

# Fiscal Discriminations in Three Wars

George J. Hall<sup>1</sup>   Thomas J. Sargent<sup>2</sup>

<sup>1</sup>Brandeis University

<sup>2</sup>New York University

2015

## Calvin Coolidge, 1922

Inflation is repudiation. Deflation is assumption.

# Initial and Terminal Conditions

1. 1789: a U.S. paper dollar is held in disrepute
  - ▶ “not worth a Continental”
2. 1879: a U.S. paper dollar is as “good as gold”

*How did the U.S. go from 1 to 2?*

# Three Wars

## 1. American Revolution (1775-1783)

- ▶ funded with seignorage and loans
- ▶ 1790 refunding: haircuts, heavy discrimination

## 2. War of 1812

- ▶ debt financed at huge cost
- ▶ temptation to use inflation tax resisted

## 3. Civil War (1861-1865)

- ▶ debt financed
- ▶ two currencies: lawful money and coin.
- ▶ Grant makes lawful money as good as gold

# Three Models Shape our Stories

1. Gallatin-Barro Model of Tax Smoothing (risk-free government debt)
2. Lucas-Stokey Model of State-Contingent Government Debt
3. Bryant-Wallace Model of Discrimination

Government budget constraint is foundation of all three

$$B_{t+1} = (1 + r)B_t + G_t - T_t - \frac{M_{t+1} - M_t}{P_t}$$

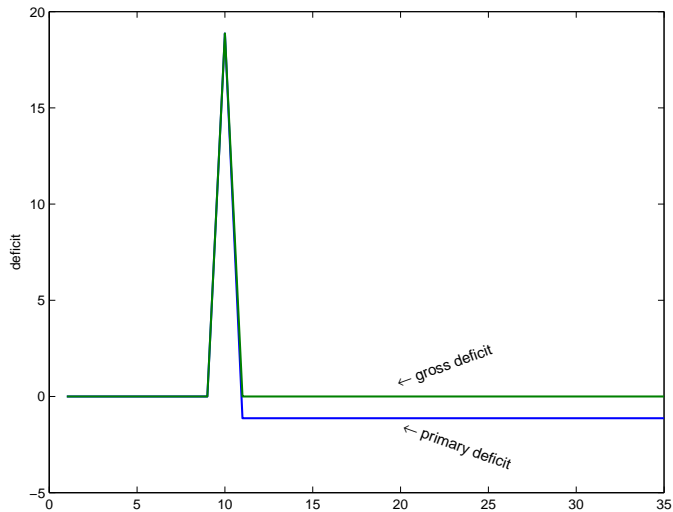
# Gallatin-Barro Tax Smoothing

Albert Gallatin's (1807) *Annual Report* recommended that during a war, tax rates should be set to

*provide a revenue at least equal to the annual expenses on a peace establishment, the interest on the existing debt, and the interest on the loans which may be raised. . . . losses and privations caused by war should not be aggravated by taxes beyond what is strictly necessary.*

- ▶ Barro (1979) and AMSS (2002)

# Deficits Under Gallatin-Barro Tax Smoothing



# Lucas-Stokey (1983) Model With State-Contingent Debt

- ▶ The government wants to keep the marginal cost of distortionary taxes constant through time and across states.
- ▶ Returns on debt absorb the impact of fiscal shocks
  - ▶ perhaps through inflation and deflation.

High Expenditures  $\longrightarrow$  low (negative) returns

Low Expenditures  $\longrightarrow$  high returns

- ▶ Tax rates are approximately constant

# Bryant-Wallace (1984)

Price discrimination rationalizes paying different returns on bonds and money.

- ▶ Bonds

- ▶ pay interest
- ▶ difficult to use as medium of exchange
  - ▶ large minimum denominations
  - ▶ often physically large
  - ▶ transferable, but payable to an individual

- ▶ Money

- ▶ usually non-interest bearing
- ▶ easy to use as means of exchange
  - ▶ small minimum denominations
  - ▶ often physically small
  - ▶ payable to the bearer

# Sustaining Reputations

- ▶ Fudenberg-Kreps idea of sustaining different reputations with different groups
- ▶ Hamilton's application to big and small creditors
- ▶ Hamilton's application to states and federal creditors.

