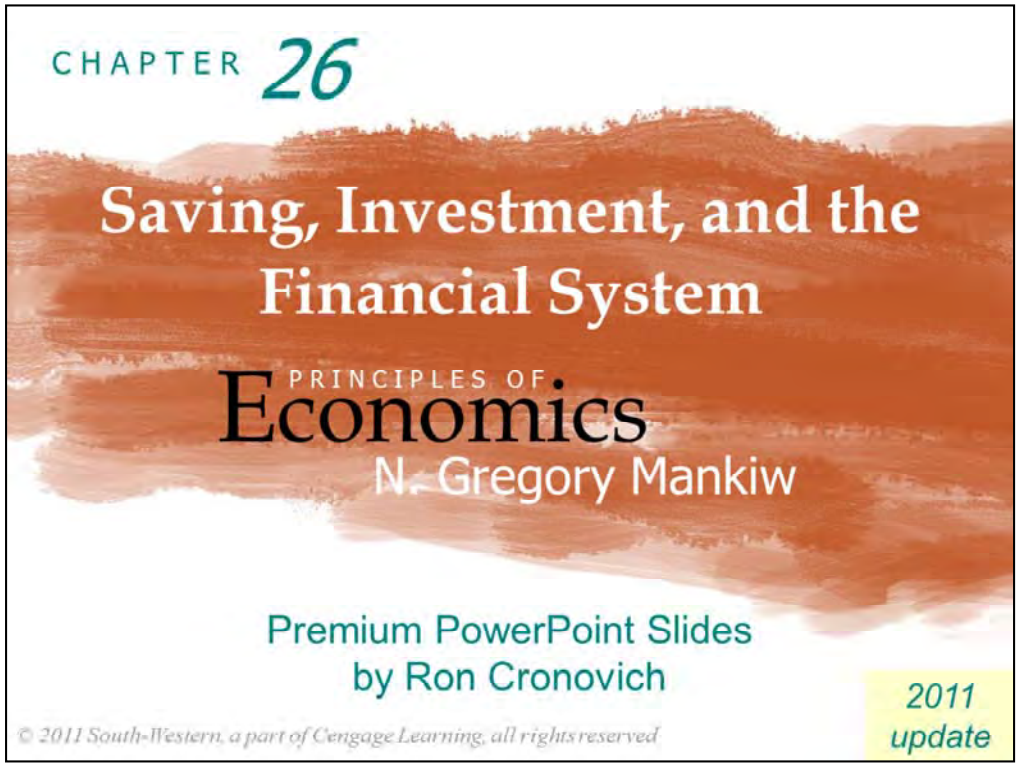


This chapter is an excellent follow-up to the previous one ("Production and Growth"). In that chapter, we learn that investment – the accumulation of capital – is important because it leads to a higher standard of living in the long run. But what determines how much investment a country undertakes? That is the central question of the present chapter.

After some introductory information about the various types of financial institutions, the chapter focuses on saving and investment. Students will learn the difference between private and public saving, and the definitions of government budget surpluses and deficits. The brief review of the difference between saving and investment is very useful, as intro-level students often use the term "investment" when they mean to say "saving."

The most analytical part of the chapter is the coverage of the closed-economy loanable funds model. This model uses the tools of supply and demand (introduced in Chapter 4) and should be very familiar if your students have already taken introductory microeconomics.

The loanable funds model shows how the interest rate adjusts to equate saving and investment in a closed economy. Students will learn how government budget deficits can crowd out investment, which is probably one of the biggest ideas in macroeconomics.

In this chapter, look for the answers to these questions:

- What are the main types of financial institutions in the U.S. economy, and what is their function?
- What are the three kinds of saving?
- What's the difference between saving and investment?
- How does the financial system coordinate saving and investment?
- How do govt policies affect saving, investment, and the interest rate?

1

Financial Institutions

- The **financial system**: the group of institutions that helps match the saving of one person with the investment of another.
- **Financial markets**: institutions through which savers can directly provide funds to borrowers. Examples:
  - The Bond Market.
    A **bond** is a certificate of indebtedness.
  - The Stock Market.
    A **stock** is a claim to partial ownership in a firm.

Financial Institutions

- **Financial intermediaries**: institutions through which savers can indirectly provide funds to borrowers. Examples:
  - Banks
  - **Mutual funds** – institutions that sell shares to the public and use the proceeds to buy portfolios of stocks and bonds

Different Kinds of Saving

Private saving

= The portion of households' income that is not used for consumption or paying taxes

= **Y – T – C**

Public saving

= Tax revenue less government spending

= **T – G**

In case anyone asks, "T" here (and in general) is net of transfer payments.

After presenting this slide and the next, it might be useful to point out the following:

In general, "saving" is just some measure of income minus some measure of expenditure.

For private (household) saving, the measure of income is "disposable income," or gross income minus taxes ("take-home pay.") The measure of expenditure is consumption.

For public (government) saving, the measure of income is T, total taxes, which is the government's source of "income." The measure of expenditure is simply G, government purchases.

In the case of national saving (covered on the next slide), the measure of income is GDP, and the measure of expenditure is C+G.

