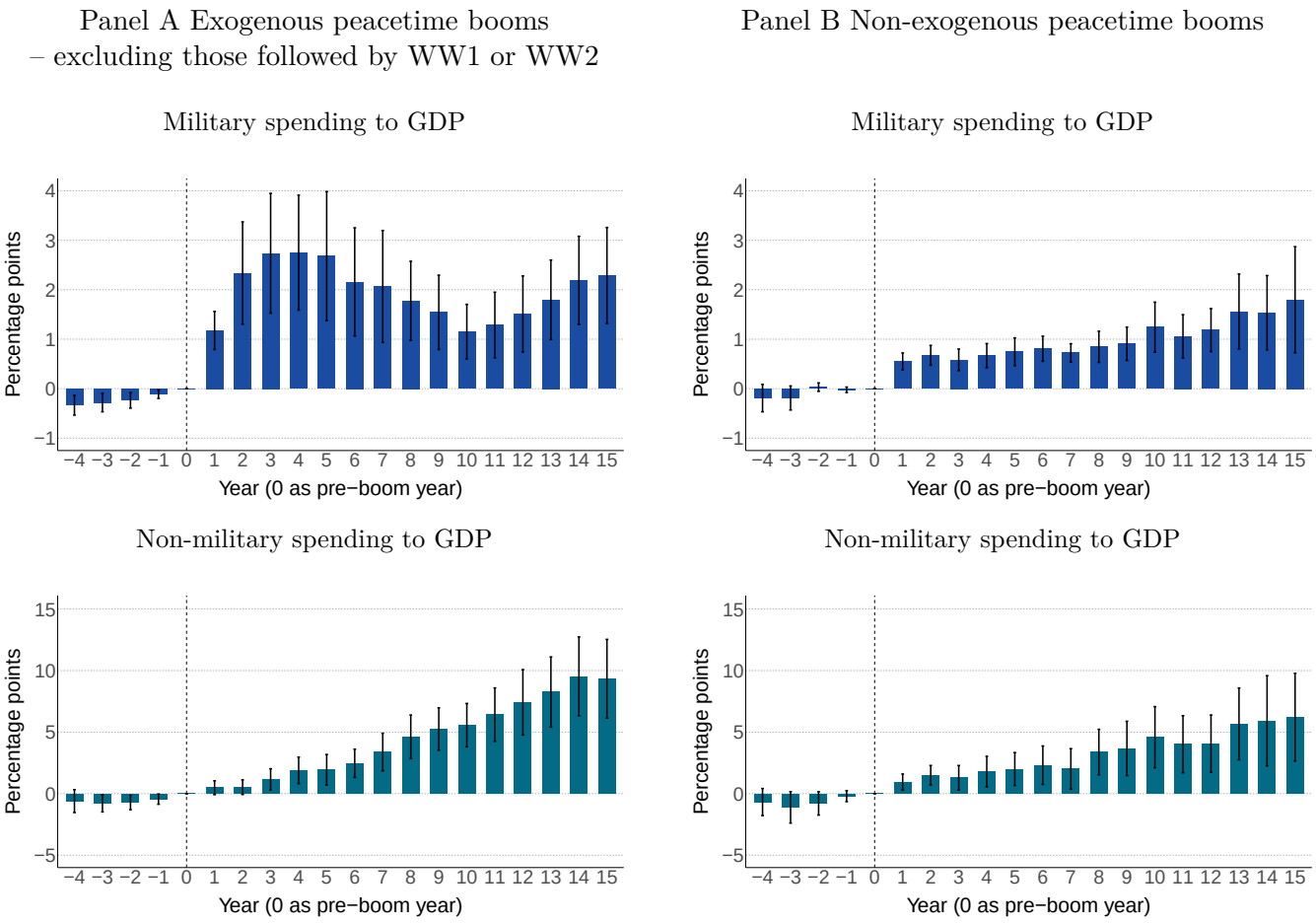
Note: Long-run impulse response functions for real 2015 USD tax revenues, normalized by pre-boom GDP, and the statutory top marginal income tax rate over a period of 15 years after the onset of military spending booms. We use plain differences for the top income tax rate. Therefore, the resulting coefficients can be interpreted as percentage point changes. Panel A shows results for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

C3. Fiscal aftermath: excluding cases followed by World Wars

This section shows our long-run results using two alternative subsamples: (i) exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (a sample of 28 booms) and (ii) non-exogenous peacetime booms, meaning booms that were not triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motives (a sample of 20 booms).

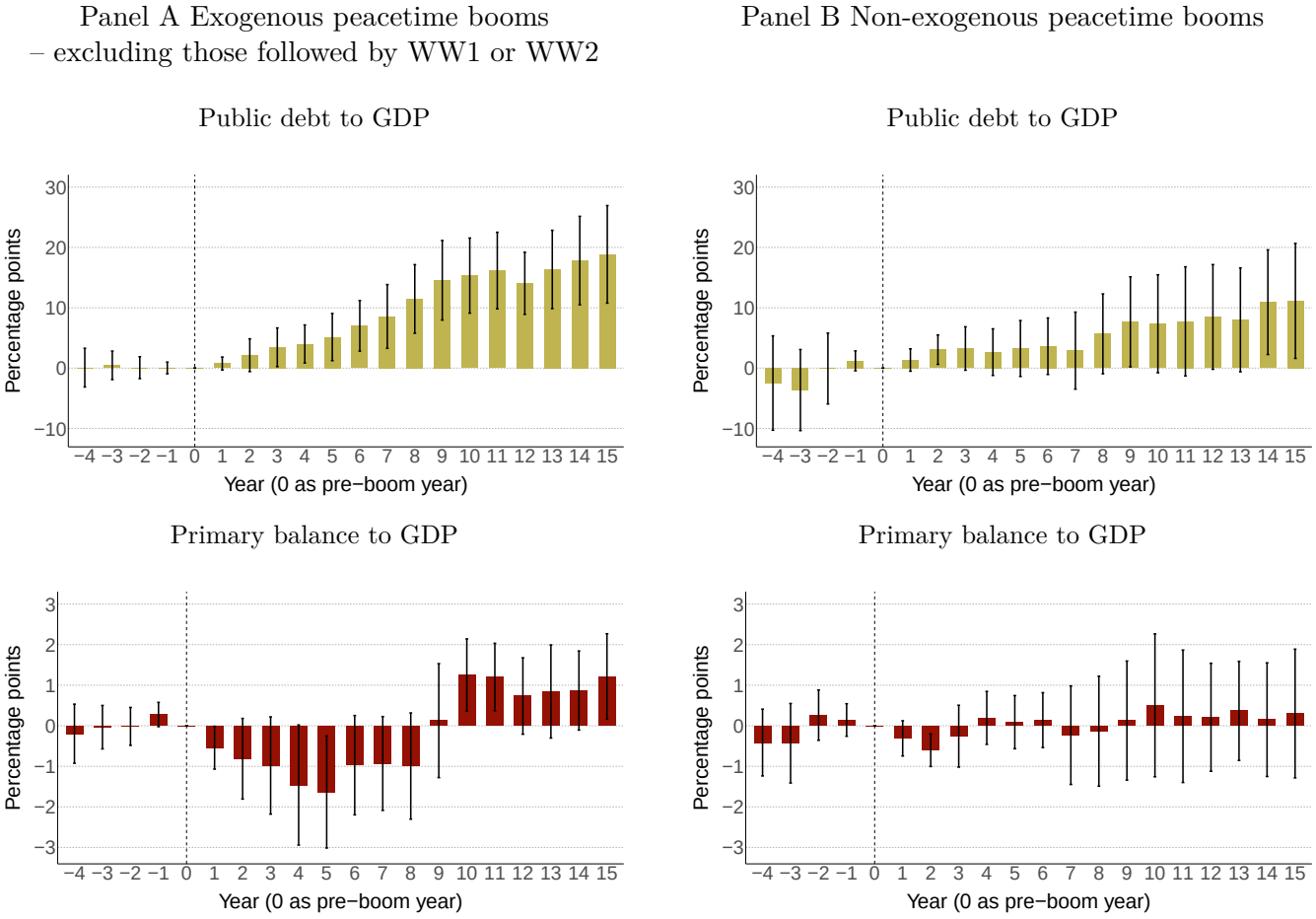
We again show event study graphs as well as the same long-run local projection framework used in the main analysis. The results are shown in Figure C10-Figure C15. We find that the main results are robust when dropping cases preceding WW1 and WW2. The results change markedly, however, in the subsample of non-exogenous military booms. These endogenous events are *not* associated with a notable and lasting change in spending, debt, or taxes.

Figure C10: Alternative subsamples – spending event studies



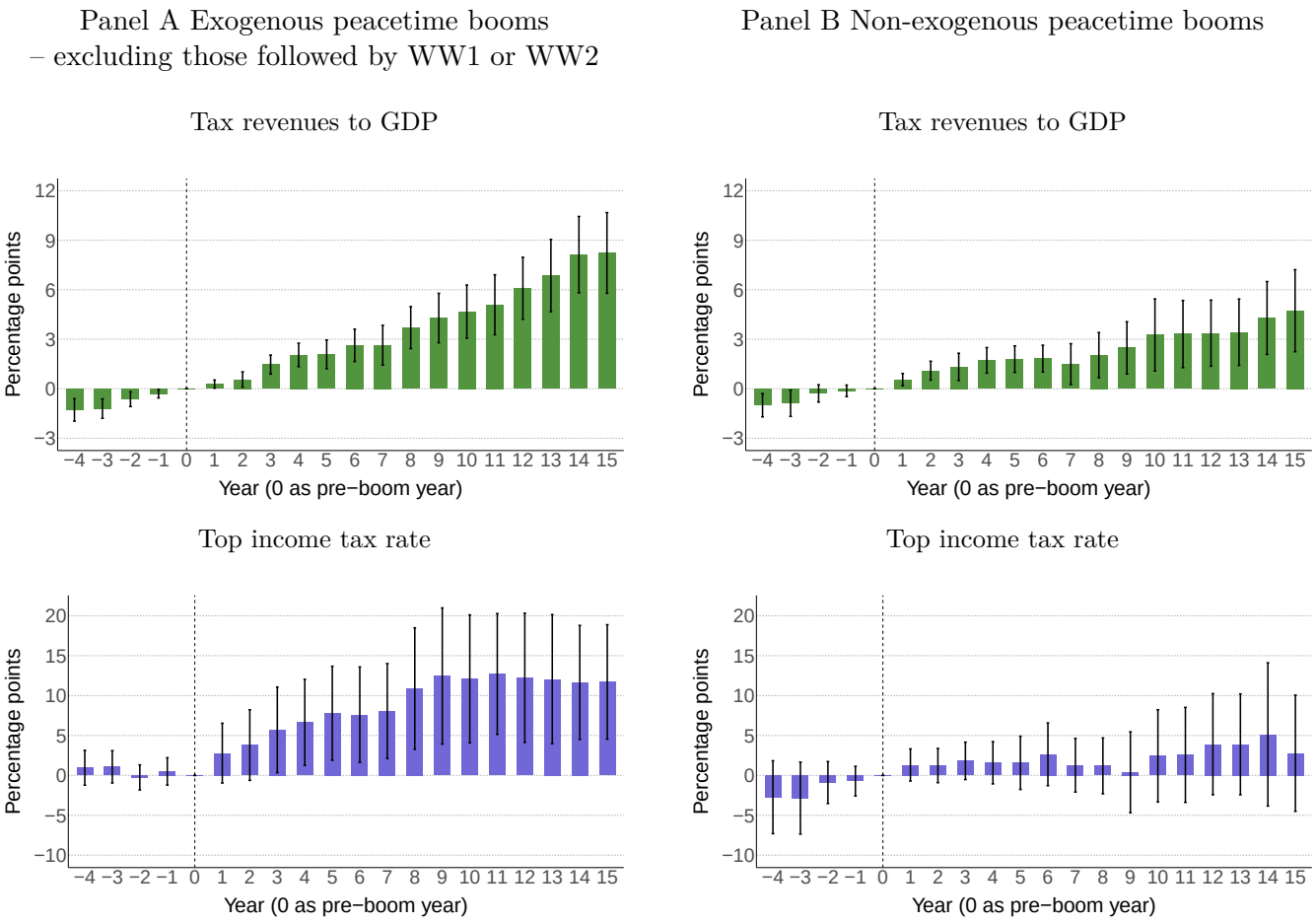
Note: Military and non-military (civilian) government spending dynamics around military booms. Panel A uses the subsample of exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (28 cases). Panel B uses the sample of non-exogenous peacetime booms, meaning booms that were *not* triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motives (20 cases). The bars depict changes in real 2015 USD spending relative to spending in the pre-boom year, normalized by pre-boom real 2015 USD GDP, and averaged across all booms in the sample. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C11: Alternative subsamples – public debt and primary balance event studies



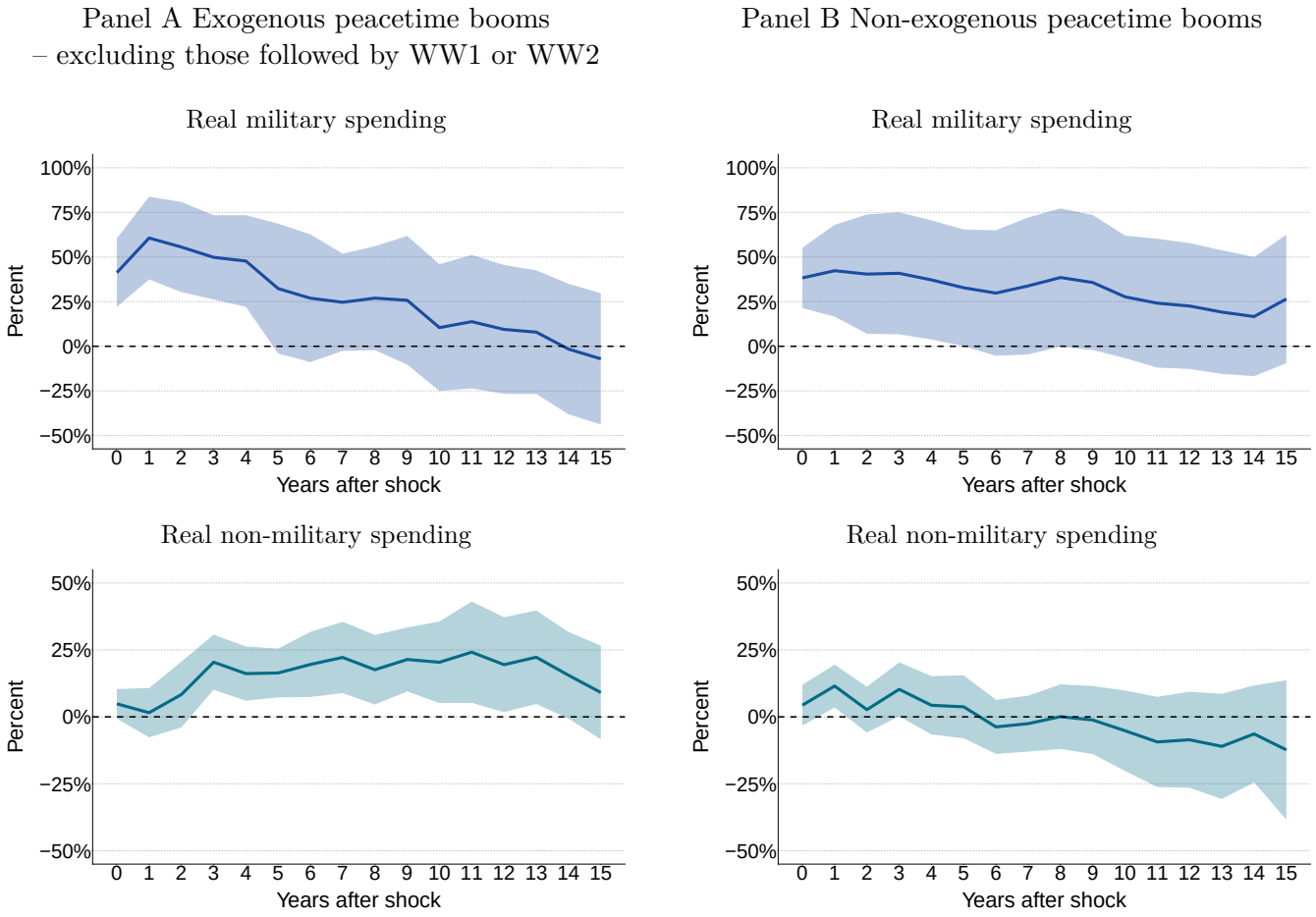
Note: Public debt and primary balance dynamics around military booms. Panel A uses the subsample of exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (28 cases). Panel B uses the sample of non-exogenous peacetime booms, meaning booms that were *not* triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motives (20 cases). The bars depict changes in real 2015 USD debt and primary balance relative to their levels in the pre-boom year, normalized by pre-boom real 2015 USD GDP, and averaged across all booms in the sample. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C12: Alternative subsamples – tax event studies



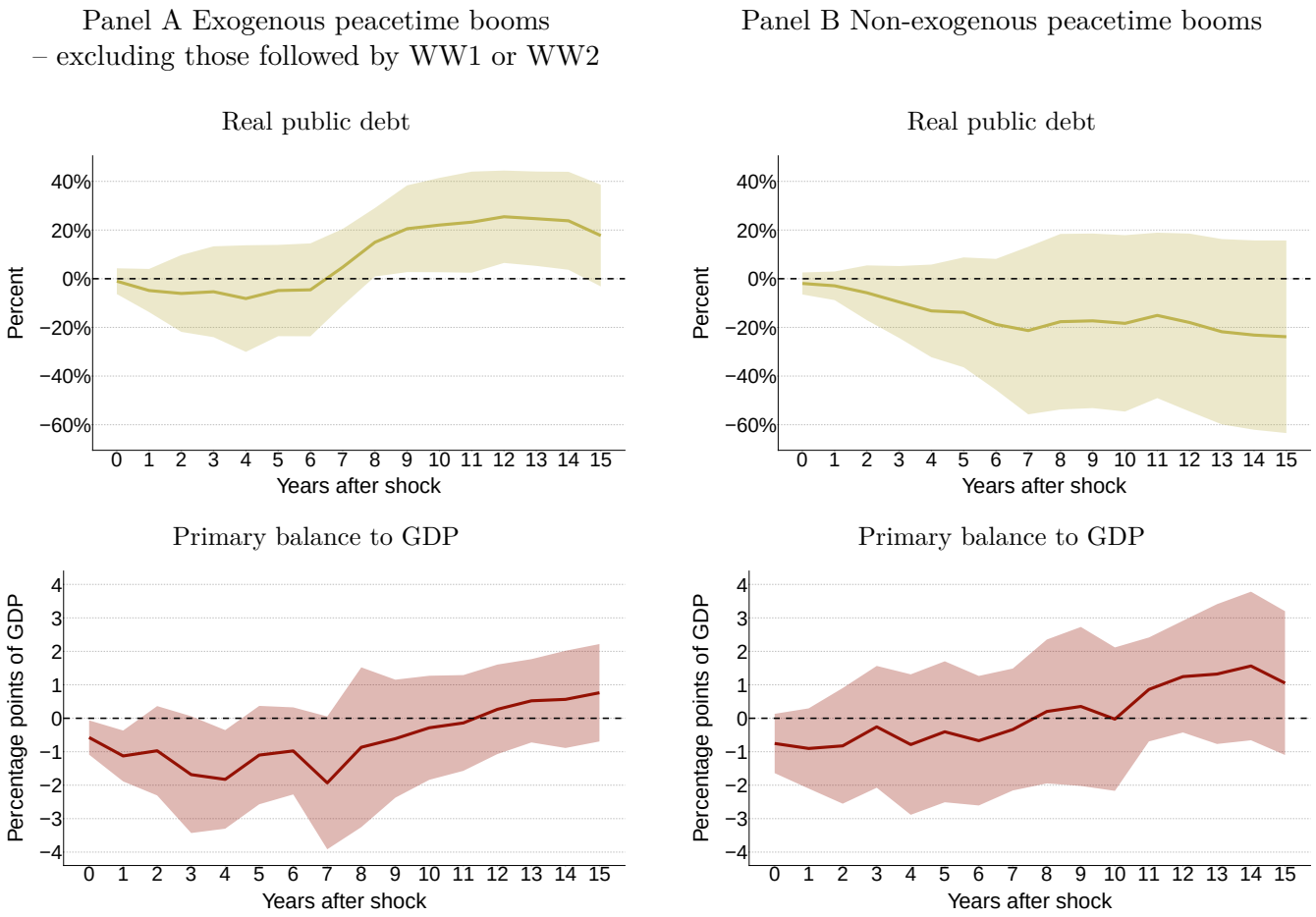
Note: Tax revenues and statutory top marginal income tax rate dynamics around military booms. Panel A uses the subsample of exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (28 cases). Panel B uses the sample of non-exogenous peacetime booms, meaning booms that were *not* triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motives (20 cases). The bars depict changes in real 2015 USD tax revenues and the top marginal income tax rate relative to their levels in the pre-boom year, normalized by pre-boom real 2015 USD GDP, and averaged across all booms in the sample. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C13: Alternative subsamples – public spending LPs



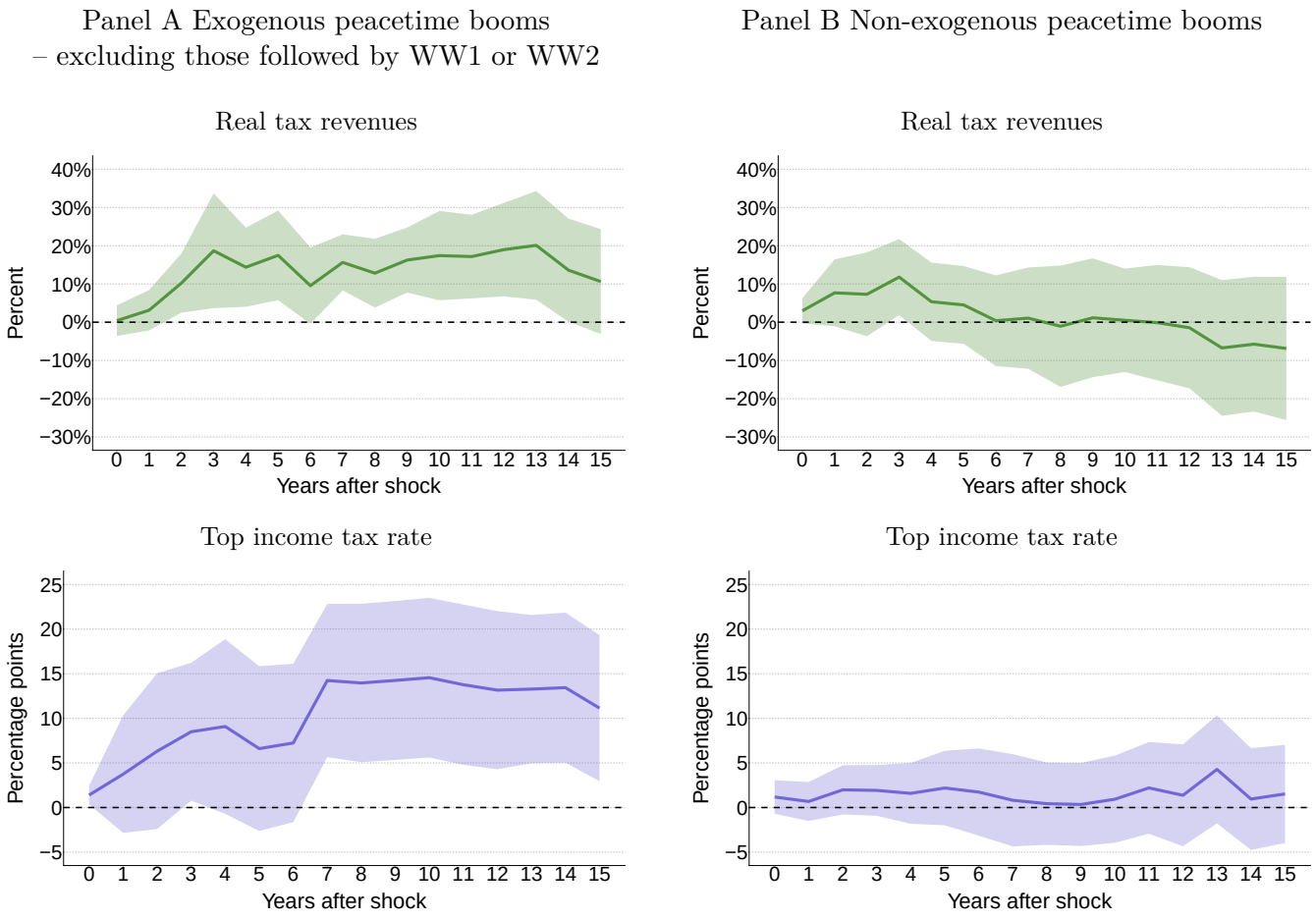
Note: Long-run impulse response functions for real 2015 USD military and non-military (civilian) government spending over a period of 15 years after the onset of military spending booms. Panel A uses the subsample of exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (28 cases). Panel B uses the sample of non-exogenous peacetime booms, meaning booms that were *not* triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motives (20 cases). Shaded areas correspond to 90% confidence intervals.

Figure C14: Alternative subsamples – public debt and primary balance LPs



Note: Long-run impulse response functions for real 2015 USD public debt and the primary balance over a period of 15 years after the onset of military spending booms. Since the primary balance (% of GDP) can be negative, we use plain differences instead of log differences. Therefore, the resulting coefficients can be interpreted as percentage point changes in GDP. Panel A uses the subsample of exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (28 cases). Panel B uses the sample of non-exogenous peacetime booms, meaning booms that were *not* triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motives (20 cases). Shaded areas correspond to 90% confidence intervals.

Figure C15: Alternative subsamples – tax revenue and tax rate LPs



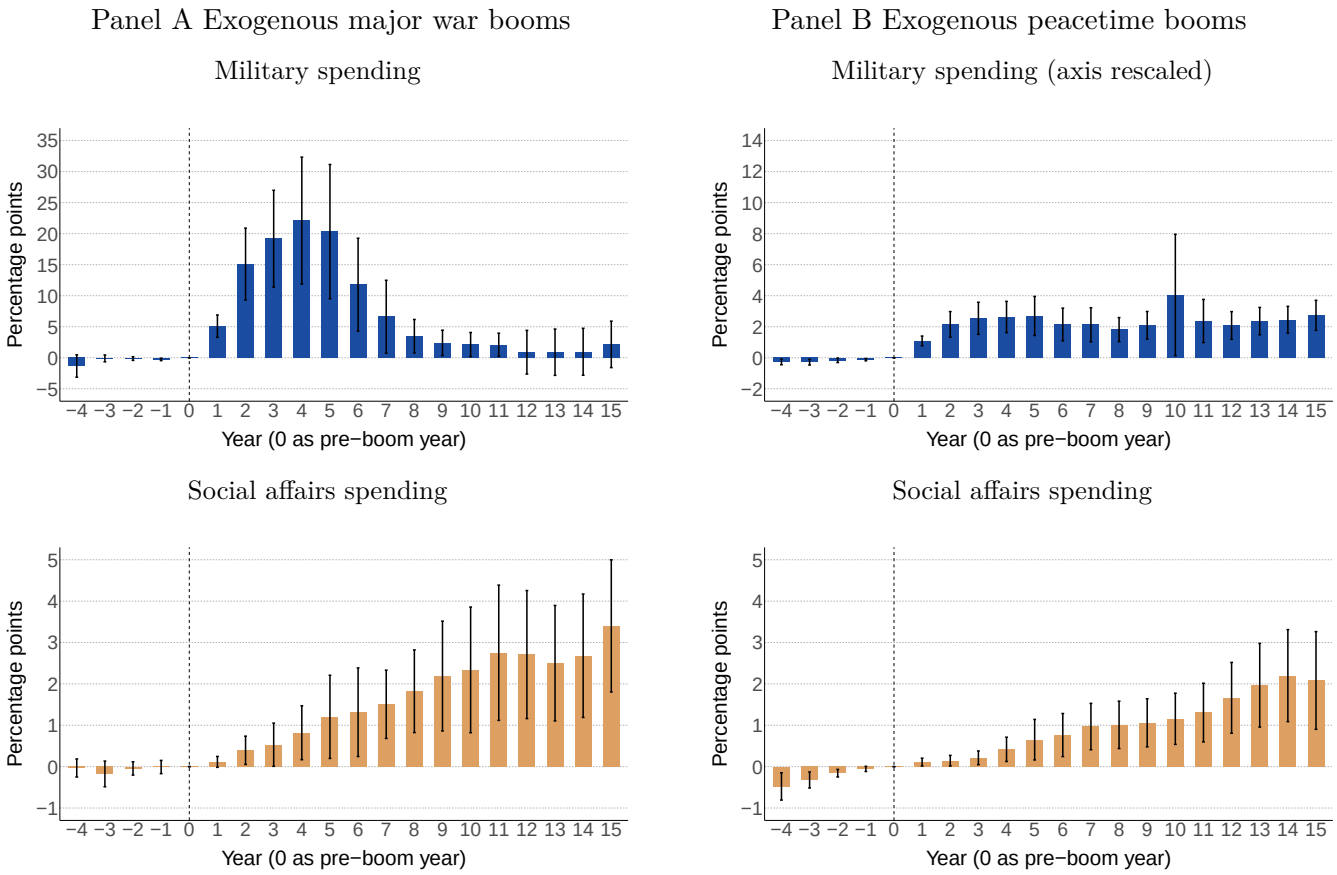
Note: Long-run impulse response functions for real 2015 USD tax revenues and the statutory top marginal income tax rate over a period of 15 years after the onset of military spending booms. We use plain differences instead of log differences for the top income tax rate. Therefore, the resulting coefficients can be interpreted as percentage point changes. Panel A uses the subsample of exogenous peacetime booms when excluding cases that were followed by WW1 or WW2 within ten years (28 cases). Panel B uses the sample of non-exogenous peacetime booms, meaning booms that were *not* triggered by a clear external geopolitical shocks but rather reflected domestic economic or political motives (20 cases). Shaded areas correspond to 90% confidence intervals.

C4. Long-run spending dynamics: by type of spending

This appendix subsection examines the long-run evolution of public spending following the onset of military spending booms. The added value is that we now show results disaggregated across the seven main government spending categories. We present results from two complementary specifications: (i) descriptive event study graphs showing the dynamics in real spending as a share of pre-boom-GDP ratios (Figure C16–Figure C18); and (ii) long-horizon local projections (Figure C19 and Figure C20) following the specification discussed in the main part of the paper and in Appendix C3.

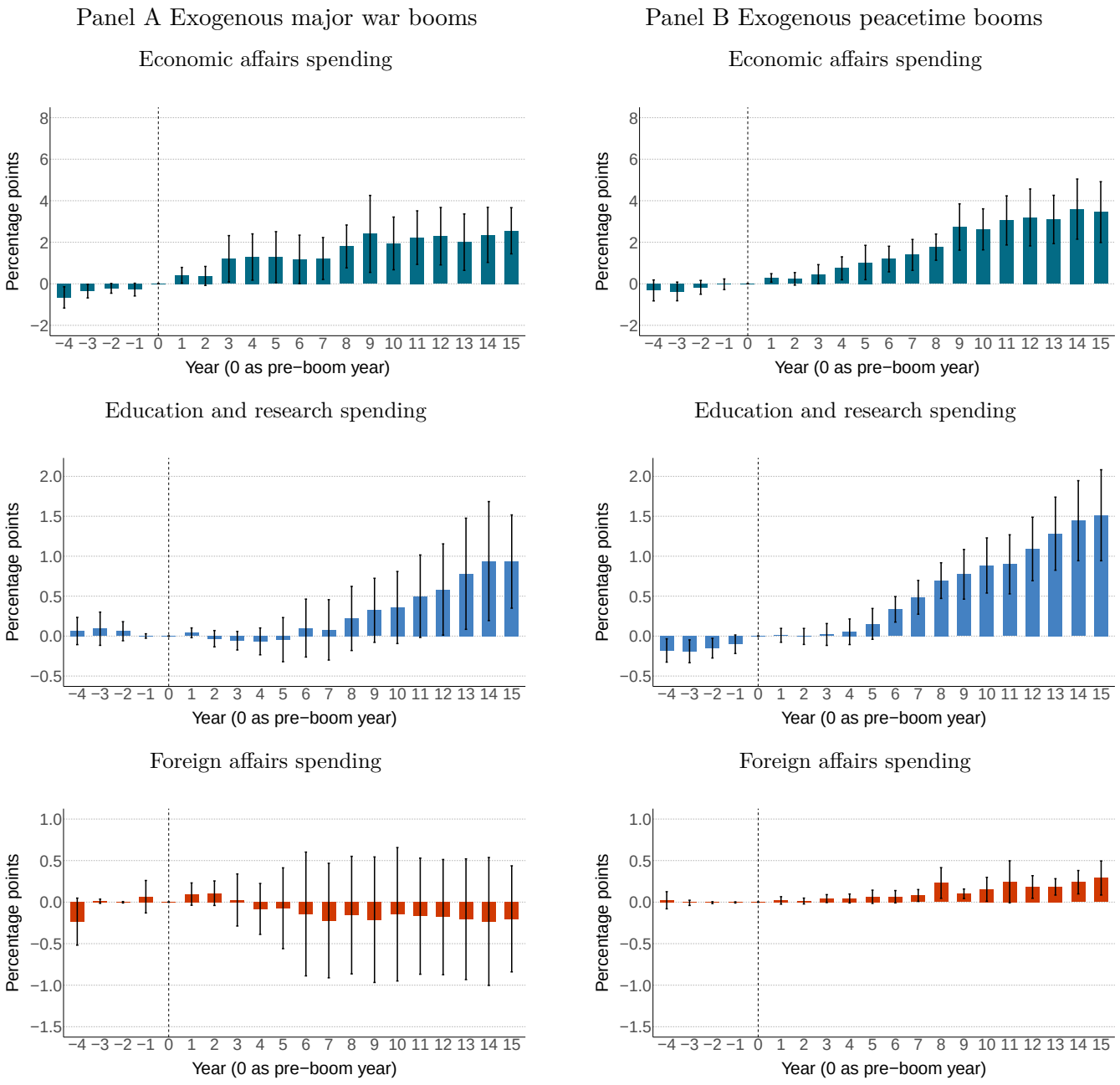
Overall, the results are qualitatively consistent across both approaches: there is no evidence of spending reversals. On average, and across all spending categories, the real 2015 USD event study graphs show no indication of reversals after the onset of military spending booms — neither for the 23 exogenous major war booms nor for the 37 exogenous peacetime booms. The local projection results closely mirror these patterns. The only exception is foreign affairs spending in the late aftermath of major war booms, which shows a persistent but statistically insignificant decline below its pre-boom level. Overall, these findings confirm that spending expands, rather than reverts, in the aftermath of military spending booms.

Figure C16: Long-run dynamics by type of spending – event studies part 1



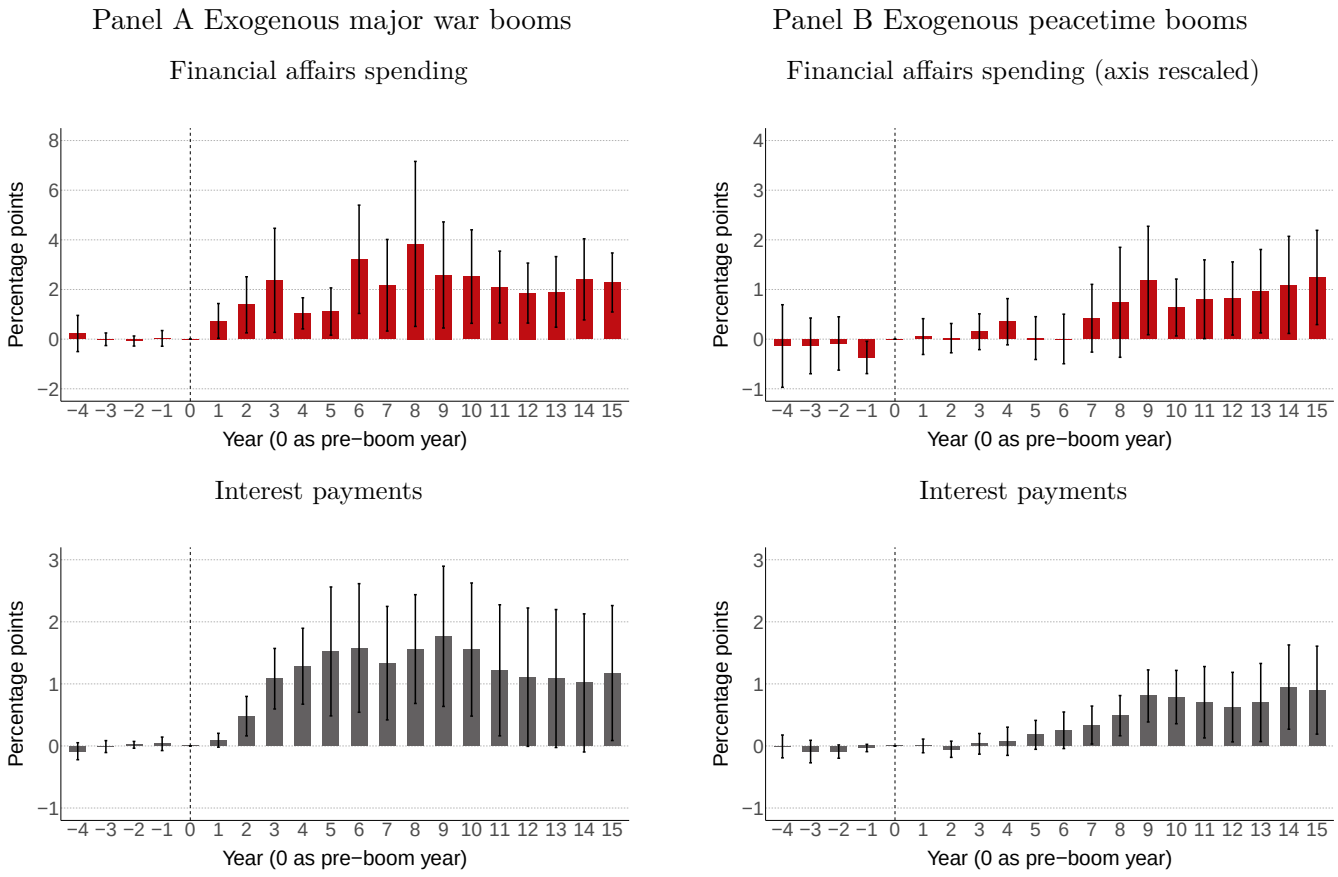
Note: Military and social spending dynamics around military booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). The bars depict changes in real spending relative to spending in the pre-boom year, normalized by pre-boom real GDP, and averaged across all booms in the sample. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C17: Long-run dynamics by type of spending – event studies part 2



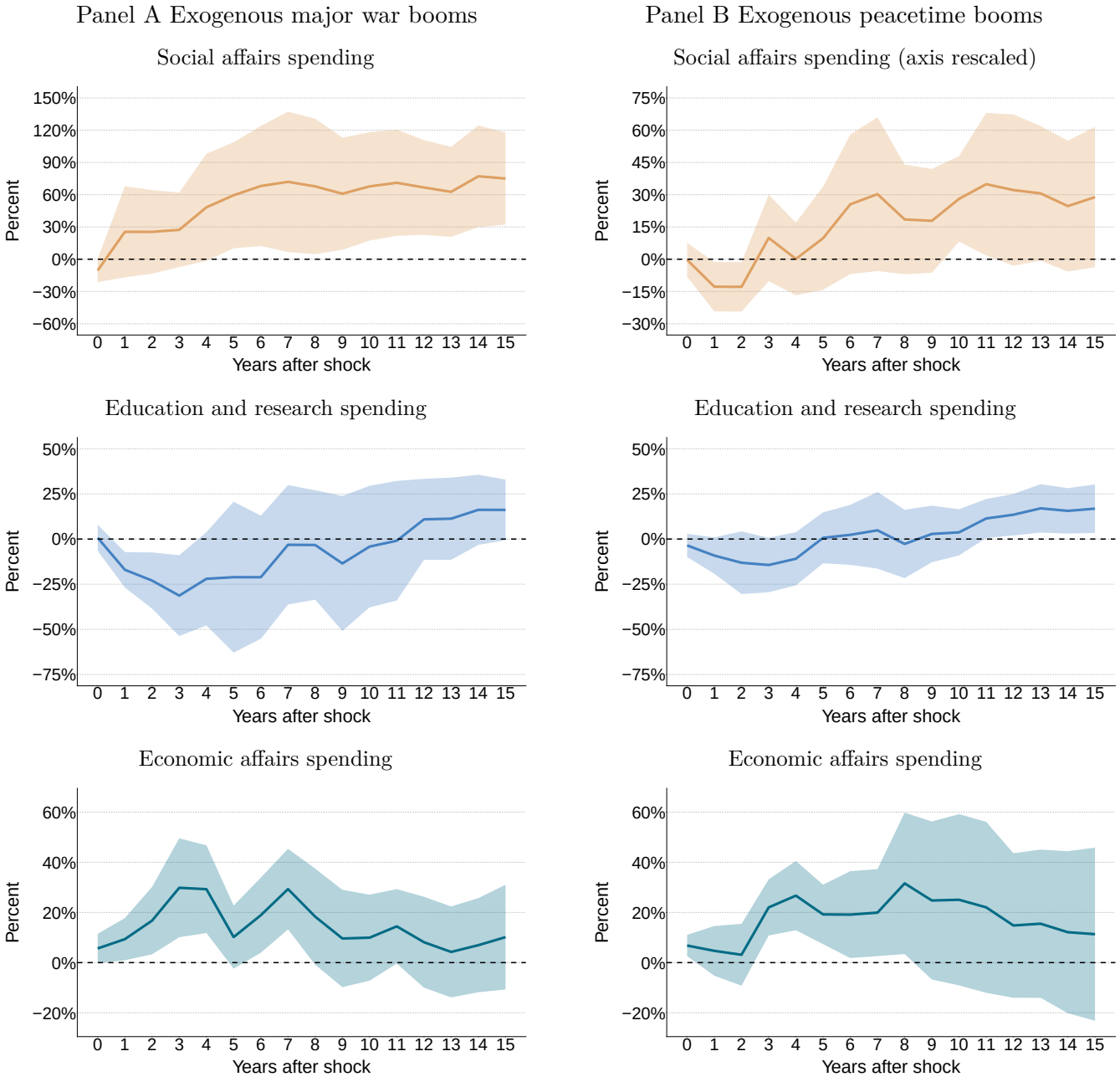
Note: Economic affairs, educations and research, and foreign affairs spending dynamics around military booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). The bars depict changes in real spending relative to spending in the pre-boom year, normalized by pre-boom real GDP, and averaged across all booms in the sample. The whiskers indicate 90% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C18: Long-run dynamics by type of spending – event studies part 3



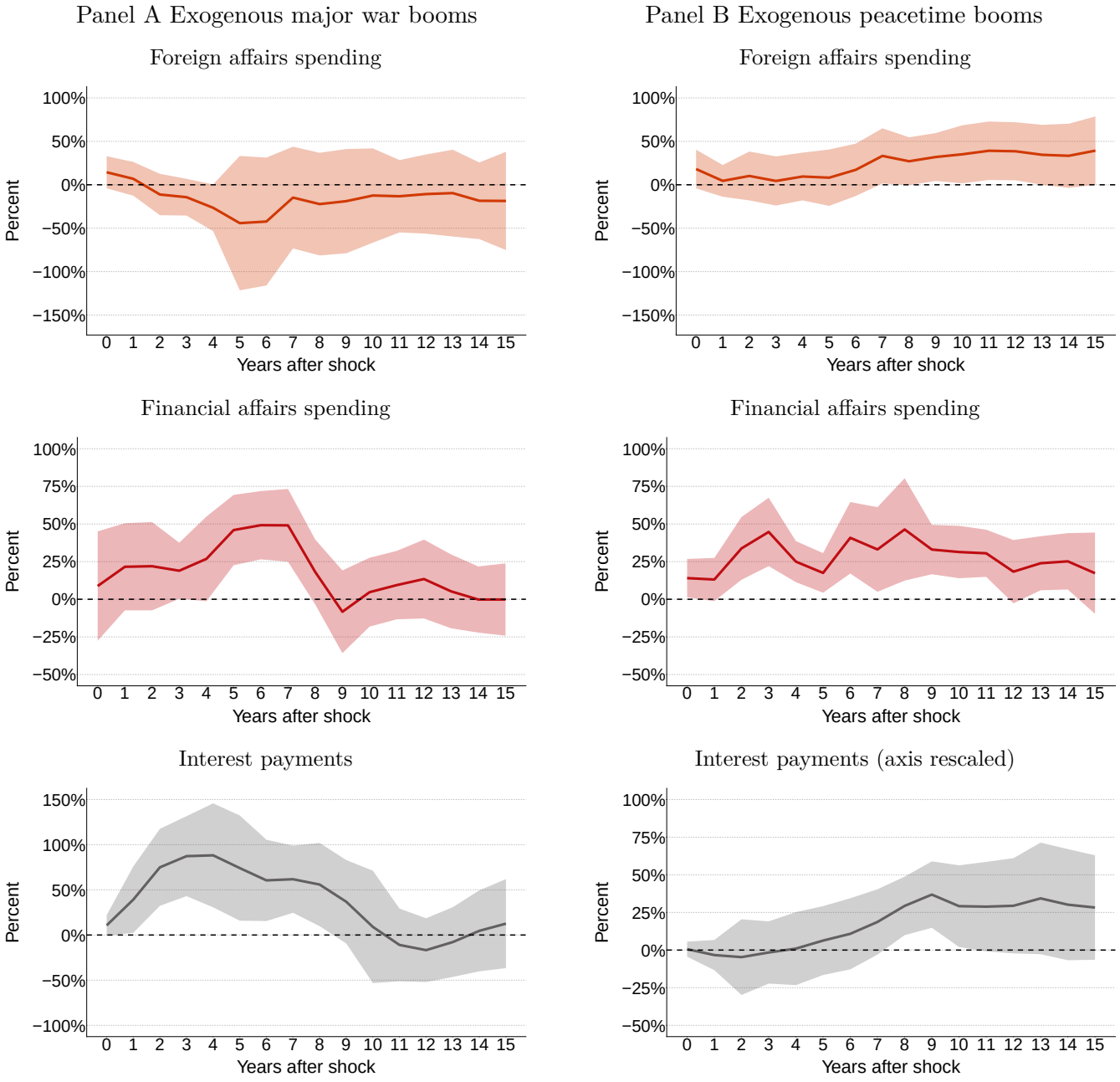
Note: Financial affairs spending and interest payments dynamics around military booms. Panel A shows averages for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). The bars depict changes in real spending relative to spending in the pre-boom year, normalized by pre-boom real GDP, and averaged across all booms in the sample. The whiskers indicate 90% confidence intervals. The dashed vertical line marks the pre-boom year.

Figure C19: Long-run dynamics by type of spending – local projections part 1



Note: Long-run impulse response functions for real 2015 USD social affairs, education and research, and economic affairs spending over a period of 15 years after the onset of military spending booms. Panel A shows results for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

Figure C20: Long-run dynamics by type of spending – local projections part 2



Note: Long-run impulse response functions for real 2015 USD foreign affairs, financial affairs, and interest on the public debt spending over a period of 15 years after the onset of military spending booms. Panel A shows results for the 23 exogenous major war booms; Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals.

C5. World War 1 and 2 event studies

Figure C21-Figure C23 present event study graphs for World War 1 and 2, complementing the findings on major war booms from the previous sections of this appendix. Figure C21 and Figure C22 display average (contemporaneous) GDP ratios of public debt, tax revenues, the primary balance, and military, social, and other (non-military, non-social) spending around World War 1 (Panel A) and World War 2 (Panel B), separately for belligerent[9] and non-belligerent[10] countries. Figure C23 follows the same graphical structure and shows the evolution of average top income tax rates around the World Wars.

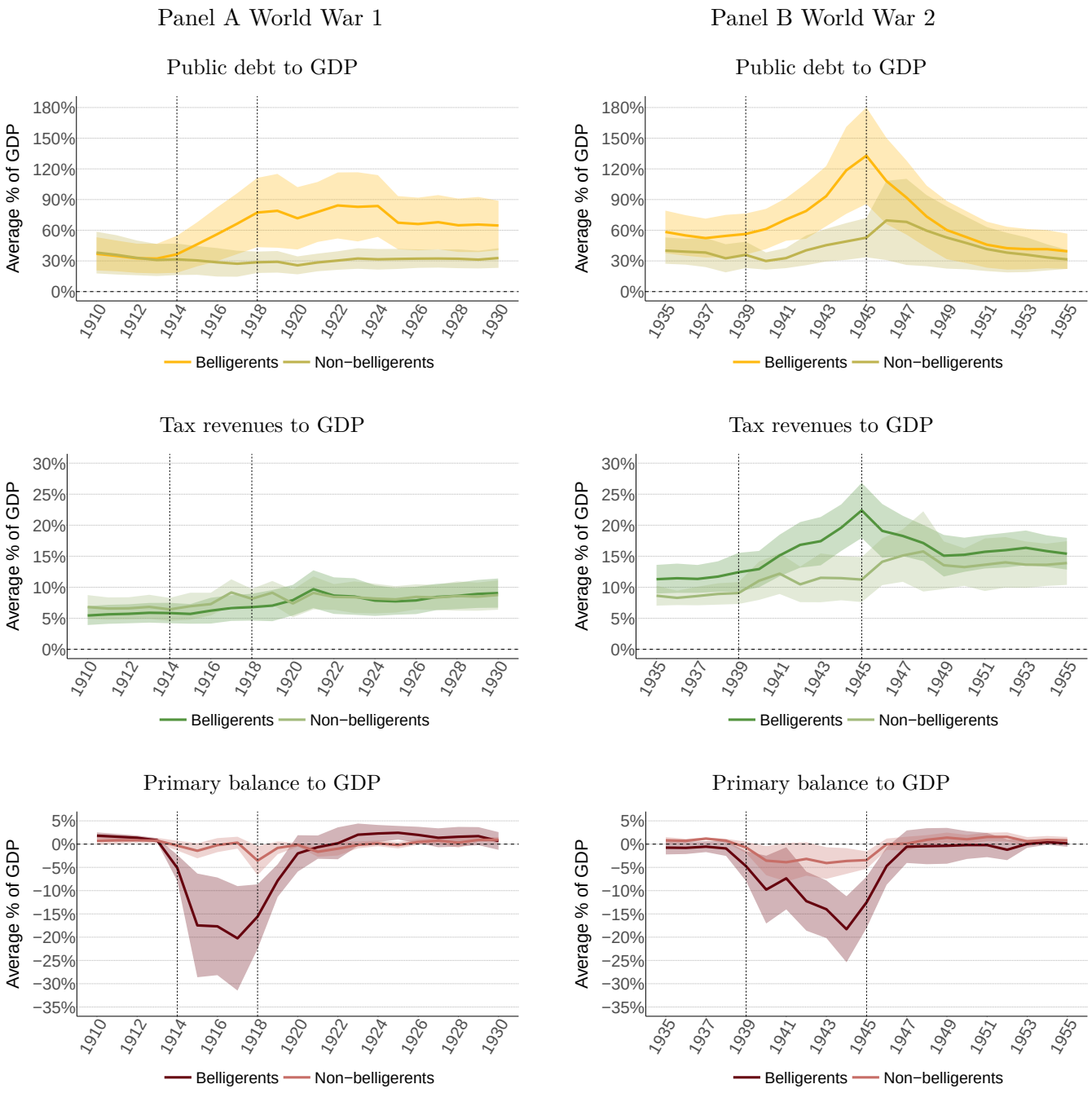
Four main results emerge from Figure C21 and Figure C22: (i) for both belligerents and non-belligerents, military spending as a share of GDP reverts to its pre-boom level after the wars; (ii) the social-spending-to-GDP ratio does not decline during the wars — neither for belligerents nor for non-belligerents — and continues to rise steadily afterwards; (iii) the tax-revenue-to-GDP ratio increases during both wars, signaling an expansion of the fiscal state and the presence of tax revenue ratchets in both belligerent and non-belligerent countries (Peacock and Wiseman, 1961), with the effect being particularly pronounced for World War 2; and (iv) while World War 1 left a substantial legacy of higher debt-to-GDP ratios in belligerent countries, World War 2 was followed by a sharp decline, such that by the early 1950s the average debt ratio fell below its pre-war level.

The results from Figure C23 underscore the major influence of the World Wars on the evolution of statutory top marginal income tax rates. Belligerent countries exhibit, on average, very large increases during both wars. Non-belligerents raise the rate only modestly during World War 1 (about 5 percentage points) but more substantially during World War 2 (about 15 percentage points). During World War 2, there are large increases in income tax rates — on average, about 30 percentage points for belligerents and 15 percentage points for non-belligerents.

[9] **World War 1 belligerents:** Australia, Canada, France, Germany, India, Italy, Portugal, Russia, Turkey, UK, USA; **World War 1 non-belligerents:** Denmark, Finland, Japan, Netherlands, Norway, Spain, Sweden, Switzerland.

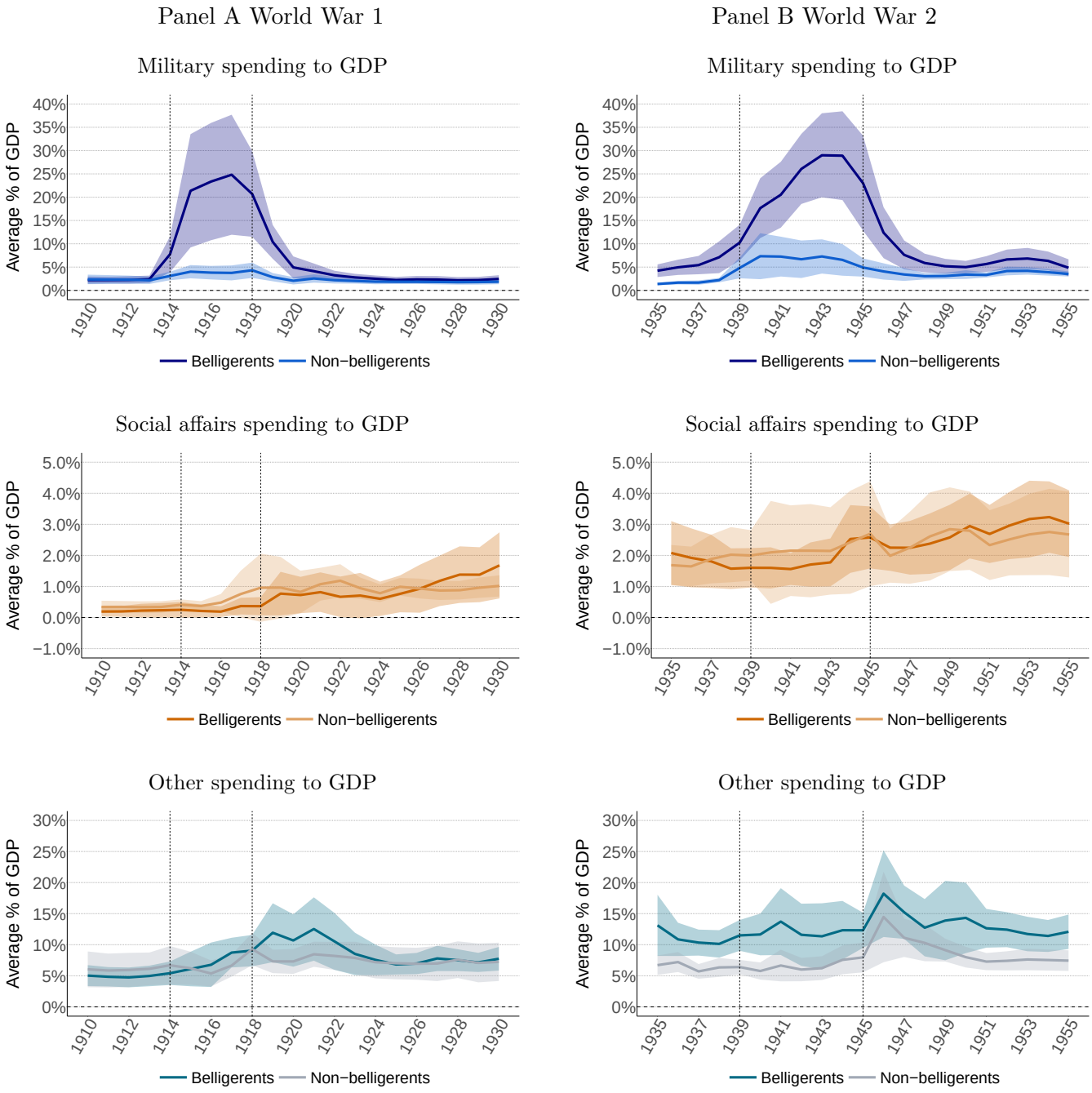
[10] **World War 2 belligerents:** Australia, Austria, Canada, Finland, France, Germany, India, Italy, Japan, Russia, Turkey, UK, USA; **World War 2 non-belligerents:** Denmark, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland.

Figure C21: Debt and tax legacies after the World Wars?



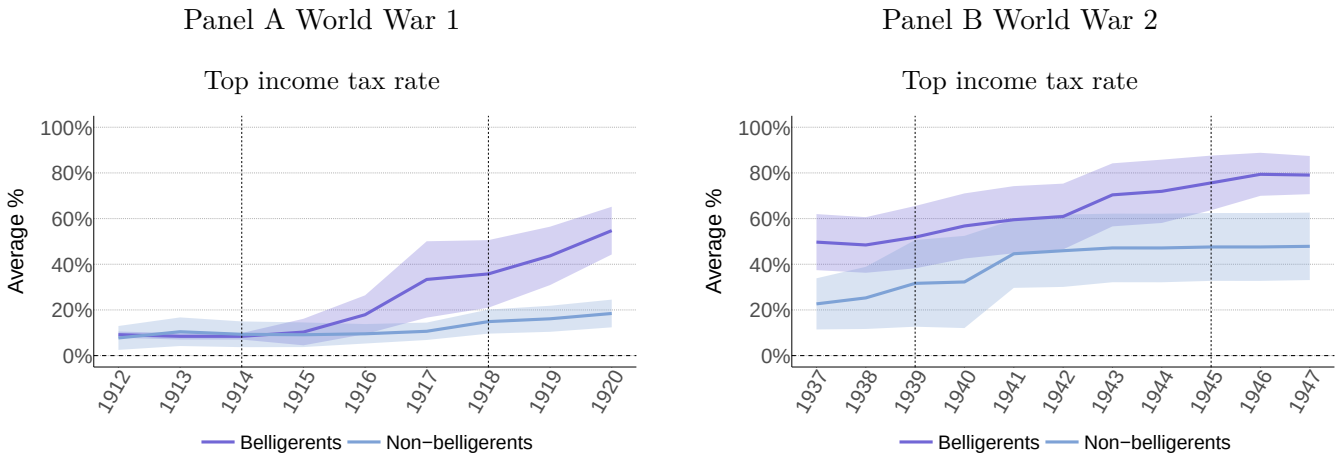
Note: Public debt, tax revenues, and the primary balance to (contemporaneous) GDP around the World Wars for belligerent and non-belligerent countries. Shaded areas correspond to 90% confidence intervals.

Figure C22: Spending reversals after the World Wars? GDP ratios



Note: Military and social spending to (contemporaneous) GDP around the World Wars for belligerent and non-belligerent countries. Shaded areas correspond to 90% confidence intervals.

Figure C23: Top tax rates during World Wars, belligerents vs. non-belligerents



Note: Statutory top marginal income tax rates around the World Wars for belligerent and non-belligerent countries. Shaded areas correspond to 90% confidence intervals.

C6. Tax introductions and increases during military booms

This Appendix presents a condensed overview of tax introductions and tax rate changes during each of our 114 military booms. Table C1 provides additional details to the very compact Table 3 in the main paper. For each boom, the table reports types of taxes introduced and/or changed, the names of the corresponding tax or legislative acts. Importantly, it also shows whether taxes were fully or partially rolled back.

A first key insight is that tax introductions and increases in tax rates are very common during military booms. This is particularly true for major war booms, but also for many exogenous peacetime booms (during non-exogenous peacetime booms we observe fewer tax changes). A second key insight is that full rollbacks of tax increases are the exception. Taxes introduced during military booms often remain in place for many years or even decades after the boom.

Our findings are consistent with the tax introductions database from Genschel and Seelkopf (2019), which records the introduction years of major tax types (personal and corporate income, inheritance, general sales, value added, and social security taxes) between 1785 and 2018 across 220 former and current countries.

Compared to them, we consider all types of taxes, including, for example, excess profits taxes, property taxes, temporary tax surcharges or special war levies. We also consider tax rate and tax base changes, which have been a dominant tool to increase tax revenues during wars and military booms. Most importantly, we also code whether tax introductions and rate changes were rolled back or not.

As supporting evidence, we show Figure C24 which is based on the tax introductions database from Genschel and Seelkopf (2019). The figure plots the introduction years of these tax types for the 20 countries in our sample over the past 150 years. As can be seen, many of these introductions occurred during or shortly after military spending booms, with a marked clustering around World War 1 and 2. This interpretation is confirmed in Figure C25, which shows that there is a significantly higher probability of new tax introductions during military spending booms, especially during war booms and exogenous peacetime booms.

Table C1: Tax increases around military booms: case-by-case overview

Country	Boom years	Type of taxes	Name of tax/legislative act	New tax introduced?	Tax rate increase?	Rollback post-boom?
Australia	1911-12		None			
Australia	1915–19	Income	Income tax act of 1915	Yes	Yes	Partial
		Corporate	Entertainment tax assessment act of 1916			
		Consumption/excise	War-time profits tax assessment act of 1917			
Australia	1940-44	Corporate	War tax act of 1941	Yes	Yes	Partial
		Consumption/excise	Pay-roll tax assessment act of 1941			
		Property/wealth/estate	Income tax (war-time arrangements) act of 1942			
Australia	1952-53	Income	Income tax and social services cont. act of 1951	No	Yes	Full
		Corporate				
		Consumption/excise				
Australia	1966-68	Corporate	Income tax act of 1968	No	Yes	No
Austria	1934-37		None			
Austria	1956-58		None			
Austria	1963-64		None			
Canada	1884		None			
Canada	1903-05		None			
Canada	1910-11		None			
Canada	1914-17	Income	War revenue act of 1915	Yes	Yes	Partial
		Corporate	Customs tariff war revenue act of 1915			
		Consumption/excise	Business profits war tax act of 1916			
		Customs	Income war tax act of 1917			
Canada	1935		None			
Canada	1939-44	Income	An act to amend the income war tax act 1939	Yes	Yes	Partial
		Corporate	National defence tax act of 1939			
		Consumption/excise	Excess profits tax act of 1941			
		Property/wealth/estate	Dominion succession duty act 1940			
		Customs				
Canada	1950-52	Income	Defence surtax	Yes	Yes	Full
		Corporate	General sales tax			
		Consumption/excise	Excise tax			
Denmark	1885-88		None			
Denmark	1909-11		None			
Denmark	1914-16	Corporate	Overordentlig indkomstskat til staten af 1915	Yes	Yes	Partial
		Consumption/excise	Excise taxes			
Denmark	1945-47		None			
Denmark	1951-58	Income	Defence tax of 1950 (Værneskat)	Yes	Yes	No
Finland	1918-19	Income	Wartime income tax extension of 1918	Yes	Yes	Partial
		Corporate	Wartime wealth tax of 1919			
		Property/wealth/estate	Income tax act of 1920			
Finland	1939-44	Income	Income surtax of 1938	Yes	Yes	Partial
		Corporate	Sugar production tax act of 1939			
		Consumption/excise	Coffee tax act of 1939			
		Property/wealth/estate	Turnover tax act of 1941			
			Income and property tax act of 1943			
Finland	1967-68		None			
Finland	2003-04		None			
France	1891-92		None			
France	1914-18	Income	Institution de l'impôt sur le revenu 1914	Yes	Yes	Partial
		Corporate	Contribution exc. sur les bénéfices de guerre 1916			
		Consumption/excise	Taxe sur le chiffre d'affaires 1917			
			Excise increases of 1916 and 1917			
France	1927-29		None			
France	1936-39	Income	Excess profits tax of 1935	Yes	Yes	Full
		Corporate	Income tax change of 1937			
			Overtime wage tax of 1939			
France	1951-53	Corporate	Loi sur le programme de réarmement 1951	Yes	Yes	No
		Consumption/excise				
		Customs				
Germany	1914-18	Income	Kriegssteuergesetz 1916	Yes	Yes	Partial
		Corporate	Gesetz über einen Warenumsatzstempel 1916			
		Consumption/excise	Außerordentliche Reichsabgabe 1916			
		Property/wealth/estate	Außerordentliche Kriegsabgabe 1918			

(continued)

(continued)

Country	Boom years	Type of taxes	Name of tax/legislative act	New tax introduced?	Tax rate increase?	Rollback post-boom?
Germany	1934-35		None			
Germany	1936-38	Income Corporate	Körperschaftsteuer 1936 Wehrsteuer 1937	No	Yes	No
Germany	1939-	Income Corporate Consumption/excise Property/wealth/estate	Kriegswirtschaftsverordnung 1939 Kriegszuschlag 1939 Hauszinssteuer 1942	Yes	Yes	No
Germany	1956-59		None			
India	1879-80		None			
India	1917-19	Income Corporate Consumption/excise Customs	Motor spirit (duties) act of 1917 Super tax act of 1917 Income tax act of 1918	Yes	Yes	Partial
India	1940-48	Income Corporate Consumption/excise	Excess profits tax act of 1940 Indian finance act of 1941 Central excise and salt act of 1944 Business profits tax act of 1947	Yes	Yes	Partial
India	1957		None			
India	1962-63	Income Corporate Consumption/excise	Super profits tax act of 1963 Finance act of 1963	Yes	Yes	Full
India	1986-88		None			
Italy	1887-88		None			
Italy	1910-12		None			
Italy	1914-18	Income Corporate Consumption/excise Property/wealth/estate	Regio decreto 1643 of 1915	Yes	Yes	Full
Italy	1935-36	Consumption/excise Property/wealth/estate	Regio decreto 1963 of 1935 Regio decreto 1729 of 1937	Yes	Yes	Full
Italy	1939-42	Income Corporate Consumption/excise Property/wealth/estate	Regio decreto 1729 of 1937 Regio decreto 1720 of 1938 Regio decreto 1529 of 1939 Regio decreto 2 of 1940 Regio decreto 800 of 1940 Regio decreto 813 of 1940 Regio decreto 647 of 1941	Yes	Yes	Partial
Japan	1879-80		None			
Japan	1883-84	Consumption/excise	Tax on soy, sake, and tobacco of 1882	Yes	Yes	Partial
Japan	1886-87	Income	Income tax act of 1887	Yes	Yes	No
Japan	1896-97	Corporate Consumption/excise	National business tax of 1896 Brewery tax of 1896 Registration duties of 1896	Yes	Yes	No
Japan	1904-05	Income Corporate Consumption/excise Property/wealth/estate Customs	Emergency special tax law of 1904	Yes	Yes	No
Japan	1907-08	Income Corporate Consumption/excise Property/wealth/estate Customs	Special tax law amendments of 1908	No	Yes	Partial
Japan	1920-21	Income Corporate	Wartime excess profit tax of 1918 Income tax reform of 192	Yes	Yes	No
Japan	1932-33		None			
Japan	1937-38	Income Corporate Consumption/excise Property/wealth/estate	Temporary tax increase act 1937 North China affair special tax law of 1937 Special tax law on foreign currency bonds of 1937 Corporate capital tax law of 1937 Gasoline tax act of 1937	Yes	Yes	No
Japan	1941-43	Income Corporate Consumption/excise Property/wealth/estate	Tax reform of 1940 Capital levy law of 1946	Yes	Yes	Partial

(continued)

(continued)

Country	Boom years	Type of taxes	Name of tax/legislative act	New tax introduced?	Tax rate increase?	Rollback post-boom?
Netherlands	1875-76		None			
Netherlands	1914-18	Income Corporate Property/wealth/estate	Wet op de inkomstenbelasting 1914 Verdedigingsbelasting I & II 1916 Wet op de oorlogswinstbelasting 1916 Dividend- en tantièmebelasting 1917	Yes	Yes	Partial
Netherlands	1938-39	Income Corporate Consumption/excise	Defense taxation of 1938 Besluit op de winstbelasting 1940	Yes	Yes	Partial
Norway	1886-87		None			
Norway	1891-92		None			
Norway	1895-96		None			
Norway	1914-1917	Income Corporate Consumption/excise	Krigskonjunkturskatt 1915 Krigskonjunkturskatt 1917 Luksusskatt & stempelavgifts 1917 Midlertidig avgift av skibstonnasje 1917	Yes	Yes	Partial
Norway	1938-39 None		None			
Norway	1950-53	Consumption/excise	Sales tax increase of 1951	No	Yes	No
Portugal	1883-85		None			
Portugal	1889-91		None			
Portugal	1895-97		None			
Portugal	1915-18		None			
Portugal	1926		None			
Portugal	1932-34		None			
Portugal	1941-43	Income Corporate Customs	Imposto de salvação nacional Imposto sobre a exportação de tungsténio Imposto sobre os lucros extraordinários de guerra	Yes	Yes	Partial
Portugal	1953-55		None			
Portugal	1961-63	Corporate Consumption/excise Customs Property/wealth/estate	Imposto consumo de bens supérfluos ou luxo 1961 Imposto sobre o consumo de refrigerantes 1961 Imposto consumo de bebidas e gelados 1962 Imposto defesa e valorização do ultramar 1962 Decreto de lei 46311 1965 Imposto de mais-valias 1965 Imposto sobre transacções 1966	Yes	Yes	Partial
Russia	1877-78		None			
Russia	1904-05	Corporate Consumption/excise Customs Property/wealth/estate	Tax rate increases of 1905-1907	No	Yes	No
Russia	1913-14	Corporate Consumption/excise Customs Property/wealth/estate	Income tax of 1916 Excess profit tax of 1916	Yes	Yes	Full
Russia	1934-35	Consumption/excise	Turnover tax increases (hidden)	No	Yes	No
Russia	1936-38	Consumption/excise	Turnover tax increases (hidden)	No	Yes	No
Russia	1939-44	Income Corporate Consumption/excise	Bachelors tax of 1941 Income and agriculture surtaxes of 1941 Special war tax of 1942 Military tax of 1942 Special war profits tax of 1943	Yes	Yes	Partial
Spain	1874-76	Corporate Consumption/excise Customs Property/wealth/estate	Impuestos extr. y transitorios para guerra 1873	Yes	Yes	Partial
Spain	1909-11	Other	Decree of 17 October 1909	Yes	Yes	Yes
Spain	1921		None			
Spain	1941-44	Income Corporate Consumption/excise Customs	Contribution excep. sobre beneficios extr. 1939 Ley de reforma tributaria 1940 Contribución excep. sobre beneficios extr. 1941 Wolfram export tax changes of 1943	Yes	Yes	Partial
Spain	1980-83		None			
Sweden	1900-04	Income Corporate Customs	Proposition 16 of 1903	Yes	Yes	No

(continued)

(continued)

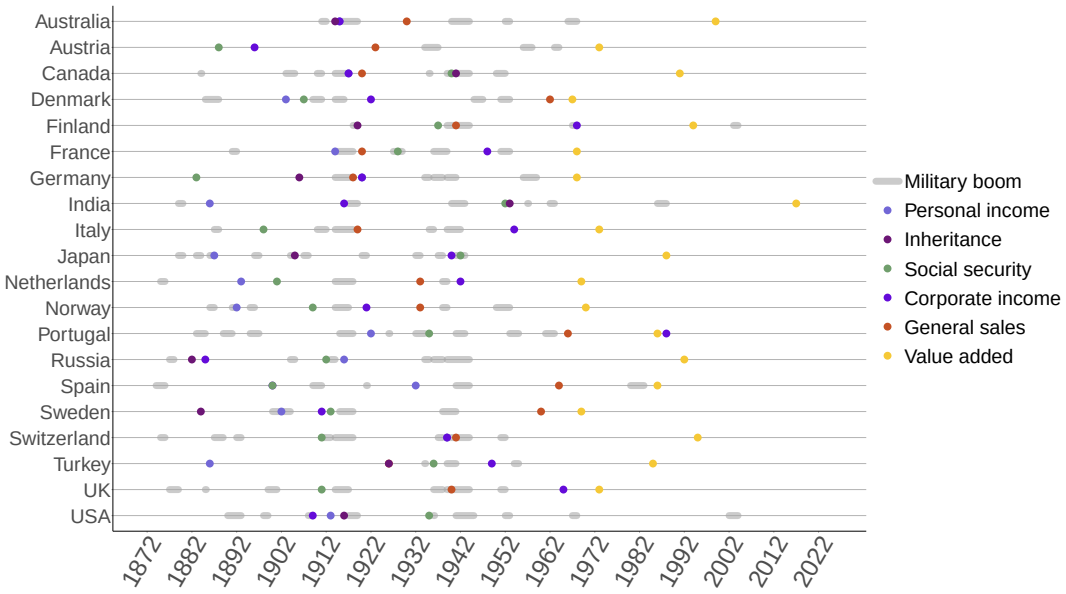
Country	Boom years	Type of taxes	Name of tax/legislative act	New tax introduced?	Tax rate increase?	Rollback post-boom?
Sweden	1915-18	Income	Värnskatt 1914	Yes	Yes	Partial
		Corporate	Krigskonjunkturskatt proposition 196 of 1915			
		Customs	Proposition 259 of 1919			
Sweden	1938-41	Income	Proposition 258 of 1938	Yes	Yes	Partial
		Corporate	Proposition 37 of 1938			
		Consumption/excise	Proposition 78 of 1939			
		Customs	Proposition 185 of 1940			
Switzerland	1875-76	Other	Bundesgesetz betr. Militärpflichtersaz. 1878	Yes	Yes	No
Switzerland	1887-89		None			
Switzerland	1892-93		None			
Switzerland	1911-13		None			
Switzerland	1914-18	Income	Militärpflichtersatz 1914	Yes	Yes	Partial
		Corporate	Kriegssteuer 1915			
		Consumption/excise	Kriegsgewinnsteuer 1915			
		Other	Wiederholte Eidgenössische Kriegssteuer 1919			
Switzerland	1937-38	Income	Krisenabgabe (prolonged) 1938	No	No	No
		Corporate				
Switzerland	1939-44	Income	Wehropfer auf das Vermögen 1940 & 1942	Yes	Yes	Partial
		Corporate	Wehrsteuer 1940			
		Consumption/excise	Warenumsatzsteuer 1941			
		Property/wealth/estate	Kriegsgewinnsteuer 1940			
		Other	Auswanderer-Wehrbeitrages 1941			
			Biersteuererhöhung 1941			
			Luxussteuer 1942			
Switzerland	1951-52		None			
Turkey	1934		None			
Turkey	1939-41	Income	Tax rate rises of 1939-1941	Yes	Yes	Full
		Corporate	Excess profit tax of 1942			
		Property/wealth/estate	Agricultural products tax of 1941			
Turkey	1954-55		None			
UK	1877-79	Customs	Customs and inland revenue act of 1879	No	Yes	No
UK	1885	Income	Income rate increase of 1885	No	Yes	Partial
		Corporate	Spirit and beer increase of 1885			
		Consumption/excise				
UK	1899-01	Income	Finance act of 1900	Yes	Yes	Partial
		Corporate	Finance act of 1901			
		Consumption/excise				
		Customs				
UK	1914-17	Income	Excess profit duty of 1915	Yes	Yes	Partial
		Corporate	Income tax Bill of 1918			
		Consumption/excise				
		Customs				
UK	1936-38	Income	Income tax of 1938	No	Yes	Partial
		Corporate				
UK	1939-44	Income	Finance act of 1939	Yes	Yes	Partial
		Corporate	Finance act of 1940			
		Consumption/excise	Finance act of 1945			
		Customs	Finance act of 1949			
		Property/wealth/estate				
UK	1951-52	Income	Finance act of 1951	No	Yes	Partial
US	1890–93		None			
US	1898–99	Corporate	War revenue act of 1898	Yes	Yes	Full
		Consumption/excise				
		Property/wealth/estate				
US	1908–09		None			
US	1917–19	Income	Emergency revenue act of 1914	Yes	Yes	Partial
		Corporate	Act to increase revenue & other purposes of 1917			
		Consumption/excise	Revenue act of 1918			
		Property/wealth/estate				
US	1936		None			

(continued)

(continued)

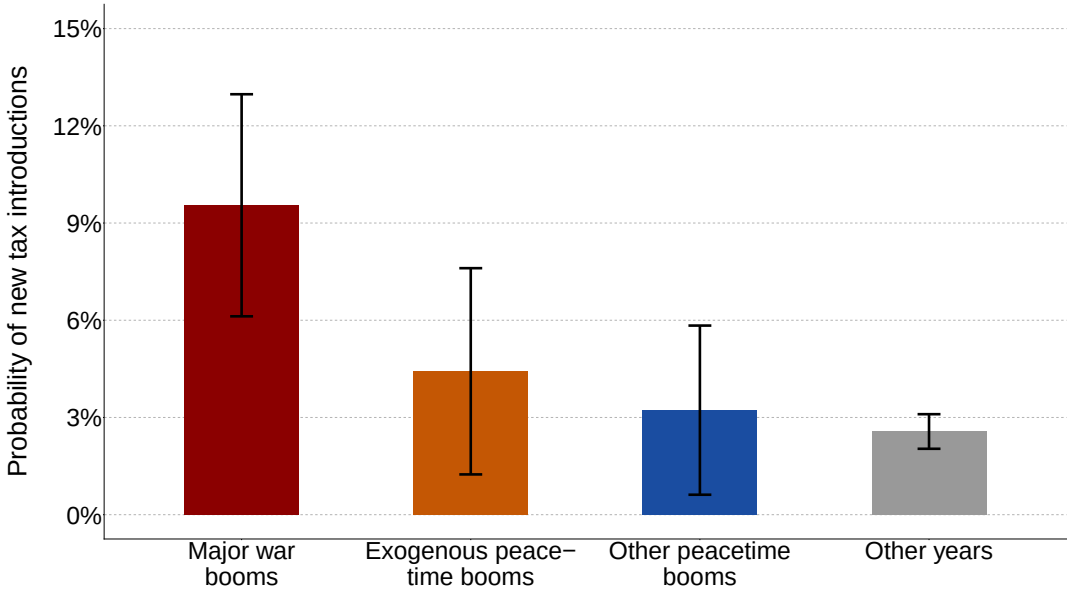
Country	Boom years	Type of taxes	Name of tax/legislative act	New tax introduced?	Tax rate increase?	Rollback post-boom?
US	1941–45	Income Corporate Consumption/excise Property/wealth/estate	Revenue act of 1940 Second revenue act of 1940 Revenue act of 1941 Revenue act of 1942 Current tax payment act of 1943 Revenue act of 1943 Individual income tax act of 1944 Revenue act of 1945	Yes	Yes	Partial
US	1952–53	Income Corporate Consumption/excise Customs Property/wealth/estate	Revenue act of 1950 Excess profits tax of 1950 Revenue act of 1951	Yes	Yes	Partial
US	1967–68	Income Corporate Consumption/excise	Revenue and expenditure control act of 1968	Yes	Yes	Partial
US	2002–11		None			

Figure C24: Introduction of major taxes across countries, 1870-2022



Note: This figure shows the introduction year of a major tax (personal and corporate income, inheritance, general sales, value added, and social security) from the database by Genschel and Seelkopf (2019) for the set of countries and years studied in our paper. The gray segments indicate military spending boom years.

Figure C25: Probability of major tax introductions



Note: This figure shows the probability of seeing the introduction of a new major tax (personal and corporate income, inheritance, general sales, value added, and social security taxes) in a given year during and three years after a major war boom, during exogenous and other peacetime booms, and during other years. The sample of exogenous peacetime booms contains 37 booms that are unrelated to any active war involvement. The whiskers indicate 90% confidence intervals.

D. Other outcomes: Inflation and private consumption

In this appendix, we examine inflation (Appendix D1) and private consumption (Appendix D2) dynamics during and in the aftermath of military spending booms. Two key findings emerge from this analysis. First, inflation rises significantly during major war booms — particularly during the World Wars. With respect to the 37 exogenous peacetime booms (without minor wars), inflation also increases but to a smaller extent, and the effect dissipates shortly after the boom. Second, sharp declines in private consumption (in real terms) occur only during major war booms, especially during the World Wars and primarily in belligerent countries. This pattern is consistent with the findings of Barro and Ursúa (2008). In contrast, private consumption declines only modestly in the years following exogenous peacetime booms, and most of these decreases are statistically insignificant.

The two subsections follow the same structure. First, we present descriptive event study graphs; second, we show evidence from World War case studies; and third, we report results from local projection regressions that follow the same specification as in the previous sections, see Appendix C4.

D1. Inflation response

As discussed in the main paper, we do not treat the "inflation tax" as a financing instrument in our baseline analysis, since inflation is typically not a direct policy choice of governments — particularly not within the budget process. However, to supplement our main findings, we take a closer look at inflation dynamics during and in the aftermath of military spending booms in this subsection. For this purpose, we draw on inflation data from Funke et al. (2023) and Jordà et al. (2017). The key finding from these analyses is that inflation rose sharply during major war booms — especially in belligerent countries during World War 1 and World War 2. In the sample of the 37 exogenous peacetime booms, inflation also increases but to a smaller extent.

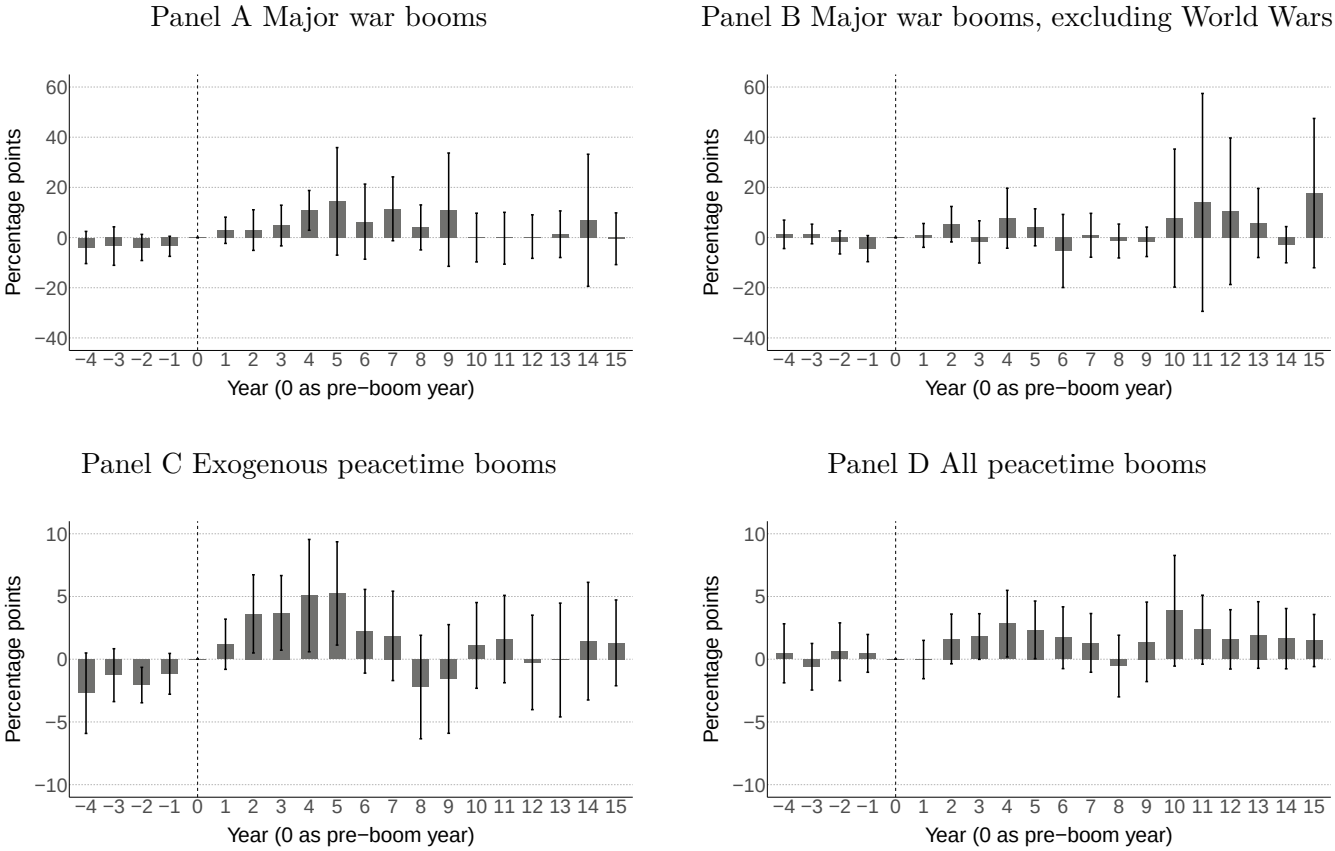
Figure D1 presents event study graphs for inflation (log change in the CPI) in the context of major war booms (Panel A; 26 booms), major war booms excluding World War booms (Panel B; 8 booms), exogenous peacetime booms without minor wars (Panel C; 37 booms), and for the full set of peacetime booms (Panel D; 88 booms). The bars depict changes in the inflation rate relative to the pre-boom year, averaged across the set of respective booms.

