

Ch 4:

Page 88 (page 490 in *Economics*)

1. Define GDP and distinguish between a final good and an intermediate good. Provide examples.

GDP is the market value of all the final goods and services produced within a country in a given time period. A final good or service is an item that is sold to the final user, that is, the final consumer, government, a firm making investment, or a foreign entity. An intermediate good or service is an item that is produced by one firm, bought by another firm, and used as a component of a final good or service. For instance, bread sold to a consumer is a final good, but wheat sold to a baker to make the bread is an intermediate good. Distinguishing between final goods and services and intermediate goods and services is important because only final goods and services are directly included in GDP; intermediate goods must be excluded to avoid double counting them. For example, counting the wheat that went into the bread *as well as* the bread would double count the wheat—once as wheat and once as part of the bread.

2. Why does GDP equal aggregate income and also equal aggregate expenditure?

GDP equals aggregate income because one way to value production is by the cost of the factors of production employed. GDP equals aggregate expenditure because another way to value production is by the price that buyers pay for it in the market.

3. What is the distinction between gross and net?

“Gross” means before subtracting depreciation or capital consumption. “Net” means after subtracting depreciation or capital consumption. The terms apply to investment, business profit, and aggregate production.

Page 91 (page 493 in *Economics*)

1. What is the expenditure approach to measuring GDP?

The expenditure approach measures GDP by focusing on aggregate expenditures. Data are collected on the different components of aggregate expenditure and then summed. Specifically, the Bureau of Economic Analysis collects data on consumption expenditure, C , investment, I , government expenditure on goods and services, G , and net exports, NX . These expenditures are valued at the prices paid for the goods and services, called the market price. GDP is then calculated as $C + I + G + NX$.

2. What is the income approach to measuring GDP?

The income approach measures GDP by focusing on aggregate income. This approach sums all the incomes paid to households by firms for the factors of production they hire. The *National Income and Product Accounts* divide income into five categories: compensation of employees; net interest; rental income; corporate profits; and proprietors' income. Adding these income components does not quite equal GDP, because it values the output at factor cost rather than the market price and omits depreciation. So, further adjustments must be made to calculate GDP: Indirect taxes and depreciation must be added and subsidies subtracted.

3. What adjustments must be made to total income to make it equal GDP?

Total income is net domestic product at factor cost. To convert it to gross domestic product at market prices, we must add the depreciation of capital and add indirect taxes minus subsidies.

4. What is the distinction between nominal GDP and real GDP?

Nominal GDP is the value of final goods and services produced in a given year valued at the prices of that year. Real GDP is the value of final goods and services produced in a given year when valued at the prices of a reference base year. By comparing the value of production in the two years at the same prices, we reveal the change in production.

5. How is real GDP calculated?

The traditional method of calculating real GDP is to value each year's GDP at the constant prices of a fixed base year.

Page 97 (page 499 in *Economics*)

1. Distinguish between real GDP and potential GDP and describe how each grows over time.

Real GDP is the value of final goods and services produced in a given year when valued at the prices of a reference base year. Potential GDP is the amount of real GDP that would be produced when all the economy's labor, capital, land, and entrepreneurial ability are fully employed. So real GDP is the *actual* amount produced with the actual level of employment of the nation's factors of production while potential GDP is the amount that *would be* produced if there were full employment of all factors of production.

2. How does the growth rate of real GDP contribute to an improved standard of living?

A benefit of long-term economic growth is the increased consumption of goods and services that is made possible. Growth of real GDP also allows more resources to be devoted to areas such as health care, research, and environmental protection.

3. What is a business cycle and what are its phases and turning points?

The business cycle is a periodic but irregular up-and-down movement of total production and other measures of economic activity. A business cycle has two phases: recession and expansion. The turning points are the peak and the trough. A business cycle runs from a trough to an expansion to a peak to a recession to a trough and then back to an expansion.

