Fiscal Space and Ambiguity During the Post-Civil War Period

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Brown Bag Talk
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Today's Fiscal Situation [just for perspective]

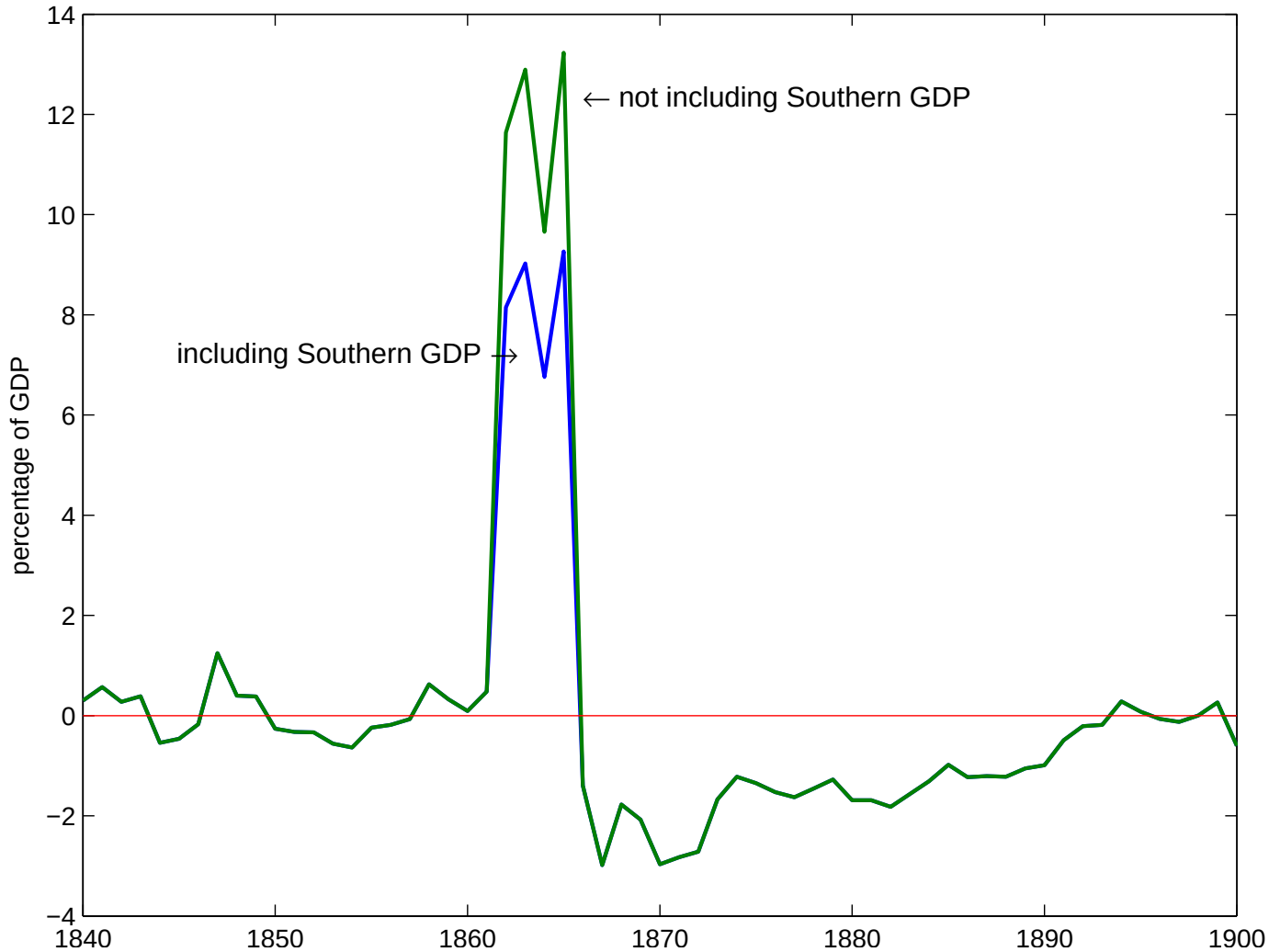
- Current deficit: 9.8% of GDP
- Current debt: 69.4% of GDP
- CBO forecasts debt to grow to 76.7% (really over 90%) of GDP in the next decade.
- Expenditures: 24.7% of GDP
- Taxes: 14.8% of GDP (about 60% of expenditures)
- Questions people are asking:
  - Is the current U.S. fiscal situation *sustainable*?
  - If so, how much *fiscal space* does the U.S. have? (i.e. how much more debt can we take on before we hit some limit?)

- The government budget constraint assures us that *actual* fiscal policy will be sustainable.

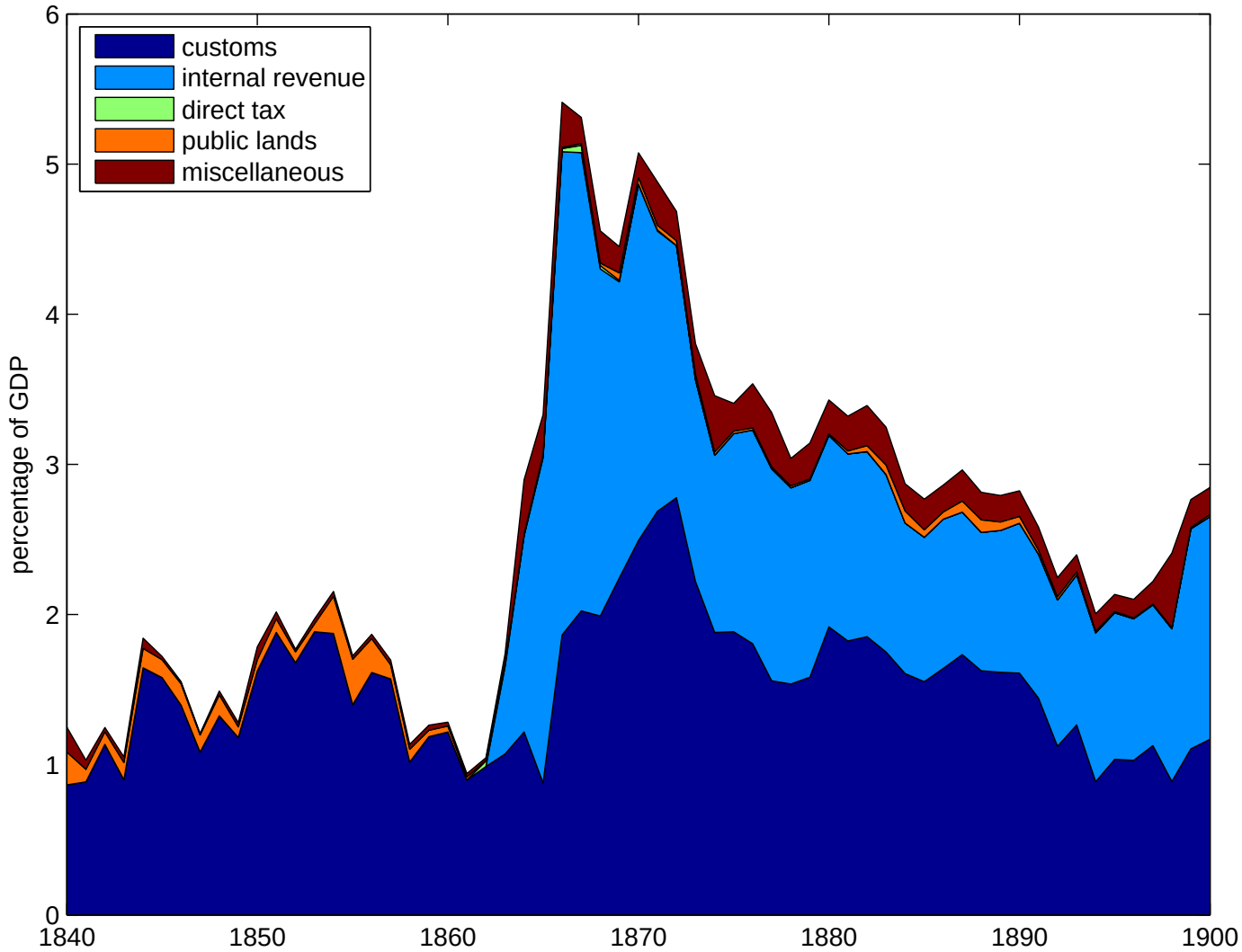
$$\frac{B_t}{Y_t} = (1 + i_t - \pi_t - g_t)\frac{B_{t-1}}{Y_{t-1}} + \frac{\mathrm{def}_t}{Y_t}$$

- Tremendous ambiguity about how this sustainability will come about
  - Taxes
  - Spending
  - Return to the bondholders (e.g. explicit default, or inflation)
  - GDP growth
- We have been in similar (but not the same) situations before and sustained.
- Post-Civil War period