# Units of Account and Legal Tender?

- ▶ Paper legal tender in disrepute among framers of Constitution
- ▶ Madison's consistent opposition
- ▶ Hamilton's repudiation poisoned its reputation
- ▶ Disappearance of negative connotation attached to 'legal tender'
- ▶ Supreme court cases after civil war

# Funding the American Revolution

- ▶ Terms on the right side of the government budget constraint
  1. taxes
  2. loans
  3. seignorage
  
- ▶ Between 1775 and 1781, the Continental Government spent \$85 million (Spanish dollars)
  - ▶ \$7 million in taxes, gifts, sales of public goods, and raised ...
  - ▶ \$40 million in seignorage
  - ▶ \$41 million by issuing debt and unpaid interest
    - ▶ promised 6% interest (payable in Spanish silver dollar)

# Continental Dollars



# Exitus in Dubio Est

- ▶ “The Outcome is in Doubt”
- ▶ Ovid
- ▶ The Continental Congress’s source: Johann Camerarius’s *Symbola et Emblemata*, 1590
- ▶ Camerarius explains that “the battles of Mars are dubious and uncertain events; he often loses who was near victory.”
- ▶ Although the odds heavily favor the falcon, the heron’s excrements could render falcon unable to fly by soiling its plumage.

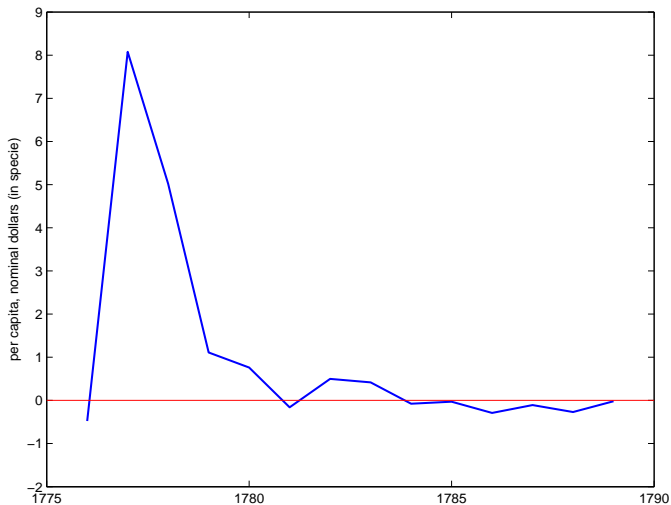
# Continental Dollar

- ▶ 'bills of credit'
- ▶ first issued on June 22, 1775
  - ▶ initially traded near parity with Spanish milled dollar
- ▶ But rapid emissions
  - ▶ by December 1776 \$25,000,000 outstanding
  - ▶ by November 1779 \$199,990,000 outstanding
- ▶ Continental currency depreciated quickly (but it wasn't the unit of account)
- ▶ In March 1780, Continental Congress accepted 40 Continental dollars for one 1 Spanish dollar
- ▶ By 1789, \$80,000,000 outstanding

# U.S. Under the Articles of Confederation

- ▶ Continental Congress had no power to tax, but was liable for its debts
- ▶ 1784
  - ▶ owed \$2 million in scheduled interest payments,
  - ▶ received \$723,000 in revenue
- ▶ set spending = revenues
  - ▶ deferred interest payments
- ▶ Unpleasant monetarist arithmetic
  - ▶ 1781 to 1789, unpaid interest: \$871,000 → \$14,231,000.
- ▶ Continental debt traded around 20 cents on the dollar