4. What is PPP and how does it help us to make valid international comparisons of real GDP?

PPP is purchasing power parity. To make the most valid international comparisons of real GDP, we need to value each nation's production using purchasing power parity prices rather than by using exchange rates and the prices within each country because relative prices within different countries can vary widely. As a result, if the real GDP of each country is valued using the same PPP prices then the comparison of real GDP among the countries is more accurate.

5. Explain why real GDP might be an unreliable indicator of the standard of living.

Real GDP is sometimes used to measure the standard of living but real GDP can be misleading for several reasons. Real GDP does not include household production, productive activities done in and around the house by the homeowner. Because these

tasks often are an important component of people's work, this omission creates a major measurement problem. Real GDP omits the underground economy, economic activity that is legal but unreported or that is illegal. In many countries the underground economy is an important part of economic activity, and its omission creates a serious measurement problem. Real GDP does not include a measurement of people's health and life expectancy, both factors that obviously affect economic well being. The value of leisure time is not included in real GDP. People value their leisure hours, and an increase in people's leisure that enhances people's economic welfare can lower the nation's real GDP and lower the nation's well-being. Environmental damage is excluded from real GDP. So an economy wherein real GDP grows but at the expense of its environment, as was the case with Eastern European countries under communism, falsely appears to offer greater economic welfare than a similar economy that grows slightly more slowly but at less environmental cost. Real GDP does not indicate the extent of political freedom and social justice enjoyed by a nation's citizens.

Page 101 (page 503 in *Economics*)

1. **The table provides data on the economy of Tropical Republic that produces only bananas and coconuts. Calculate Tropical Republic's nominal GDP in 2008 and 2009 and its chained-dollar real GDP in 2009 expressed in 2008 dollars.**

Quantities	2008	2009
Bananas	1,000 bunches	1,100 bunches
Coconuts	500 bunches	525 bunches
Prices		
Bananas	\$2 a bunch	\$3 a bunch
Coconuts	\$10 a bunch	\$8 a bunch

In 2008, nominal GDP is \$7,000. In 2009, nominal GDP is \$7,500. Nominal GDP in 2008 is equal to total expenditure on the goods and services produced by Tropical Republic in 2008. Expenditure on bananas is 1,000 bunches of bananas at \$2 a bunch, which is \$2,000, and expenditure on coconuts is 500 bunches at \$10 a bunch, which is \$5,000. Total expenditure is \$7,000, so nominal GDP in 2008 is \$7,000. Nominal GDP in 2009 is equal to total expenditure on the goods and services produced by Tropical Republic in 2009. Expenditure on bananas is 1,100 bunches at \$3 a bunch, which is \$3,300 and expenditure on coconuts is 525 bunches at \$8 a bunch, which is \$4,200. Total expenditure is \$7,500 so nominal GDP in 2009 is \$7,500. Real GDP in 2009 is \$7,475.30. The chained-dollar method uses the prices of 2008 and 2009 to calculate the growth rate in 2009. The value of the 2008 quantities at 2008 prices is \$7,000. The value of the 2009 quantities at 2008 prices is \$7,450. We now compare these values. The increase in the value is \$450. The percentage increase is $(\$450 \div \$7,000) \times 100$, which is 6.43 percent.

Next the value of the 2008 quantities at 2009 prices is \$7,000. The value of the 2009 quantities at 2009 prices is \$7,500. We now compare these values. The increase in the value is \$500. The percentage increase is $(\$500 \div \$7,000) \times 100$, which is 7.14 percent.

The chained dollar method calculates the growth rate as the average of these two percentage growth rates, which means that the growth rate in 2009 is 6.79 percent. So real GDP in 2009 is calculated as \$7,000, which is real GDP in the base year (and is equal to nominal GDP in that year) multiplied by one plus the growth rate. Real GDP in 2009 is \$7,475.30.