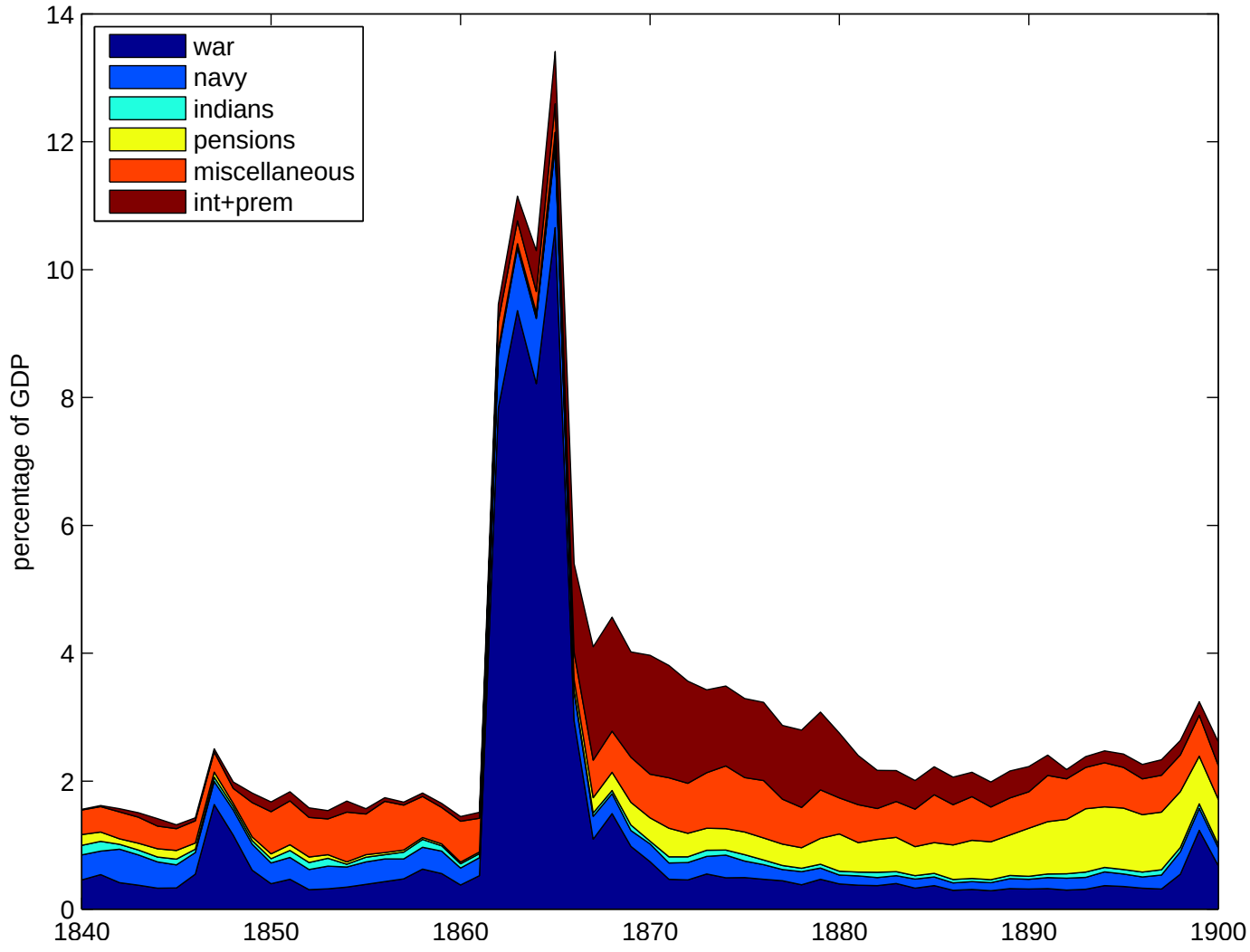
Primary Deficit to GDP Ratio



Composition of Federal Revenues by Source



Composition of Federal Expenditures by type



Federal Receipts by Source

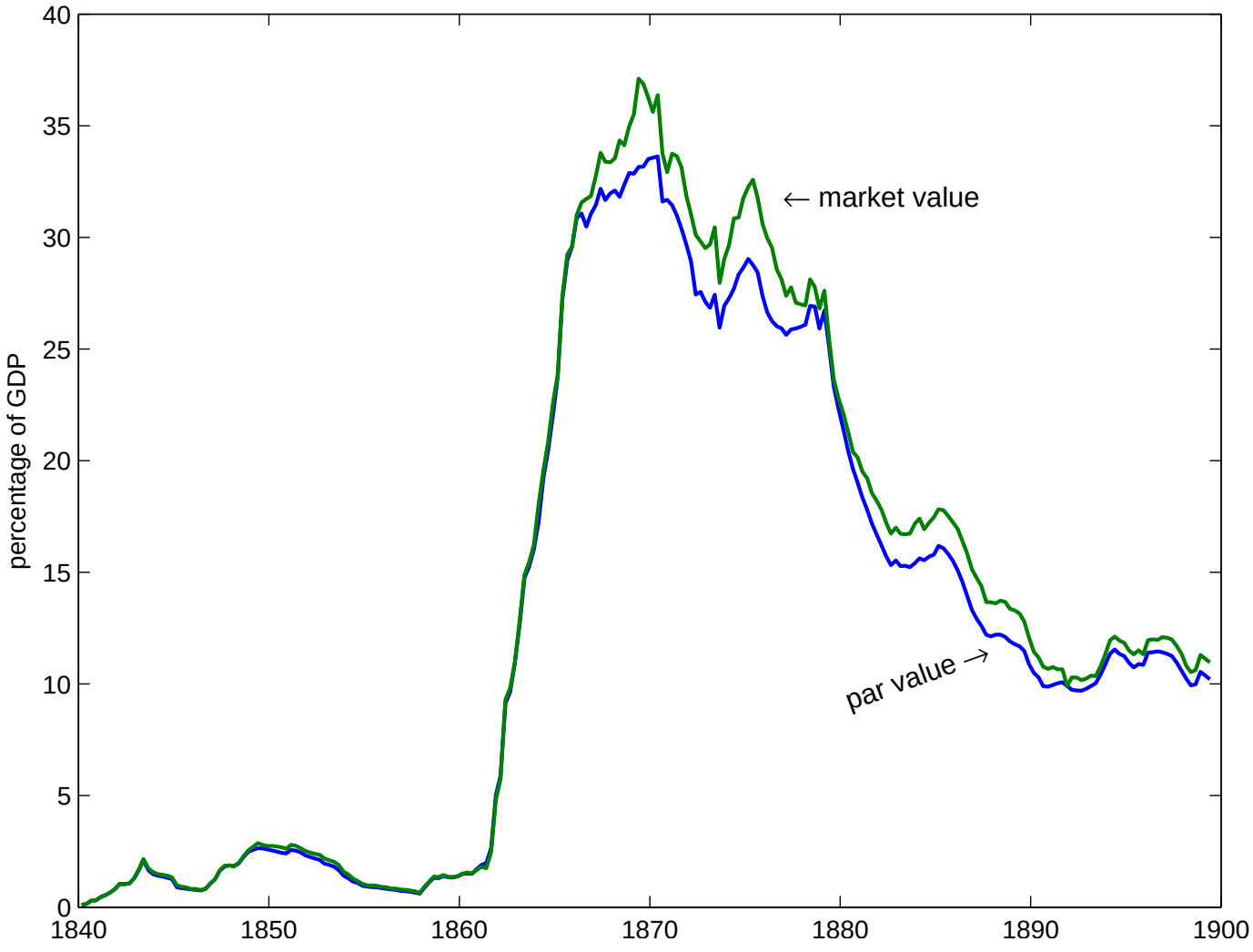
	Customs	Income Tax	Other Taxes	Total Taxes	Total Revenue	Loans	Share of Expend Taxes	Share of Expend Loans
1859	$49.6			$49.6	$52.8	$14.3	71.8%	20.7%
1860	53.2			53.2	56.1	6.9	84.2	11.0
1861	39.6			39.6	41.5	23.2	59.4	34.7
1862	49.1		$1.8	50.9	51.9	433.7	10.8	92.4
1863	69.1	$2.7	36.4	108.2	112.1	596.2	15.1	83.0
1864	102.3	20.3	89.9	212.5	243.4	719.5	24.6	83.2
1865	84.9	32.0	178.6	295.6	322.0	872.6	22.8	67.3
1866	179.0	73.0	238.2	490.2	519.9	130.6	94.4	25.2
1867	176.4	66.0	204.2	446.6	462.8	-78.1	124.9	-21.9
1868	164.5	41.5	151.4	357.3	376.4	-45.2	94.7	-12.0
1869	180.0	34.8	124.3	339.2	357.2	-11.2	105.1	-3.5
1870	194.5	37.8	147.4	379.7	396.0	-108.5	122.6	-35.0
1871	206.3	19.2	124.5	349.9	374.4	-130.9	119.8	-44.8
1872	216.4	14.4	116.2	347.0	364.7	-97.5	125.0	-35.1
1873	188.1	5.1	109.0	302.1	322.2	-12.3	104.1	-4.2
1874	163.1		102.4	265.5	299.9	20.9	87.7	6.9

Internal Revenue Act of 1862

- sin taxes on liquor, tobacco and playing cards
- luxury taxes on carriages, yachts, billiard tables, jewelry, and other items
- license taxes on most professions except clergy
- taxes of dividends and interest
- value added taxes on manufactured goods and meats
- increased the income tax
  - first $600 not taxed
  - 3% on income between $600 and $10,000
  - 5% on income over $10,000

  rates increased to 5%, 7.5%, and 10% in 1864

Debt-to-GDP Ratio



Civil War Fiscal Situation

- Deficit: 8 to 9% of GDP
- Debt: 30 to 35% of GDP
- Debt stayed around 30 to 35% of GDP over the next decade.
- Expenditures: 11 to 13% of GDP
- Taxes: 1 to 4% of GDP (about 10 to 25% of expenditures)
- Was this situation sustainable?
  - Civil War was temporary, unlike Medicare
  - But then again, it was a civil war
  - Much tougher to raise revenue (taxes/GDP were 1/8 of debt/GDP)
- So how was the debt "paid off"? Did the government follow an optimal policy?

