

# Saving, Investment and the Financial System

(Chapter 26 in Mankiw & Taylor)

- We have seen that saving and investment are essential to long-run economic growth
- In this lecture we will see how the financial system coordinates saving and investment



# Financial Institutions

- **Financial system**

- Group of institutions in the economy

- That help match one person's saving with another person's investment

- Moves the economy's scarce resources from savers to borrowers

- **Financial institutions**

- Financial markets

- Financial intermediaries





# Financial Markets

- **Financial markets**
  - Savers can directly provide funds to borrowers
  - They do so expecting some return on their ‘investment’
  - Two important types of financial market that coordinate savers and borrowers:
    1. The bond market
    2. The stock market





# The bond market

- Bonds – are certificates of indebtedness
  - Bonds differ by their time to maturity – when the loan will be repaid - and their rate of interest (“coupon” or yield) which is paid regularly
  - Principal - amount borrowed
- This rate of interest reflects, *inter alia*, “credit risk”, i.e. the probability of default
  - Higher risk = higher expected return (higher interest rate). Sovereign vs. corporate bonds
  - Long term bonds therefore usually pay a higher interest rate: the “yield curve”





# The stock (or equity) market

- Stock: a claim to partial ownership in a firm and therefore a claim on its profits
- Organised stock exchanges trade stocks
  - Stock prices: demand and supply
  - Share prices reflect expected profitability
- Equity versus debt finance
  - Sale of stock to raise money
- Stock index
  - Average of a group of stock prices; closely watched as indicators of future economic conditions





# Financial Intermediaries

Institutions through which savers can indirectly provide funds to borrowers

Two main types:

1. Banks

2. Mutual or investment funds





# Financial Intermediaries

- **Banks**

- Take in deposits from savers
  - Banks pay interest
- Make loans to borrowers
  - Banks charge interest (at a higher rate)
- Also facilitate purchasing of goods and services
  - Cheques – medium of exchange





# Financial Intermediaries

- **Mutual or investment funds**

- Institution that sells shares to the public

- Uses the proceeds to buy a portfolio of stocks and bonds

- Advantages:

- Allows people with small amounts of money to diversify, but you pay a management fee
- “Don’t put all your eggs in one basket”: a diverse portfolio is one with less risk
- Access to professional money managers
  - But in efficient markets shares are correctly priced





# FYI: extra detail in the book

- Price-earnings (P/E) ratios
- Financial instruments we heard a lot about in the recent financial crisis
  - Credit Default Swaps
    - Insure against the risk of default when you buy a bond
  - Collateralised Debt Obligations
    - Investors buy bonds, the proceeds of which are used to buy tranches of debt (mortgage debt) which vary by risk
    - Mortgage payments are then meant to pay the interest to each of the tranche holders
    - ... more on finance in a later lecture





# National Income Accounts

- National income accounting
  - Important identities
- An Identity
  - An equation that must be true because of the way the variables in the equation are defined
  - Clarify how different variables are related to one another
  - Not about behavioural relationships, such as how consumption might depend on income





# Accounting Identities

- **Gross domestic product (GDP)**
  - Total income = Total expenditure
- **$Y = C + I + G + NX$** 
  - Y = gross domestic product GDP
  - C = consumption
  - G = government purchases
  - NX = net exports (exports minus imports)





# Accounting Identities

- **Closed economy**
  - Doesn't interact with other economies
  - $NX = 0$
- **Open economy**
  - Interacts with other economies
  - $NX \neq 0$





# Accounting Identities

- Assumption: closed economy:  $NX = 0$ 
  - $Y = C + I + G$
- National saving (saving),  $S$ 
  - Total income in the economy that remains after paying for consumption and government purchases
  - $Y - C - G = I$
  - $S = Y - C - G$
  - $S = I$





# Accounting Identities

- **T = taxes minus transfer payments**
  - $S = Y - C - G$
  - $S = (Y - T - C) + (T - G)$
- **So, national savings comprises:**
  1. Private saving:  $(Y - T - C)$ 

Income that households have left after paying for taxes and consumption
  2. Public saving:  $(T - G)$ 

