

# **Robust Fiscal Stabilization**

**by Alan Auerbach and Danny Yagan**

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# Overview

- **Important new insights on the state of U.S. debts and deficits.**
- **Document what we all suspected:** Congress has abandoned its earlier feedback rules. It acts like it doesn't care about deficits and debt.
- **Extends analysis of Auerbach (2003),** which used a better measure of active response --- changes in primary surpluses resulting from legislation.
- Estimates and simulates paths from **various fiscal feedback rules**, both deficit-based and debt-based, with no uncertainty.
- **Stochastic debt sustainability analysis:** Considers a stochastic world where (i) budgets are hit with infrequent Poisson processes; (ii) the  $r - g$  term is hit with shocks and is affected by lagged debt.

## Summary of Auerbach-Yagan Findings

- **U.S. Congress has stopped responding to projected deficits:** they responded from 1984-2003, they didn't from 2004 - 2024.
- **Dramatic implications for debt sustainability:** The earlier feedback kept the U.S. deficit below 250% of GDP, the post-2003 feedback does not.
- **Post-2003 pattern:** relative stability of debt/GDP, but punctuated by very large increases (GFC and COVID).
- **Asymmetry of significant shocks:** all large shocks raise debt, none reduce it.
- **Keeping the debt/GDP ratio below 250%:** Simulations suggest can't keep it below threshold with 95% probability using post-2003 weak feedback.

## Background: Debt Dynamics and Fiscal Reaction Rules

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Debt dynamics identity

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- **Bohn rule**: Primary surpluses respond to the lagged **debt-GDP ratio**. This is the correct feedback if one cares about the debt path.
- **Auerbach-Yagan** baseline rule: Primary surpluses respond to the CBO's forecasts of the **primary surplus-GDP ratio** over the next five years – no debt feedback in their baseline. Why did they exclude it?
  - Congress responded to the surplus forecast from 1984-2003, but not from 2004-2024.
  - However, **in neither period did it respond to the debt-GDP ratio!**

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- Recall the debt dynamics under the Bohn rule:

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- Thus, it's okay for  $d = 0$  if  $r < g$ .
- But this isn't the case if we account for two other realistic features:
  - Constraints on primary surpluses
  - Shocks

## Constraints on Primary Surpluses

As Blanchard, Leandro, and Zettelmeyer (2021) note, this changes if there are economic or political constraints on the size of primary surplus a government can generate.

Let  $\bar{s}$  be the upper limit to the primary surplus. Then the maximum sustainable debt is

$$b^* = \bar{s} \left( \frac{1+g}{r-g} \right)$$

If  $\bar{s} = 1.5\%$  and  $\left( \frac{r-g}{1+g} \right) = 1.5\%$ , then maximum sustainable debt is 100%.

## Auerbach-Yagan Models and Simulations

- It's not clear that even the 1984-2003 estimated rule generally gives sustainable debt paths.
- Their simulations consider both types of rules (though with Bohn's estimates of debt feedback parameters) and combinations of those rules.
- The probability of unsustainable paths with the post-2003 Auerbach-Yagan rule are **unacceptably high**.

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- Omit feedback between changes in primary surpluses and GDP → **they assume multipliers on both spending and taxes are 0.**
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  - Evidence suggests that on average fiscal consolidations are painful, i.e., they reduce GDP.
- Their stochastic processes **don't allow for covariances.**