National Saving

National saving

= private saving + public saving

= $(\mathbf{Y} - \mathbf{T} - \mathbf{C}) + (\mathbf{T} - \mathbf{G})$

= $\mathbf{Y} - \mathbf{C} - \mathbf{G}$

= the portion of national income that is not used for consumption or government purchases

Saving and Investment

Recall the national income accounting identity:

$$\mathbf{Y = C + I + G + NX}$$

For the rest of this chapter, focus on the closed economy case:

$$\mathbf{Y = C + I + G}$$

Solve for **I**:

$$\mathbf{I = Y - C - G} = \overbrace{\mathbf{(Y - T - C) + (T - G)}}^{\text{national saving}}$$

Saving = investment in a closed economy

In defense of the closed economy assumption:

It's true that most economies are open. However, the closed economy case is easier to learn, and we can still learn a lot about how the world works by studying the closed economy case.

A later chapter will add international trade and capital flows to this model.

Budget Deficits and Surpluses

Budget surplus

= an excess of tax revenue over govt spending

= **T** – **G**

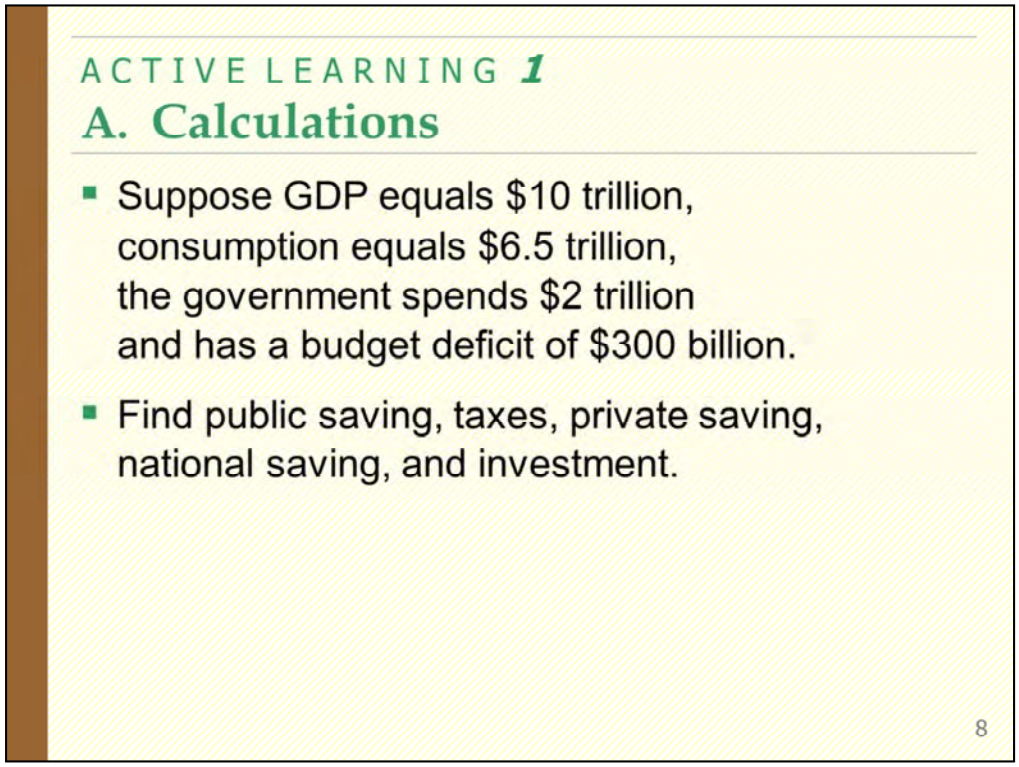
= public saving

Budget deficit

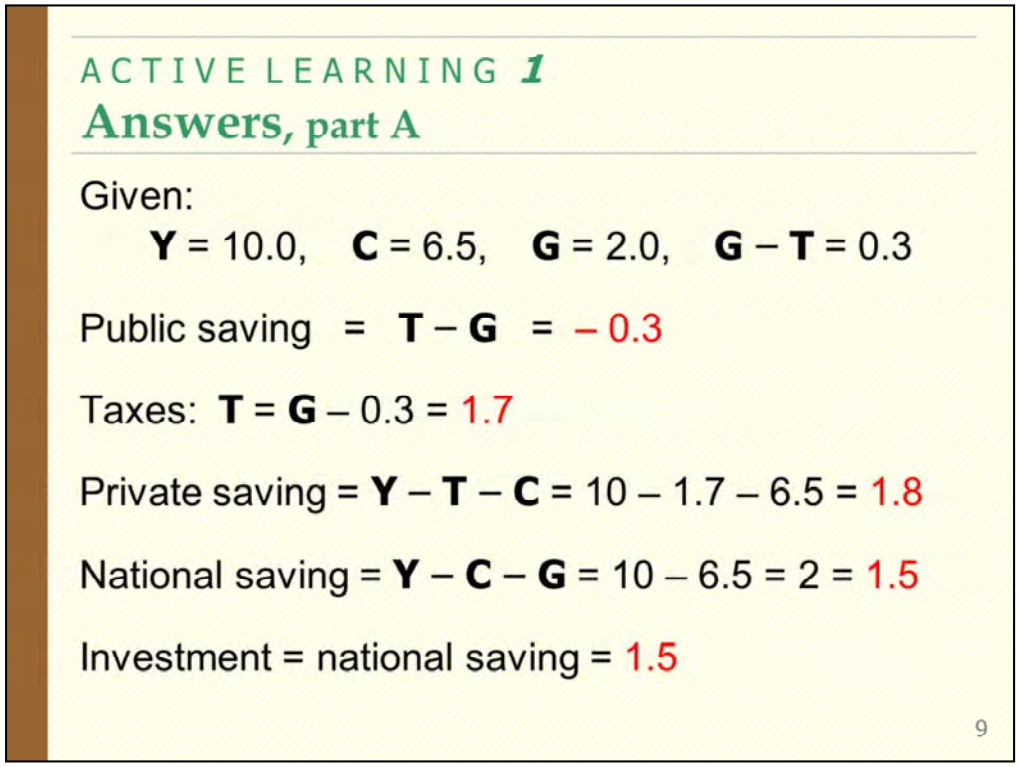
= a shortfall of tax revenue from govt spending