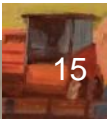
Tax revenue that the government has left after paying for its spending





# Accounting Identities

- **Budget surplus:  $T - G > 0$** 
  - Excess of tax revenue over government spending
- **Budget deficit:  $T - G < 0$** 
  - Shortfall of tax revenue from government spending
  - Implies an increasing level of public debt





# Saving and Investing

- Accounting identity:  $S = I$
- Saving = Investment
  - For the economy as a whole this identity must hold
  - One person's savings can finance another person's investment
  - It is the financial markets and intermediaries that stand behind this identity' and allocate  $S$  to  $I$
  - Now we develop a simple model that explains how financial markets coordinate an economy's saving and investment





# The Market for Loanable Funds

## – Market

- Those who want to save supply funds
- Those who want to borrow to invest demand funds

## – There is just one interest rate

- Return to saving
- Cost of borrowing

## – Assumption

- Single financial market. All savers and borrowers go to this market





# The Market for Loanable Funds

- **Supply and demand of loanable funds**
  - Source of the supply of loanable funds
    - Saving
  - Source of the demand for loanable funds
    - Investment
  - Price of a loan = real interest rate
    - Borrowers pay for a loan
    - Lenders receive on their saving





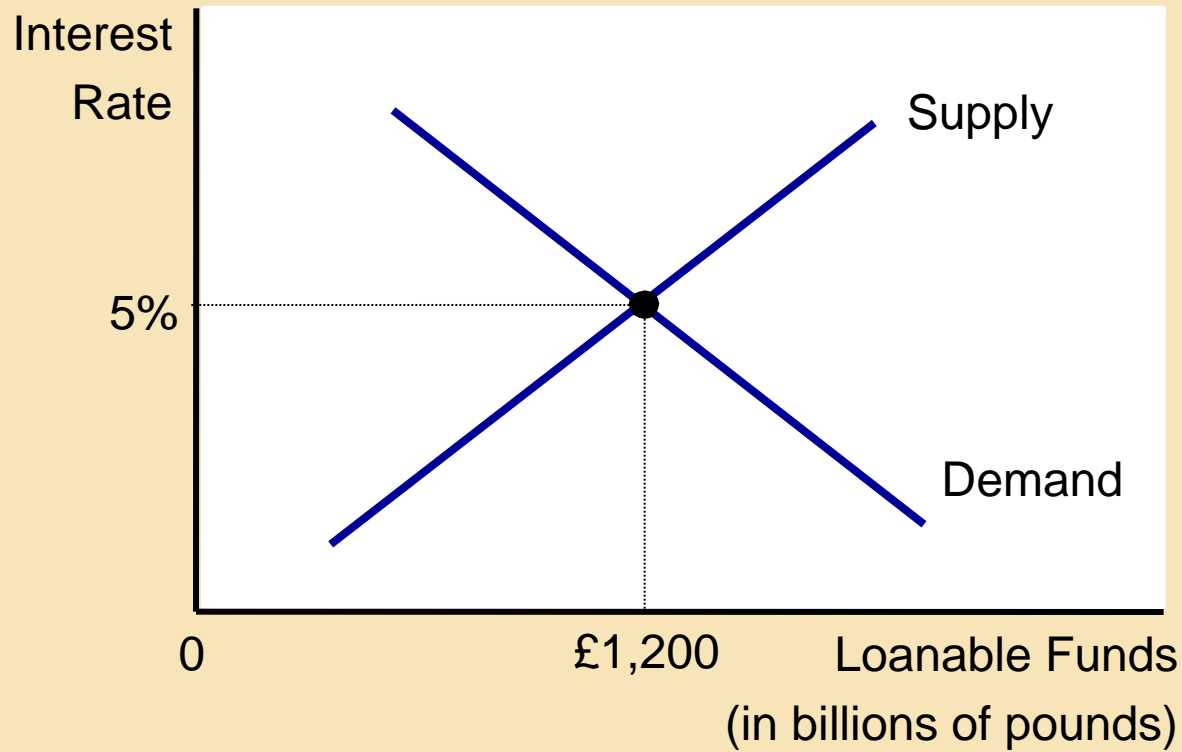
# The Market for Loanable Funds

- **Supply and demand of loanable funds**
  - As (the real) interest rate rises:
    - Quantity demanded declines
    - Quantity supplied increases
  - Demand curve
    - Slopes downward
  - Supply curve
    - Slopes upward
  - Price adjusts to ensure equilibrium as in any market