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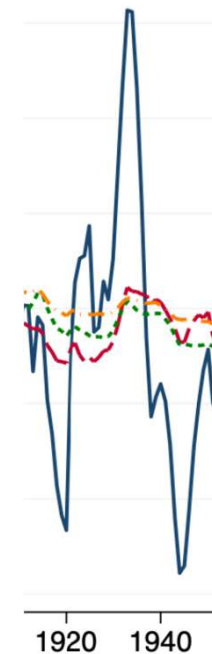
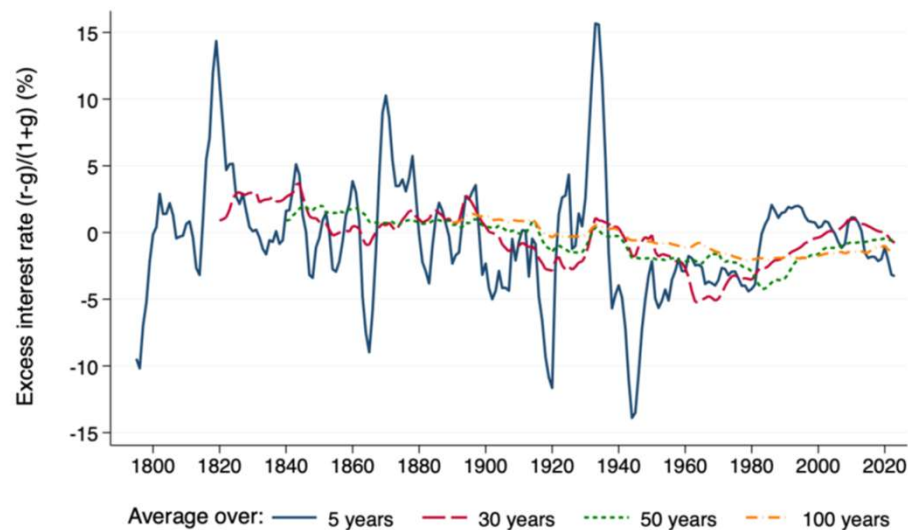
- Consider a model in which news arrives of a **secular decline in GDP growth**, i.e.,  **$g$  falls to a lower level**.
- Likely **consequences**:
  1. A **recession** in the short run, due to the consumption and investment responses  $\rightarrow$   **$\downarrow$  GDP in denominator** of debt/GDP ratio.
  2. Government responds with a **deficit-financed stimulus**  $\rightarrow$   $\uparrow$  debt.
  3. Although the stimulus is temporary, the debt/GDP ratio doesn't  $\downarrow$  because **lower  $g$**   $\rightarrow$   $\uparrow \left( \frac{r-g}{1+g} \right)$ .

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- In this scenario, the **shocks** to Auerbach-Yagan's debt and excess interest equations **are correlated**. This means that the **risk of explosive debt paths is greater**.

## Example of why covariances are important (continued)

(a) Evolution of Excess Interest Rate  $(r-g)/(1+g)$  over Time



The excess interest rate was very high during the 1930s, just when the U.S. was experiencing the Great Depression.

Bad luck or correlated shocks?

## Additional Comments on Uncertainty and Fiscal Feedback Rules

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- The presence of shocks means that it makes no sense to have a feedback rule that ignores the state variable, i.e., the debt/GDP ratio.
  - That rule implies that the govt should ignore the effects of past shocks, such as stimulus packages, on the debt.
  - As Auerbach-Yagan's simulations show, there is no parameter value in the deficit feedback rule that guarantees that the debt/GDP ratio remains under 200% with 95% probability. (Table 6.)

## Pessimism about Fiscal Reaction Functions Going Forward

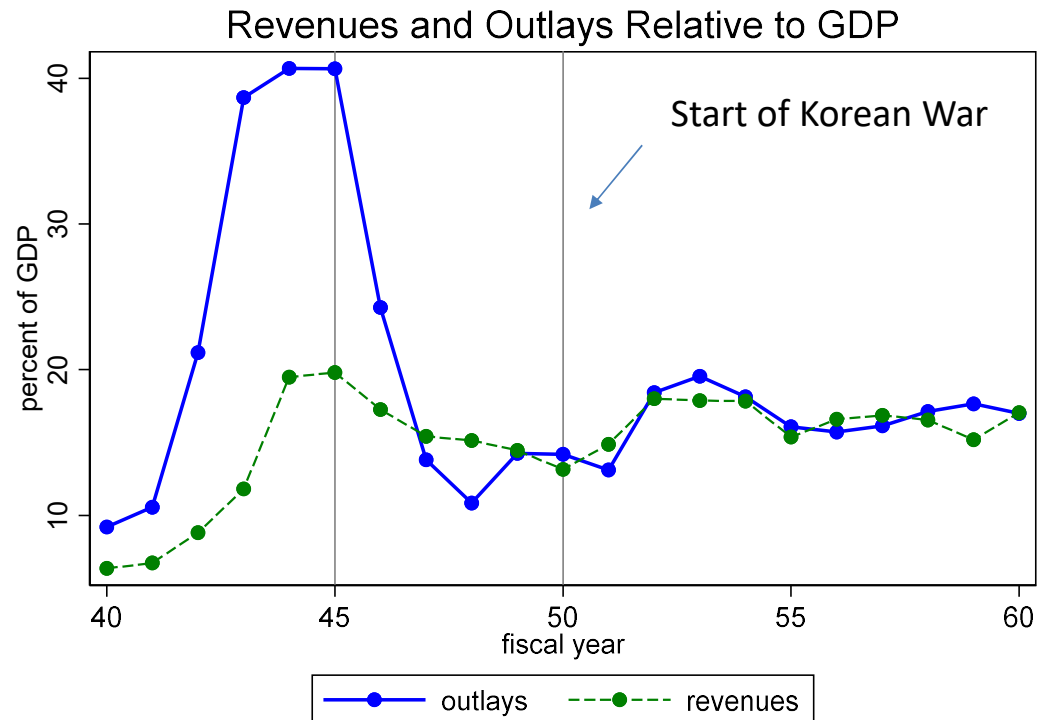
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- During the 21<sup>st</sup> century, a major force raising the debt/GDP ratio is the **aging of the population** and the rise in **relative health care prices**.
  - If Congress does nothing, the debt/GDP path is unsustainable.
- Historically, Congress has made Social Security and health care entitlements more generous, never less generous.
  - Thus, the implied feedback going forward looks non-existent.