Ch 6:

Page 135 (page 537 in *Economics*)

1. What is economic growth and how do we calculate its rate?

Economic growth is the sustained expansion of production possibilities. It is measured by the increase in real GDP over a given time period. The economic growth rate is the annual percentage change in real GDP.

2. What is the relationship between the growth rate of real GDP and the growth rate of real GDP per person?

The growth rate of real GDP tells how rapidly the total economy is expanding while the growth rate of real GDP per person tells how the standard of living is changing. The growth rate of real GDP per person approximately equals the growth rate of real GDP minus the population growth rate.

3. Use the Rule of 70 to calculate the growth rate that leads to a doubling of real GDP per person in 20 years.

The rule of 70 states that the number of years it takes for the level of any variable to double is approximately equal to 70 divided by the growth rate. If the level of real GDP doubles in 20 years, the rule of 70 gives $20 = 70 \div (\text{growth rate})$ so that the growth rate equals $70 \div 20$, which is 3.5 percent per year.

Page 138 (page 540 in *Economics*)

1. What has been the average growth rate of U.S. real GDP per person over the past 100 years? In which periods was growth the most rapid and in which periods was it the slowest?

Over the past 100 years, U.S. real GDP per person grew at an average rate of 2 percent per year. Slow growth occurred during mid-1950s and 1973–1983. *Very* slow growth (negative growth!) also occurred during the Great Depression. Growth was rapid during the 1920s and 1960s. Growth was also (extremely!) rapid during World War II.

2. Describe the gaps between real GDP per person in the United States and other countries. For which countries is the gap narrowing? For which is it widening? And for is it remaining the same?

Some rich countries are catching up with the United States, but the gaps between the United States and many poor countries are not closing. Amongst the rich countries, since 1960 Japan has closed the gap with the United States but the gaps between the United States and Canada, and the “Europe Big 4” (France, Germany, Italy, and the United Kingdom) have tended to remain constant. Other Western European nations and the former Communist countries of Central Europe have fallen slightly farther behind the United States. The gap between the United States and most nations in Africa, and Central and South America has widened. But some nations in Asia—including Hong Kong, Singapore, Taiwan, Korea, Malaysia, Thailand, and China—have grown very rapidly. The gap between these nations and the United States has shrunk; indeed, Singapore has slightly surpassed the United States and Hong Kong has virtually tied the United States.

3. Compare the growth rates and levels of real GDP per person in Hong Kong, Korea, Singapore, Taiwan, China, and the United States. How far is China’s real GDP per person behind that of the other Asian economies?

Since 1960, income per person in the nations of Hong Kong, Singapore, Taiwan, Korea, and China have grown very rapidly and are rapidly catching up to the United States.

Income per person in Hong Kong is virtually the same as that in the United States and income per person in Singapore slightly exceeds that in the United States. Income in Taiwan and Korea also are relatively close and income in China is the lowest, though recently China has been growing the most rapidly. China's level of income in 2008 is similar to that of Hong Kong in 1968.

Page 144 (page 546 in *Economics*)

1. What is the aggregate production function?

The aggregate production function is the relationship that tells us how real GDP changes as the quantity of labor changes when all other influences on production remain the same.

2. What determines the demand for labor, the supply of labor, and labor market equilibrium?

The demand for labor depends on the real wage rate. A fall in the real wage rate increases the quantity of labor demanded because of diminishing returns. The demand for labor also depends on productivity. If productivity increases, the demand for labor increases.

The supply of labor also depends on the real wage rate. An increase in the real wage rate increases the quantity of labor supplied because more people enter the labor force and the hours supplied per person increases.

The real wage adjusts so that the labor market is in equilibrium. If the real wage rate is above (below) its equilibrium, there is a surplus (shortage) of labor that then causes the real wage rate to fall (rise). For example, if the real wage rate is above the equilibrium level, there is a surplus of labor so the real wage rate falls until it reaches its equilibrium. The equilibrium quantity of employment is the full employment quantity of labor.