# Figure 1

## The Market for Loanable Funds

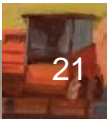


The interest rate in the economy adjusts to balance the supply and demand for loanable funds. The supply of loanable funds comes from national saving, including both private saving and public saving. The demand for loanable funds comes from firms and households that want to borrow for purposes of investment. Here the equilibrium interest rate is 5 percent, and £1,200 billion of loanable funds are supplied and demanded.



# The Market for Loanable Funds

- **Government (fiscal) policies**
  - Can affect the economy's saving and investment
    - Saving incentives
    - Investment incentives
    - Government budget deficits and surpluses
- **What about the independent central bank?**
  - Monetary policy: influences money supply, which we will discuss later
    - *liquidity preference* theory of interest rates
  - Explains short-run determinants of the interest rate. Loanable funds explains the long-run





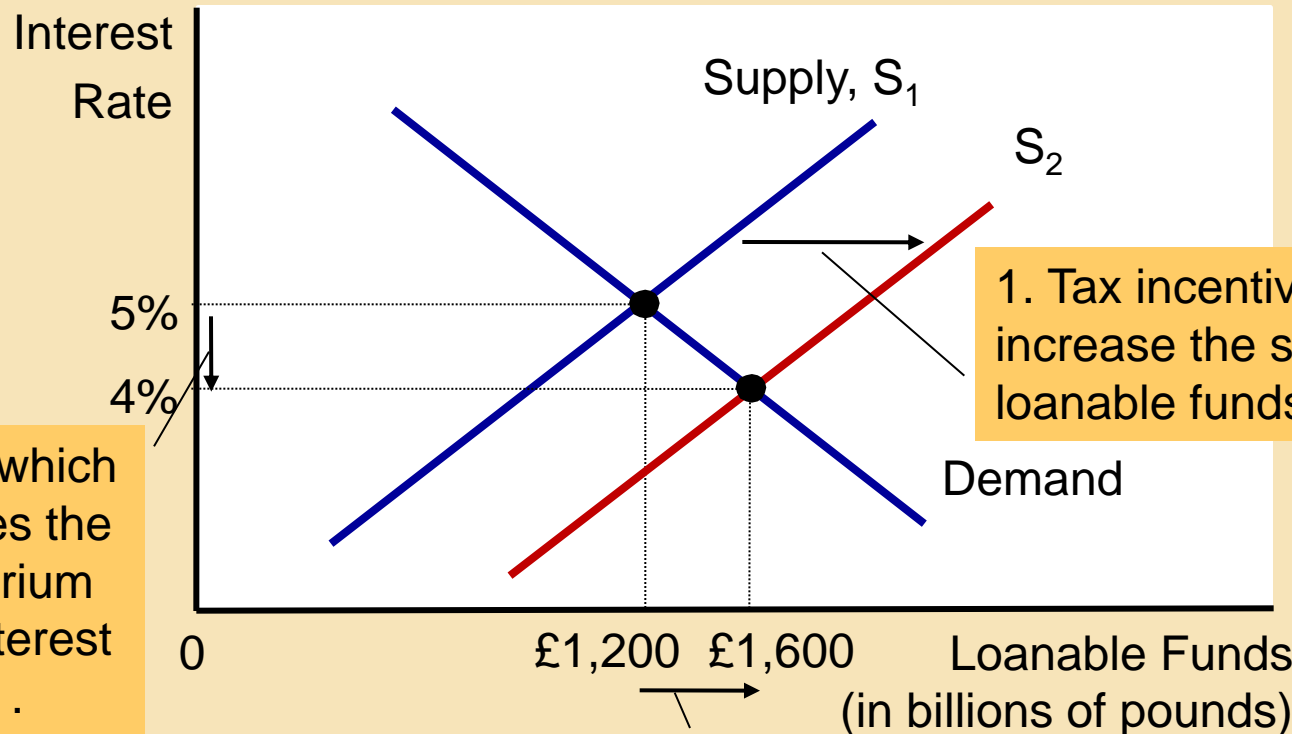
# Policy 1: Saving Incentives

- Replace income tax with a consumption tax, like VAT
  - Shelters saving from taxation
  - Will affect the supply of loanable funds
  - Causes an increase in supply (rightward shift)
  - New equilibrium
    - Lower interest rate with a higher quantity of loanable funds