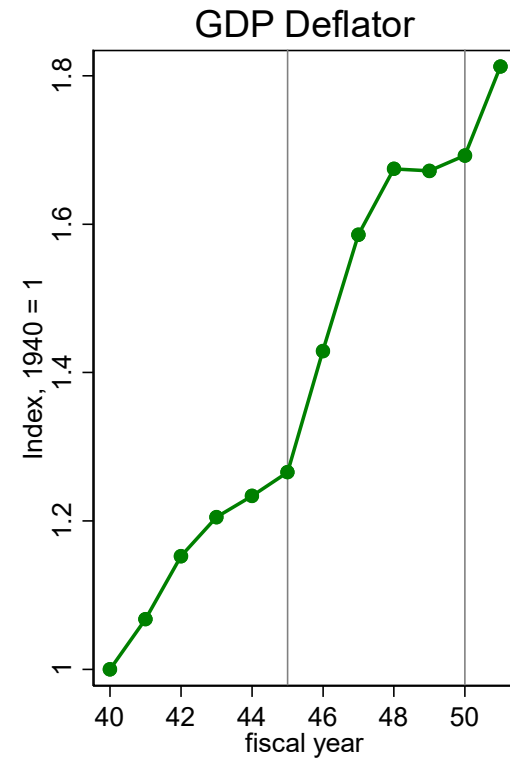
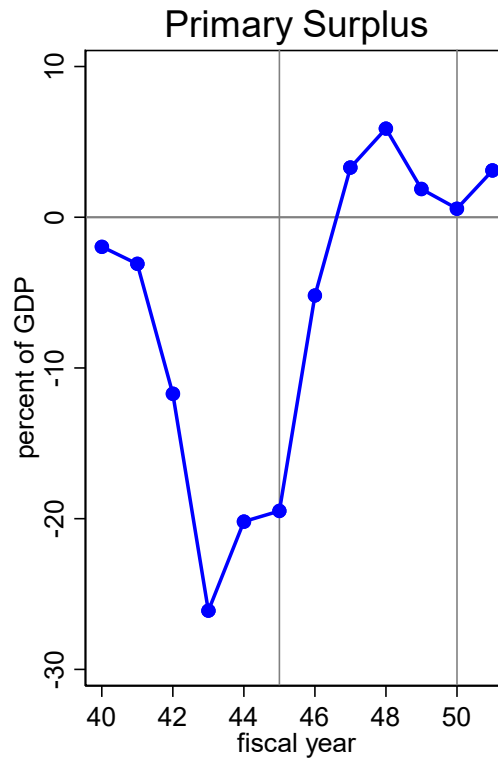
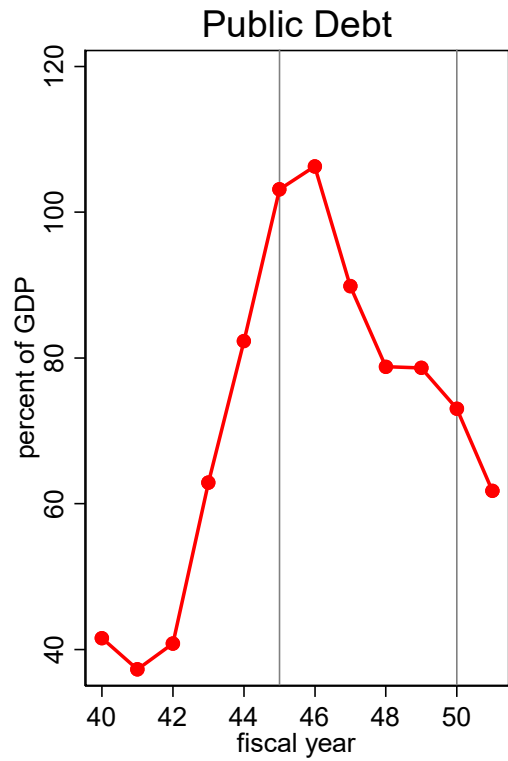
# Case Study of ↓ Debt/GDP after WWII



The first gray line marks the end of WWII, the second marks the beginning of the Korean War.