3. What determines potential GDP?

Potential GDP is determined from the labor market equilibrium. When the labor market is in equilibrium, there is full employment. The quantity of real GDP produced by the full employment quantity of labor is potential GDP.

4. What are the two broad sources of potential GDP growth?

The two broad sources of growth in potential GDP are growth of the supply of labor and growth of labor productivity.

5. What are the effects of an increase in the population on potential GDP, the quantity of labor, the real wage rate, and potential GDP per hour of labor?

An increase in population increases the supply of labor. Employment increases and the real wage rate falls. The increase in employment creates a movement along the aggregate production function so potential GDP increases. Because of diminishing returns, real GDP per hour of labor decreases.

6. What are the effects of an increase in labor productivity on potential GDP, the quantity of labor, the real wage rate, and potential GDP per hour of labor?

The increase in labor productivity shifts the aggregate production function curve upward. It also increases the demand for labor, and the demand for labor curve shifts rightward. The increase in the demand for labor raises the real wage rate and increases employment. The increase in employment as well as the upward shift of the aggregate production function increase potential GDP. Real GDP per hour of labor increases.

Page 147 (page 549 in *Economics*)

1. What are the preconditions for and sources of labor productivity growth?

The fundamental preconditions for labor productivity growth are: firms, markets, property rights, and money. These fundamental preconditions create an incentive system that can lead to labor productivity growth. Once these preconditions are in place, the sources of labor productivity growth are physical capital growth, human capital growth, and advances in technology. All of these activities enable an economy to grow and they all increase labor productivity. They all also interact: human capital creates new technologies, which are then embodied in both new human capital and new physical capital.

2. What is the one third rule and how is it used?

The one-third rule holds that on the average, with no change in technology a 1 percent increase in capital per hour of labor creates a 1/3 percent increase in output per hour of labor, that is, in productivity. The one-third rule is used to divide observed productivity growth into growth that is the result of capital accumulation and growth that is the result of technological advances. The procedure is straightforward: The growth rate in capital per hour of labor is multiplied by one third. The resulting number is the productivity growth resulting from capital accumulation. This growth rate is then subtracted from the total productivity growth rate, and the difference is the productivity growth caused by technological advances (including growth in human capital).

3. What slowed labor productivity growth between 1973 and 1983?

At one level, the productivity growth slowdown in the United States was the failure of technology to contribute much to (measured) productivity growth. This answer is relatively shallow. A deeper answer explains why technology did not contribute much to measured productivity. Technology did not add much to productivity growth because of the energy price shocks. The huge price hikes for energy diverted investment in new technology from enhancing productivity to replacing no longer economical, fuel-guzzling capital.

Page 153 (page 555 in *Economics*)

1. What is the key idea of classical growth theory that leads to the dismal outcome?

The "dismal outcome" in classical theory is the conclusion that in the long run real GDP per person equals the subsistence level. In classical growth theory, an increase in labor productivity leads to higher incomes, which causes population increases that return real GDP per person to the subsistence level because of diminishing returns to labor. In the classical growth theory, an increase in productivity increases the demand for labor. The real wage rate rises and GDP increases. The increase in the real wage rate means that people's incomes rise, which then creates a population boom. The increase in population increases the supply of labor. Because of diminishing returns to labor, the increase in the supply of labor lowers the real wage rate. As long as the real wage rate remains above the subsistence level, population growth and hence growth in the labor supply continues. Eventually the real wage rate falls to equal the subsistence level, at which time the population stops growing. Total GDP is higher than before the increase in productivity, but GDP per person is the same as before and is at the subsistence level.

2. What, according to neoclassical growth theory, is the fundamental cause of economic growth?

In neoclassical growth theory, growth results from technological advances, which are determined by chance.