The figure shows that inflation increases across the set of major war, exogenous peacetime, and all peacetime booms. Although the confidence intervals are wide, the magnitude of the increase is largest in the major war booms sample. Excluding the World War booms from the set of major war booms underscores the role of the World Wars in driving this pattern.

Next, we examine the inflation dynamics around the World Wars in Figure D2. Panel A shows the dynamics for World War 1 and Panel B for World War 2, separately for belligerent[11] and

[11] **World War 1 belligerents:** Australia, Canada, France, Germany, India, Italy, Portugal, Russia, Turkey,

Figure D1: Inflation (CPI-based) around military booms



Note: This figure shows inflation dynamics around military spending booms. The bars depict changes in the inflation rate (CPI-based) relative to the pre-boom year, averaged across all booms, and the whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year. Panel A shows averages for major war booms (26 booms); Panel B for major war booms excluding the World Wars (8 booms); Panel C for exogenous peacetime booms without minor wars (37 booms); and Panel D for the full set of peacetime booms (88 booms).

non-belligerent[12] countries.

During World War 1, both belligerent and non-belligerent countries experienced sharp increases in inflation. A similar pattern emerged during World War 2, with inflation rising in both groups until 1941. Thereafter, it continued to rise sharply in belligerent countries but gradually declined in non-belligerent ones.

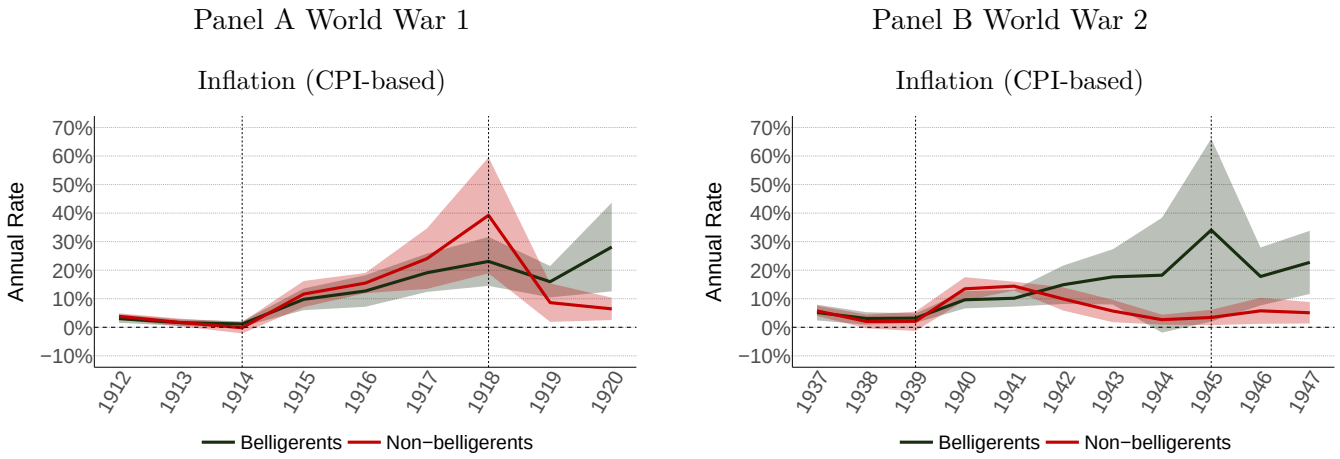
Lastly, we analyze inflation dynamics using a panel local projections framework. Panel A presents the results for the 26 major war booms, and Panel B for the 37 exogenous peacetime booms. The results reinforce our earlier findings: inflation rose sharply during major war booms and increased more moderately during exogenous peacetime booms. In the latter case, the rise

UK, USA; **World War 1 non-belligerents:** Denmark, Finland, Japan, Netherlands, Norway, Spain, Sweden, Switzerland.

[12]**World War 2 belligerents:** Australia, Austria, Canada, Finland, France, Germany, India, Italy, Japan, Russia, Turkey, UK, USA; **World War 2 non-belligerents:** Denmark, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland.

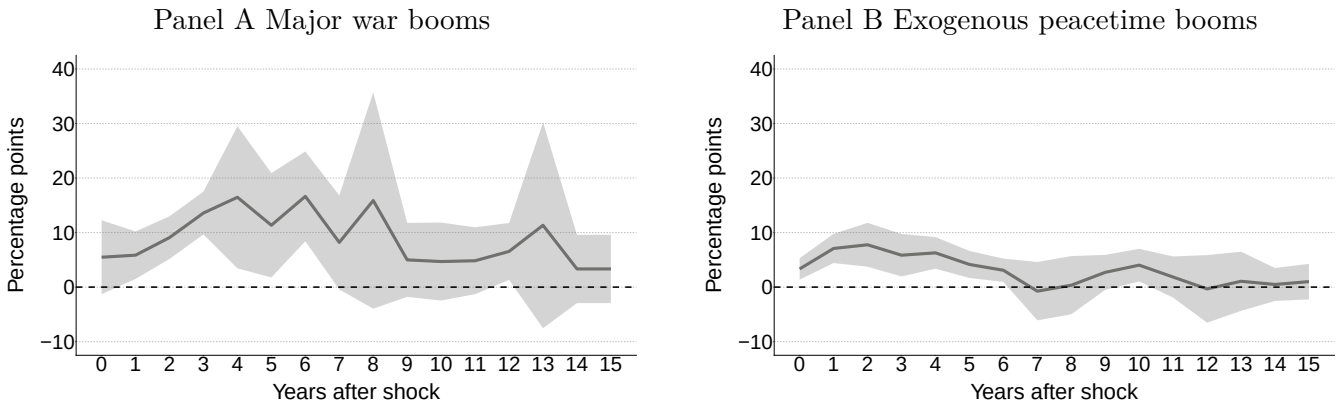
vanishes in the immediate aftermath of the boom.

Figure D2: Inflation during the World Wars, belligerents vs. non-belligerents



Note: Annual inflation rate (CPI-based) around the World Wars for belligerent and non-belligerent countries. Shaded areas correspond to 90% confidence intervals.

Figure D3: Local projections – Inflation dynamics around military booms



Note: Impulse response functions for the inflation rate (based on the CPI) following military spending booms. Panel A shows results for the 26 major war booms, and Panel B for the 37 exogenous peacetime booms (without minor wars). Shaded areas correspond to 90% confidence intervals; dashed vertical lines indicate the average boom duration in each sample.

D2. Private consumption

In this subsection, we examine private consumption dynamics during and in the aftermath of military spending booms. The motivation is to look beyond our definition of "guns vs. butter," in which "butter" refers to government spending on social affairs. In the classic textbook example of Samuelson (1948), "guns vs. butter" can also describe a situation where rising military spending crowds out civilian consumption. To investigate whether military spending booms reduce private consumption, we draw on data from Barro and Ursúa (2008). Our key finding is that strong reductions occur only during major war booms, particularly during the World Wars and primarily in belligerent countries, consistent with the results of Barro and Ursúa (2008).

Figure D4 presents event study graphs for real 2015 USD private consumption expenditures for four sets of booms: major war booms (Panel A; 26 booms), major war booms excluding World War booms (Panel B; 8 booms), exogenous peacetime booms excluding exogenous minor war booms (Panel C; 37 booms), and all peacetime booms (Panel D; 88 booms). The bars show changes in private consumption relative to the pre-boom year, normalized by pre-boom GDP, and averaged across all booms.

In both peacetime booms sample, private consumption continues the gradual upward trend already present before the onset of the booms. In contrast, major war booms are associated with small, statistically insignificant decreases. When the World Wars are excluded from this sample, however, we find a positive trend. Taken together, these figures offer tentative evidence of "guns and butter" during peacetime booms, and of reductions in private consumption during major war booms, particularly during World War booms.

Figure D5 corroborates this World War conclusion. During World War 1, private consumption falls slightly in belligerent[13] countries and rises marginally in non-belligerent[14] countries. In contrast, during World War 2, private consumption in belligerent countries drops sharply — by more than 10 percentage points of GDP on average when comparing 1938 to 1944.

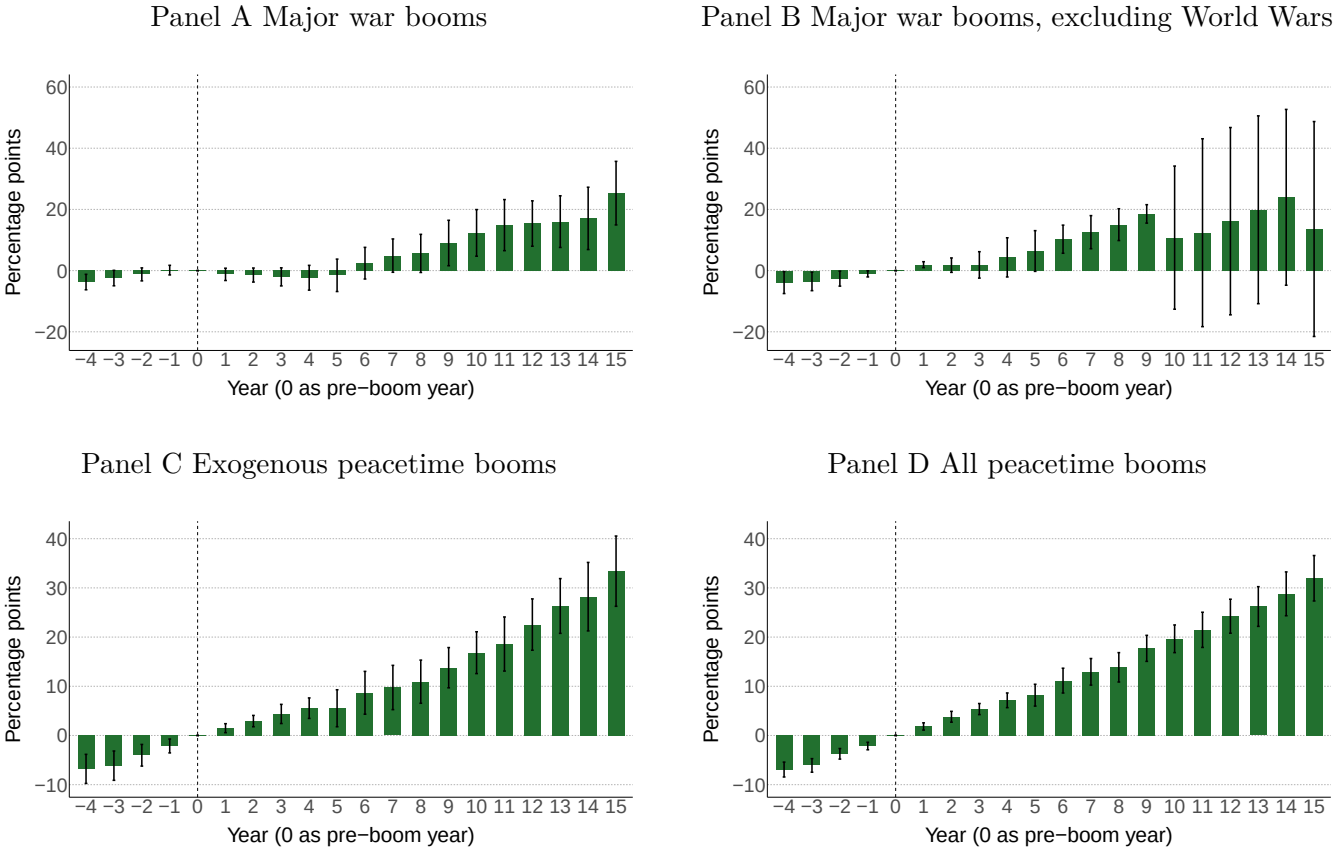
Finally, Figure D6 depicts private consumption dynamics estimated using a panel local projections framework. Panel A presents the results for the 26 major war booms, and Panel B for the 37 exogenous peacetime booms. The results reinforce our earlier finding that private consumption declines sharply, particularly during major war booms. For the exogenous peacetime booms, we only observe small decreases in private consumption in the years following the boom, and most of them are statistically insignificant.

The particularly sharp decline in private consumption during major war booms may appear somewhat at odds with the descriptive evidence in Figure D4. However, this result is largely

[13] **World War 1 belligerents:** Australia, Canada, France, Germany, India, Italy, Portugal, Russia, Turkey, UK, USA; **World War 1 non-belligerents:** Denmark, Finland, Japan, Netherlands, Norway, Spain, Sweden, Switzerland.

[14] **World War 2 belligerents:** Australia, Austria, Canada, Finland, France, Germany, India, Italy, Japan, Russia, Turkey, UK, USA; **World War 2 non-belligerents:** Denmark, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland.

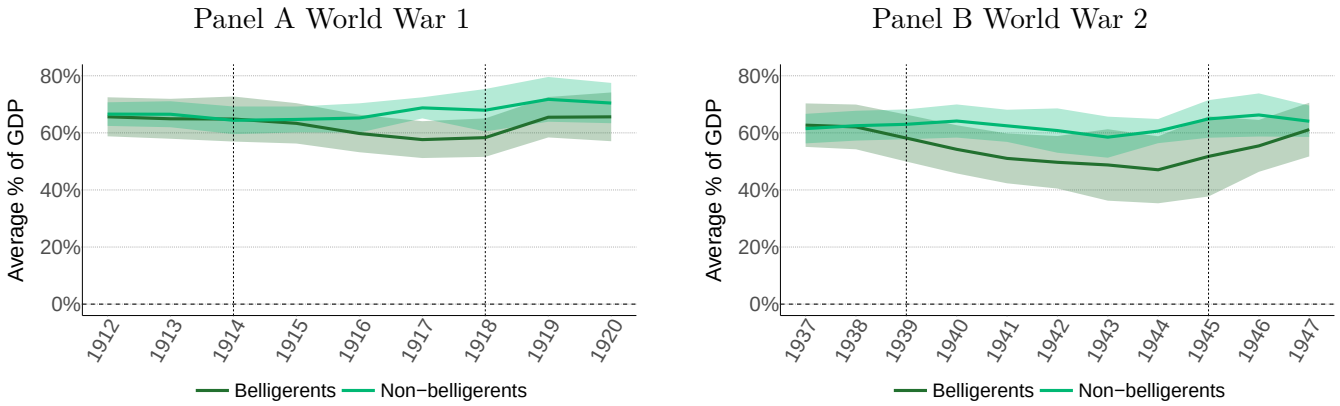
Figure D4: Private consumption normalized by pre-boom GDP around booms



Note: This figure shows private consumption dynamics around military spending booms. The bars depict changes in real private consumption relative to the pre-boom year, normalized by real pre-boom GDP, and averaged across all booms. The whiskers indicate 95% confidence intervals. The dashed vertical line marks the pre-boom year. Panel A shows averages for major war booms (26 booms); Panel B for major war booms excluding the World Wars (8 booms); Panel C for exogenous peacetime booms excluding exogenous minor war booms (37 booms); and Panel D for the full set of peacetime booms (88 booms).

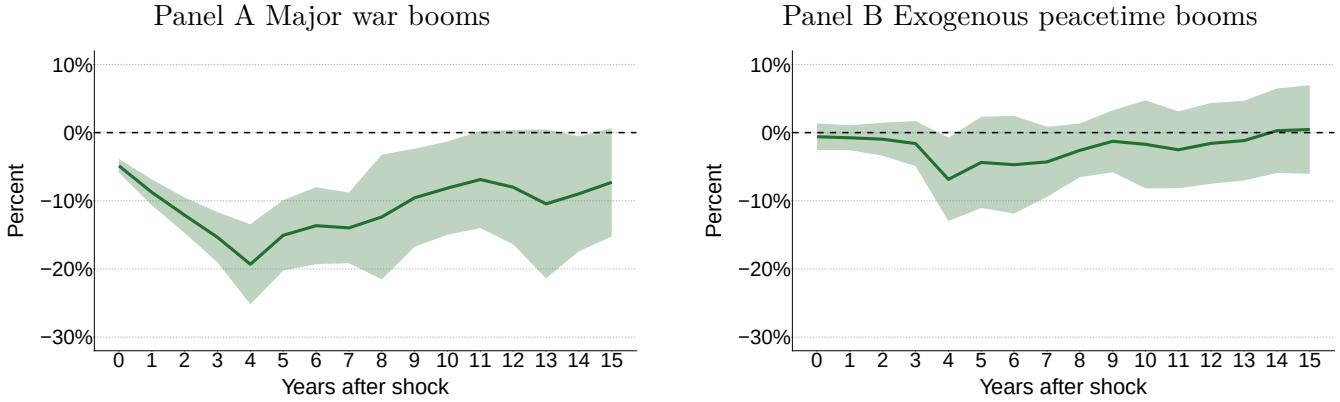
driven by countries that were belligerents in World War 1 and World War 2. Outside of these cases, variation in real private consumption is limited, leading to a muted regression response. Excluding the World Wars from the sample produces an impulse response for private consumption that is small and statistically insignificant. Conversely, when focusing solely on World War booms in belligerent countries (excluding, for example, Switzerland or Sweden) in the analysis underlying Figure D4, the decline in private consumption is also more pronounced. Moreover, the local projections framework includes a set of macroeconomic controls — such as population and real GDP growth — that account for growth effects not captured in the descriptive bar charts and help explain the less pronounced impulse response function in the exogenous peacetime booms sample.

Figure D5: Private consumption to GDP ratios during the World Wars



Note: Private consumption as percentage of GDP around the World Wars for belligerent and non-belligerent countries. Shaded areas correspond to 90% confidence intervals.

Figure D6: Local projections – Private consumption dynamics around military booms



Note: Impulse response functions for real 2015 USD private consumption following military spending booms. Panel A shows averages for major war booms (26 booms), and Panel B for exogenous peacetime booms without minor wars (37 booms). Shaded areas correspond to 90% confidence intervals; dashed vertical lines indicate the average boom duration in each sample.

E. Military booms: case-by-case summaries

This appendix presents the case-by-case analysis and narratives on each of our 114 military spending booms. The booms are organized by country.

For each country we add a **title page** that includes a figure on military spending to GDP over time, along with an overview of the military spending boom episodes. The figure also shows additional booms, identified using a lower standard-deviation threshold (0.5 SD increase rather), as discussed in Appendix B4. We briefly contextualize each of these booms historically, including the additional booms (when possible).

For each boom, we start with a **set of graphs on expenditures and revenues**. All of these are based on the granular revenue and expenditure data from our Global Budget Database.

- The top-left figure shows the composition of central government revenues and spending in each boom year (as a share of pre-boom GDP).
- The top-right figure shows the cumulative change in spending, debt, and revenues over the course of the boom. We compute this by summing up the annual growth in military spending, other spending, or tax revenues for all boom years, and then normalize the sum by pre-boom GDP.
- The bottom-left figure disaggregates by spending category. We decompose the total cumulative change in government spending over the course of the boom by type of spending (military, social, foreign affairs etc).
- The bottom-right figures show the analogous decomposition by type of revenues. We decompose the total revenue change by type of tax revenue category (income taxes, wealth taxes, customs revenue etc.).
- For each boom we also summarize boom size and boom duration, the average debt-to-GDP during the boom, as well as the average real tax revenue growth in the three years preceding the boom.

Importantly, we also classify the **primary financing method** for each boom. A key challenge is the fungibility of money. In modern budgetary systems, revenues are rarely earmarked, which makes it difficult to link specific spending increases, such as for the military, to corresponding revenue sources. However, historical reporting practices and our case-by-case assessments helped us to find a solution to this problem. In historical budget documents, increases in military spending were often classified as "extraordinary" expenditures and explicitly linked to revenues also labeled "extraordinary," typically new taxes or, more often, borrowing. Similarly, modern budget documents can contain narrative accounts that clarify how major spending increases were financed.

Based on these insights, we make the following assumptions to identify the primary financing source of military spending booms:

- Increases in tax revenues ("ordinary revenues") are first allocated to cover additional non-military spending ("ordinary spending"). If the increase in tax revenues exceeds the increase

in non-military spending, we count that as a "surplus" and allocate this surplus to fund the increase in military spending (in full or in part). The remainder is financed through borrowing (debt issuance). In short, if the increase in tax or administrative revenues does not suffice to cover the increase in military spending, we assume the gap to be financed by debt.

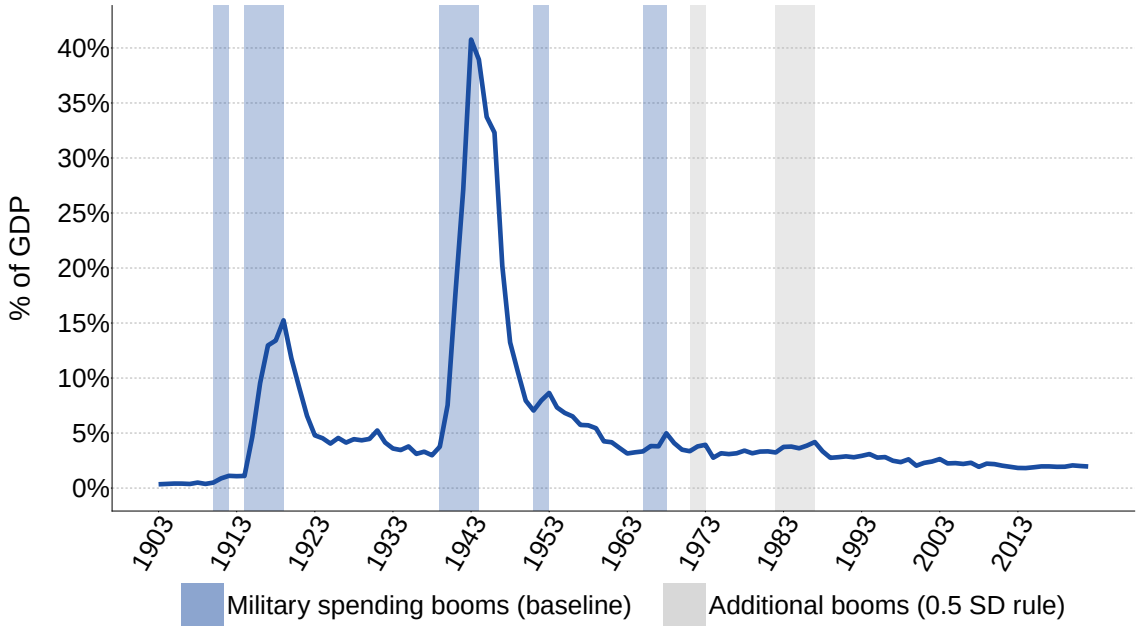
- If the tax revenue increase covers more than 66.6% of additional military spending, we consider the boom as primarily tax-financed.
- If the additional taxes cover less than 33.3% of additional military spending, we consider the boom as primarily debt-financed.
- Every boom in between these values is considered to be mixed-financed.
- Finally, we create the category "spending cuts" when at least half of the military spending increase is financed through reductions in other, non-military spending.

At the end, we present **two sets of narratives**:

- A narrative discussing the historical context of the boom and whether it was triggered by an exogenous geopolitical event.
- A narrative summarizing tax introductions, tax rate changes, and tax rollbacks during and after the boom.

The reference list documents all sources used. In total, we draw on more than 500 sources to create the case historical narratives.

Australia



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1911-1912	1.06%	2 Years	Taxes	Naval buildup and conscription
2	1915-1919	48.35%	5 Years	Debt	World War 1
3	1940-1944	153.56%	5 Years	Debt	World War 2
4	1952-1953	2.94%	2 Years	Taxes	Involvement in Korean War
5	1966-1968	4.30%	1 Year	Mixed	Involvement in Vietnam War

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1972-1973	-
2	1983-1987	-

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Australia, 1911-1912: Naval buildup and conscription

Figure E1: Total spending and revenues

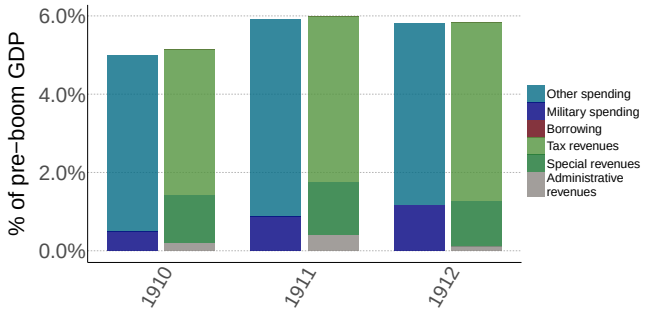


Figure E2: Cumul. change in spending, debt, revenues

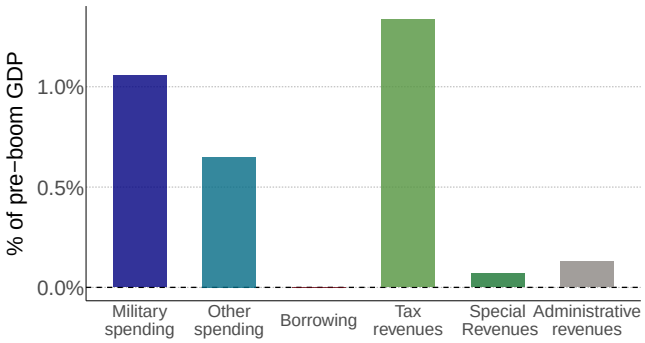


Figure E3: Spending breakdown (cumul. change)

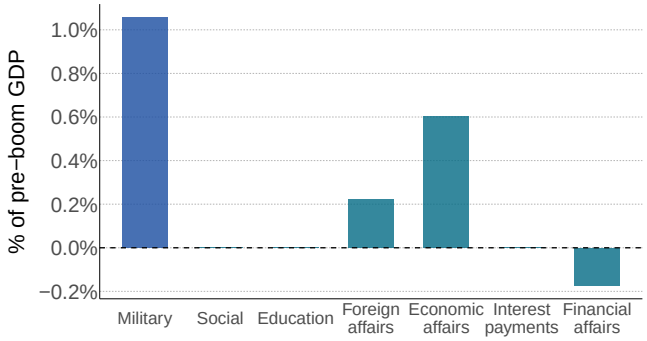
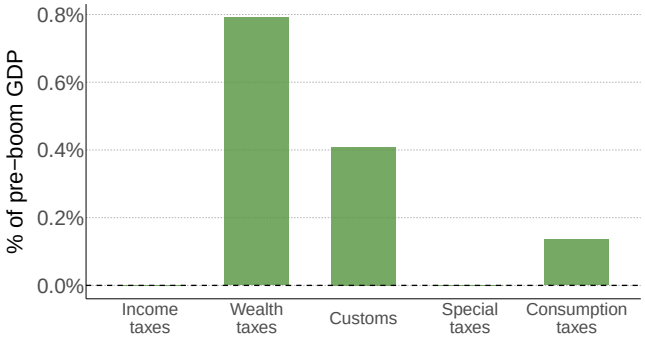


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.06 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 0.15 % **Average tax growth[1]:** 8.72 %

Historical context – exogenous trigger? Yes. Australia's 1911 naval reorganization and the introduction of conscription was a direct response to two exogenous events. The first was the 1909 Imperial Defense Conference, which externally imposed the dominions to take on more naval responsibilities while Britain focused on deterring Germany. During the 1909 conference, the British Admiralty proposed that each Dominion establish a regional "fleet unit." Australia adopted this scheme, passing the Naval Defence Act in 1910 and formally establishing the Royal Australian Navy in 1911. The second exogenous trigger was the alarm caused by Japan's victory in the Russo-Japanese War (February 1904 – September 1905), which reshaped Australia's perception of threats in the region (Meaney, 2015). In 1911, besides the naval buildup, Australia introduced its first universal conscription system under the Defence Act of 1909, which required males to undergo compulsory military training. These reforms mark a major shift in Australian defense policy and signaled the nation's move toward greater military capabilities and preparedness (Grey, 1999), while maintaining very close ties with the British Royal Navy (Government of Australia, 1909).

New taxes or tax increases? No. Australia introduced new taxes in 1910 and 1911, but we find no evidence that these measures were related to the subsequent military spending surge. In

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

1910, Australia enacted a federal land tax, a progressive levy on land values that broadened the tax base (Commonwealth of Australia, 1912). In 1911, the Customs Tariff Act raised duties on various imported goods (Commonwealth of Australia, 1911). Both measures were permanent but not motivated by defense needs. Large war related taxes were introduced only after 1914.

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Australia, 1915-1919: World War 1

Figure E1: Total spending and revenues

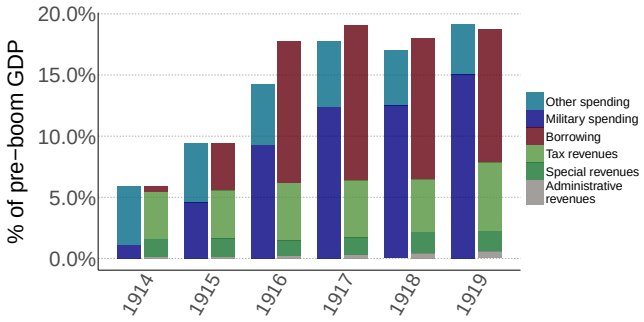


Figure E2: Cumul. change in spending, debt, revenues

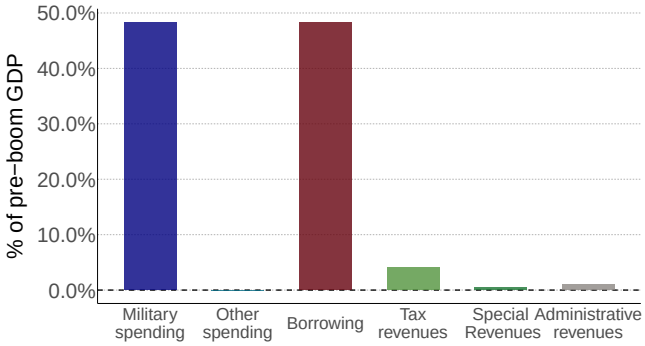


Figure E3: Spending breakdown (cumul. change)

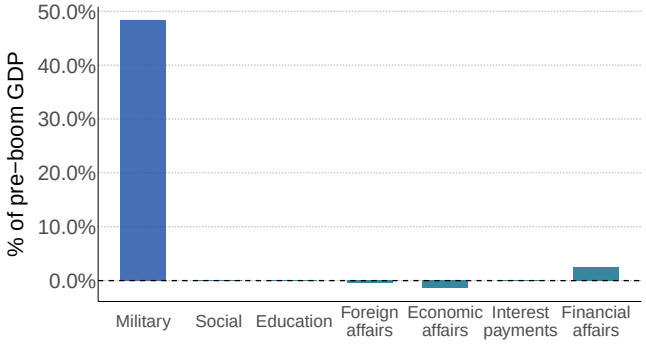
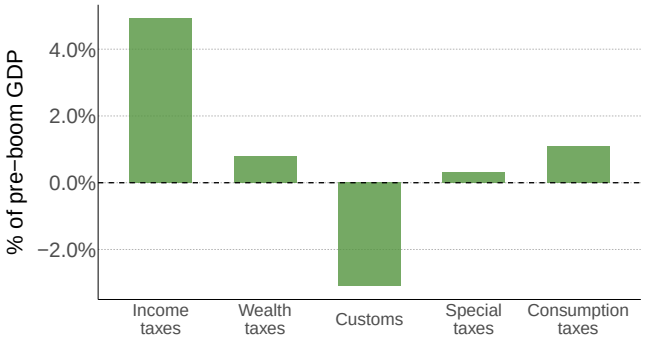


Figure E4: Tax revenue breakdown (cumul. change)



Size: 48.35 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 30.20 % **Average tax growth[1]:** -0.09 %

Historical context – exogenous trigger? Yes. Australia's 1914 military mobilization was dictated by the outbreak of World War 1, as Britain's declaration of war on Germany automatically committed all Dominions. Australia had no independent authority over foreign policy, which meant it had no choice but to enter World War I, fully supporting Britain (Australian War Memorial, nd). Overall, more than 300,000 Australians served abroad with the Australian Imperial Forces, of which more than 200,000 were wounded or killed (Curtis, 1914).

New taxes or tax increases? Yes. During World War 1, the Australian government introduced a federal income tax in 1915 (Commonwealth of Australia, 1915), further consumption and excise taxes in 1916 (Commonwealth of Australia, 1916), and an excess-profit tax in 1917 (Commonwealth of Australia, 1917), all to finance military expenditure. The new progressive income tax complemented the existing income taxes from individual states and applied only above a certain threshold, thus aiming to exclude lower incomes. Furthermore, the government broadened the tax base with new consumption and excise taxes (e.g., entertainment stamps) and increased the rates of existing taxes. The income tax was not reversed after World War 1, but minor changes were applied. In 1917, Australia also introduced an excess-profit (war) tax on corporations, which was

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

abolished shortly after the war. Excise taxes continued to be levied for several years after the war, but where gradually reversed.

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Australia, 1940-1944: World War 2

Figure E1: Total spending and revenues

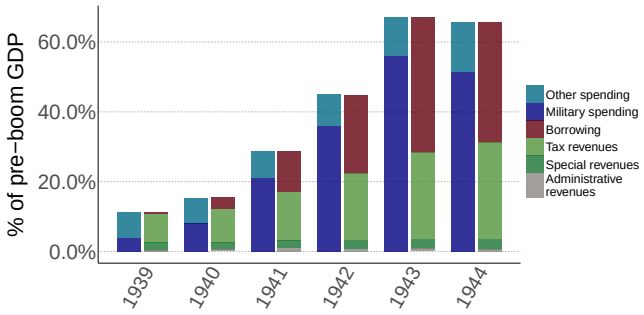


Figure E2: Cumul. change in spending, debt, revenues

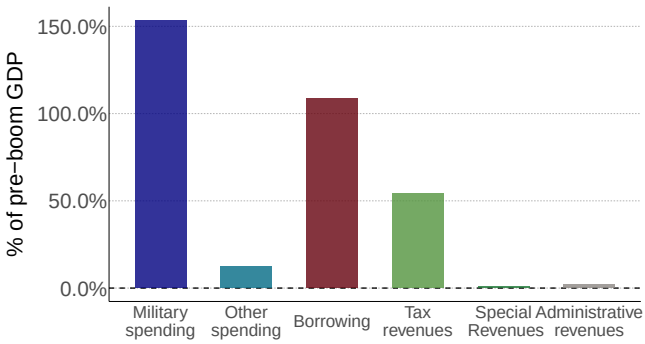


Figure E3: Spending breakdown (cumul. change)

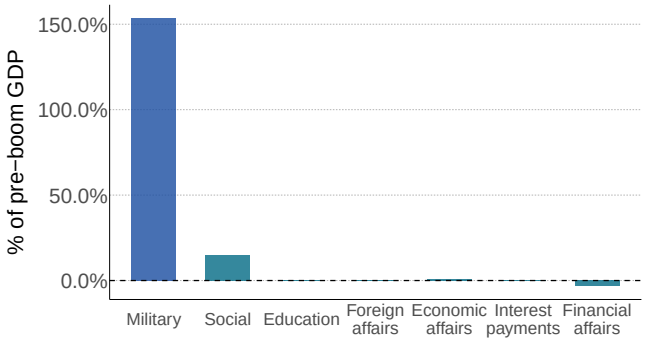
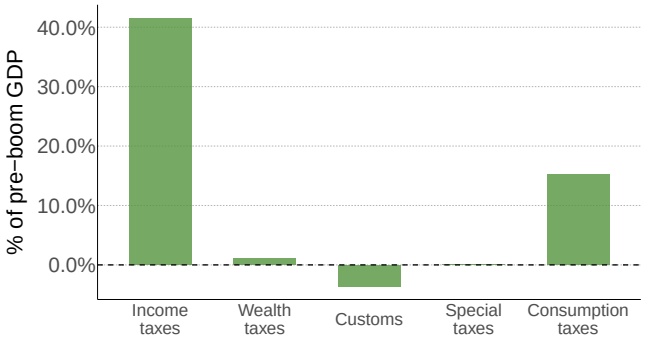


Figure E4: Tax revenue breakdown (cumul. change)



Size: 153.56 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 64.58 % **Average tax growth[1]:** 9.12 %

Historical context – exogenous trigger? Yes. Prime Minister Robert Menzies declared Australia's involvement in World War 2, citing Nazi Germany's invasion of Poland (September 1, 1939) as the catalyst (Menzies, 1939). Australia's entry was formally a voluntary choice but in practice shaped by its alignment with Great Britain. While Australia sent a volunteer army to support Britain early in the conflict, the Japanese attack on Pearl Harbor (December 7, 1941) led to an urgent need for a shift in focus towards the Pacific, marked by a strong increase in military spending to fight off Japanese attacks (Department of Veterans' Affairs, 2021). As the war progressed, Australia shifted from a focus on British imperial defense to directly confronting Japan in the Pacific, marked by conscription and the deployment of forces to various regions (Cousley et al., 2017).

New taxes or tax increases? Yes. During World War 2, Australia increased income, corporate, and consumption taxes to finance military expenditure. In 1940, a broad set of fiscal measures were proposed that increased existing or introduced new taxation on income, property and estate, gifts, sales, excess corporate profits, consumption, and excise (The West Australian, 1940). In particular, income tax rates were increased (by 2.5 to 5 percent, depending on the income bracket), and the

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

tax base was broadened by lowering exemptions to lower incomes in the acts of 1941 and 1942 (Commonwealth of Australia, 1941b, 1942, 1941a). A major step toward a uniform state income tax occurred when the states waived their income tax jurisdiction. After the war, tax rates were reduced again, though not to prewar levels, and the temporary excess profits tax and temporary income tax were abolished. Several structural changes persisted, including federal jurisdiction over income taxes and a broader tax base. Estate and gift duties, as well as payroll taxes, also remained in place throughout the decade after the war.

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Australia, 1952–1953: Involvement in Korean War

Figure E1: Total spending and revenues

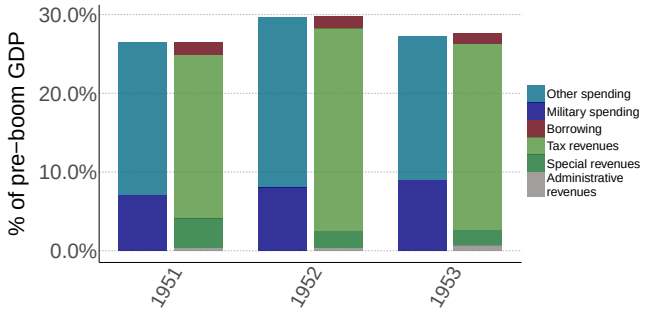


Figure E2: Cumul. change in spending, debt, revenues

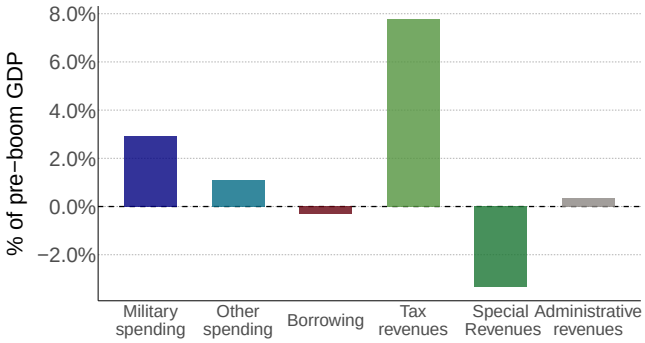


Figure E3: Spending breakdown (cumul. change)

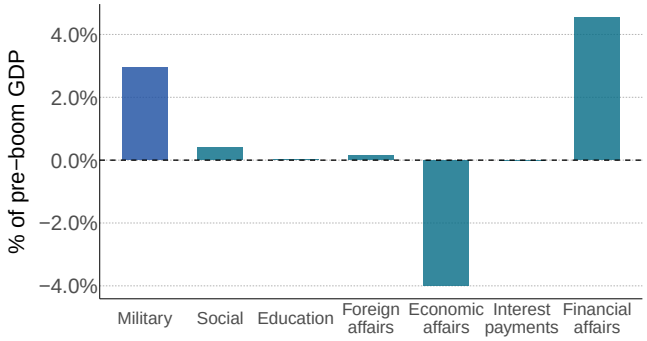
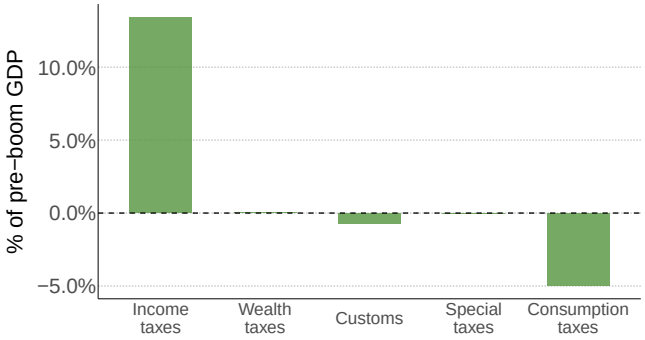


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.94 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 48.56 % **Average tax growth[1]:** 11.66 %

Historical context – exogenous trigger? Yes. After North Korea invaded South Korea on June 25, 1950, Australia sent naval, air, and ground forces under U.N. command to defend the South (Australian War Memorial, nd). Australia's involvement was bolstered by a firm stance against Communist expansion (Museum of Australian Democracy, 1951). Australian forces remained committed until the war's end, maintaining a small military presence in Korea (Barrett, 1953). The Menzies government hoped that demonstrating loyalty in Korea after June 1950 would strengthen security ties with the U.S., which indeed helped pave the way for the ANZUS Treaty of 1951. This treaty formalized a defense alliance between the U.S., Australia, and New Zealand in the Pacific region.

New taxes or tax increases? Yes. Australia raised income tax rates, as well as corporate and sales taxes, in the 1951 "horror budget" (Commonwealth of Australia, 1951). These measures were partly a response to the surge in wool prices driven by US demand for uniforms for the Korean War, which generated inflationary pressures because wool was Australia's main export at the time (Hawkins, 2011). The budget also aimed to tighten fiscal policy in the face of high expenditures, including defense. Most of the increases were reversed in 1952 after wool prices fell. At the same

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

time, Australia relaxed taxation by abolishing several temporary World War 2 taxes and the land tax in 1952 (Edmonds, 2010).

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Australia, 1966–1968: Involvement in Vietnam War

Figure E1: Total spending and revenues

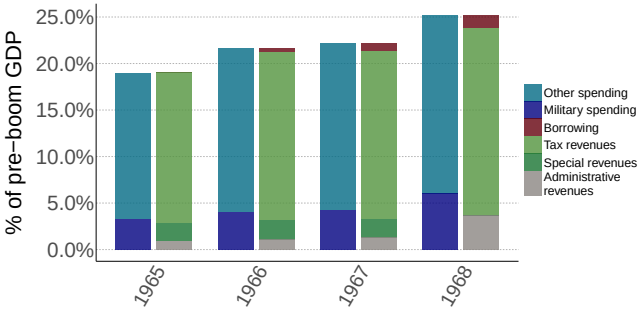


Figure E2: Cumul. change in spending, debt, revenues

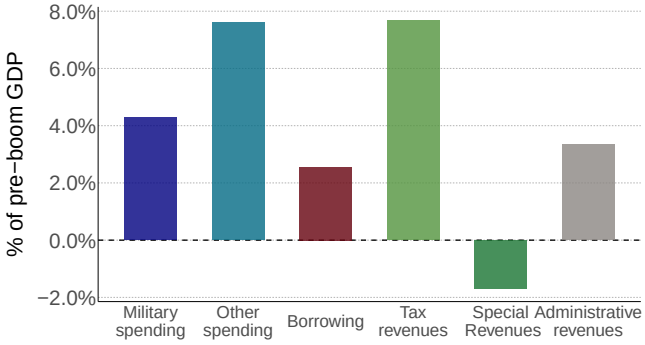


Figure E3: Spending breakdown (cumul. change)

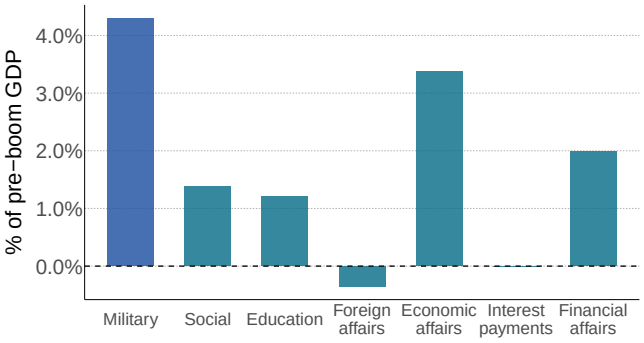
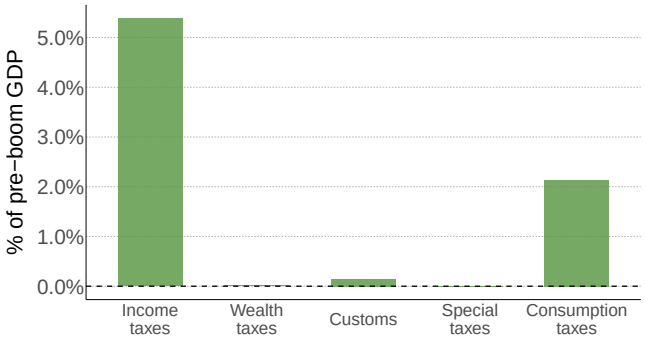


Figure E4: Tax revenue breakdown (cumul. change)



Size: 4.30 % of pre-boom GDP **Duration:** 1 year **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 48.56 % **Average tax growth[1]:** 10.24 %

Historical context – exogenous trigger? Yes. Australia's military and troop involvement in the Vietnam War was driven primarily by Cold War alignment with the United States. The surge in forces followed U.S. escalation decisions and Washington's request in 1966 for allied troop contributions after its own troop surge. Australia's "forward defense" strategy also framed the intervention as a way to prevent the spread of communism in Southeast Asia (Groenewegen, 1970). Australia dispatched significant forces, including battalions, air squadrons, and naval units, to fight alongside U.S. troops. The Australian government sought both to show solidarity with the U.S. and to strengthen the operational experience of its military (Australian War Memorial, 2023). However, the reliance on conscripts, growing public opposition, and rising financial costs created mounting controversy. These pressures ultimately led Australia to withdraw its forces in 1971 (Grey, 1991).

New taxes or tax increases? Yes, Australia increased corporate income tax rates in 1968 to finance social security spending (especially age pensions) and defense spending (Hawkins, 2012). The change was permanent.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Grey, J. (1991). Vietnam as History: The Australian Case. *Vietnam Generation*, 3(2):26–34.

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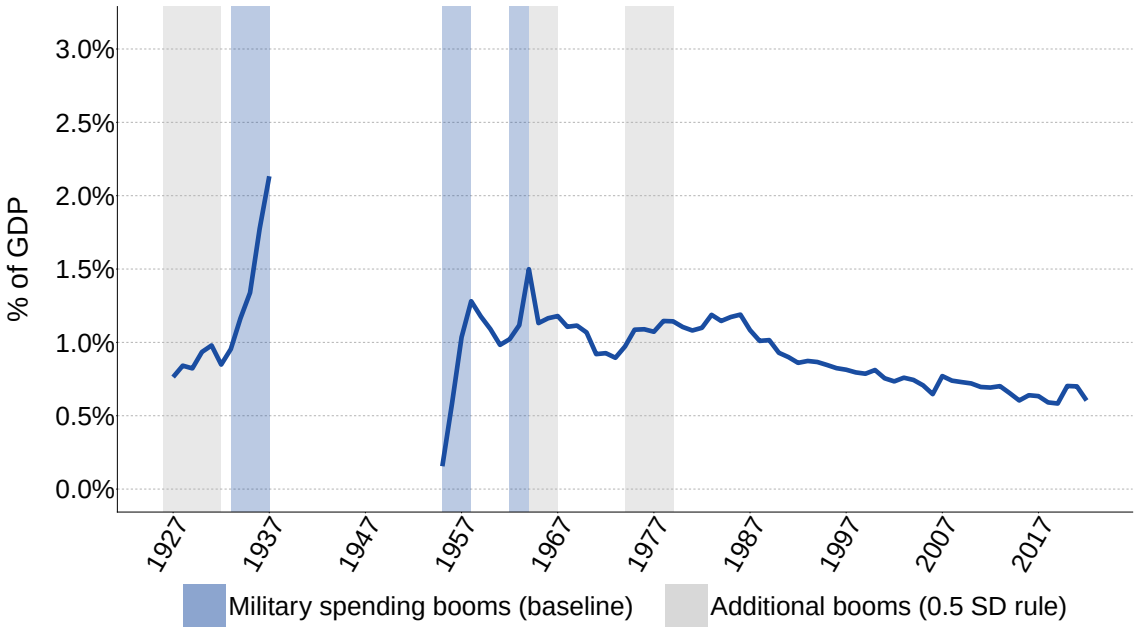
Austria



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1934-1937	2.99%	4 Years	Spending cuts	Threat from Nazi Germany
2	1956-1958	2.81%	3 Years	Debt	Rearmament after Austrian State Treaty
3	1963-1964	0.78%	2 Years	Debt	Rearmament (Berlin Crisis; Cuban Missile Crisis)

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1927-1932	Internal struggles
2	1975-1979	Reform of defense strategy and reorganization

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Austria, 1934–1938: Threat from Nazi Germany

Figure E1: Total spending and revenues

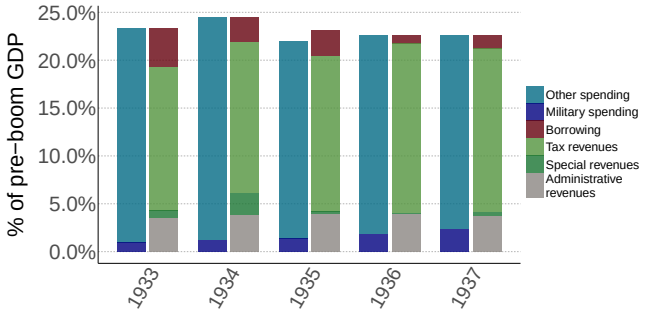


Figure E2: Cumul. change in spending, debt, revenues

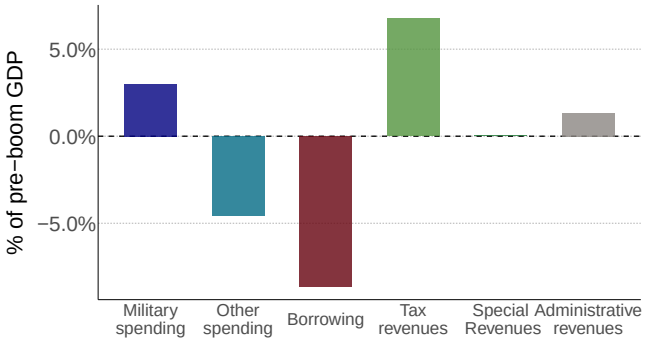


Figure E3: Spending breakdown (cumul. change)

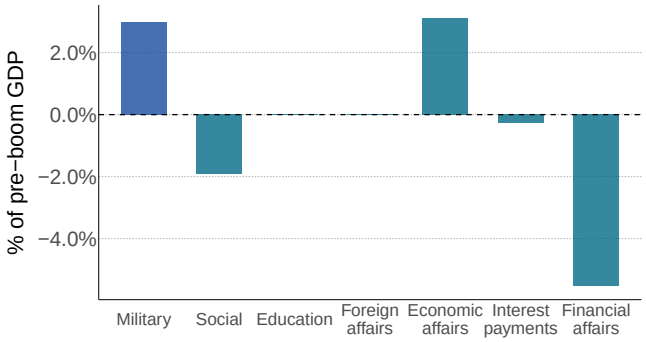
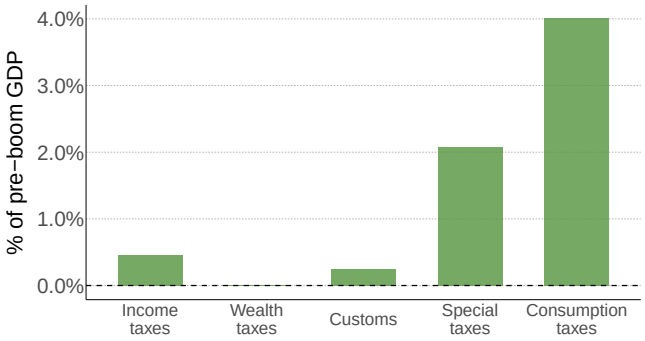


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.99 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily spending cuts
Major war boom: No **Average debt-to-GDP[1]:** 37.90 % **Average tax growth[1]:** -3.84 %

Historical context – exogenous trigger? Yes. In the early 1930s, Austria began rearming in response to the rising threat from Nazi Germany, despite the Great Depression and domestic political struggles (Prieschl, 2010). The Austrian government moved to dismantle the "Heimwehren" (paramilitary groups) and strengthen the Federal Army. It pursued these steps while staying within the limits of the Treaty of Saint-Germain (Lerider, 1978). In 1936, the government introduced universal conscription (Raschhofer, 1936). Nazi Germany's annexation in 1938 absorbed the new army into the Wehrmacht and ended Austria's independence (Wenninger, 2013).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup during 1934-1937. After the "Anschluss" annexation in 1938, Austria became subject to Nazi-German (war) taxes (Lindholm, 1946).

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Austria, 1956-1958: Rearmament after Austrian State Treaty

Figure E1: Total spending and revenues

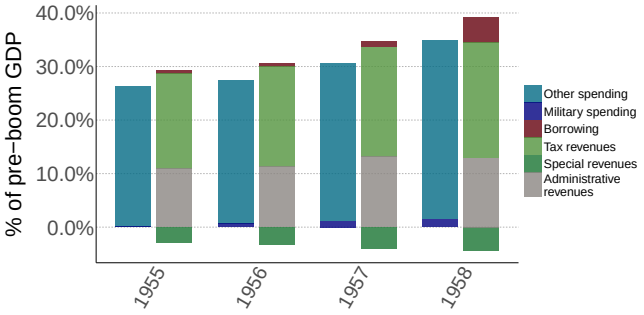


Figure E2: Cumul. change in spending, debt, revenues

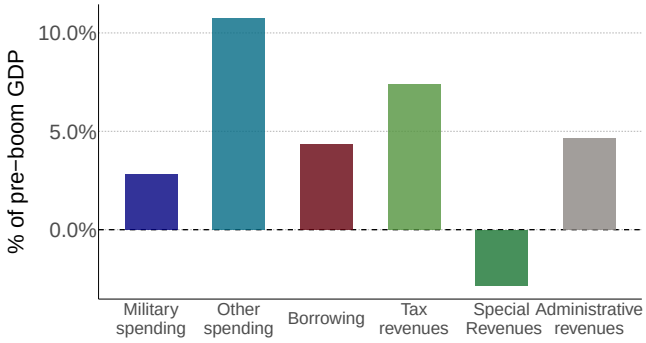


Figure E3: Spending breakdown (cumul. change)

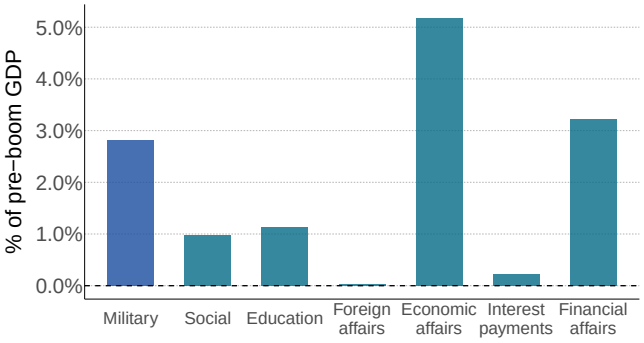
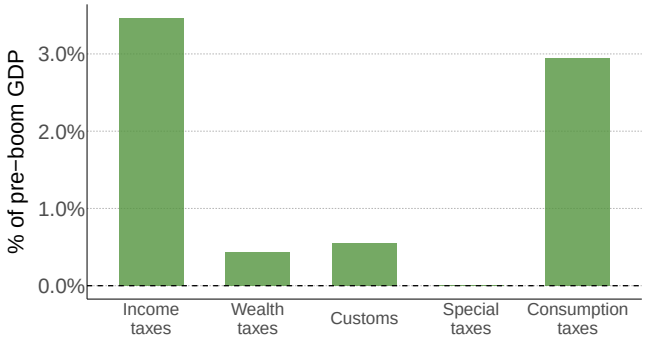


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.81 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 10.27 % **Average tax growth[1]:** 9.09 %

Historical context – exogenous trigger? Yes. Austria had to quickly build its own army after the mid 1955 State Treaty with the United States, the United Kingdom, France, and the USSR, which ended Allied occupation (Seidl-Hohenveldern, 1956). Allied troops were withdrawn in October 1955. These developments were made possible by shifts in Soviet foreign policy after Stalin's death in 1953. The Defense (Military Service) Act of September 1955 provided the legal basis for establishing the new Bundesheer, and the first conscripts were called up in October 1956. Despite arms limitations and the requirement of permanent neutrality, meaning no alliances and no foreign bases, the Treaty and the subsequent rearmament created a new army for the Second Republic that was built rapidly after 1955. It comprised three group commands with eight brigades and focused on territorial security (Hessel, 2005). This force would be tested only weeks later during the Hungarian Crisis.

New taxes or tax increases? No. We find no evidence of significant tax increases that were linked to financing the military buildup.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Austria, 1963-1964: Rearmament (Berlin Crisis; Cuban Missile Crisis)

Figure E1: Total spending and revenues

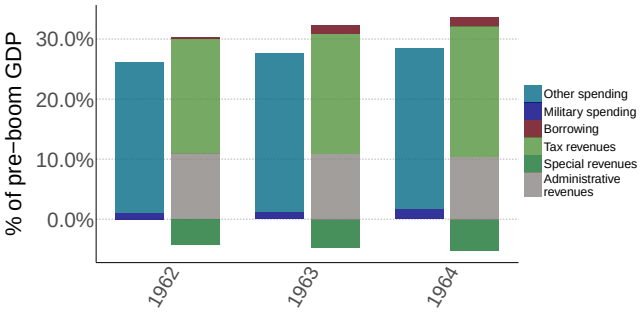


Figure E2: Cumul. change in spending, debt, revenues

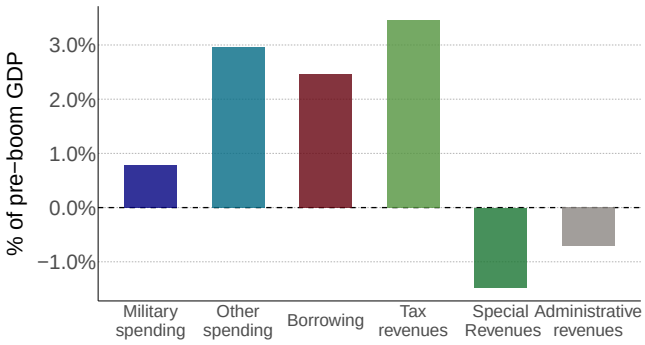


Figure E3: Spending breakdown (cumul. change)

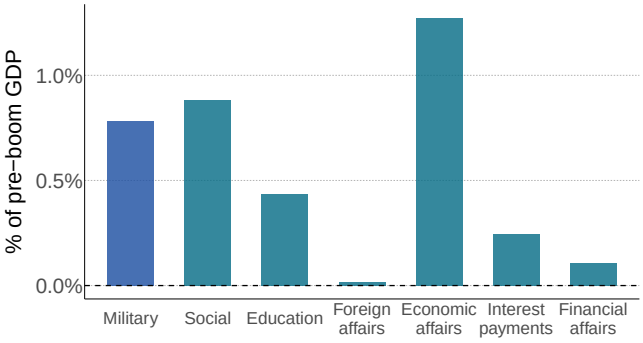
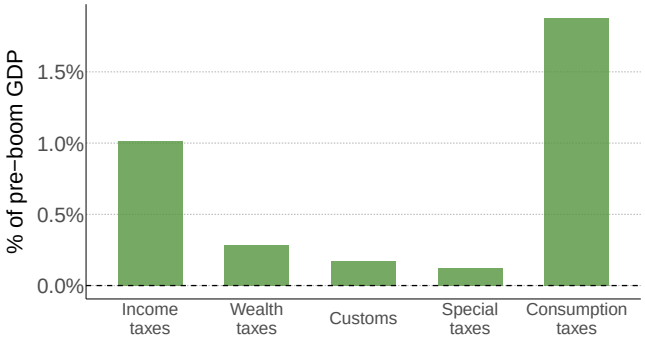


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.78 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 12.07 % **Average tax growth[1]:** 6.35 %

Historical context – exogenous trigger? Yes. Austria's 1963 military reform followed the 1961 Berlin Crisis and the 1962 Cuban Missile Crisis, which exposed Central Europe's vulnerability during the Cold War (Hessel, 2005). These shocks pushed Vienna to reorganize the Austrian Bundesheer through the "Heeresgliederung 62" reform. The government sharply increased spending on military equipment and weapons systems (Steiger, 2005). Military expenditures rose further in 1963 and 1964, driven especially by procurement from the United States and Italy, as documented in the original budget accounts.

New taxes or tax increases? No. We find no evidence of significant tax increases that were linked to financing the military buildup. However, until 1989, (income) taxation was marked by gradually increasing rates and progressivity (Schratzenstaller and Wagener, 2009).

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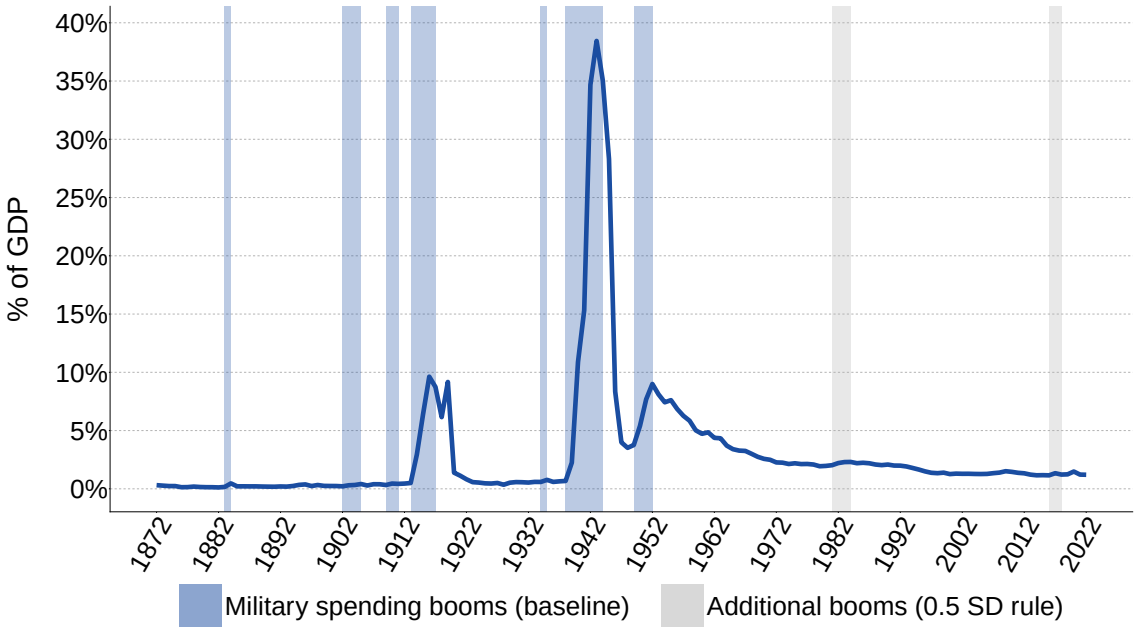
Canada



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1884	0.34%	1 Year	Taxes	Militia Act for a permanent force
2	1903-1905	0.49%	3 Years	Taxes	Militia Act to expand permanent force
3	1910-1911	0.33%	2 Years	Taxes	Forced creation of navy
4	1914-1917	27.59%	4 Years	Debt	World War 1
5	1935	0.24%	1 Year	Debt	Modest naval expansion
6	1939-1944	214.99%	6 Years	Mixed	World War 2
7	1950-1952	14.20%	3 Years	Taxes	Involvement in Korean War

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1982-1984	Acquisition of new ships
2	2017-2018	-

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Canada, 1884: Militia Act for a permanent force

Figure E1: Total spending and revenues

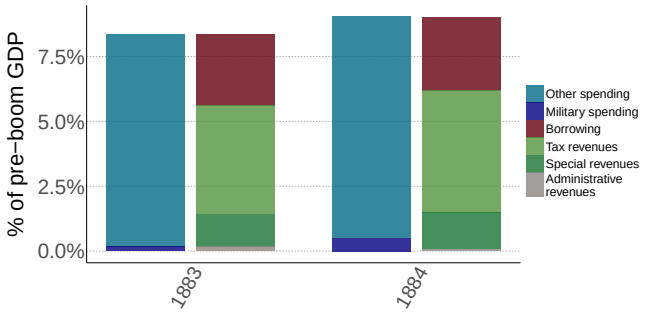


Figure E2: Cumul. change in spending, debt, revenues

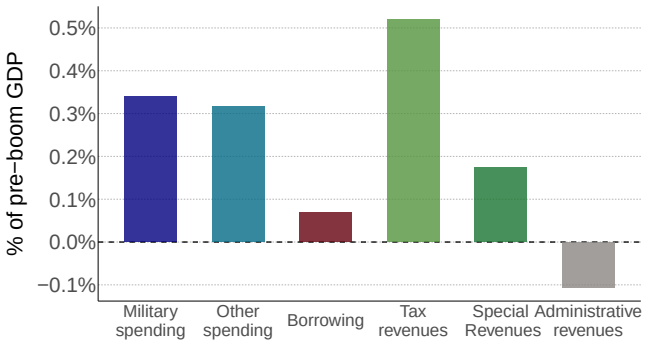


Figure E3: Spending breakdown (cumul. change)

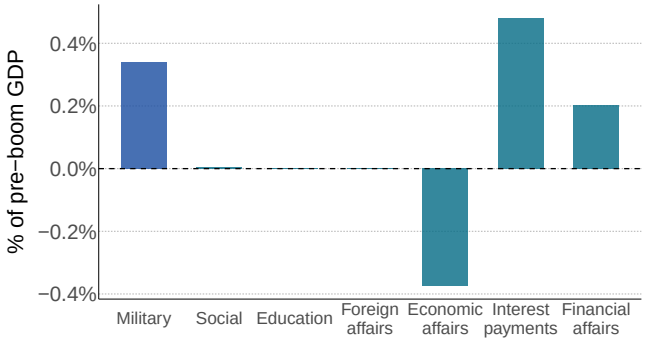
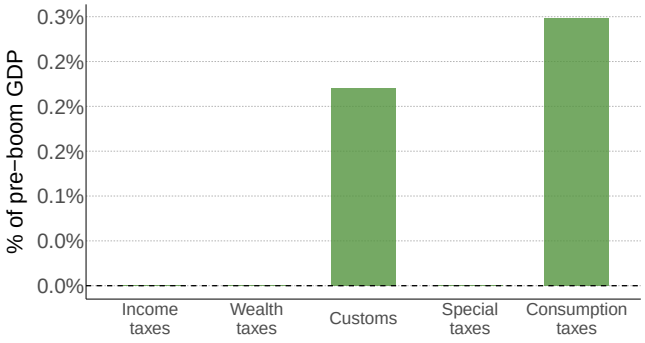


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.34 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 49.61 % **Average tax growth[1]:** 0.60 %

Historical context – exogenous trigger? No. In 1883, the Canadian government allocated funds for the creation of permanent militia schools, which aimed to professionalize the military force (Morton, 2007). The new military infrastructure included cavalry, artillery, and infantry units (Government of Canada, 2024). The 1883 Militia Act played a crucial role in the establishment of a small permanent army, including the Regiment of Canadian Artillery and schools for various military branches (Ridler et al., 2021).

New taxes or tax increases? No. We find no evidence of significant tax increases that were linked to financing the military buildup in 1884.

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Canada, 1903-1905: Militia Act to expand permanent force

Figure E1: Total spending and revenues

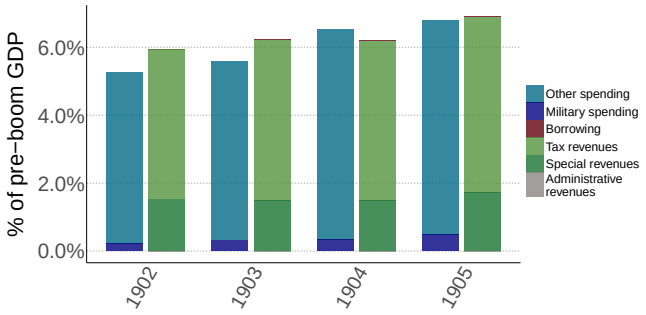


Figure E2: Cumul. change in spending, debt, revenues

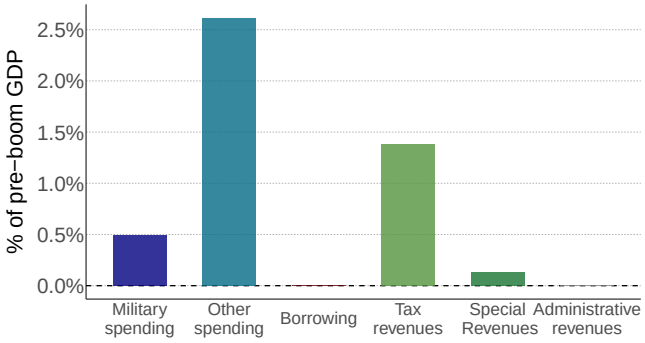


Figure E3: Spending breakdown (cumul. change)

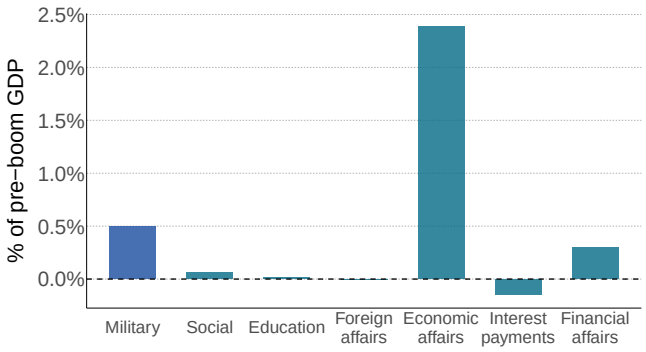
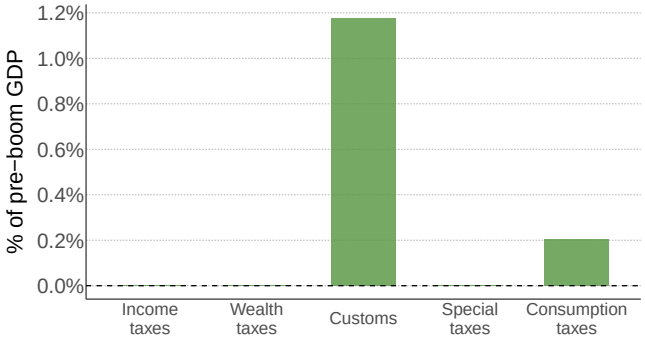


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.49 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 29.91 % **Average tax growth[1]:** 6.12 %

Historical context – exogenous trigger? No. Canada's 1903–1904 military expansion was primarily driven by a planned domestic agenda of administrative reform and growing national autonomy rather than by any sudden external shock. Even though these changes unfolded against the backdrop of British post–Boer War defense debates and London's calls for greater Dominion readiness (MacDonald, 2008), it was an internally driven modernization process. The 1904 Militia Act led to an expansion of the permanent force (Canada, House of Commons, 1904). The act redefined the structure of the military, allowing Canadians to hold command positions within the militia, a significant shift from the previous British-dominated hierarchy (Morton, 2007). Most of the increased spending was used for salaries (due to a expansion of the military), construction of military facilities, and military equipment (MacDonald, 2008).

New taxes or tax increases? No. We find no evidence of significant tax increases that were linked to financing the military buildup.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Canada, 1910-1911: Forced creation of navy

Figure E1: Total spending and revenues

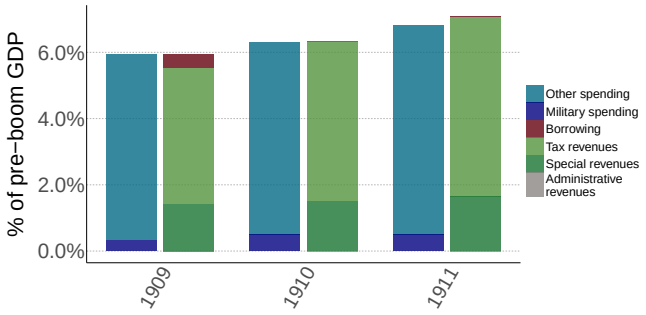


Figure E2: Cumul. change in spending, debt, revenues

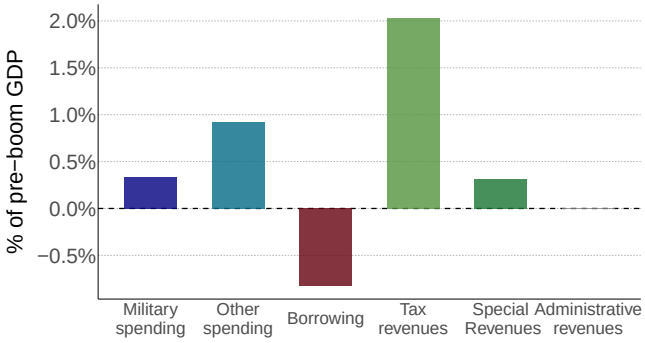


Figure E3: Spending breakdown (cumul. change)

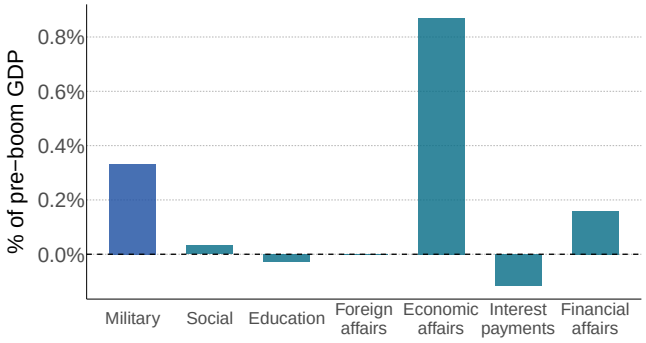
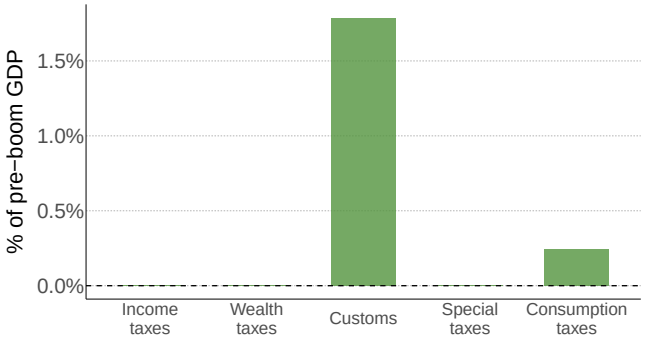


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.33 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 28.12 % **Average tax growth[1]:** 11.73 %

Historical context – exogenous trigger? Yes. Canada's 1910 naval buildup was triggered by external pressures, foremost the 1909 Imperial Defence Conference, which urged the Dominions to assume greater naval responsibilities while Britain concentrated on deterring Germany. At the conference, the British Admiralty proposed that each Dominion establish a regional "fleet unit." In response, the Canadian government passed the Naval Service Act in 1910, creating Canada's first independent naval force (Government of Canada, 1910). The act reflected the intensifying great power naval competition in Europe (Sarty, 2017). It established a naval service within the Department of Marine and Fisheries to strengthen Canadian capabilities. The arrival of the cruiser Niobe in Halifax illustrated this shift and marked a new era in Canada's maritime defense (Sarty, 2018).

New taxes or tax increases? No. We find no evidence of significant tax increases that were linked to financing the military buildup.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Canada, 1914-1917: World War 1

Figure E1: Total spending and revenues

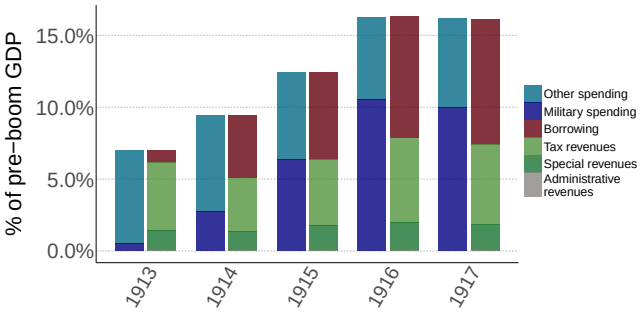


Figure E2: Cumul. change in spending, debt, revenues

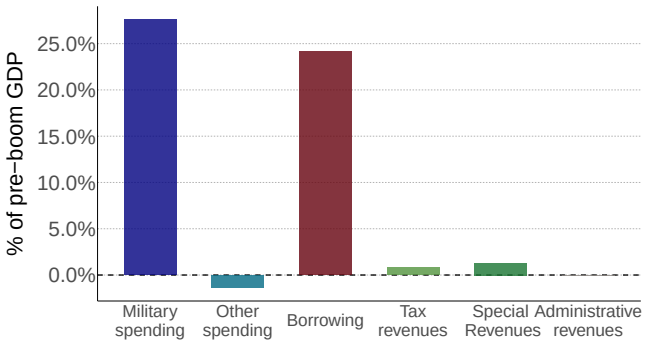


Figure E3: Spending breakdown (cumul. change)

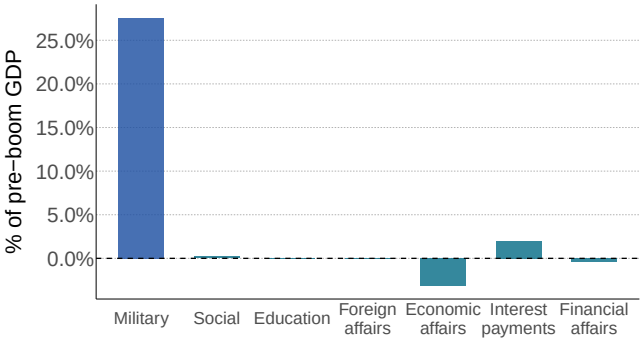
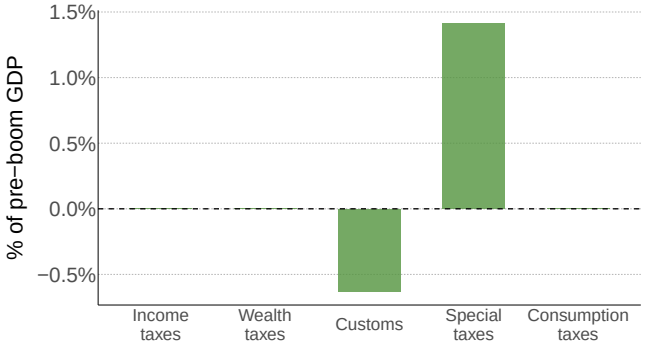


Figure E4: Tax revenue breakdown (cumul. change)



Size: 27.59 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 16.62 % **Average tax growth[1]:** 9.49 %

Historical context – exogenous trigger? Yes. When Britain declared war on Germany on 4 August 1914, Canada was automatically at war as part of the British Empire. Although Canada was a self-governing Dominion at the time, foreign affairs and defense policy remained under British control, and no separate Canadian declaration of war was required under the British North America Act (Bothwell and Colbourn, 2014). The government was surprised by the length and scale of the conflict. More than 620,000 Canadians enlisted (Morton, 1993), and Canada's war goods industry, organized under the Imperial Munitions Board, employed over 200,000 workers (Granatstein, 2018). Once Britain could no longer finance Canada's war effort, Canada started borrowing from the U.S., marking the shift in its financial orientation from Britain toward the United States (Granatstein, 1989).

New taxes or tax increases? Yes. During World War 1, Canadian taxation was strongly increased. In 1917, an income tax on private and corporate income was introduced, which had been rejected earlier in 1915 (Bryan Pontifex, 1917). The base rate was 4%, with exemptions for lower-income households. Surtaxes depended on income brackets initially ranging from 2%-25%. An additional excess profit tax was levied on corporate profits above prewar levels since 1916,

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

including a retroactive taxation of 1915 profits (The Royal Bank of Canada, 1917). The associated rates were increased up to 60% in follow-up acts. Tariffs were also subject to temporary surtaxes (Roberts, 2023). Excise tax rates were increased for alcohol, tobacco, and luxury goods. Services like providing legal documents were subjected to temporary stamp taxes. After the war. the excess profits tax was fully rolled back. Tariff surtaxes were also abolished. Although mostly abolished by 1919, excise rates still remained above prewar levels. The income tax, introduced as a temporary measure, became a permanent tax.

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Canada, 1935: Modest naval expansion

Figure E1: Total spending and revenues

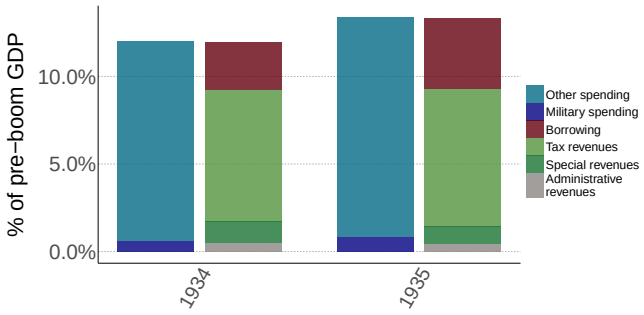


Figure E2: Cumul. change in spending, debt, revenues

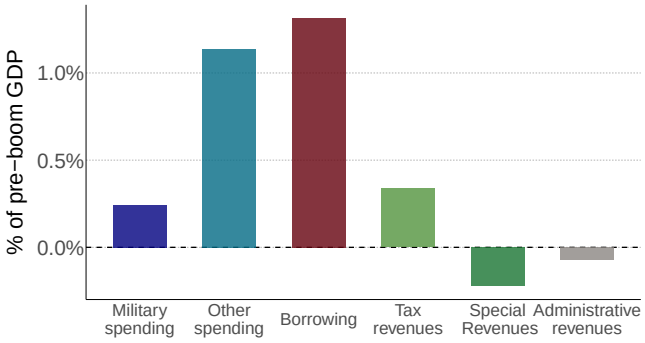


Figure E3: Spending breakdown (cumul. change)

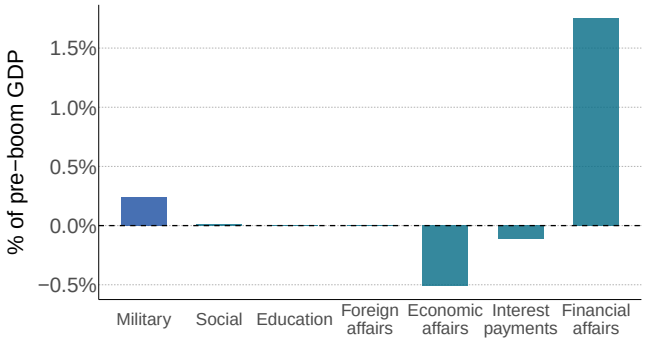
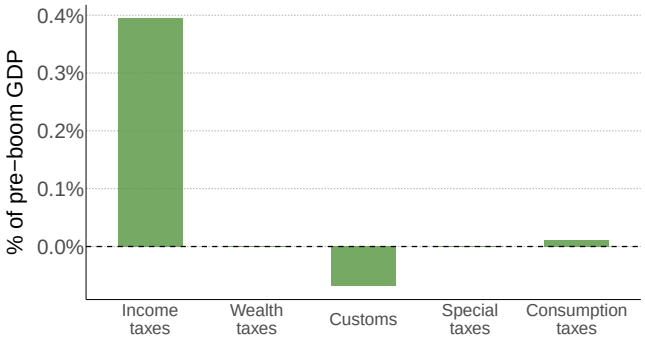


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.24 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 75.71 % **Average tax growth[1]:** 7.77 %

Historical context – exogenous trigger? No. Canada's mid 1930s naval buildup was small, gradual, and shaped by domestic politics, including strong anti-war sentiment in the population (Tucker, 1962). The buildup occurred against a backdrop of deteriorating external conditions, including Germany's open rearmament after 1935, Britain's requests that the Dominions strengthen regional forces, and Japanese expansion in East Asia. These developments did, however, not create an acute fear of invasion or war. Instead, the government's focus was on protecting Canadian neutrality (Rawling, 2017).