Outlays rose by 30 percentage points of GDP in WWII and by 5.5 percentage points in the Korean War.

# Focus on 1940 - 1950



## What Factors Accounted for Decline in Debt/GDP from 1945-1948?

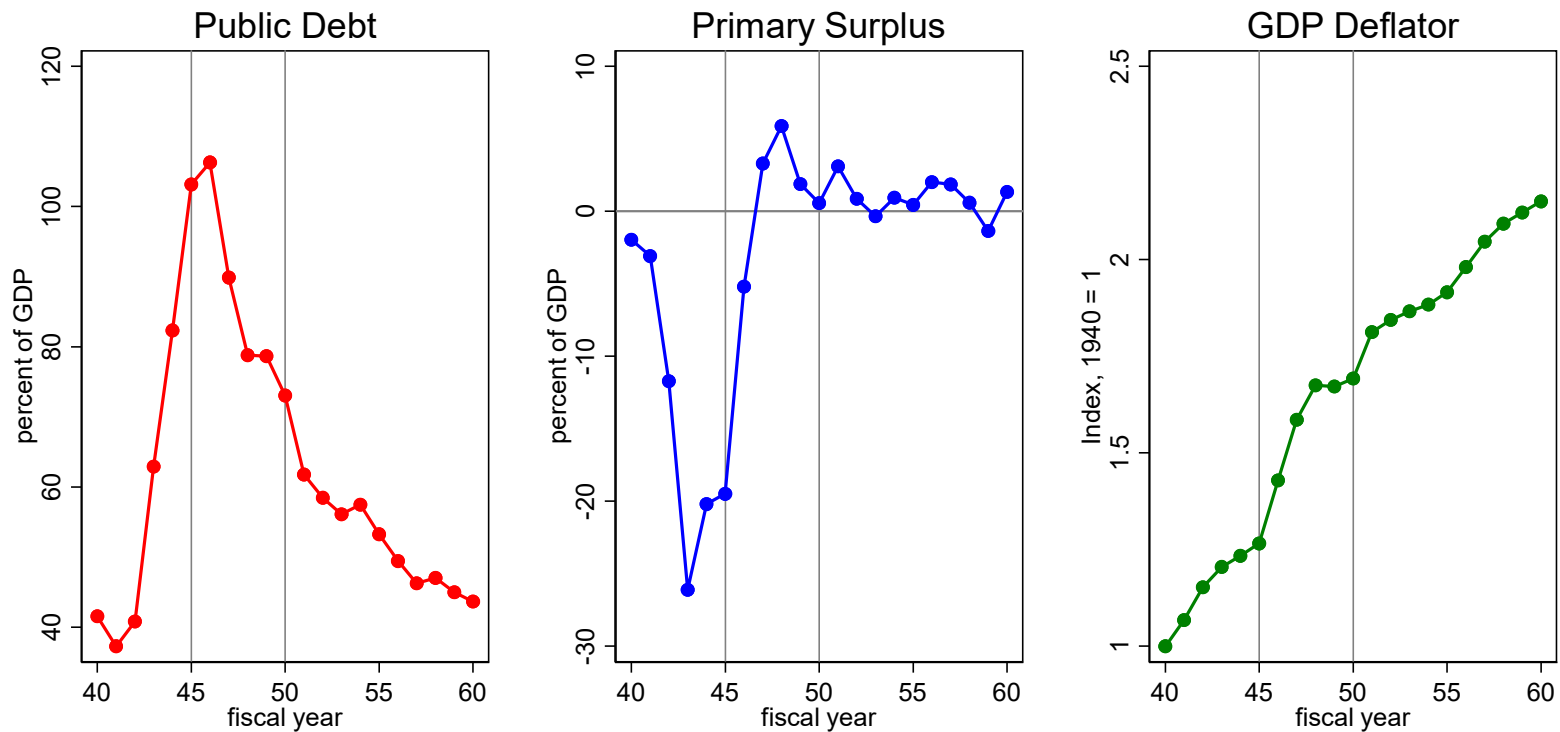
$$\% \Delta \left( \frac{\text{debt}}{P \cdot Y} \right) \approx \% \Delta \text{ debt} - \% \Delta Y - \% \Delta P$$