= **G** – **T**

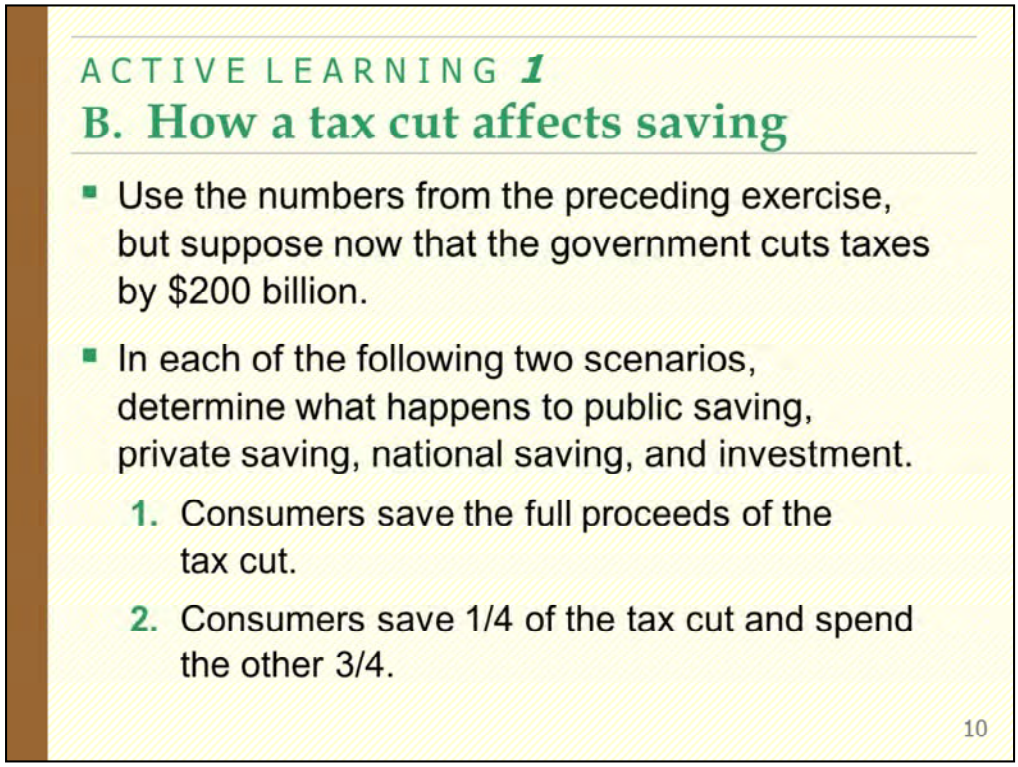
= – (public saving)



This exercise asks your students to apply the concepts from the preceding slides to the kind of problem they might see on an upcoming exam.



All numbers are in trillions of dollars.



This exercise is designed to teach an important lesson and prevent a common mistake among students.

When students are asked (on an exam, for example) to determine the effects of a tax cut on national saving, investment, and the interest rate, many students mistakenly state that the tax change has no effects because taxes enter positively in the expression for public saving, negatively in the expression for private saving, and not at all in the expression for national saving (Y – C – G).

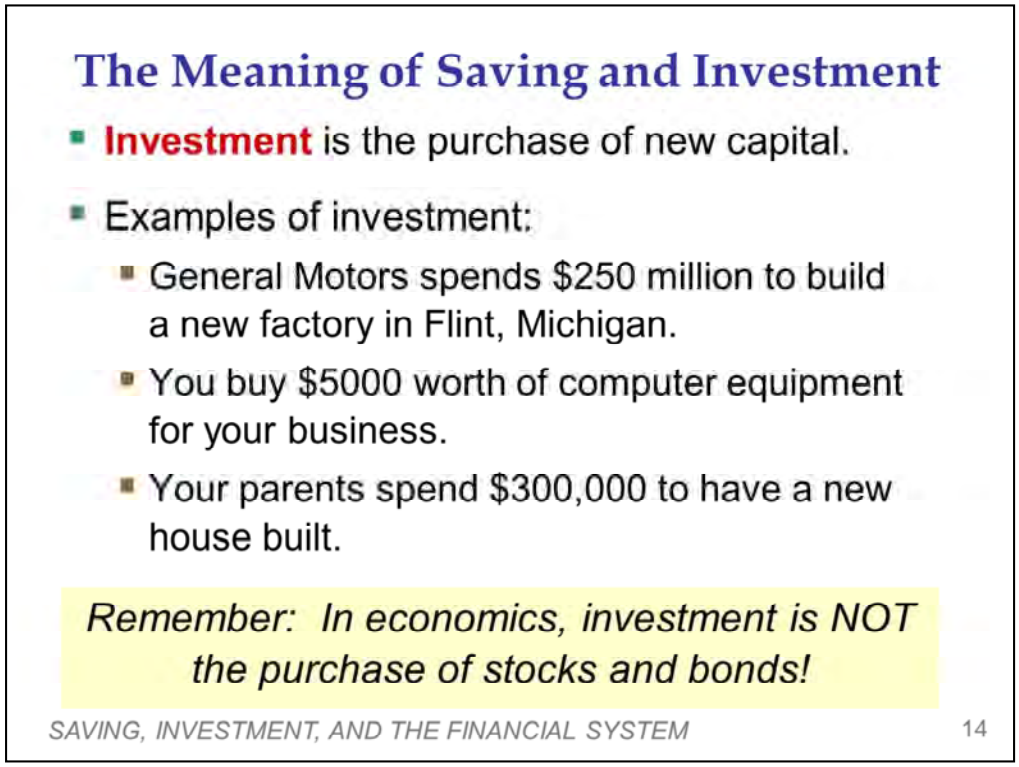
This exercise gets students to see that the effects of a tax cut on national saving and investment depend on the behavior of consumers.