New taxes or tax increases? No. We do not find evidence for tax increases in connection to higher defense spending. The Income War Tax Act and the Special War Revenue Act were changed in 1935, including the introduction of a permanent gift tax, but the changes were limited and the names stemmed from World War 1, with no clear link to the ongoing spending surge (Parliament of Canada, 1935).

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Canada, 1939-1944: World War 2

Figure E1: Total spending and revenues

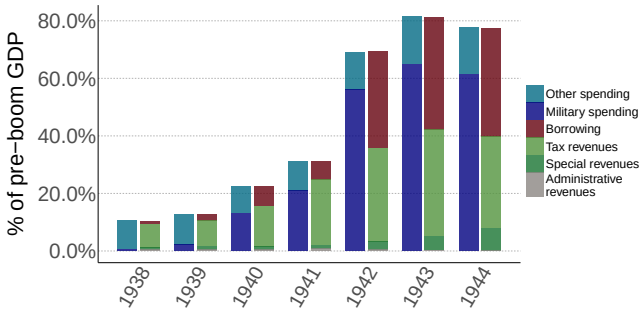


Figure E2: Cumul. change in spending, debt, revenues

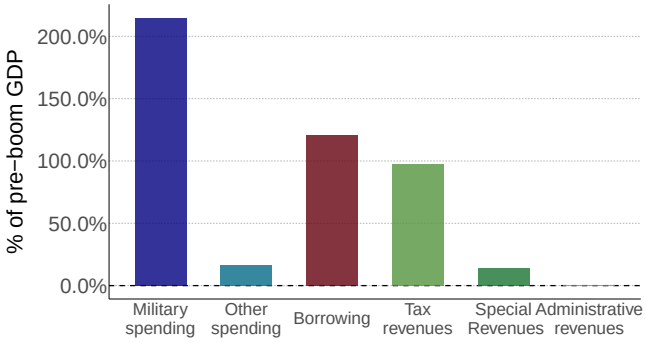


Figure E3: Spending breakdown (cumul. change)

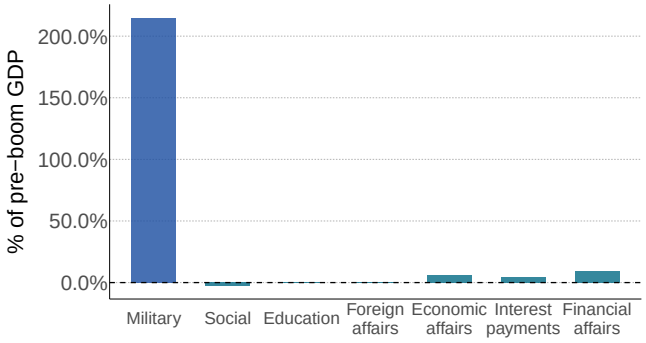
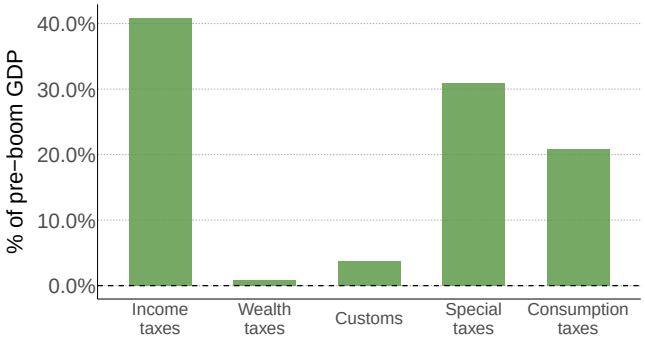


Figure E4: Tax revenue breakdown (cumul. change)



Size: 214.99 % of pre-boom GDP **Duration:** 6 years **Financing:** Mixed
Major war boom: Yes **Average debt-to-GDP[1]:** 64.24 % **Average tax growth[1]:** 10.24 %

Historical context – exogenous trigger? Yes. After Germany invaded Poland on 1 September 1939, Canada declared war on 10 September, which set in motion large-scale industrial mobilization and troop recruitment. Unlike in 1914, Canada did not automatically enter the war with Britain. Under the 1931 Statute of Westminster, Canada had full autonomy over foreign policy, but its decision was externally driven (Rossignol, 1992). Canada's security and economy were deeply tied to Britain, and a German victory in Europe would have left Canada geopolitically isolated. Public opinion also shifted rapidly in favor of supporting Britain once the scale of German aggression became clear. The fall of France in the summer of 1940 left Canada, after Britain, the second most powerful adversary Germany faced until the United States entered the war (Stacey, 1970). Canada ultimately mobilized more than one million men and women, and the Department of Munitions and Supply transformed the country into a major war economy, producing thousands of aircraft, hundreds of ships, and tens of thousands of military vehicles (Kennedy, 1950; Higgins, 1944).

New taxes or tax increases? Yes. Over the course of World War 2, Canada strongly increased personal income taxes (20% surtax) as well as corporate income taxes. The government also introduced an excess profits tax and estate taxes, and increased excise taxes, for example on

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

vehicles, and general sales taxes. The tax base was broadened substantially and exemptions were reduced. After the war, the National Defense Tax and the Excess Profits Tax were abolished. Sales and excise tax rates were reduced, as were personal income tax rates, although these remained clearly above prewar levels. Also the broader tax base persisted, with roughly 2 percent of the population paying income tax in 1938 compared to 25 percent in 1954. In addition, corporate income tax rates were notably higher in the late 1940s than at the start of the decade. The original tax acts were not accessible for most of these wartime taxes. Canada's Statistical Yearbook of 1940 (Dominion Bureau of Statistics, 1940) as well as Di Matteo (2017) provide very good overviews.

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Canada, 1950-1952: Involvement in Korean War

Figure E1: Total spending and revenues

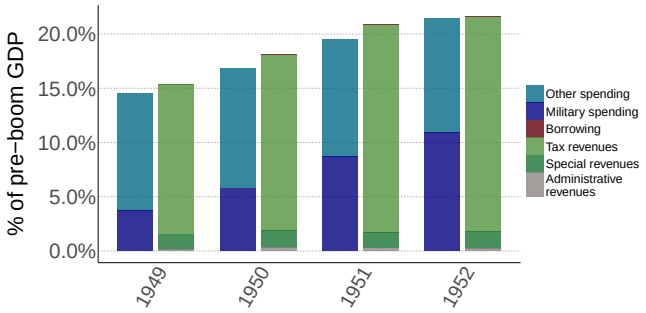


Figure E2: Cumul. change in spending, debt, revenues

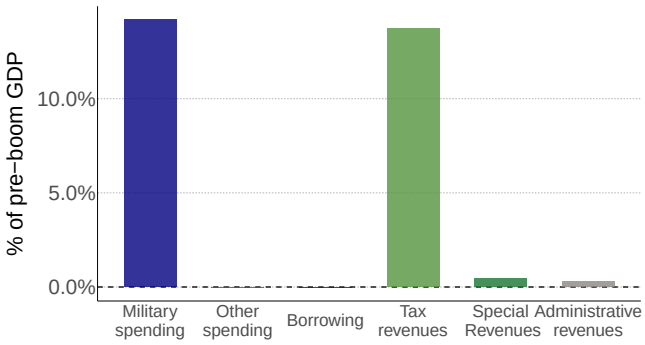


Figure E3: Spending breakdown (cumul. change)

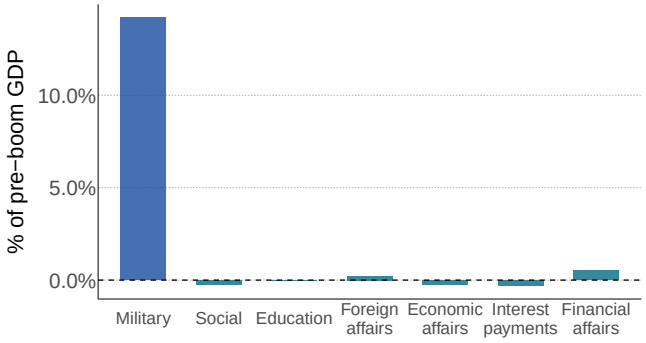
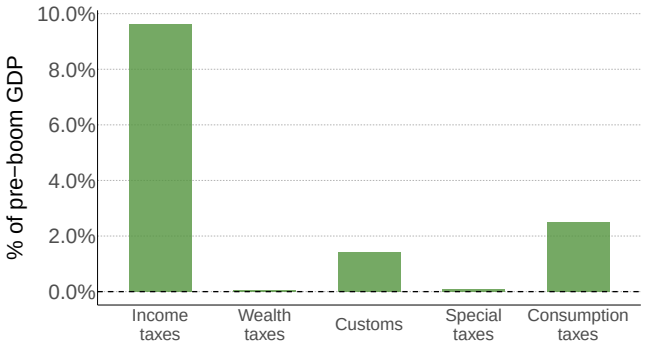


Figure E4: Tax revenue breakdown (cumul. change)



Size: 14.20 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 76.44 % **Average tax growth[1]:** -10.65 %

Historical context – exogenous trigger? Yes. After North Korea invaded South Korea on June 25, 1950, Canada first sent naval and air support and later ground forces under United Nations command to defend the South (Wood, 1966; UN Security Council, 1950). The decision to intervene was driven by the United Nation's call for collective action and Canada's close alliance with the United States, particularly after the formation of NATO in 1949. The Canadian Forces Act and subsequent Orders in Council authorized the deployment of naval, air, and ground units, framing Canada's involvement as a "collective police action" (Rossignol, 1992). The decision to send special ground forced contributed to army expenditures more than tripling - after years of post-WW2 demobilization (Wood, 1966).

New taxes or tax increases? Yes. In early 1951, Canada introduced a temporary defense surtax on income taxes to help finance rising military expenditures during the Korean War (initially a 10% surtax, later to be increased to 20%). The government also imposed special commodity taxes on cars, soft drinks, tobacco, and various other durable goods. These levies were withdrawn in 1952. The defense surtax on incomes was abolished in the 1952–53 budget, although part of the tax increase was maintained through a revised fee schedule (Dominion Bureau of Statistics, 1953).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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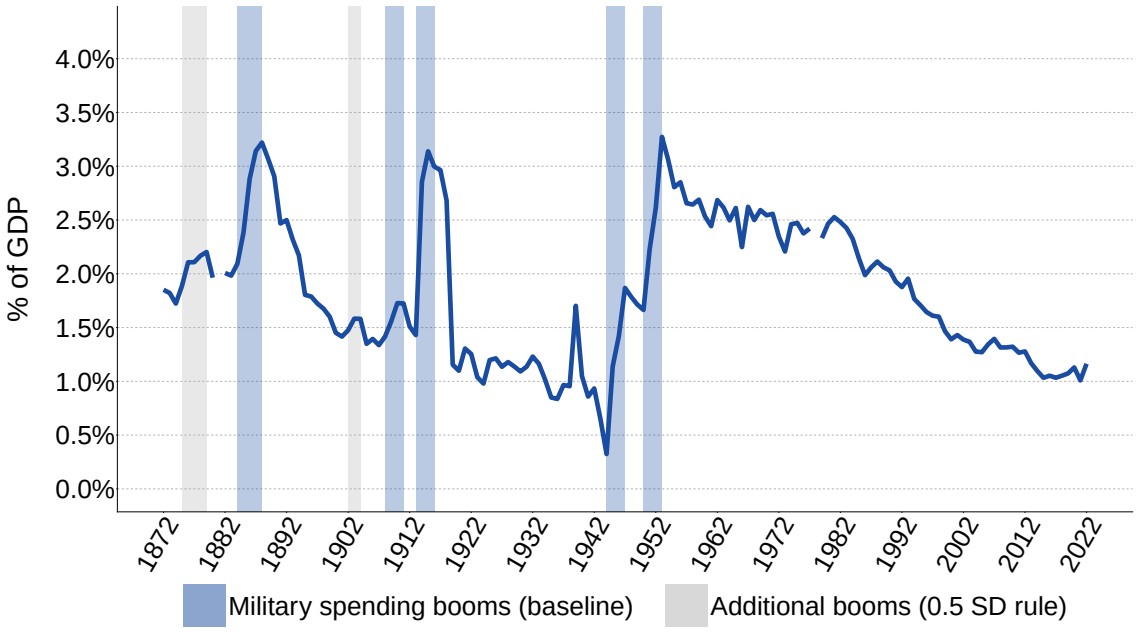
Denmark



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1885-1888	3.98%	4 Years	Taxes	Planned defense upgrades and fortifications
2	1909-1911	1.16%	3 Years	Debt	Defense Act of 1909
3	1914-1916	4.94%	3 Years	Mixed	World War 1
4	1945-1947	3.72%	3 Years	Mixed	Military reorganization
5	1951-1953	3.47%	3 Years	Taxes	Military buildup after joining NATO

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1876-1879	Extension of Copenhagen's costal fortifications
2	1903-1904	Naval expansion and coastal defense efforts

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Denmark, 1885-1888: Planned defense upgrades and fortifications

Figure E1: Total spending and revenues

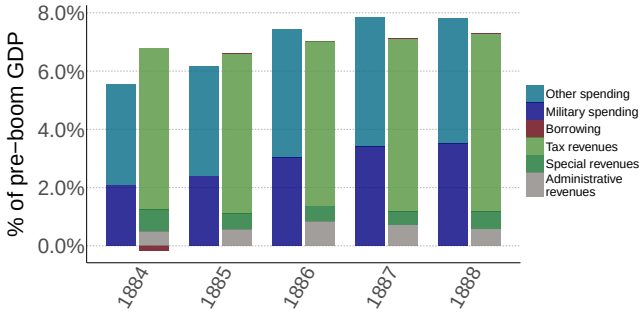


Figure E2: Cumul. change in spending, debt, revenues

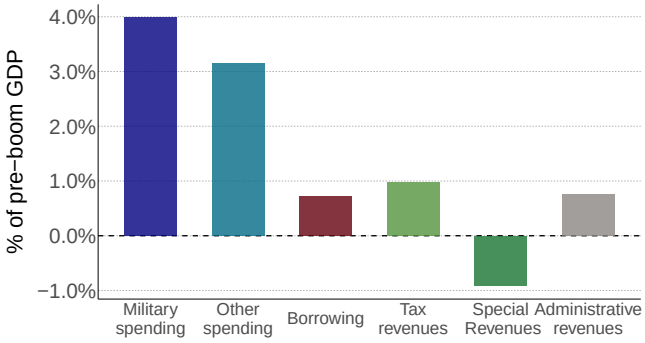


Figure E3: Spending breakdown (cumul. change)

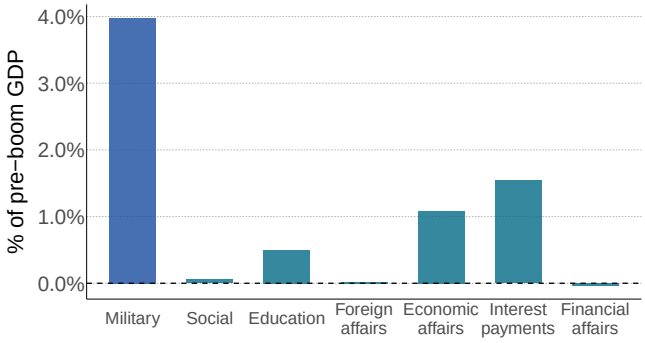
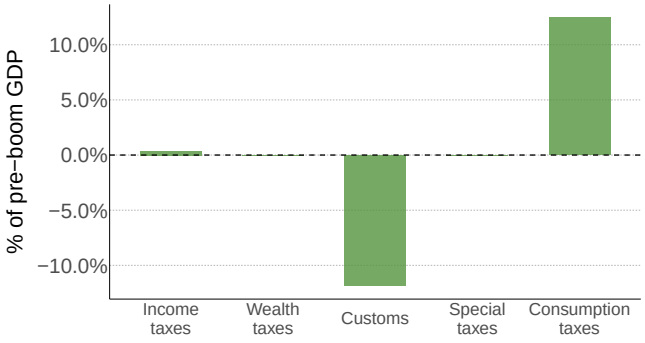


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.98 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 23.61 % **Average tax growth[1]:** 5.45 %

Historical context – exogenous trigger? No. Denmark's defense modernization in 1885 arose primarily from domestic political conflict (The Fortifications of Copenhagen, nd). Conservatives, who dominated the Landsting, supported higher defense spending to expand Copenhagen's fortifications, while liberals in the Folketing repeatedly blocked these initiatives. However, from 1885 onwards, Prime Minister Estrup started to govern through provisional laws that bypassed the Folketing, with the support of King Christian IX. This allowed the government to launch a large-scale fortification program (Roewade, 1911). Despite the threat of rising German military power in this period, the 1885 buildup was primarily a product of domestic political struggle, not a direct reaction to an external shock.

New taxes or tax increases? No. We find no evidence of significant tax increases that were linked to financing the military buildup during 1885–1888.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Denmark, 1909-1911: Defense Act of 1909

Figure E1: Total spending and revenues

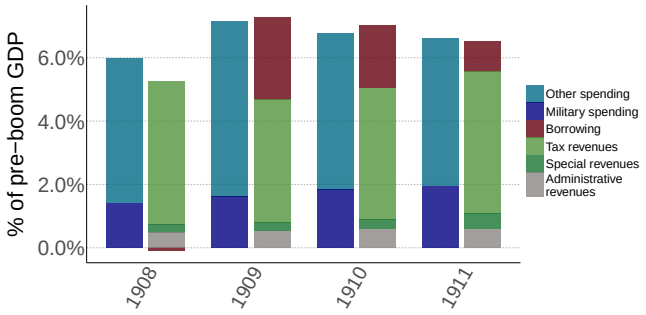


Figure E2: Cumul. change in spending, debt, revenues

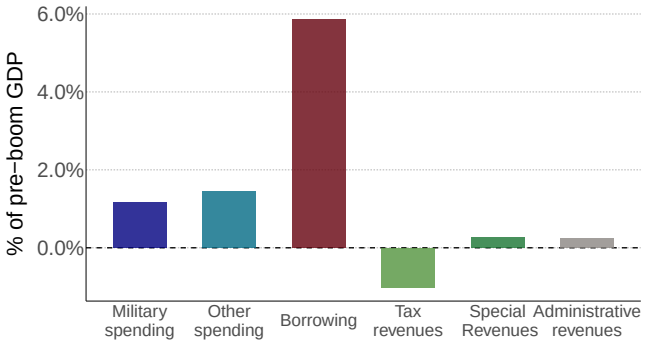


Figure E3: Spending breakdown (cumul. change)

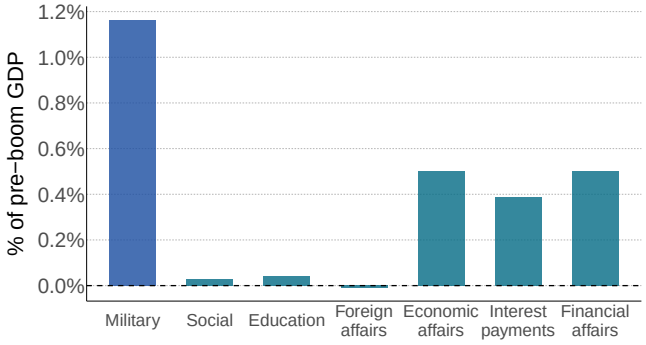
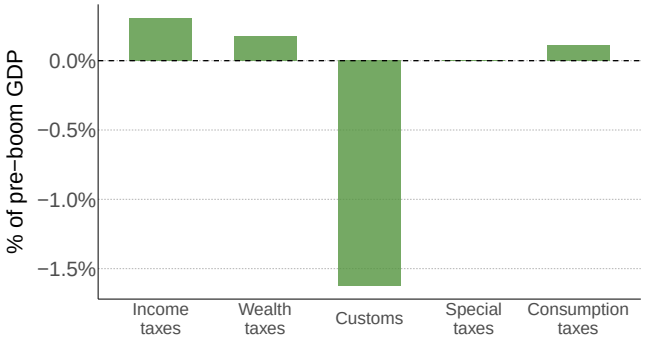


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.16 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 15.31 % **Average tax growth[1]:** 2.92 %

Historical context – exogenous trigger? Yes. Denmark's 1909 Defense Act was driven by external pressures, especially escalating European tensions and Germany's 1908 Flottennovelle, a naval expansion law that accelerated German fleet growth and reinforced Danish concerns about being drawn into a future conflict in the North Sea or the Baltic. The 1909 Defense Act strengthened Denmark's sea fortifications and allocated substantial funds for new coastal defenses (Københavns Befæstning, nd). It also introduced a new "security force" concept to improve mobilization (Clemmesen, 2017). This required the creation of a specialized reserve that could be deployed quickly under "dangerous conditions" (Københavns Befæstning, nd).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup during 1909–1911.

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

Københavns Befæstning (n.d.). Hærlovene af 1909. https://www.vestvolden.info/haerlovene-af-1909-2/. Accessed May 16, 2025.

Denmark, 1914-1916: World War 1

Figure E1: Total spending and revenues

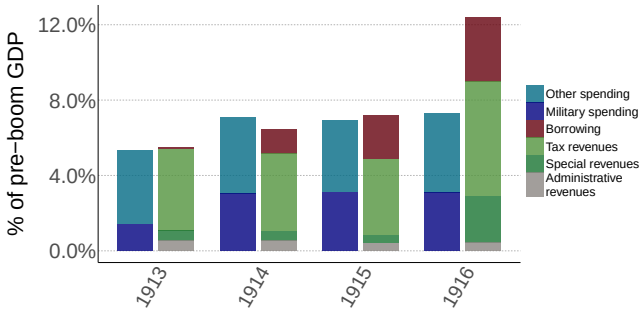


Figure E2: Cumul. change in spending, debt, revenues

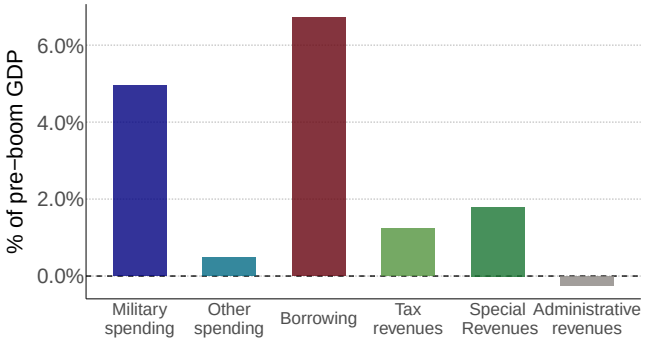


Figure E3: Spending breakdown (cumul. change)

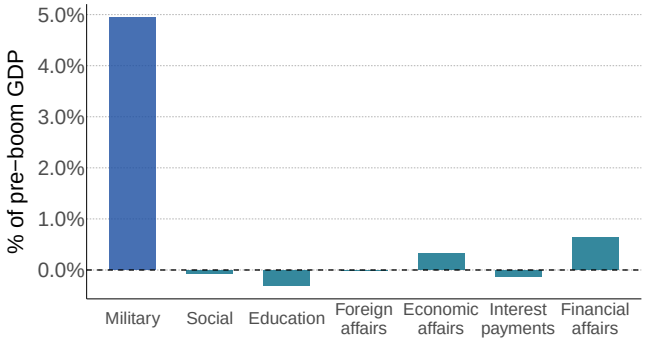
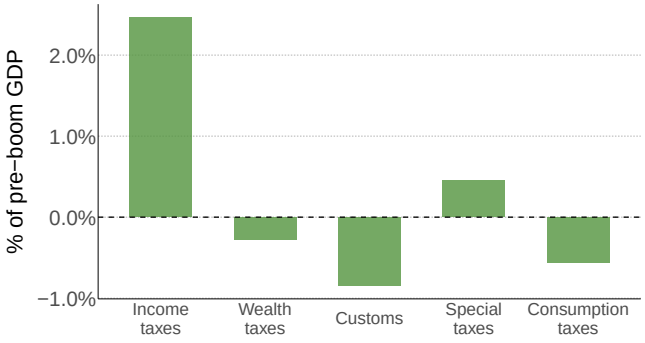


Figure E4: Tax revenue breakdown (cumul. change)



Size: 4.94 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 13.34 % **Average tax growth[1]:** 6.42 %

Historical context – exogenous trigger? Yes. When World War 1 broke out, Denmark was immediately exposed to great power threats. Its position between Germany and Britain required a rapid defensive buildup. The government ordered full mobilization of the army and navy on August 1, 1914. Emergency defense spending and border fortifications followed. Denmark remained neutral throughout the war. The navy protected Danish waters and cleared drifting mines. The army, about 58,000 men at the outset, was concentrated on Zealand to defend Copenhagen because nationwide defense was judged impossible (Sørensen, 2014). As the war continued, tensions grew between military leaders and the government, which viewed the prolonged mobilization as excessive (Blüdnikow, 1989). By 1917, the number of conscripts was reduced (Sørensen, 2014).

New taxes or tax increases? Yes. Denmark sharply increased taxation during World War 1 to finance rising military expenditures. Existing tax rates were raised and several new taxes were introduced, including excise taxes on shipping, alcohol, and stock exchange transactions. An excess profits tax on war-related income was also adopted and became a major revenue source. In 1918–1919 it generated roughly half of total government revenue (Sørensen, 2014). The wartime tax measures were progressive and targeted higher incomes. After the war, the excess profits

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

tax was rolled back in full, but some rate increases and the progressive tax structure endured. Moreover, main fiscal responsibilities had shifted permanently from local authorities to the central government (Petersen and Arne Sørensen, 2018).

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Denmark, 1945-1947: Military reorganization

Figure E1: Total spending and revenues

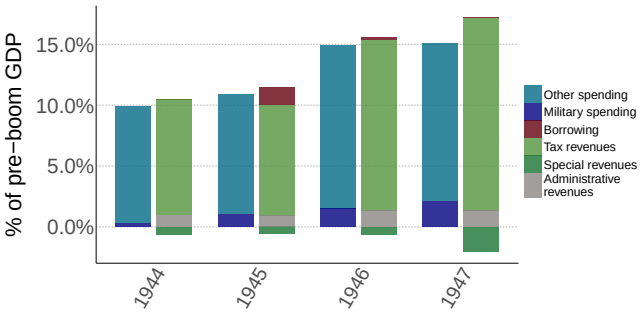


Figure E2: Cumul. change in spending, debt, revenues

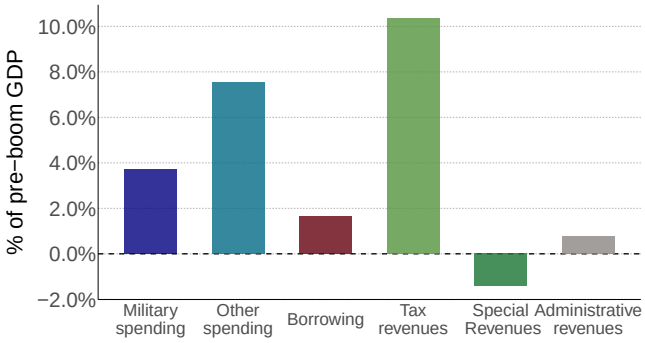


Figure E3: Spending breakdown (cumul. change)

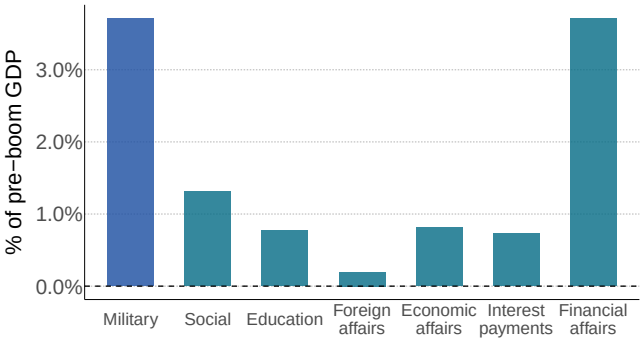
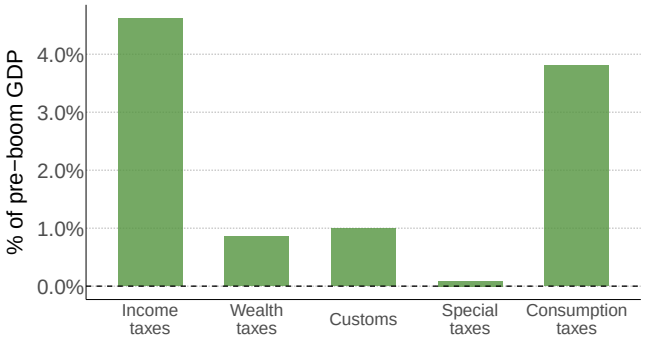


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.72 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 10.86 % **Average tax growth[1]:** 11.01 %

Historical context – exogenous trigger? No. Denmark's 1945–48 military reorganization was primarily an endogenous state-building process, driven by Denmark's political decision to abandon prewar neutrality and reorient its security policy after World War 2. Denmark became a founding member of the United Nations on June 26, 1945, and UN membership required certain military commitments and a more active international role (Sørensen, nd). At home, the government formalized the Danish Home Guard and supplied the resources it needed to develop into a functioning component of national defense (Halck, 1954). By 1948, Denmark had completed the reorganization of its military, created a unified air force, and enacted the Home Guard law (Hillingsø, 1997).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup during 1945–1947. In 1947, Denmark enacted a temporary one-year capital levy to fund reconstruction (O'Donovan, 2021). Moreover, special taxes on war-related income (similar to the 1914-1916 excess profits tax) were levied until 1947.(Petersen and Arne Sørensen, 2018).

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Sørensen, A. (n.d.). Lektion 8. Efterkrigstiden, 1945-1973. 2. Danmark i Norden, i Europa og i Vestblokken. Open Online Course i danmarkshistorie. Aarhus Universitet. https://auinstallation47.cs.au.dk/open-online-course/lektioner/lektion-8-efterkrigstiden-1945-1973/2-danmark-i-norden-i-europa-og-i-vestblokken. Accessed May 16, 2025.

Denmark, 1951-1953: Military buildup after joining NATO

Figure E1: Total spending and revenues

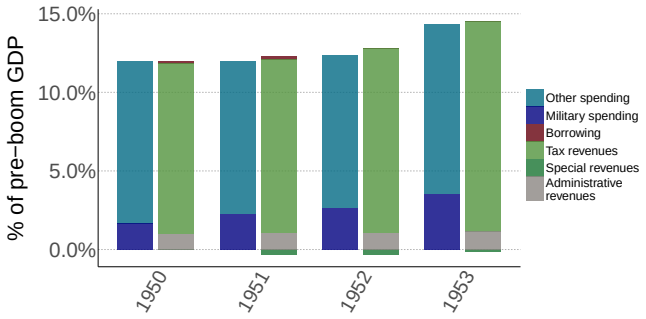


Figure E2: Cumul. change in spending, debt, revenues

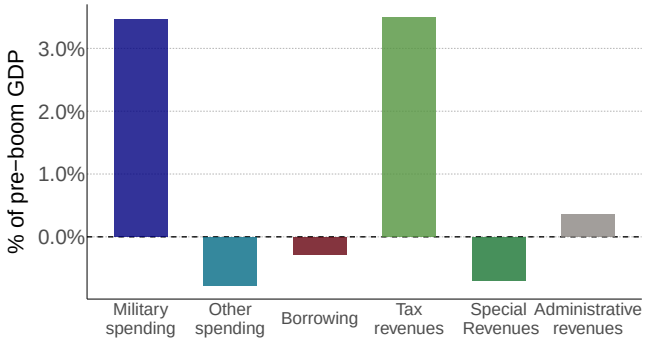


Figure E3: Spending breakdown (cumul. change)

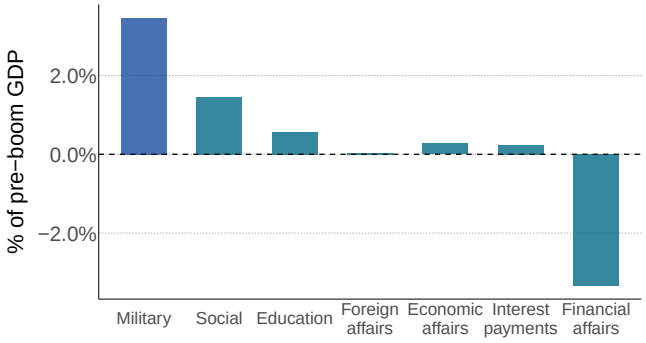
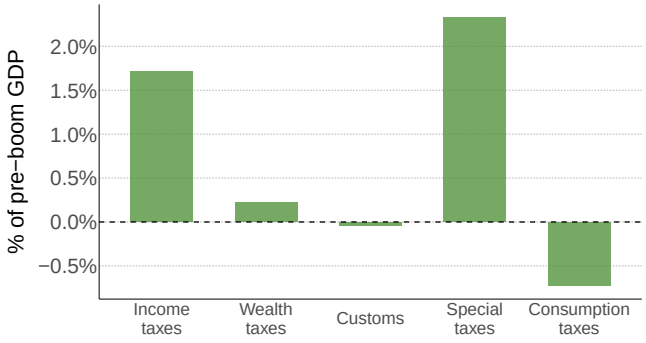


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.47 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 13.07 % **Average tax growth[1]:** -5.08 %

Historical context – exogenous trigger? Yes. Denmark's military buildup in the early 1950s was an externally driven response to the outbreak of the Korean War in June 1950 and to strong U.S. pressure for NATO-wide rearmament (Danielsen, nd). These developments, together with substantial U.S. military aid following Denmark's entry into NATO in 1949, convinced Danish leaders that postwar demobilization and residual neutrality were no longer tenable. Denmark therefore adopted the Defense Acts of 1950 and 1951, which mandated a major reorganization of the armed forces. The acts created a unified Ministry of Defense, established an independent Air Force, and introduced a chief of defense with a dedicated staff, reshaping the command structure (Hillingsø, 1997). The reforms also expanded mobilization capacity based on conscription. Denmark increased the length of service to 18 months by 1953, and defense spending rose sharply (Danielsen, nd).

New taxes or tax increases? Yes. Denmark adopted a defense tax in November 1950 to help finance rising military expenditures as a NATO member. It applied additional, progressive rates from 3 percent to 20 percent on income above a specified threshold. Although introduced as a temporary measure, it was later extended until 1956. Together with an income surtax enacted at

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

the same time, the measure raised the top marginal tax rate to roughly 75 to 80 percent. The defense tax was formally abolished in 1957, but effective tax burdens changed little because a simultaneous tax reform offset the repeal (Christensen, 2003).

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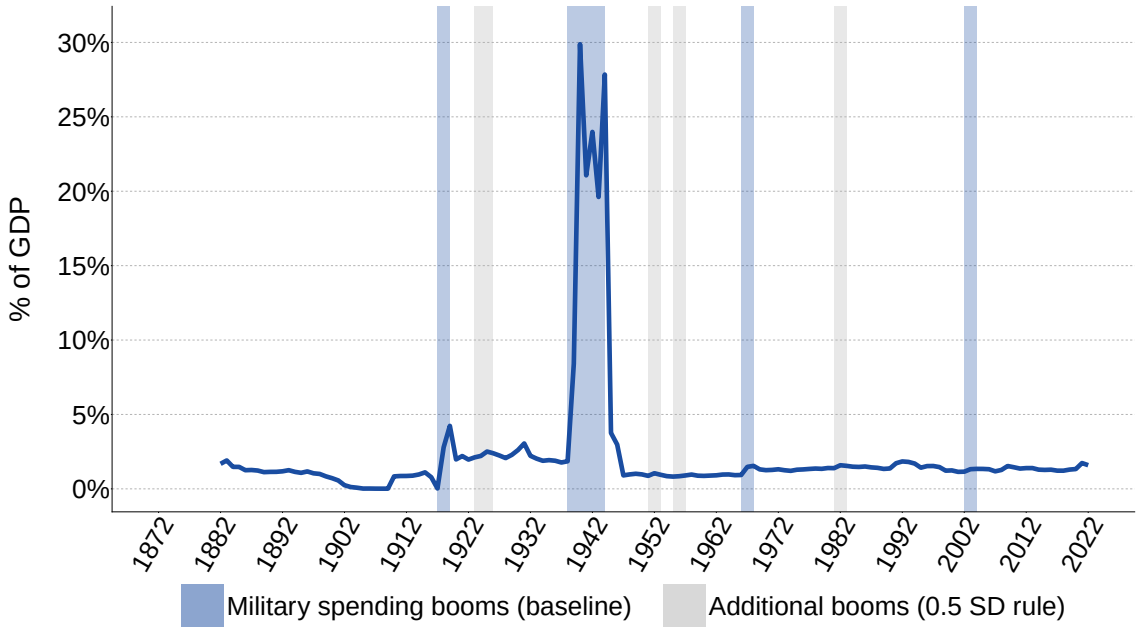
Finland



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1918-1919	6.80%	2 Years	Debt	Finnish Civil War
2	1939-1944	115.89%	6 Years	Debt	Winter War and World War 2
3	1967-1968	1.27%	2 Years	Taxes	Planned military modernization
4	2003-2004	0.46%	2 Years	Debt	Defense reforms and internationalization

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1924-1926	-
2	1952-1953	Establishment of air force
3	1956-1957	-
4	1982-1983	Modernization and replacement of equipment

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Finland, 1918-1919: Finnish Civil War

Figure E1: Total spending and revenues

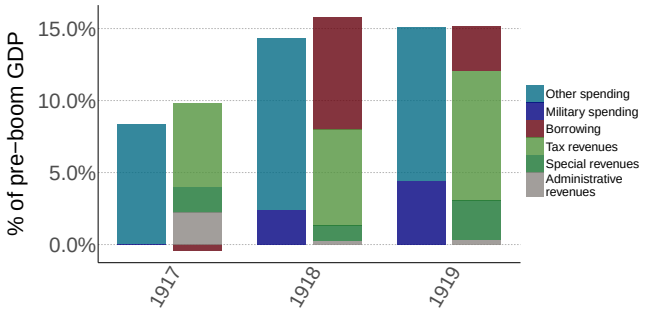


Figure E2: Cumul. change in spending, debt, revenues

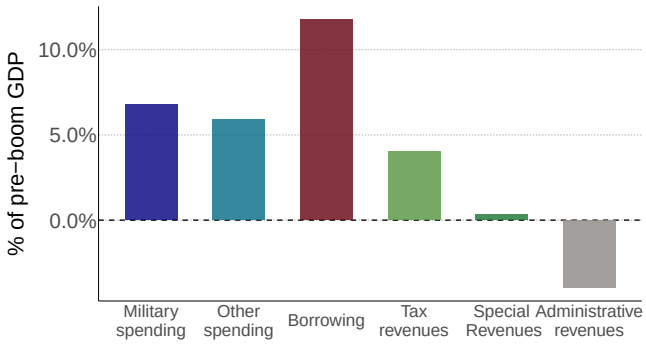


Figure E3: Spending breakdown (cumul. change)

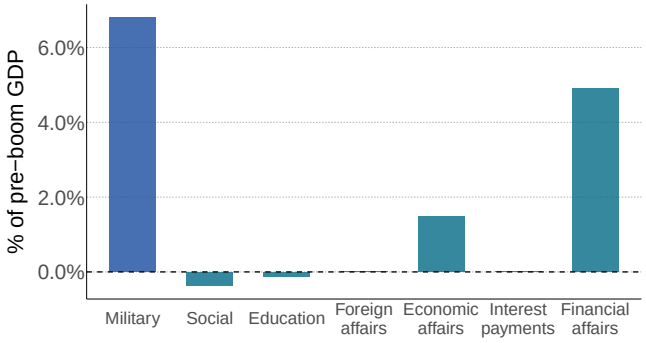
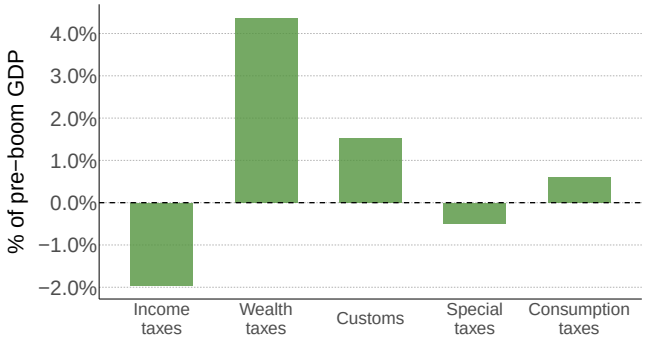


Figure E4: Tax revenue breakdown (cumul. change)



Size: 6.80 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 31.19 % **Average tax growth[1]:** -3.09 %

Historical context – exogenous trigger? Yes. Finland's emergency mobilization in 1918 followed the collapse of Imperial Russia, the October Revolution of 1917, and the power vacuum and Finnish Civil War that ensued. Finland declared independence on 6 December 1917, yet armed Russian units remained in the country, while domestic tensions escalated. In January 1918, the Finnish People's Delegation, composed of leading Social Democrats and supported by the Finnish Red Guards, proclaimed the Finnish Socialist Workers' Republic, creating a rival government to the recognized Finnish state. The Finnish government responded by organizing the White Army to secure independence and restore its authority. Both the Reds and the Whites mobilized large numbers of inexperienced troops (Tepora, 2014a,b). The Whites gained a decisive advantage from German trained Finnish volunteers and from the arrival of about 13,000 German troops (Smith, 1955). The civil war, rooted in deep social and political divisions, ended with the victory of the Whites. Between 1918 and 1919, Finland formalized the White forces as the new national army (Solsten and Meditz, 1990).

New taxes or tax increases? Yes. In 1918, Finland prolonged the temporary income taxation introduced in World War 1 (Haapala, 2025; Genovese et al., 2016). In World War 1, Finland had

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

levied a progressive (excess) income tax on high private and corporate incomes, and excises to finance war expenses. After World War 1, there was growing political resentment against further taxation, despite high government expenses to rebuild a strong army of now independent Finland. As fiscal pressure increased, however, the war taxes were extended in 1918 and further broadened to cover lower incomes in the following years. Finland also introduced a temporary wealth tax in 1919. In 1920, the taxation system was restructured, and much of the wartime taxation was made permanent through the adoption of a progressive income tax with a top rate of about 20 percent and the establishment of a regular property tax (Genovese et al., 2016).

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Finland, 1939–1944: Winter War and World War 2

Figure E1: Total spending and revenues

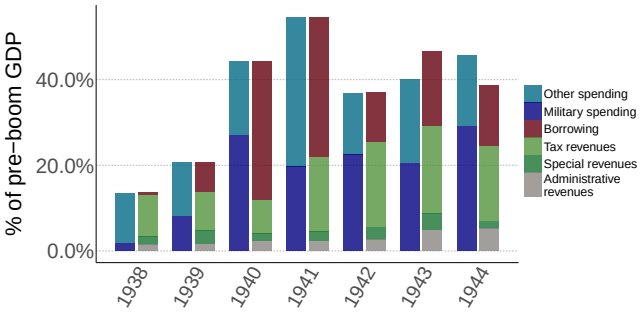


Figure E2: Cumul. change in spending, debt, revenues

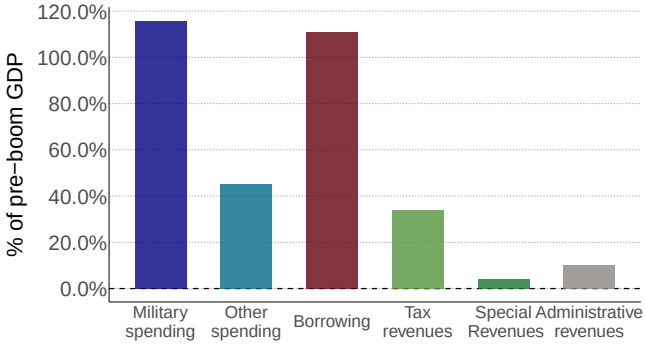


Figure E3: Spending breakdown (cumul. change)

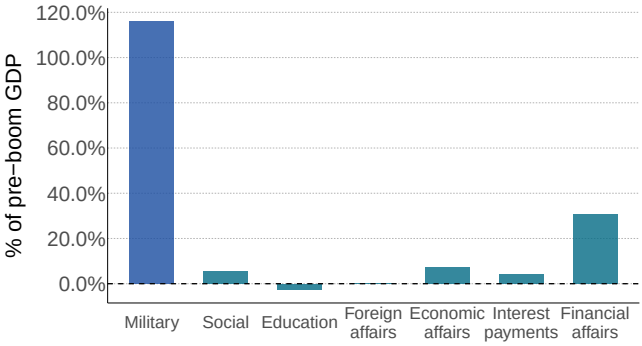
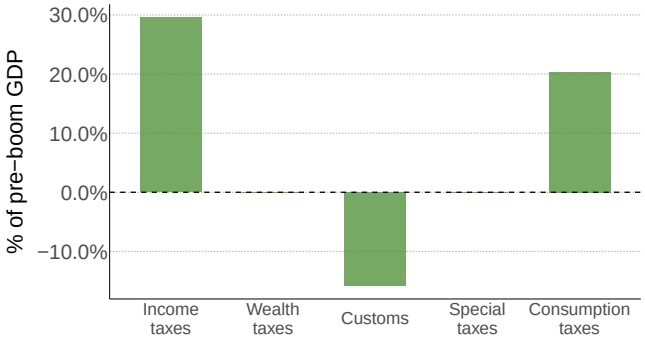


Figure E4: Tax revenue breakdown (cumul. change)



Size: 115.89 % of pre-boom GDP **Duration:** 6 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 65.22 % **Average tax growth[1]:** 5.84 %

Historical context – exogenous trigger? Yes. The 1939–40 buildup was driven entirely by Soviet aggression. After failed border negotiations in autumn 1939, the Soviet Union invaded Finland on November 30, 1939. The attack triggered the Winter War and forced Finland into full mobilization. Finland expanded its army from roughly 30,000 peacetime personnel to more than 300,000 troops within weeks and redirected all resources to national defense. Moscow expected a quick victory but encountered determined Finnish resistance (Solsten and Meditz, 1988). Although heavily outnumbered, Finland held out through the winter. The Treaty of Moscow (March 1940) ended the conflict and required Finland to cede territory to the USSR. Continued Soviet pressure after 1940 pushed Finland to seek German support. In June 1941, Finland entered the so called Continuation War alongside Germany to recover lost territory and to advance into Eastern Karelia (Hannikainen, 2020). After Finland's successful defense during the large Soviet offensive of summer 1944 and a subsequent change in government, Finland signed the Moscow Armistice on September 19, 1944. Finland then fought the Lapland War, expelling German forces as required under the armistice (Enander et al., 2025).

New taxes or tax increases? Yes. During World War 2, Finland relied heavily on new and extended taxation. Already in 1938, the government feared war and surtaxes of about 20 percent

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

were introduced on income (private and corporate) and on wealth taxes. Later, tax reforms adopted to fund the war effort also produced lasting structural changes. A turnover tax was introduced in 1941, and income taxation was strengthened in 1943 with the introduction of a pay-as-you-earn (PAYE) system (Kettunen, 2018). After the war, only parts of the wartime tax increases were rolled back. The turnover tax and the PAYE system became permanent.

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Finland, 1967–1968: Planned military modernization

Figure E1: Total spending and revenues

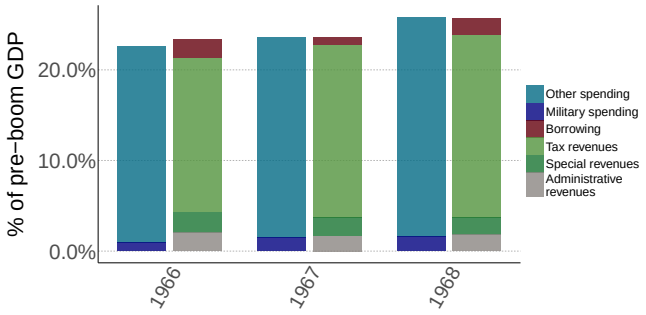


Figure E2: Cumul. change in spending, debt, revenues

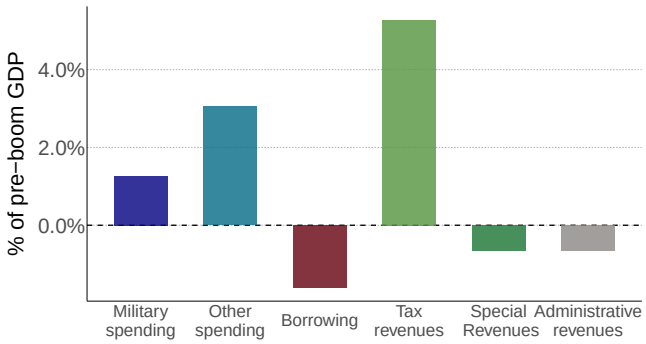


Figure E3: Spending breakdown (cumul. change)

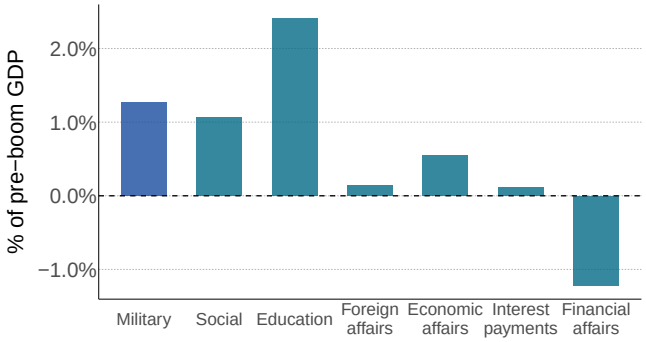
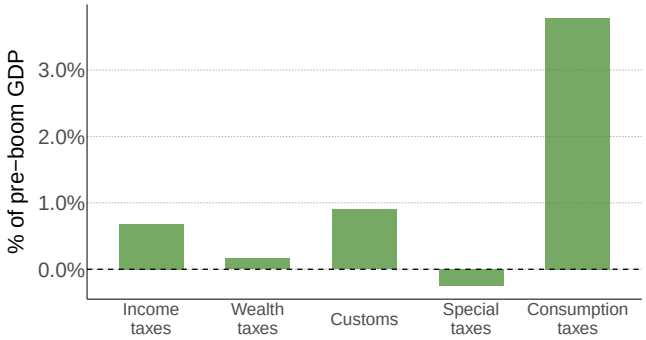


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.27 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 15.76 % **Average tax growth[1]:** 9.78 %

Historical context – exogenous trigger? No. In 1967 Finland faced no major external security crisis or sudden defense shock. The procurement programs implemented in 1967/68, including air force and artillery updates, had long been scheduled. They were also deliberately balanced between Soviet and Western suppliers to preserve political neutrality and autonomy (Pajunen, 1968). Later interpretations linking the buildup to events such as the 1968 Soviet invasion of Czechoslovakia are retrospective and do not reflect Finland's situation in 1967 (Nokkala, 2022). The country operated under the stable framework of the 1948 Agreement of Friendship, Cooperation and Mutual Assistance (YYA Treaty) with the Soviet Union. Defense policy focused on planned, incremental modernization within tight budget constraints, as national resources were directed toward welfare and industrial development.

New taxes or tax increases? No. We find no evidence of significant tax increases that were linked to financing the military buildup during 1967–1968.

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Finland, 2003-2004: Defense reforms and internationalization

Figure E1: Total spending and revenues

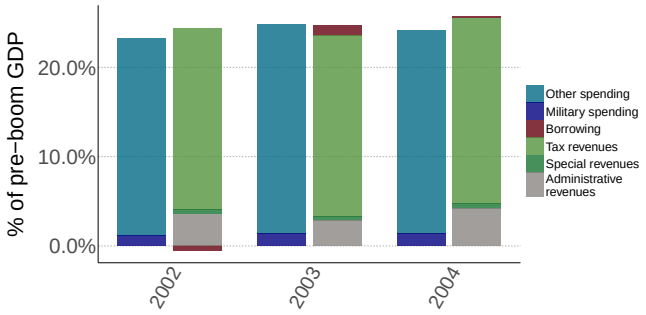


Figure E2: Cumul. change in spending, debt, revenues

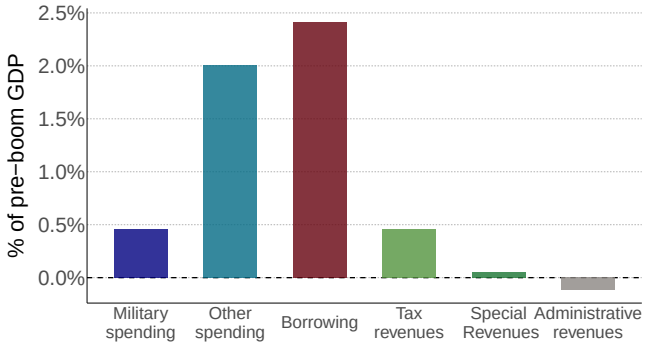


Figure E3: Spending breakdown (cumul. change)

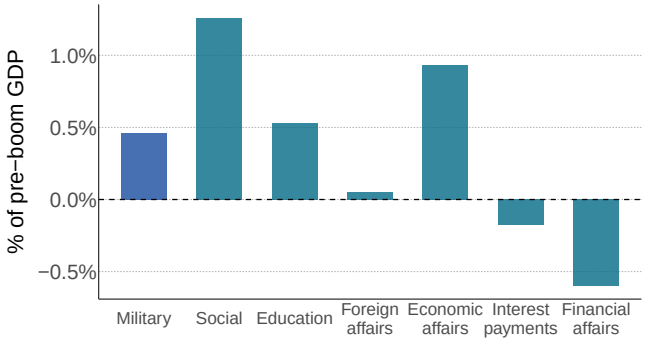
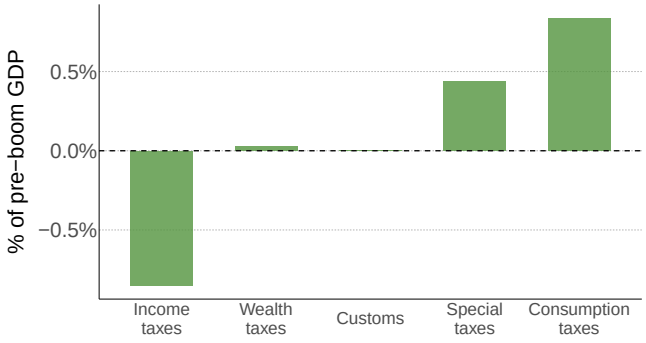


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.46 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 42.70 % **Average tax growth[1]:** 3.35 %

Historical context – exogenous trigger? No. Finland's 2003 defense adjustments were limited in scale and not motivated by external threats or shocks. The reforms aimed to establish new rapidly deployable, volunteer based international units for participation in peacekeeping operations, crisis management missions, and multinational military exercises and partnerships (Finnish Ministry of Defence, 2004; Ministry for Foreign Affairs of Finland, 2004). Throughout this period Finland maintained its official policy of military non alignment (Finnish Ministry of Defence, 2003).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing of higher military expenses 2003–2004. In contrast, corporate taxes were reduced in 2005 as part of a reform announced in 2003.(Kari et al., 2008).

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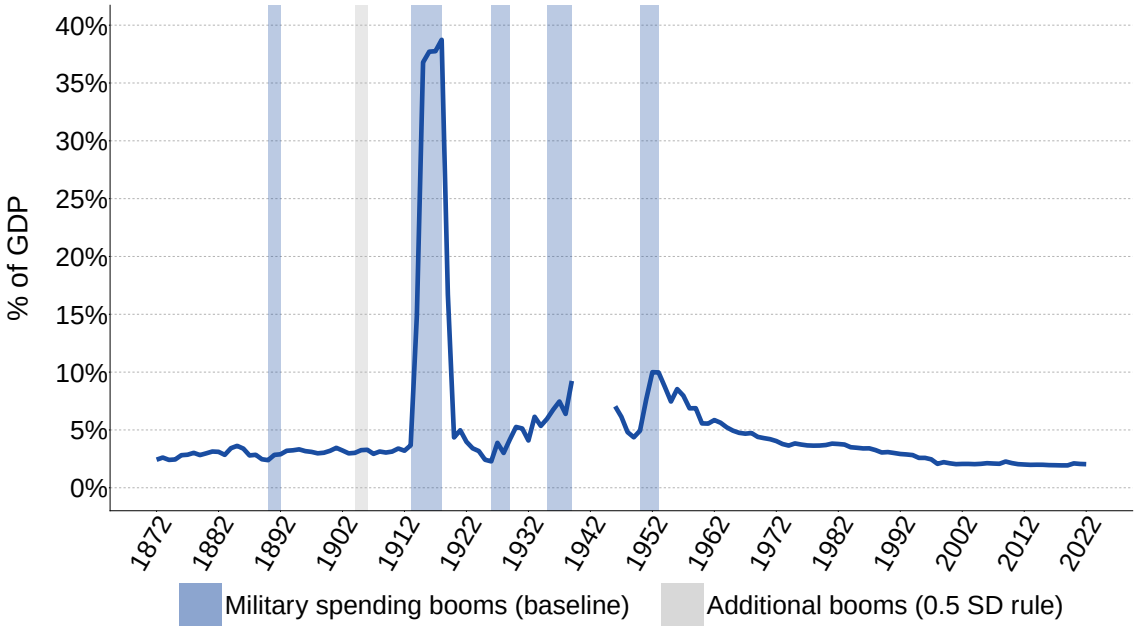
France



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1891-1892	1.08%	2 Years	Taxes	Naval buildup after Franco-Russian alliance
2	1914-1918	107.09%	5 Years	Debt	World War 1
3	1927-1929	4.82%	3 Years	Taxes	Construction of the Maginot Line
4	1936-1939	6.91%	4 Years	Debt	Growing threats from Nazi Germany
5	1951-1953	15.18%	3 Years	Mixed	Indochina War and Korean War

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1905-1906	-

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

France, 1891-1892: Naval buildup after Franco-Russian alliance

Figure E1: Total spending and revenues

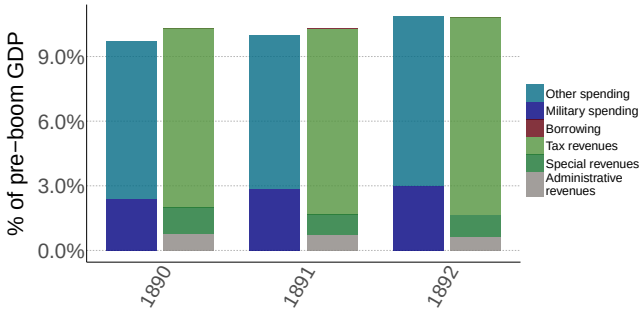


Figure E2: Cumul. change in spending, debt, revenues

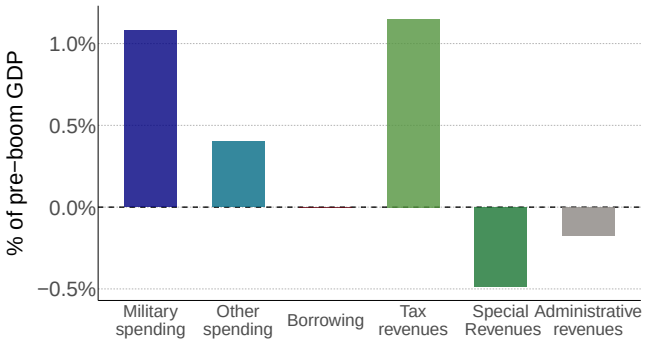


Figure E3: Spending breakdown (cumul. change)

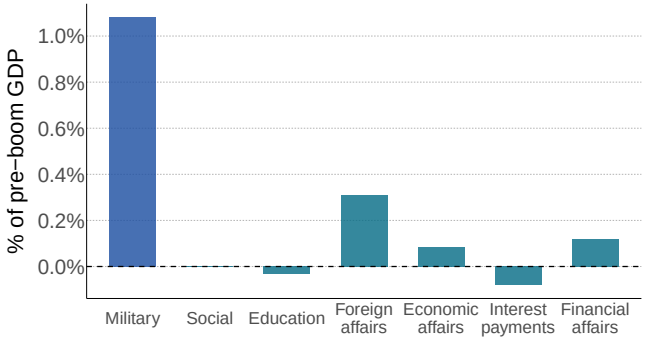
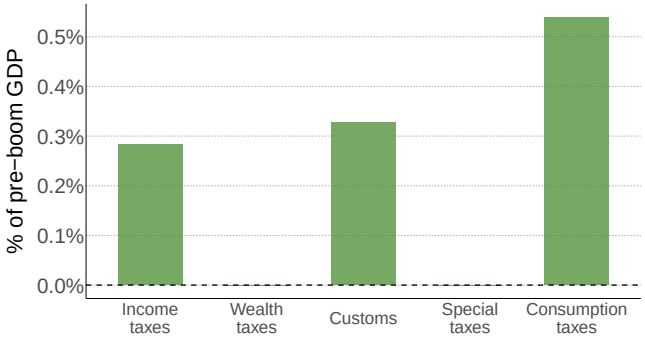


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.08 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 81.33 % **Average tax growth[1]:** -5.68 %

Historical context – exogenous trigger? Yes. France's naval buildup in the early 1890s was driven by its geopolitical reorientation after Bismarck's surprising dismissal by the German Kaiser in 1890. The sacking of Bismarck led Germany not to renew the German-Russian Reinsurance Treaty and thereby opened the way for the Franco-Russian Alliance of 1891. The new alliance encouraged France to strengthen its overall military posture against the Triple Alliance of Germany, Austria-Hungary, and Italy. France launched a significant naval expansion, building more seaworthy armored cruisers and pre-dreadnought battleships (Clayton, 2014). It also reinforced its Mediterranean presence in response to Italian naval growth, rising German interest in Morocco, and British dominance of global sea routes, including via technological investments such as early submarines (Campbell, 1979).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup during 1891–1892.

References

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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France, 1914-1918: World War 1

Figure E1: Total spending and revenues

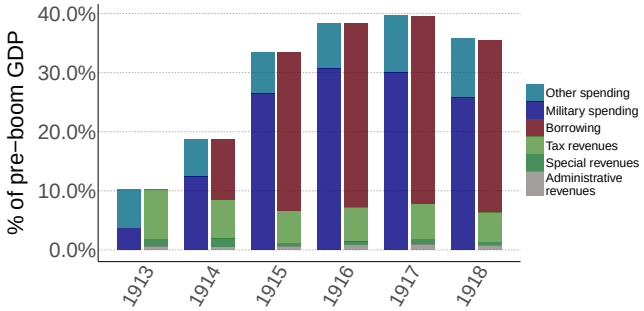


Figure E2: Cumul. change in spending, debt, revenues

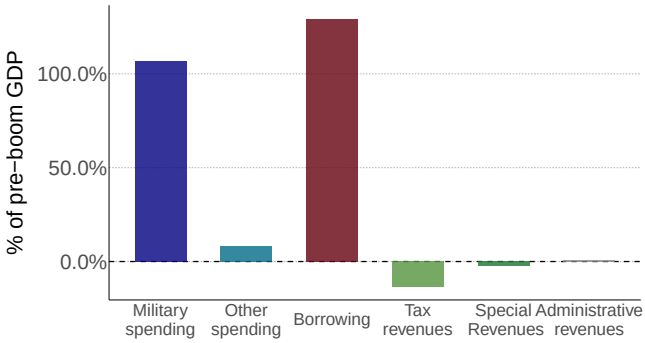


Figure E3: Spending breakdown (cumul. change)

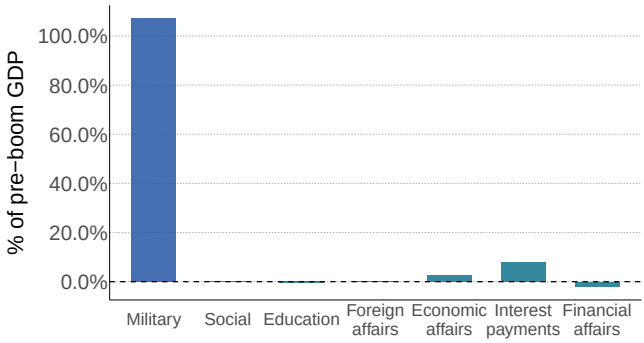
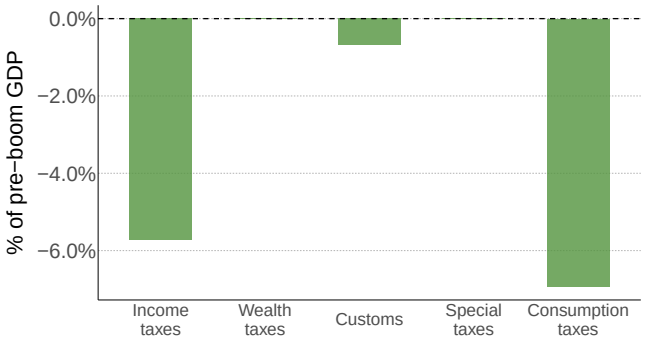


Figure E4: Tax revenue breakdown (cumul. change)



Size: 107.09 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 135.64 % **Average tax growth[1]:** 9.67 %

Historical context – exogenous trigger? Yes. France's 1914 mobilization was a direct response to the exogenous shocks that triggered World War I: Austria-Hungary's declaration of war on Serbia on July 28, Germany's mobilization against Russia on August 1, and the German invasion of Belgium and France on August 3–4. After German forces violated its territory (Poincaré, 1914), France entered the war. Although France had pledged support to Russia, its role in the July Crisis was secondary and reactive, shaped by a domestic climate not inclined toward aggression (Beaupré, 2014). Once the war broke out, however, France mobilized rapidly and drew on colonial troops from North and West Africa. The government implemented Plan XVII, its prewar operational strategy against Germany, which failed and contributed to the transition to a prolonged war of attrition (Hervet, nd). War spending rose far beyond initial expectations (Baubeau, 2014).

New taxes or tax increases? Yes. During World War 1, France strongly increased the tax burden - with new taxes, higher tax rates and an expanded tax base. The government introduced a new income tax, which had been drafted before the war, passed in 1914, and applied from 1917. This tax covered personal income, corporate profits, and income from real estate. In addition, France introduced a temporary excess profits tax with rates of 50 to 80 percent (Hautcœur and

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

Grotard, 2005; Tristram, 2018). A special tax on payments, later the permanent turnover tax, was also adopted, and customs, stamp, excise, and consumption duties were raised (Tristram, 2018). Most temporary wartime measures, including the excess profits tax, were rolled back after 1918, but the income tax and turnover tax became permanent features of the fiscal system (Fisk, 1922).

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France, 1927–1929: Construction of the Maginot Line

Figure E1: Total spending and revenues

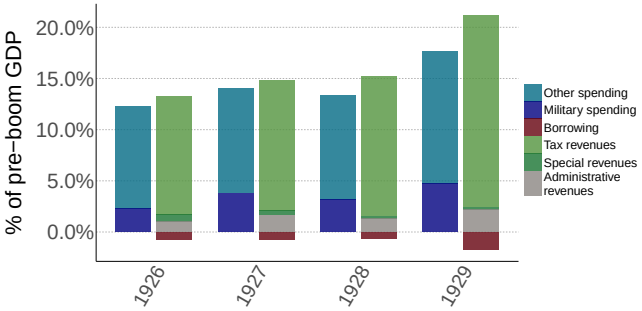


Figure E2: Cumul. change in spending, debt, revenues

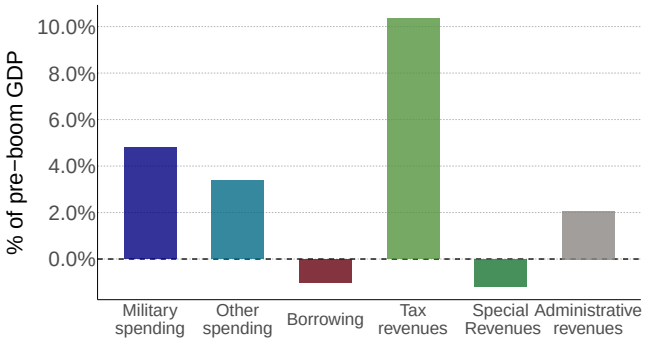


Figure E3: Spending breakdown (cumul. change)

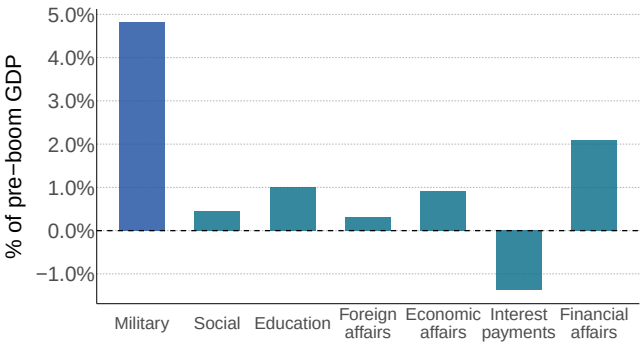
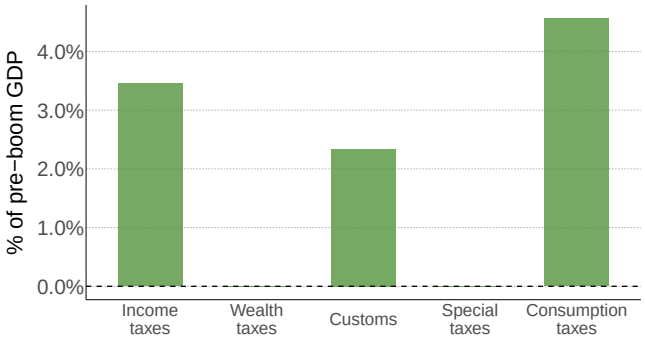


Figure E4: Tax revenue breakdown (cumul. change)



Size: 4.82 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 115.53 % **Average tax growth[1]:** 8.15 %

Historical context – exogenous trigger? Yes. France's decision to build the Maginot Line was a response to its worsening external security environment and to international diplomatic events, with large appropriations for a fortification system along the eastern border approved in 1927–28 (Kovacs, 1949). Main triggers included the Locarno Treaty of 1925, which restored Germany's diplomatic standing, and France's commitment to evacuate the Rhineland by 1930, a date that was fast approaching and that meant France would lose its strategic territorial buffer. In addition, several reports in foreign and French media in the late 1920s pointed to covert German rearmament, in particular the detailed investigations published in The Manchester Guardian in December 1926. These developments weakened France's perceived defensive position from 1927 on. Experiences from World War 1, including the failed Plan XVII offensive, reinforced the belief within France that better fortified defenses were indispensable. Against this background, France launched the Maginot Line project as a strategic and psychological shield against German aggression (Kraehe, 1944; Kovacs, 1949).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup during 1927–1929. Tax reforms during that period are rather associated with Poincaré's fiscal stabilization policy (Prati, 1991).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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France, 1936-1939: Growing threats from Nazi Germany

Figure E1: Total spending and revenues

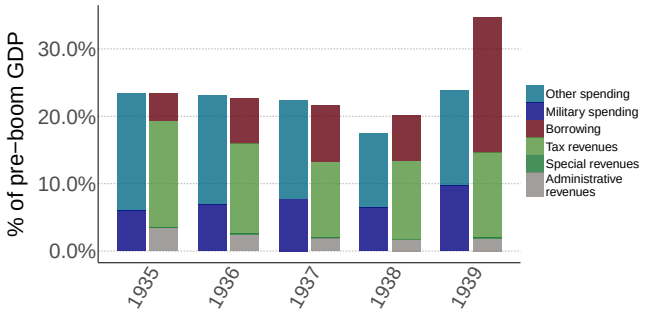

Figure E2: Cumul. change in spending, debt, revenues

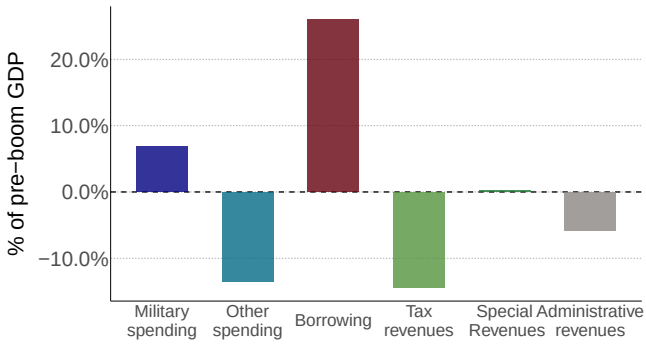

Figure E3: Spending breakdown (cumul. change)

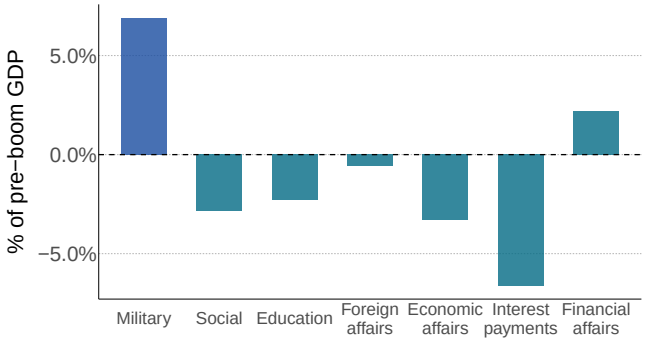

Figure E4: Tax revenue breakdown (cumul. change)

Size: 6.91 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** No data **Average tax growth[1]:** 8.87 %

Historical context – exogenous trigger? Yes. France's 1936 increase in defense spending was a direct response to Germany's remilitarization of the Rhineland on March 7, 1936 and to Germany's openly declared rearmament program, underscored by Hitler's public announcement of the Four Year Plan in September 1936. In 1936, France's leftist Popular Front government therefore shifted rapidly from its ambitious social reform agenda to prioritizing national defense (Thomas, 1992). It launched a sweeping rearmament program that included the nationalization of France's private arms industry. The government also introduced a five-year defense production plan that guided French military preparations until 1940 (Thomas, 1992). Given the increasingly aggressive overseas posture of Germany and Italy, colonial defense also reemerged as a strategic priority (Alexander, 2015).

New taxes or tax increases? Yes. In 1935, the French government introduced a 20 percent tax on the profits of armament firms, since existing wartime profit taxes were ineffective due to their reliance on World War 1 profit levels. This rate was raised to 36 percent in 1936, then replaced in 1939 by a system that capped profits on armament contracts at 5 percent (Frankestein, 1980). The Popular Front government in 1936 also increased income taxation by expanding the progressive

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

income tax introduced in 1917–1918 and significantly broadening the tax base (André and Guillot, 2014). In 1937, income taxes were further increased (The New York Times Archives, 1938), and in 1939 a 40 percent tax on overtime wages in war related industries was added (Frankestein, 1980). Most measures changed following the invasion by Nazi Germany, since after 1940 French taxation was reorganized under Vichy rule and German occupation authority (Occhino et al., 2007).

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France, 1951–1953: Indochina War and Korean War

Figure E1: Total spending and revenues

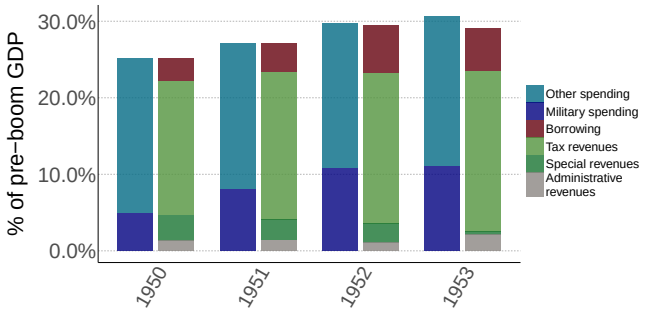


Figure E2: Cumul. change in spending, debt, revenues

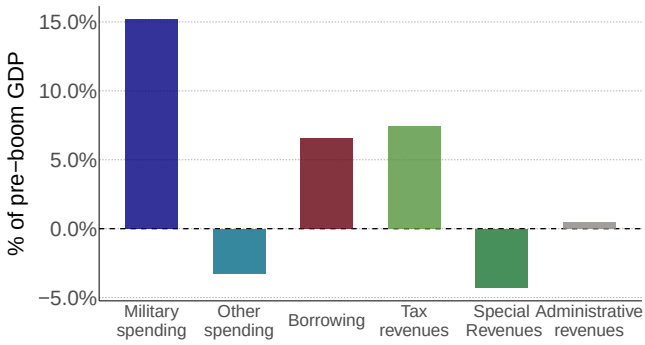


Figure E3: Spending breakdown (cumul. change)

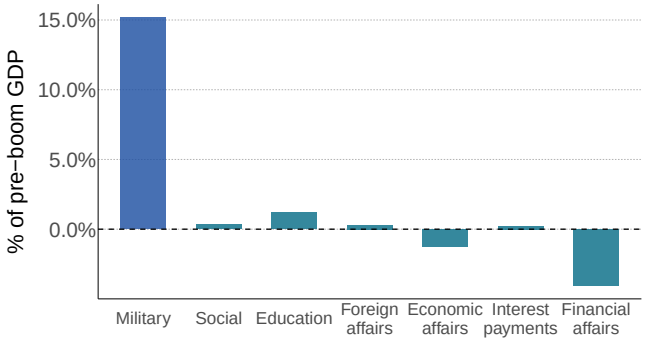
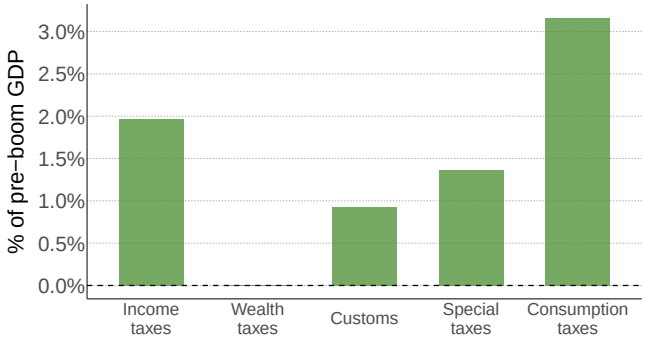


Figure E4: Tax revenue breakdown (cumul. change)



Size: 15.18 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 31.74 % **Average tax growth[1]:** 21.43 %

Historical context – exogenous trigger? Yes. France's 1951–1953 defense surge was triggered by overlapping external shocks: the Korean War, NATO rearmament demands, and the escalation of the Indochina War after Chinese intervention in 1950. China's decision to support the Viet Minh sharply intensified the Indochina conflict and contributed to the French defeat at Cao Bằng in October 1950, which pushed French leaders toward a more aggressive military strategy. In parallel, the outbreak of the Korean War on June 25, 1950 spurred a broad Western rearmament effort, U.S. pressure on NATO members to expand forces, and rising U.S. military aid (Webb, 1951). France also deployed forces to the Korean War beginning in late 1950. These external pressures drove a sustained increase in France's defense budget and deepened its reliance on US economic and military assistance (Dunn, 1953).

New taxes or tax increases? Yes. The increases in corporate and indirect taxes from 1951 to 1953 were directly linked to rising rearmament expenditures (Republique Francaise, 1951). In 1951, the corporate tax rate was raised from 24 percent to 34 percent, and temporary levies were introduced on products such as petroleum. We find no evidence that the corporate tax increase or these duties were subsequently reversed.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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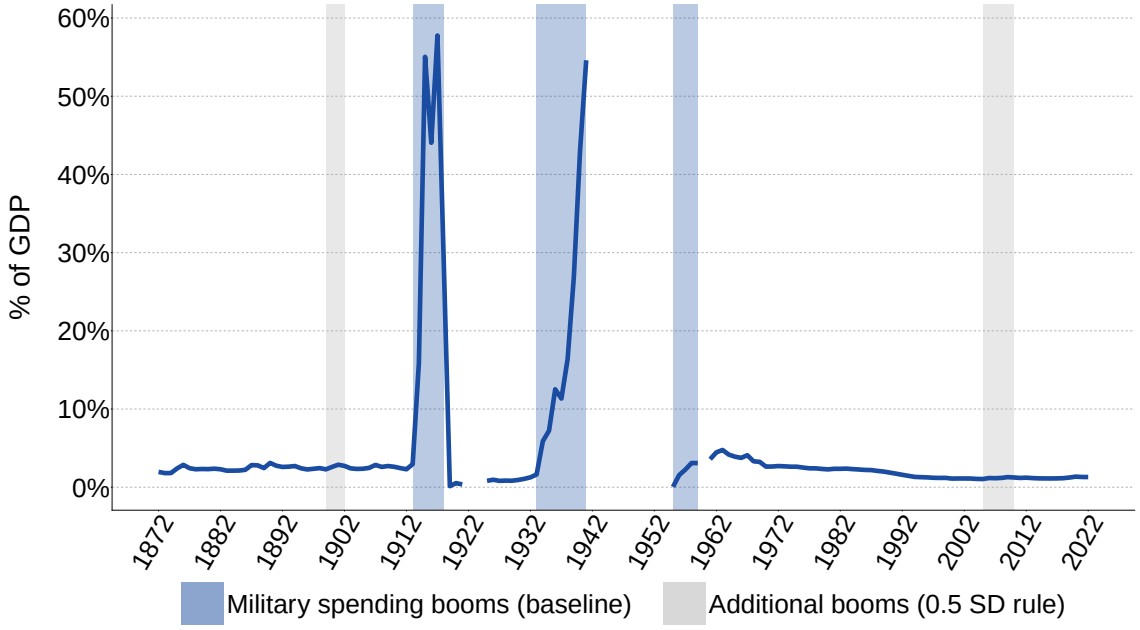
Germany



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1914-1918	139.54%	5 Years	Debt	World War 1
2	1934-1935	12.28%	2 Years	Debt	Hidden Nazi rearmament
3	1936-1938	28.53%	3 Years	Mixed	Open Nazi rearmament
4	1939-1941	128.72%	3 Years	Mixed	World War 2
5	1956-1959	11.94%	4 Years	Taxes	Foundation of "Bundeswehr"

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1900-1902	Tirpitz' fleet laws
2	2006-2010	Afghanistan mission

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Germany, 1914–1918: World War 1

Figure E1: Total spending and revenues

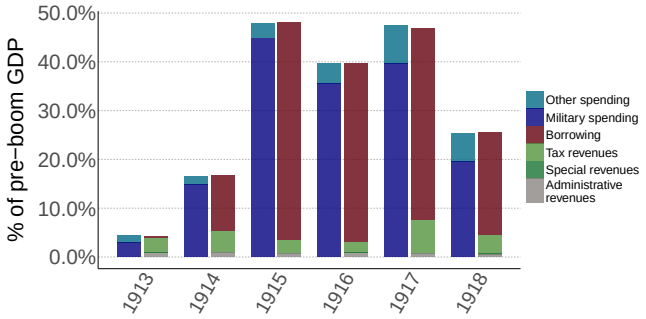


Figure E2: Cumul. change in spending, debt, revenues

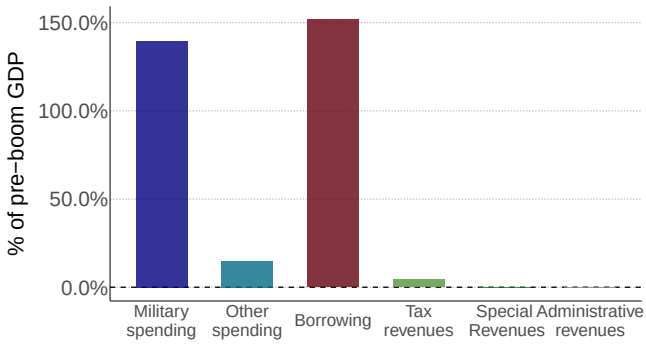


Figure E3: Spending breakdown (cumul. change)

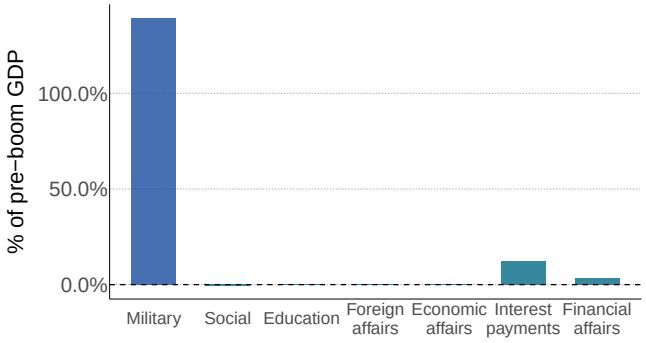
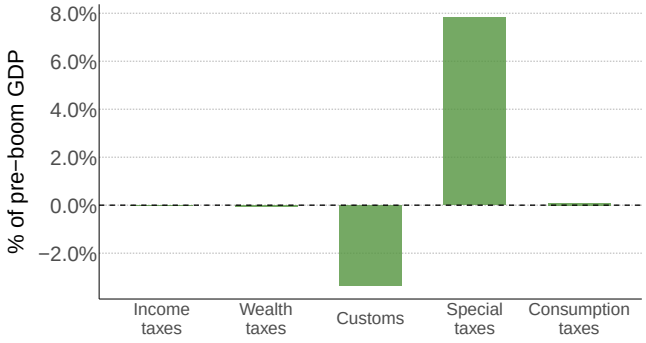


Figure E4: Tax revenue breakdown (cumul. change)



Size: 139.54 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 61.07 % **Average tax growth[1]:** 19.05 %

Historical context – exogenous trigger? Yes. Germany's 1914 military mobilization was a direct, externally driven response to the July Crisis and the outbreak of World War 1. Berlin faced rapidly escalating great-power tensions that it could not control. The situation escalated when Russia ordered general mobilization. Germany interpreted this move as an immediate existential threat, even though mediation efforts between Vienna and St. Petersburg were still underway (von Pourtales, 1914). Early battlefield success strengthened national confidence. However, the Schlieffen Plan, Germany's strategy for the war's opening phase, failed and locked the country into a prolonged two-front war (Hirschfeld, 2021). Germany's goals soon expanded from defensive concerns to far-reaching territorial ambitions outlined in the "Septemberprogramm." These aims included subordinating Belgium, weakening France, and creating a German-dominated Central European economic bloc (Kruse, 2013). As the war stagnated on the Western Front between 1915 and 1918, Germany ultimately faced defeat in November 1918 despite its successes in the East (Retallack, 2008).