3. What is the key proposition of new growth theory that makes growth persist?

The key proposition that makes growth persist indefinitely in the new growth theory is the assumption that the returns to knowledge and human capital do not diminish. As a result, increases in knowledge do not cause diminishing returns and the incentive to innovate remains high. As people accumulate more knowledge, the incentive to innovate does not fall and so people continue to innovate new and better ways to produce new and better products. This innovation means that economic growth persists indefinitely.

Ch 7:

Page 166 (page 568 in *Economics*)

1. **Distinguish between physical capital and financial capital and give two examples of each.**

Physical capital is the actual tools, instruments, machines, buildings and other items that have been produced in the past and are presently used to produce goods and services. Financial capital is the funds that businesses use to acquire their physical capital. Examples of physical capital are the pizza ovens owned by Pizza Hut and the buildings in which the Pizza Huts are located. Examples of financial capital are the bonds issued by Pizza Hut to buy pizza ovens and the loans Pizza Hut has made to fund their purchases of new buildings.

2. **What is the distinction between gross investment and net investment?**

Gross investment is the total amount spent on new capital; net investment is the change in the capital stock. Net investment equals gross investment minus depreciation.

3. **What are the three main types of markets for financial capital?**

The main types of markets for financial capital are the loan markets, the bond markets, and the stock markets.

4. **Explain the connection between the price of a financial asset and its interest rate.**

There is an inverse relationship between the price of a financial asset and its interest rate. When the price of a financial asset rises, its interest rate falls. Similarly, when the interest rate on an asset falls, the price of the asset rises.

Page 171 (page 573 in *Economics*)

1. **What is the market for loanable funds?**

The market for loanable funds is the market in which households, firms, governments, banks, and other financial institutions borrow and lend. It is the aggregate of all the individual financial markets and includes loan markets, bond markets, and stock markets. The real interest rate is determined in this market.

2. **Why is the real interest rate the opportunity cost of loanable funds?**

The real interest rate is the opportunity cost of loanable funds because the real interest rate measures what is forgone by using the funds. If the funds are loaned, then the real interest rate is received. If the funds are borrowed, then the real interest is paid for the funds. The real interest rate forgone when funds are used either to buy consumption goods and services or to invest in new capital goods is the opportunity cost of not saving or not lending those funds.

3. **How do firms make investment decisions?**

To determine the quantity of investment, firms compare the expected profit rate from an investment to the real interest rate. The expected profit from an investment is the benefit from the investment. The real interest rate is the opportunity cost of investment. If the expected profit from an investment exceeds the cost of the real interest rate, then firms make the investment. If the expected profit from an investment is less than the cost of the real interest rate, then firms do not make the investment.

4. What determines the demand for loanable funds and what makes it change?

The demand for loanable funds depends on the real interest rate and expected profit. If the real interest rate falls and nothing else changes, the quantity of loanable funds demanded increases. Conversely, if the real interest rate rises and everything else remains the same, the quantity of loanable funds demanded decreases. Movements along the loanable funds demand curve illustrate these events. If the expected profit increases and nothing else changes, the demand for loanable funds increases and the demand for loanable funds curve shifts rightward. If the expected profit decreases and everything else remains the same, the demand for loanable funds decreases and the demand for loanable funds curve shifts leftward.

5. How do households make saving decisions?

A household's saving depends on five factors: the real interest rate, the household's disposable income, the household's expected future income, wealth, and default risk. A household increases its saving if the real interest rate increases, its disposable income increases, its expected future income decreases, its wealth decreases, or if default risk decreases.

6. What determines the supply of loanable funds and what makes it change?

The supply of loanable funds depends on the real interest rate, disposable income, expected future income, wealth, and default risk. An increase in the real interest rate increases the quantity of loanable funds supplied; a decrease in the real interest rate decreases the quantity of loanable funds supplied. An increase in disposable income increases the supply of loanable funds; a decrease in disposable income decreases the supply of loanable funds. An increase in wealth decreases the supply of loanable funds; a decrease in wealth increases the supply of loanable funds. An increase in expected future income decreases the supply of loanable funds; a decrease in expected future income increases the supply of loanable funds. Finally, an increase in default risk decreases the supply of loanable funds; a decrease in default risk increases the supply of loanable funds.