      - Greater investment → higher GDP growth
      - But possible distributional effects: would this policy be better for the rich than the poor?



# Figure 2

## Saving Incentives Increase the Supply of Loanable Funds



2. . . . which reduces the equilibrium real interest rate . . .

1. Tax incentives for saving increase the supply of loanable funds . . .

3. . . . and raises the equilibrium quantity of loanable funds.

A change in the tax laws to encourage the UK to save more would shift the supply of loanable funds to the right from  $S_1$  to  $S_2$ . As a result, the equilibrium interest rate would fall, and the lower interest rate would stimulate investment. Here the equilibrium interest rate falls from 5 percent to 4 percent, and the equilibrium quantity of loanable funds saved and invested rises from £1,200 billion to £1,600 billion.



# Policy 2: Investment Incentives

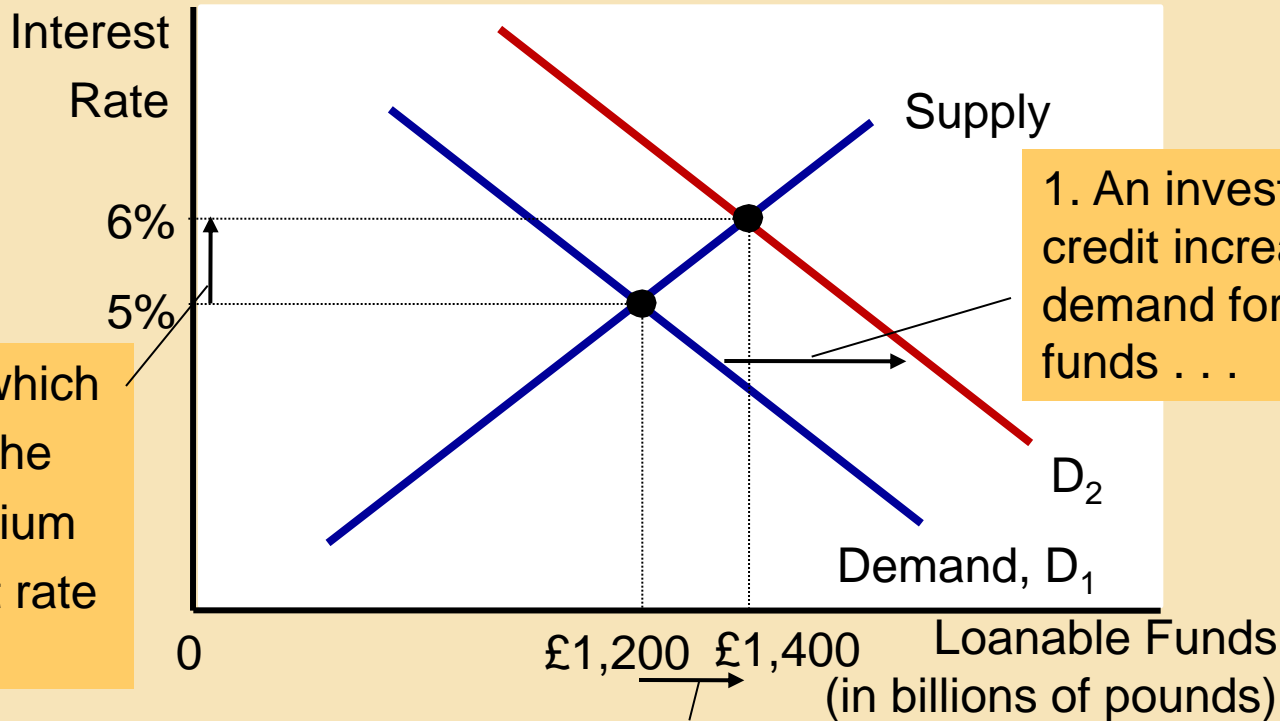
- **Investment tax credit**
  - A tax break
  - Affects demand for loanable funds
  - Increase in demand
    - Demand curve shifts right
  - New equilibrium
    - Higher interest rate
    - Higher quantity of loanable funds
      - Greater saving



# Figure 3

## Investment Incentives Increase the Demand for Loanable Funds

### Funds



2. . . . which raises the equilibrium interest rate . . .