New taxes or tax increases? Yes. During World War 1, Germany introduced a war profits tax and a general turnover tax to finance military expenditures (Reichs Gesetzblatt, 1916b,c).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

Additional excises were imposed on telegraph services (Reichs Gesetzblatt, 1916a), and by 1918 the government levied one-time wartime surcharges alongside the excess profits tax (Reichs Gesetzblatt, 1918). These measures were designed as temporary wartime taxes, but the turnover tax was retained after the war. Moreover, the Erzberger reforms of 1919–1920 replaced the fragmented prewar and wartime system with permanent national taxes, including a unified Reich income tax.

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Germany, 1934–1935: Hidden Nazi rearmament

Figure E1: Total spending and revenues

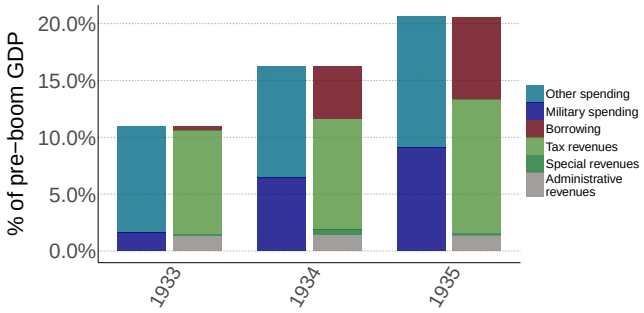


Figure E2: Cumul. change in spending, debt, revenues

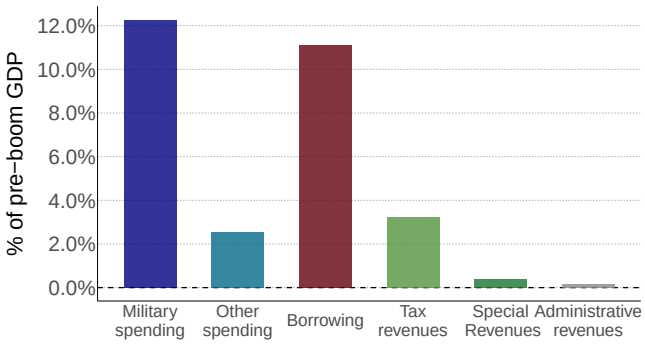


Figure E3: Spending breakdown (cumul. change)

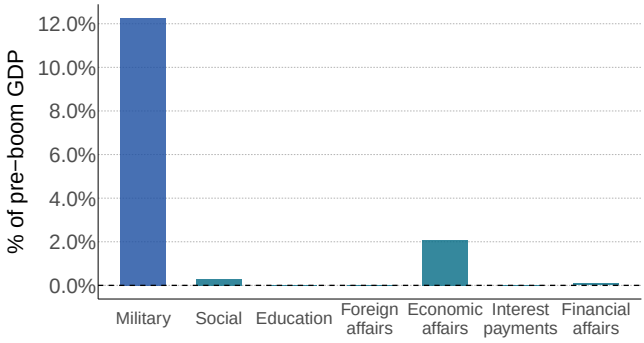
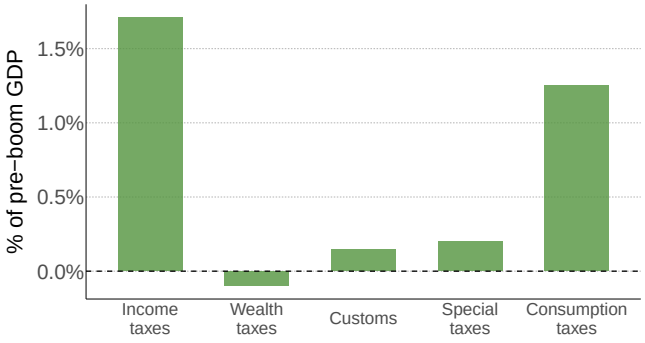


Figure E4: Tax revenue breakdown (cumul. change)



Size: 12.28 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 17.01 % **Average tax growth[1]:** -12.74 %

Historical context – exogenous trigger? No. The militarization that followed Hitler's rise to power in 1933 was a planned, ideologically driven initiative fully aligned with Nazi domestic policy goals, not a reaction to an external shock. The Nazi regime swiftly absorbed most facets of German political life, enabling unimpeded militarization driven by Hitler's war-preparation motives and aided by the 1933 Enabling Act (Millett and Murray, 2010). Military spending became a priority immediately, partly financed by Hjalmar Schacht's infamous Mefo (Metallurgische Forschungsanstalt) bills (Ritschl, 2002). The 1935 Defense Law gave the Minister of Defense sweeping powers, and Germany resumed conscription in violation of Versailles (Best Jr., 1981).

New taxes or tax increases? No. We find no clear evidence of significant tax increases linked to financing the military buildup during 1934–1935. Overall taxation was already relatively high in European comparison, and rising military expenditures were financed primarily through deficit spending, in particular through off-budget mechanisms such as the Mefo Bills. In 1934, the Reich flight tax base was expanded, but its main purpose was to restrict capital outflows rather than to finance rearmament Tooze (2008). Major tax changes appear only later in the 1930s and especially during World War 2.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Germany, 1936–1938: Open Nazi rearmament

Figure E1: Total spending and revenues

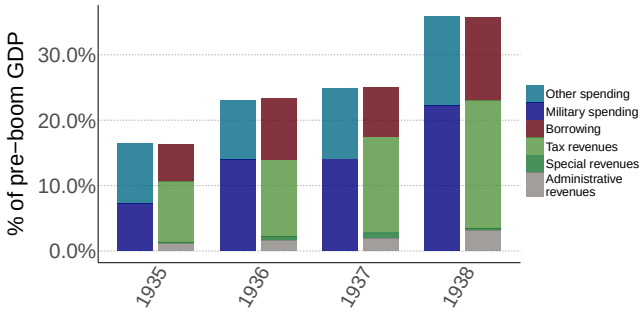


Figure E2: Cumul. change in spending, debt, revenues

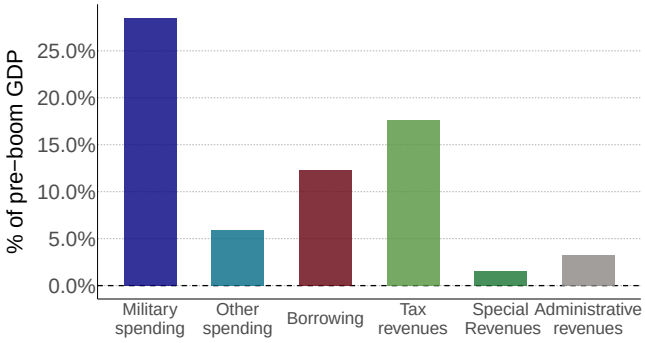


Figure E3: Spending breakdown (cumul. change)

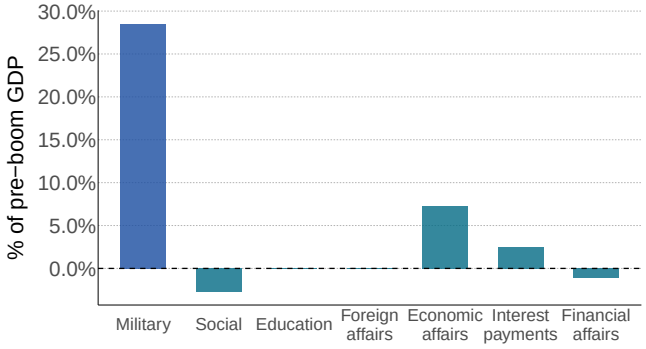
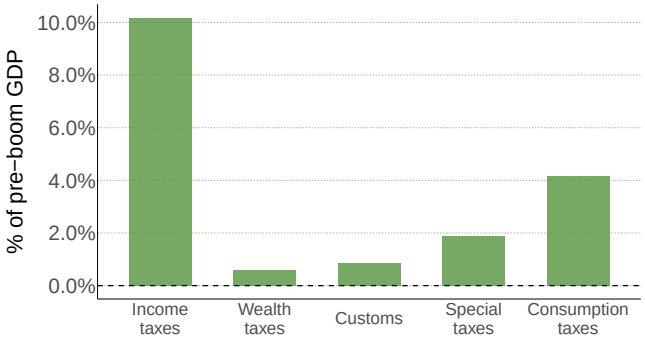


Figure E4: Tax revenue breakdown (cumul. change)



Size: 28.53 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 17.41 % **Average tax growth[1]:** -0.27 %

Historical context – exogenous trigger? No. The buildup was driven by Nazi ideology and policy rather than by external threats or shocks. Between 1936 and 1938 the Reich moved to open rearmament, exemplified by Hitler's announcement of the Four Year Plan in September 1936, which aimed at economic autarky and preparing the country for a major war. Hitler also undertook unprovoked foreign policy escalations, including the remilitarization of the Rhineland on March 7, 1936 and subsequent moves against Austria and Czechoslovakia (Tooze, 2006). Hitler's ideological commitment to "Lebensraum" underpinned these preparations for aggressive expansion (Weisiger, 2013). Military spending accelerated through intensified arms investment, with war readiness taking precedence over civilian sectors, and the Wehrmacht expanded rapidly despite persistent economic and industrial bottlenecks (Tooze, 2006; Scherner, 2010).

New taxes or tax increases? Yes. Germany increased the corporation tax from 20 percent to 25 percent in 1936 and to 30 percent in 1937, partly to help finance the large-scale rearmament (Nathan, 1914; **?**). Surtaxes on higher incomes were also raised, and the income tax base was broadened through reductions in exemptions (Nathan, 1914). These measures were not reversed quickly. Instead, during World War 2, additional wartime taxes and surcharges were introduced.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Germany, 1939–1940: World War 2

Figure E1: Total spending and revenues

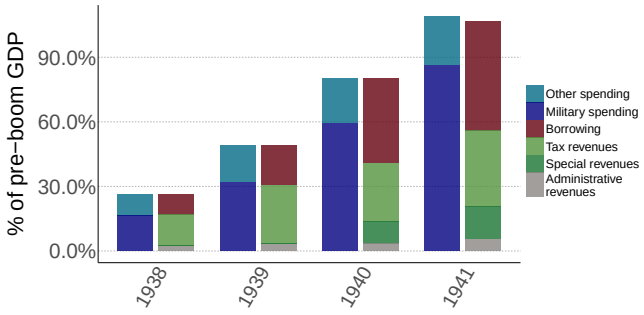


Figure E2: Cumul. change in spending, debt, revenues

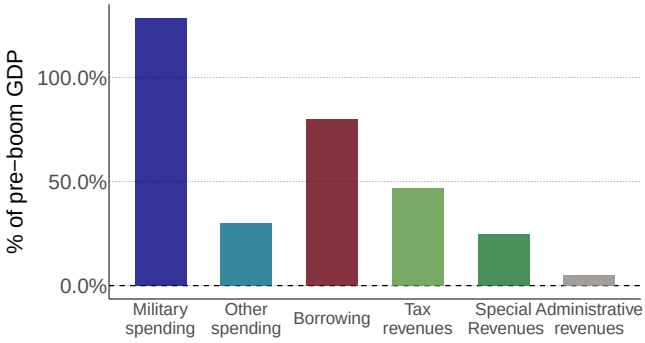


Figure E3: Spending breakdown (cumul. change)

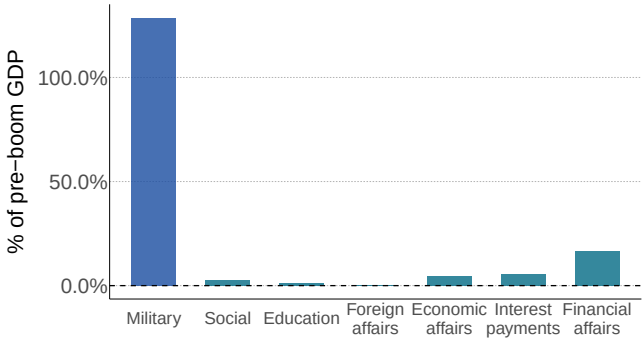
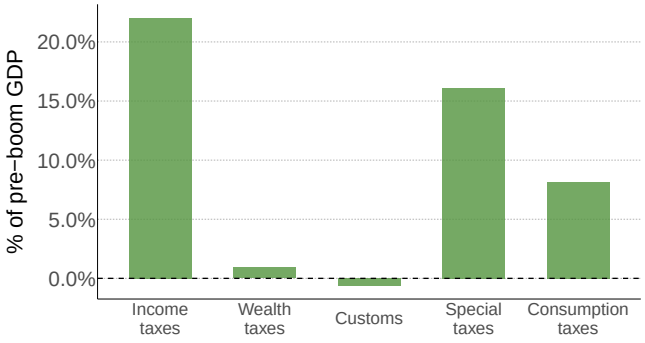


Figure E4: Tax revenue breakdown (cumul. change)



Size: 128.72 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: Yes **Average debt-to-GDP[1]:** 40.72 % **Average tax growth[1]:** 30.00 %

Historical context – exogenous trigger? No. Nazi Germany's drastic surge in military spending after 1939 was driven not by external shocks or threats but by its own aggressive expansionism. In early 1939 the regime released the Z-Plan, a major naval rearmament program intended to challenge British sea power (Scherner, 2010). Germany invaded Poland on September 1, 1939, initiating World War 2 through an unprovoked and deliberate attack. In 1940 Germany invaded and defeated France, launched the Battle of Britain, and in 1941 also invaded the Soviet Union. The initial successes of the "Blitzkrieg" campaigns were not sustained (Harrison, 1988), and Germany shifted rapidly toward a full war economy as the conflicts it had started turned into a prolonged two-front war (Lindholm, 1947).

New taxes or tax increases? Yes. Germany introduced several new taxes and rate increases during World War 2 to finance the massive military expenditures. In 1939 a war surcharge on personal income tax raised liabilities by 50% of the assessed tax, lifting top marginal tax burdens. Also surtaxes on consumption goods such as beer and tobacco were increased (Reichs Gesetzblatt, 1939b). Corporate tax rates were raised in 1941 and 1942, with rates moving from about 40% to 55% (Tooze, 2008). The real-estate tax was abolished in 1943 and replaced by a one-off advance

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

payment equal to ten years of liabilities (Reichs Gesetzblatt, 1939a). In addition, fiscal centralization was intensified by requiring states and municipalities to transfer a share of their tax revenues to the Reich. Additional discriminatory levies were imposed on Jews after 1938, and the earlier Reich flight tax was further increased. Proposals for additional tax increases in 1943 and 1944 were not implemented, partly due to Hitler's opposition (Tooze, 2008). After the war, most Nazi wartime taxes were not reversed or abolished. The Allied and early Federal Republic reforms left the broader structure of high income, corporate, and consumption taxation in place.

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Germany, 1956-1959: Foundation of "Bundeswehr"

Figure E1: Total spending and revenues

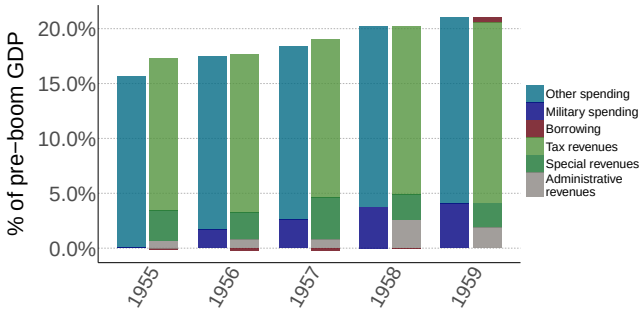


Figure E2: Cumul. change in spending, debt, revenues

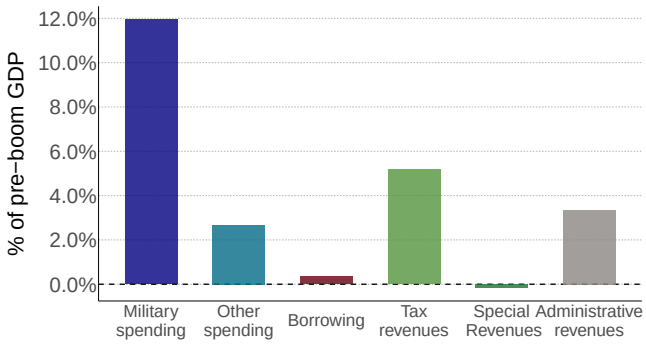


Figure E3: Spending breakdown (cumul. change)

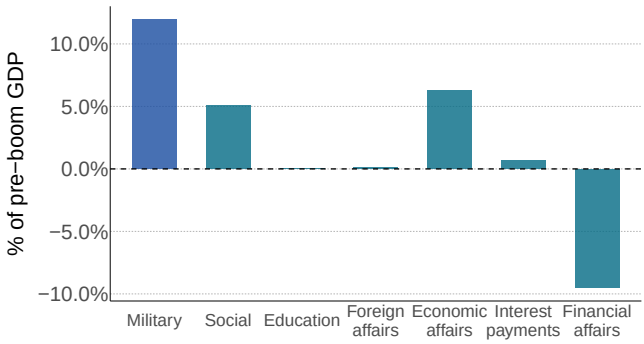
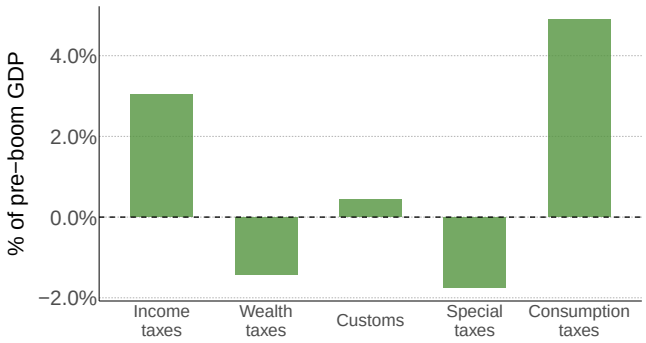


Figure E4: Tax revenue breakdown (cumul. change)



Size: 11.94 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 8.64 % **Average tax growth[1]:** 10.35 %

Historical context – exogenous trigger? Yes. The creation of the West German army, the "Bundeswehr," was a direct response to external Cold War pressures and occurred amid intense domestic debate and opposition (Neitzel, 2020; Weingärtner, 2015). The first trigger was the outbreak of the Korean War on June 25, 1950, which reshaped NATO's security strategy and led the United States to press its allies, including West Germany, to contribute to Western rearmament efforts. Additional external triggers followed in rapid succession. The collapse of the European Defence Community in 1954 forced the Western allies to adopt a new rearmament framework, codified in the Paris Agreements of 1954, which committed West Germany to rearm and join NATO. In 1955 West Germany entered NATO, and the Soviet Union responded by creating the Warsaw Pact, further strengthening allied demands for substantial West German force contributions to NATO's Central European defense posture (Neitzel, 2020). To enable rearmament, the Bundestag amended the Constitution and established strict mechanisms of parliamentary oversight, including the Defense Committee and a parliamentary commissioner for the armed forces (Fischer, 2005; Bundesministerium der Justiz, 1956).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup during 1956–1959. Instead, the buildup was financed

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

largely through the reduction of transfers to Allied forces. Instead of compensating the US, the UK, and France for their stationed troops, as in the previous years, Germany was permitted to redirect most of these funds to rebuild its own military. The top income tax rate was even cut back in 1955 (55%) and 1958 (53%) (Bach, 2019).

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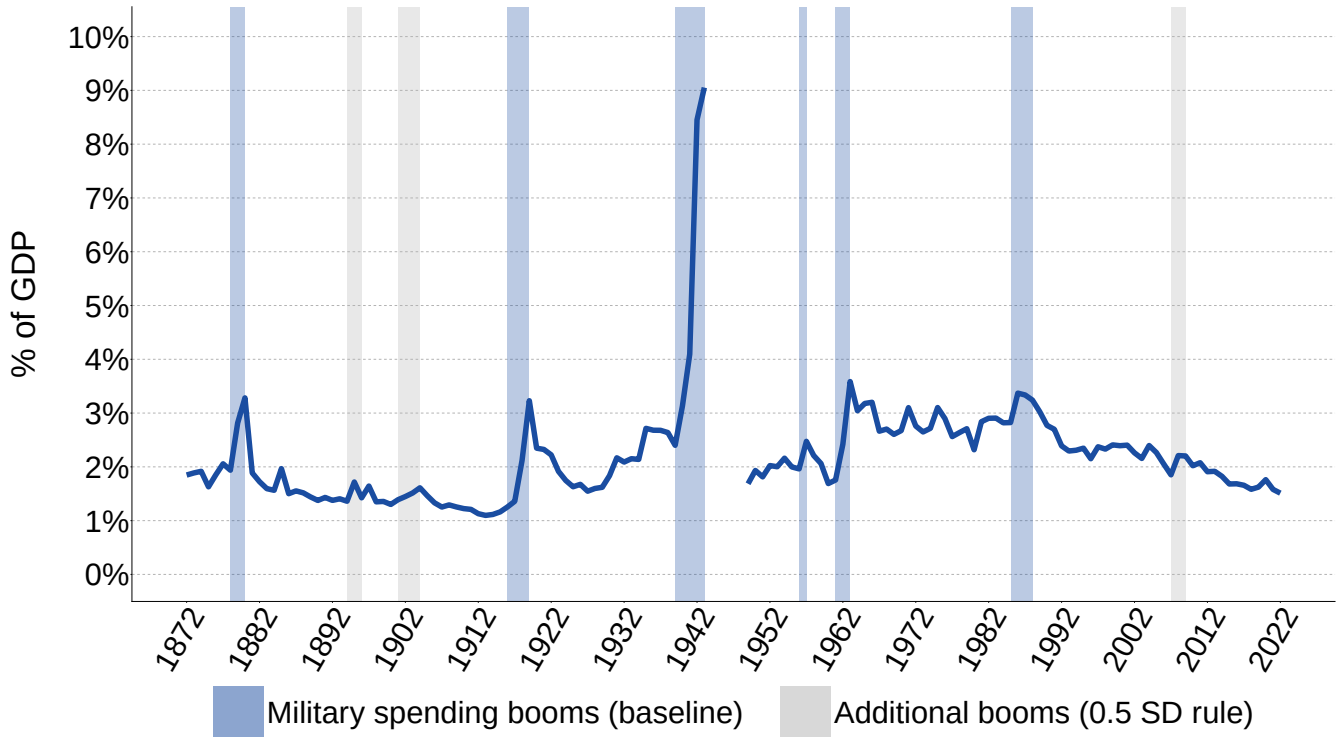
India



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1879-1880	1.89%	2 Years	Debt	Second Anglo-Afghan War
2	1917-1919	2.53%	3 Years	Debt	World War 1
3	1940-1943	16.66%	4 Years	Debt	World War 2
4	1957	0.50%	1 Year	Debt	Military modernization
5	1962-1963	2.91%	2 Years	Debt	Sino-Indian War
6	1986-1988	2.62%	3 Years	Debt	Planned defense initiatives

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1895-1896	-
2	1902-1904	Kitchener reforms
3	2008-2009	Reaction to Mumbai terror attacks

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

India, 1879-1880: Second Anglo-Afghan War

Figure E1: Total spending and revenues

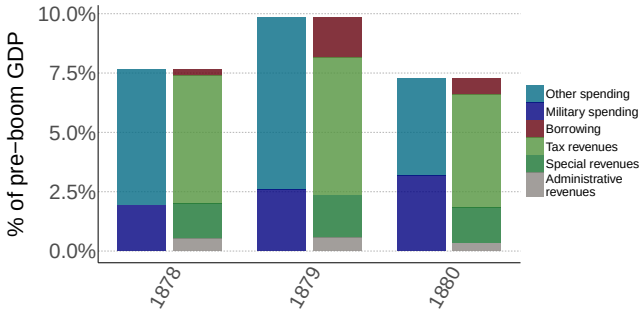


Figure E2: Cumul. change in spending, debt, revenues

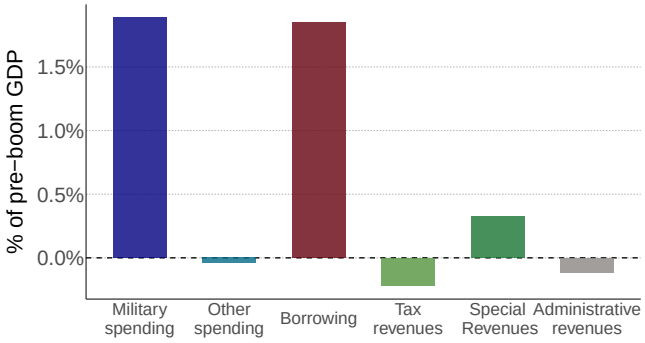


Figure E3: Spending breakdown (cumul. change)

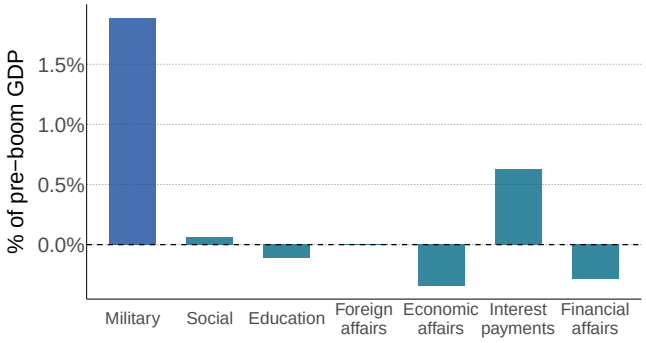
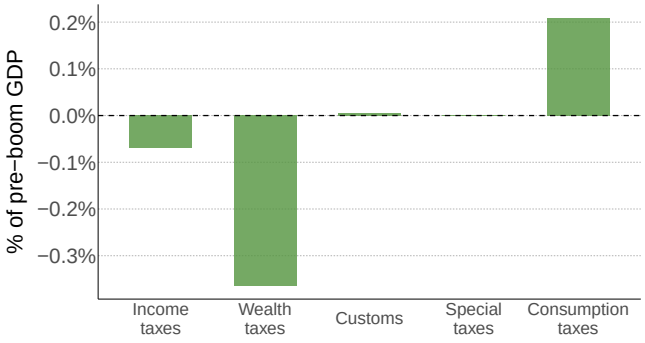


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.89% of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 7.23 % **Average tax growth[1]:** 8.21 %

Historical context – exogenous trigger? Yes. India was forced into the conflict because Britain compelled its colony to provide the troops and financing required for its imperial strategy in Central Asia. Russia's expanding influence in the region heightened British concerns about the security of India and the need to secure Afghanistan as a buffer state, a rivalry known as the "Great Game" (National Army Museum, nd; Johnson, 2013). These external pressures contributed to the outbreak of the Second Anglo-Afghan War (Nov. 1878 to Sept. 1880). The initial British campaign produced the Treaty of Gandamak (1879), which placed Afghan foreign policy under British control. After the murder of the British envoy Sir Louis Cavagnari and his garrison, fighting resumed and British Indian forces reentered Afghanistan, ultimately restoring British strategic influence (Johnson, 2013). The costs of the war were financed largely by India (Fawcett, 1880), generating trade-offs with planned economic reforms in the colony (Johnson, 2013).

New taxes or tax increases? No. We find no clear evidence of significant tax changes that were linked to financing the military buildup in India during 1879–1880.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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India, 1917-1919: World War 1

Figure E1: Total spending and revenues

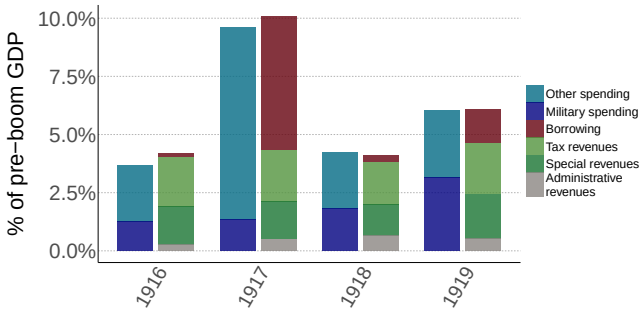


Figure E2: Cumul. change in spending, debt, revenues

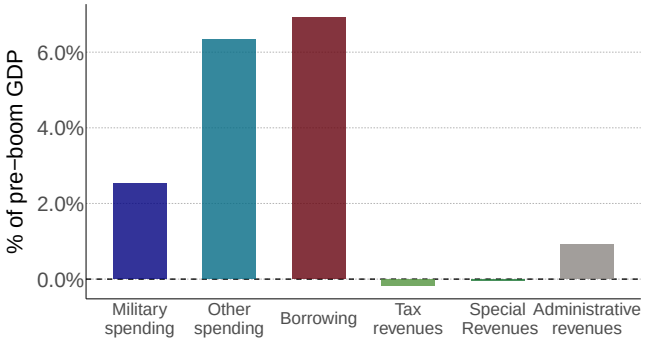


Figure E3: Spending breakdown (cumul. change)

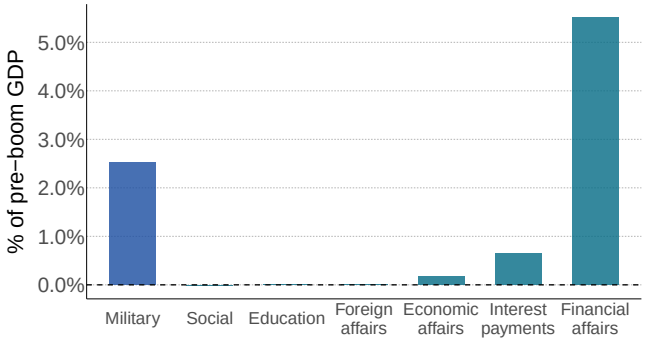
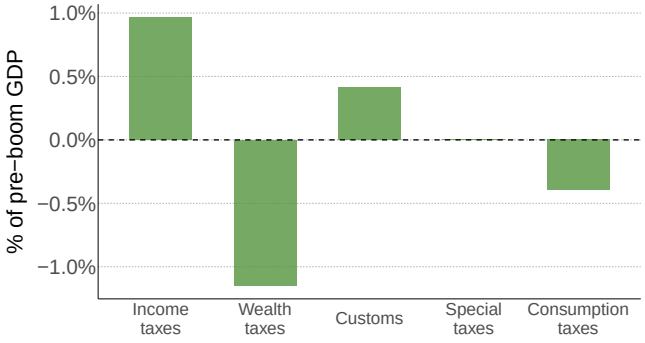


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.53 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 16.93 % **Average tax growth[1]:** 3.89 %

Historical context – exogenous trigger? Yes. The 1917–1919 Indian military spending spending surge was an externally forced expansion driven by Britain's wartime requirements rather than by any security threat to India itself. London ordered large-scale recruitment and the raising of additional divisions, and it also extracted substantial financial and material resources to sustain the wider British imperial war effort. These demands rose sharply after 1916 and continued through 1919. By end-1917 India had supplied more than 1.3 million troops, including 877,000 new recruits, with Indian soldiers serving in nearly all major theaters of the war (Das, 2014; Benn, 1939). Britain's reliance on India as a core pillar of its imperial military system, combined with the scale of the demanded support, heightened political awareness within India and influenced subsequent calls for greater autonomy and Dominion status (Das, 2014; Morton-Jack, 2023).

New taxes or tax increases? Yes. During 1917–1919 India expanded both the rate and base of income taxation, for private and corporate incomes, through a series of wartime fiscal acts to help finance the World War 1 effort (Indian Legislative Council, 1919). A progressive surtax on high incomes and profits was introduced in 1917 (Indian Legislative Council, 1917b). Customs duties, including on gasoline, were also raised (Indian Legislative Council, 1917a). After 1919

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

these customs duties remained elevated (Arthi et al., 2020), and the wartime restructuring of income taxation was formalized and made permanent in the Income Tax Act of 1922 (Income Tax Department, Government of India, 2024).

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India, 1940–1943: World War 2

Figure E1: Total spending and revenues

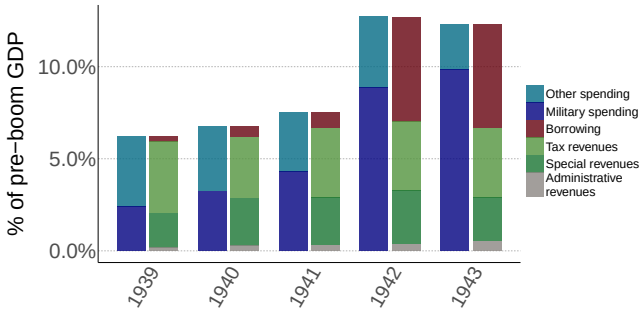


Figure E2: Cumul. change in spending, debt, revenues

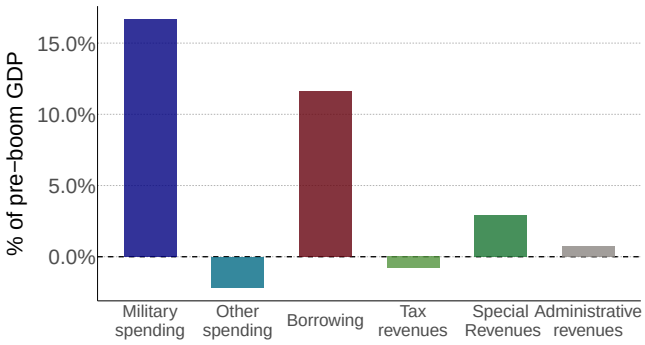


Figure E3: Spending breakdown (cumul. change)

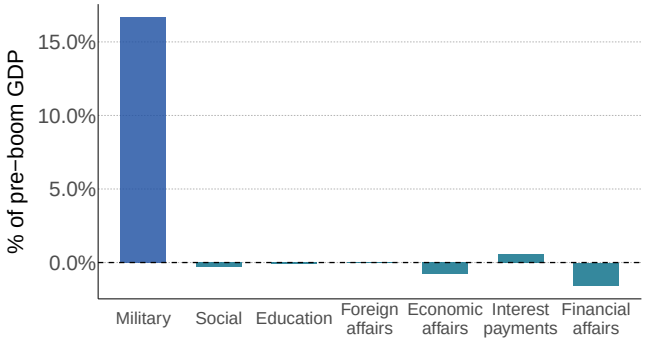
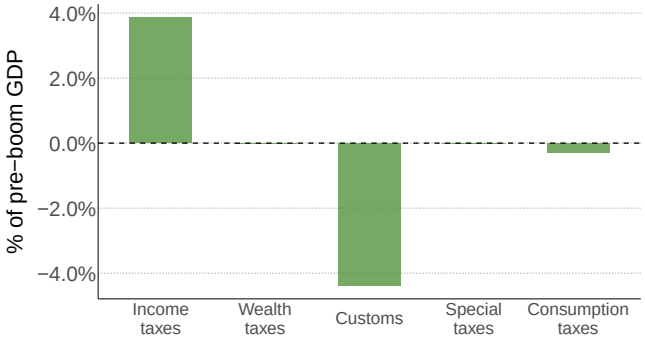


Figure E4: Tax revenue breakdown (cumul. change)



Size: 16.66 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 49.03 % **Average tax growth[1]:** -1.34 %

Historical context – exogenous trigger? Yes. India's military mobilization 1940-43 was a forced expansion driven by external British wartime demands. Britain declared war on Germany in 1939 without consulting Indian representatives, and then obliged India to support the imperial war effort (Roy, 2010). The initial expansion was limited, but Britain's defeats in Europe and the Mediterranean by mid-1940 sharply increased the British demands placed on India. Recruitment rose rapidly, from roughly 50,000 new recruits in early 1940 to more than 820,000 by October 1941 (Roy, 2010). This buildup addressed acute British manpower shortages on multiple fronts, including North Africa and the Middle East, and also responded to the emerging threat of Japanese expansion in Asia. India supplied troops, equipment, and materials not just to the UK but also to other Allied forces. India's vast contributions are one of the largest mobilizations in colonial military history (Roy, 2016).

New taxes or tax increases? Yes. India substantially expanded taxation during 1940–1948. Income tax rates were raised repeatedly, exemptions were reduced, and two excess profits taxes were enacted in 1940 and 1947 (Indian Legislative Council, 1940, 1941, 1947). Existing excise taxes were increased, and new excise taxes introduced in 1944, broadening the tax base further

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

(Indian Legislative Council, 1944). Most temporary wartime measures were abolished after World War 2, but the expanded excise tax system and the higher income taxes persisted into the postwar period.

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India, 1957: Military modernization

Figure E1: Total spending and revenues

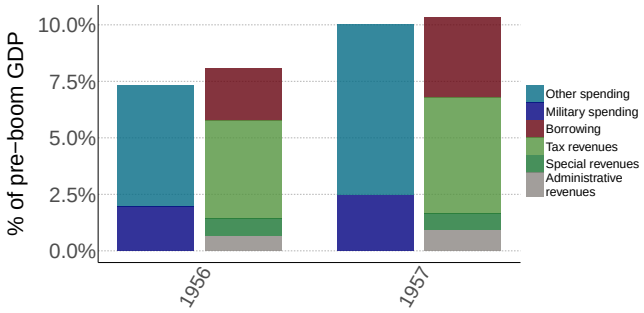


Figure E2: Cumul. change in spending, debt, revenues

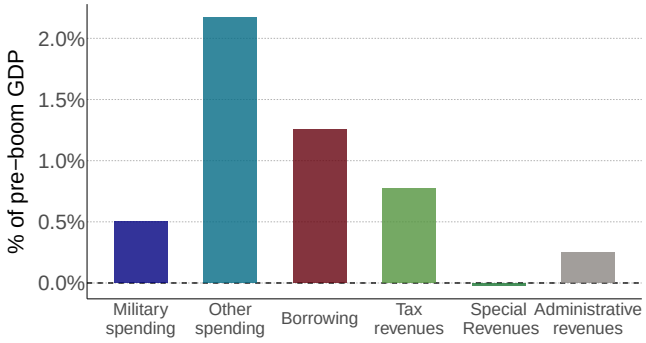


Figure E3: Spending breakdown (cumul. change)

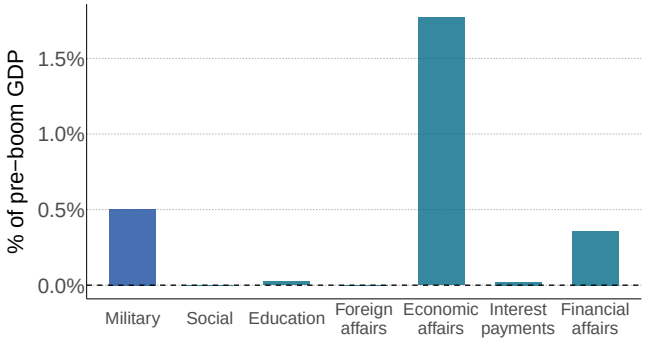
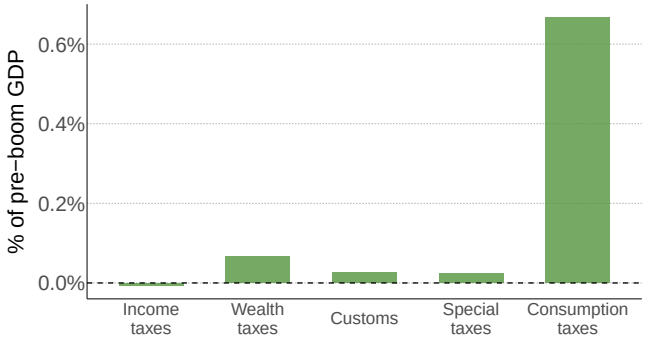


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.50 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 27.38 % **Average tax growth[1]:** 12.76 %

Historical context – exogenous trigger? No. India's 1957 defense expansion was a planned, modest, and incremental modernization rather than a reaction to any external shock. Defense spending rose mainly to support Navy and Air Force growth and increased reliance on domestic production (Deshmukh, 1956). Regional frictions, including tensions with Pakistan over Kashmir (United Nations, 1957) and concern about China's Aksai Chin Road (Gupta, 1974), formed part of the broader environment but did not constitute a sudden trigger. Contemporary budget statements do not link the increase to any specific threat or shocks (Krishnamachari, 1957).

New taxes or tax increases? No. We find no clear evidence of significant tax changes that were linked to financing the military buildup in India in 1957.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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India, 1962–1963: Sino-Indian War

Figure E1: Total spending and revenues

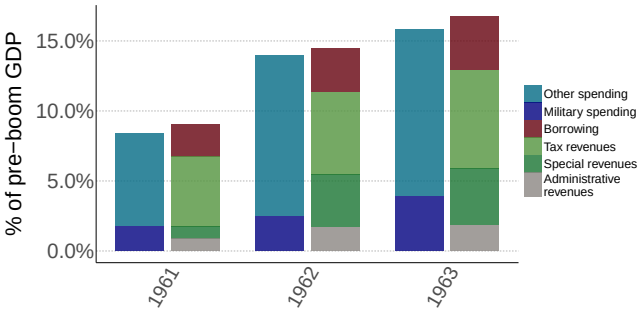


Figure E2: Cumul. change in spending, debt, revenues

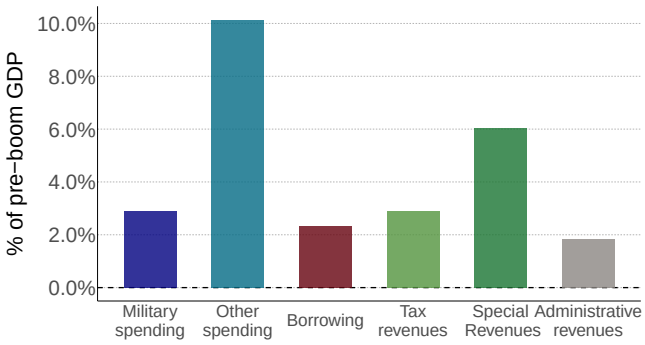


Figure E3: Spending breakdown (cumul. change)

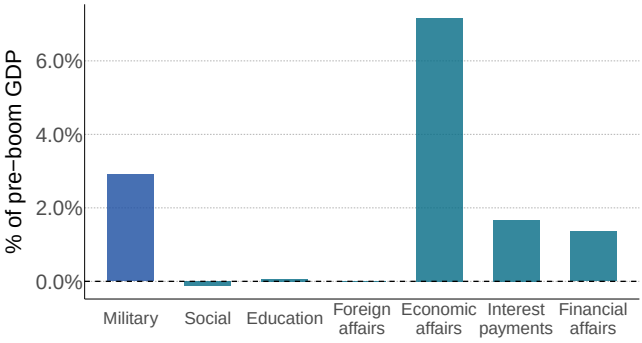
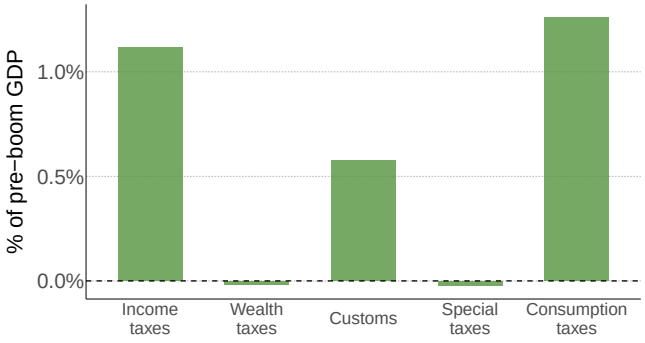


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.91 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 35.82 % **Average tax growth[1]:** 6.91 %

Historical context – exogenous trigger? Yes. China's sudden invasion in October 1962 forced India into emergency mobilization and produced a sharp, exogenous rise in defense spending during and after the brief Sino-Indian War (October 20 to November 21, 1962) (Smith, 1994). The short conflict had major consequences. India's defeat exposed significant weaknesses, and defense expenditure nearly doubled in the aftermath (Desai, 1962, 1963). India launched major expansion plans for the Army and accelerated broader preparedness measures (Gupta, 1995). This was reflected in substantial increases for the Army and Air Force in the 1963 defense budget (Desai, 1963).

New taxes or tax increases? Yes. In 1963 India introduced two major tax measures to raise revenue for defense. A progressive income surtax of up to 20 percent was imposed, and excess profits were taxed at 50 to 60 percent (Parliament of the Republic of India, 1963a,b). Both measures were repealed in 1966.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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India, 1986-1988: Planned defense initiatives

Figure E1: Total spending and revenues

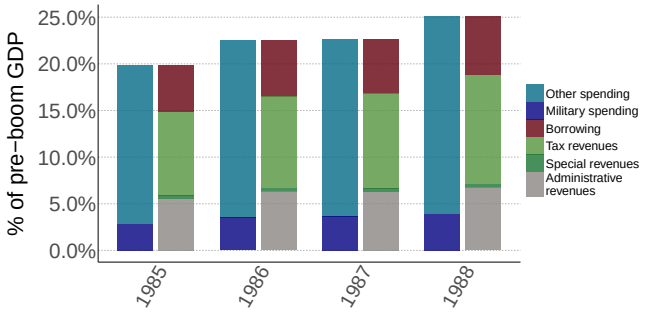


Figure E2: Cumul. change in spending, debt, revenues

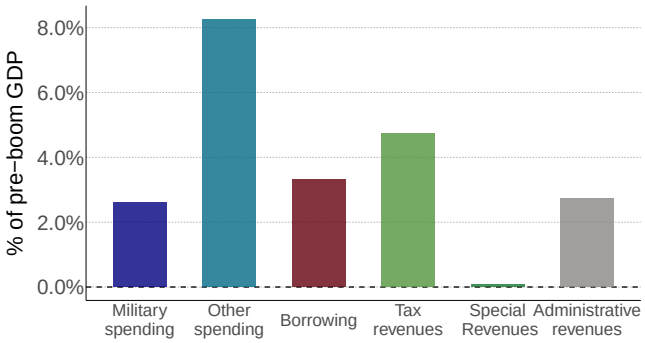


Figure E3: Spending breakdown (cumul. change)

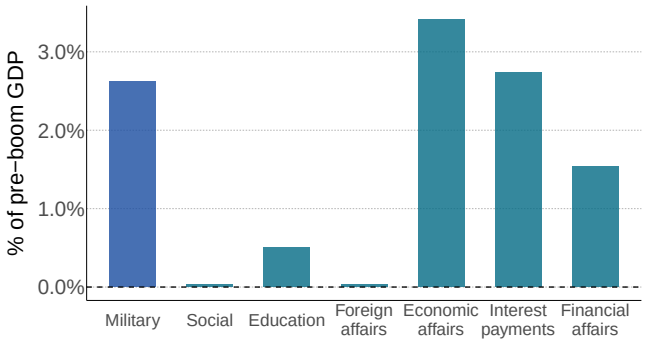
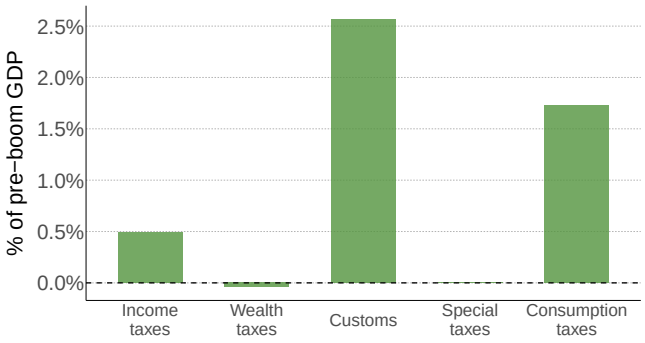


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.62 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 47.71 % **Average tax growth[1]:** 8.15 %

Historical context – exogenous trigger? No. India's 1986–87 military buildup reflected internally driven defense initiatives rather than a response to an imminent external threat. The main activities and associated expenditure increases were pre-planned (Gandhi, 1987). The most prominent was Exercise Brasstacks, a large scale, domestically conceived training operation that unintentionally escalated tensions with Pakistan (Khalid, 2020). India also strengthened its posture vis-a-vis China by increasing deployments in disputed areas such as Arunachal Pradesh, but this followed long-standing territorial disputes rather than any immediate crisis (Pardesi, 2019).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in India during 1986–1988. Notably, during this period the Modified Value Added Tax was introduced and gradually extended, but this was not related to larger military expenses (Aggarwal, 1986).

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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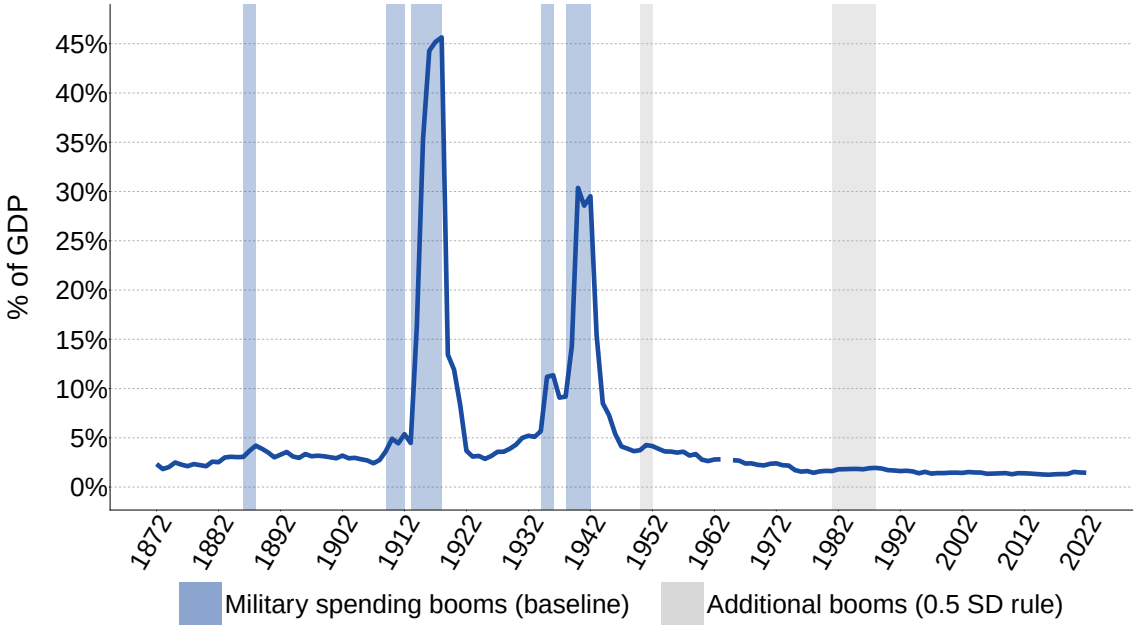
Italy



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1887-1888	1.95%	2 Years	Mixed	Colonial expansion
2	1910-1912	4.37%	3 Years	Taxes	Italo-Turkish War
3	1914-1918	217.43%	5 Years	Debt	World War 1
4	1935-1936	13.53%	2 Years	Debt	Invasion of Ethiopia
5	1939-1942	70.10%	4 Years	Debt	World War 2

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1951-1952	NATO commitment
2	1982-1988	-

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Italy, 1887 – 1888: Colonial expansion

Figure E1: Total spending and revenues

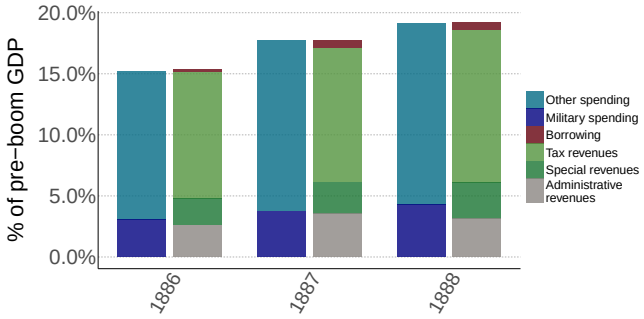


Figure E2: Cumul. change in spending, debt, revenues

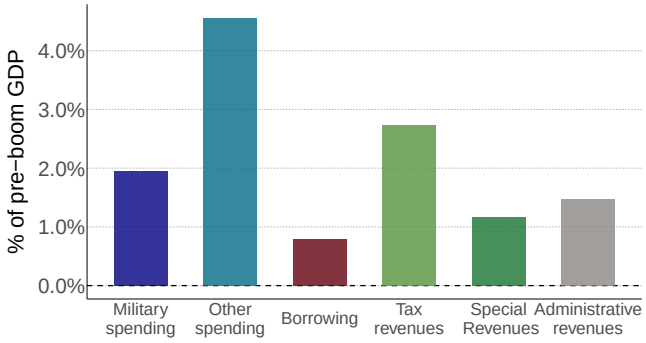


Figure E3: Spending breakdown (cumul. change)

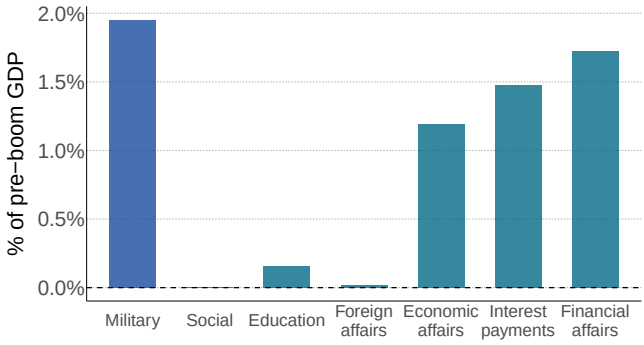
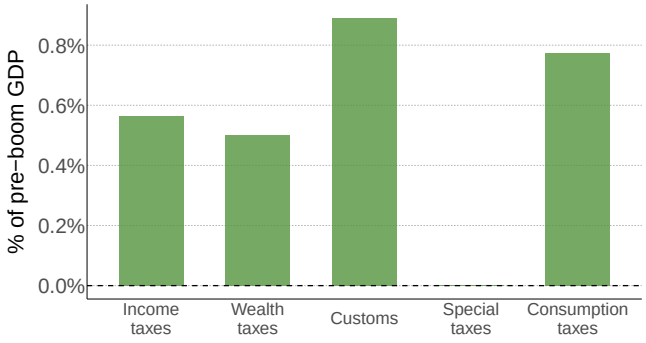


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.95 % of pre-boom GDP **Duration:** 2 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 117.56 % **Average tax growth[1]:** -0.14 %

Historical context – exogenous trigger? No. Italy's 1887–1891 military buildup was driven primarily by Francesco Crispi's great power ambitions and by Italy's ongoing colonial campaign in the Horn of Africa, not by a sudden external shock. The sharp rise in military expenditure beginning in 1887 was closely tied to operations in Eritrea following the Italian defeat at Dogali (January 1887) and to efforts to consolidate Italy's position around Massawa (Duggan, 2002). Italy expanded its foothold in Eritrea and secured protectorate agreements in parts of present day Somalia by 1889 (Marino et al., 2025). Although relations with France were strained during this period, the tariff dispute and short lived trade war were not the principal drivers of rearmament. The buildup formed part of Crispi's broader strategy to strengthen Italy's armed forces and sustain overseas expansion, pursued alongside closer military alignment with Germany (Gooch, 1989).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Italy during 1887–1888.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Italy, 1910-1912: Italo-Turkish War

Figure E1: Total spending and revenues

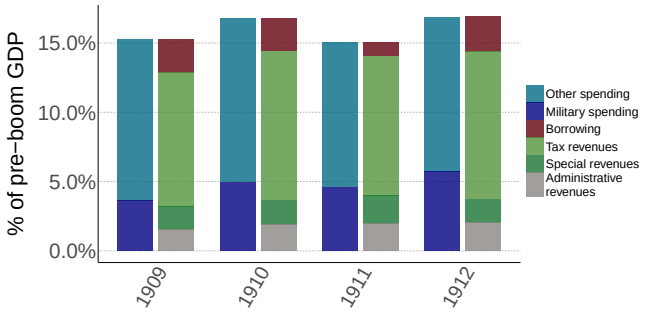


Figure E2: Cumul. change in spending, debt, revenues

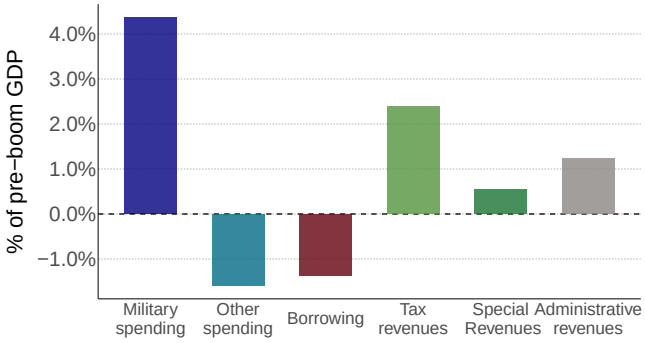


Figure E3: Spending breakdown (cumul. change)

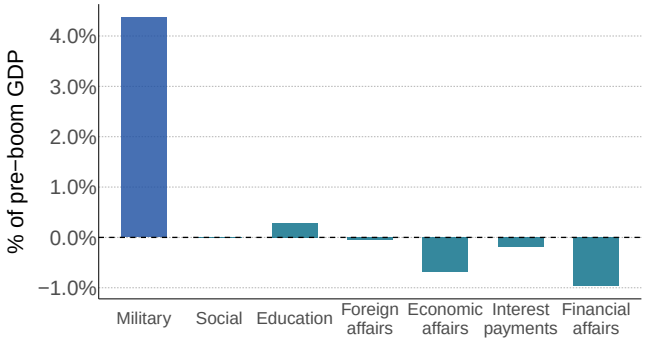
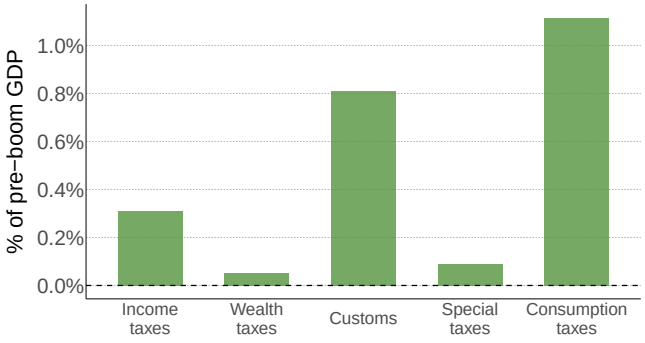


Figure E4: Tax revenue breakdown (cumul. change)



Size: 4.37 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 81.38 % **Average tax growth[1]:** 0.06 %

Historical context – exogenous trigger? No. Italy's 1910 military buildup and the Italo-Turkish war of 1911/12 was driven by deliberate expansionist ambitions as well as domestic modernization goals, not by any sudden external shock. Giolitti's government sought to assert Italy's great power status and modernized the navy with the explicit aim of enabling overseas operations. This fed directly into the Italo-Turkish War (September 29, 1911 to October 18, 1912), which was initiated by Italy. During the war, Italy seized Libya and the Dodecanese and employed aircraft in combat for the first time (Paoletti, 2008; Vego, 1997). The Bosnian Crisis of 1908–09 increased Italian concern about Austrian influence in the Balkans and reinforced the navy's Adriatic orientation, but it did not compel rearmament (Vego, 1997). Italy remained formally within the Triple Alliance while preparing its navy for potential operations against Austria (Donolo and Tritten, 1995).

New taxes or tax increases? No. We find no clear evidence of significant tax changes that were linked to financing the military buildup in Italy during 1910–1912.

References

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Italy, 1914-1918: World War 1

Figure E1: Total spending and revenues

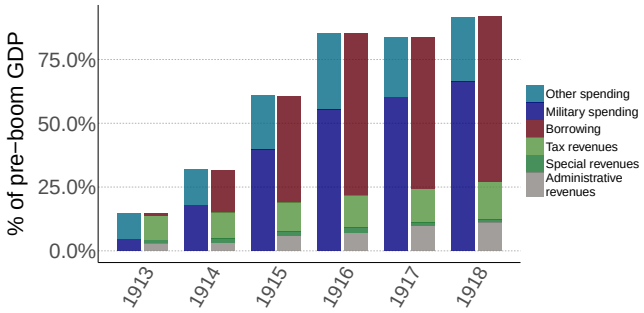


Figure E2: Cumul. change in spending, debt, revenues

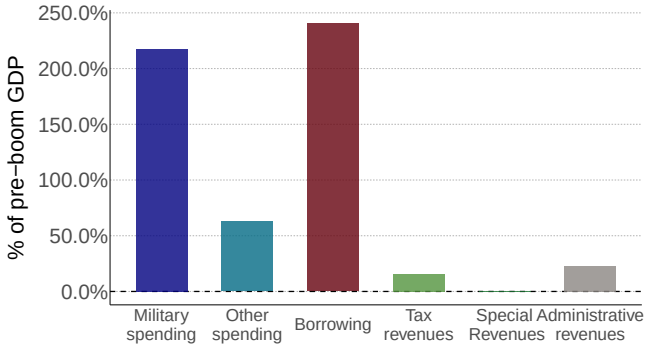


Figure E3: Spending breakdown (cumul. change)

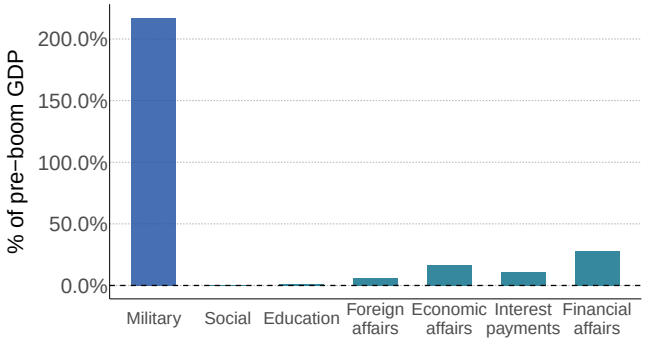
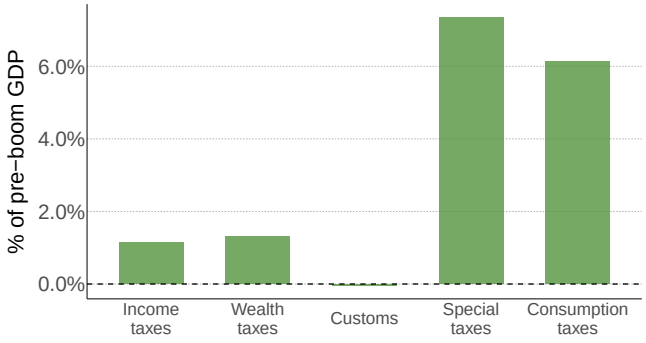


Figure E4: Tax revenue breakdown (cumul. change)



Size: 217.43 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 85.37 % **Average tax growth[1]:** 0.15 %

Historical context – exogenous trigger? Yes. Italy's military expansion after 1914 was driven by external shocks, most notably the outbreak of World War 1. Italy had been a member of the Triple Alliance, but at the start of the war it declared neutrality, arguing that the alliance was defensive. The sudden onset of a continental war, combined with Entente diplomacy, created strong external pressure and a defensive buildup. Negotiations with France, Russia, and Great Britain led to the Treaty of London on April 26, 1915, which offered substantial territorial concessions to Italy (Okey, 1915). These promises aligned with Italy's long standing territorial claims along its northern and eastern frontiers (Renzi, 1968) and shifted domestic politics toward intervention. Italy declared war on Austria-Hungary on May 23, 1915, entering a conflict it had not initiated. The decision was widely contested and had lasting political and economic repercussions (Pryce, 1954).

New taxes or tax increases? Yes. During World War 1, Italy introduced extensive tax measures, beginning with a 1915 decree that raised rates on stamp duties, postal and telegraph services, matches, salt, and other consumption items (Italy, 1915). Land tax rates increased from 9 to 14 percent and the buildings tax from 16 to 22 percent. A war profits tax was imposed on

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

extraordinary corporate profits, and its burden rose significantly as the war continued. In 1919, Italy added a capital gains tax with rates up to 50 percent. Although many of these measures were introduced as temporary wartime taxes, several remained in force until their full repeal in 1925. The wartime system placed its heaviest burden on wealthy individuals and corporations rather than on lower-income groups. Later reforms in the 1920s broadened the tax base to include lower-income households and at the same time reduced rates at the top (Marinkov, 2019).

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Italy, 1935-1936: Invasion of Ethiopia

Figure E1: Total spending and revenues

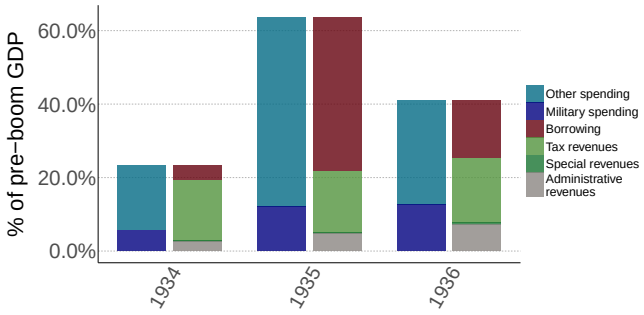


Figure E2: Cumul. change in spending, debt, revenues

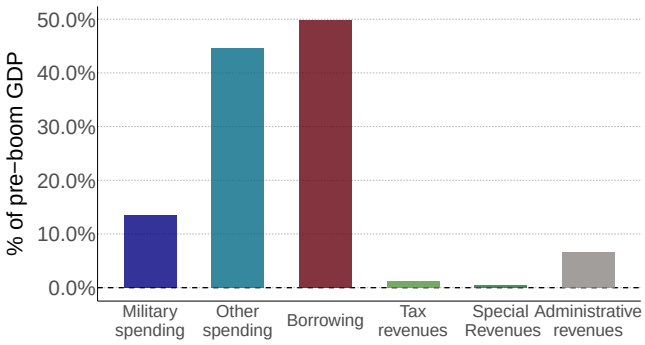


Figure E3: Spending breakdown (cumul. change)

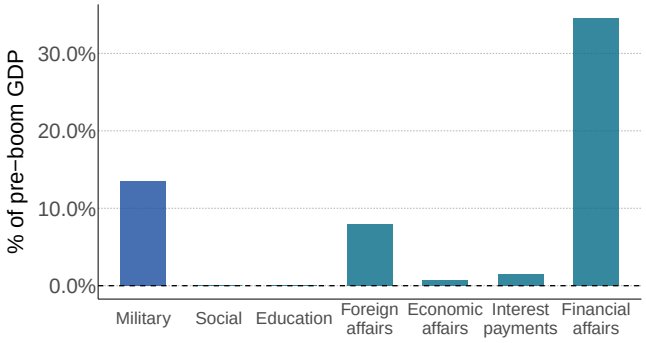
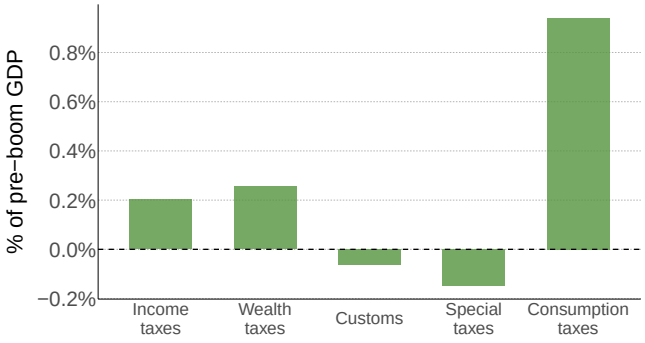


Figure E4: Tax revenue breakdown (cumul. change)



Size: 13.53 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 80.47 % **Average tax growth[1]:** 7.70 %

Historical context – exogenous trigger? No. Italy's 1935 mobilization was driven by its own decision to launch the war against Ethiopia (October 3, 1935 to November 27, 1941), not by any external shock. Mussolini sought imperial expansion and a stronger Mediterranean role (Williamson, 2023). After the Walwal Incident in December 1934, he ordered large scale war preparations and deployed hundreds of thousands of troops and major supplies to Eritrea and Italian Somaliland. International protests followed, and the League of Nations imposed sanctions in October 1935, reinforcing Italy's turn toward autarkic and militarized policies. The campaign produced a domestic rally effect despite its heavy financial and military costs (Donolo and Tritten, 1995), and it revealed significant weaknesses in Italy's military preparedness, especially in naval planning (Paoletti, 2008). Italy's simultaneous intervention in the Spanish Civil War further strained resources and weakened its later position in World War 2 (Millett and Murray, 2010).

New taxes or tax increases? Yes. In 1935–1936, Italy raised several taxes to finance the Ethiopian War (Marinkov, 2019). New levies included a tax on oil sales (Gazzetta Ufficiale, 1935) and, after the League of Nations sanctions, the regime organized nationwide voluntary gold donations, which functioned as a quasi tax (Muccilli, 2024). In addition, a one-off tax on corporate

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

capital was imposed in 1937 to help cover war and rearmament costs (Italy, 1937). The wartime increases were announced as temporary and indeed rolled back, but some measures were later revived to finance Italy's later buildup for World War 2.

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Italy, 1939-1942: World War 2

Figure E1: Total spending and revenues

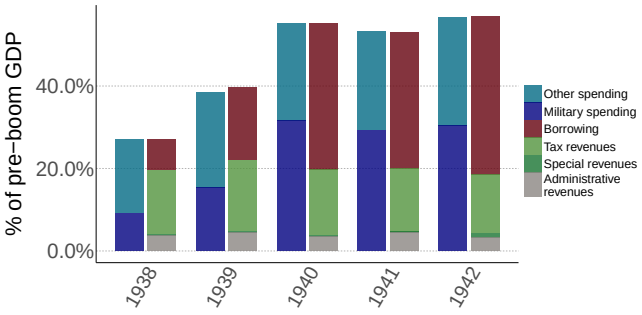


Figure E2: Cumul. change in spending, debt, revenues

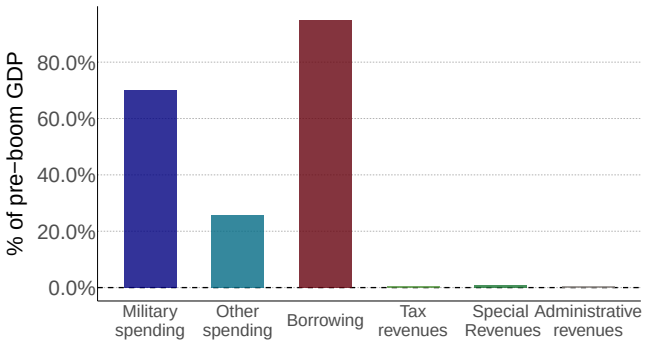


Figure E3: Spending breakdown (cumul. change)

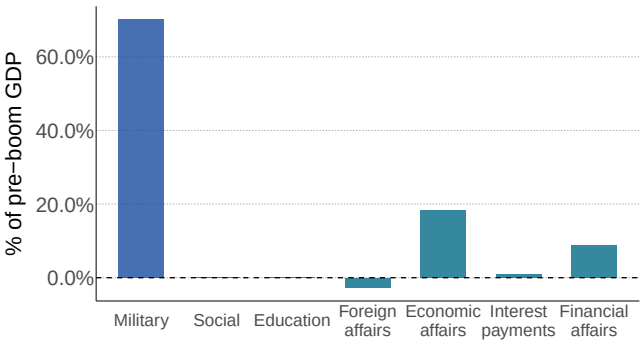
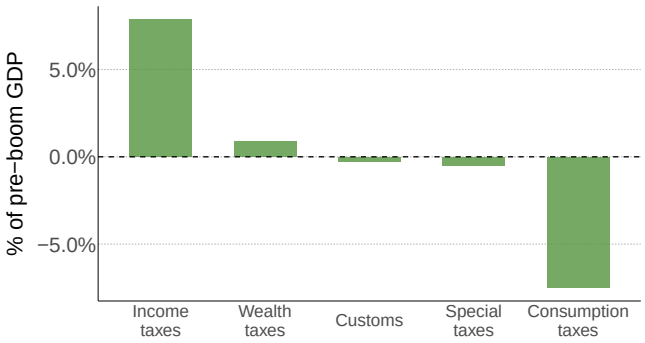


Figure E4: Tax revenue breakdown (cumul. change)



Size: 70.10 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 82.97 % **Average tax growth[1]:** 4.42 %

Historical context – exogenous trigger? Yes. Italy's 1939–40 military buildup was driven by external geopolitical shocks, above all the escalating European crisis and its alliance with Nazi Germany (Tooze, 2006). Fascist ambitions shaped Italian goals, but the timing and urgency of the buildup were determined by events abroad. Mussolini accelerated rearmament in 1939 to prepare for the continental war he expected to fight alongside Germany. Italy then sharply increased military spending after the war began, and Mussolini entered the conflict on June 10, 1940, in the wake of France's military collapse in May–June 1940 (Sadkovich, 1989).

New taxes or tax increases? Yes. Italy relied heavily on on taxation to finance the pre-war buildup and, even more so, after WW2 broke out. Already in 1938, it imposed a special levy on all industrial and commercial firms at 7.5 percent of capital (Gazzetta Ufficiale, 1938). In 1939 a permanent wealth tax of 0.5 percent was added (Gazzetta Ufficiale, 1939). In 1940 the government imposed a temporary income surtax of up to 20 percent (Gazzetta Ufficiale, 1940a), an excess profits tax (rates of 10–60 percent) (Gazzetta Ufficiale, 1940b), and a new general turnover tax of 2 percent, later raised to 3 percent (Italy, 1940). Surtaxes and excess profits taxes were removed after the war, and the wealth tax was abolished in 1948. Changes to estate tax assessment remained in place, and the turnover tax became a permanent feature of Italy's fiscal system.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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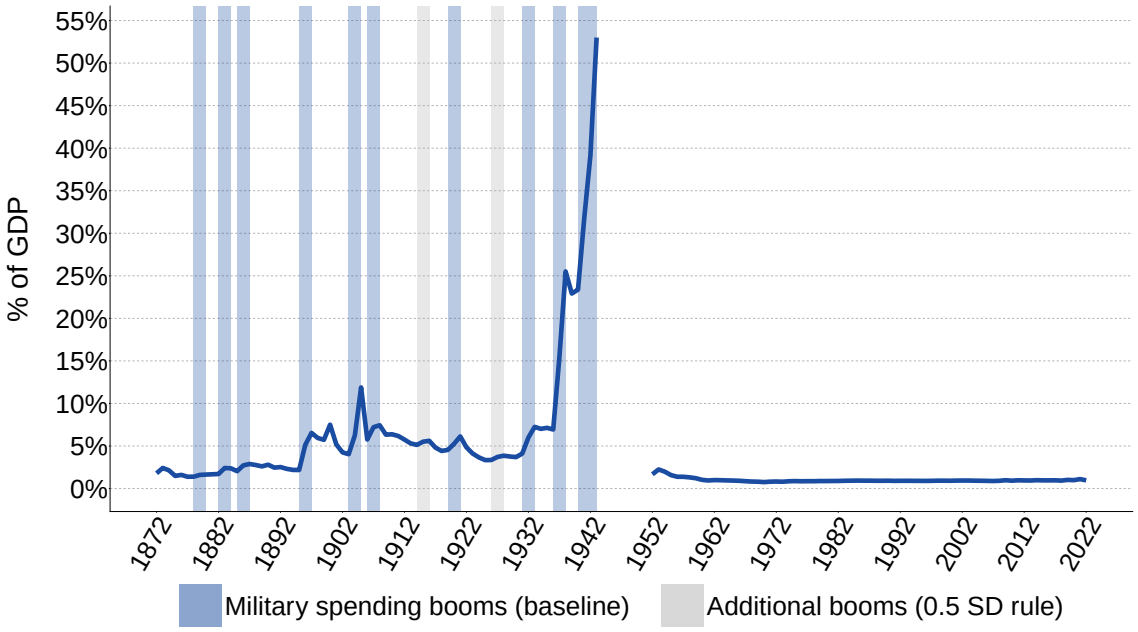
Japan



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1879-1880	0.72%	2 Years	Taxes	Military modernization
2	1883-1884	1.40%	2 Years	Debt	Military modernization
3	1886-1887	2.14%	2 Years	Debt	Chinese fleet visit
4	1896-1897	6.81%	2 Years	Taxes	Expansion after the Triple Intervention
5	1904-1905	10.01%	2 Years	Debt	Russo-Japanese War
6	1907-1908	3.65%	2 Years	Debt	Buildup for imperial expansion
7	1920-1921	2.22%	2 Years	Debt	Siberian Intervention
8	1932-1933	6.95%	2 Years	Debt	Occupation of Manchuria and Shanghai Incident
9	1937-1938	30.87%	2 Years	Debt	Invasion of China
10	1941-1943	55.68%	3 Years	Debt	World War 2

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1915-1916	WW1
2	1927-1928	Expansion to prepare for moves against China and the Soviet Union

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Japan, 1879-1880: Military modernization

Figure E1: Total spending and revenues

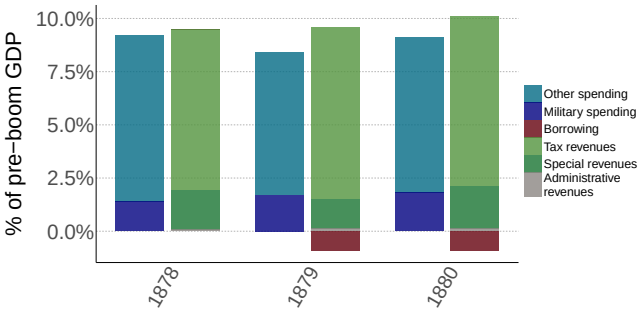


Figure E2: Cumul. change in spending, debt, revenues

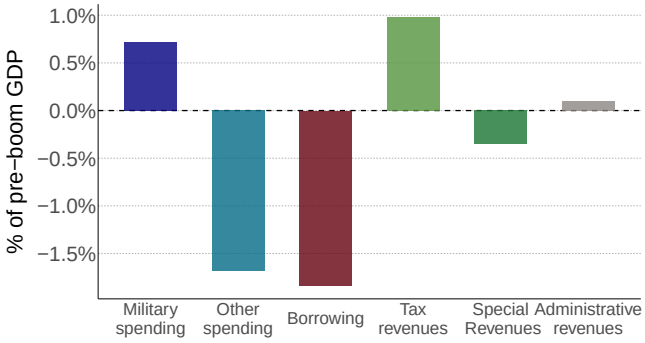


Figure E3: Spending breakdown (cumul. change)

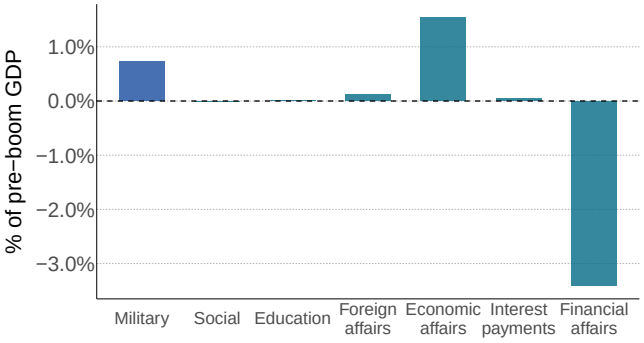
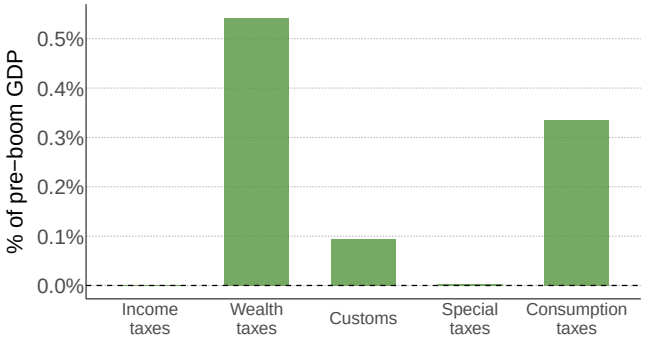


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.72 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 52.96 % **Average tax growth[1]:** -4.45 %

Historical context – exogenous trigger? No. Japan's 1879 military buildup reflected ongoing Meiji era modernization rather than a response to an external shock. After the Satsuma Rebellion of 1877, the government consolidated its authority and accelerated military restructuring (Kublin, 1949). The 1879 annexation of the Ryukyu Islands signaled growing regional ambition and supported incremental strengthening of the army and navy. From 1878 onward Japan adopted German military practices, introducing dual command structures, reserves, and technical services (Shingo, 1965). This shift from the French to the German model formed part of Japan's broader project of Western style military modernization and the consolidation of Meiji state power (Kublin, 1949).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Japan during 1879–1880.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Japan, 1883-1884: Military modernization

Figure E1: Total spending and revenues

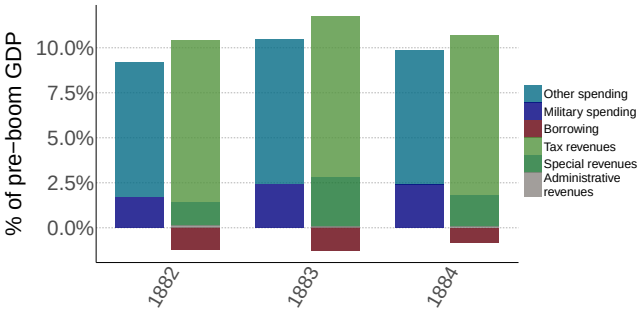


Figure E2: Cumul. change in spending, debt, revenues

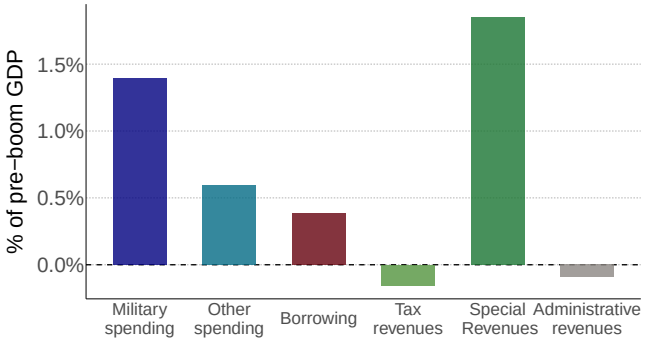


Figure E3: Spending breakdown (cumul. change)

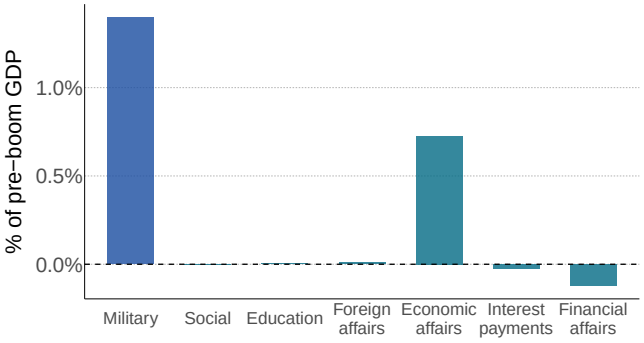
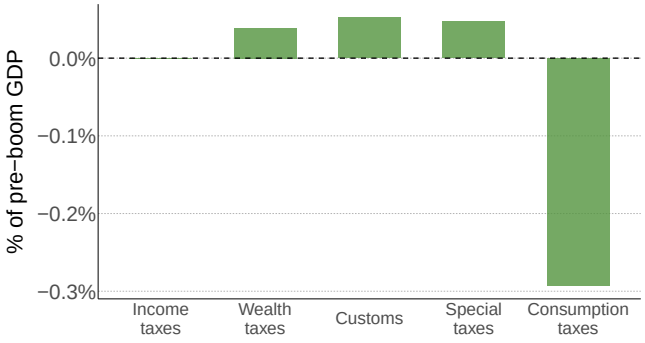


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.40 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 40.23 % **Average tax growth[1]:** 6.90 %

Historical context – exogenous trigger? No. Japan's post-1882 military expansion was part of its ongoing Meiji era modernization and was a long planned reform rather than a reaction to an external shock. Rising regional tensions, including the Sino-French War of 1884–85 and rivalry over Korea and Indochina, influenced the composition of investments but did not trigger them. In 1883 the army proposed a fully specified ten-year plan to field seven modern divisions and strengthen coastal defenses (Kublin, 1949). The government expanded personnel from about 42,300 to 54,000 by 1885 and accelerated shipbuilding, fortification, and professional reforms, with particular emphasis on countering China's rapid military modernization (Kitaoka, nd).