Two Theories of Tax Smoothing

1. Gallatin (1807), Barro (1979)
   - War expenditures should met with loans.
   - Taxes should be increased only to provide for the annual expenses on the peace establishment, the interest on the existing debt, and the interest on the new loans.
2. Lucas-Stokey (1983)
   - The government uses the return on its debt to absorb the impact of fiscal shocks.
   - Nominal debt should be used as a way to shift fiscal risk onto bondholders. Debt is a form of insurance.
   - When the government is hit with unexpectedly high (low) expenditures, the government should hand its creditors low (high) rates of return.
   - The government wants to keep the marginal cost of distortionary taxes constant through time and across states.

So What Happened?

- We see elements of both Barro and Lucas and Stokey tax smoothing.
  - If the shock is purely temporary, financing 90% of the expenditure with loans is consistent with Barro
  - Going into the war, the stock of debt was too small to implement Lucas and Stokey. But bond returns during and after the war are consistent with Lucas and Stokey.
  - The government had the opportunity to pay low returns to the bond-holders after the war, but did not.
- Need to work out versions of the Barro and Lucas-Stokey models with economic growth and population growth.

Policy Ambiguity in the Post-Civil War Period

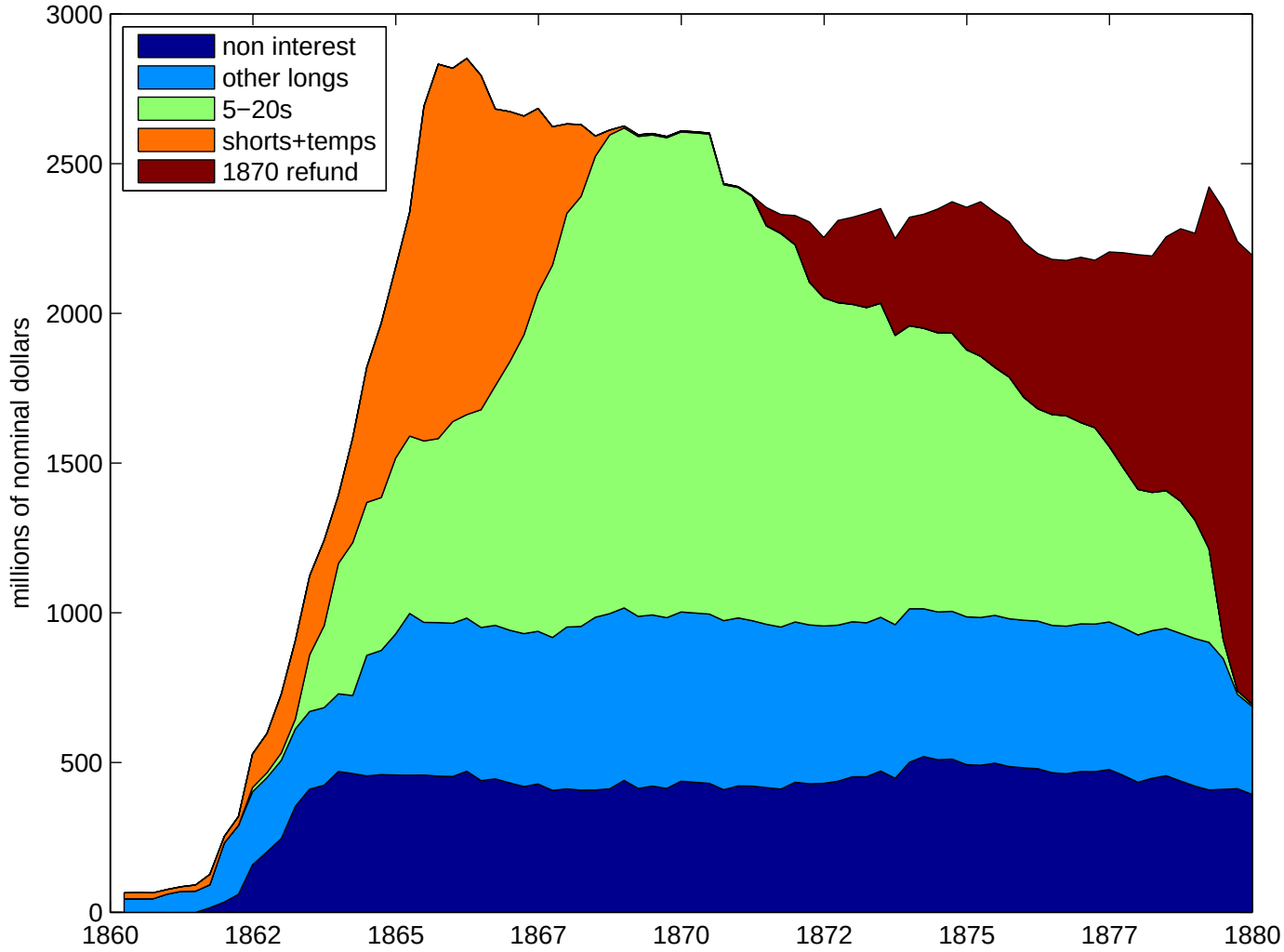
It is, in the secretary's judgment, not only difficult but impossible to apply fixed rules to a condition of affairs constantly changing, or to meet contingencies which no human reason can foresee by a steady application of general laws, especially in a government and with a people where public opinion is the controlling element, and that opinion is not under the direction of those who may happen to administer public affairs.

Secretary of Treasury Fessenden, Dec. 1864.

Debt Management: 1860-1880

- Went off the gold standard early in the war. Returned in 1879.
- There was a heavy reliance on short term debt during the war and mid-1860s. Much of this short-term debt paid a relatively high interest rate.
- This short term debt was then refinanced into 5-20 loans during the mid 1860s intended to extend the maturity of the debt.
- After 1870 the 5-20s were refinanced into bonds paying a lower coupon rate.
- The non-interest bearing debt is largely comprised of the greenbacks (i.e. the Legal Tender Notes authorized on February 25, 1862). The share of the debt comprised of these non-interest bearing loans is stable throughout the sample.

Composition of the Debt Outstanding by Type of Obligation: 1860 to 1880



The 5-20 loans

- Congress authorized 7 of these loans
  - 20 year bonds
  - callable after 5 years
  - 6 percent coupon rate
- Coupons paid in gold. Congress failed to state whether the principal would be paid in gold or greenbacks.
- First U.S. Treasury bonds ever called, and there were partial calls, based on the serial number

Payments in the Bonds in Gold or Currency?

The lessons of the past admonish the lender that it is not well to be over-anxious in exacting from the borrower rigid compliance with the letter of the bond.