7. How do changes in the demand for and supply of loanable funds change the real interest rate and quantity of loanable funds?

The real interest rate is determined by the supply of loanable funds and the demand for loanable funds. The equilibrium real interest rate is the real interest rate at which the quantity of loanable funds supplied equals the quantity of loanable funds demanded. Changes in the demand for or supply of loanable funds change the equilibrium real interest rate and equilibrium quantity of loanable funds. If the demand for loanable funds increases (decreases), the real interest rate rises (falls) and the quantity of loanable funds increases (decreases). If the supply of loanable funds increases (decreases) the real interest rate falls (rises) and the quantity of loanable funds increases (decreases).

Page 174 (page 576 in *Economics*)

1. How does a government budget surplus or deficit influence the market for loanable funds?

A government budget surplus adds to the supply of loanable funds. A government budget deficit adds to the demand for loanable funds.

2. What is the crowding-out effect and how does it work?

The crowding out effect refers to the decrease in investment that occurs when the government budget deficit increases. An increase in the government budget deficit increases the demand for loanable funds. As a result the real interest rate rises. The rise in the real interest rate decreases—"crowds out"—investment.

3. What is the Ricardo-Barro effect and how does it modify the crowding-out effect?

The Ricardo-Barro effect points out that the crowding out effect is less than predicted by looking only at the effect of a budget deficit on the demand for loanable funds. The Ricardo-Barro effect asserts that as a result of a government budget deficit households increase their saving to pay the higher taxes that will be needed in the future to repay the debt issued to fund the deficit. The increase in saving increases the supply of loanable funds. This increase in the supply of loanable funds offsets the rise in the real interest rate from the increase in the demand for loanable funds caused by the budget deficit. Because the real interest rate does not rise as much, the decrease in investment, that is the amount of crowding out, is less in the presence of the Ricardo-Barro effect.

Page 177 (page 579 in *Economics*)

1. Why do loanable funds flow among countries?

Loanable funds flow among countries because savers are searching for the highest (risk-adjusted) real interest rate and borrowers are searching for the lowest (risk-adjusted) real interest rate.

2. What determines the demand for and supply of loanable funds in an individual economy?

The demand for and supply of loanable funds in an economy with international lending and borrowing depend on the same factors as in an economy without international lending and borrowing with one exception: If, at the world real interest rate, the country has a surplus of funds, it can lend the surplus to the rest of the world while if, at the world real interest rate, the country has a shortage of funds, it can borrow from the rest of the world.

3. What happens if a country has a shortage of loanable funds at the world real interest rate?

If a country has a shortage of loanable funds at the world real interest rate, it borrows from other nations and becomes an international borrower.

4. What happens if a country has a surplus of loanable funds at the world interest rate?

If a country has a surplus of loanable funds at the world real interest rate, it loans to other nations and becomes an international lender.

5. How is a government budget deficit financed in an open economy?

A government budget deficit increases the demand for loanable funds. In an open economy, the increase in the demand for loanable funds means the country lends less to the rest of the world (if it initially was an international lender) or borrows more from the rest of the world (if it initially was an international borrower). These changes in lending or borrowing finance the budget deficit.

Ch 9:

Page 216 (page 618 in *Economics*)

- 1. What is the foreign exchange market and what prices are determined in this market?**

The foreign exchange market is the market in which the currency of one country is exchanged for the currency of another country. The exchange rate, the price at which one currency is exchanged for another, is the price determined in the foreign exchange market.
- 2. Distinguish between appreciation and depreciation of the dollar.**

The U.S. dollar appreciates when it rises in value against a foreign currency. The U.S. dollar depreciates when it falls in value against a foreign currency.
- 3. What are the world's major currencies?**