# Per Capita Continental Government Primary Deficit



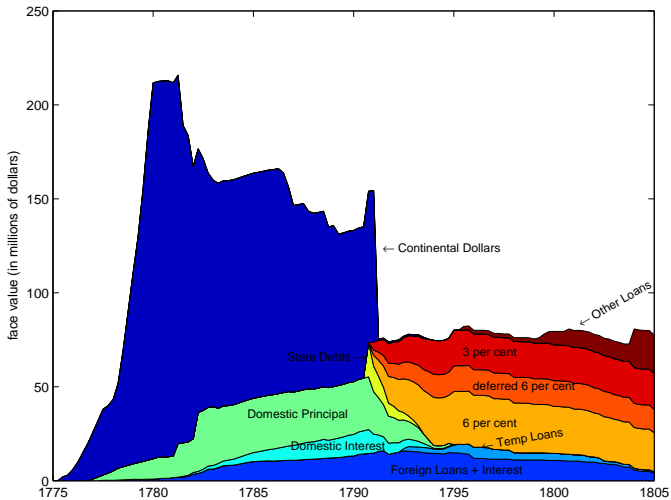
# Resolution of a Fiscal Crisis

- ▶ 1789: U.S. Constitution transferred customs revenues to the federal government
  - ▶ silent on the federal government's power to issue fiat money
- ▶ Funding Act of 1790: designed by Alexander Hamilton
  - ▶ Government issued three consols
    1. Six per cent stock – paying 6% interest.
    2. Deferred six per cent stock – paying no interest until 1801, then 6% afterwards
    3. Three per cent stock – paying 3% interest

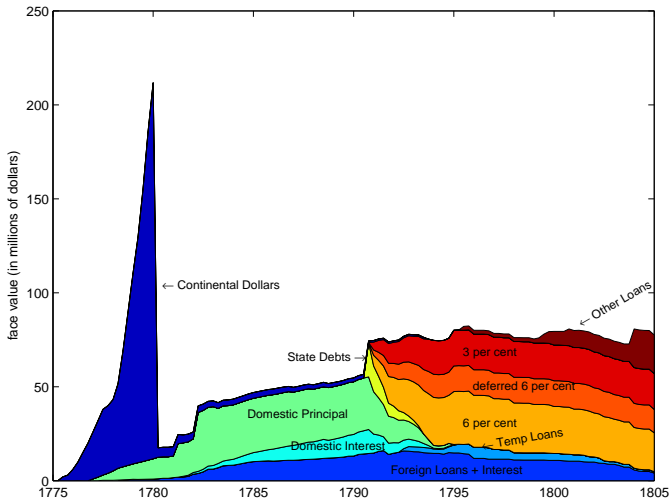
## Funding Act of 1790: Rescheduling terms

Domestic Federal Debt	↗	$2/3$	6 per cent stock
	↘	$1/3$	def 6 per cent stock
Indents of Interest	→		3 per cent stock
State Debts	↗	$4/9$	6 per cent stock
	→	$2/9$	def 6 per cent stock
	↘	$3/9$	3 per cent stock
Continental Dollar	→	$1/100$	dollar in specie

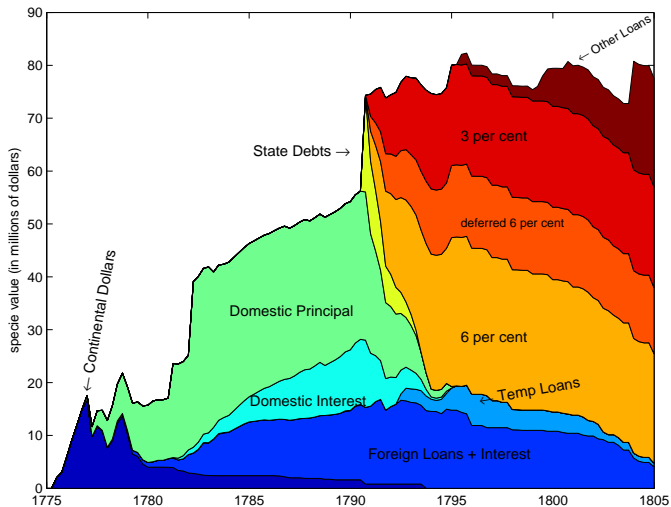
# Federal Debt by Type Loan



# Federal Debt by Type Loan



# Federal Debt by Type Loan



# Implications of the Refunding

- ▶ Hamilton resisted James Madison's proposal to withhold capital gains from speculators.
- ▶ Was the debt funded 'at par'? No.
  - ▶ Domestic creditors had their interest rate cut from 6% to 4%.
  - ▶ Value of the Continental dollar was nearly wiped out.