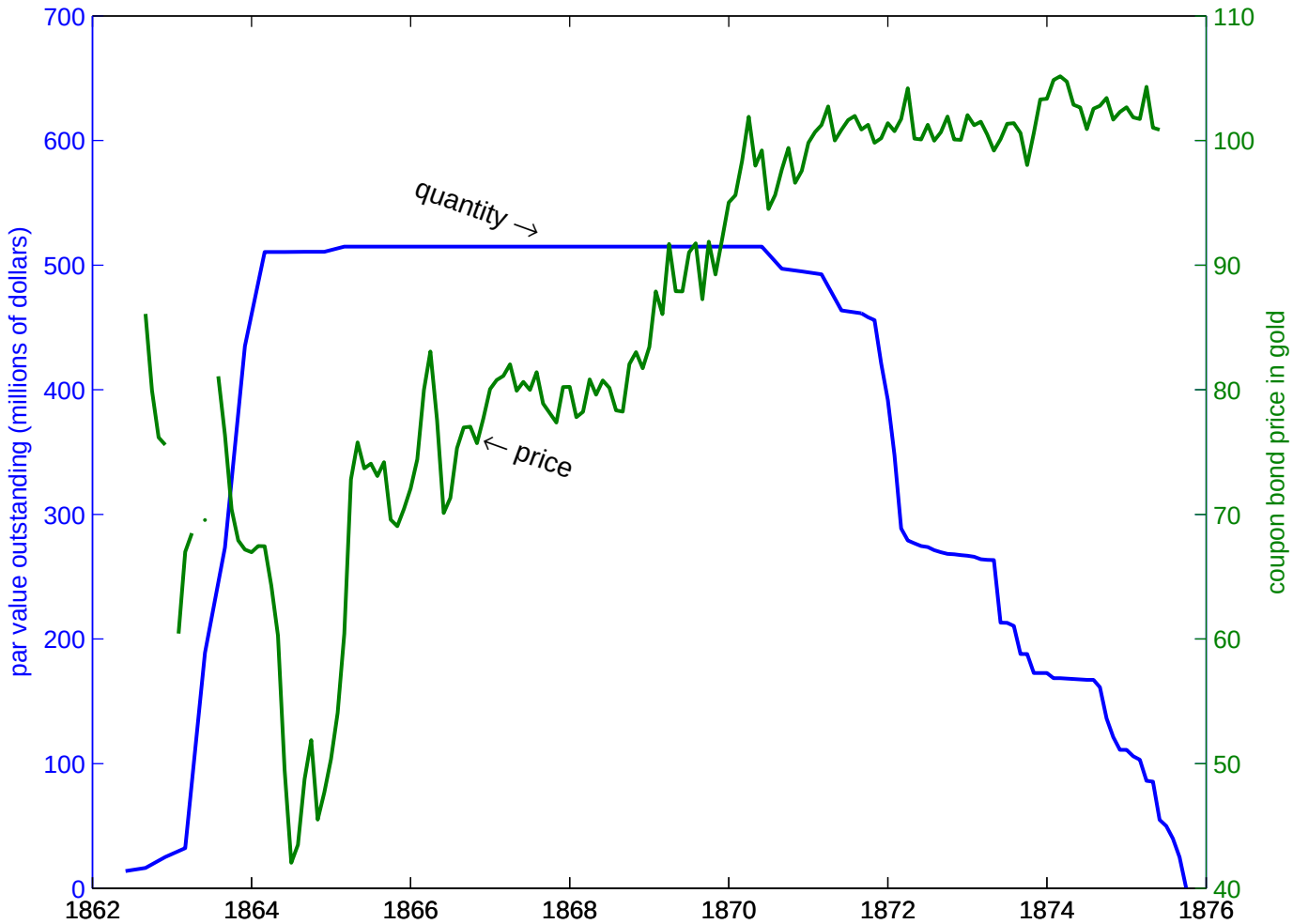
President Andrew Johnson, 1868

Grant Resolves the Uncertainty

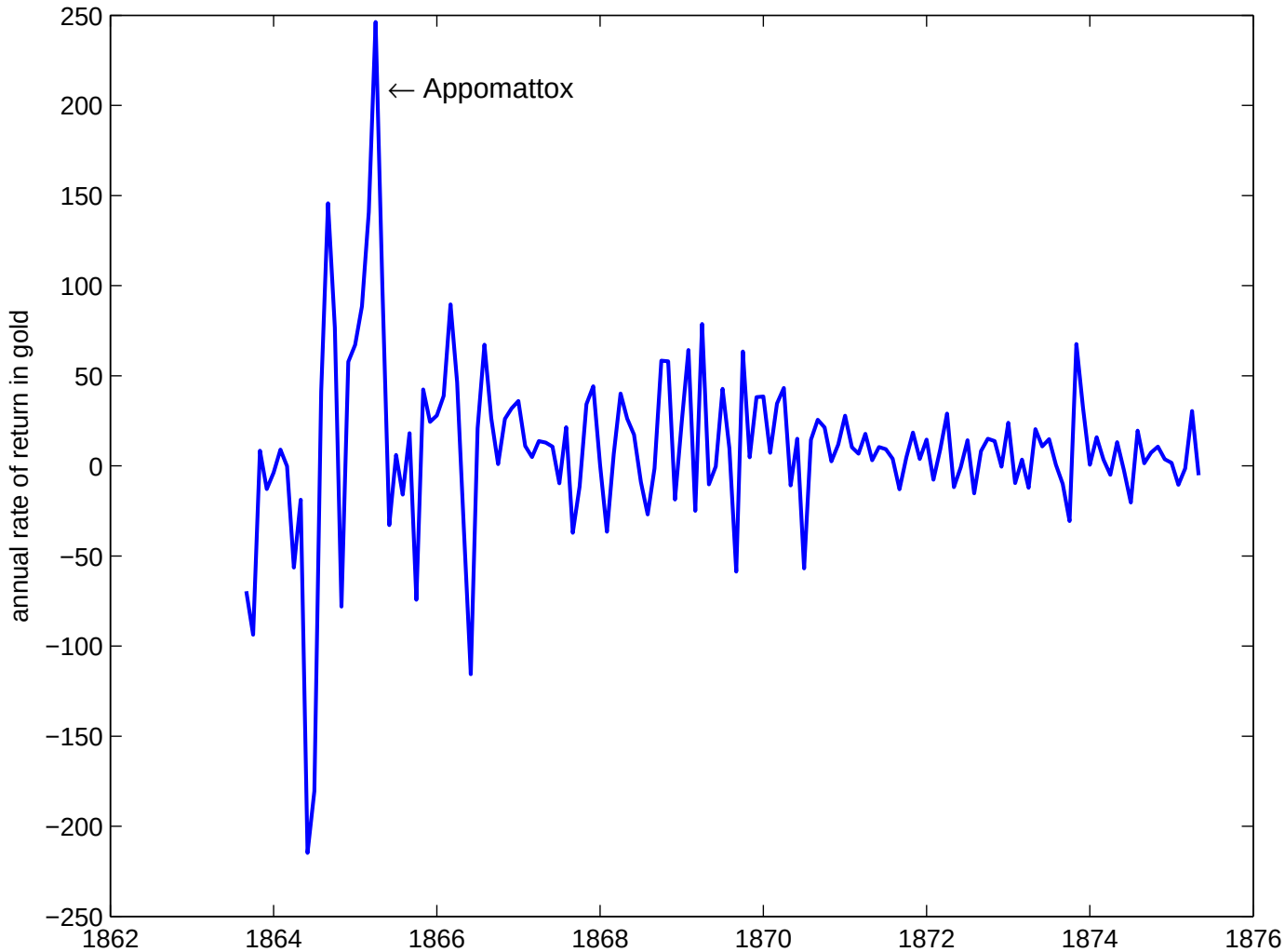
A great debt has been contracted in securing to us and our posterity the Union. The payment of this, principal and interest, as well as the return to a specie basis as soon as it can be accomplished without material detriment to the debtor class or to the country at large, must be provided for. To protect the national honor, every dollar of Government indebtedness should be paid in gold, unless otherwise expressly stipulated in the contract. Let it be understood that no repudiator of one farthing of our public debt will be trusted in public place, and it will go far toward strengthening a credit which ought to be the best in the world, and will ultimately enable us to replace the debt with bonds bearing less interest than we now pay.

U. S. Grant, First Inaugural Address, March 1869

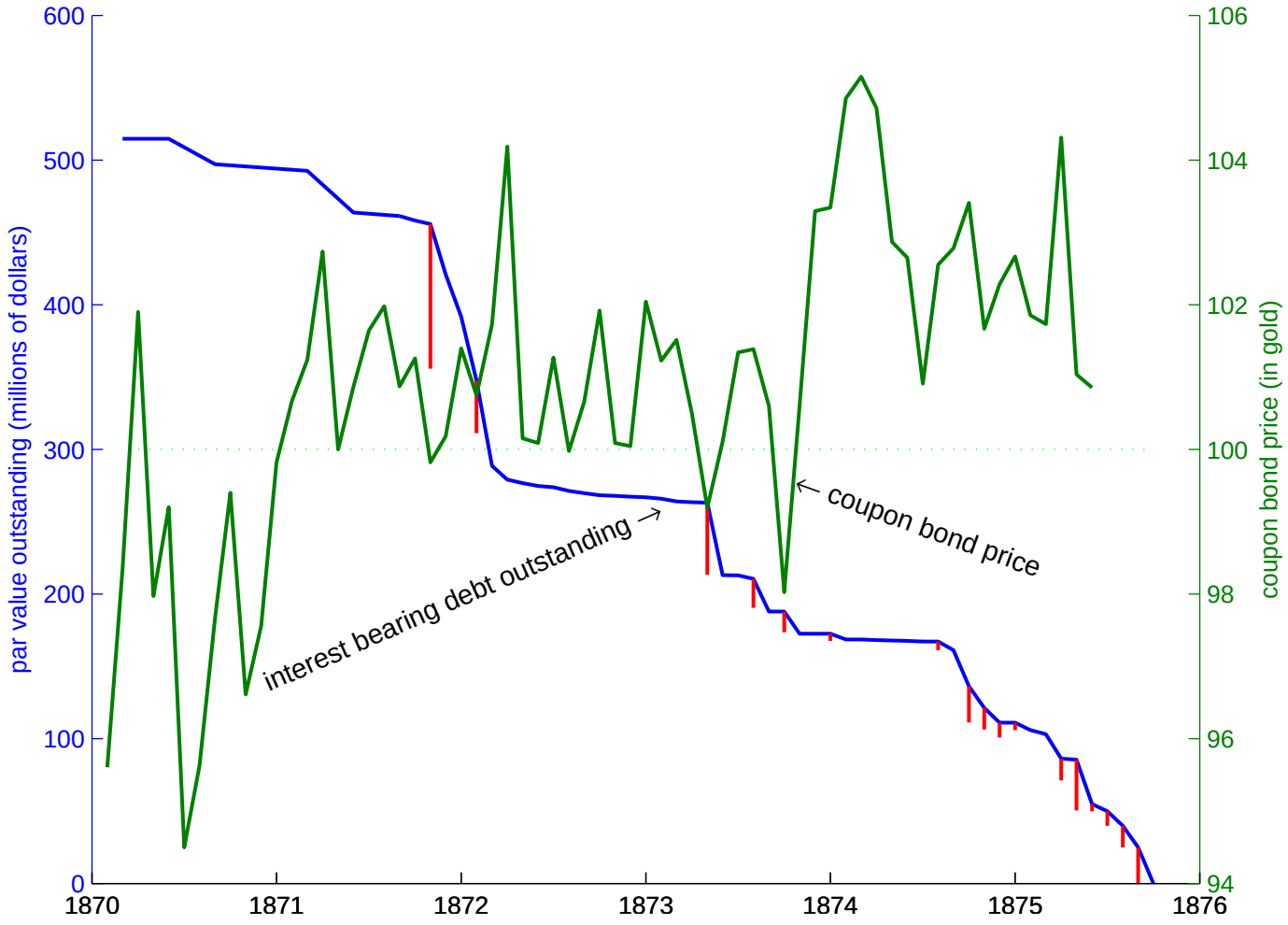
Price and Quantity Outstanding of the 5-20s of 1862