Immediately following this exercise is a discussion question designed to help students realize that the tax cut will most likely cause consumption to rise and national saving to fall.

Of course, if you intend to teach your students that Ricardian Equivalence is an accurate description of the world, then you'd want to argue that scenario 1 is the most realistic. The reason for this, according to Ricardian Equivalence, is that consumers are forward-looking and realize that a tax cut today must be matched by a future tax increase that is equal in present value to today's tax cut. Please be aware, however, that Ricardian Equivalence is not covered in this chapter, so it is not supported with test-bank or study guide questions.

The Meaning of Saving and Investment

- **Private saving** is the income remaining after households pay their taxes and pay for consumption.
- Examples of what households do with saving:
  - Buy corporate bonds or equities
  - Purchase a certificate of deposit at the bank
  - Buy shares of a mutual fund
  - Let accumulate in saving or checking accounts



In principle, students should already know the meaning of "investment," which was introduced in the "Measuring National Income" chapter. However, many students continue to think of "investment" as the purchase of stocks, bonds, or other assets. At this point in the chapter, a review of "saving" and "investment" is especially worthwhile because the next topic is the loanable funds model. In this model, saving is the supply of funds and investment is the demand.

There's a connection between the economics definition of investment and the commonplace usage of the term: What laypeople think of as financial investment (the purchase of stocks and bonds, etc) is what finances investment in physical capital. For example, General Motors may sell $300 million worth of bonds to raise the funds it needs to pay for its new factory in Flint, Michigan. In this case, people buying the bonds are doing "investment" in the layperson's sense of the term, and G.M. is using their funds to pay for the physical investment.

The Market for Loanable Funds

- A supply-demand model of the financial system
- Helps us understand
  - how the financial system coordinates saving & investment
  - how govt policies and other factors affect saving, investment, the interest rate

The Market for Loanable Funds

Assume: only one financial market

- All savers deposit their saving in this market.
- All borrowers take out loans from this market.
- There is one interest rate, which is both the return to saving and the cost of borrowing.

In defense of the assumption of just one financial market:

We are using this model to study the aggregate financial system. It's fine to assume there's only one type of asset as long as we don't need to know how households divide their financial wealth into various types of assets.

An analogy might help. Suppose you want to know how a fall in consumer income affects the automobile market. You could draw a supply-demand model for autos, in which the demand curve would shift leftward, causing the price and quantity to fall. Of course, this model ignores the fact that there are lots of different types of vehicles, but that isn't relevant to the issue at hand.

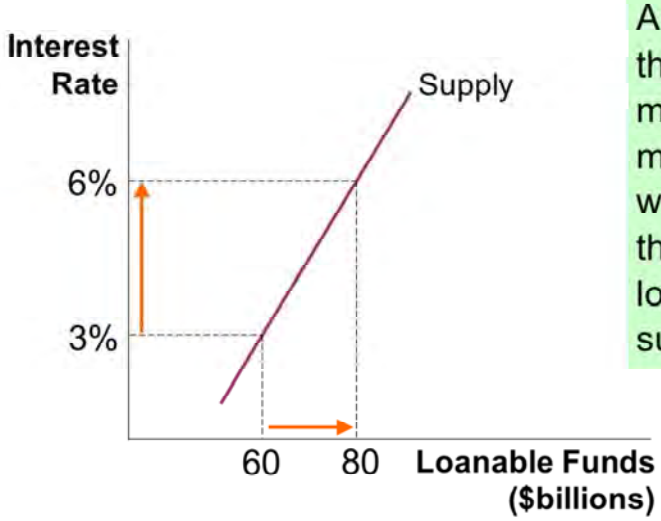
The Market for Loanable Funds

The supply of loanable funds comes from saving:

- Households with extra income can loan it out and earn interest.
- Public saving, if positive, adds to national saving and the supply of loanable funds.

  If negative, it reduces national saving and the supply of loanable funds.