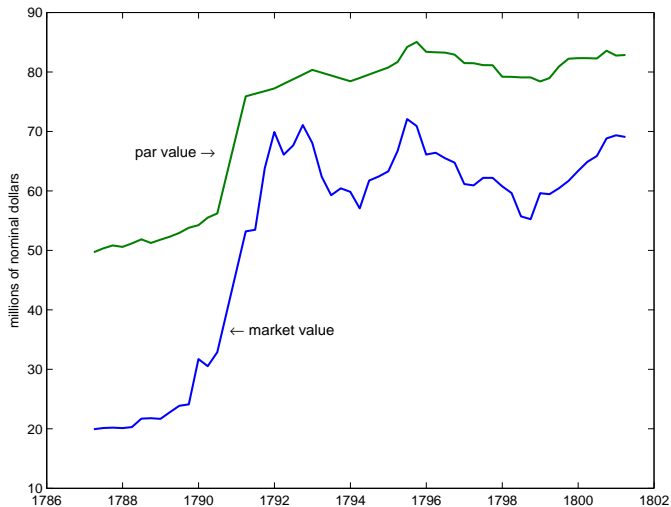
# Hamilton Haircuts

Continental Loan	Market Value of Exchanged Assets
loan office certificate	\$75.00
interest in arrears	\$45.00
state debt (principal or interest)	\$65.00
Continental dollars	\$1.00

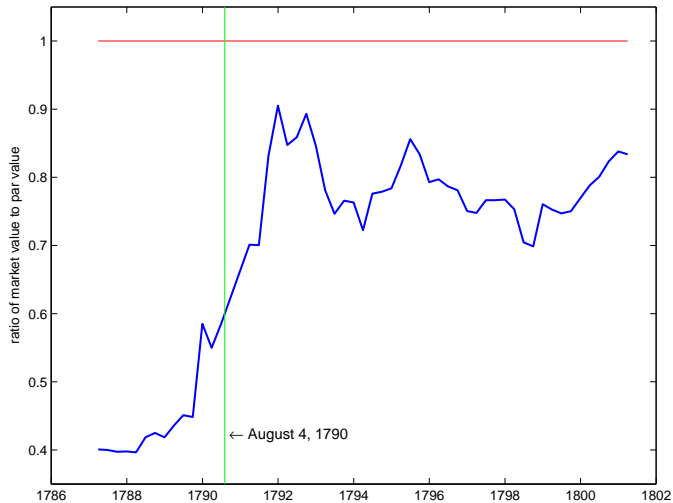
Market Value of Exchanged Assets for  
\$100 of Face Value of a Continental Security

Garber (1991): French creditors received 80 cents on the dollar and Dutch creditors were made whole.

# Principal Outstanding and Market Value



# Ratio of Market Value to Par Value of the Debt



# Legacy of Hamilton

- ▶ Was Hamilton a paragon of financial responsibility?
- ▶ Was Hamilton the author of widespread discriminations and repudiations?
- ▶ Holders of Continental Dollars were disappointed
  - ▶ U.S. Constitution does not explicitly deny Federal Government the right to issue paper money, but
  - ▶ Hamilton poisoned reputation of 'bills of credit'
- ▶ Was this a (partial) 'time-0' repudiation a la Lucas-Stokey?

# War of 1812

- ▶ Tax revenues collapse
  - ▶ at war with primary trading partner
  - ▶ no machinery to collect internal revenue
  - ▶ Washington D.C. burned in August 1814
- ▶ Difficult to sell long term bonds
  - ▶ 1813: Treasury sold bonds at 12% discount
  - ▶ 1814: Treasury sold bonds at 20% discount
- ▶ Short-term, money-like, borrowing
  - ▶ no central bank
  - ▶ resort to issue Treasury notes