Annualized Ex Post Return on the 5-20s of 1862



Price and Quantity Outstanding of the 5-20s of 1862 During the Call Period



How was the debt "paid off"?

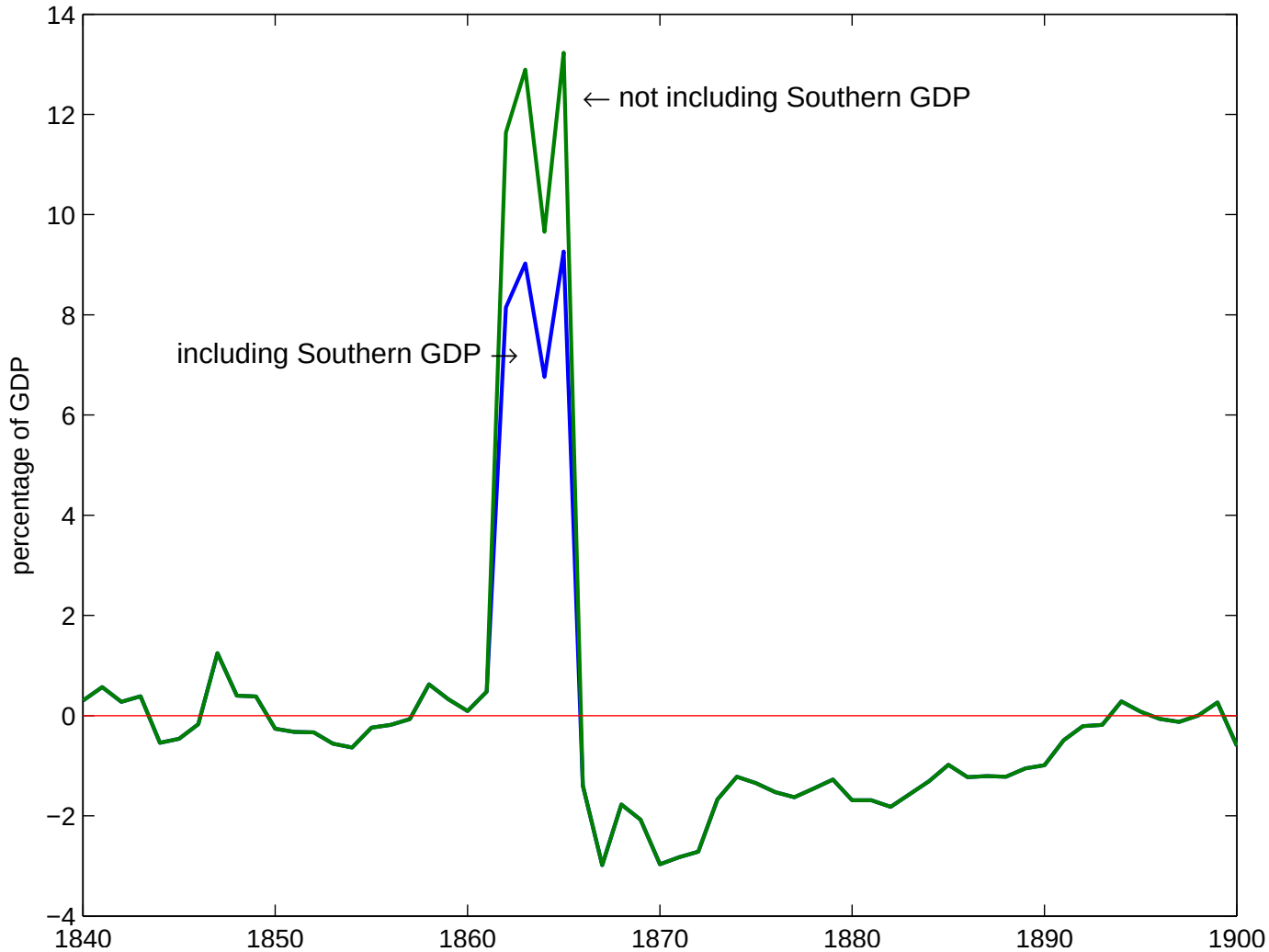
- A decomposition of the government budget constraint

$$v_t \sum_{j=1}^{N} p_t^j q_t^j = v_t \sum_{j=1}^{N} p_t^j q_{t-1}^j + v_t \sum_{j=1}^{N} c^j q_{t-2}^j + v_t \mathrm{def}_t$$

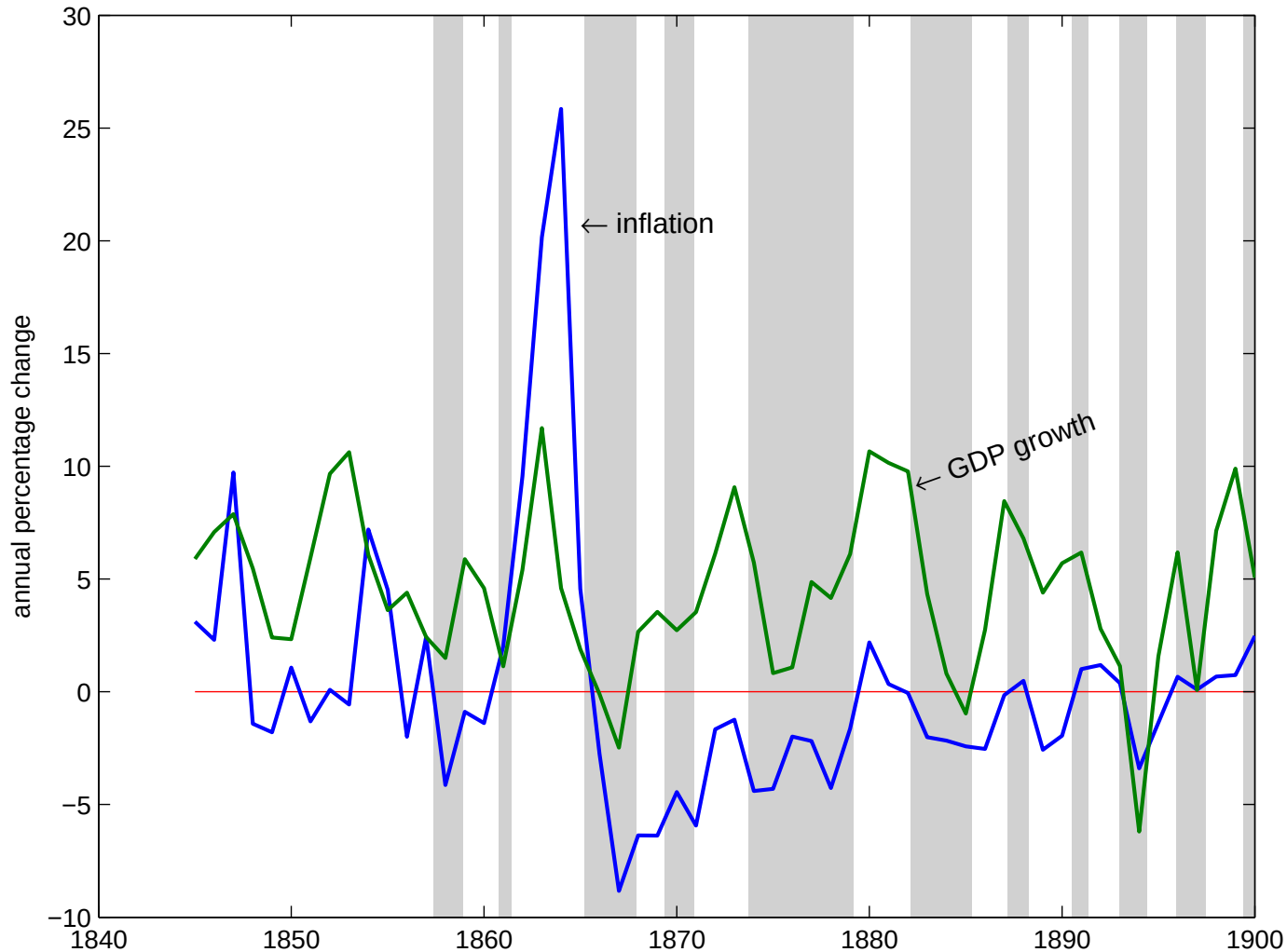
Dividing both sides by Y_t and rearranging terms yields:

$$\frac{v_t \sum_{j=1}^{N} p_t^j q_t^j}{Y_t} - \frac{v_{t-1} \sum_{j=1}^{N} p_{t-1}^j q_{t-1}^j}{Y_{t-1}} = \sum_{j=1}^{N} \left(\frac{p_t^j}{p_{t-1}^j} \frac{v_t}{v_{t-1}} \frac{Y_{t-1}}{Y_t} - 1 \right) + \frac{v_t \sum_{j=1}^{N} c^j q_{t-1}^j}{Y_t} + \frac{v_t \mathrm{def}_t}{Y_t}$$