New taxes or tax increases? Yes. To finance the planned military expansion, Japan introduced taxes on medicine, brokers, stock exchanges, as well as on sake, and tobacco in 1882. Furthermore, existing rates on alcohol were increased. It was actively decided not to increase the land tax in the process (Takao, 1965). The taxes were at least partly permanent, as existing high-rate tobacco and alcohol taxation is also mentioned in the 1896–1897 period. In the aftermath of the buildup, in 1887, a new income tax system was introduced (Moriguchi and Saez, 2008).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

References

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Japan, 1886-1887: Ongoing and planned modernization

Figure E1: Total spending and revenues

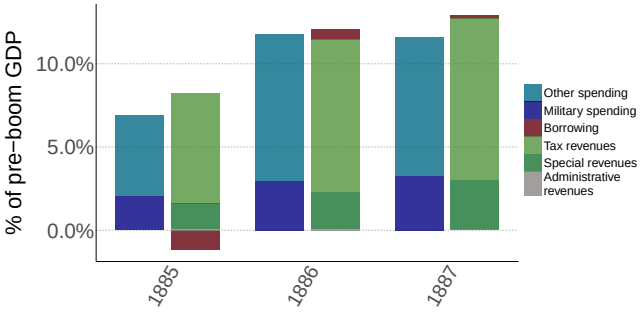


Figure E2: Cumul. change in spending, debt, revenues

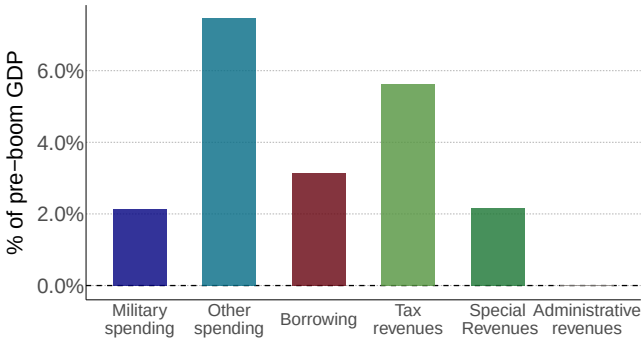


Figure E3: Spending breakdown (cumul. change)

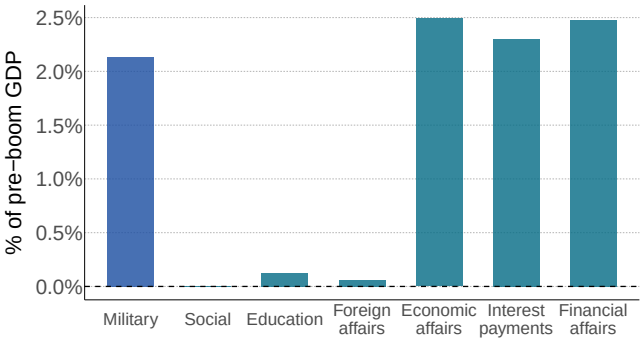
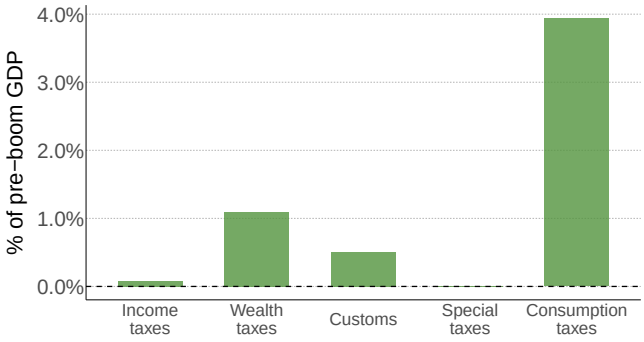


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.14 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 29.07 % **Average tax growth[1]:** -7.78 %

Historical context – exogenous trigger? No. Japan's 1886–87 military buildup reflected the continuation of Meiji era modernization and the implementation of longer-term plans rather than a response to an external shock. From the early 1880s Japan had adopted Prussian military methods, modernized conscription, and expanded coastal defenses as part of systematic institutional reform (Martin and Wetzler, 1990). Rising Sino-Japanese rivalry over Korea shaped the buildup, and the visit of China's Beiyang Fleet underscored Japan's naval vulnerabilities and reinforced calls for strengthening (Kitaoka, 2003). But these were no exogenous triggers. Instead, a main driver of the expansion and its timing was the improved fiscal situation, which allowed Tokyo to raise army and navy budgets and launch a naval construction program, including the purchase of modern steel cruisers from Britain.

New taxes or tax increases? Yes. In 1887, Japan introduced a full income tax system (Moriguchi and Saez, 2008). According to some sources, this was directly linked to rearmament plans and the military buildup during this decade (Takao, 1965). These measures were permanent. Proposals for additional land taxes were not implemented.

(Kitaoka, nd).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Takao, T. (1965). Financial Policy of the Meiji Government. *The Developing Economies*, 3(4):427–449.

Japan, 1896-1897: Expansion after the Triple Intervention

Figure E1: Total spending and revenues

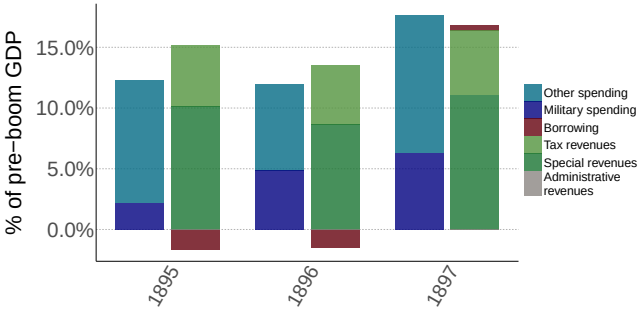


Figure E2: Cumul. change in spending, debt, revenues

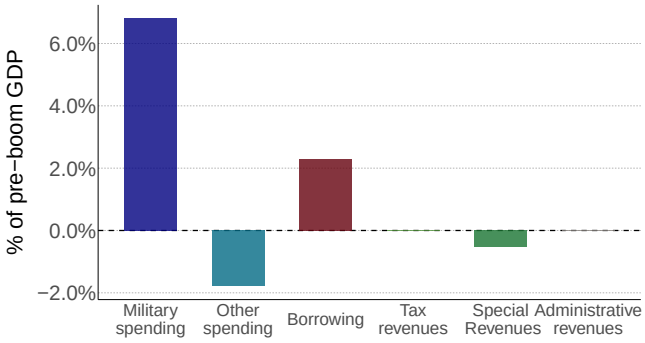


Figure E3: Spending breakdown (cumul. change)

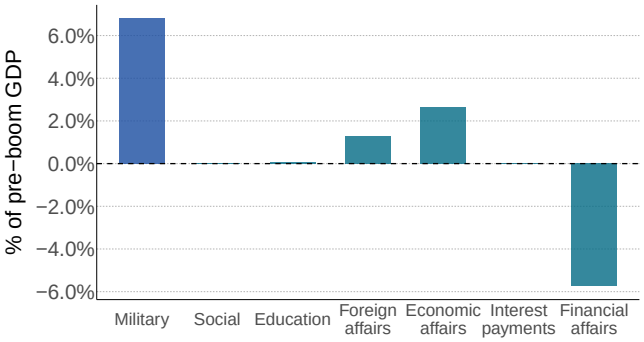
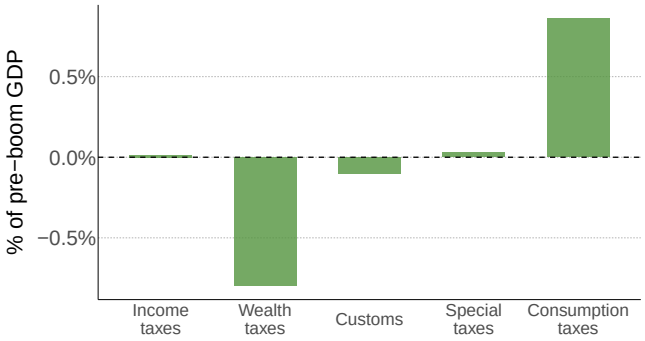


Figure E4: Tax revenue breakdown (cumul. change)



Size: 6.81 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 23.95 % **Average tax growth[1]:** -2.78 %

Historical context – exogenous trigger? Yes. Japan's 1896/97 army and navy expansion was a direct response to the Triple Intervention of 1895, in which Russia, Germany, and France forced Japan to relinquish the Liaodong Peninsula after its victory in the First Sino-Japanese War (July 1894 to April 1895). This was a major diplomatic shock and heightened fears of Russian expansion in Manchuria, generating pressure on the Meiji leadership to accelerate rearmament (Crowley, 1982). Japan's concerns were reinforced as Russia moved to expand its influence in Manchuria, beginning with the 1896 agreement to construct the Chinese Eastern Railway there. From 1896 onward, Japan adopted ambitious army and navy expansion plans that increased the number of army divisions from seven to twelve and launched a large-scale naval construction program aimed at deterring future coercion and securing overseas interests (Drea, 2016).

New taxes or tax increases? Yes. By 1896, Japan introduced additional taxation to help finance the rise in military spending. The government did not want to adjust the land tax for political reasons and therefore introduced a national business tax, registration duties, and a new brewery tax, as well as further increases on income from tobacco (monopoly) (Nagaoka, 1981). The changes were not reversed after the buildup.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Japan, 1904-1905: Russo-Japanese War

Figure E1: Total spending and revenues

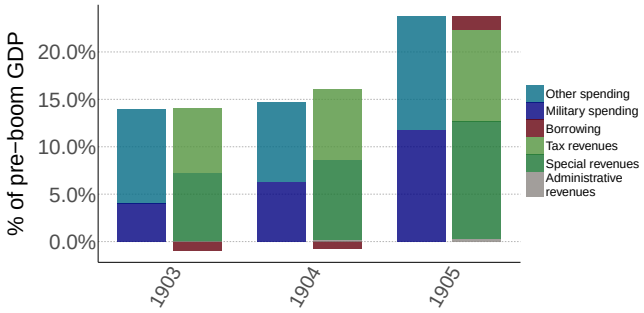


Figure E2: Cumul. change in spending, debt, revenues

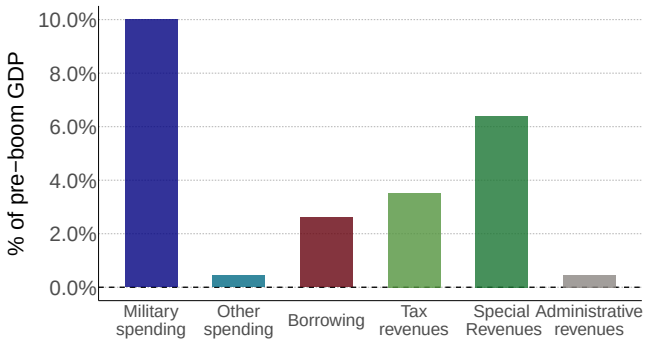


Figure E3: Spending breakdown (cumul. change)

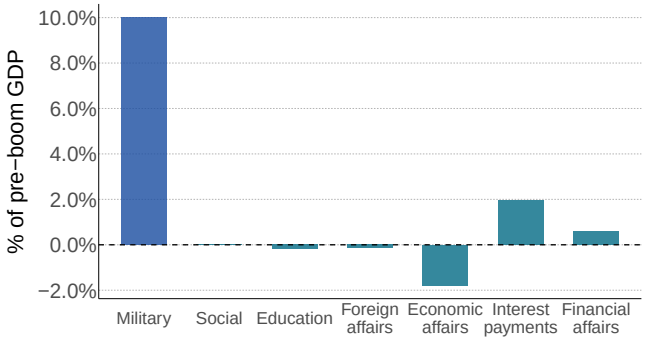
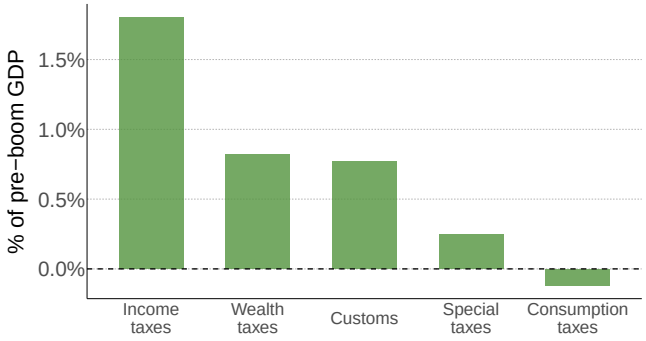


Figure E4: Tax revenue breakdown (cumul. change)



Size: 10.01 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 52.89 % **Average tax growth[1]:** 1.17 %

Historical context – exogenous trigger? Yes. Japan's 1904 military buildup and war with Russia were an externally driven response to Russia's rapid expansion in Northeast Asia. Following the Triple Intervention of 1895, which forced Japan to relinquish the Liaodong Peninsula, Russia leased the peninsula and Port Arthur in 1898, thereby expanding its presence in southern Manchuria. After the Boxer Rebellion of 1900, Russian forces occupied Manchuria. Tensions escalated further in 1902–03 as Russia failed to withdraw despite international protests and consolidated its control through new administrative arrangements. Negotiations with Japan collapsed in late 1903, as Russia refused to agree to binding spheres of influence in Korea and Manchuria (Miller, 2005; Kowner, 2001). These developments sharply altered Japan's security environment. Tokyo responded with full mobilization and a rapid increase in defense spending. Hostilities began with Japan's attack on the Russian fleet at Port Arthur on February 8–9, 1904, followed by a formal declaration of war two days later (Ananich and Lebedev, 2005). Japan's victory marked a turning point in its emergence as a major military power and laid the groundwork for further postwar armament expansion (Ohkawa, 1965).

New taxes or tax increases? Yes. In 1904, Japan introduced a special war tax package. It increased the rates for various existing taxes, including those on land, income, business, and

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

excises such as sake, soy, and sugar. Import duties were also raised. Furthermore, the package introduced a new inheritance tax and a new consumption tax on textiles. A second round of increases was implemented in 1905. Notably, the land tax was only modestly increased, while revenue from indirect taxes, especially excises on consumer goods, rose by about 300% from 1903–1908 (Cappella Zielinski, 2016).

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Japan, 1907-1908: Buildup for imperial expansion

Figure E1: Total spending and revenues

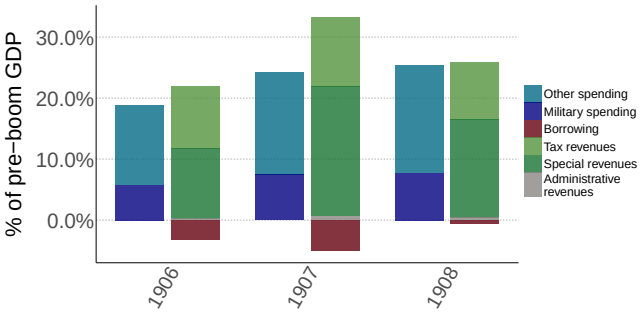


Figure E2: Cumul. change in spending, debt, revenues

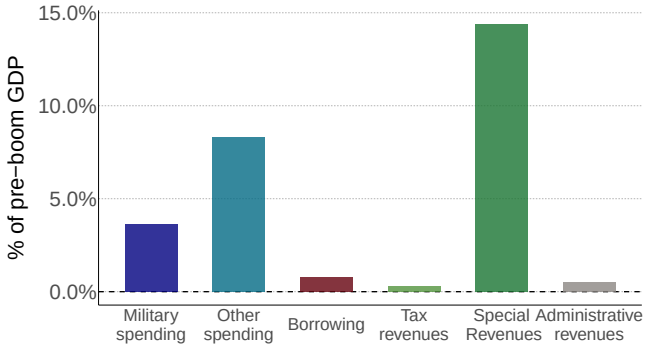


Figure E3: Spending breakdown (cumul. change)

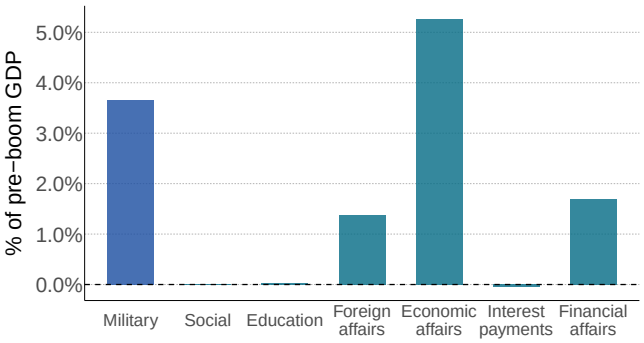
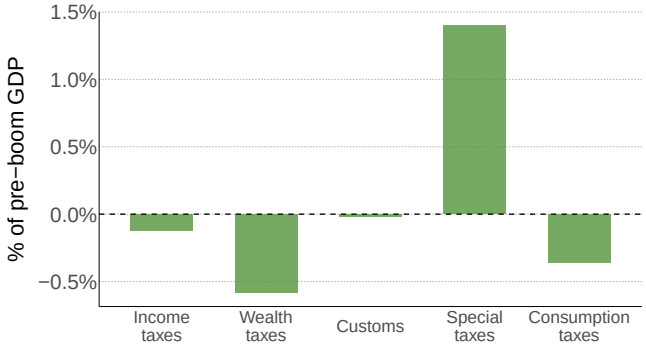


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.65% of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 57.30 % **Average tax growth[1]:** 17.03 %

Historical context – exogenous trigger? No. Japan's 1907 military buildup mirrored the internally driven consolidation of imperial power following the Russo-Japanese War, not an external shock. The Basic Plan of National Defense formalized Japan's expansionist objectives, outlining ambitions in Manchuria, Korea, South Asia, and the western Pacific and calling for substantial force enlargement, including proposals to increase the number of army divisions (Dickinson, 2016; Ohkawa, 1965).

New taxes or tax increases? Yes. Between 1907 and 1908, Japan extended and partially institutionalized the temporary taxes introduced during the Russo-Japanese War of 1904–05, without introducing major new tax instruments. In 1908, the Special Tax Law of 1904 was prolonged, and several wartime taxes were made permanent. The inheritance tax introduced in 1904 was amended in 1907 and established as a permanent levy. As a result, the tax base remained significantly broader and tax rates stayed above pre-1904 levels (Cappella Zielinski, 2016).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Japan, 1920-1921: Siberian Intervention

Figure E1: Total spending and revenues

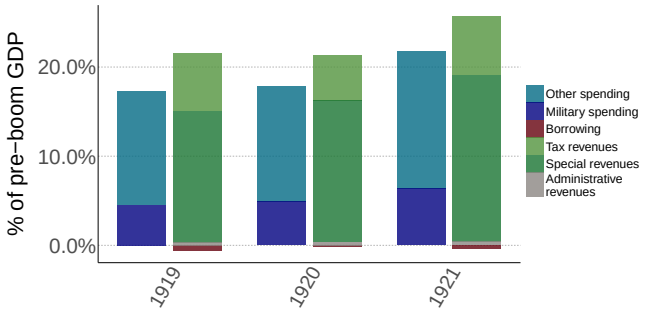


Figure E2: Cumul. change in spending, debt, revenues

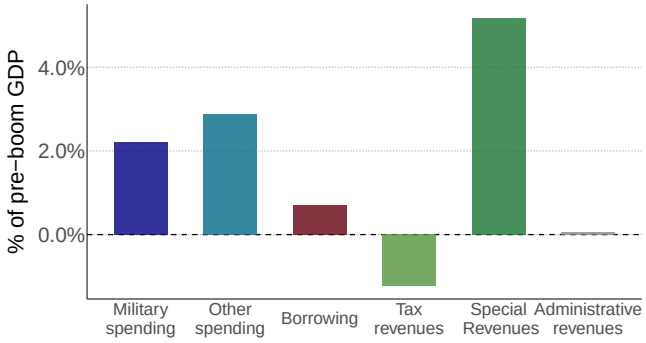


Figure E3: Spending breakdown (cumul. change)

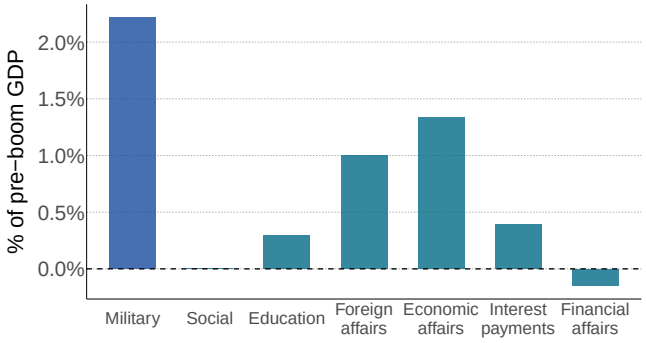
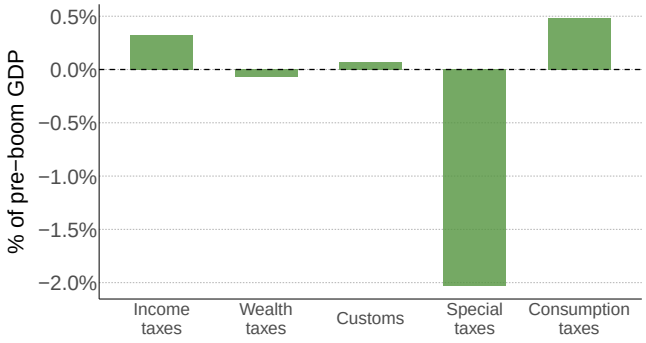


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.22 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 27.40 % **Average tax growth[1]:** -2.52 %

Historical context – exogenous trigger? Yes. Japan's 1918–1922 military intervention was an externally driven response to the collapse of Imperial Russia and the outbreak of the Russian Civil War (1917–22), which destabilized Northeast Asia. Japan joined the Allied Siberian Intervention to support Czechoslovak and White Russian forces and to secure the Trans Siberian and Chinese Eastern Railways, deploying roughly 72,000 troops (Dunscomb, 2018). Tensions escalated further after the Nikolayevsk Incident in March 1920, when Bolshevik partisans killed about 700 Japanese civilians, triggering public outrage and prompting additional troop deployments, including to Karafuto (Sakamoto, 2014b). Even after the collapse of White offensives in 1919, Japanese forces remained in Siberia until 1922. Military spending on the army and navy increased sharply during the intervention, with a further surge following the Nikolayevsk Incident (Sakamoto, 2014b).

New taxes or tax increases? Yes. In 1920, Japan implemented a permanent income tax reform to replace temporary World War 1 taxes and to finance the high ad growing military expenditures (Nakaoka, 2016). The reform followed the abolition of the wartime excess profits tax at the end of 1919, which had taxed excess private profits at 15 percent and corporate profits at 20 percent (Sakamoto, 2014a). To offset the resulting revenue loss, the 1920 reform increased income tax

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

rates, extended taxation to dividend income, and introduced penalties to strengthen enforcement. The changes were progressive in design, placing a greater burden on high private and corporate incomes. The changes permanently expanded the income tax base (Nakaoka, 2016).

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Japan, 1932-1933: Occupation of Manchuria and Shanghai Incident

Figure E1: Total spending and revenues

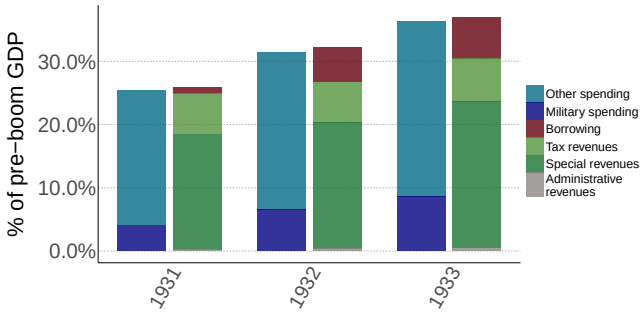


Figure E2: Cumul. change in spending, debt, revenues

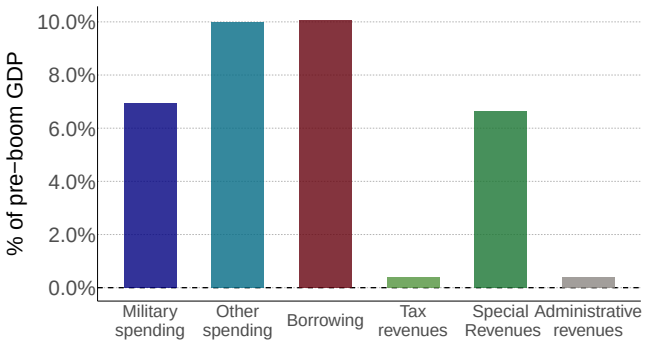


Figure E3: Spending breakdown (cumul. change)

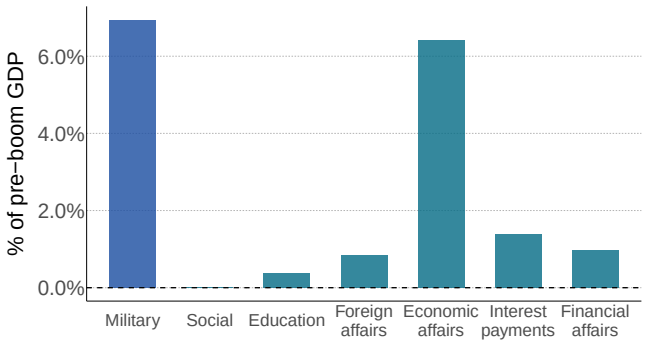
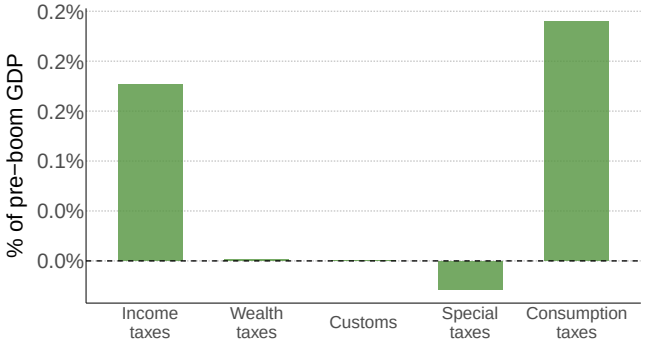


Figure E4: Tax revenue breakdown (cumul. change)



Size: 6.95 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 55.33 % **Average tax growth[1]:** -1.45 %

Historical context – exogenous trigger? No. Japan's 1932–33 military interventions and the occupation of Manchuria were internally driven and followed Japan's own aggressive actions, not an external shock. The Manchurian Incident (September 1931–February 1932) and the Shanghai Incident (January–March 1932) were orchestrated by the Japanese military to justify expansion. After occupying Manchuria, Japan established the puppet state of Manchukuo in 1932, marking a shift from limited territorial influence to direct imperial control (O'Neil, 2003). These actions showed domestic militarization and ideological radicalization, and they set Japan on a path toward prolonged conflict with China. International condemnation and Japan's withdrawal from the League of Nations in 1933 reinforced this internally driven expansionist trajectory (Goddard, 2018).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Japan during 1932–1933. Rather, Japan mostly financed the military expansion by issuing domestic bonds (Yoshio, 1937).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Japan, 1937-1938: Invasion of China

Figure E1: Total spending and revenues

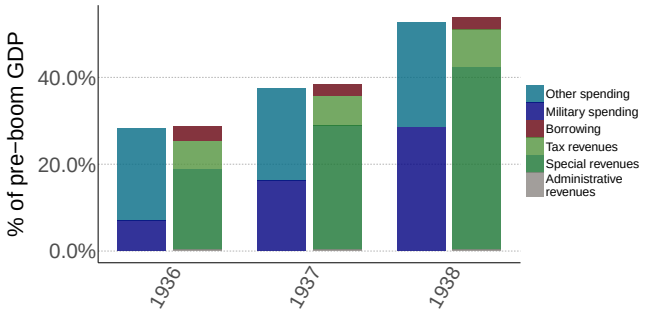


Figure E2: Cumul. change in spending, debt, revenues

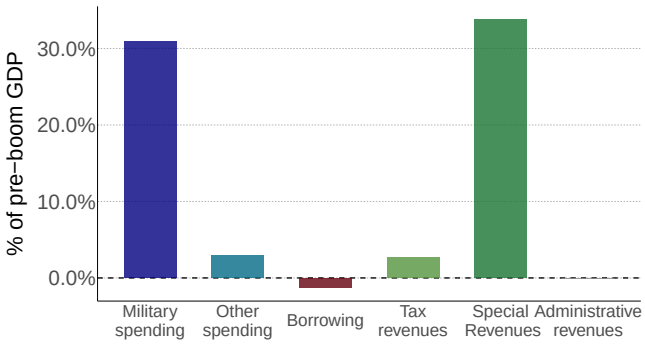


Figure E3: Spending breakdown (cumul. change)

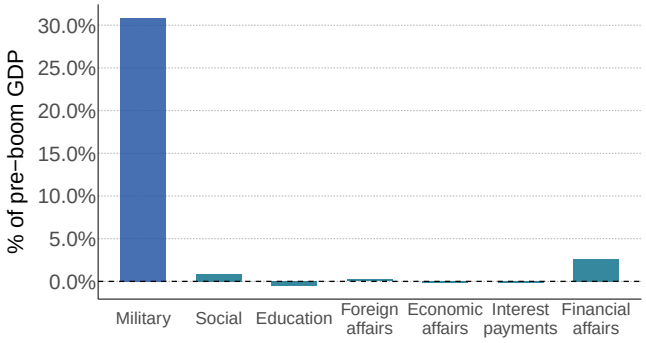
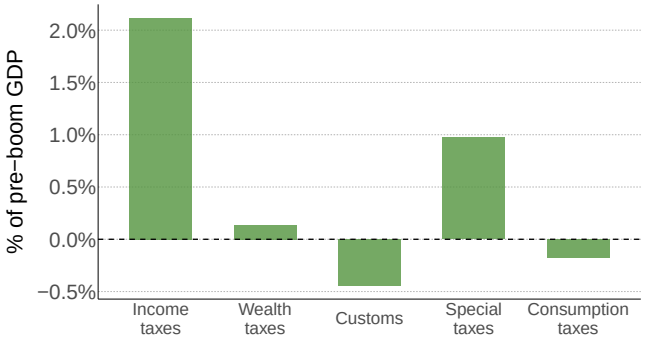


Figure E4: Tax revenue breakdown (cumul. change)



Size: 30.87 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 61.55 % **Average tax growth[1]:** 7.56 %

Historical context – exogenous trigger? No. Japan's 1937–38 military mobilization resulted from its own decision to launch a full scale invasion of China, beginning with the Marco Polo Bridge Incident on July 7, 1937. By 1938, Japanese forces had advanced deep into central and southern China, requiring large scale mobilization and the creation of a wartime economy under the National Mobilization Law of 1938, with military outlays dominating the state budget (Hughes and Royde-Smith, 2025). The Japanese government articulated a "New Order" in East Asia, aiming to integrate Japan, Manchukuo, and occupied China under Japanese leadership (Crowley, 1982). Japan's expansionist actions sought economic self-sufficiency and reduced dependence on Western powers, and sharply worsening relations with the United States, setting the stage for wider conflict (Office of the Historian, nd).

New taxes or tax increases? Yes. During the invasion of China beginning in 1937, Japan introduced a series of temporary wartime tax measures to finance rising military expenditures (Ludmer, 1946). These included higher income tax rates on private and corporate incomes, excises on gasoline, taxes on corporate capital, and a special levy on foreign currency securities. Additional rate increases followed in 1938 and 1939. The temporary measures expired as scheduled, but

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

because they raised insufficient revenue, the government implemented a broader tax revision in 1940.

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Japan, 1941-1943: World War 2

Figure E1: Total spending and revenues

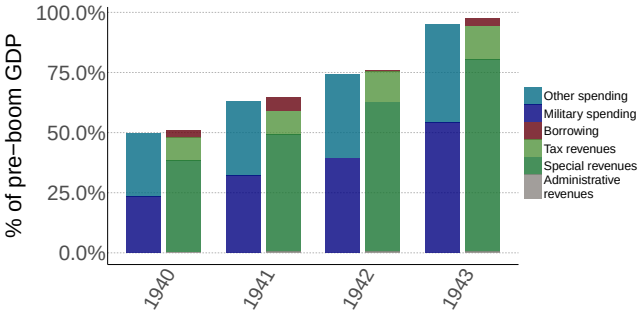


Figure E2: Cumul. change in spending, debt, revenues

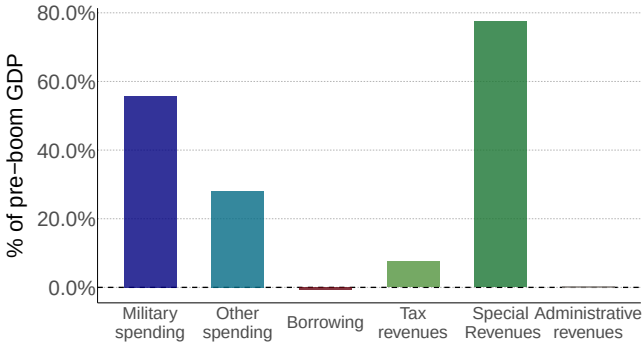


Figure E3: Spending breakdown (cumul. change)

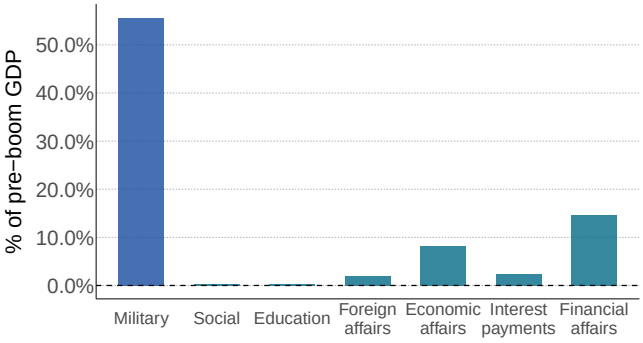
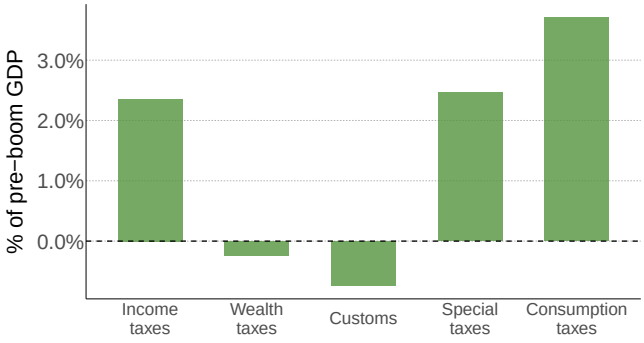


Figure E4: Tax revenue breakdown (cumul. change)



Size: 55.68 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 129.96 % **Average tax growth[1]:** 23.49 %

Historical context – exogenous trigger? Yes. Japan's military escalation and declaration of war in 1941 were triggered by acute external shocks, most importantly the U.S.-led oil and trade embargoes, Allied asset freezes, and the collapse of diplomatic negotiations. These measures contributed to a resource crisis, as Japan depended heavily on imported oil, particularly from the Dutch East Indies (Drea, 2016). Diplomatic efforts failed in late 1941, culminating in the U.S. Hull Note of November 26, 1941, which Japanese leaders interpreted as foreclosing further negotiation (Ono, 2012). Faced with rapidly depleting oil reserves and mounting external pressure, Japan accelerated full-scale mobilization and war preparations, culminating in the attack on Pearl Harbor on December 7, 1941. While long-standing imperial ambitions shaped Japan's strategic objectives, the timing and scale of escalation were driven by these external economic and diplomatic constraints (Hirohito, 1941; Drea, 2016).

New taxes or tax increases? Yes. In 1940, Japan reformed income taxation to finance military expenditures more directly, introducing a separation between private and corporate income taxes (Ludmer, 1946). Private incomes were subject to additional progressive taxation, while corporate taxation was expanded through an excess profits surtax, alongside reductions in exemptions to

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

broaden the tax base. Excise taxes introduced during the 1937 boom remained in place, and the alcohol tax was increased in 1940. After the war, the high income tax surcharges and the excess profits tax were abolished. In 1946, a one time capital levy of up to 90 percent was imposed to reduce war related debt (Shavell, 1948). Subsequent reforms in 1946–47 made the progressive income tax structure and the separation of private and corporate taxation permanent. Excise taxes on luxury goods remained elevated while those on essential goods were reduced again.

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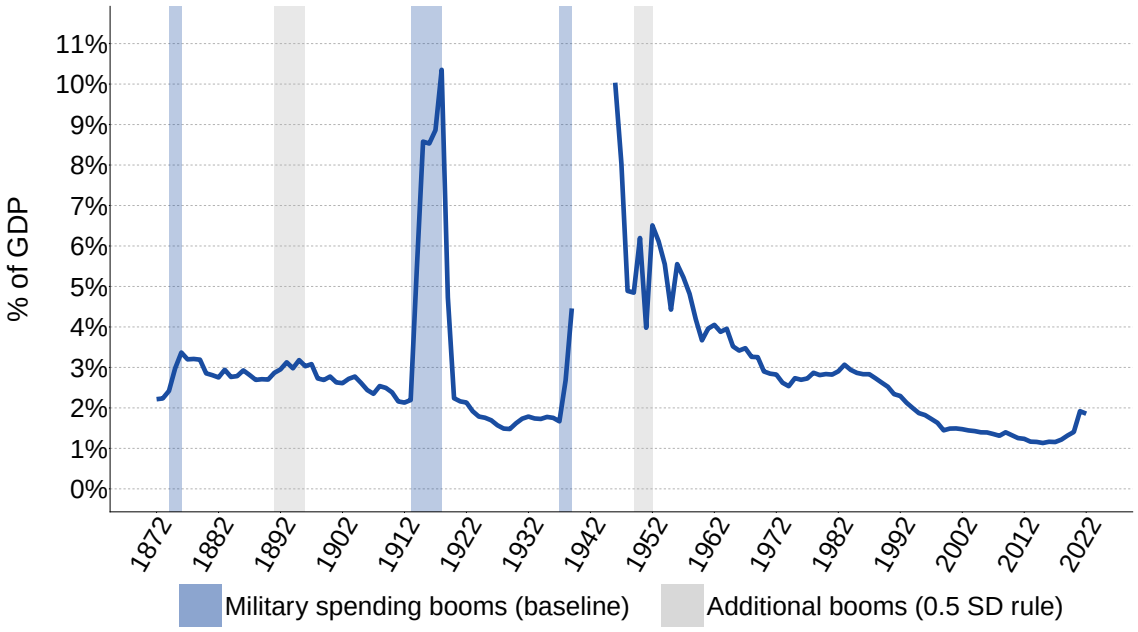
Netherlands



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1875-1876	2.00%	2 Years	Debt	Aceh War
2	1914-1918	26.87%	5 Years	Debt	World War 1
3	1938-1939	3.95%	2 Years	Mixed	Threat from Nazi Germany

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1892-1896	Navy and coastal defense modernization
2	1950-1952	NATO and support in Korean War

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Netherlands, 1875-1876: Aceh War

Figure E1: Total spending and revenues

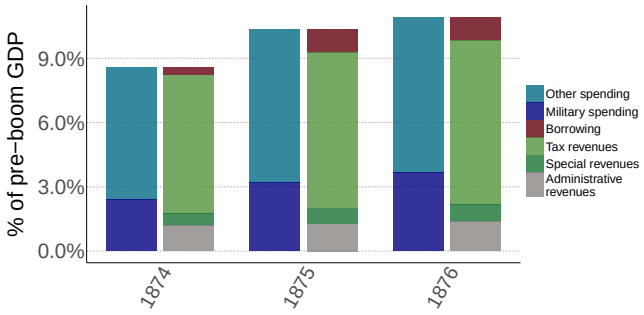


Figure E2: Cumul. change in spending, debt, revenues

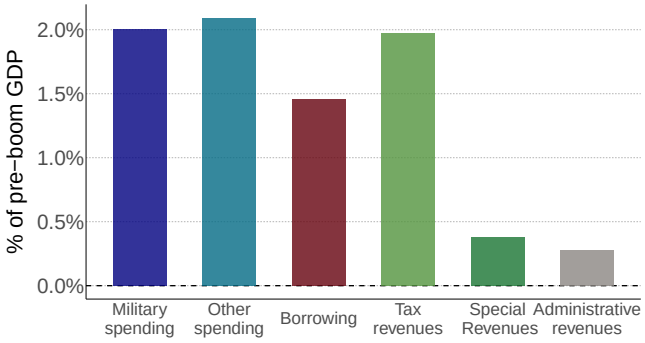


Figure E3: Spending breakdown (cumul. change)

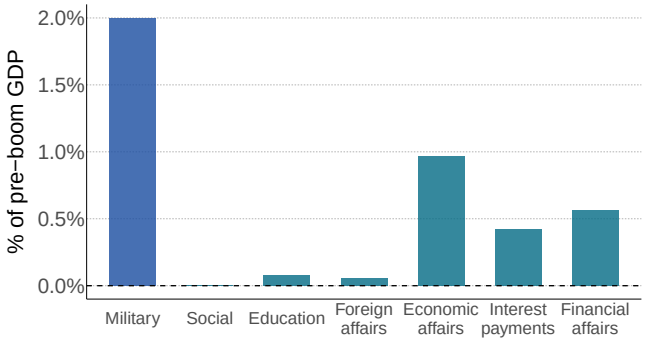
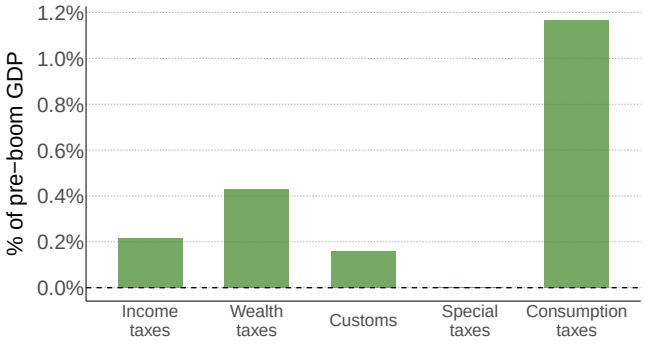


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.00 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 84.31 % **Average tax growth[1]:** 1.17 %

Historical context – exogenous trigger? Yes. The Dutch military buildup of 1875–76 was driven by external shocks arising from the unexpectedly costly Aceh War. The conflict has its roots in a planned short colonial campaign, but the first expedition (March–April 1873) failed and resulted in the death of General Köhler in April 1873. These setbacks revealed the strength of Acehnese resistance and forced the Dutch government into unplanned reinforcements of troops and resources (Kossmann, 1978). Continued military difficulties required repeated escalations in force levels and spending, transforming the campaign into one of the costliest colonial wars in Dutch history. Although major operations persisted well beyond 1876, the initial shocks triggered a sustained buildup that ultimately led to expanded Dutch territorial control (Kitzen, 2016).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in the Netherlands from 1875-1876.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

References

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Netherlands, 1914-1918: World War 1

Figure E1: Total spending and revenues

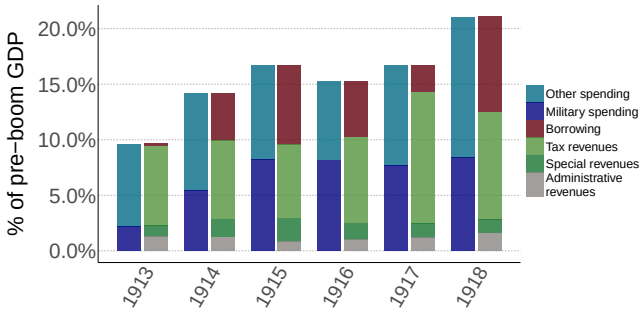


Figure E2: Cumul. change in spending, debt, revenues

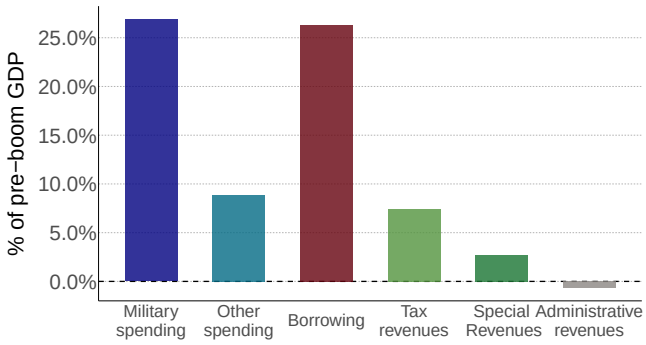


Figure E3: Spending breakdown (cumul. change)

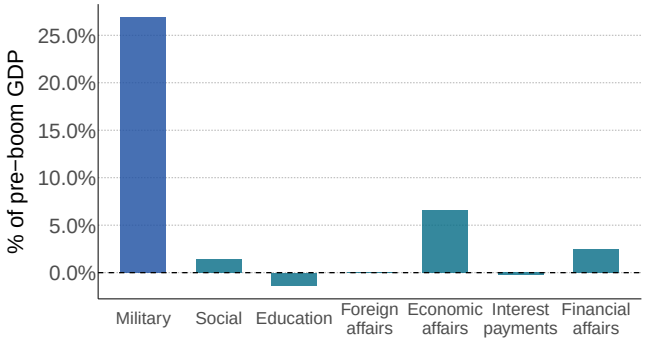
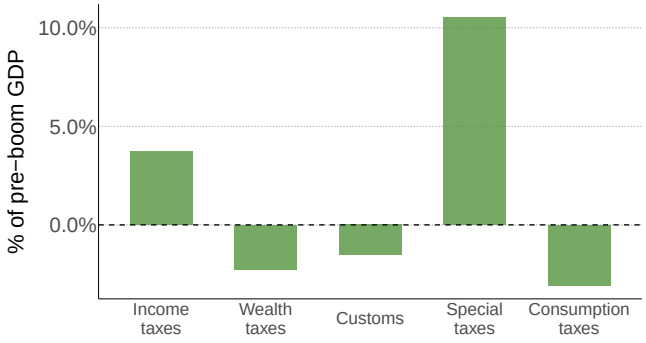


Figure E4: Tax revenue breakdown (cumul. change)



Size: 26.87 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 47.41 % **Average tax growth[1]:** 1.91 %

Historical context – exogenous trigger? Yes. The Dutch military spending surge from 1914 through 1918 was a sustained exogenous response to the outbreak of World War 1, which immediately forced a full mobilization of around 200,000 men to protect Dutch neutrality. Throughout 1915–1918, this costly mobilization remained necessary because Dutch leaders feared that one of the belligerents, especially Germany, might violate Dutch territory to gain strategic advantage. Defense preparations focused on strategic positioning and fortification systems (Klinkert, 2023). Maintaining neutrality facilitated exports but required substantial military resources, even though the public largely opposed military service (Klinkert, 2019). As a neutral buffer zone, the Netherlands became a vital space for humanitarian operations. It also served as a hub for espionage activities carried out by both Allied and Central Powers (Bout, 1972).

New taxes or tax increases? Yes. During the war, the Netherlands introduced several major tax measures. In 1914, an income tax reform unified the taxation of income from all sources and introduced a top rate of 5 percent (Den Hartogh, D., 1914). In 1916, two temporary defense taxes were enacted: a progressive wealth surtax of up to 2 percent of total wealth and an additional progressive income surtax (Ministerie van Financien, 1916a). Both measures were extended well

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

beyond the war, with the wealth surtax abolished only during the German occupation in 1941 and the income surtax in 1931 (Overwater, 2021). A temporary excess profits tax was also introduced in 1916, taxing corporate and capital profits above prewar levels at progressive rates of 10 to 30 percent until 1918 (Ministerie van Financien, 1916b). In 1917, dividends and tantièmes were permanently brought into the income tax base (Ministerie van Financien, 1917). Overall, these reforms were progressive and significantly broadened the Dutch tax base over the long run.

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Netherlands, 1938-1939: Threat from Nazi Germany

Figure E1: Total spending and revenues

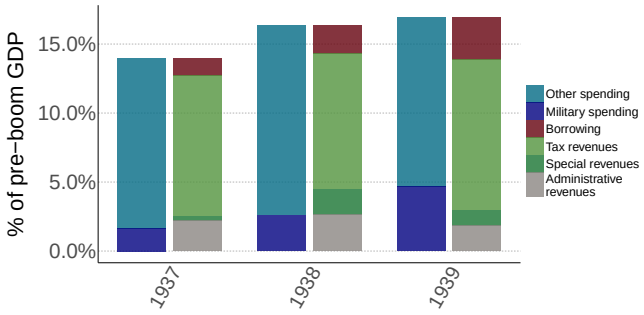


Figure E2: Cumul. change in spending, debt, revenues

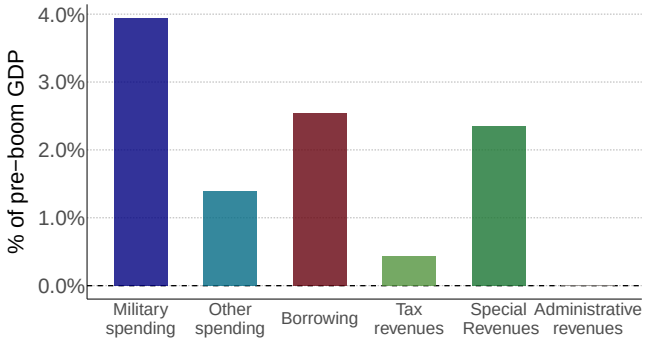


Figure E3: Spending breakdown (cumul. change)

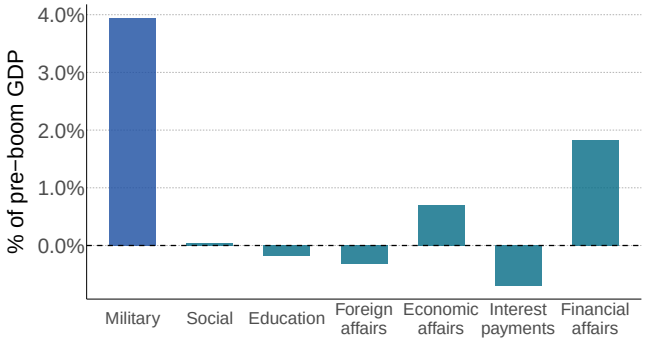
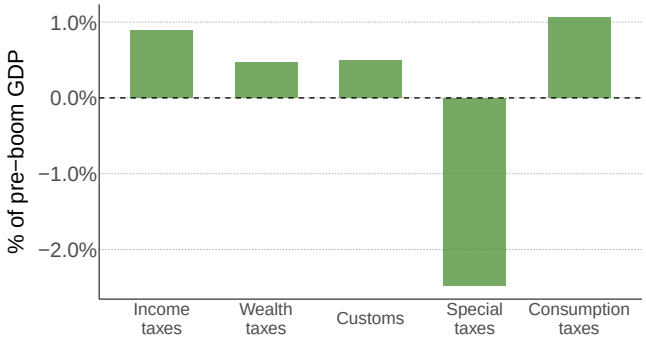


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.95 % of pre-boom GDP **Duration:** 2 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 70.99 % **Average tax growth[1]:** 8.79 %

Historical context – exogenous trigger? Yes. The Netherlands' military buildup from 1938 onward was a direct reaction to external shocks such as Germany's Anschluss of Austria (March 12, 1938) and the Munich Crisis (September 30, 1938). Although neutrality remained the guiding principle, political and military leaders increasingly recognized the dangers of Nazi rearmament and expansion (Klinkert, 2019). Between 1937 and 1939, the Netherlands expanded its forces. The navy launched additional submarines as part of this effort (Noppen, 2020). Yet, strict adherence to neutrality and outdated strategic concepts limited the scope and pace of Dutch rearmament compared to the UK or France (Klinkert, 2019).

New taxes or tax increases? Yes. In 1938, the Netherlands prolonged existing temporary taxes, such as the first defense tax from 1916, the tobacco tax, or coupon tax, and increased existing rates to raise revenues for military expenditures (Ministerie van Financien, 1938). The measures, extended until 1942 in 1939, included surtaxes on income (70%) and wealth (75%), spirit, alcohol (10%), sugar (10%), stamp and registration duties (20%), dividends and tantièmes (93%), land (20%), gift, and succession taxes (20%) (Ministerie van Financien, 1938). During the Nazi-Germany occupation, the tax on dividend profits was replaced by new profit tax acts in

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

1940 (Fliers et al., 2024). The reform proposal originated from before the war and introduced an 11.5% rate on taxable profits. The rate was increased to 26.5-31.5% in late 1940. The subsequent 1942 reform increased the rate further up to 55% (Fliers et al., 2024). The corporate tax was not abolished or even significantly changed in the two decades after World War 2. Further short-term taxes were implemented in the post-war period until the first tax reductions were made in 1947 to ease the burden on lower-income classes (Goedhart, 1966). Overall, the rollback in taxes was only partial.

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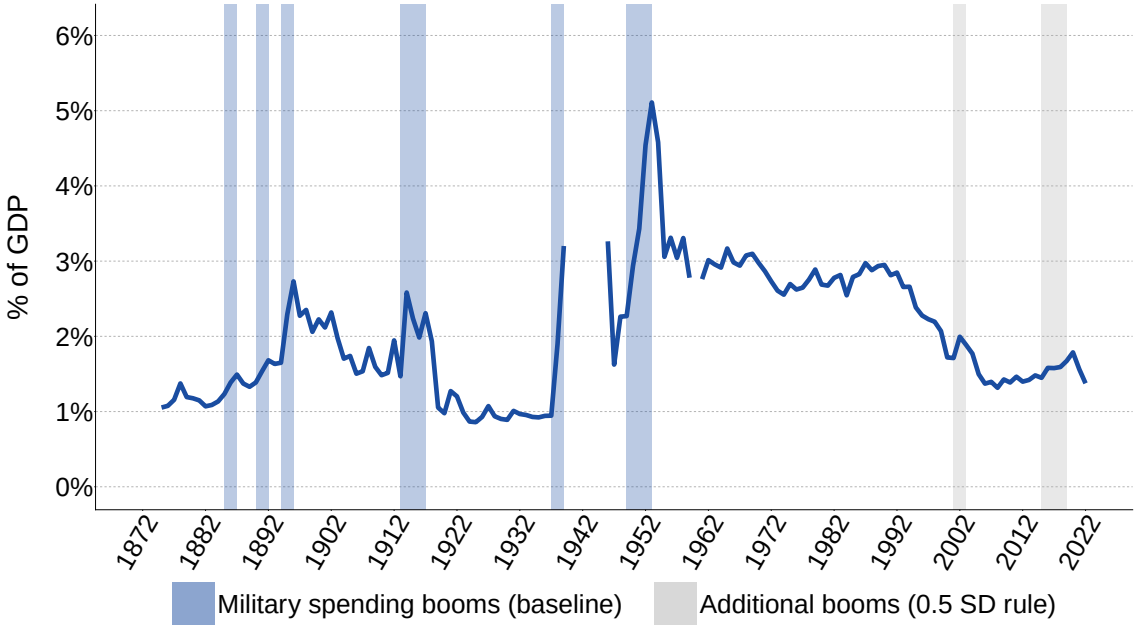
Norway



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1886-1887	0.45%	2 Years	Taxes	Planned military reorganization
2	1891-1892	0.51%	2 Years	Debt	Union crisis with Sweden
3	1895-1896	1.86%	2 Years	Mixed	Swedish threat during Union Crisis
4	1914-1917	3.66%	4 Years	Taxes	World War 1
5	1938-1939	3.48%	2 Years	Debt	Threat from Nazi Germany
6	1950-1953	9.09%	4 Years	Taxes	Buildup after joining NATO

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	2002-2003	Army reorganization and structural Reform
2	2016-2020	Modernization and cost-efficiency programs, NATO targets

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Norway, 1886-1887: Planned military reorganization

Figure E1: Total spending and revenues

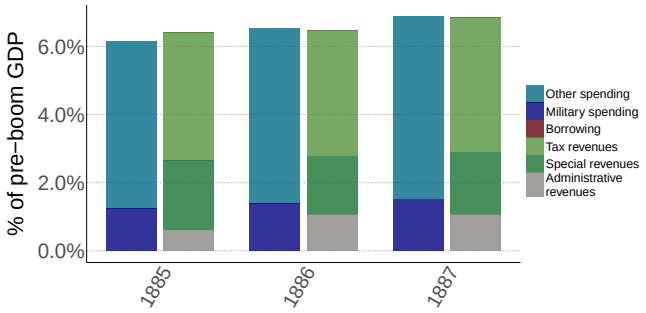


Figure E2: Cumul. change in spending, debt, revenues

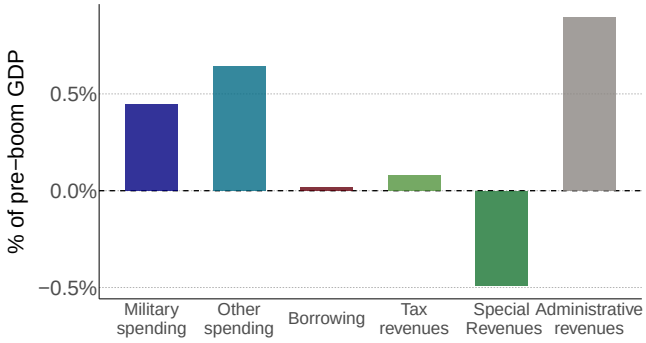


Figure E3: Spending breakdown (cumul. change)

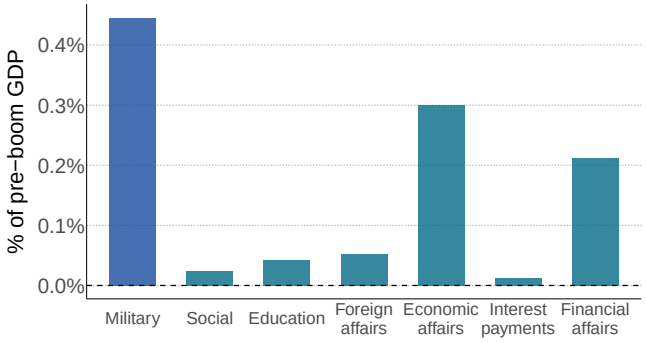
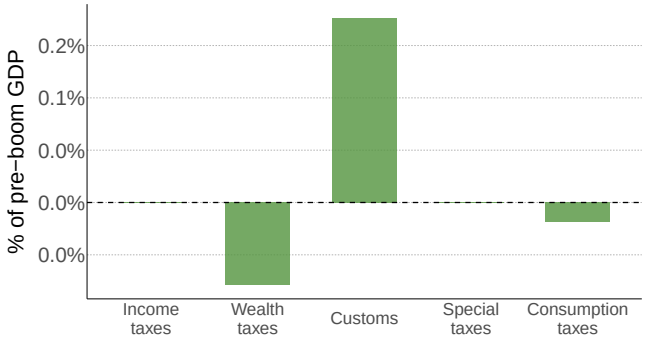


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.45% of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 17.48 % **Average tax growth[1]:** 3.51 %

Historical context – exogenous trigger? No. Norway's 1886–87 military buildup was an internally driven reform, reflecting planned modernization and growing national autonomy within the union with Sweden, not a response to an external shock. The introduction of universal conscription in 1885 was followed by a comprehensive army reorganization in 1887, the first major restructuring since 1817 (Friis, 2014). These reforms shifted Norwegian defense toward territorial protection and away from expeditionary capacity, consistent with rising nationalism and evolving domestic defense doctrine. Although general European naval competition and Russian activity in the north formed part of the broader strategic background, they did not constitute a direct trigger (Børresen and Dørum, 2024). The reforms also aligned with the social liberal Venstre party's emphasis on civilian control and a national citizen army (Friis, 2014).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Norway during 1886-1887.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Norway, 1891–1892: Union crisis with Sweden

Figure E1: Total spending and revenues

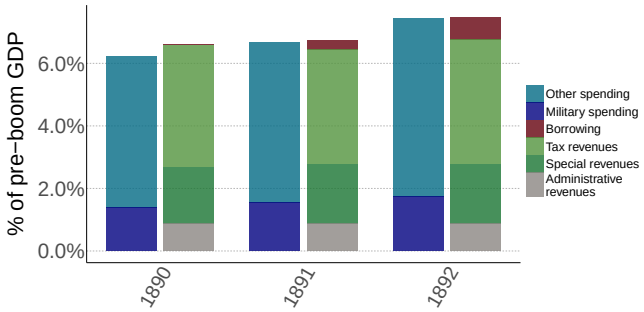


Figure E2: Cumul. change in spending, debt, revenues

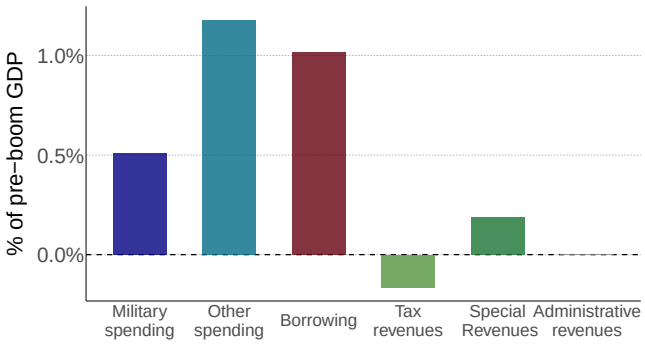


Figure E3: Spending breakdown (cumul. change)

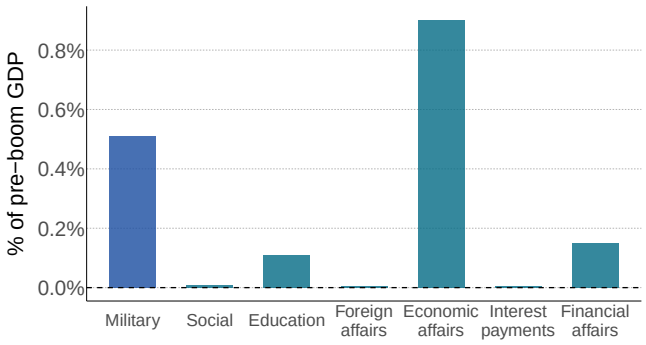
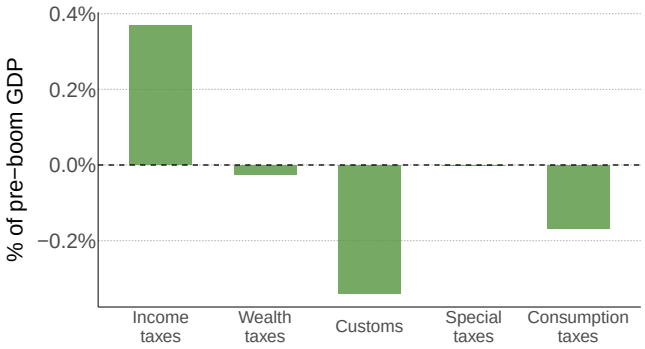


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.51 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 16.86 % **Average tax growth[1]:** 3.92 %

Historical context – exogenous trigger? Yes. Norway's 1891–1892 military buildup was triggered by external political pressure arising from the escalating union crisis with Sweden. King Oscar II's veto of Norway's proposed consular law, together with Swedish threats of military enforcement, created a credible risk of coercion that lay outside Norway's control. Although Norway and Sweden had been united since 1814 under a shared monarch and foreign policy, the victory of the social liberal Venstre Party in the 1891 election renewed Norway's push for an independent consular service and sharply intensified tensions (Christensen et al., 2025). Fears of a possible Swedish landing in the Oslofjord prompted rapid defensive planning. In response, parliament established a defense commission in 1891 to assess the requirements of national defense. The commission rejected earlier concerns about a Russian land invasion and instead identified maritime blockades and coastal raids as the primary threats (Ydstebø, 2002). These assessments led to an ambitious coastal defense program, proposing the modernization of 21 forts and the deployment of heavy artillery, torpedo batteries, and minefields around key fjords.(Kaufmann and Jurga, 1999).

New taxes or tax increases? No. We find no evidence of significant tax increases introduced specifically to finance Norway's military buildup in 1891–1892. The main relevant fiscal

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

reform was the introduction of a permanent state income and wealth tax a decade earlier, in 1882, which established a modern tax administration with municipal, district, and national authorities, mandatory income disclosure, and enforcement penalties (Stortinget, 1892). This reform created the institutional framework for taxation but did not set new tax rates tied to the later defense expansion.

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Norway, 1895-1896: Swedish threat during Union Crisis

Figure E1: Total spending and revenues

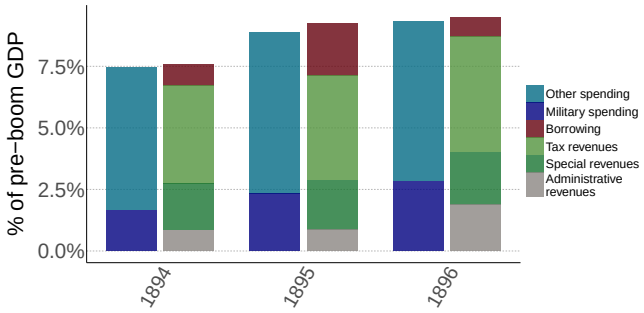


Figure E2: Cumul. change in spending, debt, revenues

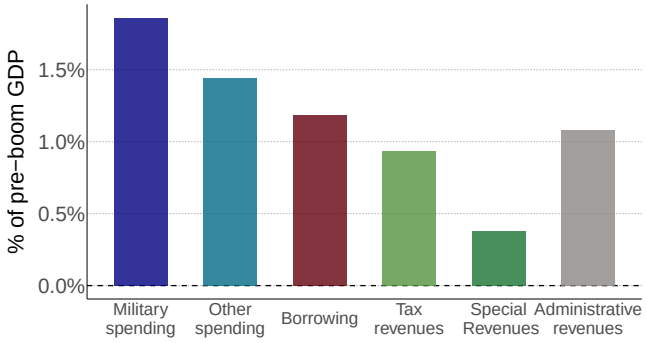


Figure E3: Spending breakdown (cumul. change)

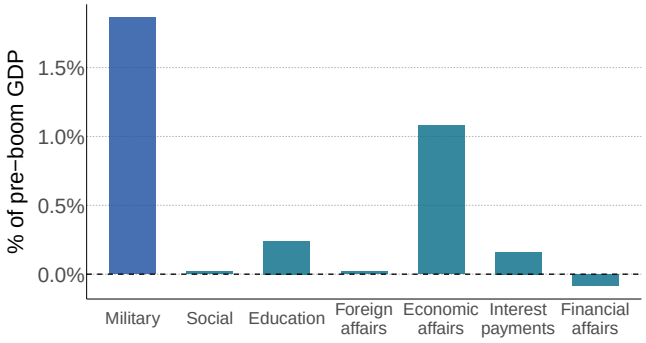
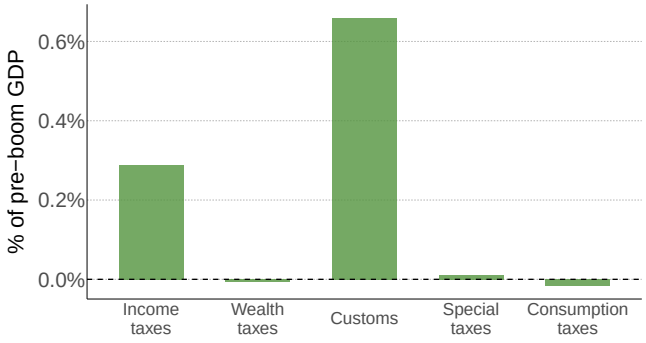


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.86 % of pre-boom GDP **Duration:** 2 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 21.37 % **Average tax growth[1]:** 5.06 %

Historical context – exogenous trigger? Yes. Norway's military buildup of 1895–96 was triggered by heightened external pressure from Sweden during the final phase of the Union Crisis. In 1895, the Swedish Riksdag adopted extraordinary defense authorizations and raised military readiness along the Norwegian border, widely interpreted in Norway as coercive signaling in response to Norway's demand for an independent consular service (Friis, 2014). These developments created a credible risk of military enforcement that lay outside Norway's control. In response, Norway sharply increased its defense budget, financed an emergency defense loan, and launched a border fortification program. Rearmament accelerated through the construction of new fortresses, the acquisition of modern naval vessels, and extensions of conscription (Børresen and Dørum, 2024). The escalation also intensified domestic debate, culminating in the founding of the Norwegian Peace Association in 1895, reflecting widespread concern over the risk of conflict with Sweden (Børresen and Dørum, 2024).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Norway during 1895-1896.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

References

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Norway, 1914-1917: World War 1

Figure E1: Total spending and revenues

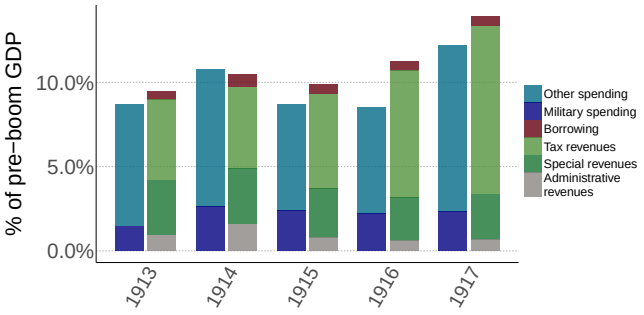


Figure E2: Cumul. change in spending, debt, revenues

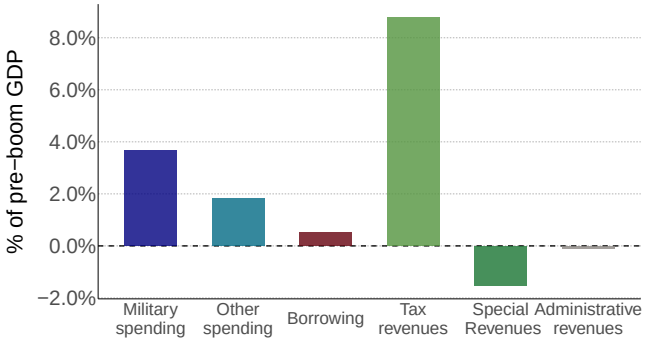


Figure E3: Spending breakdown (cumul. change)

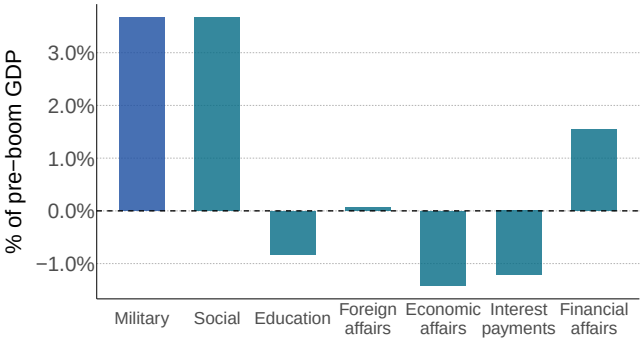
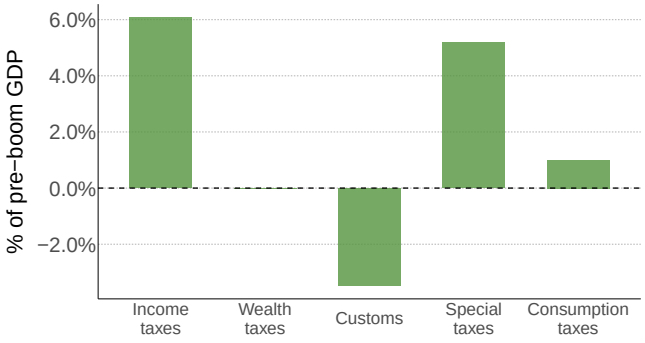


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.66 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 13.97 % **Average tax growth[1]:** 4.95 %

Historical context – exogenous trigger? Yes. Norway's 1914–1915 military mobilization was an externally driven response to the outbreak of World War 1 in August 1914. The sudden escalation of great power conflict led Norway, alongside Sweden and Denmark, to declare neutrality (Haug, 2016). Maintaining neutrality required immediate defensive measures. Although Norway remained formally non-belligerent, it faced sustained pressure from both Britain and Germany, including attacks on its merchant fleet and repeated violations of territorial waters. In response, Norway mobilized its armed forces, particularly the navy and coastal defenses, and established a dedicated neutrality guard to protect shipping and enforce neutrality (Sæther and Eriksen, 2018a). Norway's exposed geographic position between the belligerents made these measures necessary to safeguard maritime trade (Hanevik, 2006).

New taxes or tax increases? Yes. Norway adjusted taxation to finance the World War 1 military spending boom (Sæther and Eriksen, 2018b). In 1915, a temporary excess profits tax was introduced at progressive rates of up to 15 percent (Stortinget, 1915; Espeli, 2003). The tax was extended in 1917 and rates were raised to as much as 35%, remaining in force until 1918 (Stortinget, 1917c). As Norway continued to trade during the war, the government also introduced

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

a temporary tonnage tax on shipping in 1917–1918 (Stortinget, 1917b). In addition, new excise taxes were levied on tobacco, entertainment, and motor vehicles (Stortinget, 1917a). The postwar rollback was partial. The tonnage tax expired after two years, and the excess profits tax was abolished in 1920, but several excise taxes proved durable, with entertainment taxes abolished only in 1975 and motor vehicle taxation remaining in place (Bye, 2007).

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Norway, 1938-1939: Threat from Nazi Germany

Figure E1: Total spending and revenues

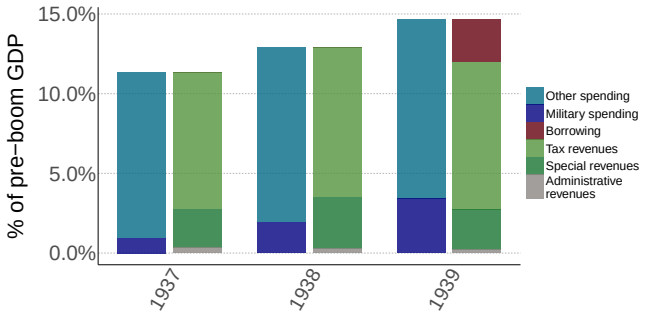


Figure E2: Cumul. change in spending, debt, revenues

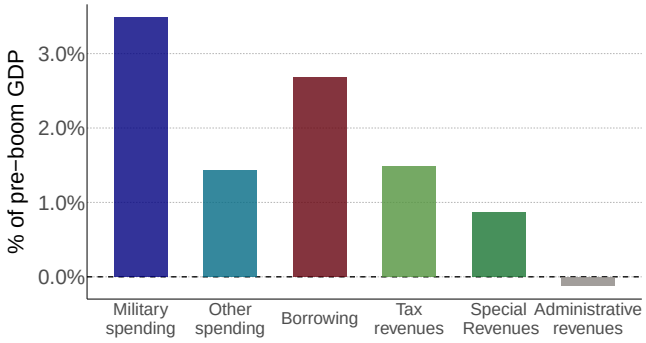


Figure E3: Spending breakdown (cumul. change)

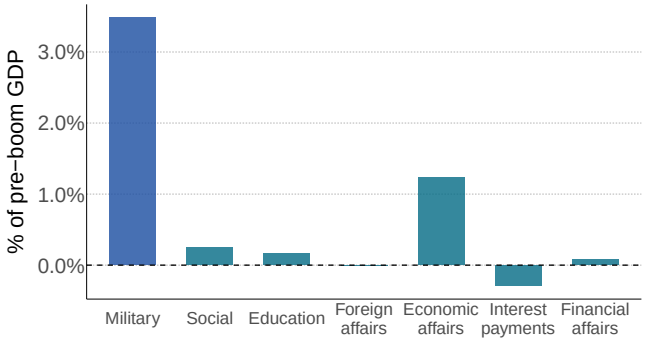
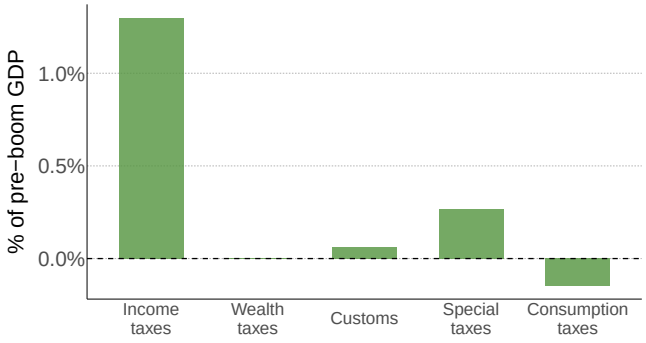


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.48 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 25.05 % **Average tax growth[1]:** 10.67 %

Historical context – exogenous trigger? Yes. Norway's 1938–39 navy and air force buildup was an externally driven response to the rapidly deteriorating European security environment. Germany's aggression and the Munich Crisis of September 1938 marked a decisive shock that undermined confidence in neutrality. Rising public concern pushed the Nygaardsvold government to reach a cross-party compromise in 1937–38, allocating an additional twenty million kroner for defense over three years, primarily for naval and air force expansion (Grimnes, 2022). This decision represented a sharp break with two decades of underinvestment under neutrality. As part of the rearmament effort, Norway ordered twelve Gloster Gladiator fighter aircraft from Britain in 1937 to strengthen air defense, which were deployed during the German invasion on April 9, 1940 (Norsk Luftfartsmuseum, nd). The rearmament ultimately proved insufficient, and Germany occupied Norway in 1940 (Forsvaret, 2021).

New taxes or tax increases? No. We find no evidence of major tax increases introduced specifically to finance Norway's military spending in 1938–39. Substantial tax increases occurred only later, during the German occupation. These included raising the purchase tax from 2 to 10 percent, increasing corporate profit taxes to around 50 percent, and higher private income and

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

wealth taxes (Espeli, 2013). Although the newly imposed tax burden declined after the war due to new exemptions, taxation was not fully rolled back postwar.

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Norway, 1950-1953: Buildup after joining NATO

Figure E1: Total spending and revenues

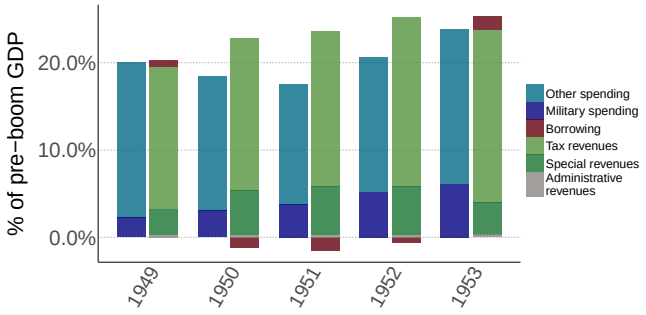


Figure E2: Cumul. change in spending, debt, revenues

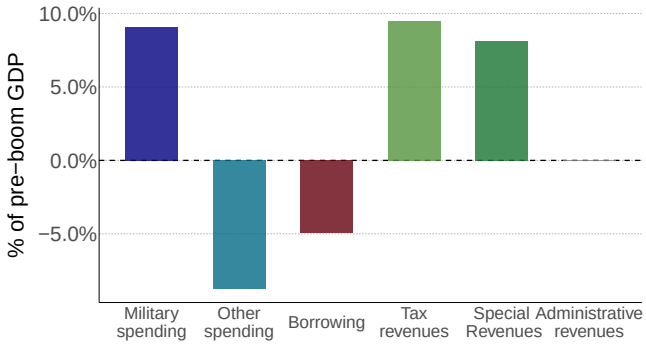


Figure E3: Spending breakdown (cumul. change)

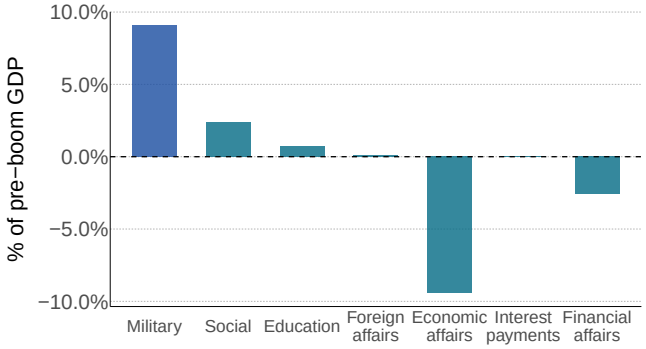
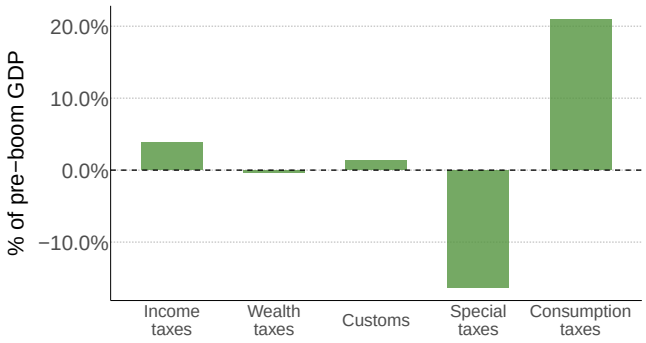


Figure E4: Tax revenue breakdown (cumul. change)



Size: 9.09 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 26.91 % **Average tax growth[1]:** 7.35 %

Historical context – exogenous trigger? Yes. Norway's military buildup between 1950 and 1953 was an externally driven response to the Cold War and, in particular, to the outbreak of the Korean War on June 25, 1950. The war transformed NATO's security environment and led to strong U.S. pressure for rearmament across all member states, including Norway. Having joined NATO in 1949, despite Soviet opposition, Norway faced heightened concerns about Soviet military power, especially in the strategically sensitive Arctic region (Warwick Daily News, 1949; Office of the Historian, 1950). In response, Norway adopted the concept of "total defense," integrating military, civil, and economic preparedness, and expanded and modernized its conscription system (Friis, 2014). The buildup relied on U.S. military aid, which financed both organizational reforms and the acquisition of modern equipment (Bay, 1951). Norway did not send troops to Korea.

New taxes or tax increases? Yes. Norway increased the sales tax in 1951 from 6.25% to 10% (Stortinget, 1951). U.S. officials at the time viewed this tax increase directly as in support of defense policy (US Ambassador in Norway, 1951). We find no evidence that the sales tax increase was rolled back afterwards.

