A History of U.S. Debt Limits

George J. Hall  
*Brandeis University*

Thomas J. Sargent  
*New York University*

Next Steps for the Fiscal Theory of the Price Level

April 1, 2016
The Government Budget Constraint

\[
\frac{B_{t-1}}{p_t} = E_t \sum_{j=0}^{\infty} (m_{t,t+j} \sigma_{t+j}^t)
\]

where

- \( \frac{B_{t-1}}{p_t} \) is the value of the debt
- \( m_{t,t+j} \) is a stochastic discount factor
- \( \sigma_{t+j}^t \) is the primary government surplus

**QUESTION:** Under a debt ceiling, what is the object that being limited?
Two conceptual differences

1. Treasury measures the debt at the par or face value; in our models, $B_{t-1}$ is the market value of the debt

2. Treasury records its interest payments by summing up coupon payments and the discount on T-bills; in our models, the return to creditors is the holding period of the debt
The Government Budget Constraint

- The one-period gross nominal return on a $j$-period zero coupon bond
  \[
  \left( \frac{q_{t+j-1}^t}{q_{t+j-1}^{t-1}} \right) = (1 + r_{t-1,t}^j) \quad \text{where} \quad q_{t+j}^t = \frac{1}{(1 + \rho_{jt})^j}
  \]

- $b_{t+j}^t \sim \text{par or principal}$
- $c_{t+j}^t \sim \text{coupon}$
- $\sigma_{t+j}^t = T_{t+j}^t - G_{t+j}^t \sim \text{primary surplus}$

Then the government budget constraint is

- value of government debt = P.V. of future surpluses

\[
\sum_{j=0}^{\infty} q_{t+j}^t (c_{t+j}^t + b_{t+j}^t) = \sum_{j=0}^{\infty} q_{t+j}^t \sigma_{t+j}^t
\]
Two measures of government debt

U.S. government accounts:

\[ \sum_{j=1}^{n_t} b_{t+j} \]  

Macroeconomics:

\[ \sum_{j=1}^{n_t} q_{t+j}^t (b_{t+j}^t + c_{t+j}^t) \]  

The debt limit is an upper bound on (1), not on (2).

- Promises labeled “principal” are recorded as debt and count against the limit.
- Promises labeled “coupons” or “interest” do not.
Promised Principal and Coupon Payments

The graph shows the trend of promised principal payments and promised principal plus coupon payments as a percentage of GDP from 1800 to 2000. The payments are depicted in blue and red lines, respectively.
Debt to GDP Ratio, Market and Par Value, 1776-2014

- Revolutionary War
- War of 1812
- Civil War
- World War I
- World War II
- Reagan
- G.W. Bush/Obama
Ratio of Market Value to Par Value of Debt

100 × market value/par value

1775 1800 1825 1850 1875 1900 1925 1950 1975 2000 2025
Two measures of “interest payments”

US government accounts:

before 1929:

\[ c_{t}^{t-1} \]

after 1929:

\[ c_{t}^{t-1} + r_{t-1,t}^{1} b_{1,t}^{t-1} \]

Macroeconomics:

\[ \sum_{j=1}^{n_{t-1}} r_{t-1,t}^{j} q_{t+j-1}^{t-1}(b_{t+j-1}^{t-1} + c_{t+j-1}^{t-1}) \]
Nominal Holding Period Return and Official Net Interest Payments as Percent of the Debt, Annual by Fiscal Year
Limit or Limits?

- Congress has imposed an aggregate limit only since 1939.
- Before WWI, Congress imposed limits on each bond.
  - For most securities, Congress limited quantities to be issued.
    - Limits were not on quantities outstanding.
    - After a security was redeemed, it could not be re-issued.
  - Restricted the projects on which proceeds could be spent.
- We construct implied limits on aggregate limit by keeping track of unexpired limits on each individual security.
Second Liberty Bond Act of 1917

Granted the Secretary of the Treasury authority

to borrow from time to time, on the credit of the United States for the purposes of this Act, and to meet expenditures authorized for the national security and defense and other public purposes authorized by law not to exceed $7,538,945,460

This broad language broke the tight connection between borrowing and spending for specific purposes that had characterized Congress’s policy since 1776.
Total Debt and the Limit: Nominal, 1917-1939

- First Liberty Loan Act
- Second Liberty Loan Act
- Third Liberty Loan Act
- Fourth Liberty Loan Act
- Victory Loan Act

- March 3, 1931 →
- February 4, 1935 →
- May 26, 1938 →

billions of nominal dollars