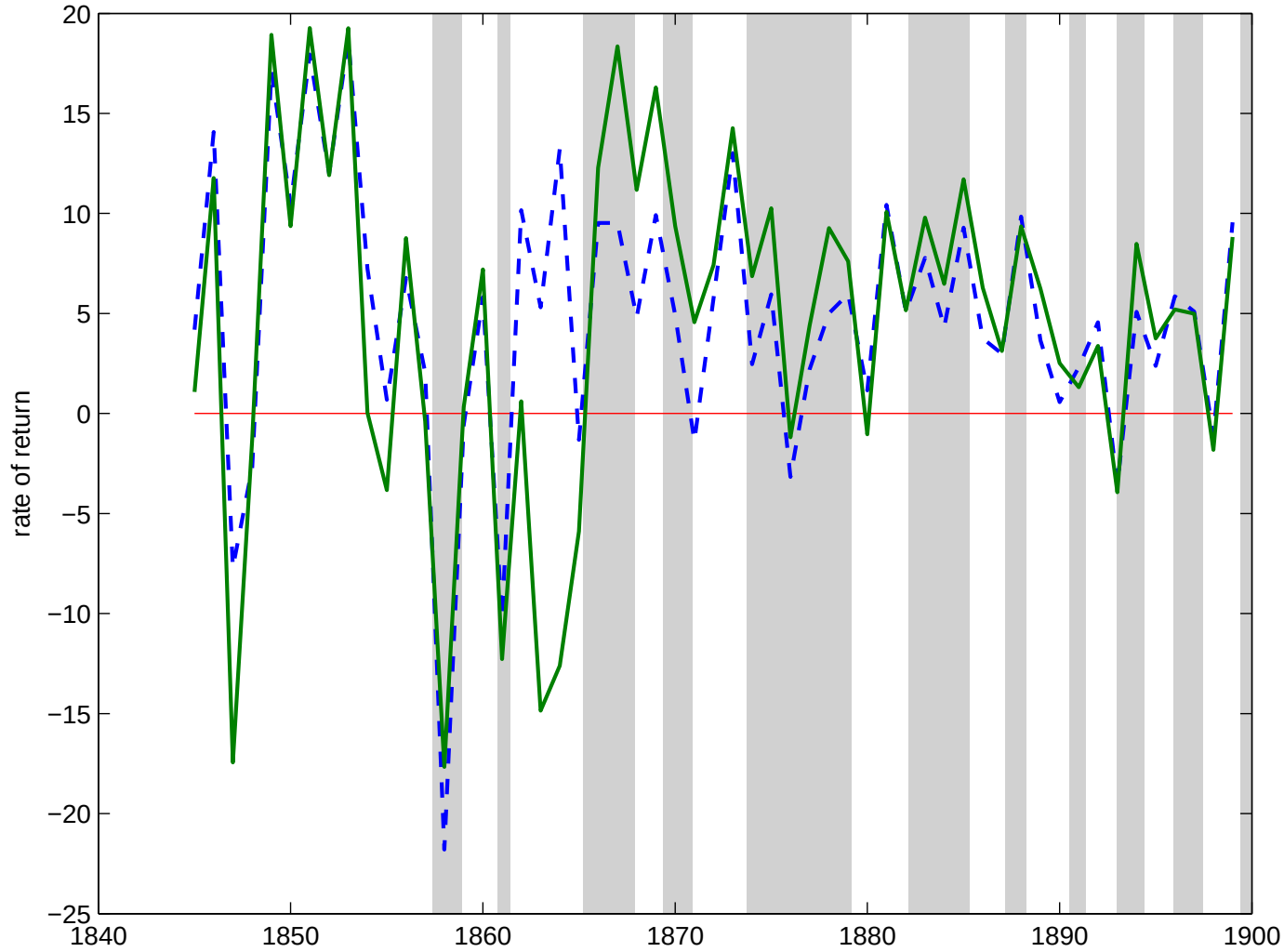
Primary Deficit to GDP Ratio



Annual Inflation and Real GDP Growth



Imputed Average Returns on the Treasury's Portfolio



Contributions to Changes in the Debt-to-GDP Ratio

Period		Debt to GDP start	Debt to GDP end	Debt to GDP change	Bond Prices	Inflation	GDP Growth	Coupon Payments	Deficit to GDP
1840	1845	0.3	1.0	0.7	4.0	0.1	-4.2	0.3	0.5
1845	1860	1.0	1.6	0.6	0.7	-0.2	-1.5	1.3	0.3
1860	1865	1.6	27.8	26.3	2.1	-7.5	-2.5	1.9	32.1
1865	1870	27.8	36.6	8.8	5.0	9.4	-2.4	8.2	-11.5
1870	1880	36.6	22.5	-14.1	-1.2	8.2	-16.0	12.4	-17.5
1880	1890	22.5	11.9	-10.6	5.6	2.1	-9.4	4.2	-13.1
1890	1899	11.9	11.4	-0.4	1.9	0.0	-3.5	1.6	-0.4
1840	1899	0.3	11.4	11.1	18.1	12.1	-39.3	29.8	-9.6