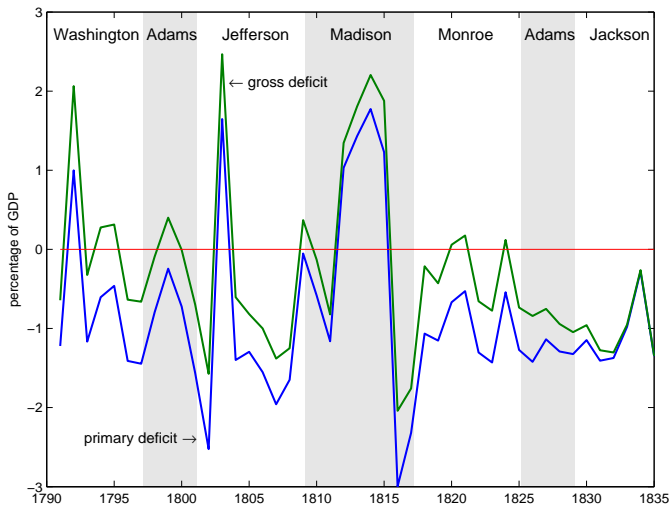
# Treasury Notes

- ▶ Issued with the understanding that they might circulate as a medium of exchange.
  - ▶ A potential mechanism for generating seignorage
- ▶ One-year loans, paying  $5\frac{2}{5}\%$
- ▶ Max \$25 million outstanding
- ▶ Never made legal tender
- ▶ 1817: Issuing Treasury Notes considered an “embarrassment”

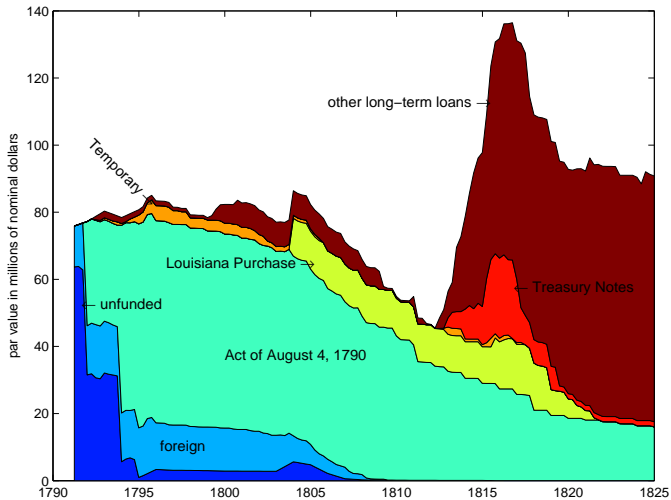
# Longer Term Loans

- ▶ six long term bond issues, 12-13 year maturity, promised 6% annually in coupon
- ▶ sold at discounts ranging from 88 cents on the dollar to 80 cents on the dollar
- ▶ Treasury notes, 1 year loans, paid  $5\frac{2}{5}\%$  interest (1.5 cents per day per \$100)

# Federal Gross and Primary Deficits as a Share of GDP



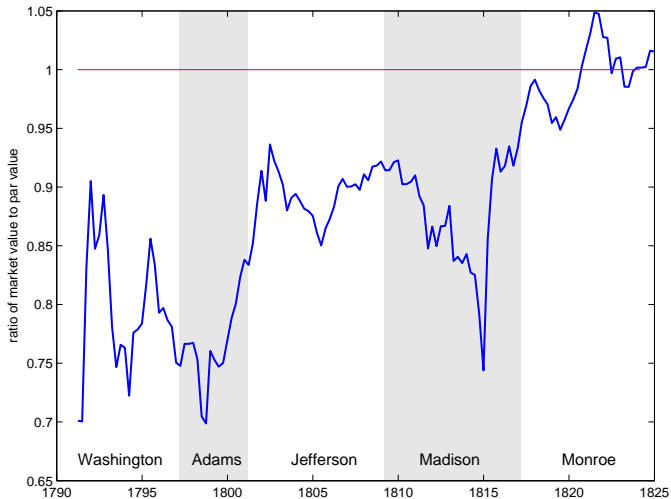
# Federal Debt by Types of Loans



# Legacy of the War of 1812

- ▶ Bondholders who stuck with the U.S. earned large returns
  - ▶ 1815: 45.1%
  - ▶ 1816: 20.7%
  - ▶ 1817: 20.9%
  - ▶ no defaults, even to British creditors
- ▶ U.S. government refrained from using the inflation tax.
  - ▶ Treasury notes held their value and paid off in full
- ▶ Soon after the war, U.S. Treasury securities consistently traded at par for the first time in U.S. history.