The Slope of the Supply Curve



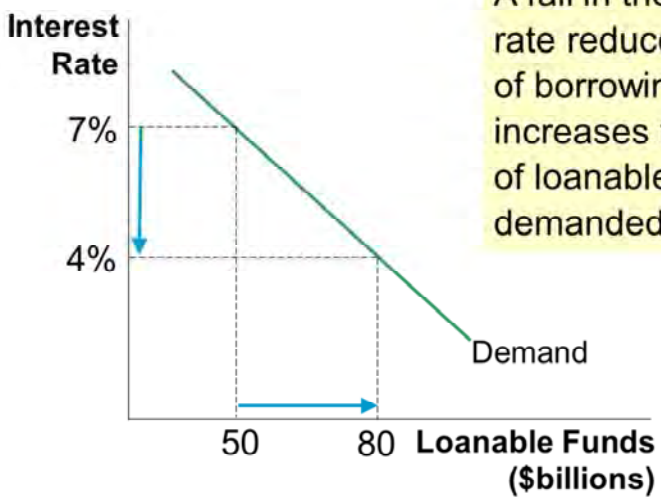
An increase in the interest rate makes saving more attractive, which increases the quantity of loanable funds supplied.

The Market for Loanable Funds

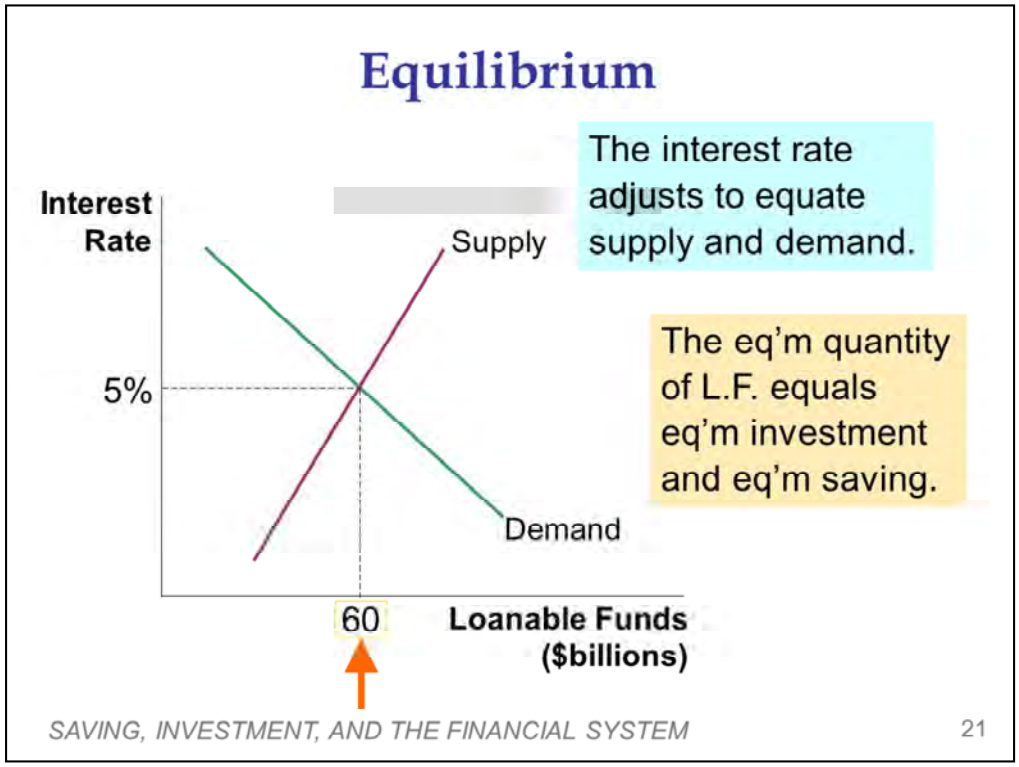
The demand for loanable funds comes from investment:

- Firms borrow the funds they need to pay for new equipment, factories, etc.
- Households borrow the funds they need to purchase new houses.

The Slope of the Demand Curve



A fall in the interest rate reduces the cost of borrowing, which increases the quantity of loanable funds demanded.