The world's major currencies are the U.S. dollar, the Australian dollar, the Canadian dollar, the euro, the Japanese yen, the English pound, the Swedish krone, and the Swiss franc. The Chinese yuan also is becoming important.
- 4. Against which currencies and during which years has the U.S. dollar appreciated since 1998?**

Since 1998, the U.S. dollar appreciated against the Mexican peso virtually every year until 2004. The U.S. dollar generally appreciated against the Canadian dollar until 2002. The U.S. dollar appreciated against the Japanese yen in 1998, with another slight appreciation from 2000 to 2001.
- 5. Against which currencies and during which years has the U.S. dollar depreciated since 1998?**

The U.S. dollar depreciated slightly against the Mexican peso since 2004 and ever so slightly in 2000. The U.S. dollar depreciated against the Canadian dollar since 2002. The U.S. dollar generally depreciated against the Japanese yen from 1999 though the change has been slight. The U.S. dollar depreciated against the euro since 2002.
- 6. What is the distinction between the nominal exchange rate and the real exchange rate?**

The *nominal exchange rate* is the value of the U.S. dollar expressed in units of foreign currency per U.S. dollar. It measures how many units of a foreign currency are necessary to buy one U.S. dollar. The *real exchange rate* is the relative price of U.S.-produced goods and services to foreign-produced goods and services. It measures how many units of foreign-produced GDP one unit of U.S.-produced GDP buys.
- 7. What does the trade-weighted index measure?**

The *trade-weighted index* shows the average U.S. exchange rate. It is calculated by weighting each nation's individual currency exchange rate by its importance in U.S. international trade.

Page 220 (page 622 in *Economics*)

- 1. What are the influences on the demand for U.S. dollars in the foreign exchange market?**

The demand for U.S. dollars depends on four main factors: the exchange rate, the world demand for U.S. exports, the interest rate in the United State and other countries, and the expected future exchange rate.

2. Provide an example of the exports effect on the demand for U.S. dollars.

The *exports effect* is the result that the larger the value of U.S. exports, the larger the quantity of dollars demanded for purchasing those exports from U.S. firms. When the exchange rate for U.S. dollars falls, U.S. exports become cheaper relative to other countries' goods and services so the volume of U.S. exports increases, which increases the demand for U.S. dollars needed to finance their purchase. So if the exchange rate falls (and other influences remain the same), the quantity of U.S. dollars demanded in the foreign exchange market increases.

3. What are the influences on the supply of U.S. dollars in the foreign exchange market?

The supply of U.S. dollars depends on four main factors: the exchange rate, the U.S. demand for imports, the interest rate in the United State and other countries, and the expected future exchange rate.

4. Provide an example of the imports effect on the supply of U.S. dollars.

The *imports effect* is the result that the larger the value of U.S. imports, the larger the quantity of dollars supplied for purchasing those imports from foreign firms. When the exchange rate for U.S. dollars rises foreign imports become cheaper relative to U.S. produced goods and services so the volume of U.S. imports increases, which increases the supply of U.S. dollars to exchange for foreign currency to finance the purchase of the imports. So if the exchange rate rises (and other influences remain the same), the quantity of U.S. dollars supplied in the foreign exchange market increases. This change increases demand for foreign imports, which increases the supply of U.S. dollars to exchange for foreign currency to finance the purchase of imports, all else held constant.

5. How is the equilibrium exchange rate determined?

The equilibrium exchange rate is the exchange rate that sets the quantity of U.S. dollars demanded equal to the quantity of U.S. dollars supplied. At the equilibrium exchange rate there is neither a shortage nor a surplus of U.S. dollars.

6. What happens if there is a shortage or a surplus of U.S. dollars in the foreign exchange market?

If there is a shortage of U.S. dollars, the quantity of U.S. dollars demanded exceeds the quantity supplied. In this case, foreign exchange dealers who are selling dollars set a higher price and those who are buying dollars and could not find any to buy at the lower price will pay the higher price. As long as there is a shortage, this upward pressure on the price automatically forces the price higher to its equilibrium.