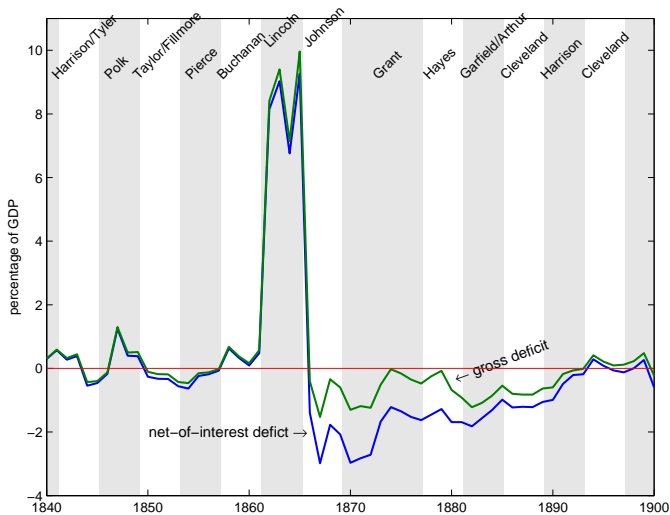
# Ratio of Market Value to Par Value of the Debt



# Civil War

- ▶ Budget deficits of 10% of GDP
  - ▶ lost about 1/3 of the tax base
- ▶ Host of new taxes
  - ▶ first federal income tax
  - ▶ 1862 taxes account for only 10% of expenditures
  - ▶ for every \$1 raised in taxes, borrowed \$3.59.
- ▶ Initial reliance on short term debt
  - ▶ high interest rates

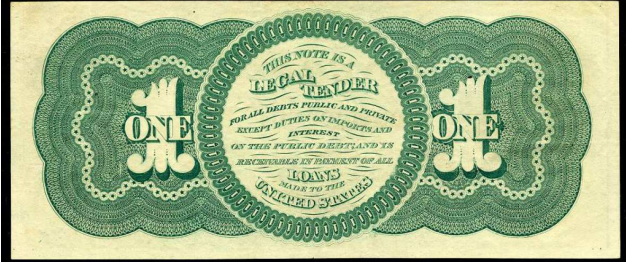
# Gross and Primary Deficits as a Share of GDP