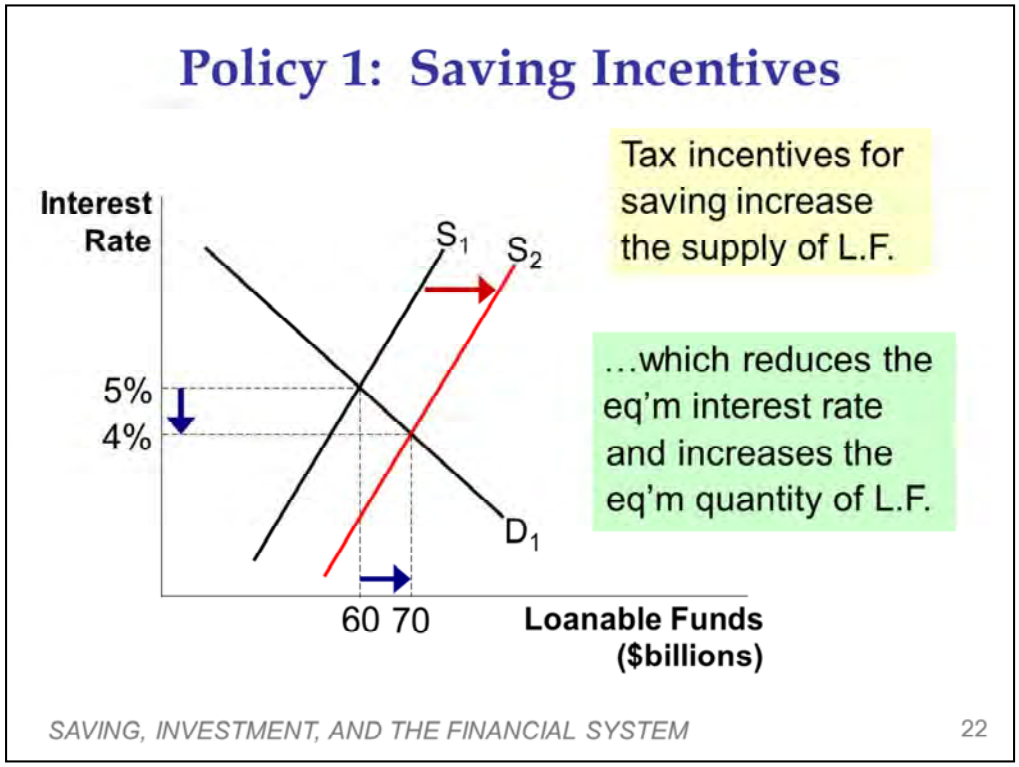


Due to space constraints, this slide uses "L.F." to stand for loanable funds, and "eq'm" to stand for equilibrium.

If the interest rate were lower than the equilibrium level, demand for funds would exceed supply, causing the interest rate to rise. The rise in the rate would make borrowing more costly, and thus would reduce the demand for funds. The rise in the interest rate would also encourage households to save more, which would increase the supply of funds. This process would occur until equilibrium was achieved.

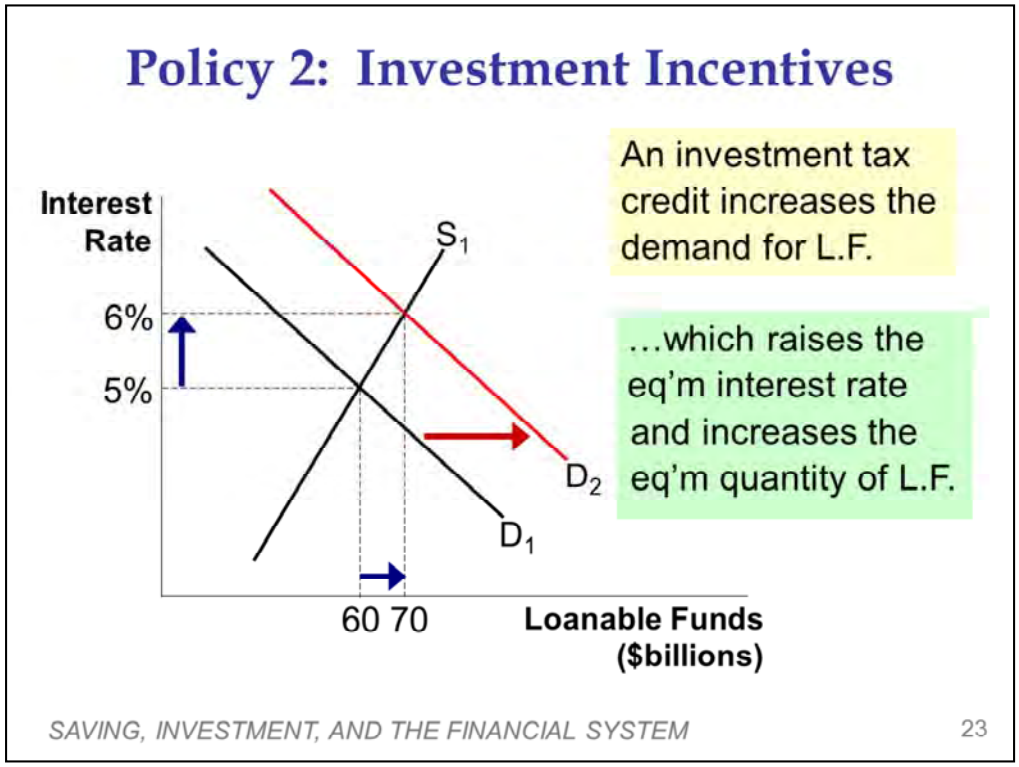
If the interest rate were higher than equilibrium, there would be a surplus of funds. The interest rate would fall to restore equilibrium.

In the real world, the adjustment to equilibrium in financial markets is extremely rapid.