1. An investment tax credit increases the demand for loanable funds . . .

3. . . . and raises the equilibrium quantity of loanable funds.

If the passage of an investment tax credit encouraged firms to invest more, the demand for loanable funds would increase. As a result, the equilibrium interest rate would rise, and the higher interest rate would stimulate saving. Here, when the demand curve shifts from  $D_1$  to  $D_2$ , the equilibrium interest rate rises from 5 percent to 6 percent, and the equilibrium quantity of loanable funds saved and invested rises from £1,200 billion to £1,400 billion.



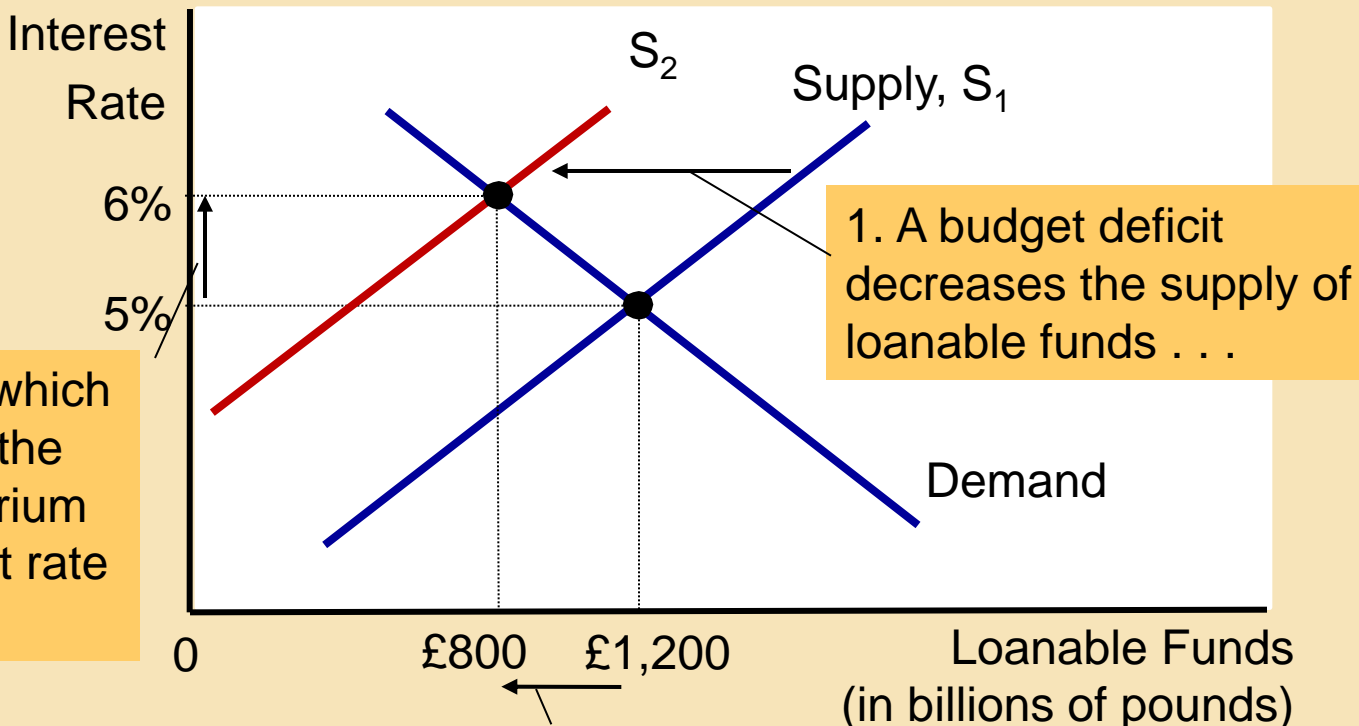
# Policy 3: Budget Deficit/Surplus

- **Hot topic!**
  - Later we'll think about the (short-run) affects of a deficit on GDP. Analysis here is long-run
- **Government - starts with balanced budget**
  - Then starts running a budget deficit
  - Achieved by issuing bonds or *gilts* (UK)
  - This decreases the supply of loanable funds
    - Supply curve shifts left
  - New equilibrium
    - Higher interest rate (*crowding out* private investment)
      - less investment and lower GDP growth



# Figure 4

## The Effect of a Government Budget Deficit



2. . . . which raises the equilibrium interest rate

. . .

1. A budget deficit decreases the supply of loanable funds . . .

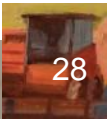
3. . . . and reduces the equilibrium quantity of loanable funds.

When the government spends more than it receives in tax revenue, the resulting budget deficit lowers national saving. The supply of loanable funds decreases, and the equilibrium interest rate rises. Thus, when the government borrows to finance its budget deficit, it crowds out households and firms that otherwise would borrow to finance investment. Here, when the supply shifts from  $S_1$  to  $S_2$ , the equilibrium interest rate rises from 5 to 6 percent, and the equilibrium quantity of loanable funds saved and invested falls from £1,200 billion to £800 billion.



# Policy 3: Budget Deficit/Surplus

- **Crowding out**
  - Decrease in investment
  - Results from government borrowing
- **Government - budget deficit**
  - Interest rate rises
  - Investment falls





# Policy 3: Budget Deficit/Surplus

- **Government – budget surplus**
  - Increase supply of loanable funds
  - Reduce interest rate
  - Stimulates investment
- **Not the whole story...**
  - This analysis is all about the long-run
  - As we shall see, and as we observe daily in the newspapers, leading economists continue to debate whether there are short-run benefits to running a deficit, at least in some circumstances