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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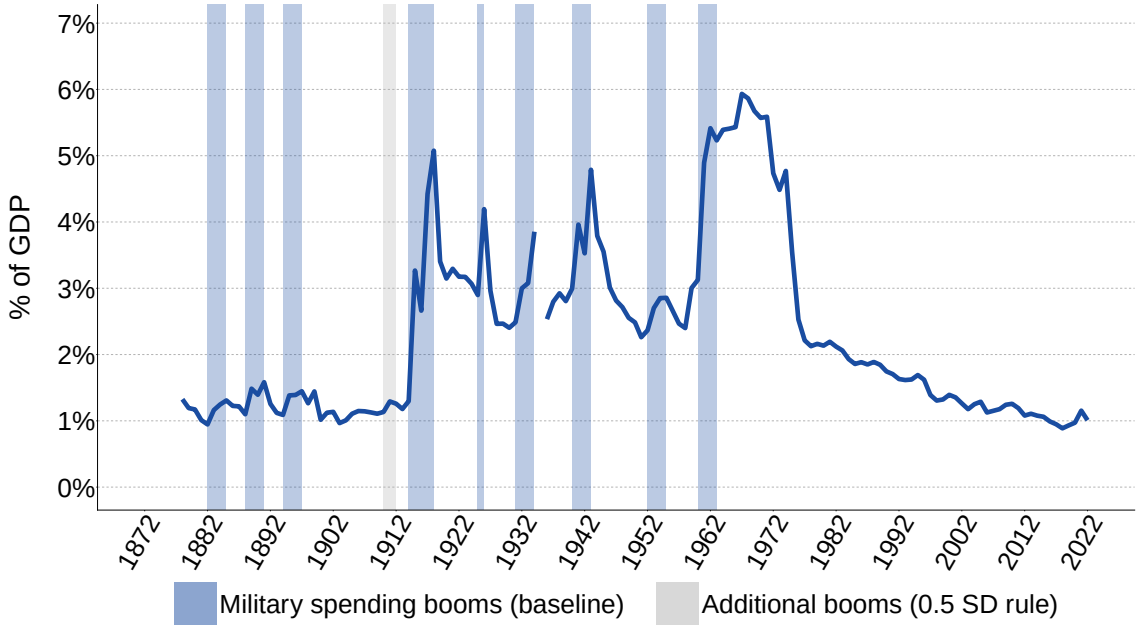
Portugal



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1883-1885	1.10%	3 Years	Spending cuts	Scramble for Africa
2	1889-1891	1.19%	3 Years	Mixed	Anglo-Portuguese Crisis
3	1895-1897	1.27%	3 Years	Mixed	Colonial consolidation
4	1915-1918	9.57%	4 Years	Debt	World War 1
5	1926	1.27%	1 Year	Debt	Military coup ends First Republic
6	1932-1934	3.32%	3 Years	Taxes	Consolidation of Estado Nova Dictatorship
7	1941-1943	4.67%	3 Years	Taxes	World War 2
8	1953-1955	2.33%	3 Years	Taxes	Cold War shocks and alliance commitments
9	1961-1963	7.99%	3 Years	Taxes	Portuguese Colonial War

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1911-1912	Naval program, establishment of air force, rebellion in East Timor

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Portugal, 1883 – 1885: Scramble for Africa

Figure E1: Total spending and revenues

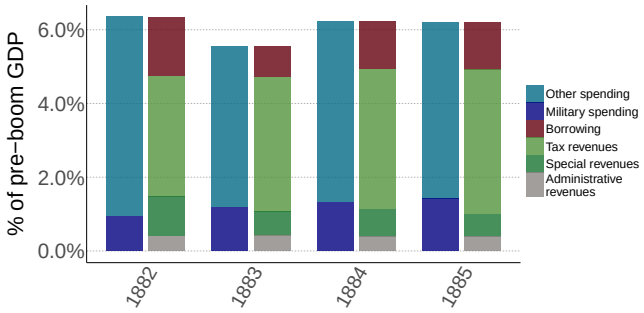


Figure E2: Cumul. change in spending, debt, revenues

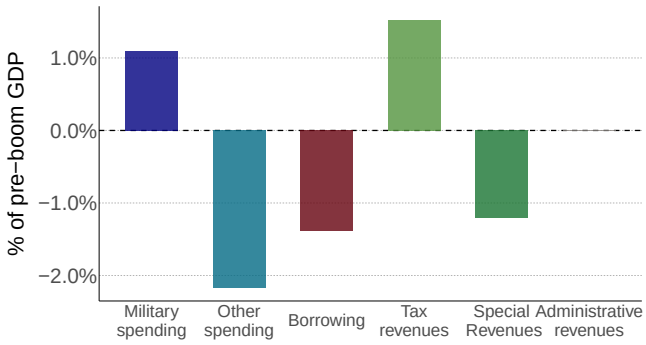


Figure E3: Spending breakdown (cumul. change)

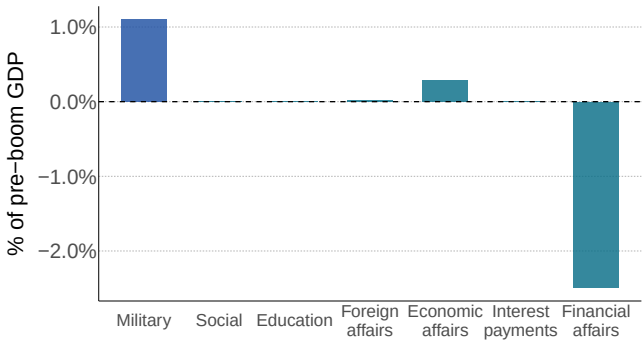
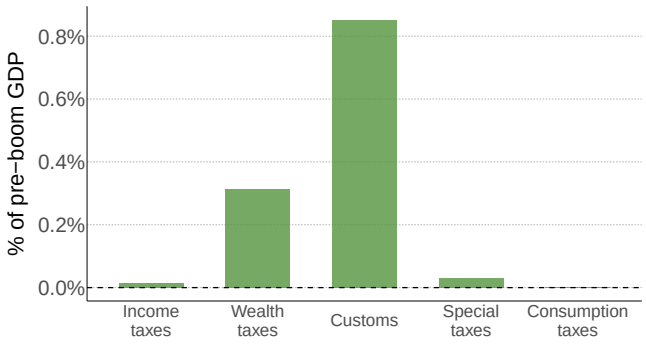


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.10 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily spending cuts
Major war boom: No **Average debt-to-GDP[1]:** 67.04 % **Average tax growth[1]:** 5.37 %

Historical context – exogenous trigger? Yes. Between 1883 and 1885, Portugal's surge in military and colonial spending was driven by external geopolitical shocks associated with the Scramble for Africa and the Berlin Conference (November 1884–February 1885). The first shock occurred in 1883, when Germany proclaimed a protectorate over Southwest Africa, directly challenging Portuguese claims in neighboring Angola. At the same time, Britain expanded northward from the Cape Colony and eastward from Zululand, while France advanced in West Africa. These dynamics threatened Portuguese positions in Angola, Mozambique, and Portuguese Guinea. In response, Portugal began strengthening its maritime capabilities, including the acquisition of its first unprotected cruiser in 1883, marking an early step toward naval modernization (Telo, 1999). The colonial rivalry culminated in the Berlin Conference, which established the principle of "effective occupation," requiring colonial powers to demonstrate actual control on the ground. This sharply altered Portugal's strategic environment and prompted it to launch expeditions into the African interior to secure its claims, thereby driving a rapid and externally induced expansion of military and colonial activity (Funada-Classen, 2013).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Portugal from 1883-1885.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Telo, A. J. (1999). *Homens, Doutrinas e Organização 1824-1974. História da Marinha Portuguesa*. Lisboa: Editorial de Marinha.

Portugal, 1889-1891: Anglo-Portuguese Crisis

Figure E1: Total spending and revenues

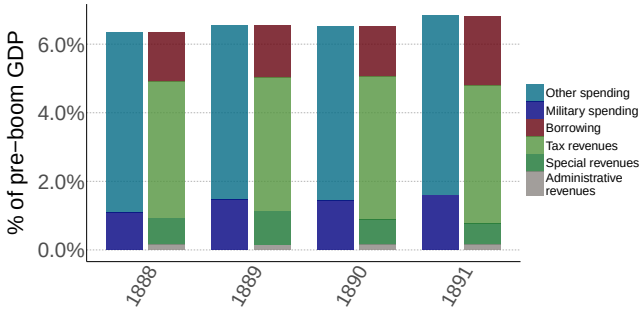


Figure E2: Cumul. change in spending, debt, revenues

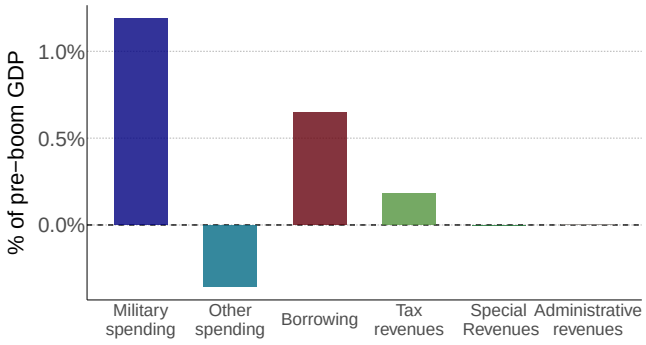


Figure E3: Spending breakdown (cumul. change)

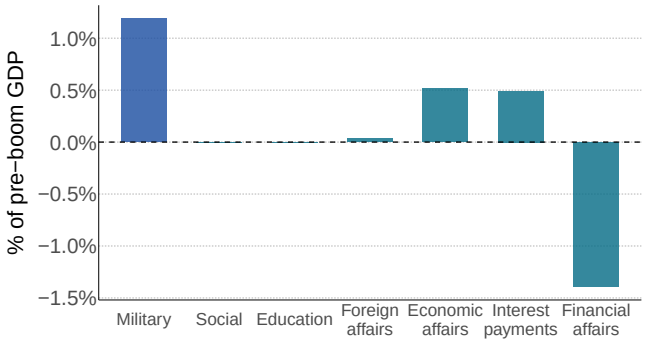
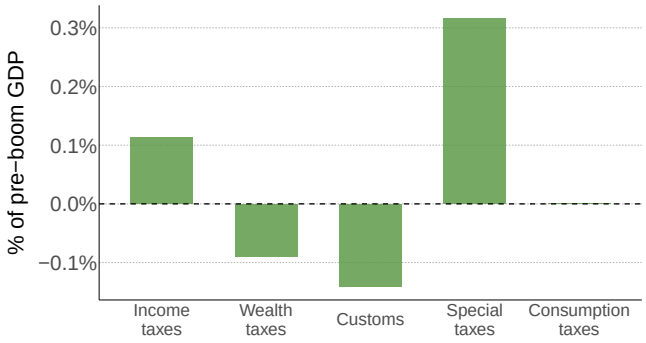


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.19 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 68.71 % **Average tax growth[1]:** 6.60 %

Historical context – exogenous trigger? Yes. Portugal's military buildup between 1889-91 was driven by escalating external pressure linked to the Anglo-Portuguese colonial confrontation in Central Africa. Tensions rose sharply in 1888–89 as Britain openly challenged Portugal's efforts to assert control over territory between Angola and Mozambique — the "Pink Map" project —, linking these two colonies. Repeated diplomatic protests and growing threats of coercion ensued. Portuguese expeditions into disputed regions, including those led by Serpa Pinto, triggered British accusations of aggression and made a confrontation increasingly likely (Diogo et al., 2023). In response, Lisbon began to increase defense spending and strengthen naval and colonial forces in 1889. The crisis culminated in the British Ultimatum of January 11, 1890, which forced Portugal to abandon its "Pink Map" project under threat of force. This was seen as a national humiliation in Portugal and intensified the ongoing buildup, prompting further military spending, naval modernization, and reinforcement of African garrisons. The crisis also destabilized domestic politics and contributed to the Porto uprising of 1891 (Fernandes et al., 2003).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Portugal from 1889-1891. Later tax increases, such

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

as a 30% tax on domestic and foreign debt and a 12.6% tax on wages of public servants in 1892, are linked to the financing crisis Portugal faced and were abolished by the end of 1892 (Lains, 2008).

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Diogo, M. P., Urze, P., and Simões, A. (2023). Cartoon diplomacy: visual strategies, imperial rivalries and the 1890 British Ultimatum to Portugal. *The British Journal for the History of Science*, 56(2):147–166.

Fernandes, P. J., Ribeiro De Meneses, F., and Baiôa, M. (2003). The political history of nineteenth century Portugal. *e-journal of Portuguese History*, 1(1):1–13.

Lains, P. (2008). The power of peripheral governments: coping with the 1891 financial crisis in Portugal. *Historical Research*, 81(213):485–506.

Portugal, 1895-1897: Colonial consolidation

Figure E1: Total spending and revenues

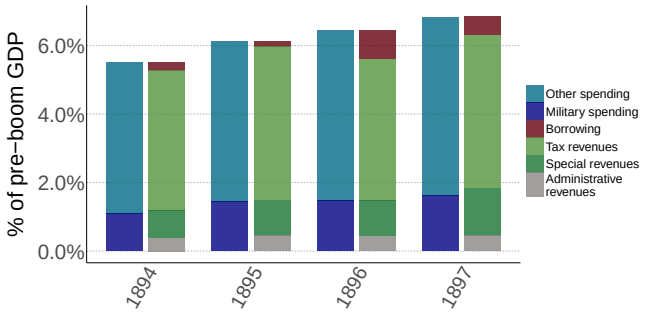


Figure E2: Cumul. change in spending, debt, revenues

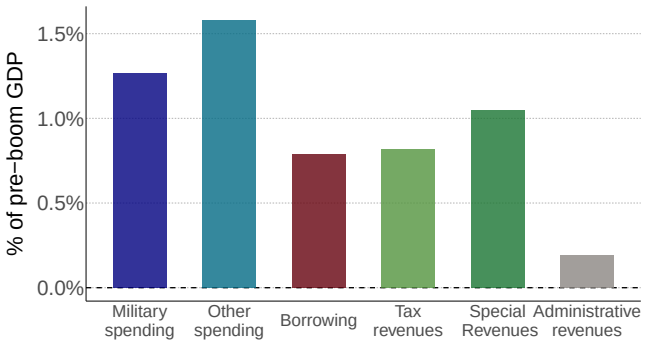


Figure E3: Spending breakdown (cumul. change)

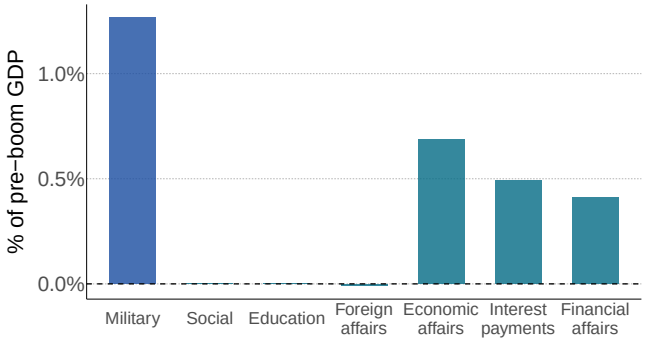
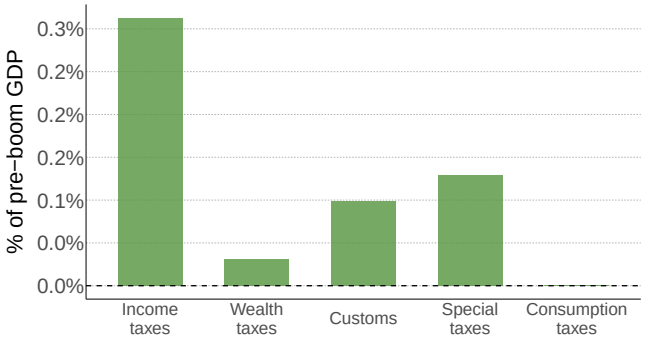


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.27 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 66.26 % **Average tax growth[1]:** 2.17 %

Historical context – exogenous trigger? No. Portugal's 1895–1897 military buildup was internally driven. It reflected a deliberate shift toward a more assertive colonial strategy and was enabled by improved fiscal capacity, rather than prompted by a sudden external shock or invasion threat. The government proactively expanded its military presence in Africa to suppress uprisings and enforce "effective occupation," which policymakers viewed as essential for long-term imperial survival amid sustained European colonial rivalry (Afonso and Borges, 2016). Consistent with this strategy, Portugal deployed substantial forces to Mozambique to consolidate territorial control (Afonso and Borges, 2016) and invested in building a modern naval fleet to strengthen and signal its maritime position (Marinha, 2025).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Portugal from 1895-1897.

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Portugal, 1915-1918: World War 1

Figure E1: Total spending and revenues

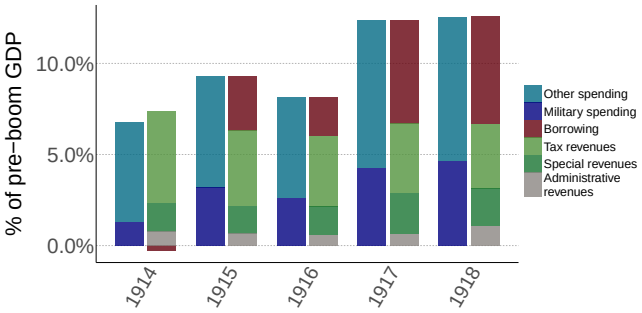


Figure E2: Cumul. change in spending, debt, revenues

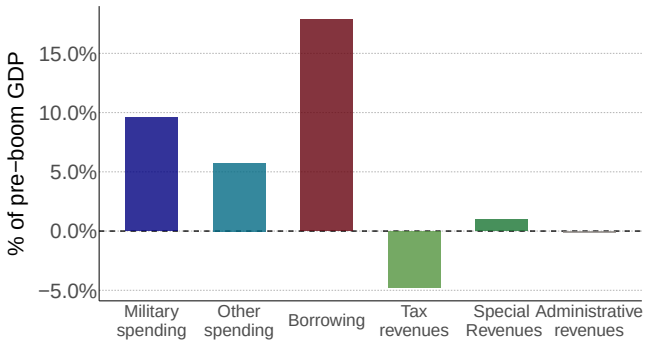


Figure E3: Spending breakdown (cumul. change)

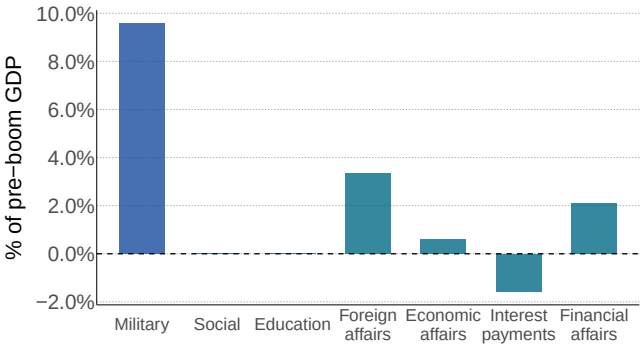
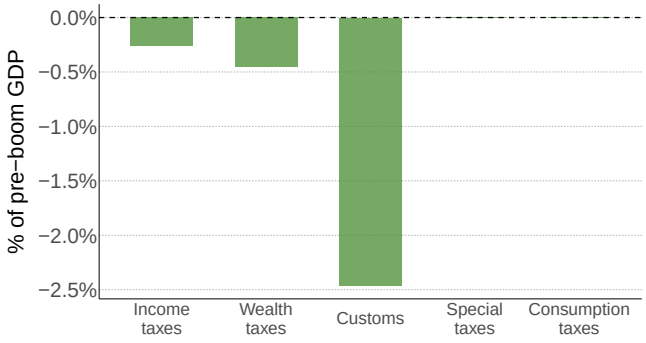


Figure E4: Tax revenue breakdown (cumul. change)



Size: 9.57 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 59.61 % **Average tax growth[1]:** 5.39 %

Historical context – exogenous trigger? Yes. Between 1915 and 1918, Portugal's surge in military expenditures was an exogenous response to World War 1, triggered by foreign attacks and Allied demands. German assaults on Portuguese positions in Angola at Naulila in 1914 and in Mozambique in 1915 forced Portugal into active imperial defense. Britain's request on February 23, 1916 to seize German ships in Portuguese ports prompted Germany's declaration of war on March 9, 1916 and triggered full mobilization. The government rapidly expanded the army and navy, created the Corpo Expedicionário Português (CEP) for the Western Front, and reinforced colonial garrisons. Fighting in Angola and Mozambique produced unrest, military setbacks, and heavy casualties, weakening local authority (de Avillez, 2018; Ferraz, 2022; de Meneses, 2023). Portugal retained its colonies but gained no territory, so that its wartime participation had high costs but limited returns (de Avillez, 2018; Ferraz, 2022; de Meneses, 2023).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Portugal from 1915-1918. Portugal financed World War 1 expenditures mainly by issuing domestic loans and via aid from Great Britain (Amaral and Da Silva, 2015). Beginning in 1915, Portugal faced a major tax crisis as tax revenues eroded due

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

to the devaluation of its currency. Major tax reforms, such as the introduction of a private income tax, were only introduced after World War 1 in 1922 (Aguiar-Conraria et al., 2024; Amaral and Da Silva, 2015).

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Amaral, L. and Da Silva, A. (2015). War Finance (Portugal). International Encyclopedia of the First World War. `https://encyclopedia.1914-1918-online.net/article/war-finance-portugal/`. Accessed December 9, 2025.

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Ferraz, R. (2022). The Portuguese military expenditure from a historical perspective. *Defence and Peace Economics*, 33(3):347–365.

Portugal, 1926: Military coup ends First Republic

Figure E1: Total spending and revenues

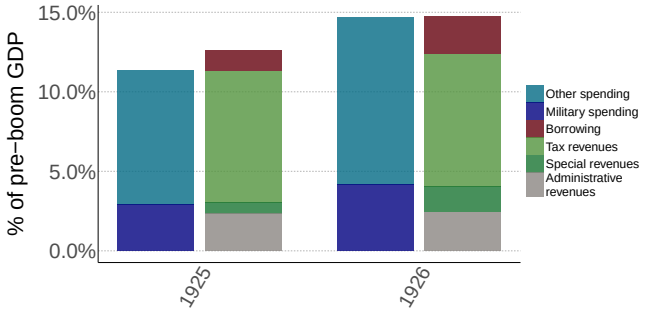


Figure E2: Cumul. change in spending, debt, revenues

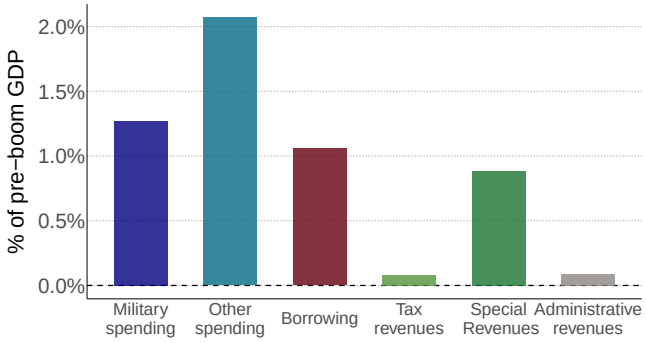


Figure E3: Spending breakdown (cumul. change)

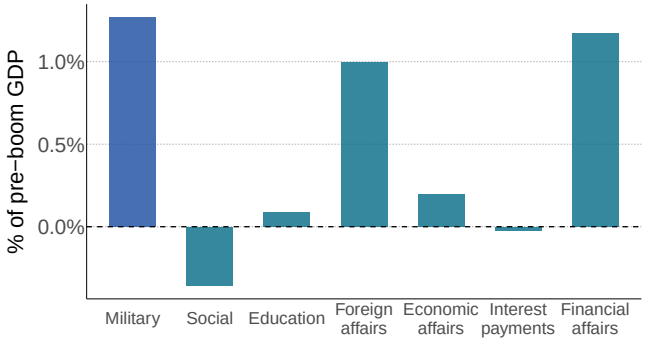
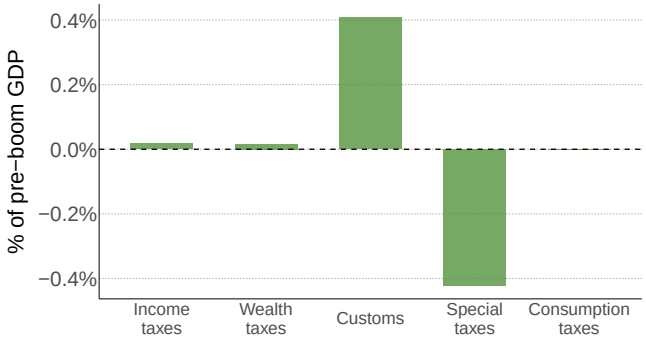


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.27 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 62.61 % **Average tax growth[1]:** 13.10 %

Historical context – exogenous trigger? No. Portugal's 1926 military spending boom was rooted in internal political upheaval rather than external shocks. The increase followed the May 28, 1926 military coup, which overthrew the unstable First Republic amid fiscal crisis, inflation, and social unrest. The coup marked a decisive shift from liberalism to authoritarian rule (Baiôa et al., 2003; Herr and Pinto, 2012; Pinto, 1986). The new military regime, led by General Gomes da Costa, redirected resources toward the armed forces to consolidate power and restore internal order, a turn described by contemporaries as a "triumph of militarism" (Araquistain, 1928). Portugal faced no foreign invasion threat or regional conflict, as Europe remained relatively calm after World War 1. The rise in defense spending therefore reflected domestic consolidation rather than external pressure and paved the way for Salazar's Estado Novo (Baiôa et al., 2003; Herr and Pinto, 2012; Pinto, 1986).

New taxes or tax increases? No. We find no clear evidence of significant tax increases that were linked to financing the military buildup in Portugal in 1926.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Herr, R. and Pinto, A. C. (2012). *The Portuguese Republic at One Hundred*. Portuguese Studies Program, University of California, Berkeley.

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Portugal, 1932–1934: Consolidation of Estado Nova Dictatorship

Figure E1: Total spending and revenues

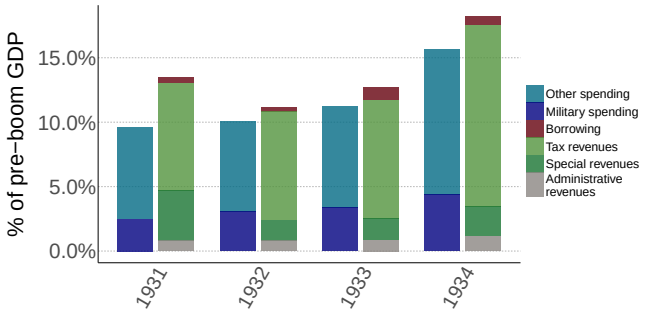


Figure E2: Cumul. change in spending, debt, revenues

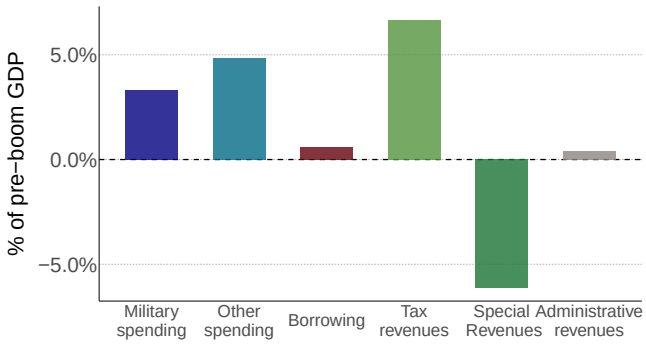


Figure E3: Spending breakdown (cumul. change)

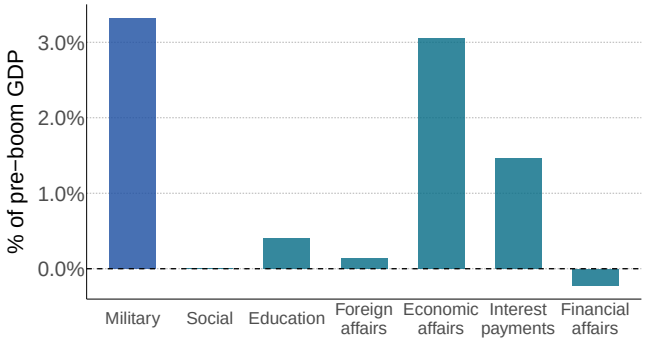
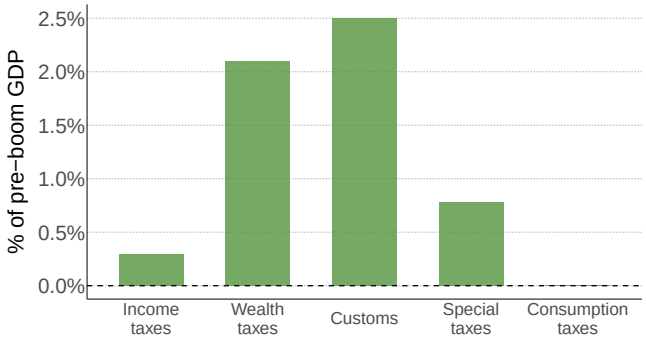


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.32 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 41.03 % **Average tax growth[1]:** 3.57 %

Historical context – exogenous trigger? No. Portugal's increase in military spending between 1932 and 1934 was endogenous and reflected the domestic consolidation of Salazar's authoritarian Estado Novo regime rather than external shocks or foreign threats. After becoming prime minister in 1932, António de Oliveira Salazar transformed the military dictatorship into a corporatist authoritarian regime by centralizing state power and reshaping political institutions. Persistent military and civilian revolts between 1926 and 1934 pressured the regime to raise military expenditures to secure internal stability (Baiôa et al., 2003). By 1934, the government had strengthened repression through political policing, censorship, and the suppression of opposition (Gallagher, 1979). Instability in neighboring Spain reinforced Salazar's authoritarian turn and encouraged the creation of regime-aligned organizations such as the Portuguese Legion (Baiôa et al., 2003). Overall, the spending increase reflected internal militarization aimed at regime consolidation and control (Herr and Pinto, 2012).

New taxes or tax increases? No. We find no clear evidence of significant tax increases specifically linked to financing the military buildup in Portugal in 1932–1934. Most major revenue measures predated this period. Beginning in 1928, while serving as minister of finance, Salazar in-

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

troduced new taxes on sugar, petrol, and oil and raised several existing tax rates through surtaxes as part of a broader effort to restore fiscal stability (O'Brien, 1941).

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Gallagher, T. (1979). Controlled repression in Salazar's Portugal. *Journal of Contemporary History*, 14(3):385–402.

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Portugal, 1941-1943: World War 2

Figure E1: Total spending and revenues

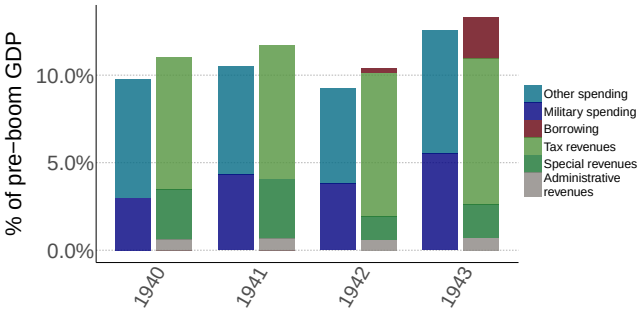


Figure E2: Cumul. change in spending, debt, revenues

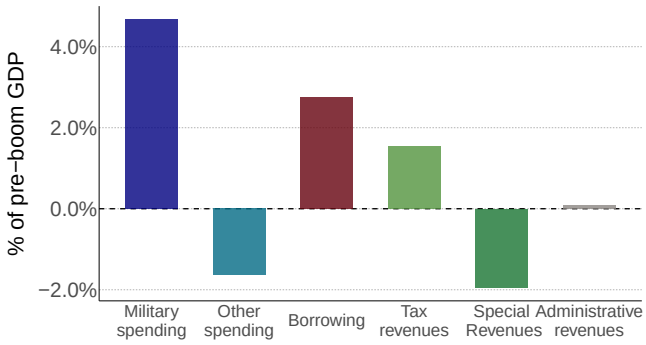


Figure E3: Spending breakdown (cumul. change)

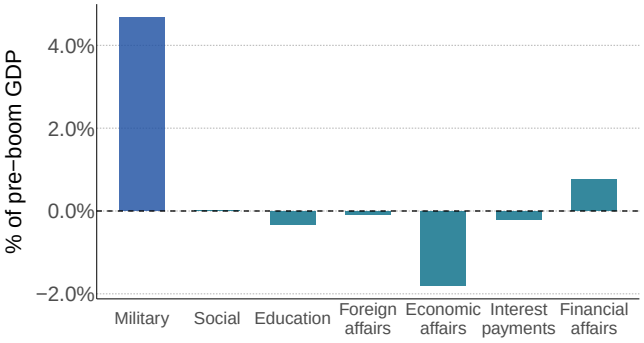
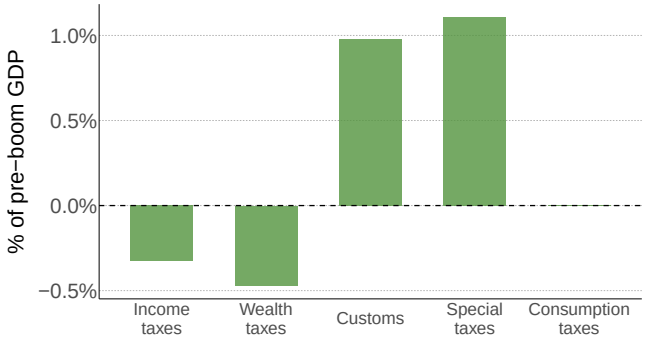


Figure E4: Tax revenue breakdown (cumul. change)



Size: 4.67 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 23.07 % **Average tax growth[1]:** -3.33 %

Historical context – exogenous trigger? Yes. Between 1941 and 1943, Portugal's military buildup responded to major external shocks arising from World War 1. Germany's conquest of France in 1940 and the Iberian threat posed by Operation Felix in 1940–41 raised acute fears in Lisbon of a German advance through Spain or a joint Axis occupation of the peninsula. These concerns intensified amid Axis espionage activity and militarization along the Spanish frontier. At the same time, Portugal's strategic Atlantic position, particularly the Azores and Cape Verde, became increasingly valuable to both Axis and Allied powers, despite Salazar's official neutrality (Booker, nd). A second wave of external pressure emerged in 1942–43, when Britain and the United States sought base rights in the Azores to secure Atlantic shipping lanes and support Mediterranean operations. Much of the resulting armament spending focused on reinforcing the Atlantic islands (Weiss, 1980). Although Salazar maintained formal neutrality, he ultimately granted the Allies access to bases in the Azores after 1943 (H. L., 1942).

New taxes or tax increases? Yes. Portugal introduced several new taxes to finance higher military expenditure during World War 2. The government expanded taxation of labor income, imposed excess profits taxes, and levied taxes on the export of tungsten (wolfram) (Aguiar-Conraria

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

et al., 2024). Excess profits were taxed at progressive rates of up to 50% (Ministerio Das Financas, 1942). The tax rate on wolfram exports rose to 45% in 1942, when the sector came under tighter state control (Wheeler, 1986). International demand for wolfram was exceptionally high due to its use in weapons production, but mounting external pressure led Portugal to halt tungsten exports in 1944 (Aguiar-Conraria et al., 2024). Most World War 2 emergency taxes were temporary, and the excess profits and wolfram export taxes were abolished after the war.

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Portugal, 1953-1955: Cold War shocks and alliance commitments

Figure E1: Total spending and revenues

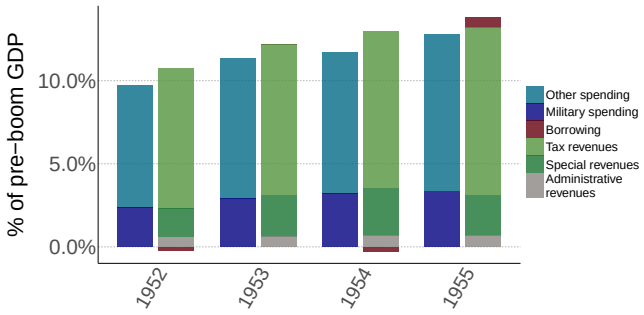


Figure E2: Cumul. change in spending, debt, revenues

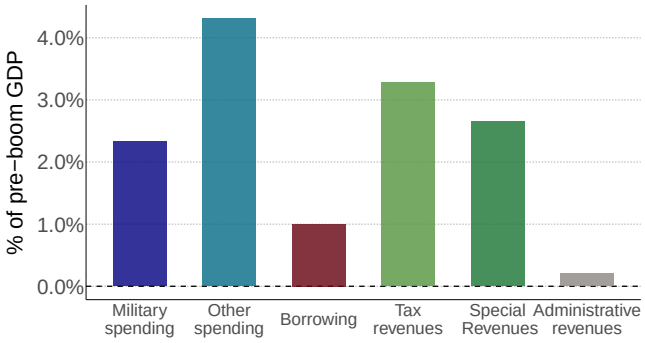


Figure E3: Spending breakdown (cumul. change)

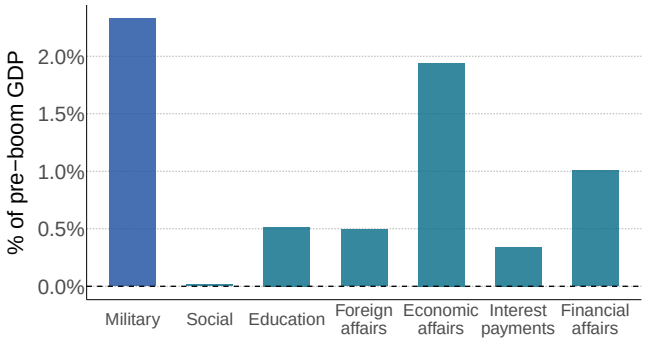
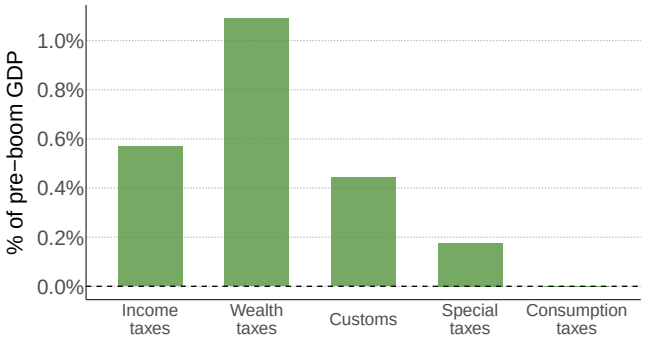


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.33 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 17.80 % **Average tax growth[1]:** 3.79 %

Historical context – exogenous trigger? Yes. Between 1953 and 1955, Portugal's defense spending increase was driven by external Cold War shocks and alliance commitments in the post–Korean War security environment. The Korean War triggered a NATO-wide rearmament effort, and Portugal, a NATO member since 1949, came under sustained U.S. and alliance pressure to strengthen Atlantic defenses. The decisive catalyst was the 1951 U.S.–Portuguese Defense Agreement, renewed in 1954–55, which granted the United States base rights at Lajes Field in the Azores in exchange for military aid and NATO-funded infrastructure. This agreement marked a strategic reorientation away from traditional concerns about Spain and toward preparation for potential Soviet aggression (Rocha, 2018; North Atlantic Defense Committee, 1950). In response, Portugal reorganized its forces along NATO lines, raised new army divisions, created the Portuguese Air Force in 1952, and acquired modern aircraft such as the F-84 Thunderjet and T-33A (Rocha, 2018; Fraga, 2001).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Portugal during 1953-1955. Ferraz (2024) shows that tax revenue stayed relatively stable while military expenditures increased until the end of the 1950s (both as % of GDP).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Portugal, 1961–1963: Portuguese Colonial War

Figure E1: Total spending and revenues

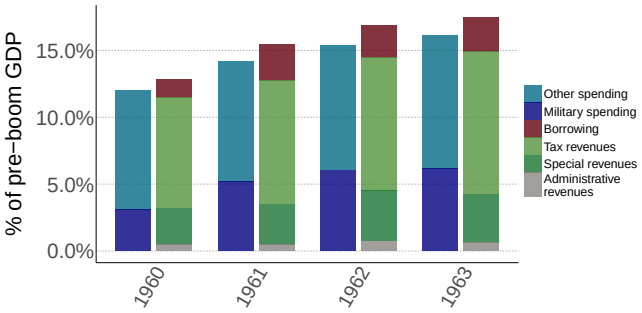


Figure E2: Cumul. change in spending, debt, revenues

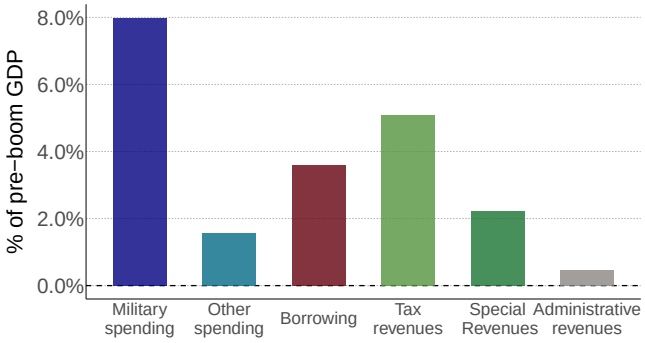


Figure E3: Spending breakdown (cumul. change)

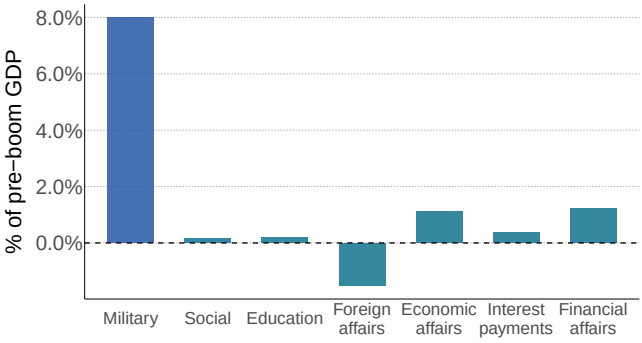
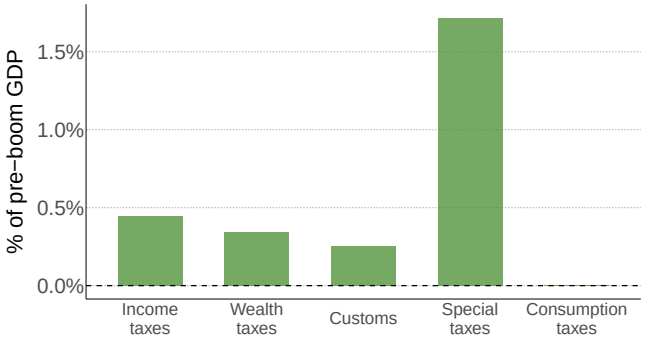


Figure E4: Tax revenue breakdown (cumul. change)



Size: 7.99 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 19.84 % **Average tax growth[1]:** 4.81 %

Historical context – exogenous trigger? Yes. Between 1961 and 1963, Portugal's military mobilization followed a sudden deterioration in its external security environment. The Angolan uprising of March 1961 marked the start of the Portuguese Colonial War, while India's December 1961 invasion and annexation of Goa, Daman, and Diu constituted a direct foreign attack and underscored Portugal's international isolation. At the same time, insurgencies in Angola, Guinea-Bissau, and Mozambique, sustained by external support, expanded into prolonged conflicts. These sudden external shocks lead the regime to impose mass conscription and rapidly expand the army and air force. Over the course of the Colonial War, more than 800,000 men were mobilized across all theaters (Ferraz, 2022a). Military spending rose sharply as a result. Portugal maintained its military presence in Africa throughout the 1960s, but the conflicts ultimately ended with rapid decolonization following Portugal's 1974 regime collapse (Ferraz, 2022b).

New taxes or tax increases? Yes. Portugal introduced several new taxes to help finance the military expansion associated with the colonial war (Ferraz, 2024). In 1961, the government imposed new excise taxes on luxury goods and beverages, and raised existing tax rates in 1962. That same year, it created a temporary colonial defense tax that broadened the tax base to

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

firms benefiting from public concessions, special privileges, or extraordinary market conditions. Additional fiscal reforms followed, including the 1965 customs reform, the introduction of a capital gains tax in 1965, and a general transaction tax in 1966. Many of these measures, notably the turnover and capital gains taxes, remained in place well beyond the war and were later integrated into Portugal's modern tax system (Ferraz, 2024). The temporary colonial defense tax, introduced in 1963, continued to be levied at least until 1975 (Ministerio de Financas, 1975).

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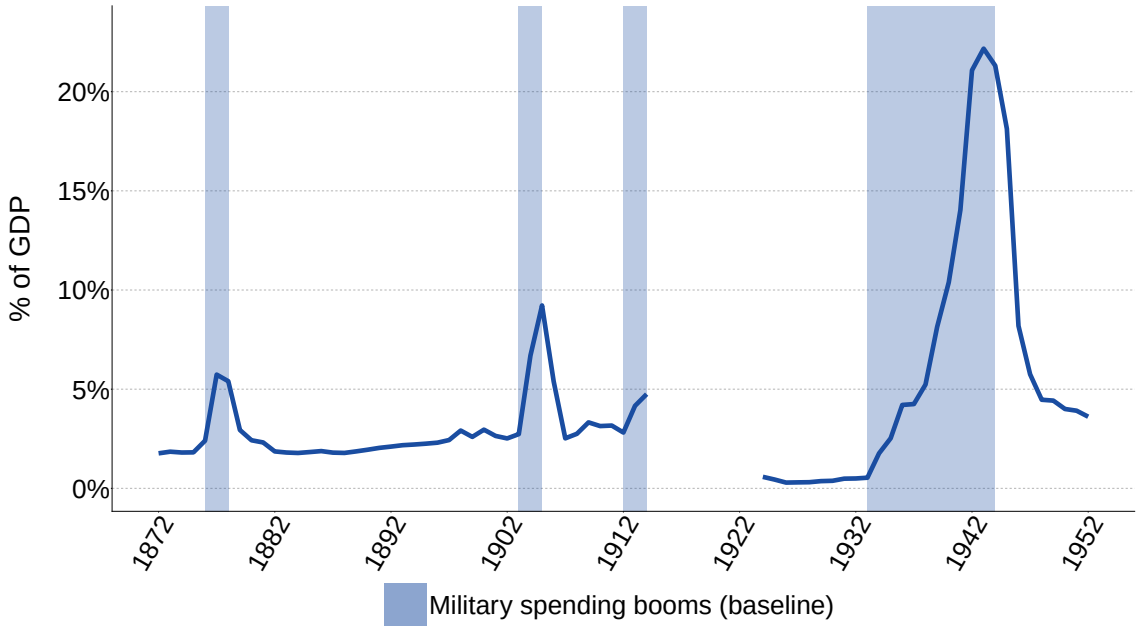
Russia



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1877-1878	8.05%	2 Years	Debt	Russo-Turkish War
2	1904-1905	11.44%	2 Years	Debt	Russo-Japanese War
3	1913-1914	3.63%	2 Years	Taxes	Planned Rearmament (Great Military Program)
4	1934-1935	4.10%	2 Years	Mixed	Stalin's Rearmament Program
5	1936-1938	8.16%	3 Years	Taxes	Prewar militarization
6	1939-1944	42.42%	6 Years	Spending cuts	World War 2

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
-	-	-

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Russia, 1877–1878: Russo-Turkish War

Figure E1: Total spending and revenues

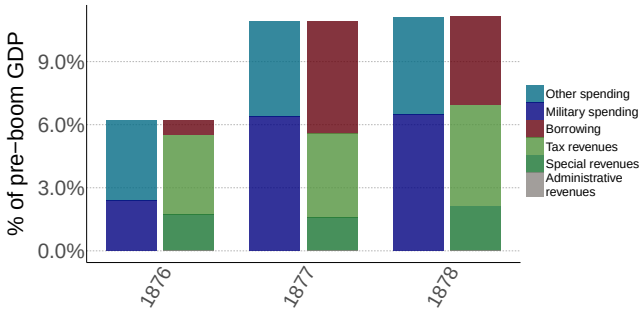


Figure E2: Cumul. change in spending, debt, revenues

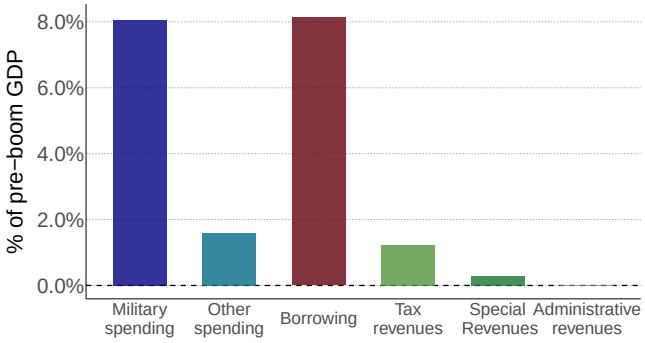


Figure E3: Spending breakdown (cumul. change)

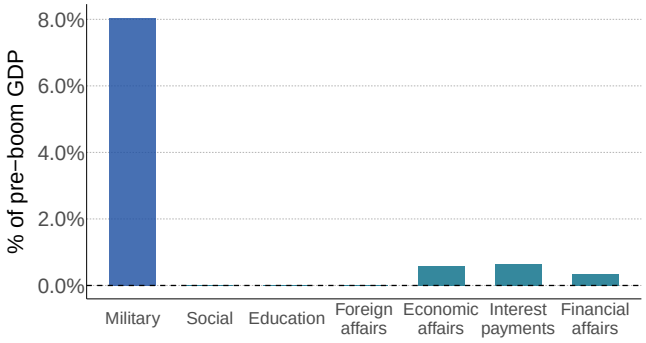
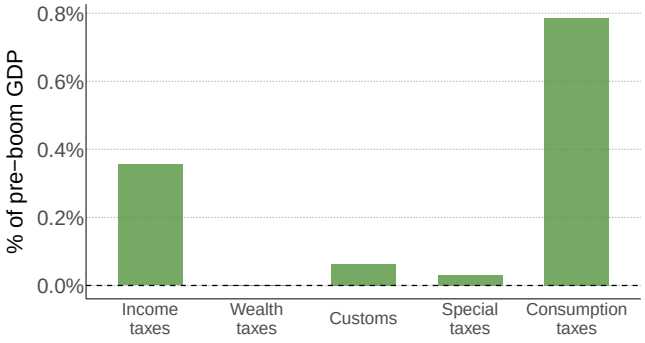


Figure E4: Tax revenue breakdown (cumul. change)



Size: 8.05 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** No Data **Average tax growth[1]:** 6.60 %

Historical context – exogenous trigger? Yes. Between 1877 and 1878, Russia's military buildup was driven by the Russo-Turkish War and by a sharp deterioration in the external environment linked to the Balkan crisis and the collapse of Ottoman authority. The Herzegovina uprising in 1875 and the Bulgarian April Uprising in 1876 intensified Pan-Slavic pressure for intervention and elevated Russia's role as protector of Balkan Christians. Diplomatic efforts failed after the Constantinople Conference collapsed and the Ottomans rejected autonomy demands. Tsar Alexander II declared war in April 1877, triggering large scale mobilization and wartime expenditures (Stepanov, 2022). Russia's victories led to the Treaty of San Stefano in March 1878, which imposed harsh terms on the Ottoman Empire and created a large, Russian-aligned Bulgaria, significantly expanding Russian influence in the Balkans. This settlement proved short lived, as British and Austro-Hungarian intervention forced Russia to accept major revisions at the Treaty of Berlin later in 1878 (Afonin, 2006).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Russia during 1877-1878. Before the Russo-Turkish War, policymakers, such as Finance Minister Mikhail Reutern, considered tax increases

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

as not feasible in the short term (Stepanov, 2021). This changed later with growing military expenditures, and a tax package was proposed at the end of 1876 (including emergency income and dividend taxation), but it was never implemented.

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Russia, 1904–1905: Russo-Japanese War

Figure E1: Total spending and revenues

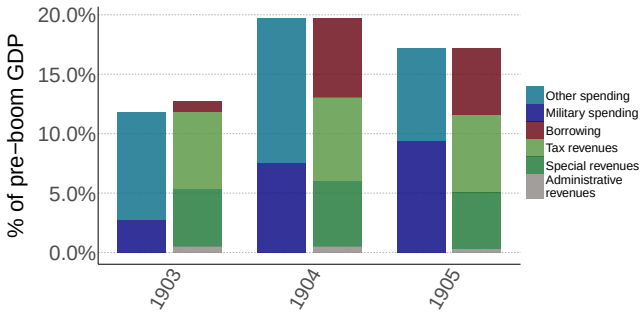


Figure E2: Cumul. change in spending, debt, revenues

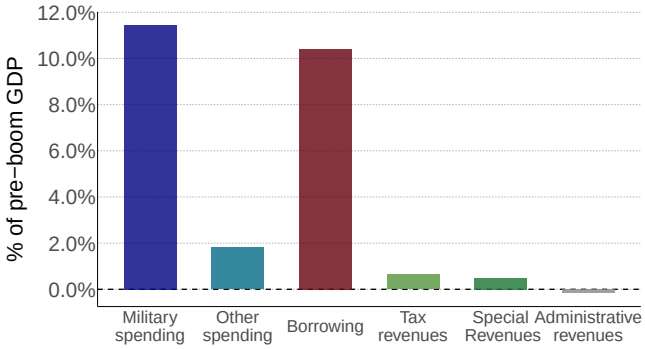


Figure E3: Spending breakdown (cumul. change)

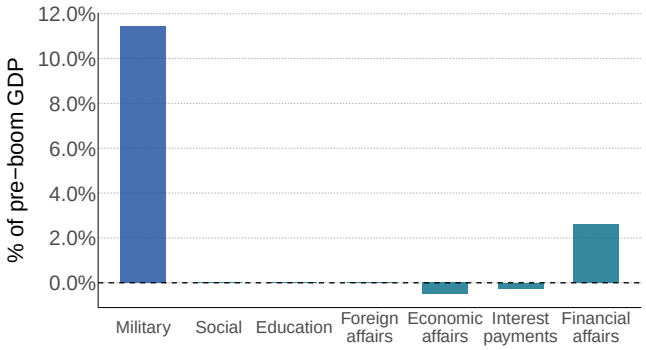
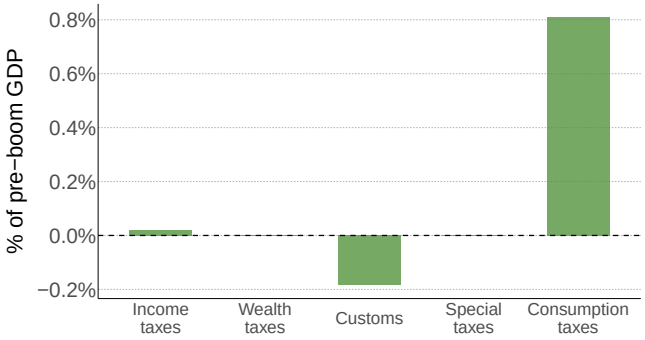


Figure E4: Tax revenue breakdown (cumul. change)



Size: 11.44 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 57.76 % **Average tax growth[1]:** 7.51 %

Historical context – exogenous trigger? Yes. The 1904–05 Russian military buildup followed an abrupt external shock, Japan's surprise attack on the Russian fleet at Port Arthur on February 8, 1904. The assault immediately prompted Russia to expand troop deployments, rebuild naval capacity, and increase wartime spending. At the outbreak of the Russo-Japanese War, Russia held Port Arthur and key positions in southern Manchuria, reflecting earlier tensions rooted in its refusal to withdraw from Manchuria after the Boxer Rebellion of 1900 (Afonin, 2006). Japan's decision to strike first transformed these tensions into a full-scale interstate war in East Asia. Major engagements, including Mukden and Tsushima, inflicted severe losses and culminated in the destruction of Russia's Baltic Fleet (Encyclopedia Britannica, 2025). Military defeat and mounting economic strain compelled Russia to seek peace in the Treaty of Portsmouth in 1905, which required significant territorial concessions to Japan (Office of the Historian, nd).

New taxes or tax increases? Yes. Russia increased taxation between 1905 and 1907 to finance the military spending surge associated with the Russo-Japanese War (Michelson et al., 1928; Cappella, 2012). The government raised existing rates, including urban property taxes (33%), excises on beer (33%), yeast and matches (100%), fuel oils (20%), and stamp and inheritance duties (50%).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

It also increased levies on commerce and industry, alcohol, selected customs duties, and railway and transport services. Several of these increases, particularly higher duties and transport taxes, remained in place after the war as part of subsequent tax reforms (Cappella, 2012).

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Russia, 1913-1914: Planned Rearmament (Great Military Program)

Figure E1: Total spending and revenues

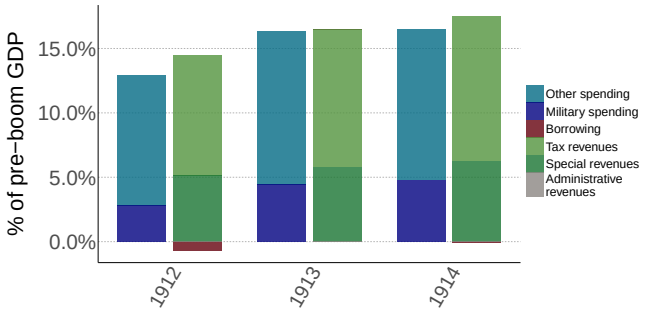


Figure E2: Cumul. change in spending, debt, revenues

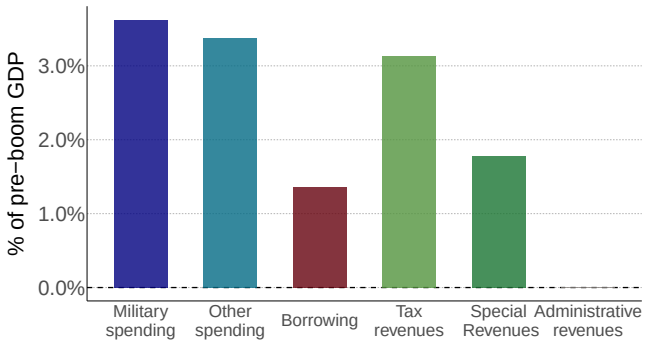


Figure E3: Spending breakdown (cumul. change)

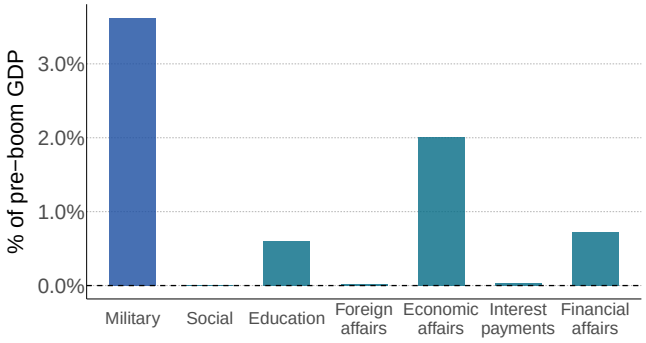
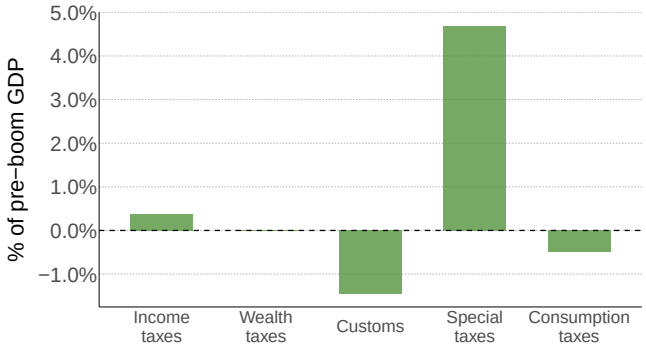


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.63 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 48.79 % **Average tax growth[1]:** 8.22 %

Historical context – exogenous trigger? No. Russia's 1913 Great Military Program was modernization effort that had been planned over many years rather than a response to a sudden external shock. The program aimed at long-term rearmament and army reform, although it was shaped by the Balkan Wars and by the accelerating military buildup of Germany and Austria-Hungary (Reddel, 1990; Fuller Jr., 2006). The First and Second Balkan Wars of 1912–13 had recently reshaped southeastern Europe and reinforced Russian concerns about future conflict, accelerating the formal approval of the program in November 1913 (Reddel, 1990). The plan envisioned adding new divisions, modernizing artillery, and improving mobilization capacity by 1917, including an expansion of more than 400,000 troops under Minister of War V.A. Sukhomlinov (Menning, 2017). Implementation, however, remained limited by July 1914, leaving major reforms incomplete on the eve of war (Menning, 2017).

New taxes or tax increases? Yes. To finance the military buildup of 1913–14 the Russian government raised excise rates on tobacco, petroleum products, sugar, matches, alcohol, stamps, postal and telegraph services, and insurance (Michelson et al., 1928; Marks, 2014). It also introduced new taxes on transport and telephone services in 1914. These measures built on a revenue

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

base that had already expanded due to repeated rate increases between 1905 and 1907. The price of alcohol was also regulated, but this coincided with a prohibition act, and was meant to ban drunkenness instead of generating revenue (Michelson et al., 1928). After World War 1 broke out, Russia introduced an excess profits tax in 1916 with rates of 20% to 40%. A major income tax reform, debated since before 1913, was enacted in 1917 with progressive rates from 0% to 12%, followed by rate increases and temporary surcharges later that year (Michelson et al., 1928). After the 1917 revolution, the tax system collapsed and was subsequently restructured.

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Russia, 1934-1935: Stalin's Rearmament Program

Figure E1: Total spending and revenues

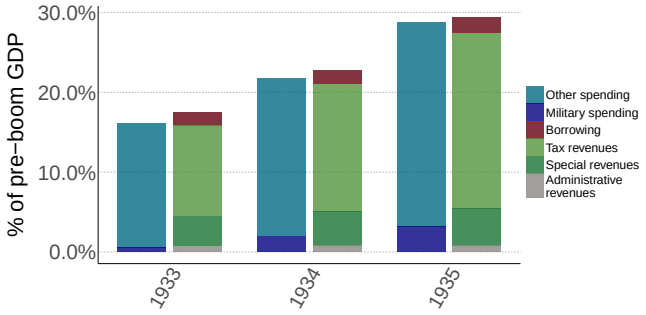


Figure E2: Cumul. change in spending, debt, revenues

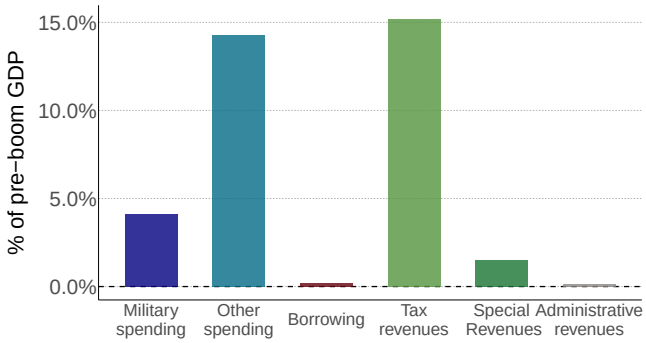


Figure E3: Spending breakdown (cumul. change)

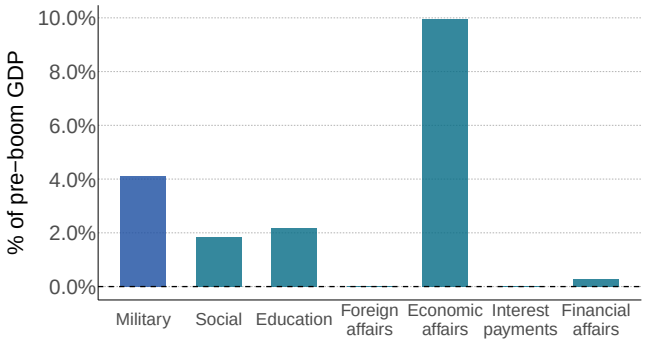
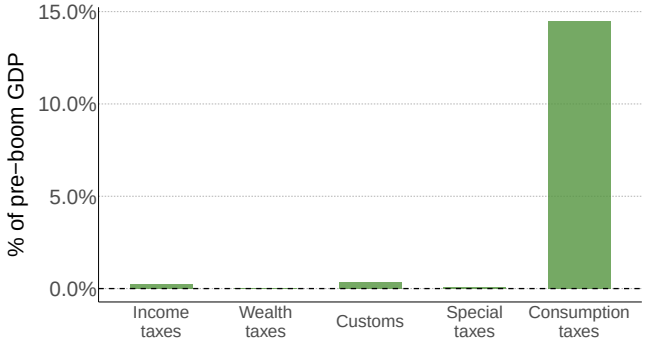


Figure E4: Tax revenue breakdown (cumul. change)



Size: 4.10 % of pre-boom GDP **Duration:** 2 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** No data **Average tax growth[1]:** 161.38 %

Historical context – exogenous trigger? No. The 1934–35 Soviet military rearmament was a planned expansion of the industrial–military complex under Stalin, not a sudden external shock. The more aggressive political stance by Germany and Japan of the early 1930s reinforced perceptions of long-term threats, but they intensified rather than initiated the buildup. In early 1934, Stalin instructed the Council of Labor and Defense (STO) to prepare a major expansion of the defense industry within the Second Five-Year Plan (1933–37), highlighting the program's endogenous origins. The regime accelerated rearmament, modernized weapons production, and promoted mass-production techniques alongside intensified political repression (Harrison and Davies, 1997; Harrison, 2008). Stalin used repression to suppress internal opposition and instability during the buildup (Kuboniwa et al., 2019). These policies laid the foundations for the Soviet defense industry that, by the late 1930s, approached German military-industrial capacity (Kuboniwa et al., 2019).

New taxes or tax increases? Yes. The "indirect turnover tax," introduced between 1930 and 1932, became the dominant source of state revenue during the 1934–35 military buildup and thus a key instrument for financing rearmament (Khlevnyuk and Davies, 1999). This tax functioned as a hidden sales tax embedded in administered prices, with the state setting retail prices above

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

production costs and capturing the difference as fiscal revenue. Revenues from this tax rose from 3.2 billion rubles in 1934 to 5.2 billion rubles in 1935, driven by higher controlled prices and forced transactions such as compulsory grain procurements (zakupki) (Wyler, 1946; Sumberg, 1946). Because of its central role in the planned economy, the Soviet government could raise revenue by adjusting prices or trade volumes without formally changing tax rates or introducing new taxes. More than 2,000 different turnover rates applied across commodities and inputs (Sumberg, 1946). We found no evidence that these measures were rolled back.

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Russia, 1936-1938: Prewar militarization

Figure E1: Total spending and revenues

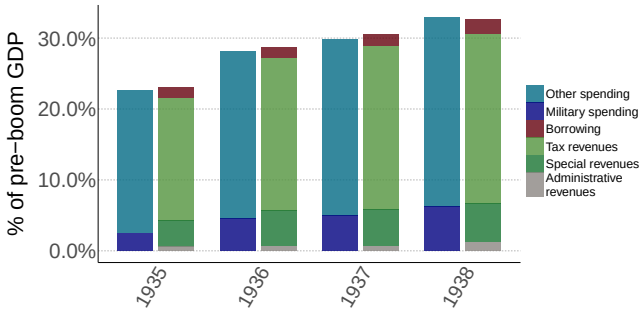


Figure E2: Cumul. change in spending, debt, revenues

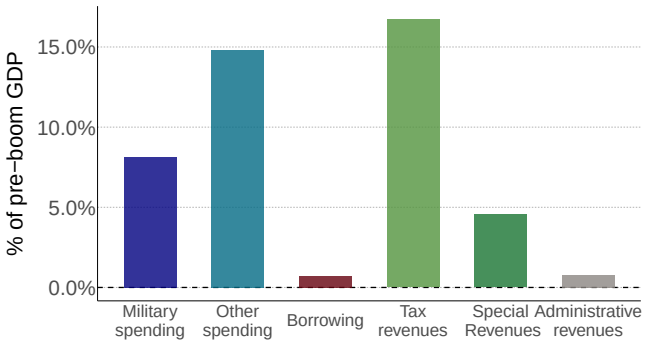


Figure E3: Spending breakdown (cumul. change)

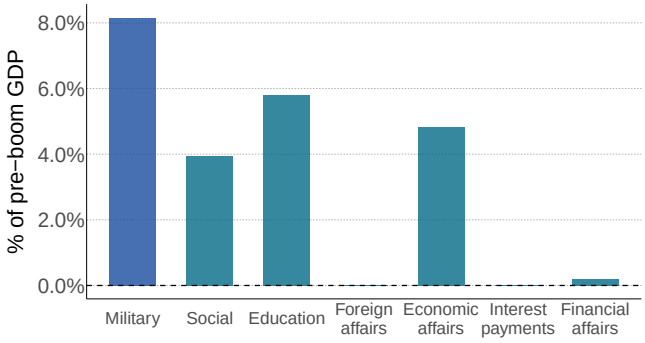
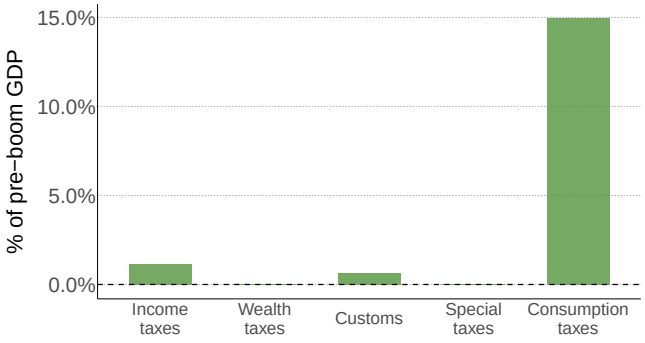


Figure E4: Tax revenue breakdown (cumul. change)



Size: 8.16 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** No data **Average tax growth[1]:** 38.16 %

Historical context – exogenous trigger? Yes. Between 1936 and 1938, the Soviet military boom followed a sharp deterioration in the external security environment in 1936. Nazi Germany shifted to open rearmament and re-militarized the Rhineland in March 1936, which signaled the collapse of the post-Versailles security order. The Spanish Civil War erupted in July 1936, with direct German and Italian intervention, revealing a coordination between these two revisionist fascist states. Moreover, the Anti-Comintern Pact of November 1936 formalized an anti-Soviet alliance between Germany and Japan, while Japanese troop deployments in Manchukuo created a growing eastern threat. In response to these external threat developments, the USSR accelerated militarization. The Red Army more than doubled in size to about 1.3 million soldiers between 1936 and 1938, driven by lower draft ages and the conversion of territorial units into regular forces (Reese, 1989; Harrison, 2008).

New taxes or tax increases? Yes. The Soviet military buildup before World War 2 was largely financed through rising tax revenues, despite the absence of explicit statutory tax increases. Contemporary accounts attribute this to the rapid expansion of the "indirect turnover tax," via price fixing and state control rather than formal rate changes (Wyler, 1946). Specifically, the state raised

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

the effective tax burden by manipulating prices and taxable goods rather than altering nominal tax rates, a mechanism reinforced by Five-Year Plan allocation decisions. By 1938, turnover tax revenue reached 80.4 billion rubles and accounted for roughly 63% of total government revenue (Bergson, 1950; Sumberg, 1946). The increase was driven partly by food price inflation, as food accounted for many of the taxed commodities, and by administrative adjustments to prices and trade volumes (Sumberg, 1946). The absence of observable tax changes likely also reflected the fact that more than 2000 goods were taxed at individual rates, as well as the difficulties in observing official Soviet prices (Wyler, 1946; Sumberg, 1946). We found no evidence that these measures were rolled back.

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Russia, 1939-1944: World War 2

Figure E1: Total spending and revenues

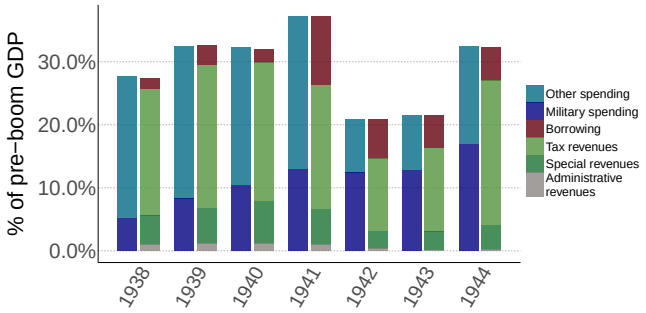


Figure E2: Cumul. change in spending, debt, revenues

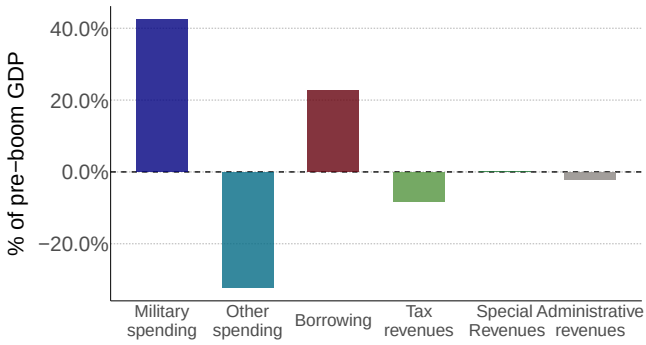


Figure E3: Spending breakdown (cumul. change)

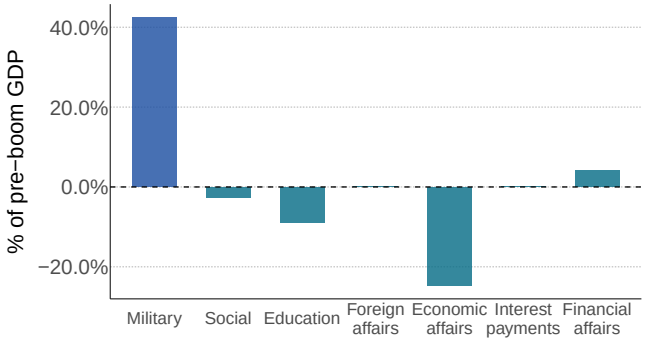
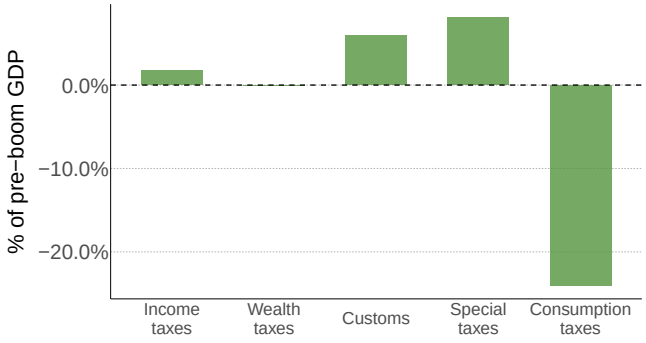


Figure E4: Tax revenue breakdown (cumul. change)



Size: 42.42 % of pre-boom GDP **Duration:** 6 years **Financing:** Primarily spending cuts
Major war boom: Yes **Average debt-to-GDP[1]:** No data **Average tax growth[1]:** 12.03 %

Historical context – exogenous trigger? Yes. The Soviet military buildup after 1939 followed the outbreak of World War 2 and, in particular, Germany's invasion of Poland on September 1, 1939, which abruptly placed the Wehrmacht on the Soviet frontier. Poland's rapid collapse, the failure of Britain and France to contain Germany, and Japan's entrenched position in Manchukuo created acute fears of encirclement and a potential two-front conflict. In this deteriorating environment, the USSR launched the Winter War against Finland in November 1939. Despite deploying roughly one million troops, the Red Army suffered heavy losses and achieved only limited gains before the Treaty of Moscow in March 1940 (Central Intelligence Office, 1955; Harrison, 2008). From June 1941 onward, the Soviet Union entered a full defensive war following the German invasion (Zickel, 1991).

New taxes or tax increases? Yes. Russia implemented major tax changes during the World War 2 spending boom. The state continued to rely heavily on the "indirect turnover tax," but declining private demand reduced the resulting income, which prompted additional measures. In 1941, the government drastically increased the income and agricultural tax rates by 100% (Sumberg, 1946). When these increases proved insufficient, a special military income tax on all individuals aged

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

18 and above was introduced in 1942, replacing the earlier measures (Millar, 1980). Additional surcharges targeted individuals exempt from military service, and a separate tax was imposed on bachelors and childless couples. Existing tax exemptions were also curtailed. After the war, the special military tax was abolished in 1946 and turnover tax rates were reduced for many goods, although the bachelor tax remained in force (Sumberg, 1946).

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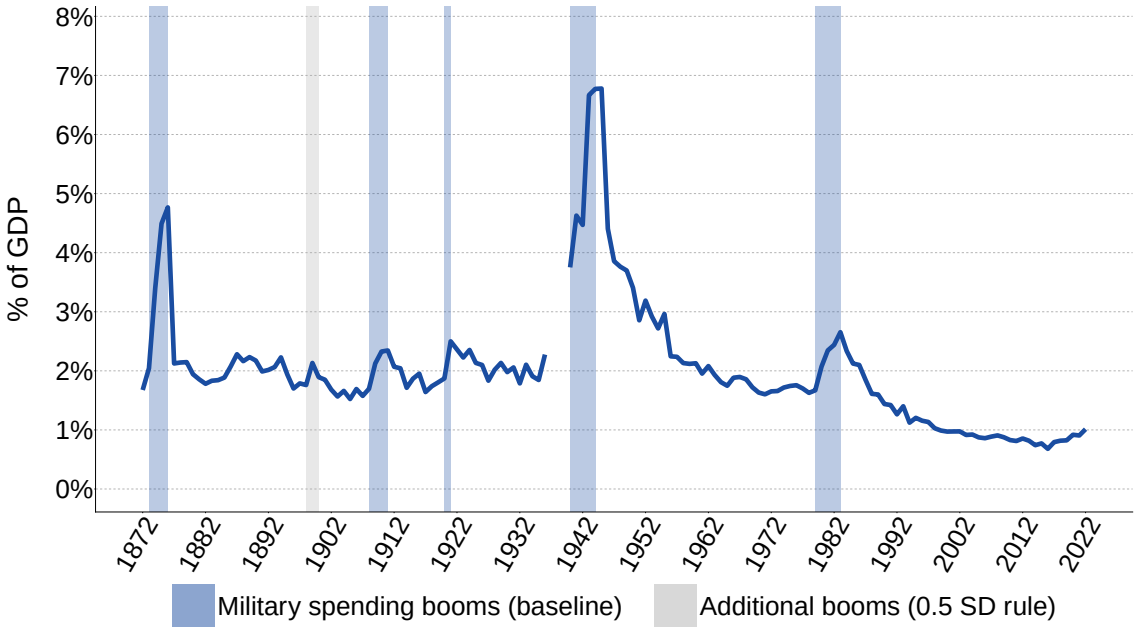
Spain



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1874-1876	5.89%	3 Years	Spending cuts	Third Carlist War (internal)
2	1909-1911	1.87%	3 Years	Taxes	Colonial uprising triggered intervention
3	1921	0.71%	1 Year	Taxes	Battle of Annual
4	1941-1944	10.31%	4 Years	Debt	World War 2
5	1980-1983	3.27%	4 Years	Mixed	Reforms and NATO accession

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1899-1900	Spanish-American War

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Spain, 1874-1876: Third Carlist War (internal)

Figure E1: Total spending and revenues

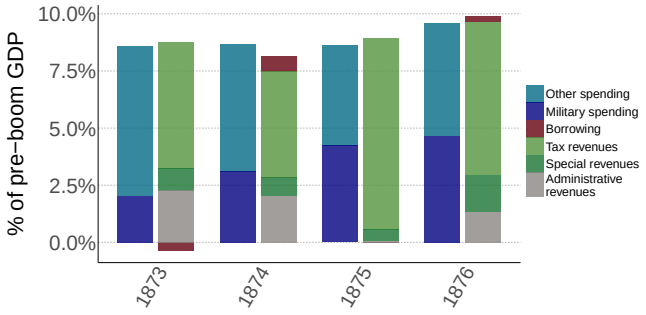


Figure E2: Cumul. change in spending, debt, revenues

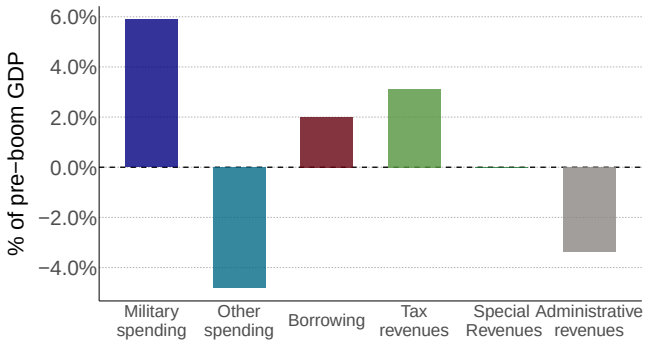


Figure E3: Spending breakdown (cumul. change)

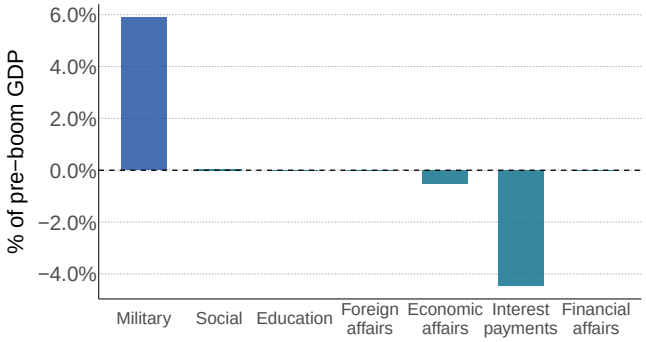
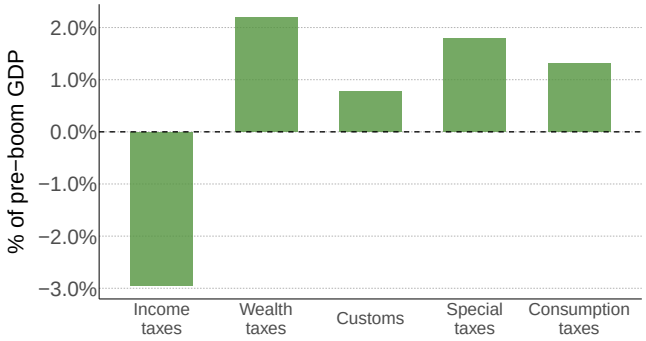


Figure E4: Tax revenue breakdown (cumul. change)



Size: 5.89 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily spending cuts
Major war boom: No **Average debt-to-GDP[1]:** 138.90 % **Average tax growth[1]:** No data %

Historical context – exogenous trigger? No. Spain's army buildup was driven by the domestic pressures of the Third Carlist War (1872–76) and the need to consolidate the newly restored Bourbon monarchy after years of political turmoil. Spain sharply increased military spending during the conflict, relying mainly on personnel rather than new equipment. The Ministry of War financed most of the effort because it oversaw the land forces, while the navy's budget remained largely unchanged (Sabaté Domingo, 2015). The conflict unfolded in a largely peaceful international environment and grew out of internal instability rather than any external threat. The war began amid the social upheavals of the Revolutionary Period (1868–1874) and marked a critical moment in Spanish political history, as the army assumed a central role in the struggle to restore national order (Carr et al., 2025). As Cantonalist revolts spread and republicanism collapsed, Madrid raised military spending to contain unrest. This escalation further entrenched the army in national politics (Lawrence, 2017).

New taxes or tax increases? Yes. Spain introduced an encompassing package of surtaxes to finance military expenditures in years 1973 and following (Gobierno de España, 1873). An export (shipping) surtax was introduced with rates between 1% to 5%. Municipalities had to pay 5%

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

of their revenue to the state. Stamp taxes were levied on letters, tickets, and official documents (Westoby, 1898). Profits from mining were taxed at 3% to 5%. Luxury carriages were also taxed. Another tax was levied per door, window, or balcony. The changes were introduced explicitly as temporary wartime measures. Although we find no direct evidence for a full reversal, our data shows that the taxes were only levied in 1875. Only the carriage tax was levied until 1877. Stamp taxes were officially abolished in 1879 (Westoby, 1898)

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Spain, 1909-1911: Colonial uprising triggered intervention

Figure E1: Total spending and revenues

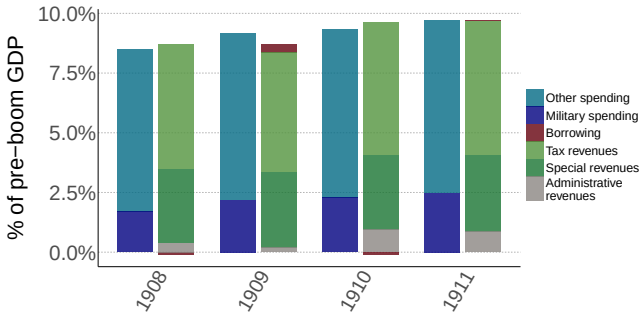


Figure E2: Cumul. change in spending, debt, revenues

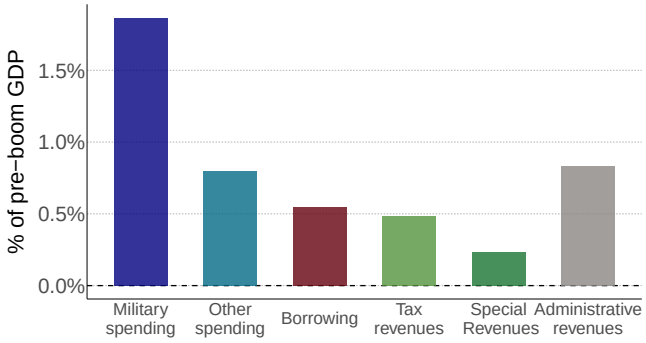


Figure E3: Spending breakdown (cumul. change)

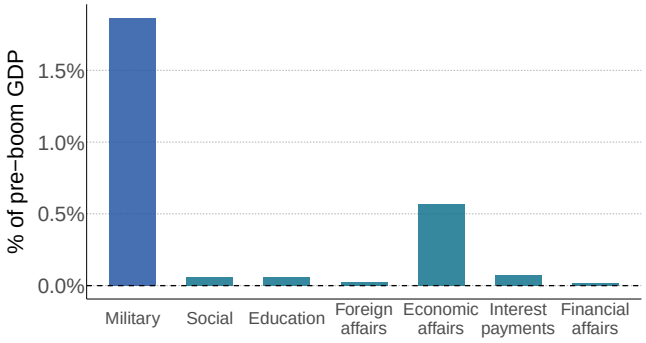
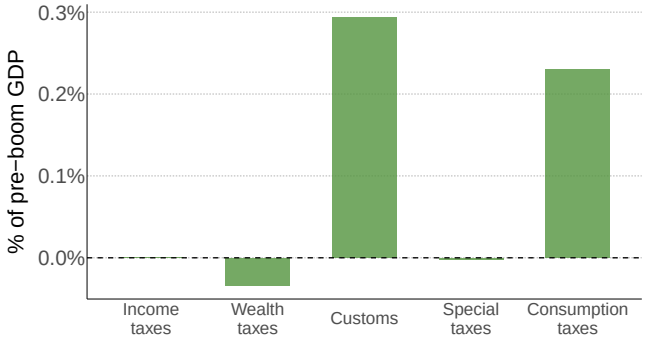


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.87 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 103.15 % **Average tax growth[1]:** 3.95 %

Historical context – exogenous trigger? Yes. Spain's 1909–11 military mobilization was triggered by the Melilla War of July 1909, when Berber Rif fighters launched sudden attacks on Spanish workers and military positions in northern Morocco, destroying outposts and killing dozens of soldiers. The violence prompted an emergency mobilization of tens of thousands of reservists, leading to a marked increase in defense spending (Gandarillas, 1993). The mobilization provoked intense domestic opposition to the war and the recruitment system, culminating in the "Tragic Week" uprising in Barcelona (Alcalde, 2017). Despite unrest at home, Spanish forces expanded operations and consolidated control over the surrounding territory in the following years (Le Tourneau, 1969).

New taxes or tax increases? Yes. In 1909, Spain levied extraordinary payments on men exempt from military service under the existing redención en metálico system to help finance the war in Morocco (Melilla) and naval expenditures (Gobierno de España, 1909). These payments acted as a one-time wartime tax on non-conscripted males rather than as a broad-based tax.