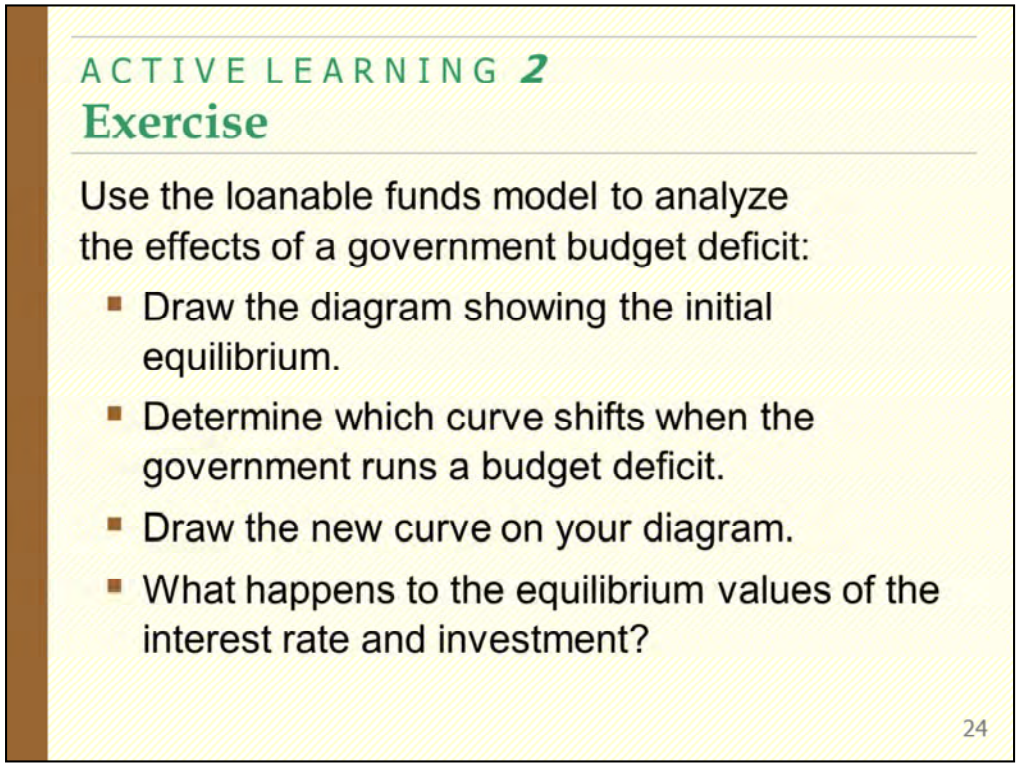


There's an implicit assumption in this analysis that overall tax revenues remain unchanged in spite of the tax incentives. Taken literally, we would have to assume that other taxes are raised to exactly offset the loss in revenue from the saving incentives. Without this implicit assumption, total tax revenues would fall, causing saving to fall, and shifting the supply curve leftward, which would mitigate the effects shown here.

You may or may not wish to point this out to your students. If you are especially nitpicky, or your students are particularly sharp, then it's probably worth telling them. (Note, however, that the assumption of constant total revenue remains implicit in the textbook's discussion of this policy.)

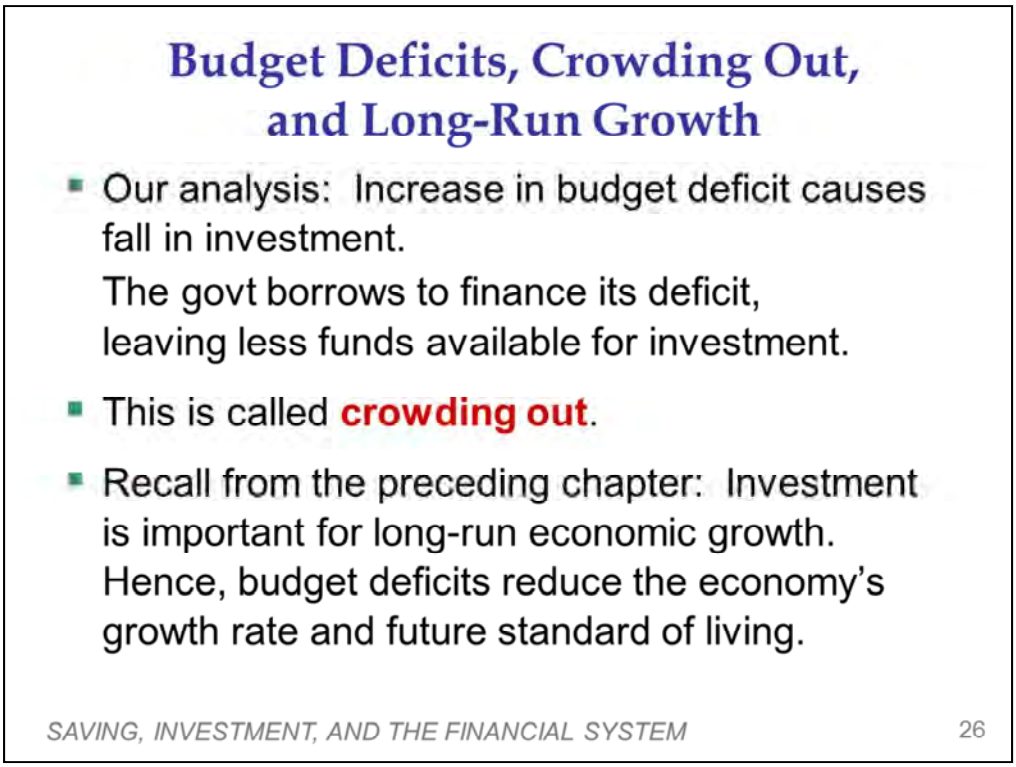


As with Policy 1, you may wish to note that we are assuming the tax credit does not significantly reduce the overall amount of taxes. If total taxes fell, then the supply curve would shift (in addition to the demand curve). However, our intention here is to focus solely on the demand shift.



Now that you have shown students the analysis of Policies 1 and 2, this exercise asks them to do the analysis of Policy 3 (a budget deficit).

In case you prefer to lecture on this material, I have provided a “hidden” slide at the end of this file that contains the budget deficit analysis as a lecture slide instead of an exercise. Move that slide to this location and “unhide” it by unselecting the “hide slide” command on the Slide Show menu.



If the last statement on this slide troubles you, here is my defense:

While the budget deficit does not affect the steady state growth rate of neoclassical growth theory, it affects the economy's growth rate temporarily (long enough to reduce the steady-state level of income per capita). And in some endogenous growth models, budget deficits can affect the steady state growth rate.

If you are still troubled, you can modify the statement so that it is more consistent with neoclassical growth theory. (Perhaps "Investment is important for long-run living standards.")