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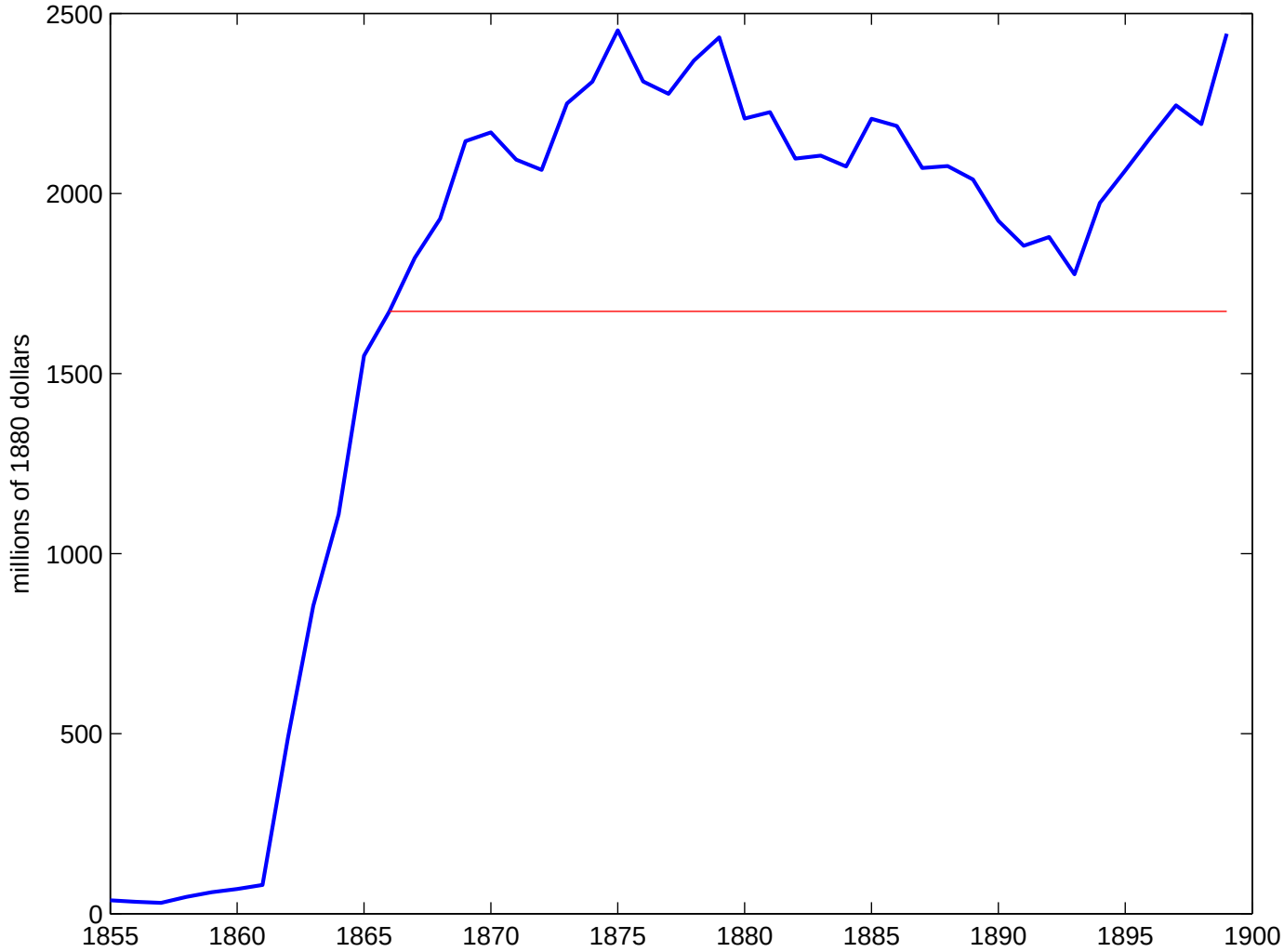
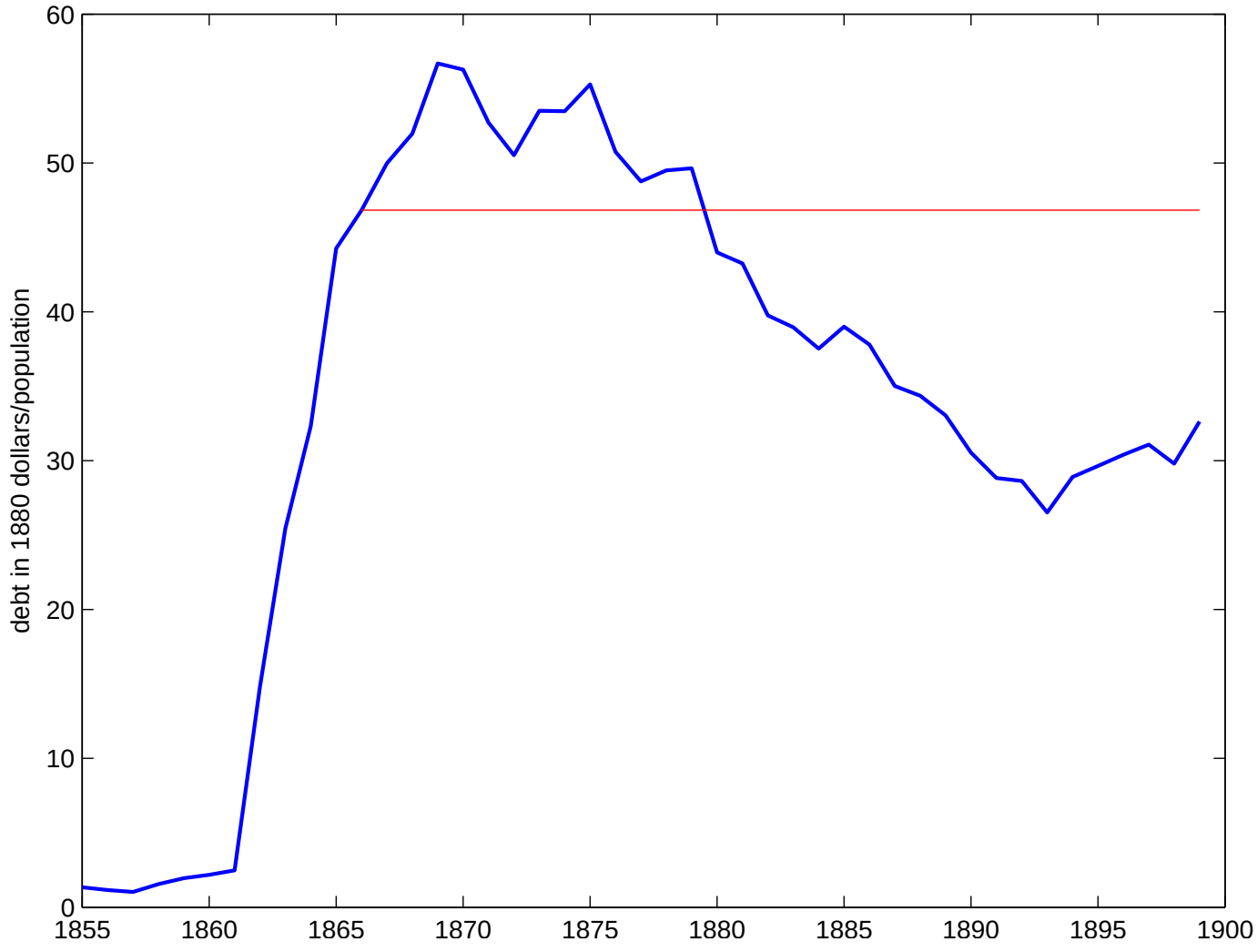
1865	1870	27.8	36.6	8.8	5.0	9.4	-2.4	8.2	-11.5
1870	1880	36.6	22.5	-14.1	-1.2	8.2	-16.0	12.4	-17.5
1880	1890	22.5	11.9	-10.6	5.6	2.1	-9.4	4.2	-13.1
1890	1899	11.9	11.4	-0.4	1.9	0.0	-3.5	1.6	-0.4
1840	1899	0.3	11.4	11.1	18.1	12.1	-39.3	29.8	-9.6

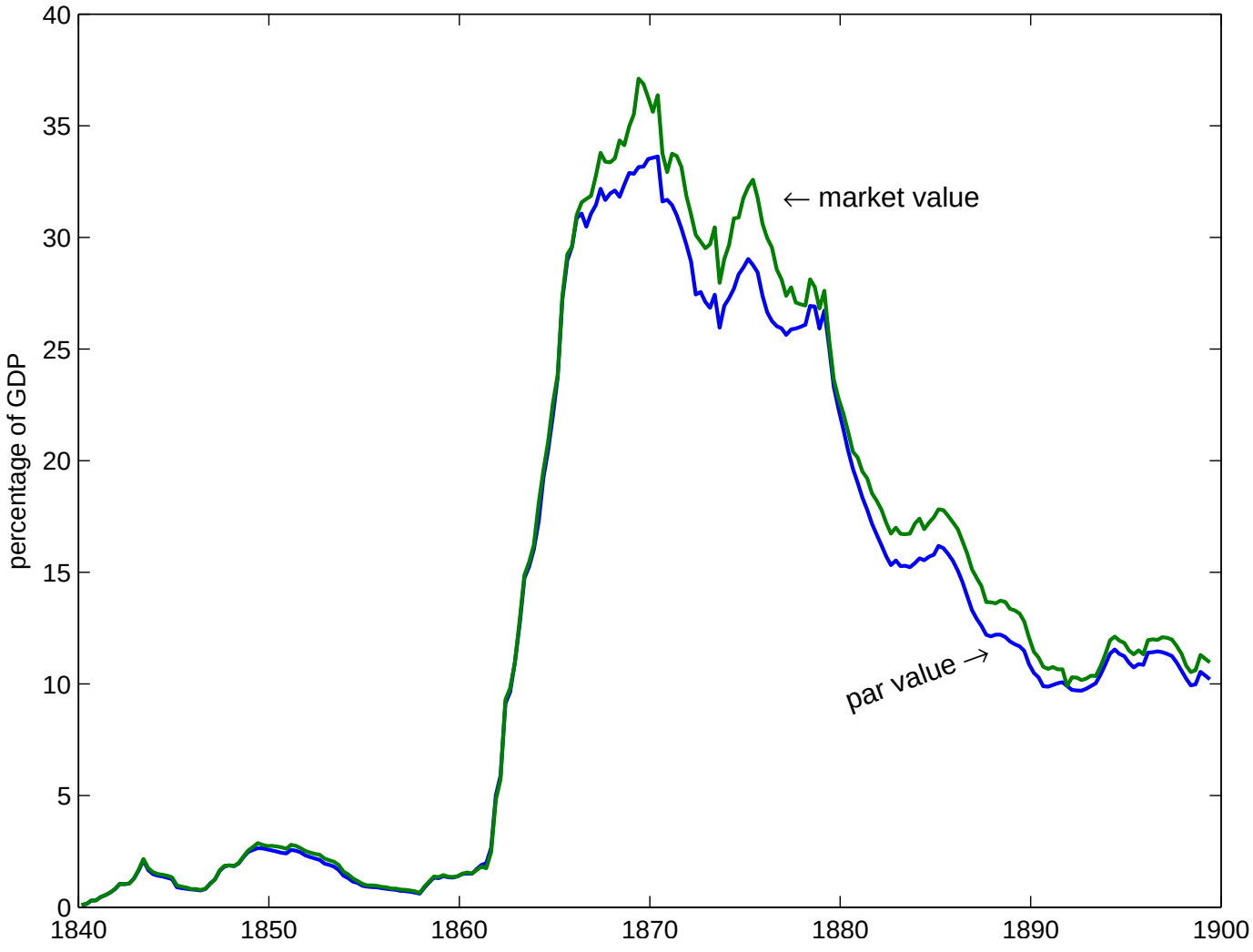
Market Value of the Debt in 1880 Dollars