References

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Spain, 1921: Battle of Annual

Figure E1: Total spending and revenues

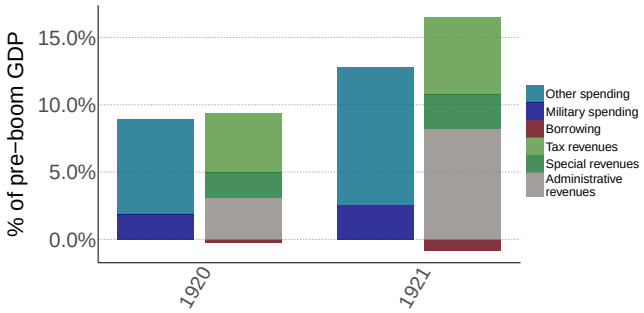


Figure E2: Cumul. change in spending, debt, revenues

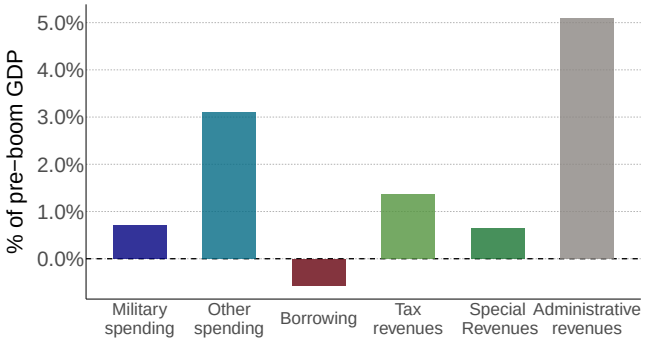


Figure E3: Spending breakdown (cumul. change)

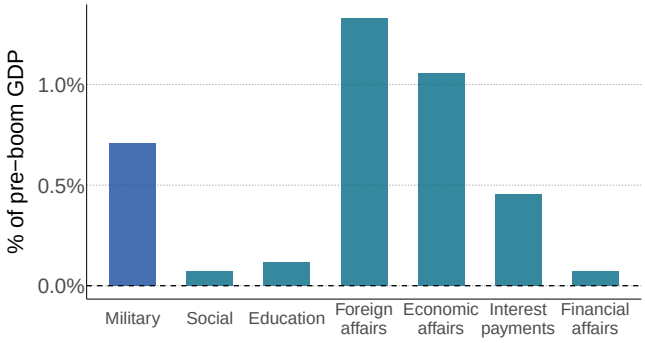
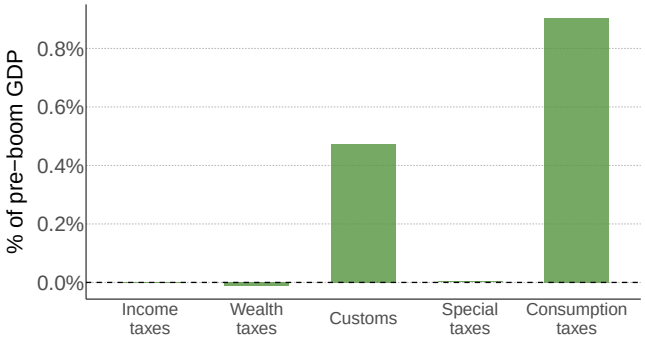


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.71 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 48.71 % **Average tax growth[1]:** 2.11 %

Historical context – exogenous trigger? Yes. Spain's 1921 emergency mobilization was a direct and unexpected exogenous reaction to the so called "Disaster of Annual" (July 22, 1921) during its colonial campaigns in Morocco. In the Battle of Annual, Spain suffered a catastrophic defeat, losing thousands of soldiers against a coordinated Riffian uprising under Abd el-Krim (Pennell, 1982). The rapid collapse of Spanish positions and the Riffian advance toward Melilla prompted an emergency mobilization. It also pushed the government to undertake substantial rearmament, driving a sharp increase in military expenditures (Sabaté Domingo, 2015). France added further pressure by demanding that Spain maintain and reinforce its presence in Morocco. This pressure expanded the deployment and increased the fiscal burden (Pack, 2019).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Spain during 1921. The main fiscal concern in 1921 was related to public debt and debt repayment pronlems (Comín, 2012).

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[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Spain, 1941-1944: World War 2

Figure E1: Total spending and revenues

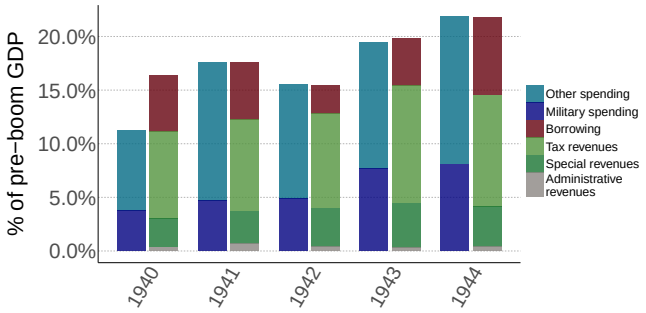


Figure E2: Cumul. change in spending, debt, revenues

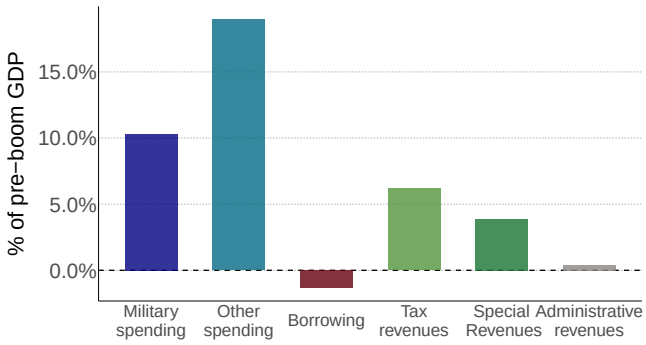


Figure E3: Spending breakdown (cumul. change)

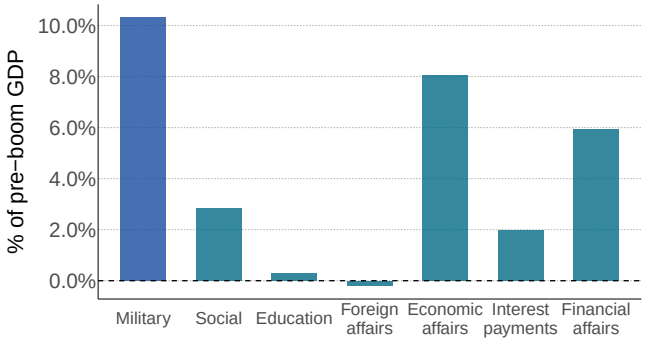
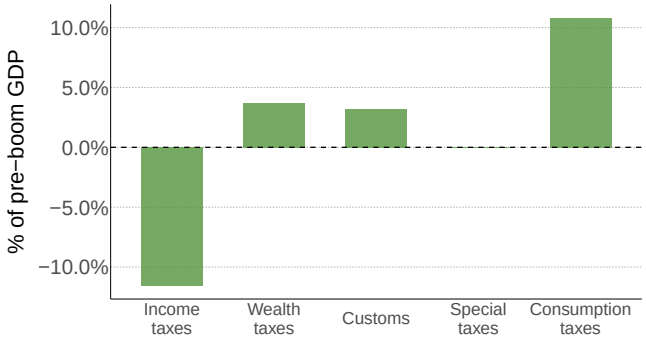


Figure E4: Tax revenue breakdown (cumul. change)



Size: 10.31 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 63.09 % **Average tax growth[1]:** No data

Historical context – exogenous trigger? Yes. Spain's military buildup between 1941 and 1944 followed successive external shocks from World War 2. Germany's victories in Western Europe, including the fall of France in 1940, removed Spain's strategic buffer and placed German power on its northern border. The invasion of the Soviet Union in June 1941 marked the high point of Axis expansion and drew Franco's regime closer to Germany. As part of its alliance with Germany, Spain created and deployed the Blue Division to Germany's Eastern Front, without Spain formally entering the war. In response to WW2 developments, Spain also partially mobilized, reinforced coastal defenses, and maintained large standing forces. Invasion fears grew considerable after the Allied landings in North Africa in November 1942 and in Italy in 1943. The North African landings, in particular, brought the war to Spain's borders and forced rapid troop deployments and a turn toward stricter neutrality. Military spending rose sharply and the expanded army helped consolidate Franco's regime (Preston, 2022; Graham, 2005; Sabaté Domingo, 2015).

New taxes or tax increases? Yes. Spain introduced encompassing tax changes during World War 2 to finance military expenses. In 1940, a large, permanent tax reform was passed (Jefatura Del Estado, 1940). Private income taxes were raised to 40%. Corporate income tax rates follow

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

a progressive structure with top rates of 25%. The package also increased property and land tax rates, as well as various consumption taxes on selected luxury goods and industrial commodities. In 1941, the temporary 1939 excess profit-tax, which was levied after the civil war at rates ranging from 40%-80%, was reinstated (Jefatura Del Estado, 1939, 1942). In 1943, the existing Wolfram export tax was also raised by 300% and extended to domestic Wolfram sales to counter possible tax evasion by the allies, who did not want to sponsor the Franco regime with tax revenue (Caruana and Rockoff, 2003). The temporary excess profit tax was abolished in 1943 (Rodríguez, 2022), the 1940 changes were permanent.

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Spain, 1980-1983: Reforms and NATO accession

Figure E1: Total spending and revenues

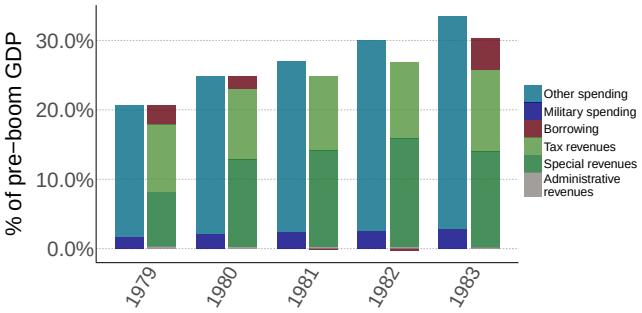


Figure E2: Cumul. change in spending, debt, revenues

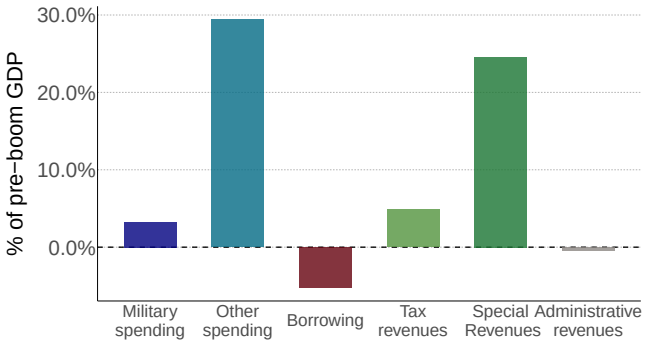


Figure E3: Spending breakdown (cumul. change)

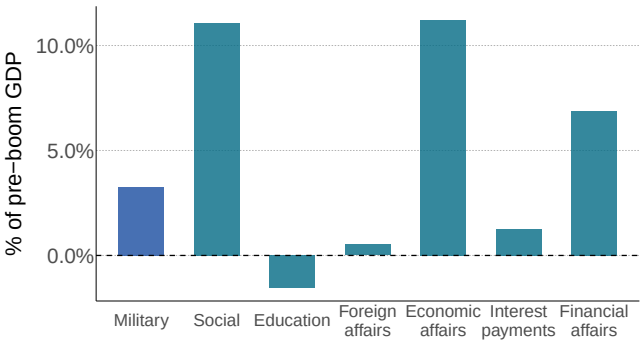
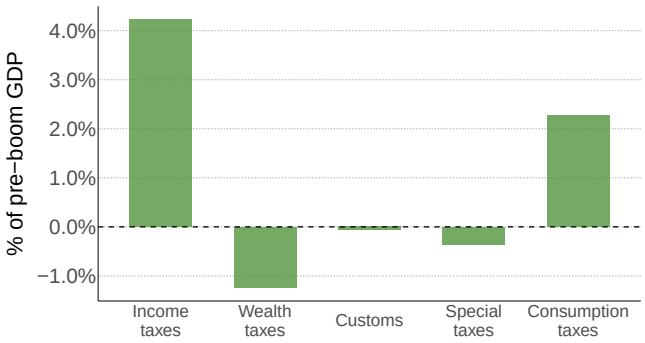


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.27 % of pre-boom GDP **Duration:** 4 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 15.62 % **Average tax growth[1]:** 5.05 %

Historical context – exogenous trigger? No. Spain's 1980–1983 military buildup stemmed from domestic transition goals and the objective of NATO integration rather than from foreign threats or sudden external shocks. Spain prepared for NATO accession, which formally occurred in 1982, by launching major defense reforms (Pila, 2010). The government introduced the META plan in the early 1980s to modernize the Army and improve operational efficiency (Yárnoz, 1983). It also raised defense spending to update obsolete forces, strengthen civilian control after Franco, and align military structures with NATO standards. At the same time, Spain expanded investment in defense R&D, military equipment, international arms-development programs, and the domestic defense industry (Molas-Gallart, 1997). These measures formed part of a broader effort to consolidate the democratic transition and reform the armed forces (Solsten and Meditz, 1990).

New taxes or tax increases? No. We find no evidence of significant tax increases linked to financing the military spending boom in Spain during 1980–1983. Spain had already embarked on a broad tax reform process beginning in 1977, building on earlier proposals (Hetland, 2017). Key reforms included the introduction of a progressive personal income tax in 1979 and a value-added tax in 1986. These measures reflected the transition from autocracy to democracy and the construction of a modern European welfare state, rather than responses to defense spending needs.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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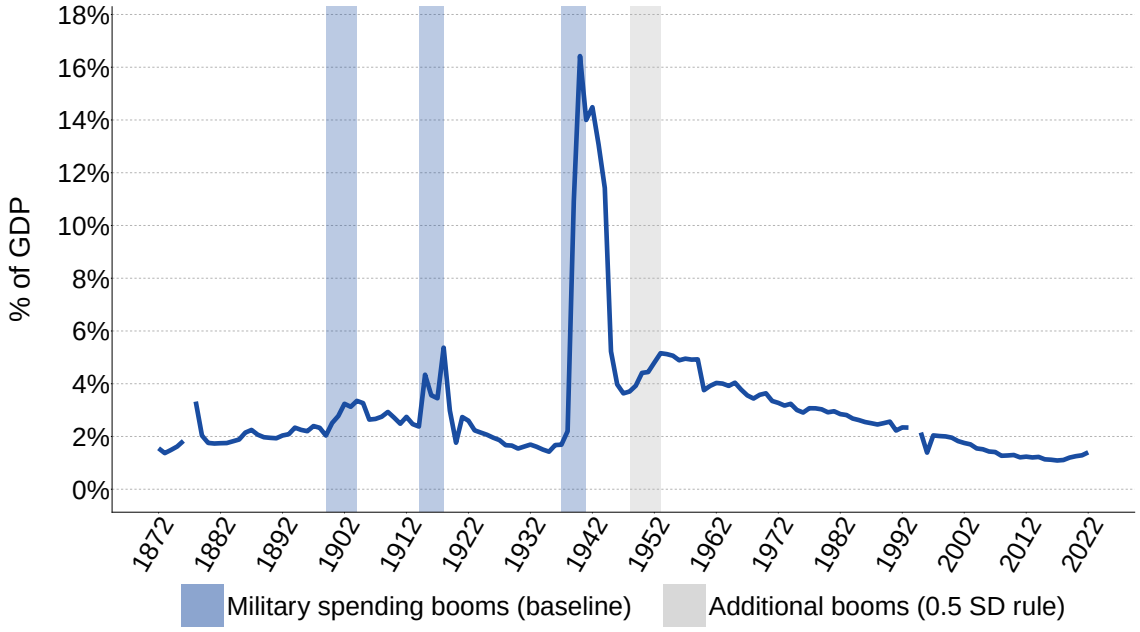
Sweden



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1900-1904	5.55%	5 Years	Taxes	Defense reform and conscription army
2	1915-1918	7.23%	4 Years	Debt	World War 1
3	1938-1941	39.55%	4 Years	Debt	World War 2

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1949-1953	Rearmament due to Cold War tensions (this boom is very close to the threshold of 1 SD)

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Sweden, 1900-1904: Defense reform and conscription army

Figure E1: Total spending and revenues

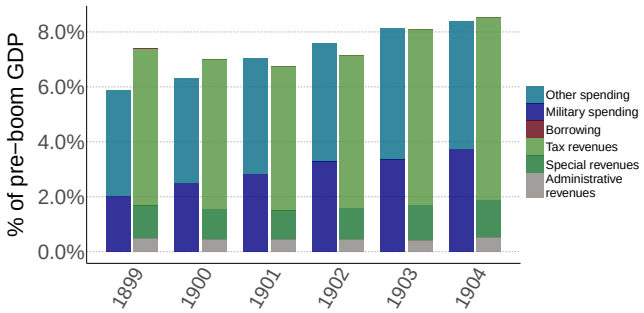


Figure E2: Cumul. change in spending, debt, revenues

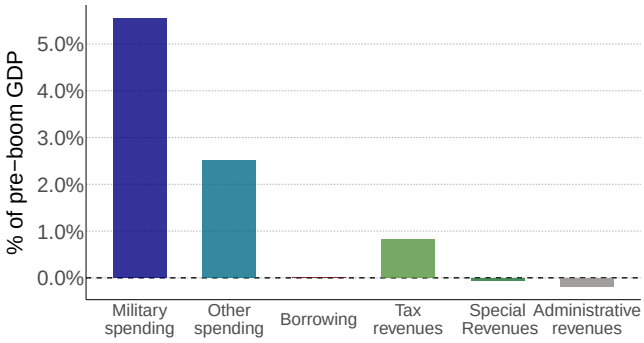


Figure E3: Spending breakdown (cumul. change)

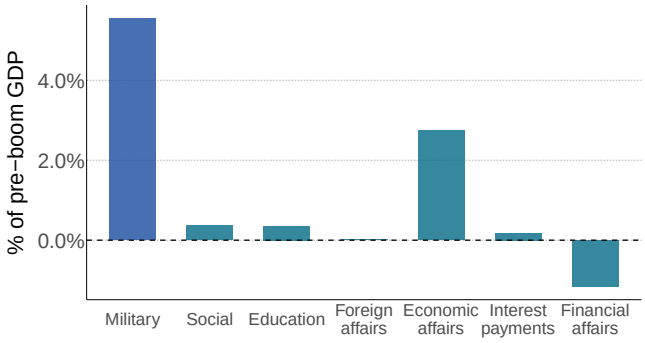
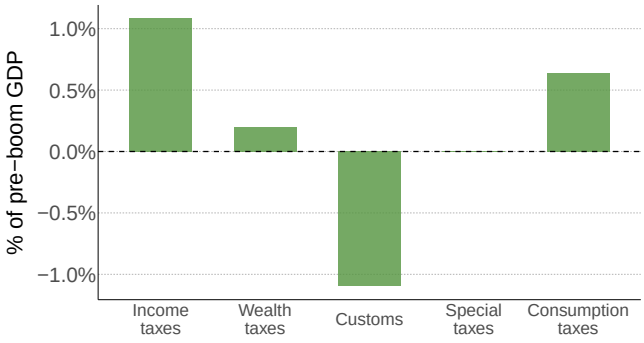


Figure E4: Tax revenue breakdown (cumul. change)



Size: 5.55 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 15.77 % **Average tax growth[1]:** 4.65 %

Historical context – exogenous trigger? No. Sweden's military buildup between 1900 and 1904 resulted from domestic political decisions and state-building reforms, not from foreign pressure or an external war shock. Preparations began around 1900 through parliamentary debate, fiscal planning, and administrative changes. These efforts culminated in the 1901 Defense Reform. The reform abolished the "Indelningsverk," introduced universal male conscription for men aged 21–40, and created a general conscription army (Holm, 1951; Försvarsmakten, 2022). The navy strengthened coastal artillery defenses and expanded training, while the army increased training and force readiness (Försvarsmakten, 2022). Initial implementation enlisted about 30,000 men and laid the foundation for a force exceeding 100,000 soldiers in later years (Sveriges Riksdag, 1909).

New taxes or tax increases? Yes. In 1903, Sweden introduced a new progressive state income tax on individuals and corporations (first proposed in 1902), partly in response to rising defense expenditures associated with the 1901 Defense Reform (Sveriges Riksdag, 1903). The tax reform set low exemption thresholds, made income declarations mandatory, and substantially broadened the tax base. Marginal rates reached up to 5%, and income from labor, capital, and real estate was subject to taxation. The tax was not reversed but instead amended and expanded through follow-up reforms, in particular in 1910 (Sveriges Riksdag, 1910).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Sweden, 1915-1918: World War 1

Figure E1: Total spending and revenues

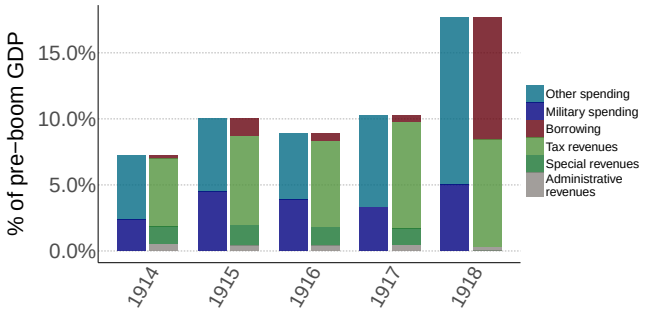


Figure E2: Cumul. change in spending, debt, revenues

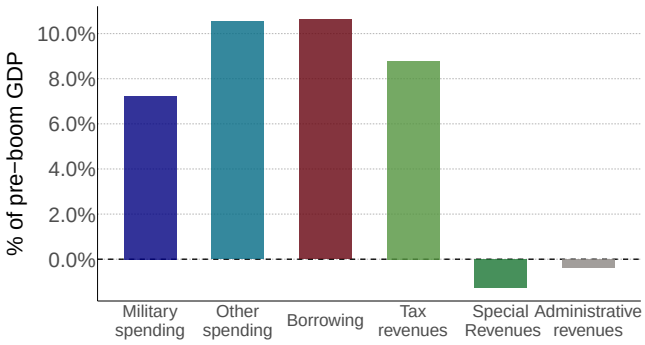


Figure E3: Spending breakdown (cumul. change)

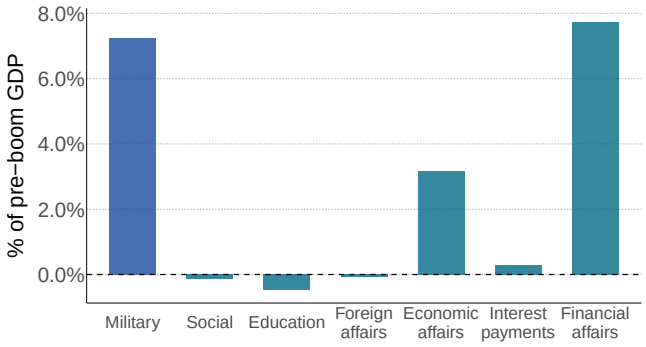
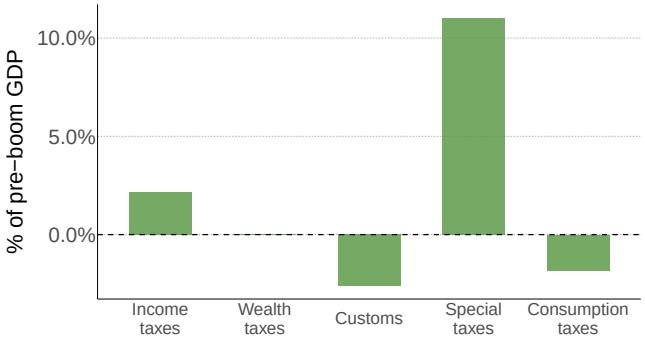


Figure E4: Tax revenue breakdown (cumul. change)



Size: 7.23 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 17.26 % **Average tax growth[1]:** 0.45 %

Historical context – exogenous trigger? Yes. Sweden's military buildup between 1915 and 1918 followed external wartime developments during World War 1. Although Sweden declared neutrality in August 1914, its position between Germany and Russia left it exposed. To preserve neutrality and prepare for potential attacks, Sweden passed a major defense bill in 1914 and doubled the army from six to twelve infantry divisions, with additional reserve divisions formed by 1916 (Åselius, 2017). The rapid expansion strained equipment and personnel capacity, forcing the government to secure uniforms, weapons, and trained officers under difficult conditions (Sveriges Riksdag, 1914). The Russian Revolution in 1917 and the withdrawal of Russian forces from Finland triggered additional military efforts and spending. Sweden remained neutral throughout the war, but the Allied blockade severely disrupted trade, especially with Germany (Enander et al., 2025).

New taxes or tax increases? Yes. Sweden introduced several new taxes to finance the pre-emptive military buildup during World War 1. In 1914, the government imposed a one-time extraordinary levy, followed in 1915 by a temporary excess-profits tax of 12% scheduled to last two years (Sveriges Riksdag, 1915b,a). In the same year, new tobacco excises were introduced to offset revenue losses from war-related trade disruptions (Häggqvist, 2019). In 1918, Sweden enacted

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

additional income and wealth surtaxes (Sveriges Riksdag, 1918). After the war, the excess-profits tax was abolished in 1920, but changes to income taxation, including higher rates, increased progressivity, and the taxation of wealth, were retained and later codified in postwar tax reforms (Henrekson and Stenkula, 2015).

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Sweden, 1938-1941: World War 2

Figure E1: Total spending and revenues

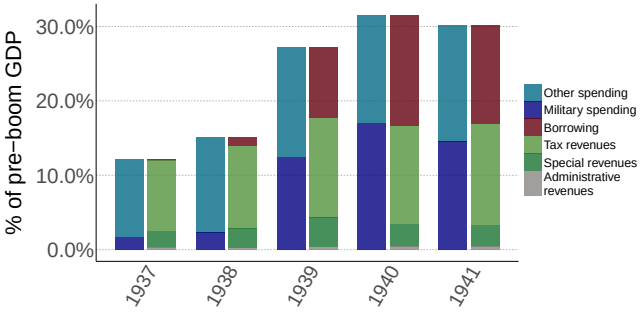


Figure E2: Cumul. change in spending, debt, revenues

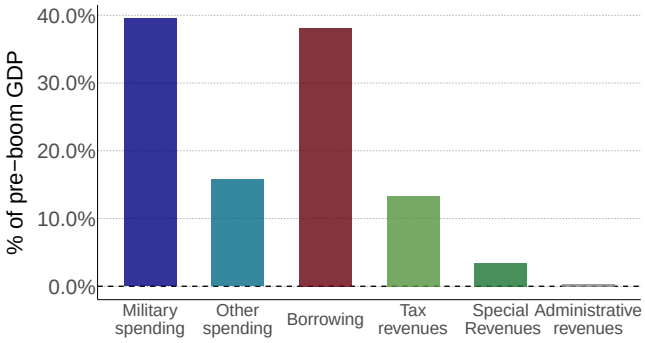


Figure E3: Spending breakdown (cumul. change)

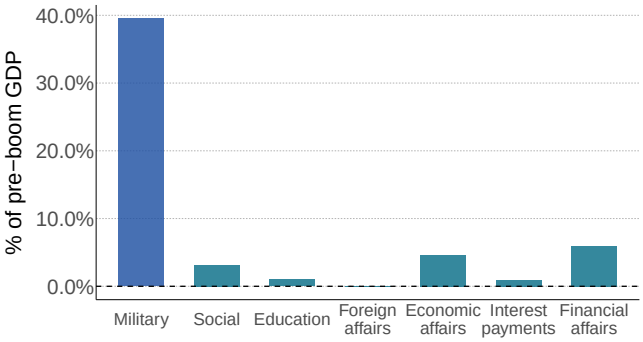
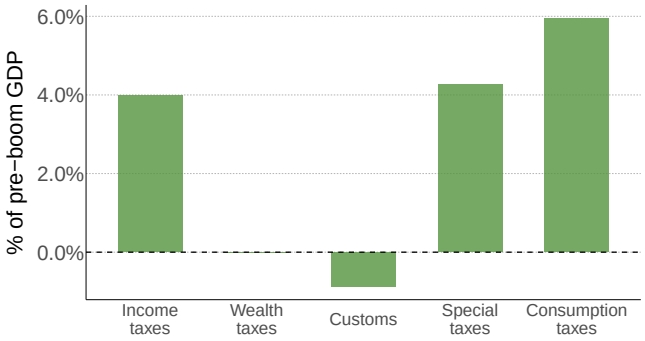


Figure E4: Tax revenue breakdown (cumul. change)



Size: 39.55 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 23.63 % **Average tax growth[1]:** 19.68 %

Historical context – exogenous trigger? Yes. Sweden's military buildup between 1938 and 1941 followed a rapid succession of external shocks that dismantled the European security order. Germany's Anschluss of Austria in March 1938, the Munich Crisis later that year, and the occupation of Czechoslovakia in March 1939 demonstrated the collapse of collective security. The Soviet attack on Finland during the Winter War (November 1939–March 1940) brought armed conflict to Sweden's immediate border. Germany's invasion of Denmark and Norway in April 1940 then placed Sweden in a position of strategic isolation. The buildup began with the 1938 defense proposal, which introduced major organizational reforms, a substantial expansion of the air force, and improved naval facilities, building on earlier planning efforts (Sveriges Riksdag, 1936, 1939b). Further adjustments followed, including strengthened anti-aircraft and coastal artillery command structures in 1941 and the adoption of a broad "total defense" doctrine, reflecting preparations for a potential German invasion (Sveriges Riksdag, 1942; Ljungkvist, 2024). Overall, Sweden mobilized more than 300,000 troops and sharply expanded both the air force and the navy.

New taxes or tax increases? Yes. Sweden introduced a combined income and wealth tax in 1938 to help finance rising military expenditures during the World War 2 spending boom (Sveriges Riksdag, 1938a). The government also imposed successive wartime surtaxes that raised existing rates,

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

with proportionally larger increases for higher income groups (Sveriges Riksdag, 1938b, 1939a). Rates, exemptions, and thresholds were repeatedly adjusted upward during the war (Sveriges Riksdag, 1940a). In 1940, Sweden introduced a general sales tax of 5% on the turnover value of selected goods and services (Sveriges Riksdag, 1940b). Most wartime tax measures were repealed after 1945, but the 1947 tax reform incorporated several features of the temporary war tax period into permanent law (Sveriges Riksdag, 1947; Henrekson and Stenkula, 2015).

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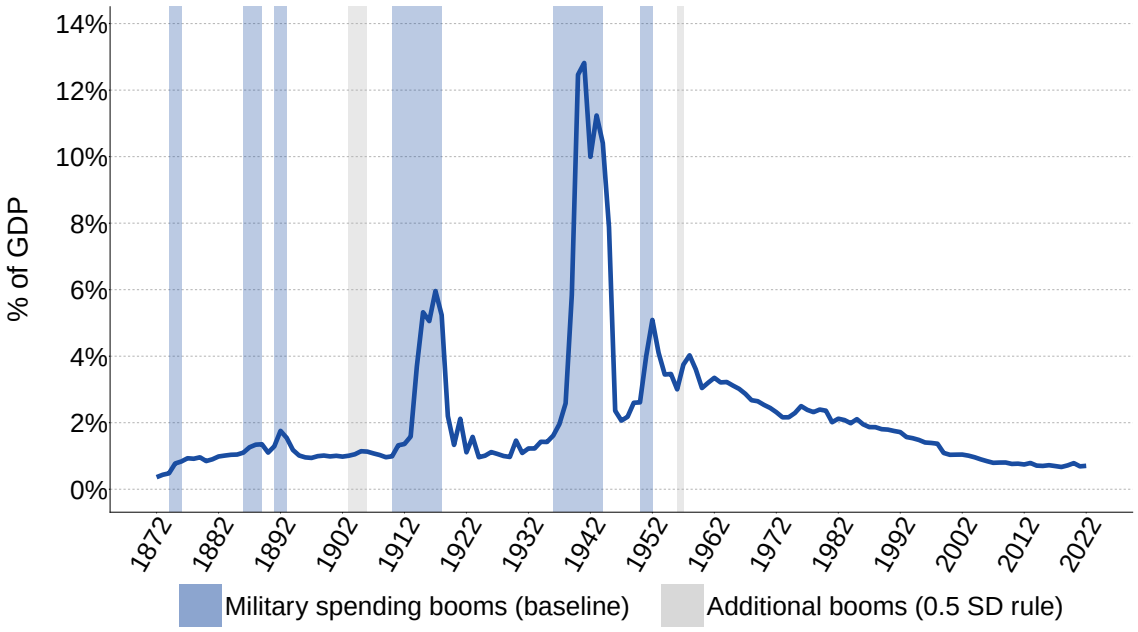
Switzerland



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1875-1876	0.80%	2 Years	Spending cuts	Military reform and centralization
2	1887-1889	0.73%	3 Years	Taxes	Planned fortification of Gotthard Pass
3	1892-1893	1.08%	2 Years	Taxes	Planned military modernization
4	1911-1913	1.40%	3 Years	Mixed	Defensive buildup before WW1
5	1914-1918	16.14%	5 Years	Debt	World War 1
6	1937-1938	1.51%	2 Years	Mixed	Defensive buildup (Nazi threat)
7	1939-1944	43.50%	6 Years	Debt	World War 2
8	1951-1952	4.60%	2 Years	Taxes	Korean War triggered defense buildup

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1904-1906	New artillery and war materials for possible conflicts
2	1957-1958	Response to geopolitical tensions (Hungary and Middle East)

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Switzerland, 1875-1876: Military reform and centralization

Figure E1: Total spending and revenues

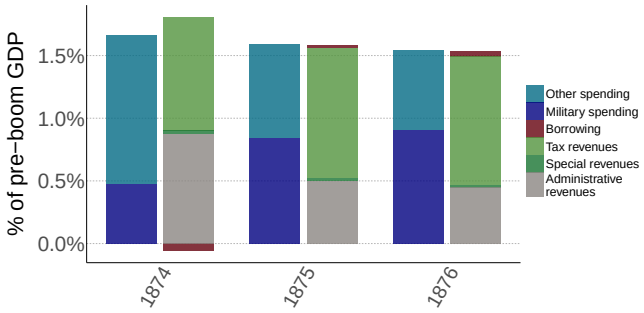


Figure E2: Cumul. change in spending, debt, revenues

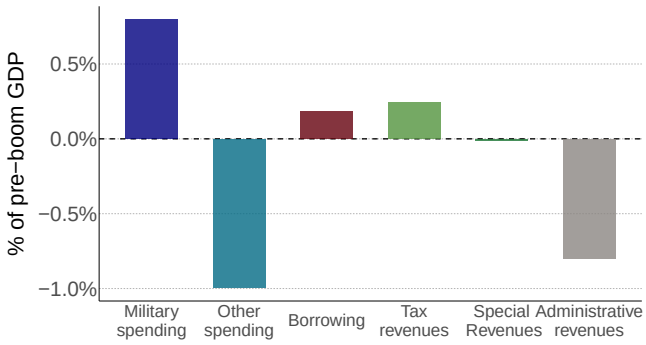


Figure E3: Spending breakdown (cumul. change)

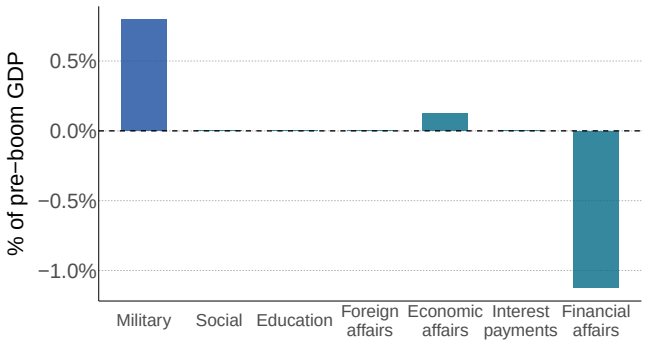
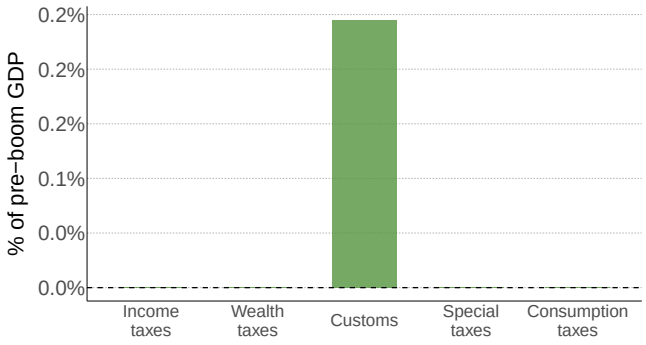


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.80 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily spending cuts
Major war boom: No **Average debt-to-GDP[1]:** 1.50 % **Average tax growth[1]:** 9.97 %

Historical context – exogenous trigger? No. Switzerland's military buildup between 1874 and 1876 was the product of internal reform rather than an external threat or coercive pressure. The federal government pushed to modernize and centralize the military after longstanding weaknesses became apparent and politically relevant. In particular, Switzerland's border mobilization during the Franco-Prussian War of 1870–71 had revealed serious army deficiencies, with several cantonal units unfit for combat (Senn, 2008). Lawmakers responded with the Military Organization of 1874, which placed recruitment, training, and refresher courses under federal control and sharply increased operational and material spending (Jaun and Zala, 2006). The reform meant more intensive training and higher standards for soldier pay and provisioning (Swiss Federal Assembly, 1874).

New taxes or tax increases? Yes. In 1878, Switzerland introduced a federal tax on men exempt from military service (Bundeskanzlei, 1878). Voters had rejected an earlier version of the measure in a 1876 referendum, but it passed following reforms that strengthened federal authority over the military and reduced cantonal autonomy (Bolliger, 2010). The tax broadened the base by applying not only to residents but also to Swiss citizens living abroad. Similar levies had previously existed at the cantonal level. A successor version of this exemption tax remains in force until today.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Switzerland, 1887-1889: Planned fortification of Gotthard Pass

Figure E1: Total spending and revenues

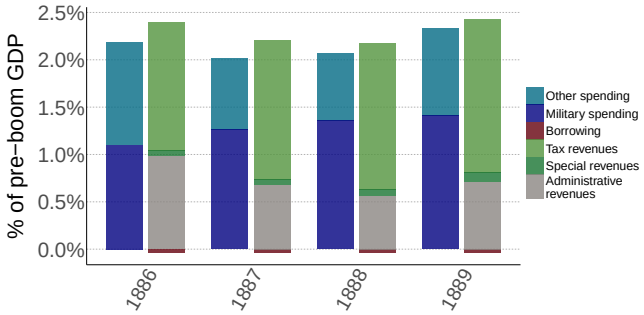


Figure E2: Cumul. change in spending, debt, revenues

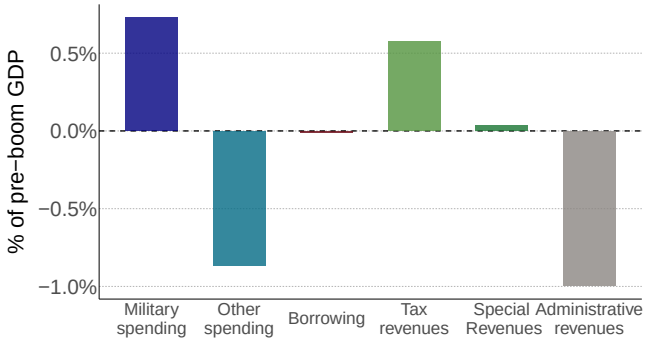


Figure E3: Spending breakdown (cumul. change)

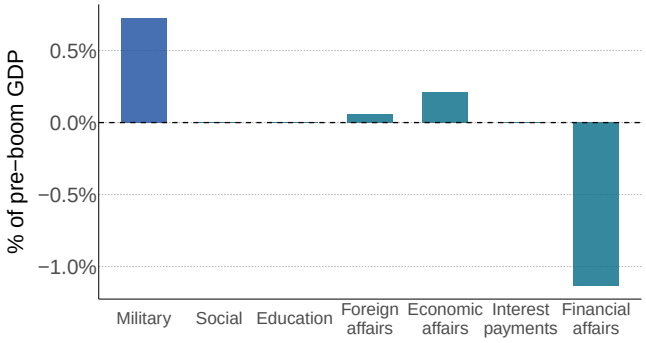
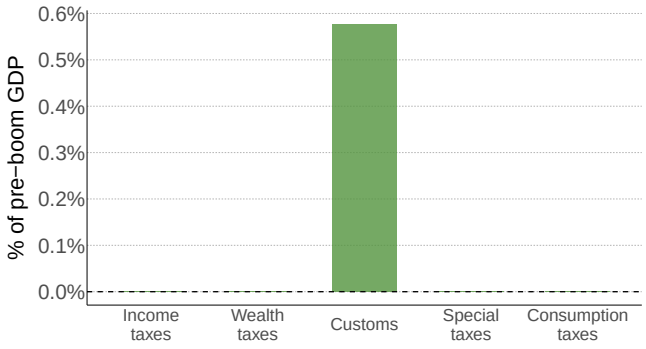


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.73 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 2.25 % **Average tax growth[1]:** -2.27 %

Historical context – exogenous trigger? No. Switzerland's 1887–1889 military buildup reflected domestic planning and precaution rather than a direct external threat or shock, even though European war scares formed the background. Beginning in 1886, the federal government initiated major fortification works to secure the strategically vital Gotthard Pass, a key political and military corridor linking northern and southern Europe (Historisches Lexikon der Schweiz, 2016). The Federal Council approved additional funding to expand the project, with more than half of the planned budget allocated to fortifications at Airolo and further resources directed to Andermatt and Oberalp (Swiss Federal Council, 1886, 1889). The program focused on constructing permanent defensive positions, excavating access tunnels, and equipping the fortifications with modern armaments (Swiss Federal Council, 1889).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to the military spending boom related to the fortification of the Gotthard Pass in Switzerland during 1887-1889.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Switzerland, 1892-1893: Planned military modernization

Figure E1: Total spending and revenues

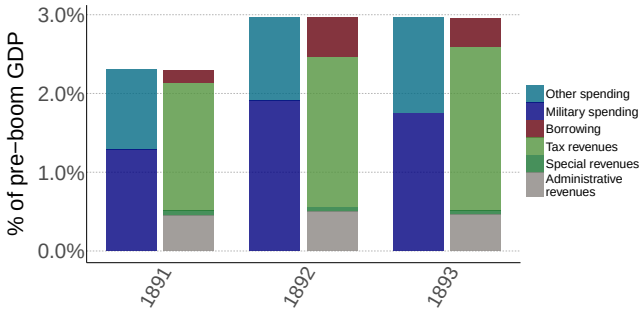


Figure E2: Cumul. change in spending, debt, revenues

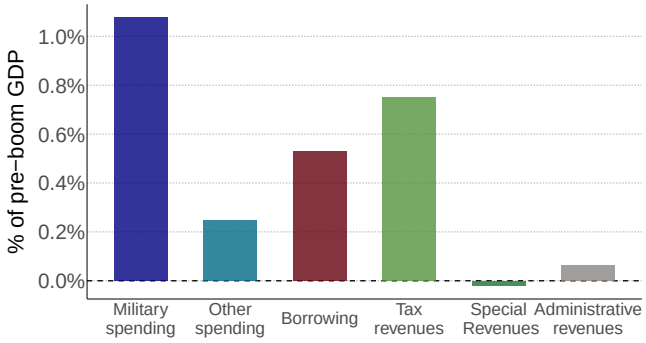


Figure E3: Spending breakdown (cumul. change)

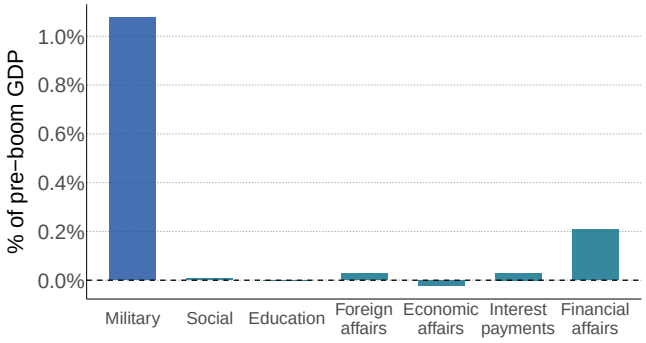
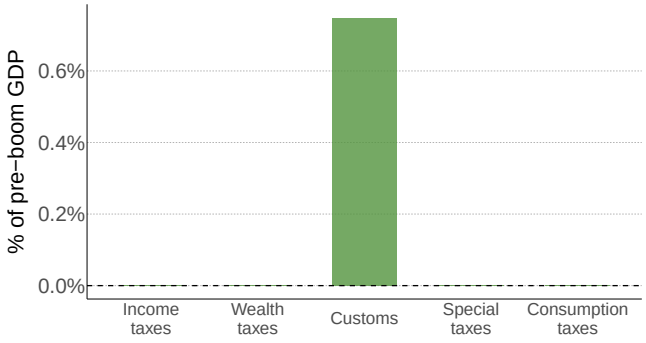


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.08 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 2.74 % **Average tax growth[1]:** 3.36 %

Historical context – exogenous trigger? No. Switzerland's 1892–1893 defense buildup reflected a planned phase of long-term military modernization rather than a response to an external shock. Although the Franco-Russian Alliance of 1892 raised general European tensions, Switzerland faced no direct military threat. The key driver was technological modernization. The adoption of the M1889 rifle marked Switzerland's transition to modern small-caliber, magazine-fed infantry weapons and prompted a major procurement program (Jardim, 2020). In 1892, the Federal Assembly approved funding for the production of 30,000 rifles as part of broader efforts to improve readiness (Swiss Federal Council, 1892a). That same year, it allocated an additional funds to complete modernized fortifications in the Rhone Valley, particularly around St. Maurice (Swiss Federal Council, 1892b).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Switzerland during 1892-1893.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Switzerland, 1911-1913: Defensive buildup before WW1

Figure E1: Total spending and revenues

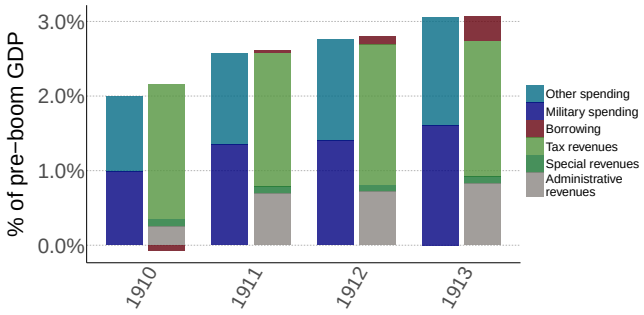


Figure E2: Cumul. change in spending, debt, revenues

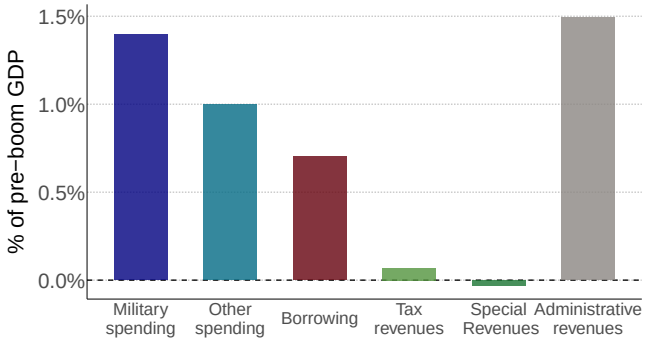


Figure E3: Spending breakdown (cumul. change)

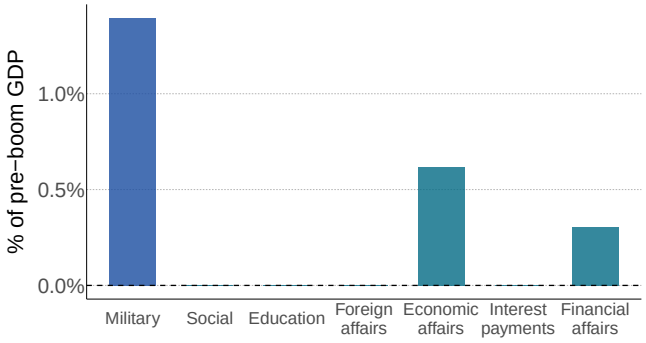
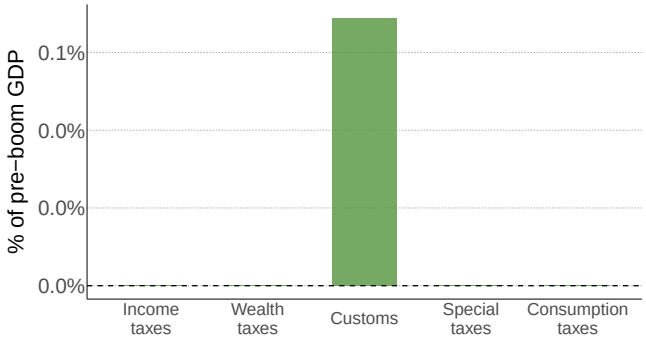


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.40 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 2.69 % **Average tax growth[1]:** 1.49 %

Historical context – exogenous trigger? Yes. Switzerland's military buildup between 1911 and 1913 followed rising external pressures from the continent-wide rearmament wave preceding World War 1. The Agadir Crisis of July 1911 and the Balkan Wars of 1912–13 heightened fears that a major conflict among France, Germany, or Austria-Hungary could spill into Swiss territory. In response, Switzerland expanded its military and approved substantial budget increases for war materiel, fortifications, and equipment. The Federal Assembly allocated funds to acquire new armaments and modernize the army (Swiss Federal Assembly, 1912). Subsequent reforms, including a new army organization and upgraded mountain troop equipment, further raised maintenance costs and required expanded facilities to manage growing stockpiles (Swiss Federal Council, 1913).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Switzerland during 1911-1913. Tax changes were introduced after the onset of WW1 in 1914 (Schweizer Steuerkonferenz SKK, 2022).

References

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Switzerland, 1914-1918: World War 1

Figure E1: Total spending and revenues

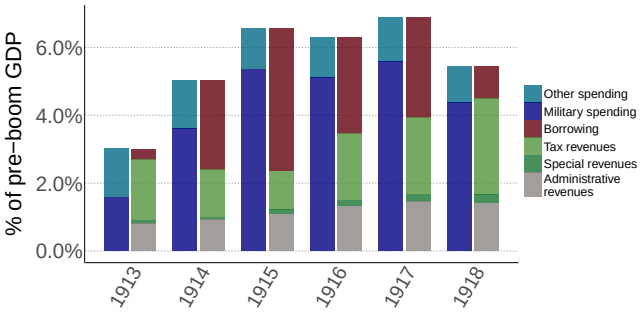


Figure E2: Cumul. change in spending, debt, revenues

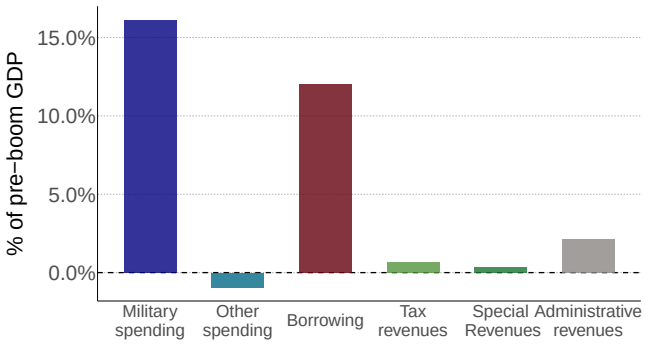


Figure E3: Spending breakdown (cumul. change)

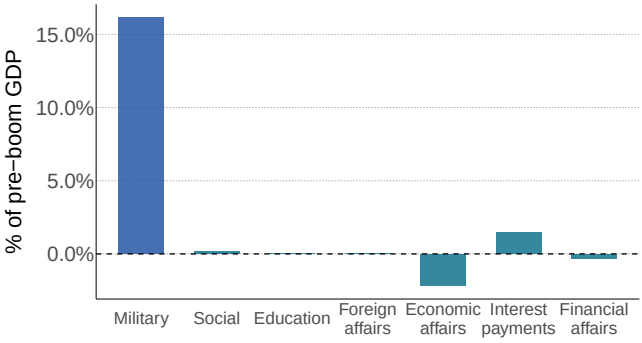
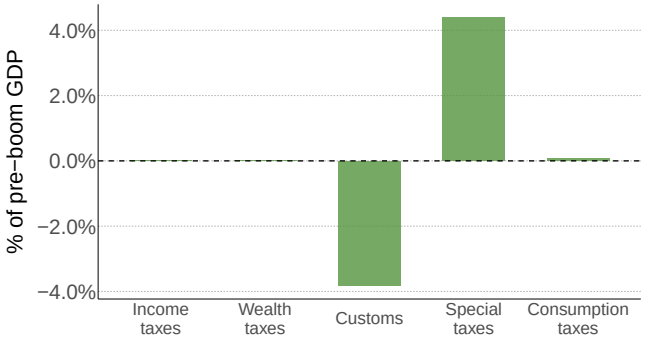


Figure E4: Tax revenue breakdown (cumul. change)



Size: 16.14 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 12.37 % **Average tax growth[1]:** 0.29 %

Historical context – exogenous trigger? Yes. Switzerland's military mobilization from 1914 to 1918 was fully exogenous and followed directly from the outbreak of World War 1 and the immediate risk of invasion. Germany's invasion of France and Belgium in August 1914 placed Switzerland between active fronts and exposed it as a potential military corridor. In response, Switzerland ordered full mobilization and deployed 220,000 troops to defend its neutrality (Swiss Federal Archives, nd). The United Federal Assembly granted the Federal Council extraordinary powers, and defense spending rose sharply to sustain the effort (Schneider, 2019). Switzerland was never invaded, but both German and French general staffs examined Swiss routes in contingency planning, including the Belfort–Basel corridor and Jura crossings. These risks, Italy's entry into the war in 1915, repeated border incidents, and post-1917 regional instability kept Switzerland's forces mobilized throughout the war (Schneider, 2019).

New taxes or tax increases? Yes. In 1914, Switzerland doubled the tax on exemptions from military service to help finance immediate mobilization costs (Schweizer Steuerkonferenz SKK, 2022; Altorfer, 2013). In 1915, the federal government introduced a temporary war tax on income and wealth, applying to both private individuals and corporations and levied in 1916 and 1917.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

Lower incomes were exempt, and progressive rates ranged from 0.1% to 1.5% (Bundeskanzlei, 1915). An excess-profits tax was also introduced and remained in force from 1915 to 1920. In 1917, Switzerland introduced stamp taxes as an additional revenue source. Voluntary war contributions functioned as a temporary quasi-tax alongside these measures. After the war, the excess-profits tax ended in 1920, and the 1915 war tax expired after 1917. However, in 1919 the government introduced a renewed, quasi-temporary war tax modeled on the 1915 measure (Bundeskanzlei, 1918). This tax was levied at irregular multi-year intervals until 1932 to cover World War 1 costs, after which it was replaced by a new crisis tax in 1933. Stamp taxes were increased in 1921 and were not abolished.

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Switzerland, 1937–1938: Defensive buildup (Nazi threat)

Figure E1: Total spending and revenues

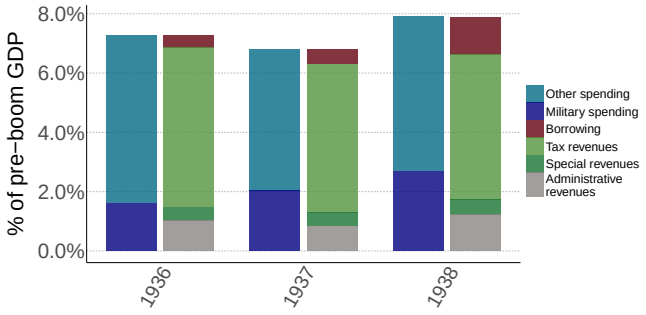

Figure E2: Cumul. change in spending, debt, revenues

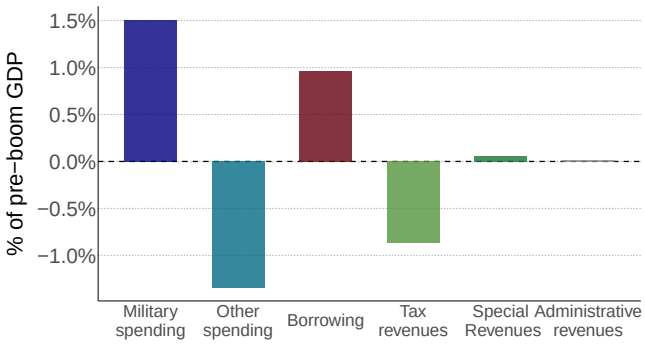

Figure E3: Spending breakdown (cumul. change)

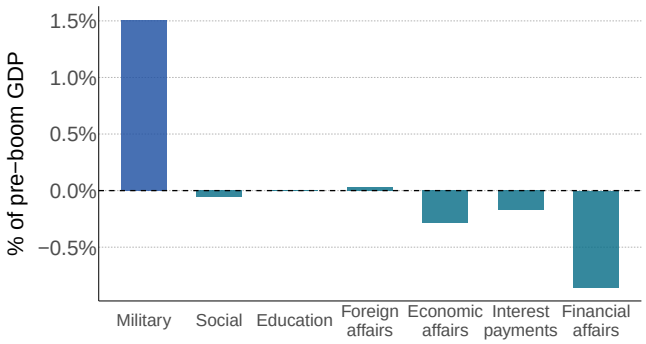

Figure E4: Tax revenue breakdown (cumul. change)

Size: 1.51 % of pre-boom GDP **Duration:** 2 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 30.81 % **Average tax growth[1]:** 6.85 %

Historical context – exogenous trigger? Yes. Switzerland's military buildup in 1937–1938 followed a sequence of external geopolitical shocks that sharply altered its security environment. Germany's remilitarization of the Rhineland in March 1936 removed a key buffer. The Anschluss of Austria in March 1938 placed German forces directly on Switzerland's eastern border. In response, Switzerland approved a major armament program in 1936 (Degen, 2011) and expanded mobilization infrastructure in 1937 (Bergier, J., et al., 2002). Despite these measures, military capabilities remained limited, with outdated equipment, few tanks, and weak air power, leaving Switzerland exposed on the eve of World War 2(de Weck, 2010).

New taxes or tax increases? Yes. In 1938, the special crisis tax, which originated from the post World War 1 period, was prolonged to provide revenue for military expenditures (Schweizer Steuerkonferenz SKK, 2022). The rates remained the same (the latest increase had been a 25% surtax in 1936). Furthermore, plans were made to substitute it with a full-scale defense tax in 1941, which eventually happened during World War 2.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Switzerland, 1939-1944: World War 2

Figure E1: Total spending and revenues

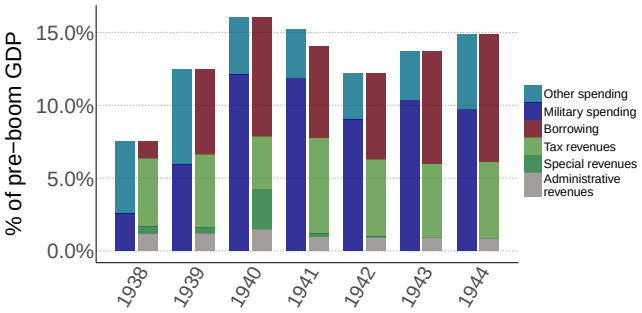


Figure E2: Cumul. change in spending, debt, revenues

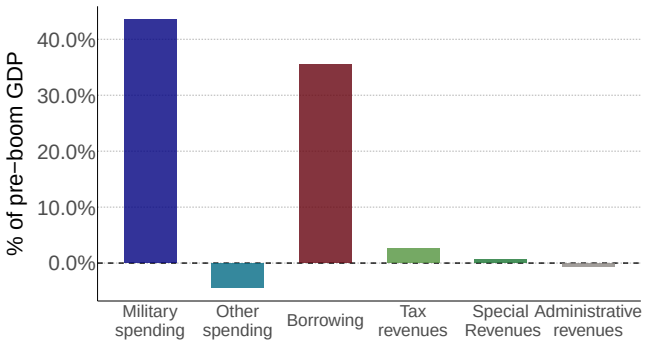


Figure E3: Spending breakdown (cumul. change)

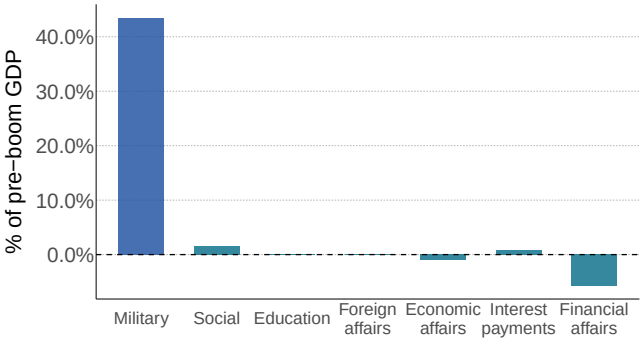
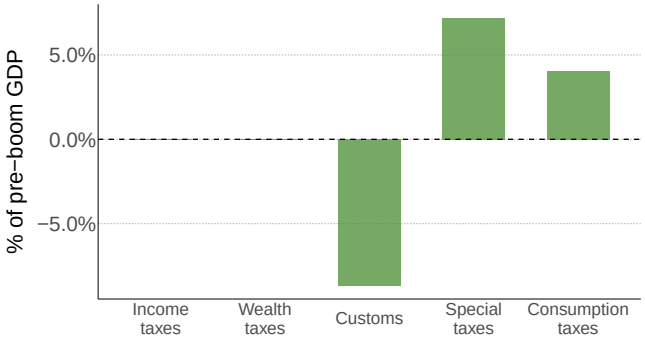


Figure E4: Tax revenue breakdown (cumul. change)



Size: 43.50 % of pre-boom GDP **Duration:** 6 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 50.71 % **Average tax growth[1]:** -3.82 %

Historical context – exogenous trigger? Yes, the outbreak of World War 2 forced a general mobilization. The German conquest of France (May 10 – June 25, 1940) left Switzerland encircled by Axis powers. Concrete German–Italian invasion plans (e.g., Operation Tannenbaum, 1940) confirmed that the threat was real. To prepare for a possible invasion, Switzerland strongly increased its military budget (Swiss Federal Assembly, 1941). Higher expenditures followed as the army mobilized more troops and purchased additional equipment (Swiss Federal Council, 1939). Extending conscription to the age of 60 raised costs further. It required new auxiliary services and the creation of additional training programs (Swiss Federal Council, 1940).

New taxes or tax increases? Yes. To finance the military spending boom after the onset of World War 2, Switzerland converted the crisis tax into a defense tax (Wehrsteuer) in 1940 (Schweizer Steuerkonferenz SKK, 2022). Although introduced as temporary, rates on private income and corporate profits remained broadly unchanged. An excess profits tax was enacted in 1940 and later increased, and one-off wealth taxes were levied in 1940 and 1942. In 1941, Switzerland introduced a general goods sales tax at rates of 2%–3%, exempting basic goods such as food to limit the burden on lower incomes. Beer taxes doubled in 1941, and luxury goods

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

became taxable in 1942. Swiss citizens residing abroad were also subject to a new wealth tax, levied through 1945. In 1943 and 1944, existing tax rates rose further, and temporary war taxes were extended until 1949. After the war, the excess profits tax and one-off wealth taxes expired, but the defense tax evolved into the permanent income and profit tax, and the general sales tax also became permanent, although rates were lowered after 1950 (Schweizer Steuerkonferenz SKK, 2022). In addition, to reduce the burden of postwar debt, a special income surtax was imposed in 1949.

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Switzerland, 1951-1952: Defense buildup triggered by Korean War

Figure E1: Total spending and revenues

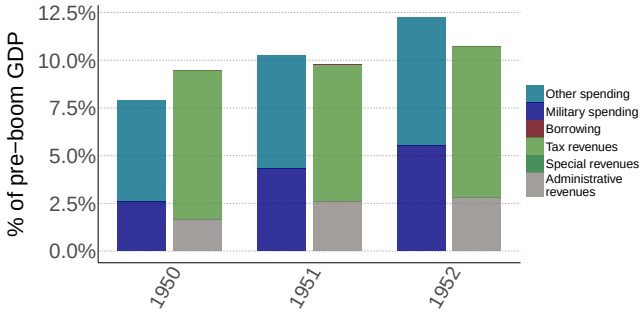


Figure E2: Cumul. change in spending, debt, revenues

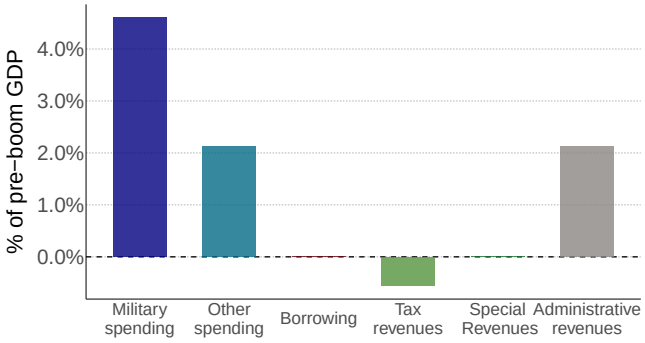


Figure E3: Spending breakdown (cumul. change)

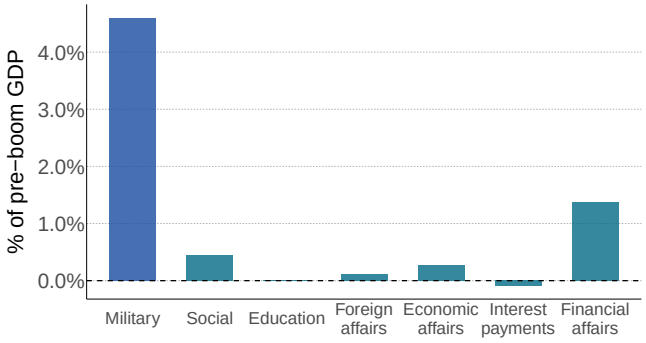
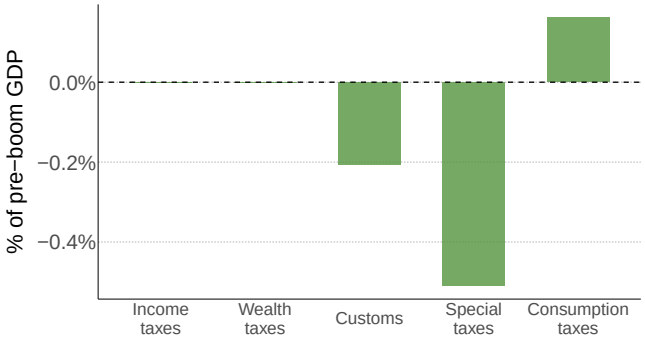


Figure E4: Tax revenue breakdown (cumul. change)



Size: 4.60 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 34.22 % **Average tax growth[1]:** 3.68 %

Historical context – exogenous trigger? Yes. Switzerland's 1951–1952 defense buildup followed a clear external shock, the outbreak of the Korean War after North Korea's invasion of South Korea on June 25, 1950, which sharply intensified Cold War tensions and altered the global security environment. Although Switzerland remained neutral, the conflict signaled a renewed risk of large-scale war in Europe and exposed gaps in national defense preparedness. In response, the federal government raised military expenditures in 1951 and launched a broad armament program to modernize equipment and improve readiness (Swiss Federal Council, 1951). Official assessments explicitly linked the expansion to the deteriorating "military-political situation" (Swiss Federal Council, 1950). Parliament approved substantial increases in military spending, mainly to sustain force strength but also for new armaments (Swiss Federal Council, 1952). The program reflected a substantial, externally induced commitment to strengthening Switzerland's defense infrastructure (Swiss Federal Council, 1953).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Switzerland during 1951-1952. Instead, during the previous years, the tax burden was still close to war levels, and first rate cuts and exemptions

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

were introduced as of 1950 (Schweizer Steuerkonferenz SKK, 2022). In 1952, there was a debate and two proposals on financing military expenses with taxes, but no tax changes were ultimately enacted.

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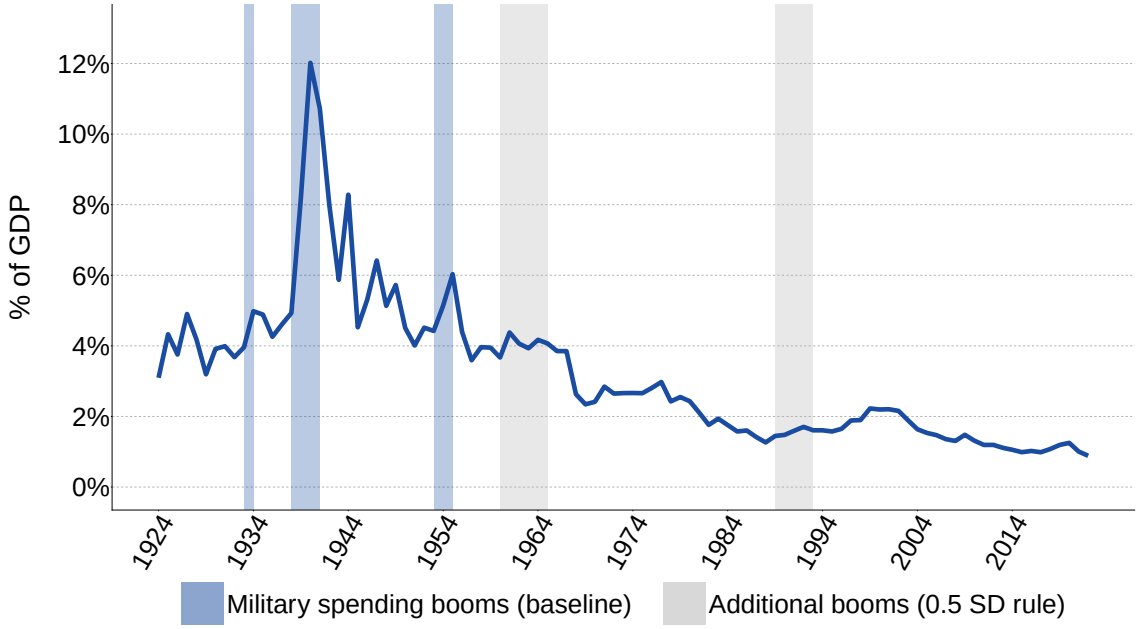
Turkey



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1934	1.34%	1 Year	Mixed	Planned military modernization
2	1939-1941	15.97%	3 Years	Mixed	World War 2
3	1954-1955	2.47%	2 Years	Taxes	NATO-driven rearmament and modernization

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1961-1965	NATO targets and preparation to occupy Cyprus
2	1990-1993	Involvement in and reaction to Gulf War

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

Turkey, 1934: Planned military modernization

Figure E1: Total spending and revenues

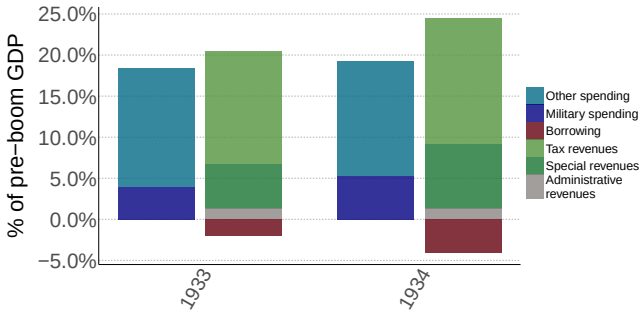


Figure E2: Cumul. change in spending, debt, revenues

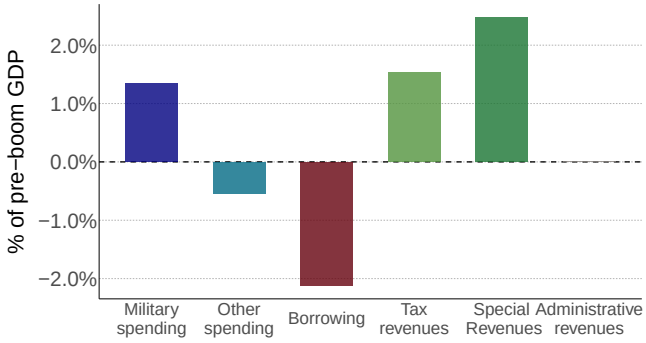


Figure E3: Spending breakdown (cumul. change)

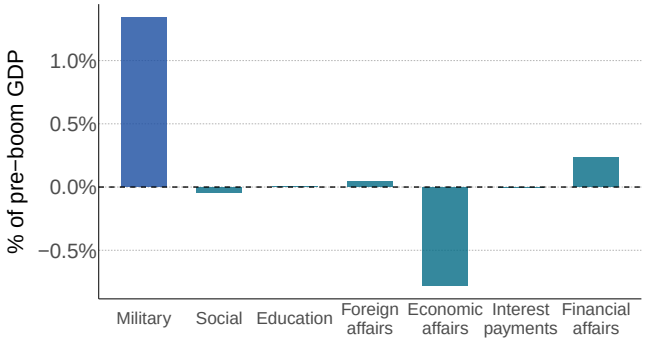
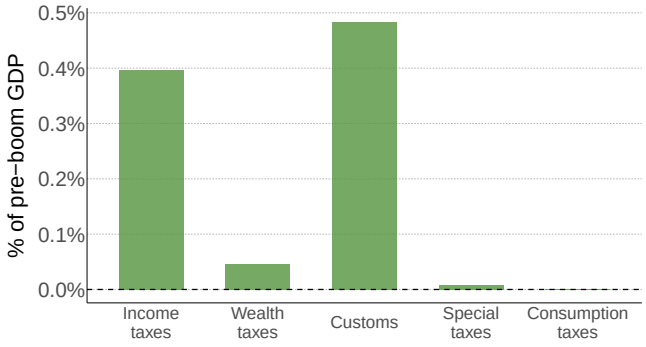


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.34 % of pre-boom GDP **Duration:** 1 year **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 37.53 % **Average tax growth[1]:** 12.70 %

Historical context – exogenous trigger? No. Turkey's military buildup in 1934 was driven by Atatürk's domestic modernization strategy and his efforts to consolidate the republic rather than a response to a sudden external shock. Atatürk made military reform a core element of state building and initiated a planned shift toward mechanized warfare. Turkey purchased tanks and armored vehicles from the Soviet Union, marking a transition from a manpower-intensive army to a motorized force (Egeli et al., 2024). This transformation created short-term vulnerabilities by increasing dependence on foreign suppliers and temporarily reducing operational capacity (Mitzer and Oliemans, 2023). Although the Balkan Entente and the rise of Italian and German militarism raised tensions, they reinforced an ongoing reform agenda rather than triggering it. Rising regional instability motivated border fortification and alliance building (Millman, 1995).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Turkey during 1934. A notable tax change during 1934 relates to the income tax, but we are not able to identify a link to military spending (Kholodilin et al., 2023).

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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Turkey, 1939-1941: World War 2

Figure E1: Total spending and revenues

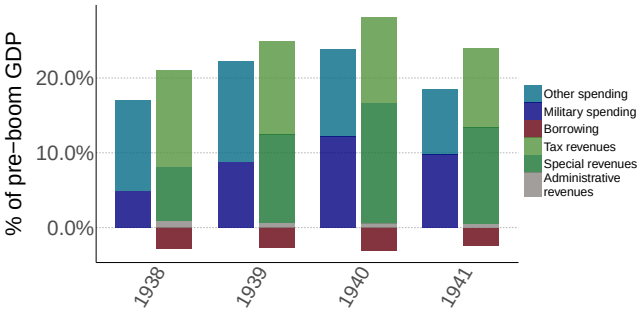


Figure E2: Cumul. change in spending, debt, revenues

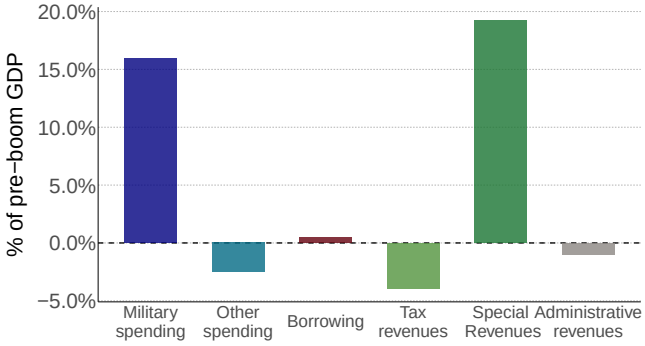


Figure E3: Spending breakdown (cumul. change)

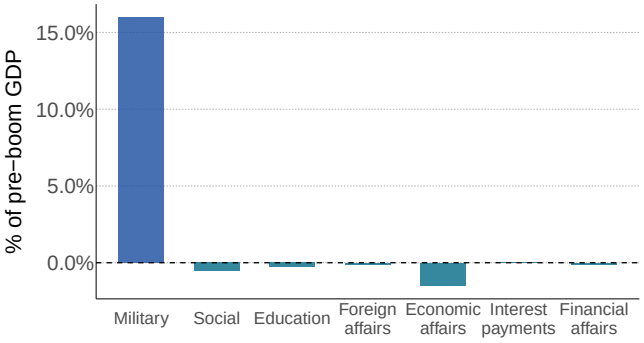
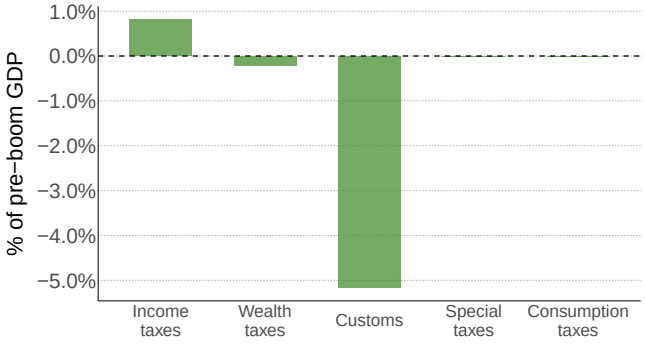


Figure E4: Tax revenue breakdown (cumul. change)



Size: 15.97 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 33.49 % **Average tax growth[1]:** 8.09 %

Historical context – exogenous trigger? Yes. Turkey's military buildup between 1939 and 1941 followed escalating external shocks from World War 2 rather than domestic planning. Initial precautionary measures began in 1939 as European instability deepened, but the buildup intensified sharply as the conflict moved closer towards Turkey. The fall of France in June 1940, Italy's entry into the war, and Germany's occupation of the Balkans in April 1941 placed Axis forces on Turkey's western border and increased the diplomatic and military pressure on Turkey. In response, Turkey accelerated mobilization, formed new divisions, and recalled reserves, expanding the army from about 120,000 men to roughly 300,000 by 1941 (Millman, 1996). Turkey avoided an invasion, partly due to careful diplomacy. The scale of mobilization strained public finances and pushed the state to intervene more deeply in industry and finance to sustain defense spending (Zürcher, 2017; Lerner and Robinson, 1960).

New taxes or tax increases? Yes. Turkey introduced new taxes and raised existing ones during the World War 2–related military boom (Uluatam, 2025). Before the war, the government had already introduced a crisis tax, often referred to as the air force tax. After the outbreak of the war, it increased existing tax rates to finance higher defense outlays. In 1941, agricultural profits

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

became subject to taxation, a measure that remained in force until its repeal in 1944. In 1942, Turkey enacted a broader excess war profits tax. Although formally labeled a property tax, it targeted extraordinary wartime profits and wealth and was levied temporarily in 1942 and 1943 (Ağır and Artunç, 2019). In the postwar period, Turkey reformed wartime profit taxation into a comprehensive income tax system for individuals and corporations in 1949 under Laws 5421 and 5422, alongside the introduction of further tax measures.

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Turkey, 1954–1955: NATO-driven rearmament and modernization

Figure E1: Total spending and revenues

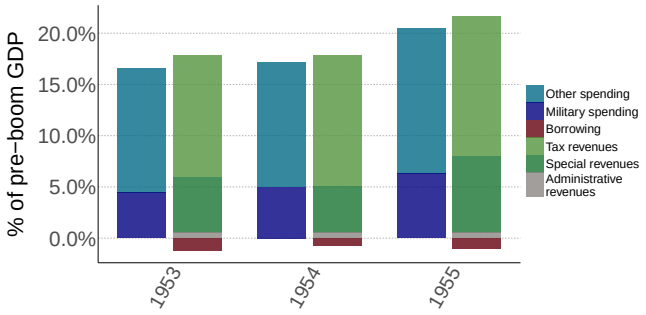


Figure E2: Cumul. change in spending, debt, revenues

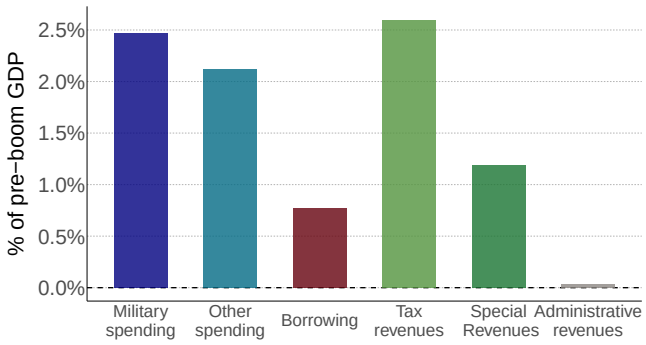


Figure E3: Spending breakdown (cumul. change)

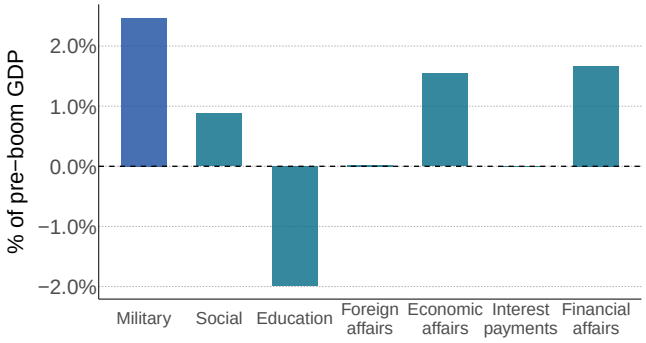
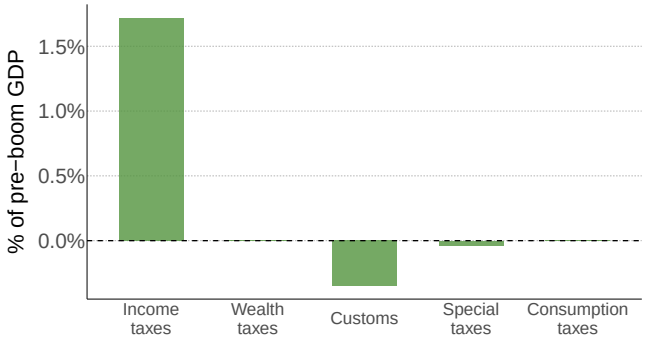


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.47 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes
Major war boom: No **Average debt-to-GDP[1]:** 19.43 % **Average tax growth[1]:** 9.94 %

Historical context – exogenous trigger? Yes. Turkey's military buildup in 1954–1955 followed external alliance shocks linked to the Korean War and NATO accession rather than domestic rearmament priorities. Turkey sent a full brigade (5,000 troops) to Korea after the war broke out in June 1950. This signaled firm alignment with the Western bloc and helped to pave the way for NATO membership on February 18, 1952 (NATO, nd). After accession, U.S. and NATO defense planning exerted strong pressure on Ankara to rearm and modernize. Large inflows of U.S. military aid under the Mutual Defense Assistance Program financed broad investments in equipment, infrastructure, training, and force reorganization. Defense spending rose as Turkey adapted its military structure and planning to these inflows and NATO standards (Kivrikoglu, 1998). Institutional changes followed, including the creation of a defense research and development unit within the Ministry of National Defense in 1954, anchoring longer-term, alliance-driven modernization (Demir, 2020).

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in Turkey during 1954-1955.