Variable	% change	Variable	% change
Debt/GDP	-27%	Real GDP (Y)	-9%
Nominal Debt	-8%	Price level (P)	28%

$$-27 \% = -8 \% + 9 \% - 28 \%$$

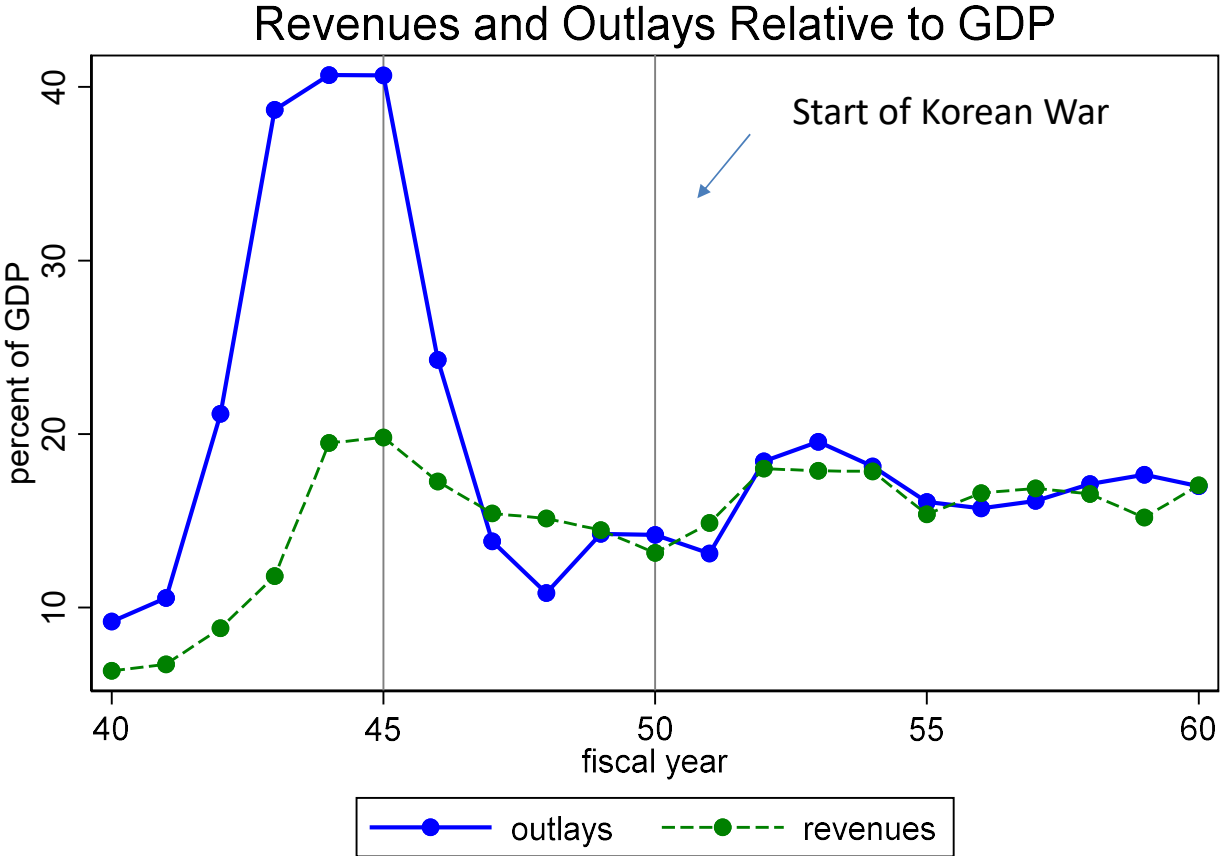
The primary surplus just offset the effect of the decline in real GDP so **all of the decrease came from inflation in the first 3 years!**

# What happened when the Korean War started in June 1950?



The U.S. managed to maintain a positive surplus despite a second war five years later.

# Truman financed the Korean War by raising taxes



## Conclusions

- Auerbach-Yagan quantify what we are observing: the current debt path looks unsustainable and no one is doing anything about it.
- They analyze multiple aspects the problem using SDSA and shed new light on how bad the long-run problem is.
- They argue that returning to the deficit feedback parameter estimated for the 1984-2003 period would make it more likely that the debt/GDP ratio would remain under 250%.