The U.S. Government Debt

- The government finances deficits by borrowing (selling government bonds).
- Persistent deficits lead to a rising govt debt.
- The ratio of govt debt to GDP is a useful measure of the government's indebtedness relative to its ability to raise tax revenue.
- Historically, the debt-GDP ratio usually rises during wartime and falls during peacetime – until the early 1980s.

Note that the 2010 debt figure, at 63.6% of GDP, is higher than at any time besides WW2, including all other wars.

From the beginning of this long time series until about 1980, the data show a clear pattern: the debt-GDP ratio jumps up during wartime, and comes back down during peacetime. (Also, the Great Depression caused revenues to plummet, and led to a rise in the debt ratio during the 1930s.)

There are two reasons why many economists believe it is appropriate to allow the debt ratio to climb during wars. First, it allows the government to keep tax rates smooth over time. Wars are expensive, and financing them solely with tax increases would be disruptive to the economy and would cause a substantial reduction in economic efficiency. Second, debt finance shifts part of the cost of the war to future generations. This is appropriate, one could argue, because future generations benefit when the government goes to war to defend the nation against foreign aggressors.

The pattern visible throughout most of history breaks down around 1980, when the debt ratio started climbing despite the lack of a major war. This was due to the Reagan tax cuts, and growth in federal entitlement outlays during the 1980s.

From 1992 to 2000, the longest expansion on record plus a strong stock market in 1995-2000 led to a surge in revenues, the first budget surpluses in many years, and a declining debt-GDP ratio.

From 2001-2005, the ratio to start climbing again due to the Bush tax cuts, the 2001 recession, and the wars (Afghanistan, Iraq, and the War on Terror).

The ratio shoots up dramatically in 2008-2010 due to the financial crisis and recession.

sources:

prior to 1940, same as text

1940 to present, Table 7.1—FEDERAL DEBT AT THE END OF YEAR, Budget of the United States Government: Historical Tables Fiscal Year 2010, http://www.gpoaccess.gov/usbudget/fy10/hist.html

CONCLUSION

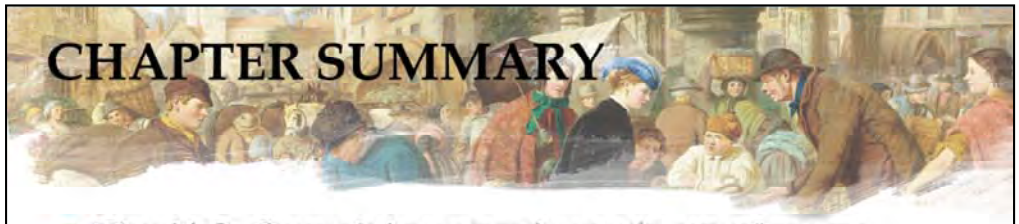
- Like many other markets, financial markets are governed by the forces of supply and demand.
- One of the Ten Principles from Chapter 1:
  Markets are usually a good way to organize economic activity.
  Financial markets help allocate the economy's scarce resources to their most efficient uses.
- Financial markets also link the present to the future: They enable savers to convert current income into future purchasing power, and borrowers to acquire capital to produce goods and services in the future.

SAVING, INVESTMENT, AND THE FINANCIAL SYSTEM 29

It might be worth elaborating for a moment on "financial markets help allocate the economy's scarce resources to their most efficient uses."

The scarce resources this statement refers to are the loanable funds. They are scarce because there are more investment projects needing funding than funds available. So how should the scarce funds be allocated? I.e., which investment projects should get the available funds? The investment projects with the highest expected returns, of course. And the projects with the highest expected returns would have the highest willingness to pay for funds.

Hence, supply and demand for funds determines the equilibrium interest rate, and all projects with returns at or above that interest rate will be funded; the projects with expected returns below the interest rate will not be funded. In this way, the economy gets the most "bang" (future productive capacity) out of its investment "buck." Just another reason why capitalism is such a beautiful thing!



CHAPTER SUMMARY

- The U.S. financial system is made up of many types of financial institutions, like the stock and bond markets, banks, and mutual funds.
- National saving equals private saving plus public saving.
- In a closed economy, national saving equals investment. The financial system makes this happen.

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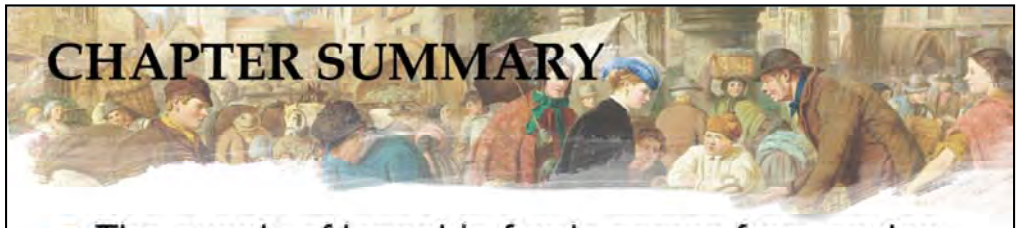

CHAPTER SUMMARY

- The supply of loanable funds comes from saving. The demand for funds comes from investment. The interest rate adjusts to balance supply and demand in the loanable funds market.
- A government budget deficit is negative public saving, so it reduces national saving, the supply of funds available to finance investment.
- When a budget deficit crowds out investment, it reduces the growth of productivity and GDP.

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