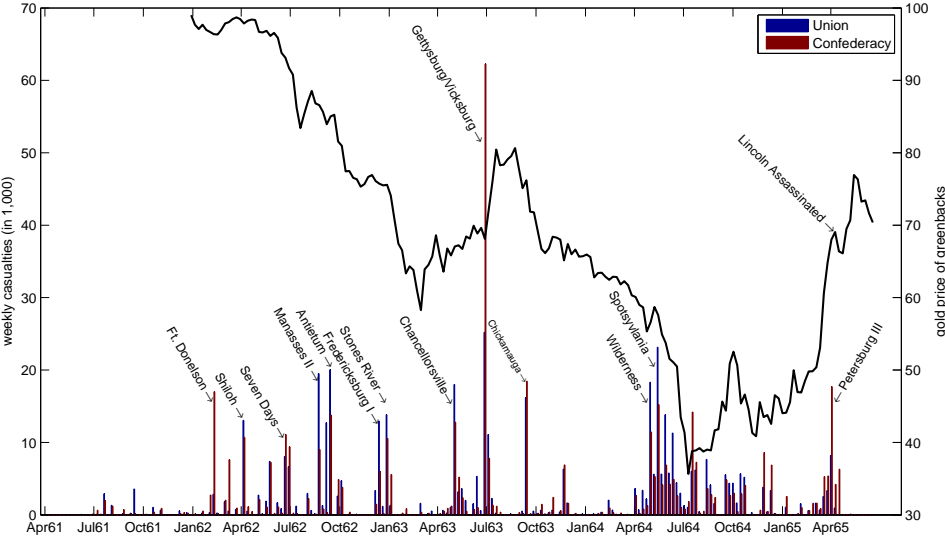
# Issuance of the Legal Tender Notes

- ▶ February 1862 Congress authorized non-interest-bearing notes
  - ▶ legal tender notes: known as 'lawful money' or 'greenback'
- ▶ Union soldiers were paid in legal tender notes.
- ▶ Creation of two types of dollars: 'lawful money' and 'coin'
  - ▶ trade between gold and greenbacks (the 'gold room')
  - ▶ in the summer of 1864, 'lawful money' had lost 60% of its value

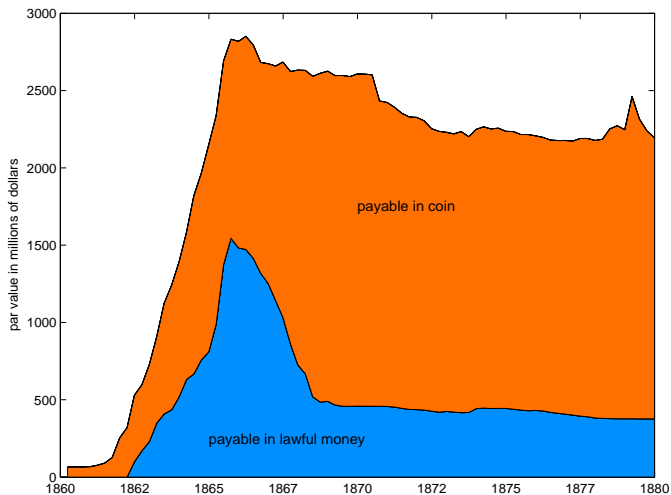
# Legal Tender Notes



# Gold Price of Greenbacks and Casualties



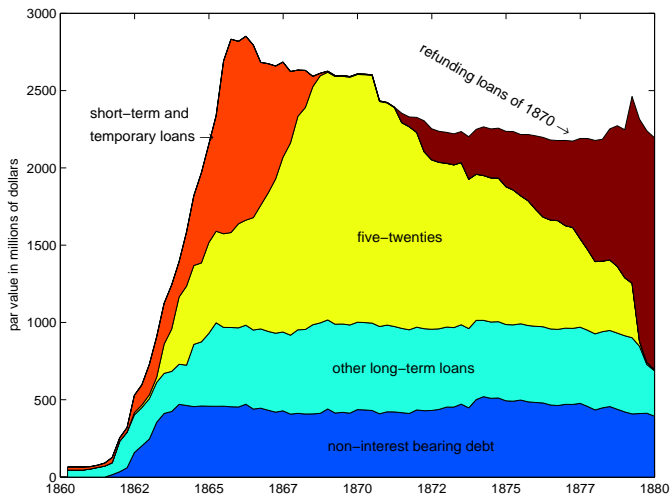
# Debt Payable in Lawful Money and in Coin



# The 5-20 loans

- ▶ First authorized in February 1862
  - ▶ 20 year bonds
  - ▶ callable after 5 years
  - ▶ 6 percent coupon rate
- ▶ Coupons paid in coin. Congress failed to state whether the principal would be paid in coin or lawful money.

# Debt by Type of Loan



# Post War

- ▶ Debt: about 35% of GDP
  - ▶ Tax revenue: 4 to 5% of GDP
- ▶ Considerable scope for discrimination
- ▶ In 1868 gold traded at 40% premium to the greenback.
- ▶ What was the Legacy of 1790?
  - ▶ Lower the interest rate through discrimination and repudiation?
  - ▶ Honor the implicit and explicit promises of the past?
- ▶ What was the Legacy of 1815?