I worry even that is optimistic because the model doesn't take into account correlated shocks.

Gone are the days of leaders and candidates who cared about the deficit!



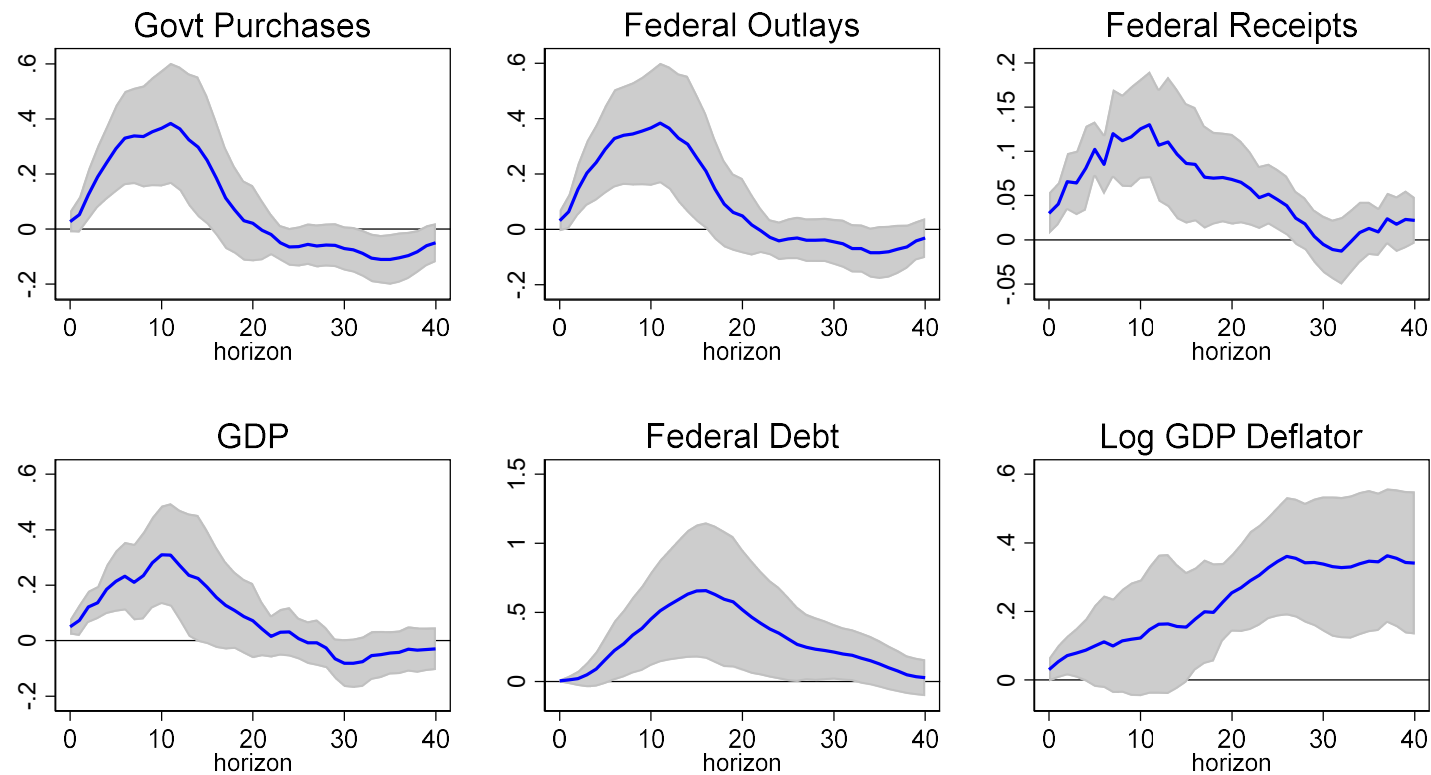




## Historical Example of Debt Reduction After Wars

- I will show what happens in response to war using the Ramey-Zubairy (2018) model and data from 1889 to 2015.
- I will then analyze WWII period and after to see how the debt/GDP ratio fell.
- The following graph shows impulse responses of key variables after the arrival of military news that raises expectations about future government purchases.

# Responses to a Military News Shock, 1889-2015



Ramey-Zubairy (JPE 2018) quarterly data. All variables except prices are divided by potential GDP.