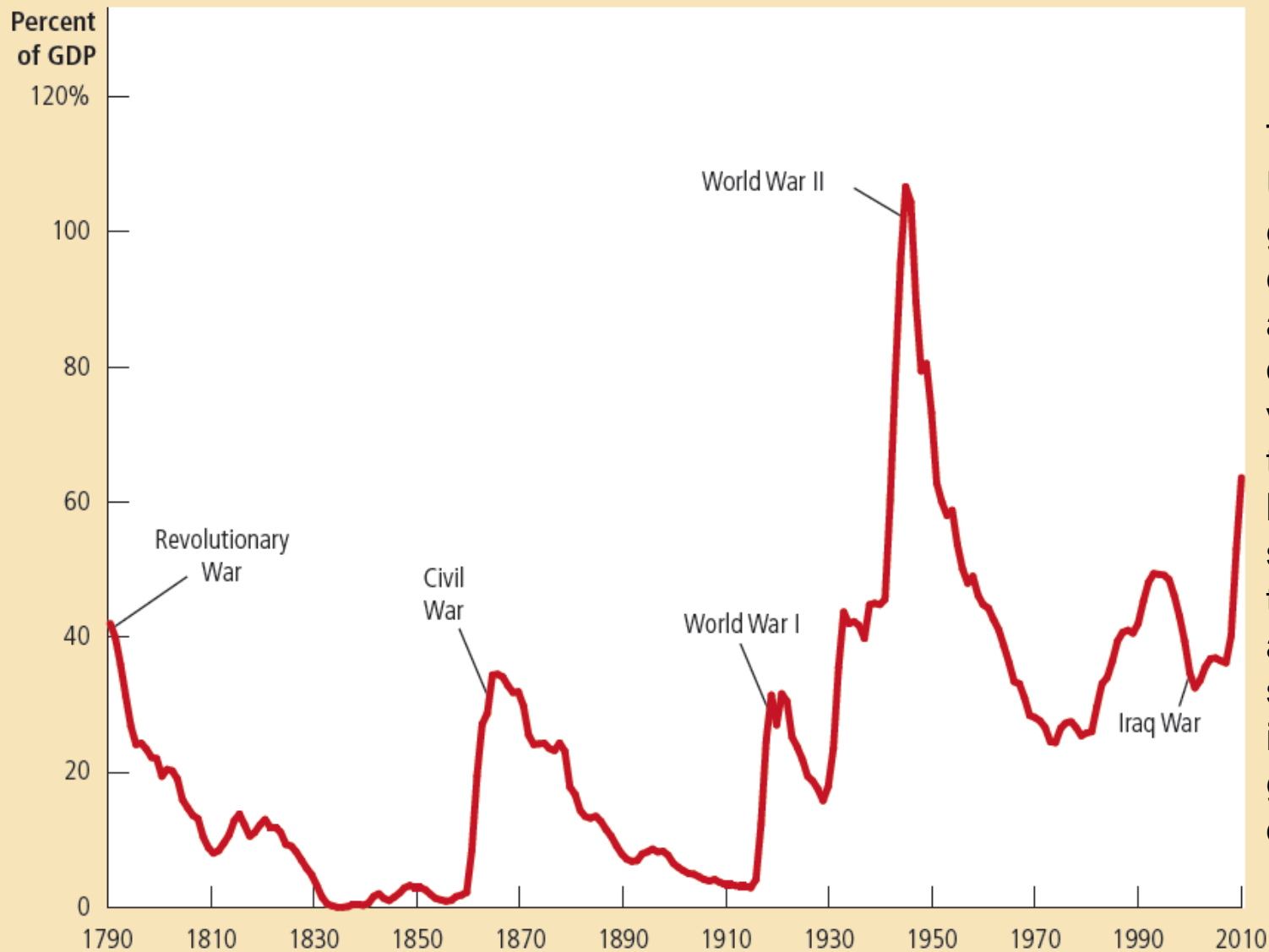


- Debt of U.S. federal government
  - As a percentage of U.S. GDP
  - Fluctuated
    - 0% of GDP in 1836
    - 107% of GDP in 1945
- Declining debt-GDP ratio
  - Government indebtedness is shrinking relative to its ability to raise tax revenue
  - Government - living within its means

- Rising debt-GDP
  - Government indebtedness is increasing relative to its ability to raise tax revenue
    - Fiscal policy cannot be sustained forever at current levels
- War – primary cause of fluctuations in government debt:
  - Debt financing of war – appropriate policy
    - Tax rates – smooth over time
    - Shifts part of the cost to future generations

# Figure 5

## The U.S. Government Debt



The debt of the U.S. federal government, expressed here as a percentage of GDP, has varied throughout history. Wartime spending is typically associated with substantial increases in government debt.

- President Ronald Reagan, 1981
  - Large increase in government debt – not explained by war
  - Committed to smaller government and lower taxes
  - Cutting government spending - more difficult politically than cutting taxes
  - Period of large budget deficits
  - Government debt: 26% of GDP in 1980 to 50% of GDP in 1993

- President Bill Clinton, 1993
  - Major goal - deficit reduction
  - And Republicans took control of Congress, 1995
    - Deficit reduction
  - Substantially reduced the size of the government budget deficit
  - Eventually: surplus
  - By the late 1990s: debt-GDP ratio - declining

- President George W. Bush
  - Debt-GDP ratio - started rising again
  - Budget deficit
    - Several major tax cuts
    - 2001 recession - decreased tax revenue and increased government spending
    - Spending on homeland security
      - Following the September 11, 2001 attacks
      - Subsequent wars in Iraq and Afghanistan
      - Increases in government spending

- 2008, financial crisis and deep recession
  - Dramatic increase in the debt-GDP ratio
  - Increased budget deficit
  - Several policy measures passed by the Bush and Obama administrations
    - Aimed at combating the recession
    - Reduced tax revenue
    - Increased government spending

- 2009 and 2010
  - Federal government's budget deficit = 10% of GDP
  - Borrowing to finance budget deficit
  - Substantial increase in the debt-GDP ratio
- Policy challenges for future generations
  - Putting the federal budget back on a sustainable path
    - Stable or declining debt-GDP ratio