## Payment of Principal in Coin or Lawful Money?

*Various plans have been proposed for the payment of the public debt. However they may have varied as to the time and mode in which it should be redeemed, there seems to be a general concurrence as to the propriety and justness of a reduction in the present rate of interest. . . . 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 State of the Union Address

## Payment of Principal in Coin or Lawful Money?

*Various plans have been proposed for the payment of the public debt. However they may have varied as to the time and mode in which it should be redeemed, there seems to be a general concurrence as to the propriety and justness of a reduction in the present rate of interest. . . . 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 State of the Union Address

# Election of 1868

- ▶ Planks of Democratic Party Platform
  3. pay off the debt in lawful money
  4. tax the bondholders
  
- ▶ Plank of Republican Party Platform
  3. pay off the debt in coin

## Grant's Victory

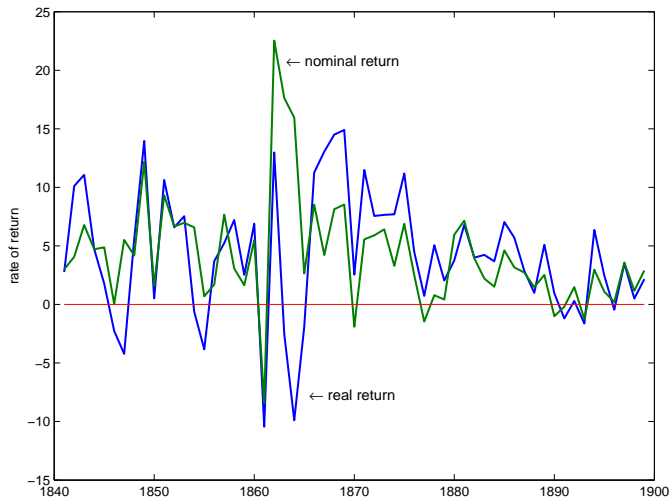


The voters elected the Republicans.

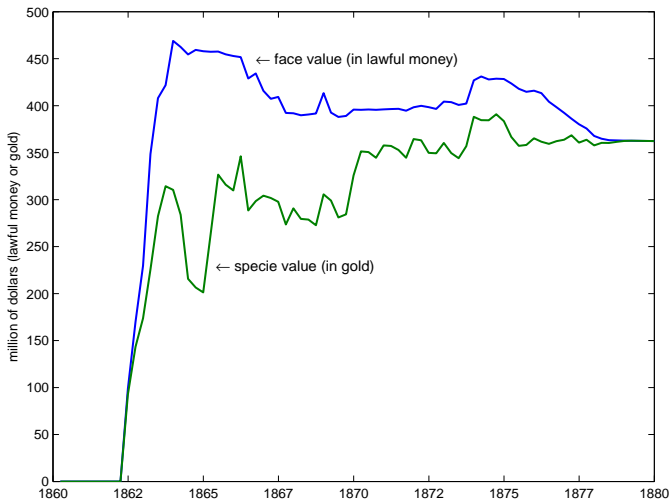
# Grant sets the stage to redeem *all* the debt at par

- ▶ An Act to Strengthen the Public Credit
  - ▶ Passed on March 18, 1869
- ▶ Results in large real returns to bondholders. From 1869 to 1879:
  - ▶ the average government creditor received 7.2% per year.
  - ▶ 5-20s owners received 8.2% per year.
- ▶ The high returns to bondholders did not come at the expense of holders of paper money.
  - ▶ June of 1868, it took 140 greenbacks to buy \$100 gold dollars, but
  - ▶ “Deflation is assumption”
- ▶ By the end of 1878, the two currencies traded at par.

# Holding Period Returns to Federal Bondholders



# Face and Specie Value of Non-Interest Bearing Debt Payable in Lawful Money



# Summing Up

- ▶ What was the legacy of Alexander Hamilton?
  - ▶ Partial repudiator who could be used by Andrew Johnson as a model?
  - ▶ A debt redeemer who could be used by Ulysses S. Grant as a model?
- ▶ How did U.S. paper dollars go from disrepute to 'as good as gold' in 90 years?
  - ▶ The American Revolution and 1790: depreciation, discrimination, and poisoned reputation
  - ▶ War of 1812 and James Madison: recuperation
  - ▶ Civil War and Ulysses S. Grant: rehabilitation