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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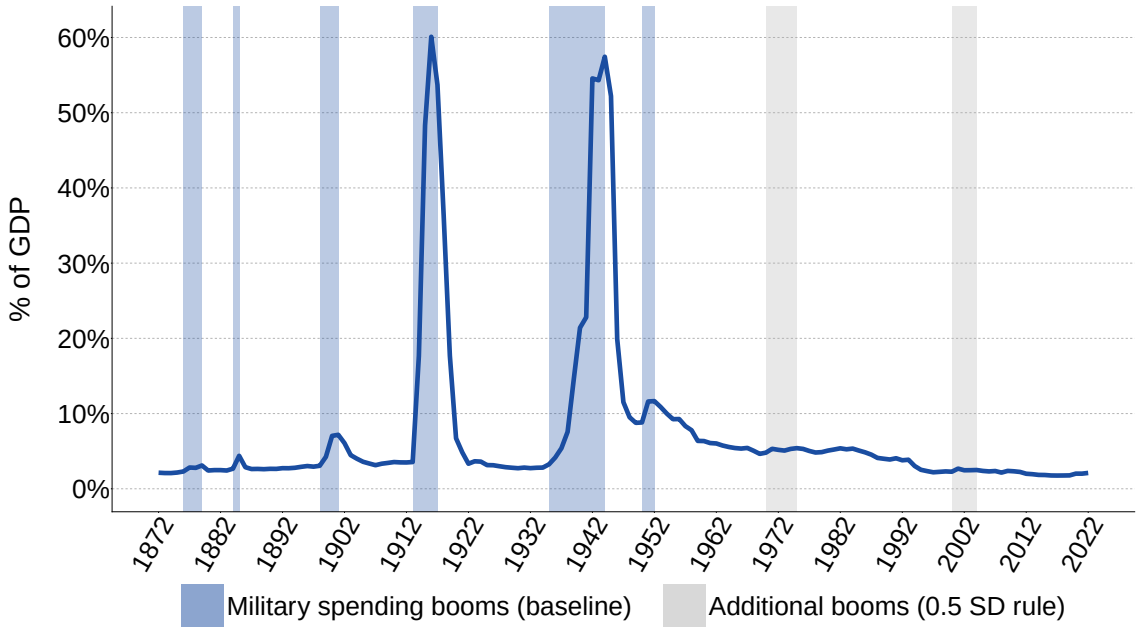
UK



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1877-1879	1.93%	3 Years	Debt	Great Eastern Crisis
2	1885	1.68%	1 Year	Debt	Sudan and Panjdeh crises
3	1899-1901	10.01%	3 Years	Debt	Second Boer War
4	1914-1917	183.14%	4 Years	Debt	World War 1
5	1936-1938	8.71%	3 Years	Mixed	Buildup in response to Nazi threat
6	1939-1944	227.66%	6 Years	Debt	World War 2
7	1951-1952	6.27%	2 Years	Debt	Korean War and NATO demands

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1971-1975	-
2	2001-2004	Joining War on Terror

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

UK, 1877-1879: Great Eastern Crisis

Figure E1: Total spending and revenues

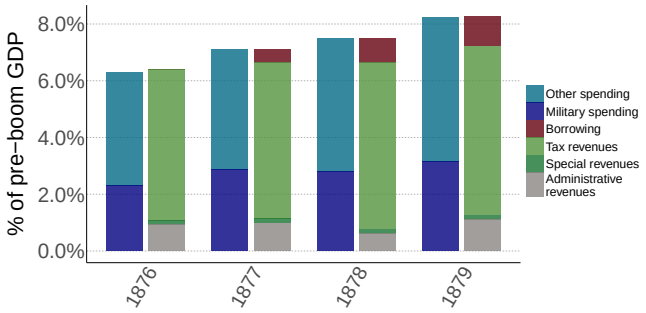


Figure E2: Cumul. change in spending, debt, revenues

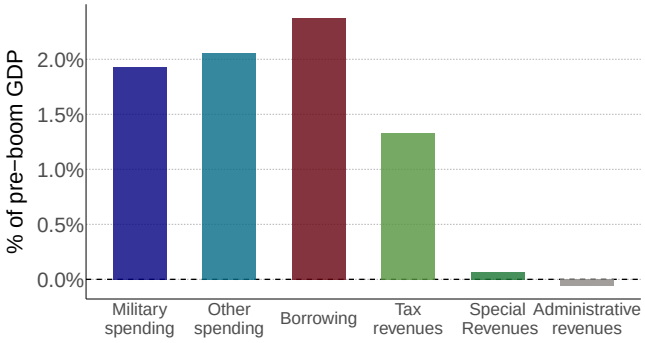


Figure E3: Spending breakdown (cumul. change)

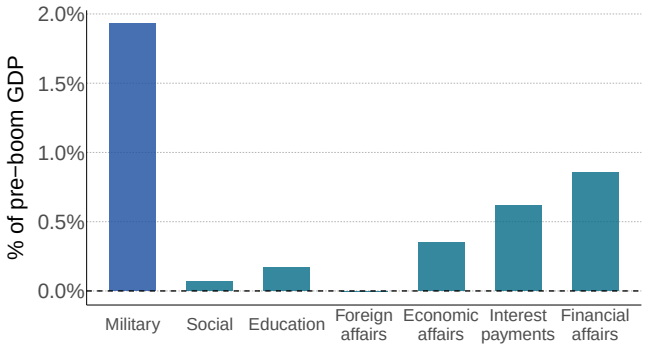
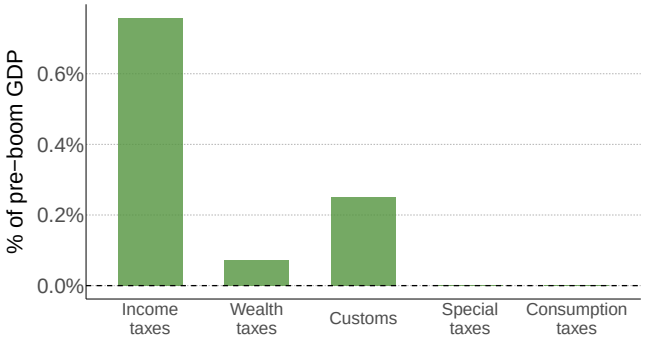


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.93 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 65.35 % **Average tax growth[1]:** 1.94 %

Historical context – exogenous trigger? Yes. The UK's military buildup between 1877 and 1879 followed external shocks generated by the collapse of Ottoman authority in southeastern Europe and the risk that this would trigger a great power war. The key triggers were the uprisings in the Balkans and the ensuing Russo–Turkish War (April 1877–March 1878). These raised fears in Britain that Russia might capture Constantinople and gain control of the Straits, threatening British naval dominance in the Mediterranean and imperial routes to India. This broader confrontation, later known as the Great Eastern Crisis, escalated in early 1878. Britain responded by ordering the fleet toward the Dardanelles, calling up reserves, and deploying Indian troops to Malta. The Mediterranean Fleet mobilized by fielding about a dozen ironclads to demonstrate force and deter further Russian advances (Allen, 2008). Parliament approved emergency defense credits to finance extraordinary army and naval operations (Parliament. House of Commons, 1879). The Congress of Berlin in mid-1878 ended the crisis averted war. However, elevated readiness and naval deployments continued into 1879 while the settlement was implemented and uncertainty persisted.

New taxes or tax increases? Yes. Britain raised several taxes during the military boom of 1877–79. The government increased the tobacco duty in 1878 and the duty on cocoa in 1879

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

(United Kingdom, 1879). Parliamentary debates also connected the rise in the income tax rate from 3 pence to 5 pence directly to military expenditure (Childers, 1878). We find no evidence that these tax increases were subsequently reversed.

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UK, 1885: Sudan and Panjdeh crises

Figure E1: Total spending and revenues

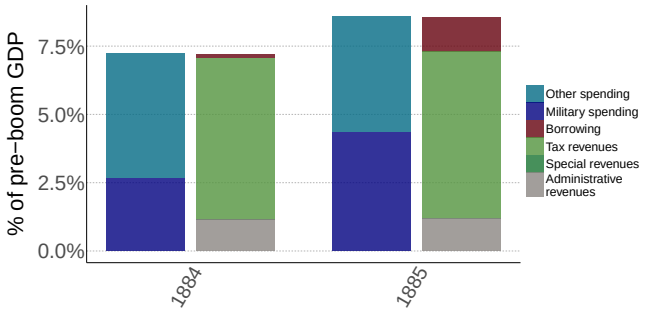


Figure E2: Cumul. change in spending, debt, revenues

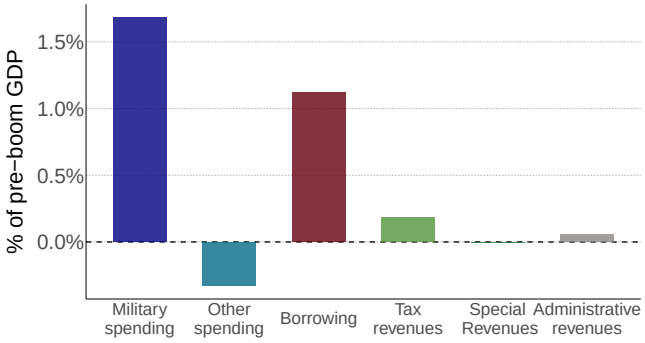


Figure E3: Spending breakdown (cumul. change)

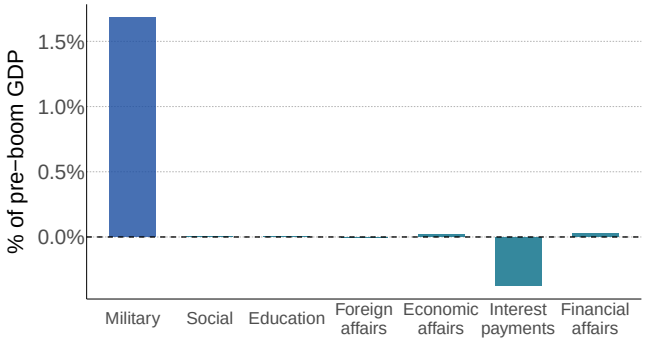
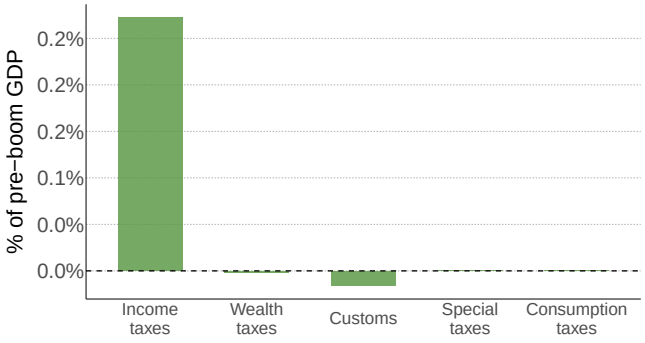


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.68 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 60.97 % **Average tax growth[1]:** 2.64 %

Historical context – exogenous trigger? Yes. Britain's sharp rise in defense spending in 1885 followed two overlapping external shocks: the Sudan Crisis and the Panjdeh Crisis on the Russian–Afghan frontier. In the Sudan, the fall of Khartoum in January 1885 and the death of General Gordon transformed a limited advisory mission into a large-scale military campaign, requiring costly river operations and sustained deployments. At the same time, the Panjdeh Crisis in early 1885 raised fears that Russia might advance toward Afghanistan and threaten India. Together, these events sharply increased perceived imperial risk. Initial cost estimates for the Sudan campaign were quickly exceeded, forcing supplementary appropriations and prompting parliamentary criticism for severe underestimation (Parliament. House of Commons, 1885). To finance both active operations in Sudan and precautionary preparations for a possible Indian emergency, the government introduced a Vote of Credit (Granville, 1885). Appropriation records placed these extraordinary expenditures outside normal parliamentary grants, underscoring the gravity of the international situation (Parliament. House of Commons, 1887).

New taxes or tax increases? Yes. To finance the deficit created by the 1885 military spending surge, the British government raised the income tax rate from 5 pence to 8 pence and increased

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

duties on spirits and beer (Campbell, 2004). Policymakers explicitly framed these measures as a way to distribute the additional burden broadly across society. The higher indirect duties expired in 1886. The income tax rate was reduced to 7 pence in 1887 but remained above its pre-crisis 1884 level.

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UK, 1899-1901: Second Boer War

Figure E1: Total spending and revenues

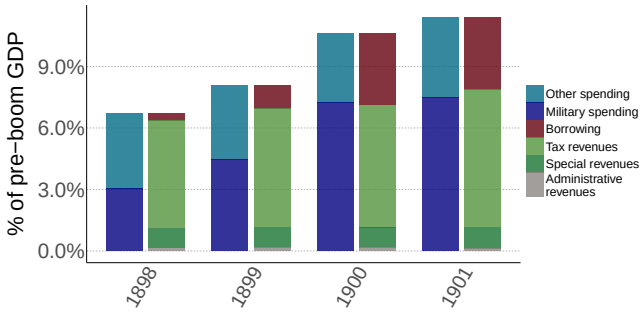


Figure E2: Cumul. change in spending, debt, revenues

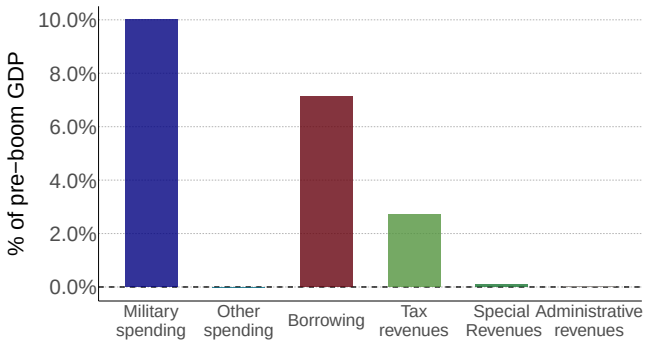


Figure E3: Spending breakdown (cumul. change)

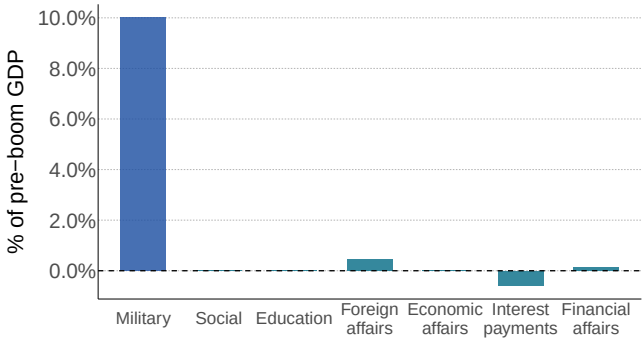
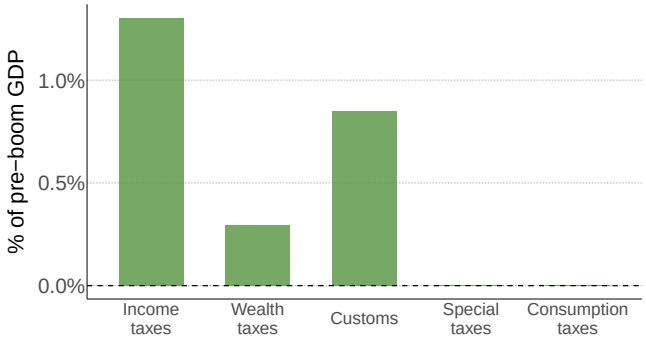


Figure E4: Tax revenue breakdown (cumul. change)



Size: 10.01 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 37.78 % **Average tax growth[1]:** 2.24 %

Historical context – exogenous trigger? Yes. Britain's defense spending surge between 1899 and 1901 followed a clear external shock, the outbreak of the Second Boer War (October 1899–May 1902). The conflict began when the Boer republics of the Transvaal and Orange Free State declared war and launched a direct invasion of British colonies in southern Africa. Early British defeats exposed unpreparedness. This compelled the government to deploy unprecedented numbers of troops overseas, the largest expedition since the Napoleonic Wars (Parliament. House of Commons, 1899). Parliament reconvened to authorize reserve mobilization after the Boer preemptive strike, which followed an ultimatum and rising tensions over British troop movements (Parliament. House of Lords, 1899; Brain, nd). The scale of the war imposed exceptionally high fiscal costs (National Army Museum, nd).

New taxes or tax increases? Yes. To finance the military buildup during the Second Boer War, the UK raised the income tax from 8 pence to 1 shilling and increased duties on spirits (by 6 pence), tobacco (by 4 pence), and tea (by 2 pence) (United Kingdom, 1900; Fairchild, 1902). These measures were introduced as temporary. As the fiscal burden intensified, the government raised the income tax by a further 2 pence in 1901 and introduced new taxes on coal exports and

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

sugar imports (United Kingdom, 1901). In 1902, the income tax rose again by 1 pence, alongside new duties on financial documents and a registration duty on imported corn. Although framed as temporary, many of these taxes remained in force through 1902. Details on subsequent rollbacks were difficult to find. Some increases persisted, but the coal duty was revoked in 1905 (Murray and Silvestre, 2020).

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UK, 1914-1917: World War 1

Figure E1: Total spending and revenues

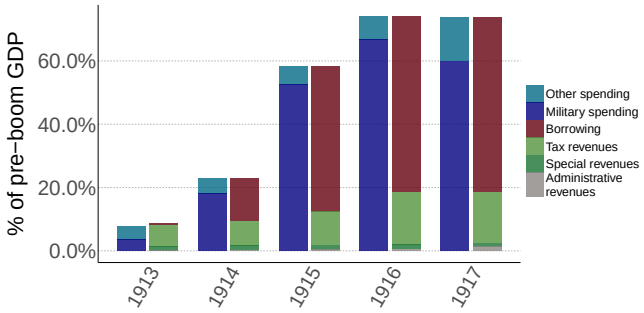


Figure E2: Cumul. change in spending, debt, revenues

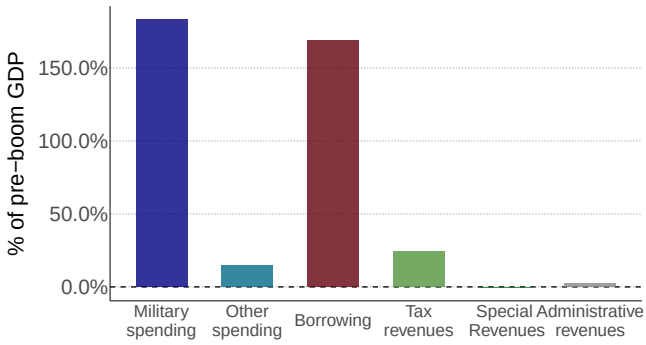


Figure E3: Spending breakdown (cumul. change)

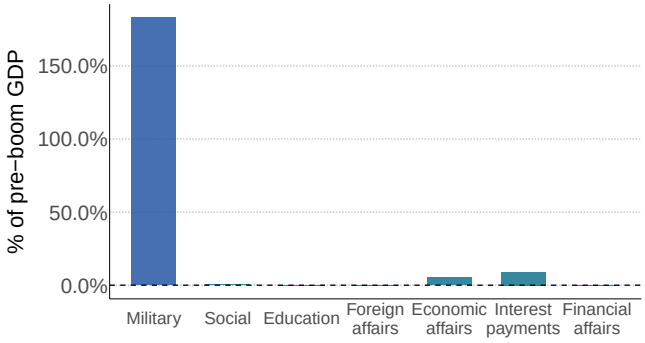
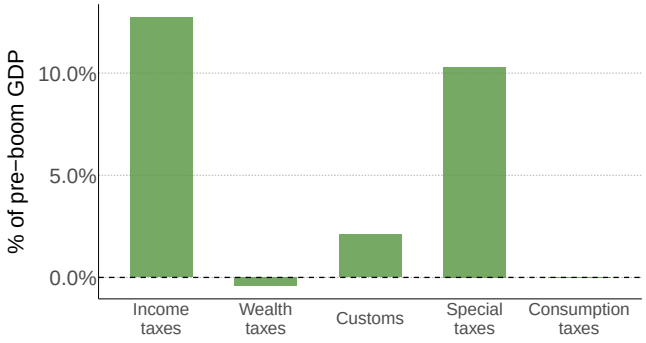


Figure E4: Tax revenue breakdown (cumul. change)



Size: 183.14 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 94.66 % **Average tax growth[1]:** 12.66 %

Historical context – exogenous trigger? Yes. Britain's military spending surge followed a clear external shock, the outbreak of World War 1 and Germany's invasion of Belgium on August 4, 1914. Britain entered the war to honor its obligations under the Treaty of London (1839), which guaranteed Belgian neutrality, and to prevent a hostile power from controlling the Channel frontier. Parliament immediately approved a war credit (George, 1914), and King George V framed the conflict as a defense of imperial honor and international commitments (V, 1914). War expenditures rose sharply, with first-year spending exceeding that of all previous British wars combined (Asquith, 1914). The German advance, followed by submarine warfare and aerial attacks, posed a direct and escalating threat to British security. Britain remained at war until the armistice of November 11, 1918.

New taxes or tax increases? Yes. To finance the enormous military spending during World War 1, the UK raised the income tax base rate from 6% in 1914 to 30% by 1918, and the abolition of many exemptions tripled the tax base (Horn, 2016; UK Parliament, 2025). In addition, an excess profits tax was introduced in 1915 and raised to 70% in 1917. The government also substantially expanded excise taxes and import duties (Samuel, 1919). After the war, the excess profits tax and

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

most wartime import duties were abolished, but the income tax was consolidated into a permanent framework in 1918, retaining a broader base, higher rates, and a more progressive structure.

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UK, 1936-1938: Buildup in response to Nazi threat

Figure E1: Total spending and revenues

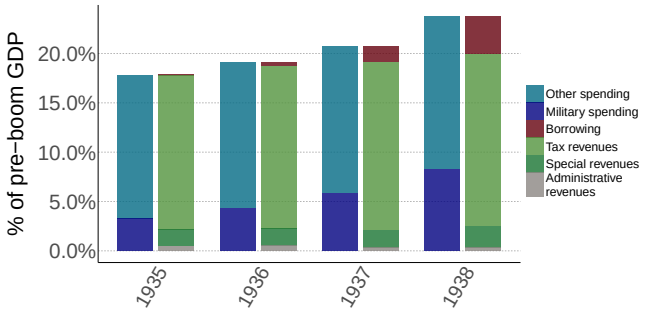


Figure E2: Cumul. change in spending, debt, revenues

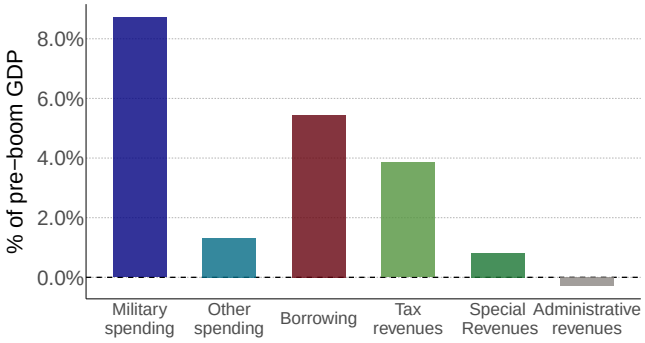


Figure E3: Spending breakdown (cumul. change)

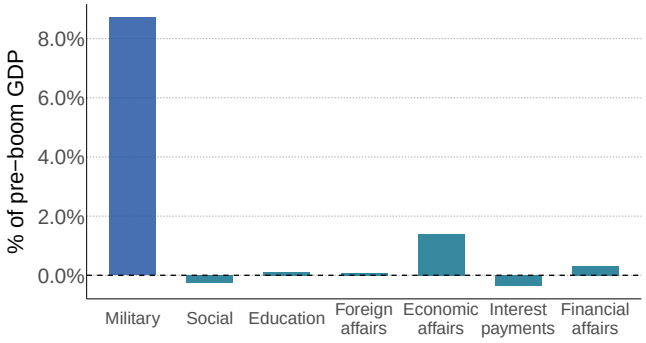
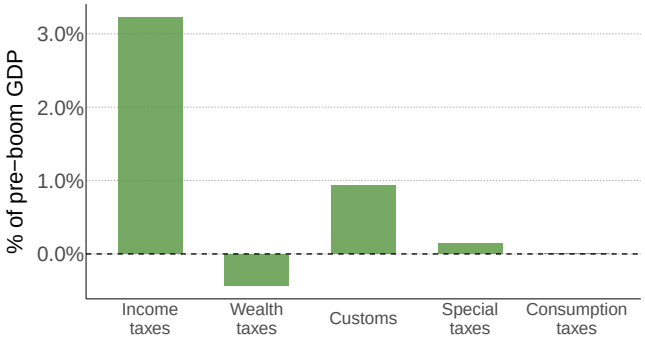


Figure E4: Tax revenue breakdown (cumul. change)



Size: 8.71 % of pre-boom GDP **Duration:** 3 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 154.09 % **Average tax growth[1]:** 1.88 %

Historical context – exogenous trigger? Yes. Between 1936 and 1938, a series of escalating external shocks drove Britain's rising defense expenditure. These shocks included Germany's re-militarization of the Rhineland (March 1936), its open rearmament (Four Year Plan of September 1936), Italy's aggression in Ethiopia (October 1935), the Spanish Civil War (from July 1936), and later the Anschluss (March 1938) and the Munich crises (September 1938). These foreign events turned a long period of disarmament into an urgent rearmament campaign. Until then, defense planners had followed the "ten-year rule," assuming peace would hold. Rising global armaments and Hitler's aggressive moves forced Britain to abandon that assumption (Harrison, 1988; Dunbabin, 1975). The government issued a Defense White Paper that reversed earlier policies (Baldwin, 1936). It cited the failure of unilateral disarmament and warned that Britain was vulnerable to air raids (The Guardian, 1935). Parliamentary debates revealed the strain on resources even during limited deployments. Lawmakers also recognized the need to prepare for simultaneous global emergencies, including a potential return to continental warfare (Cooper, 1936). The Royal Air Force expanded rapidly, adding 71 new squadrons and launching large-scale recruitment to counter the German air arms race (Lloyd, 1935).

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

New taxes or tax increases? Yes. Already in 1936, the income tax and tea duty were raised to finance the military buildup, and the government implemented plans to address tax avoidance (Cloyne et al., 2024). To finance the buildup, the UK raised the standard income tax rate to 27.5% in 1938 and imposed a surtax of up to 41% on high incomes (United Kingdom, 1938; UK Parliament, 2025). At the same time, the income tax base expanded to roughly 10 million taxpayers. Moreover, the Finance Act of 1937 also introduced the National Defence Contribution — a profit tax of 5% to meet the fiscal demands of the rearmament (United Kingdom, 1937). These tax increases were not reversed but instead carried forward and further expanded during World War 2.

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UK, 1939–1944: World War 2

Figure E1: Total spending and revenues

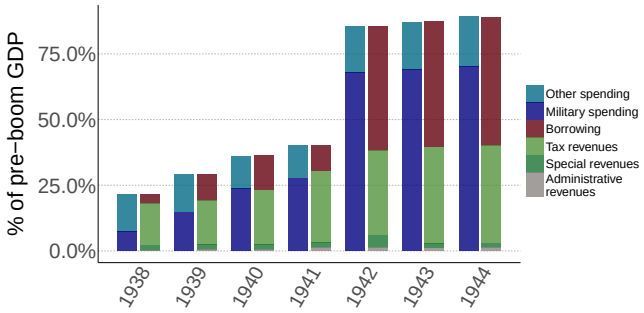


Figure E2: Cumul. change in spending, debt, revenues

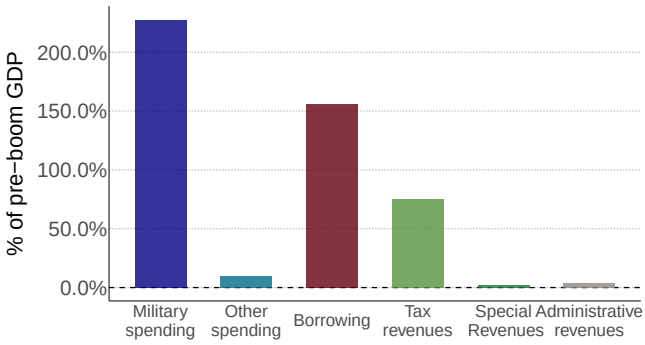


Figure E3: Spending breakdown (cumul. change)

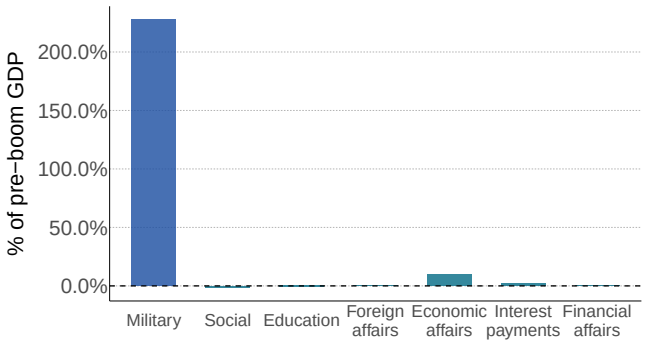
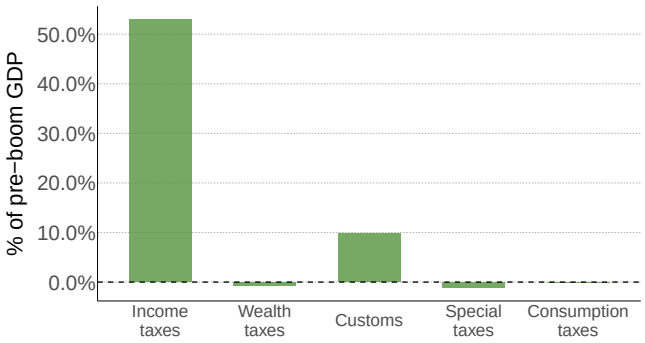


Figure E4: Tax revenue breakdown (cumul. change)



Size: 227.66 % of pre-boom GDP **Duration:** 6 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 179.18 % **Average tax growth[1]:** 4.47 %

Historical context – exogenous trigger? Yes. Britain's military buildup between 1939 and 1944 followed a sequence of severe external wartime shocks, beginning with Germany's invasion of Poland on September 1, 1939. Britain entered the war after Germany refused to withdraw from Poland, as announced by Prime Minister Chamberlain (Chamberlain, 1939). The fall of France in June 1940 and the Battle of Britain soon after placed the UK under direct military attack and raised an immediate risk of invasion. German bombing targeted British territory and civilians, and Britain suffered severe defeats, including the evacuation from Dunkirk. As the war progressed, Britain rebuilt its forces and achieved major victories in North Africa, pushing Italian troops out of Libya (Margesson, 1941). By 1943–44, the British military had participated in successful campaigns in Sicily and mainland Italy. These offensives gave Britain and the Allied control over the Mediterranean and opened the path to the liberation of continental Europe (Grigg, 1944). Britain also maintained forces in the Eastern Mediterranean and backed resistance movements in the Balkans. Throughout this period, the Britain shifted to a full war economy and massively increased defense spending (Simon, 1939).

New taxes or tax increases? Yes. To finance military spending during World War 2, the UK sharply increased taxation. The standard income tax rate rose steadily, reaching about 50% by

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

1945, while the top surtax climbed to 48% (United Kingdom, 1939, 1940, 1945). In 1944, collection shifted to direct withholding through the PAYE system (UK Parliament, 2025). An excess profits tax was introduced in 1939 and remained in force until its abolition in 1946 (United Kingdom, 1939, 1946). Excise taxes and customs duties on alcohol, tobacco, spirits, and luxury goods were raised repeatedly during the war. Estate duties also increased sharply, with the top rate rising from 50% to 60% in 1939, 65% in 1940, and 75% by 1946, before being raised further to 80% in 1949 alongside lower thresholds (see (United Kingdom, 1949) and earlier finance acts). In 1949 and the following years, some excises and duties were partially rolled back, but income tax and estate duty rates remained close to wartime levels (United Kingdom, 1949).

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UK, 1951-1952: Korean War and NATO demands

Figure E1: Total spending and revenues

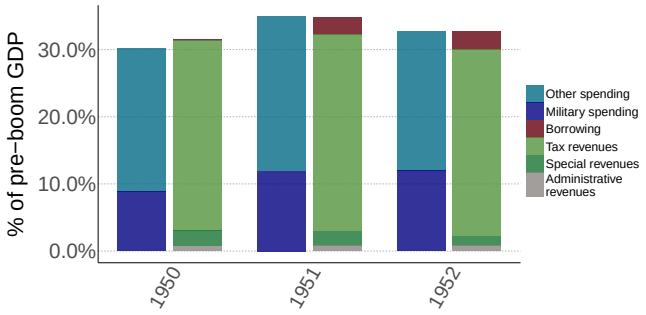


Figure E2: Cumul. change in spending, debt, revenues

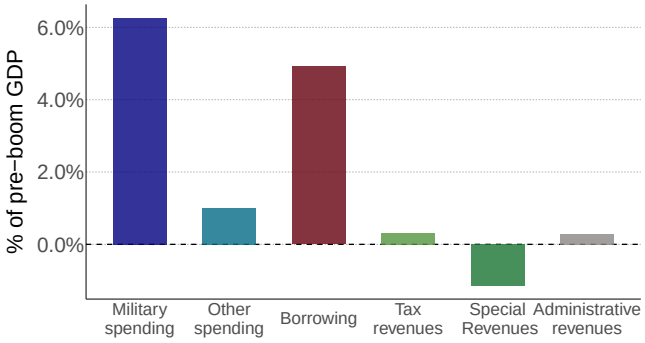


Figure E3: Spending breakdown (cumul. change)

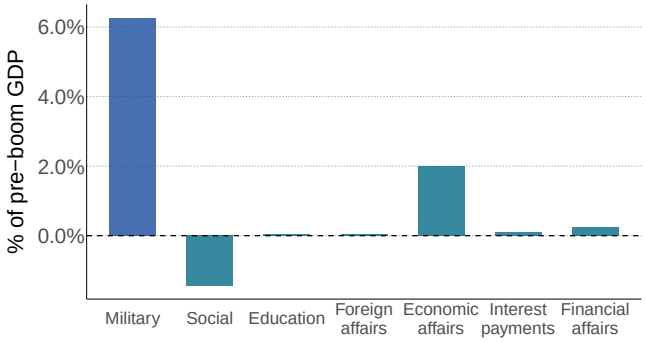
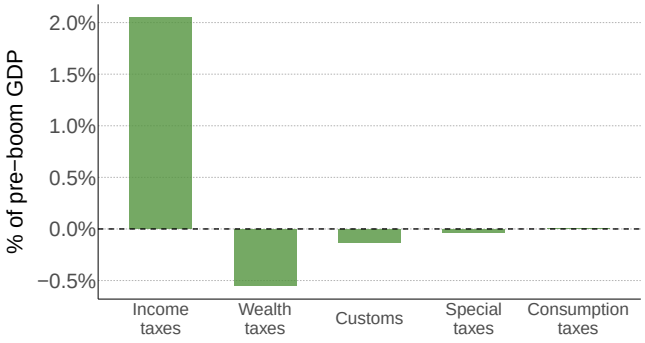


Figure E4: Tax revenue breakdown (cumul. change)



Size: 6.27 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 170.33 % **Average tax growth[1]:** 0.63 %

Historical context – exogenous trigger? Yes. Britain's military buildup between 1951 and 1952 followed a major external shock, the outbreak of the Korean War after North Korea's invasion of South Korea on June 25, 1950. The conflict sharply raised fears of a wider global war and transformed the strategic environment facing NATO and the Western alliance. Britain responded by committing naval, air, and ground forces to the UN operation in Korea (Mancroft, 1951). As Cold War tensions intensified, the government sharply increased defense spending and expanded the armed forces to meet revised NATO force targets (Attlee, 1951; Chief of Staff Committee, 1951). Both the Attlee and Churchill governments reinforced the army and air defenses and aimed to preserve Britain's global (military) role. British leaders framed the buildup as a necessary contribution to collective security and global stability, and to deter the growing threat further Communist expansion (Attlee, 1950; Chief of Staff Committee, 1951).

New taxes or tax increases? Yes. In 1951, the UK increased the standard income tax rate from 9 shillings to 9 shillings and 6 pence as well as consumption taxes such as the duties on hydrocarbon oils, entertainments, and the purchase tax. These changes were linked to higher defense expenditures in the context of the Korean War and rearmament and also to stabilize the

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

economy (United Kingdom, 1950, 1951; Cloyne, 2013). Adjustments to exemptions, thresholds, and the income surtax affected the overall tax burden, making the effective rate change difficult to quantify precisely. In 1952, an Excess Profits Levy of 30% was introduced to curb profits resulting from rearmament. However, income tax rates were cut during this year (Cloyne, 2013).

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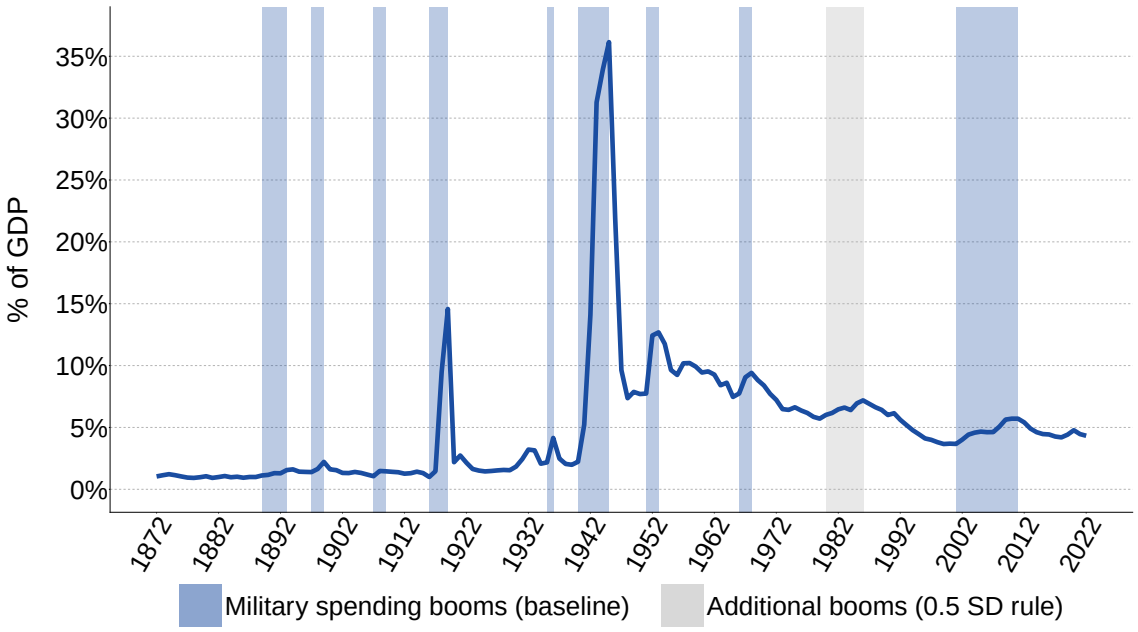
USA



Baseline booms (1 SD identification rule):

Boom	Period	Size[1]	Duration	Financing	Short reason
1	1890-1893	1.19%	4 Years	Taxes	Planned naval buildup
2	1898-1899	1.45%	2 Years	Mixed	Spanish-American War
3	1908-1909	0.34%	1 Year	Taxes	Planned naval expansion
4	1917-1919	23.95%	3 Years	Debt	World War 1
5	1936	2.52%	1 Year	Debt	Planned naval modernization
6	1941-1945	187.70%	5 Years	Debt	World War 2
7	1952-1953	11.22%	2 Years	Taxes	Korean War
8	1967-1968	3.91%	2 Years	Debt	Vietnam War escalation after Tet Offensive
9	2002-2004	2.62%	3 Years	Debt	Afghanistan and Iraq Wars after 9/11

Additional booms (0.5 SD identification rule)[2]:

Boom	Period	Historical context
1	1981-1986	Reagan buildup

[1]The size of a boom is defined as the cumulative increase in military spending over the boom period, relative to pre-boom levels and normalized by pre-boom GDP.

[2]We exclude these booms from our baseline empirical analysis in the main paper. Appendix B4 contains the results from including them in the analysis.

USA, 1890-1894: Planned naval buildup

Figure E1: Total spending and revenues

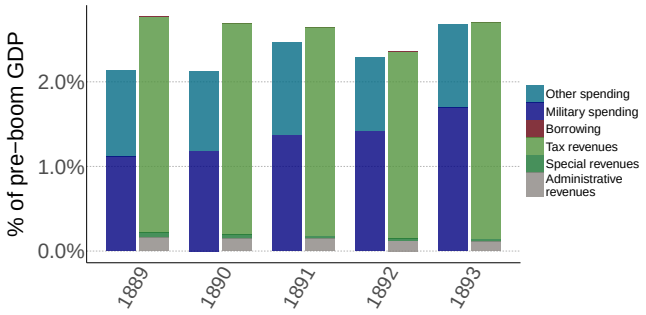


Figure E2: Cumul. change in spending, debt, revenues

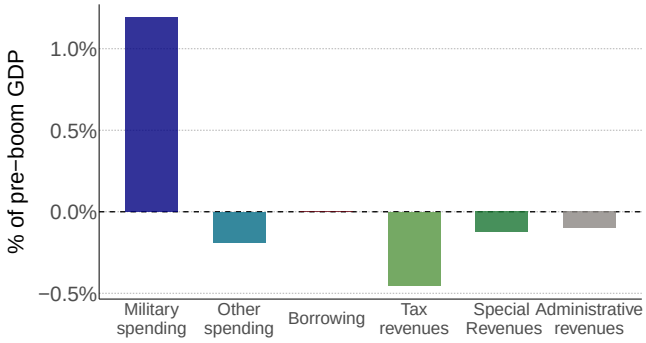


Figure E3: Spending breakdown (cumul. change)

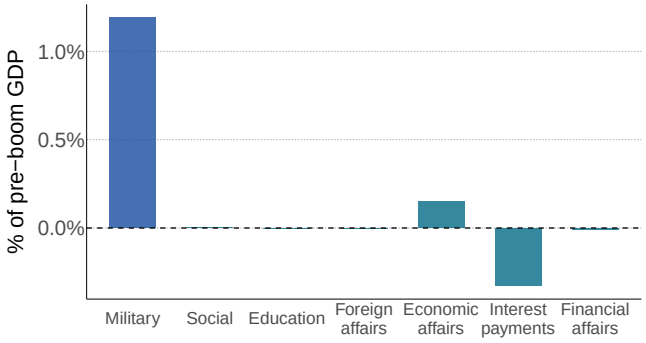
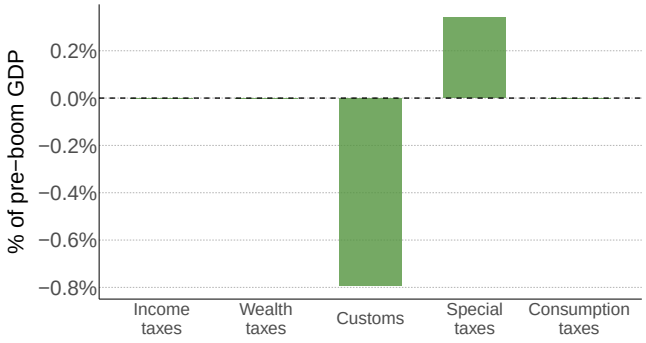


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.19 % of pre-boom GDP **Duration:** 4 years **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 6.25 % **Average tax growth[1]:** 3.92 %

Historical context – exogenous trigger? No. The rise in U.S. defense spending between 1890 and 1894 reflected a planned naval modernization effort rather than a response to an external shock. This period marked the launch of the "New Navy" and coincided with a broader shift toward a more assertive U.S. foreign policy. Political leaders and naval reformers sought to build modern steel warships to defend U.S. ports and support overseas influence (Kolwicz Jr., 2020). The Navy Act of 1890 authorized four armored battleships, the USS *Indiana*, *Massachusetts*, *Oregon*, and *Iowa*, anchoring this long-term program (Ramey and Zubairy, 2018). The initiative drew directly on Alfred Thayer Mahan's argument that sea power underpinned national strength and global influence, formulated in his famous 1890 book "The Influence of Sea Power upon History" (Crawford, 2016). Although minor diplomatic frictions occurred, including the Baltimore affair with Chile in 1891, the United States faced no imminent foreign threat or invasion risk during this period.

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in the U.S. during 1890 to 1893. The Tariff

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

Act of 1890 (McKinley Tariff) increased import duties, but it is mostly associated with domestic politics and protectionism (United States Congress, 1890; Irwin, 2017).

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USA, 1898-1899: Spanish-American War

Figure E1: Total spending and revenues

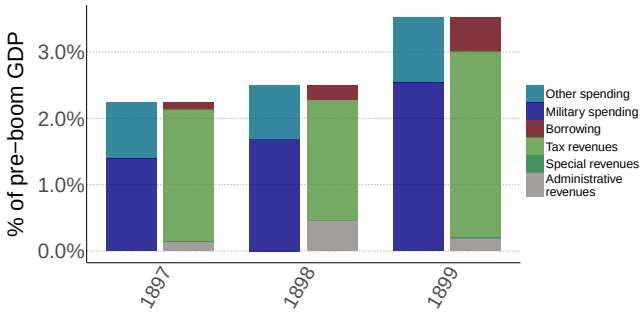


Figure E2: Cumul. change in spending, debt, revenues

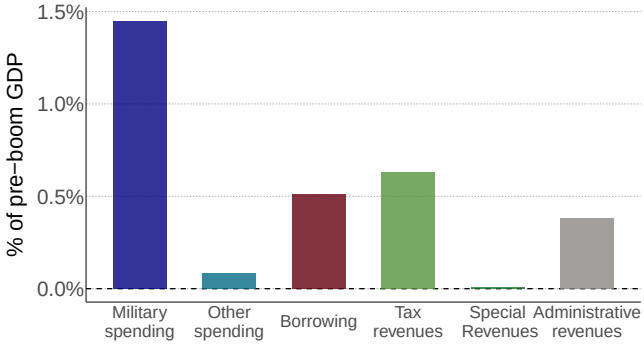


Figure E3: Spending breakdown (cumul. change)

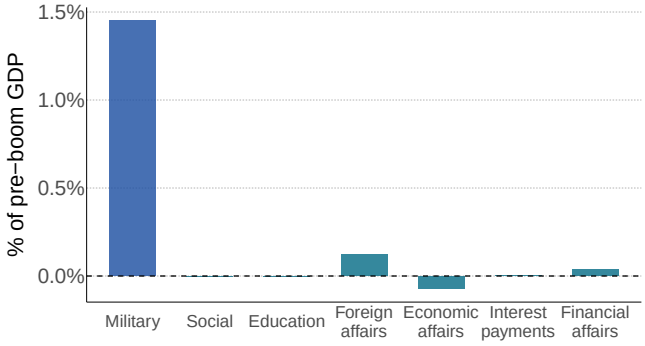
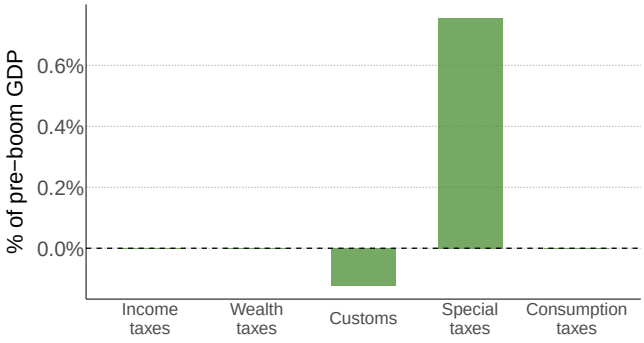


Figure E4: Tax revenue breakdown (cumul. change)



Size: 1.45 % of pre-boom GDP **Duration:** 2 years **Financing:** Mixed
Major war boom: No **Average debt-to-GDP[1]:** 7.00 % **Average tax growth[1]:** 6.51 %

Historical context – exogenous trigger? Yes. The U.S. military buildup in 1898 followed an escalating foreign crisis in Cuba rather than a preplanned expansion. Since 1895, Cuba had fought a war of independence against Spain, and Spanish counterinsurgency measures failed to restore stability while generating growing humanitarian concern in the United States. Tensions intensified in February 1898 with the publication of the so-called De Lôme Letter, in which Spanish Foreign Minister Enrique Dupuy de Lôme strongly criticized U.S. President William McKinley in the American press. Shortly thereafter, on February 15, 1898, the USS *Maine* exploded in Havana Harbor. The incident acted as a catalyst that sharply increased public and congressional pressure for intervention, although Spanish responsibility for the explosion was never established (McKinley, 1898). On April 11, 1898, Congress demanded Spain's withdrawal from Cuba, and President McKinley requested authorization to use force. Spain's continued opposition to Cuban independence then led to war within weeks. The conflict resulted a rapid and largely unanticipated expansion of U.S. forces, including the mobilization of roughly 125,000 troops and the creation of new federal regiments (Zeigler et al., 2019). Military spending rose sharply, and subsequent overseas occupation and the Philippine insurgency extended mobilization beyond the initial war.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

New taxes or tax increases? Yes. The War Revenue Act of June 13, 1898 was enacted to finance the military buildup associated with the Spanish–American War, as stated in the legislation itself (United States Congress, 1898). The act introduced a broad set of temporary taxes, including new corporate, consumption, excise, stamp, and estate taxes, as well as rate increases for some existing levies. Excise taxes applied to tobacco, insurance companies, brokers, and entertainment businesses, while stamp taxes covered a wide range of private and commercial documents, including bonds. Consumption taxes extended to tobacco, alcohol, medicines, transportation, and other goods and services. Telephone messages were taxed at one cent per message. The beer tax was doubled to 2 USD. Corporate gross receipts of sugar- and oil-refining companies were taxed at 1% on receipts exceeding 200,000 USD. The act also introduced a progressive estate tax, with rates ranging from 0.075% to 15% depending on estate value. In April 1902, Congress passed the Act to repeal war-revenue taxation, which took effect in July 1902 and repealed these measures (Office of the Commissioner of Internal Revenue, 1911).

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USA, 1908-1909: Planned naval expansion

Figure E1: Total spending and revenues

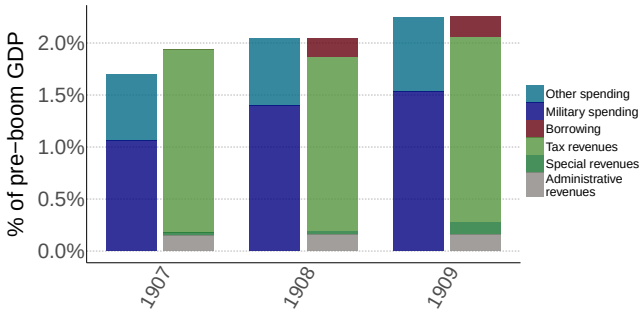


Figure E2: Cumul. change in spending, debt, revenues

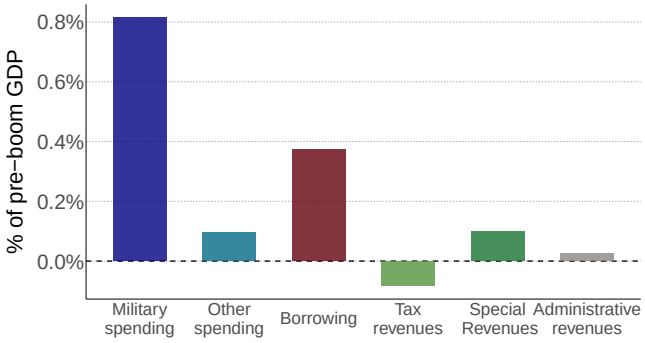


Figure E3: Spending breakdown (cumul. change)

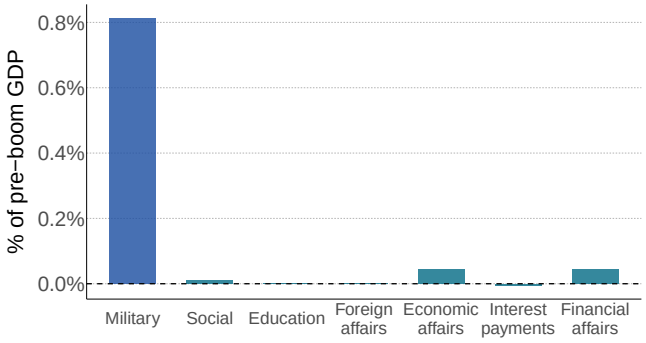
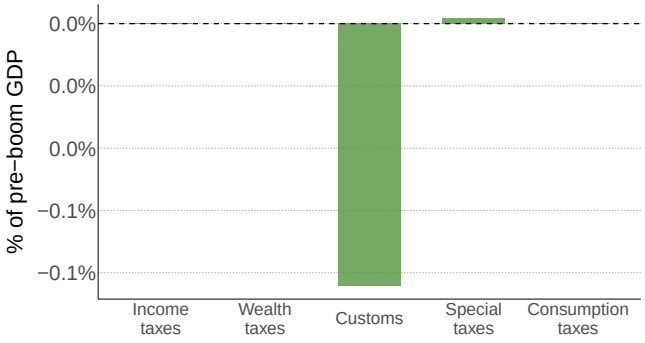


Figure E4: Tax revenue breakdown (cumul. change)



Size: 0.34 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily taxes (surpluses)
Major war boom: No **Average debt-to-GDP[1]:** 4.00 % **Average tax growth[1]:** 1.23 %

Historical context – exogenous trigger? No. The U.S. defense buildup of 1908–1909 can be attributed to domestic priorities and President Theodore Roosevelt's long-term naval modernization strategy rather than a response to an external shock. Roosevelt aimed to build additional battleships, destroyers, and auxiliary vessels to improve fleet efficiency and promote U.S. sea power, a view that had broad domestic support (Roosevelt, 1908). Rising expenditures largely reflected higher shipbuilding and operating costs, including the cost for the Great White Fleet, a formation of 16 U.S. battleships that circumvented the globe from 1907 to 1909. In parallel, the Militia Act of 1908 restructured the National Guard by standardizing organization, armament, and training and aligning it more closely with the Regular Army (Zeigler et al., 2019). Despite ongoing diplomatic tensions with Japan, the United States faced no imminent military threat, and Congress had approved most appropriations well in advance of the actual buildup.

New taxes or tax increases? No. We find no evidence of any significant tax increases that were linked to financing the military spending boom in the U.S. during 1908 to 1909. The Payne–Aldrich Tariff Act in 1909, was not primarily linked to financing military expenditure (United States Congress, 1909).

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

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USA, 1917–1919: World War 1

Figure E1: Total spending and revenues

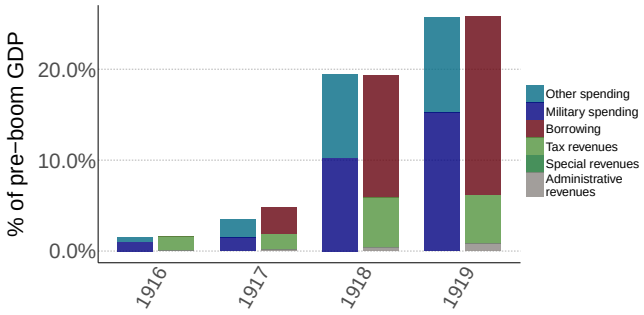


Figure E2: Cumul. change in spending, debt, revenues

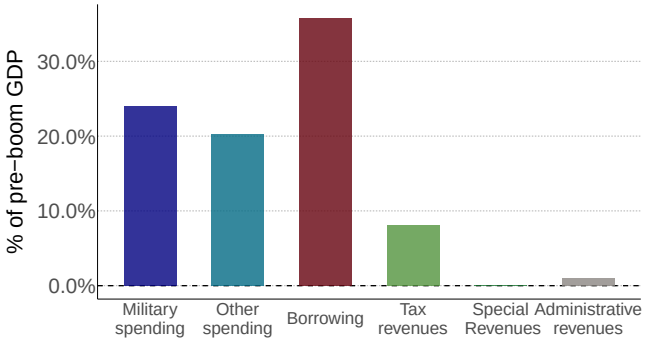


Figure E3: Spending breakdown (cumul. change)

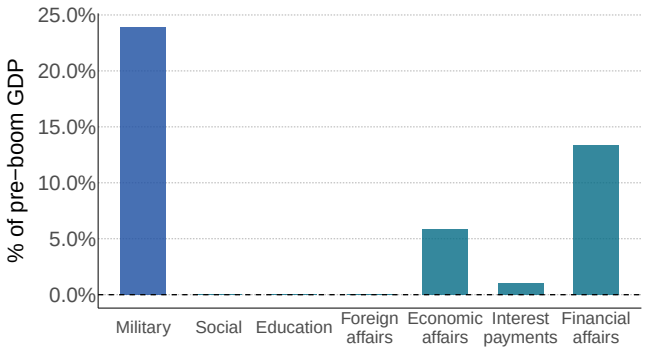
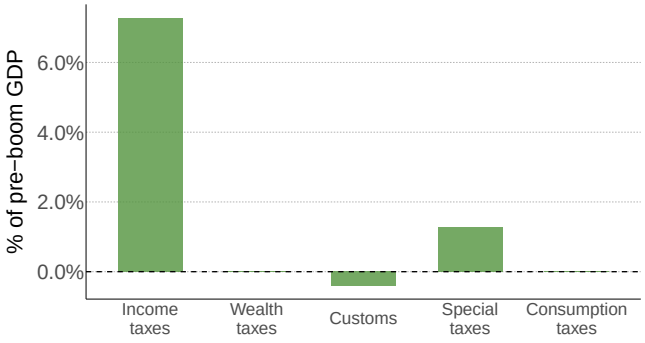


Figure E4: Tax revenue breakdown (cumul. change)



Size: 23.95 % of pre-boom GDP **Duration:** 3 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 17.67 % **Average tax growth[1]:** -1.13 %

Historical context – exogenous trigger? Yes. The U.S. entry into World War 1 in 1917 and the associated military buildup followed a series of external shocks. On January 31, 1917, Germany escalated its submarine warfare and announced that all vessels would be sunk in designated war zones, including those of neutral states. This policy directly threatened U.S. ships and citizens. In late February, British intelligence intercepted the Zimmermann Telegram, in which Germany proposed a military alliance with Mexico against the United States if it entered the war. Its publication in early March 1917 strongly shifted public and congressional opinion. On April 2, 1917, President Woodrow Wilson asked Congress for a declaration of war, framing the conflict as a defense of international law and a fight to make the world "safe for democracy" (Wilson, 1917b,a). Congress declared war on April 6, 1917. The declaration triggered rapid mobilization. Between 1917 and 1919, the United States organized 38 infantry divisions and expanded the Regular Army and National Guard on an unprecedented scale (Zeigler et al., 2019). Although the U.S. homeland faced no invasion threat, foreign attacks on U.S. shipping made the war immediate. Wilson's speech of December 1918 articulated the broader wartime objectives that emerged after mobilization had begun (Wilson, 1918).

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

New taxes or tax increases? Yes. Taxes were strongly raised over the course of the war. As early as 1914, the U.S. passed the War Revenue Act of 1914 in response to the outbreak of World War 1 in Europe, even though the United States remained neutral at first. The act aimed primarily to offset declining tariff revenues caused by wartime trade disruptions and to stabilize federal finances under heightened international uncertainty. Drawing on the precedent of the War Revenue Act of 1898, it reintroduced excise taxes, including a levy of 1.75 USD per barrel on beer and similar liquors (United States Congress, 1914). Originally set to expire on December 31, 1915, these measures were extended for one additional year (United States Congress, 1915). In 1917, when the U.S. entered the war and large-scale military rearmament and mobilization began, the War Revenue Act of 1917 strongly expanded taxation on income, excess profits, alcohol, tobacco, stamps, selected services, luxury goods, and estates (United States Congress, 1917; Blakey and Blakey, 1917). It sharply raised income tax rates and broadened the base, with top rates increasing from roughly 15% to 67%. A 10% excess profits tax was introduced, complementing a 12.5% levy on ammunition manufacturers enacted in 1916. Estate tax rates ranged from 2% to 25%. The Revenue Act of 1918, enacted in 1919, further increased rates and bases (National Bank of Commerce in New York, 1919; Blakey and Blakey, 1919). Explicit war taxes, such as the wartime excise taxes and the excess profits tax, began to expire after 1921. However, income tax rates and the tax bases were not rolled back to their prewar levels, and also the estate taxes were retained, although rates declined (United States Congress, 1921; Blakey and Blakey, 1924, 1926).

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USA, 1936: Planned naval modernization

Figure E1: Total spending and revenues

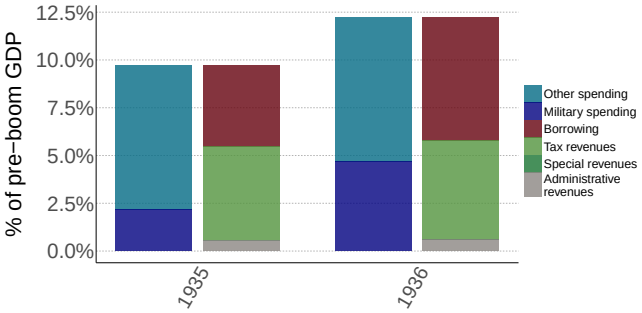


Figure E2: Cumul. change in spending, debt, revenues

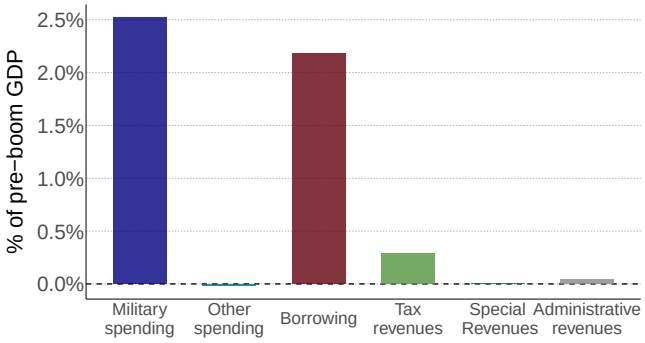


Figure E3: Spending breakdown (cumul. change)

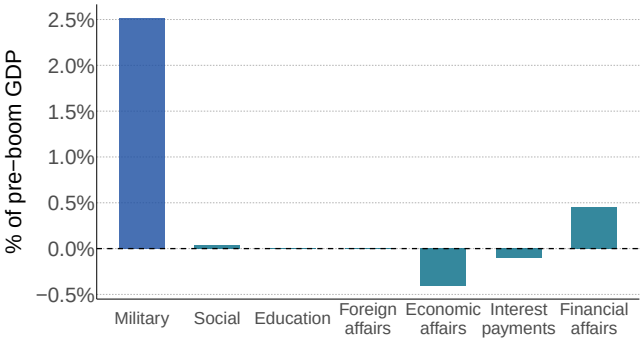
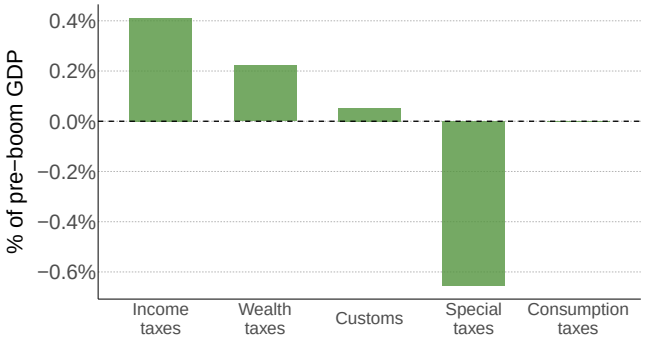


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.52 % of pre-boom GDP **Duration:** 1 year **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 40.00 % **Average tax growth[1]:** 24.14 %

Historical context – exogenous trigger? No. The 1936 U.S. defense buildup was due to domestic planning and long-term naval modernization rather than a reaction to an external shock. The buildup implemented and expanded programs established by the Vinson–Trammell Act of 1934, which authorized the Navy to replace obsolete vessels and maintain a "second-to-none" fleet within international treaty limits. In 1936, as part of this scheduled modernization effort, Congress approved record peacetime naval appropriations to fund new battleships, naval aircraft, and personnel expansion (Ramey and Zubairy, 2018; U.S. Naval Institute, 1936; Congressional Record-Senate, 1938). Although international tensions were rising as Germany, Italy, and Japan expanded their military power, the United States faced no immediate threat and continued to pursue an isolationist policy under the Neutrality Acts (Congressional Record-Senate, 1938).

New taxes or tax increases? No. We find no evidence that tax changes around 1936 were linked to financing military spending. The Revenue Act of 1936 introduced new taxes primarily in reaction to the Supreme Court's January 1936 decision in United States v. Butler, which ruled the Agricultural Adjustment Act (AAA) unconstitutional and eliminated its processing taxes, creating a revenue shortfall (Blakey and Blakey, 1936). The 1936 Act was not motivated by

[1]Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

defense financing. Instead, it sought to limit corporate tax avoidance by imposing a surtax on undistributed corporate profits and introduced a "windfall profits" tax on firms that had passed on the now-invalidated AAA processing taxes to consumers but retained the proceeds after the tax was struck down.

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USA, 1941-1945: World War 2

Figure E1: Total spending and revenues

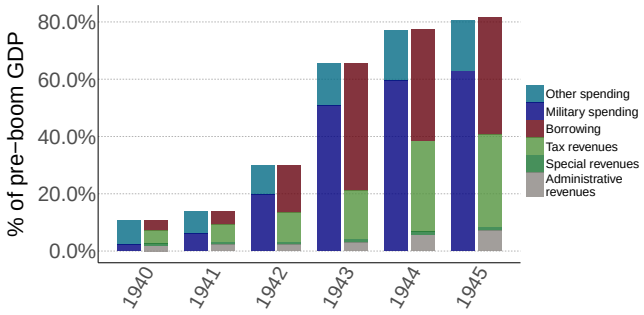


Figure E2: Cumul. change in spending, debt, revenues

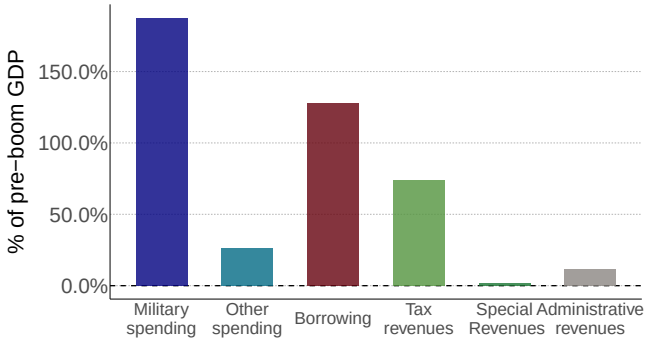


Figure E3: Spending breakdown (cumul. change)

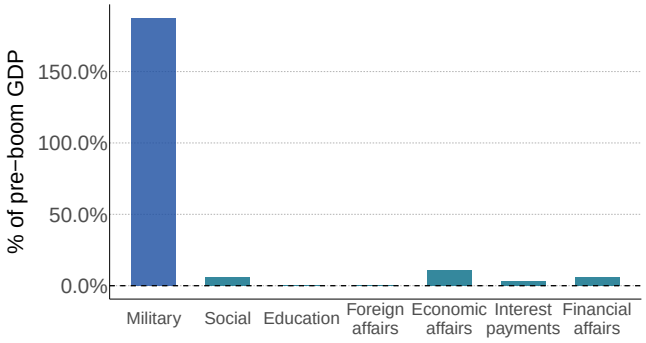
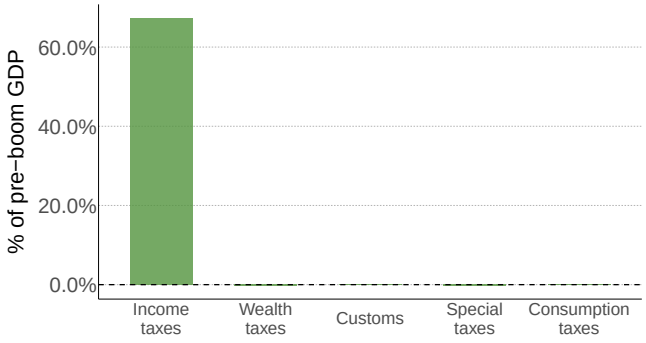


Figure E4: Tax revenue breakdown (cumul. change)



Size: 187.70 % of pre-boom GDP **Duration:** 5 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 70.20 % **Average tax growth[1]:** 1.03 %

Historical context – exogenous trigger? Yes. The U.S. military buildup after 1941 was triggered by direct foreign attack. On December 7, 1941, Japan attacked the U.S. naval base in Pearl Harbor and simultaneously struck U.S. possessions in the Philippines and Guam. These events abruptly ended U.S. neutrality and triggered its formal entry into World War 2. Congress declared war on Japan on December 8, 1941 (United States Senate, 1941). Within days, Germany and Italy then declared war on the United States, extending the conflict beyond Europe. Defense expenditures surged drastically to sustain full-scale warfare (Blakey and Blakey, 1942). The armed forces expanded from fewer than 500,000 troops in 1939 to more than 12 million by 1945. The U.S. government also funded large-scale material and weapons assistance to allies, in particular through the Lend-Lease program (National Archives, 2022; Roosevelt, 1941a). President Roosevelt framed the war as a necessary defensive response to Axis aggression and a fight for global security (Roosevelt, 1941b).

Yes. The United States introduced new taxes and sharply increased existing tax rates to finance the World War 2 spending boom. The top corporate income tax rate rose repeatedly, from 19% in 1939 to 22.1% and then 24% in 1940, increased further to 31% in 1941, and reached 40% in 1942

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

(United States Congress, 1940, 1941, 1942). Individual income taxation also expanded rapidly. The Revenue Act of 1942 imposed a 5% "Victory Tax" and strongly broadened the tax base, raising the number of taxpayers from about 13 million to roughly 50 million (Britannica, 2025). After World War 2, taxation was reduced somewhat but clearly did not return to prewar levels. The Revenue Act of 1945 lowered the top corporate rate by just two percentage points, to 38%, which was still 19 percentage points above the prewar rate (Shoup, 1945). Broader rollback efforts enacted in the Revenue Acts of 1945 and 1948 were short-lived. With the start of the Korean War in June 1950, these reductions were effectively reversed in September of 1950 (United States Congress, 1950b,a). The corporate income tax rate therefore remained elevated, standing at 45% by end-1950, rising temporarily to 52% in 1951, extended again in 1954, and reduced only gradually to 48% by 1964 (United States Congress, 1950b, 1951, 1954, 1964). Similar persistence characterized individual income taxes and excise taxes.

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USA, 1952-1953: Korean War

Figure E1: Total spending and revenues

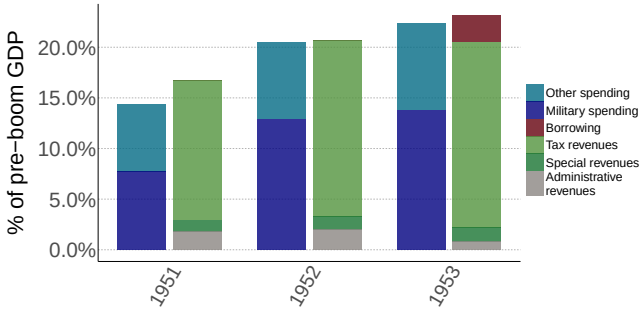


Figure E2: Cumul. change in spending, debt, revenues

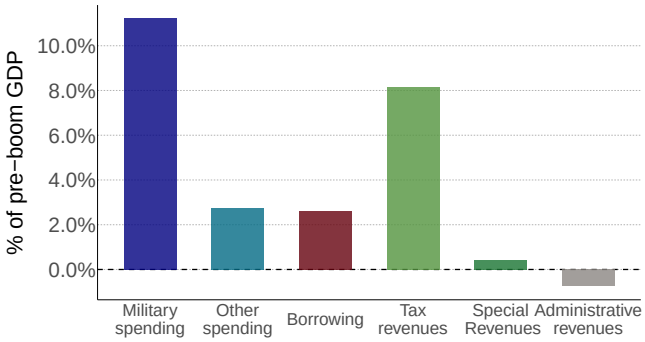


Figure E3: Spending breakdown (cumul. change)

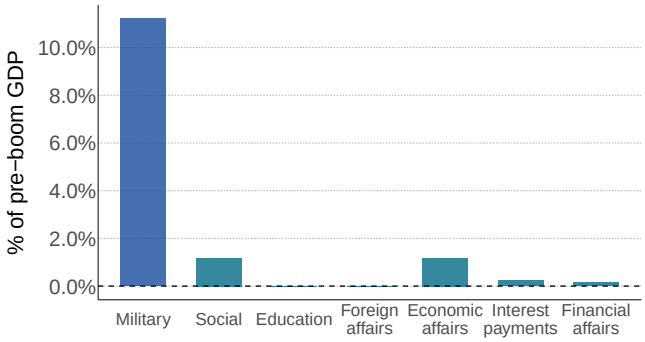
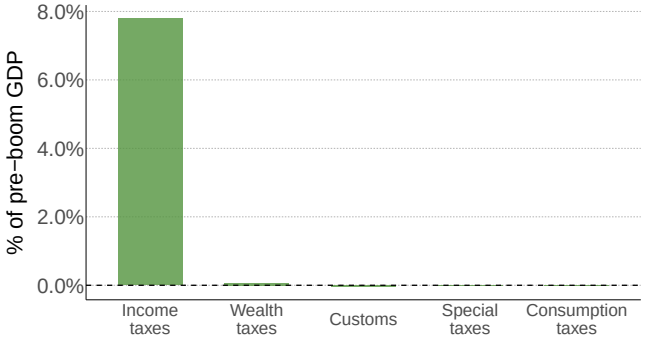


Figure E4: Tax revenue breakdown (cumul. change)



Size: 11.22 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily taxes (surpluses)
Major war boom: Yes **Average debt-to-GDP[1]:** 71.50 % **Average tax growth[1]:** 4.06 %

Historical context – exogenous trigger? Yes, the U.S. military buildup of the early 1950s followed the sudden outbreak of the Korean War. North Korea's invasion of South Korea on June 25, 1950 abruptly destabilized East Asia and challenged the postwar security order. Within days, the United States committed forces under U.N. command to prevent the military collapse of South Korea. It did so under the U.N. Security Council Resolutions 82 and 83 and to fulfill its obligations to the principle of collective security established by the U.N. Charter. In fact, U.S. forces fought in Korea as part of a multinational coalition. President Truman declared a national emergency in December 1950 (Truman, 1950), initiating rapid rearmament for the Korean conflict alongside a broader expansion of military capacity to deter further Communist advances (Pierpaoli, 2000). Defense production and military spending accelerated sharply in 1951–1953, with the surge already visible in the fiscal year beginning July 1, 1951. In his 1952 State of the Union address, Truman framed the conflict as part of a wider global struggle and warned that aggression in Korea threatened stability elsewhere in Asia (Truman, 1952). After the armistice of July 27, 1953, President Eisenhower began a gradual troop withdrawal and demobilization. While the U.S. homeland faced no immediate threat, officials feared that inaction would invite wider confrontation involving China or the Soviet Union and ultimately extent to a nuclear war.

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

New taxes or tax increases? Yes. The Revenue Act of 1950 and subsequent legislation reversed post–World War 2 tax rollbacks and introduced new taxes in response to the Korean War and the inflationary pressures created by sharply rising defense spending (Romer and Romer, 2010). Although initially drafted to reduce excise taxes, the Act was substantially revised after the outbreak of war, resulting in higher income tax rates, top marginal rates exceeding 80%, increases in the corporate income tax, and the reintroduction of an excess profits tax (United States Congress, 1950a,b). Excise taxes were imposed or raised on luxury goods, tobacco, alcohol, and fuel. After the war, several wartime rate increases expired or were later reduced. But the rollback was incomplete, as some measures were retained and incorporated into the Internal Revenue Code of 1954 as part of a broader tax reorganization (United States Congress, 1951, 1954). The top corporate income tax rate rose from 45% in 1950 to 52% in 1951, was extended in 1954, and declined only gradually to 48% by 1964 (United States Congress, 1950b, 1951, 1954, 1964).

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USA, 1967-1968: Vietnam War escalation after Tet Offensive

Figure E1: Total spending and revenues

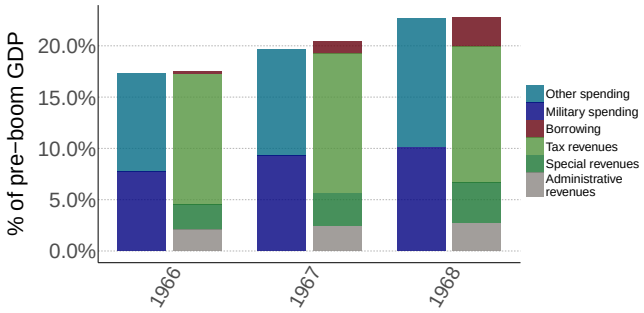


Figure E2: Cumul. change in spending, debt, revenues

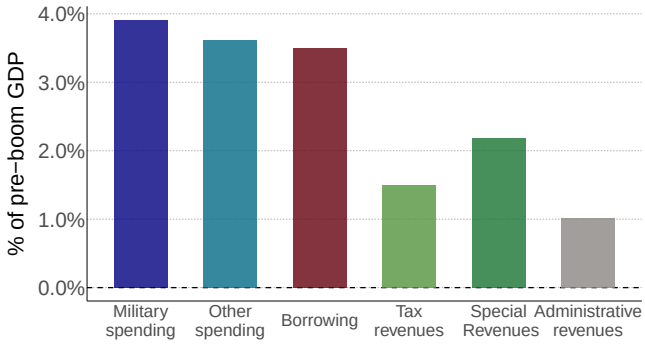


Figure E3: Spending breakdown (cumul. change)

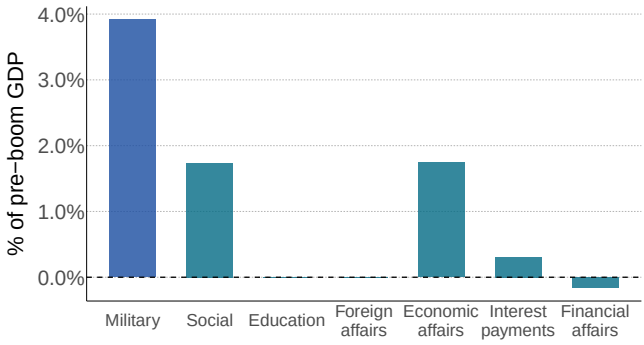
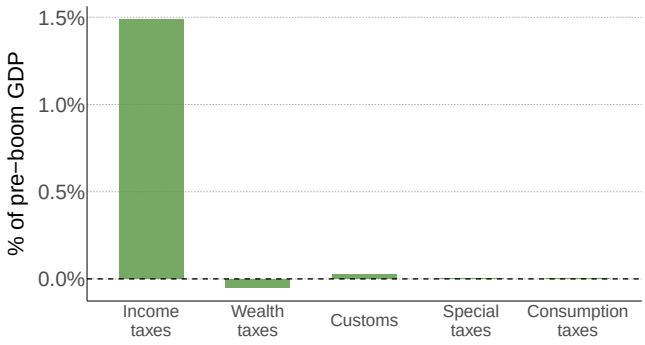


Figure E4: Tax revenue breakdown (cumul. change)



Size: 3.91 % of pre-boom GDP **Duration:** 2 years **Financing:** Primarily debt
Major war boom: Yes **Average debt-to-GDP[1]:** 41.00 % **Average tax growth[1]:** 4.16 %

Historical context – exogenous trigger? Yes. The Vietnam War escalated after the Tet Offensive in early 1968, which was a major external shock to U.S. military operations in Vietnam. Between January 30 and February 25, North Vietnamese and Viet Cong forces launched coordinated attacks across South Vietnam, directly striking U.S. and allied positions (Oberdorfer, 2001). The surprise assault exposed the scale and persistence of the conflict. At the time, more than 435,000 U.S. troops were deployed in Vietnam (Byrd, 1967). Force levels rose further to over 530,000 during 1968 as battlefield pressures intensified. President Lyndon B. Johnson justified the ongoing war and troop surge as necessary to resist communist expansion and uphold U.S. alliance commitments (Johnson, 1967). The military response reflected conditions imposed by events on the ground rather than domestic planning or homeland defense considerations.

New taxes or tax increases? Yes. The sharp rise in Vietnam War spending after 1966 contributed to renewed tax increases, first directly through the Tax Adjustment Act of 1966 and later indirectly by intensifying inflationary pressures that led to the Revenue and Expenditure Control Act of 1968. According to (Romer and Romer, 2010), the 1966 Act, which restored previously reduced excise taxes, was motivated in part by the need to finance rising costs from U.S. military operations in Vietnam. By contrast, the Revenue and Expenditure Control Act of 1968 was

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

primarily aimed at restraining aggregate demand in an overheating economy (Romer and Romer, 2010). It introduced a temporary 10% surcharge on individual and corporate income tax liabilities and imposed excise taxes on telephone services and new automobiles (United States Congress, 1968). The income tax surcharge expired in 1969, although the Tax Reform Act of 1969 increased effective tax burdens for high-income individuals (United States Congress, 1969). The automobile excise tax was repealed in 1971 (United States Congress, 1971).

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USA, 2002-2004: Afghanistan and Iraq Wars after 9/11

Figure E1: Total spending and revenues

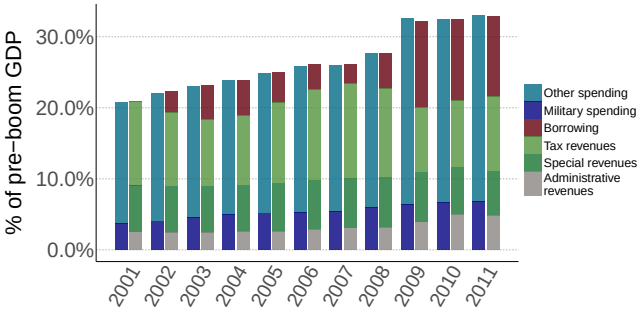


Figure E2: Cumul. change in spending, debt, revenues

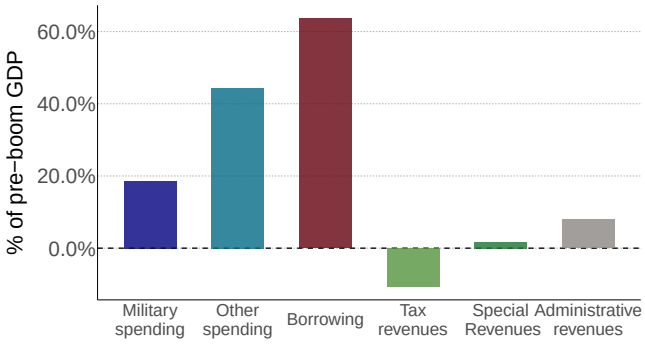


Figure E3: Spending breakdown (cumul. change)

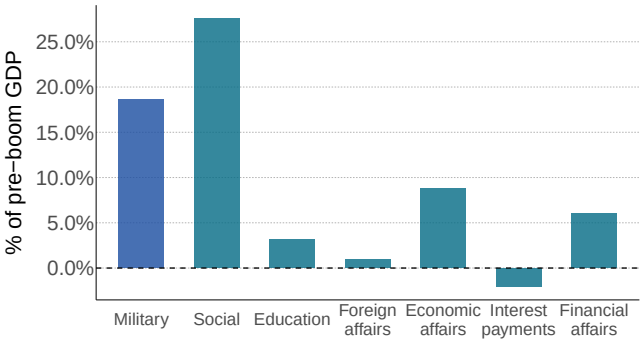
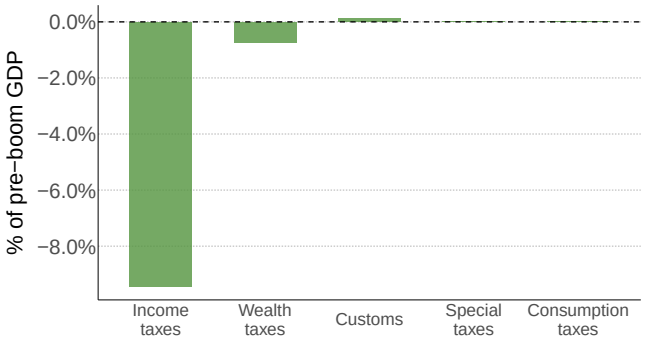


Figure E4: Tax revenue breakdown (cumul. change)



Size: 2.62 % of pre-boom GDP **Duration:** 10 years **Financing:** Primarily debt
Major war boom: No **Average debt-to-GDP[1]:** 70.20 % **Average tax growth[1]:** 3.70 %

Historical context – exogenous trigger? Yes. The September 11, 2001 terrorist attacks in New York, Washington and beyond were a major exogenous shock to the U.S. The initial military response focused on dismantling Al-Qaeda and weakening the Taliban, whose actions posed a direct threat to U.S. national security. The Afghanistan campaign was launched on October 7, 2001, as Operation Enduring Freedom, received broad international backing, including endorsement by the U.N. Security Council, which framed counterterrorism as essential to global stability (Connah, 2021; Mann, 2019). In March 2003 the U.S. then also attacked Iraq, based on the argument that Saddam Hussein's regime threatened international security. In his January 29, 2002 State of the Union address, President George W. Bush labeled Iraq part of an "axis of evil" and warned of links between rogue states, terrorism, and weapons of mass destruction (Bush, 2002). While domestic political factors influenced the scale and duration of the Iraq campaign, the initial military buildup followed directly from an unanticipated external attack and the subsequent international response.

New taxes or tax increases? No. Consistent with prior research (e.g., Romer and Romer, 2010), we find no evidence that the military buildup associated with the U.S. interventions in Afghanistan and Iraq or the broader war on terror was financed through tax increases (Flores-Macias and Kreps, 2013). Instead, the Bush administration enacted substantial tax cuts in 2001

[1] Average debt-to-GDP during boom and average real tax revenue growth over the three years preceding the boom.

and 2003, reducing income, capital gains, and dividend tax rates during the period of rising defense spending.

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