Per Capita Real Debt



Debt-to-GDP Ratio



Wrap-Up

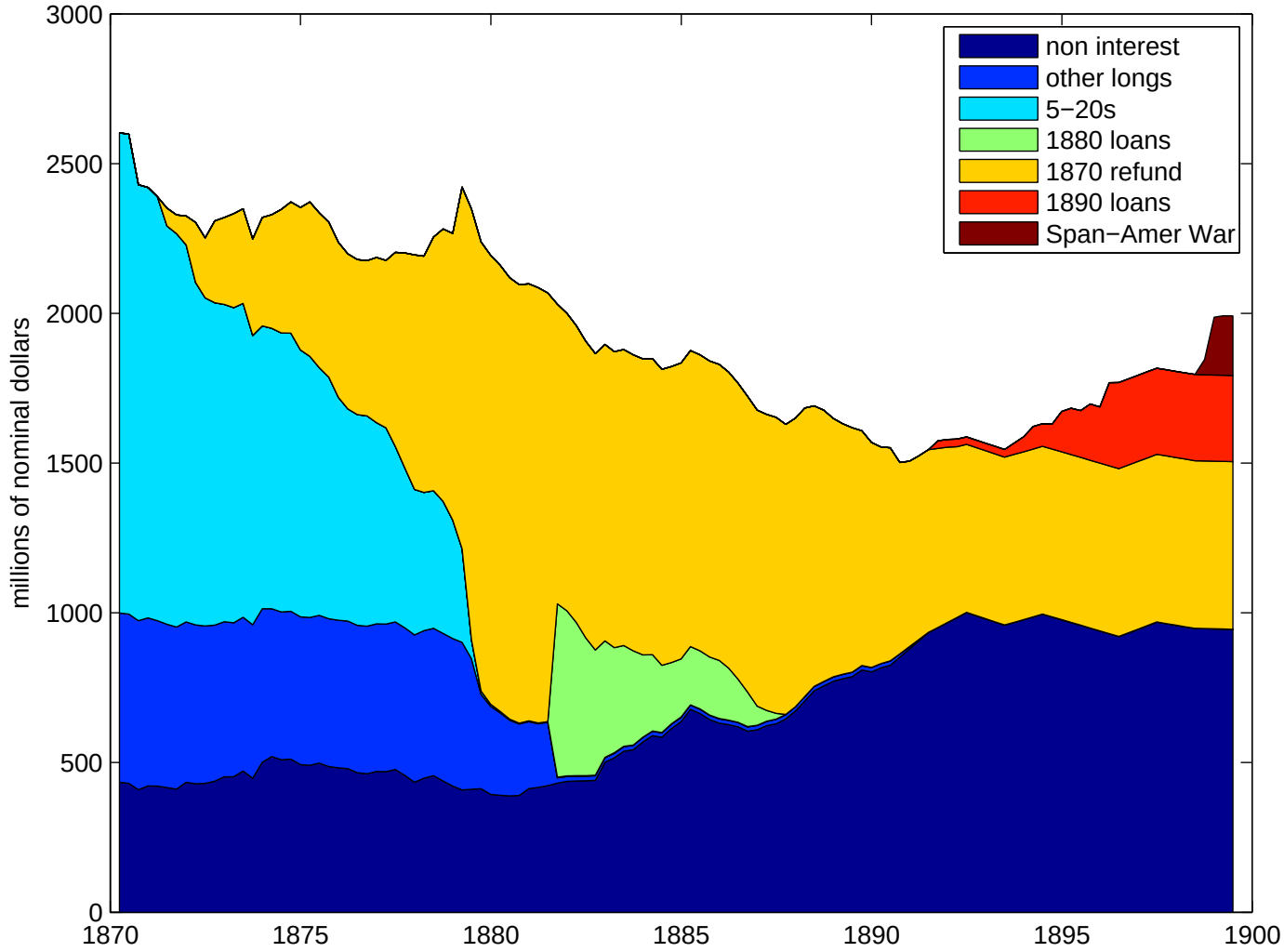
- Still in the early stages of this project
- GDP growth largely responsible for lowering debt/GDP ratio
  - opening up the west, immigration
- Looks like bond-holders paid low returns during the war and high returns after the war (Lucas and Stokey)
  - Need to estimate the term structure
- Think more about:
  - resolution of uncertainty regarding the gold/currency controversy
  - the partial calls and the refinancing of the 5-20s.

Extra Slides

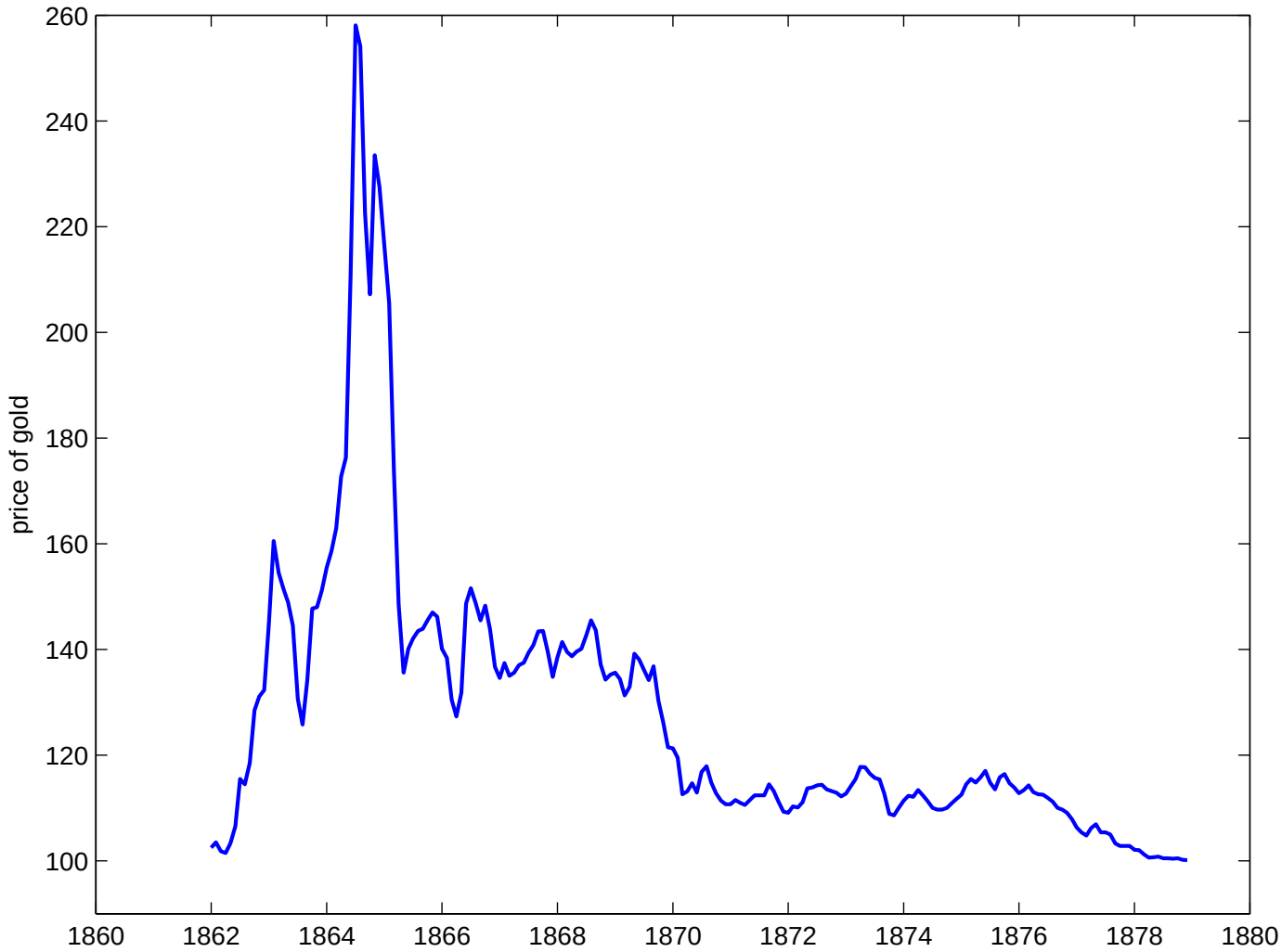
Means and Standard Deviations of Components to Debt-to-GDP Dynamics

	1845-1899		1867-1890	
Variable	Mean	Std Dev	Mean	Std Dev
(Coupon Payment)/Debt	3.84	1.48	3.78	0.94
(Nominal Capital Gain)/Debt	1.57	10.87	1.71	4.03
Inflation	0.22	5.70	-2.69	2.49
Real GDP growth	4.55	3.55	4.43	2.49
100$\times$ Deficit to GDP Ratio	-0.19	2.50	-1.68	0.62

Composition of the Debt Outstanding by Type of Obligation: 1870 to 1899



Price of Gold in Greenbacks



Total Coupon Payments and Official Interest Expenditures