If there is a surplus of U.S. dollars, the quantity of U.S. dollars demanded is less than the quantity supplied. In this case, foreign exchange dealers who are selling dollars and could not sell at the higher price set a lower price and those who are buying dollars will buy at the lower price. As long as there is a surplus, this downward pressure on the price automatically forces the price lower to its equilibrium.

Page 225 (page 627 in *Economics*)

1. Why does the demand for U.S. dollars change?

Three factors change the demand for U.S. dollars: the world demand for U.S. exports, the interest rate in the United States and other countries, and the expected future exchange rate. If world demand for U.S. exports increases, the demand for U.S. dollars increases. If the interest rate in the United States rises relative to interest rates in other countries, the demand for U.S. dollars increases. And if the expected future exchange rate rises, the demand for U.S. dollars increases.

2. Why does the supply of U.S. dollars change?

Three factors change the supply of U.S. dollars: U.S. demand for imports, the interest rate in the United States and other countries, and the expected future exchange rate. If U.S. demand for imports increases, the supply of U.S. dollars increases. If the interest rate in the United States falls relative to interest rates in other countries, the supply of U.S. dollars increases. And if the expected future exchange rate falls, the supply of U.S. dollars increases.

3. What makes the U.S. dollar exchange rate fluctuate?

Changes in the demand for U.S. dollars and the supply of U.S. dollars lead to fluctuations in the U.S. dollar exchange rate. Because the demand for dollars and the supply of dollars generally change at the same time and in opposite directions, exchange rate fluctuations are frequently large.

4. What is interest rate parity and what happens when this condition doesn't hold?

Interest rate parity occurs when the rate of return earned by a unit of currency is the same in different nations. If the rate of return for the U.S. dollar is higher than that for, say, the Japanese yen, interest rate parity does not occur. In this case people will generally expect the value of the dollar to fall against the yen (that is, the U.S. dollar is expected to depreciate over time) so that interest rate parity is restored because the rate of return earned by a unit of currency is the same in both nations.

5. What is purchasing power parity and what happens when this condition doesn't hold?

Purchasing power parity occurs when a unit of money buys the same amount of goods and services in different nations. If prices of goods and services are higher in the United States than the (exchange rate adjusted) prices of goods and services in, say, Japan, purchasing power parity does not occur because a unit of currency buys less in the United States than in Japan. The demand for U.S. dollars decreases and the supply of U.S. dollars increases so that the value of the dollar falls against the yen to restore purchasing power parity.

6. What determines the real exchange rate and the nominal exchange rate in the short run?

In the short run, the nominal U.S. exchange rate is determined in the foreign exchange market as the exchange rate that sets the quantity of U.S. dollars demanded equal to the quantity of U.S. dollars supplied. The real exchange between the United States and Japan, RER , equals $E \times P/P^*$ where P is the U.S. price level, P^* is the Japanese price level, and E is the nominal exchange rate in yen per dollar. In the short run, changes in the nominal exchange rate bring an equal change in the real exchange rate.

7. What determines the real exchange rate and the nominal exchange rate in the long run?

In the long run, the real exchange rate is determined by demand and supply in the goods market. Identical goods in the United States and Japan sell for the same price once adjusted for the (nominal) exchange rate. The prices of goods that are not identical are determined by the supply and demand for them. In the long run, the nominal exchange rate is equal to $RER \times P^*/P$. Changes in the real exchange rate and changes in the price levels change the nominal exchange rate. In the long run, the price level is determined by the quantity of money. So changes in the U.S. or the Japanese quantity of money change the nominal exchange rate.

Page 230 (page 632 in *Economics*)

1. What are the transactions that the current account records?

The *current account* records payments for imports of goods and services from abroad, receipts from exports of goods and services sold abroad, net interest paid abroad, and net transfers (such as foreign aid payments).

2. What are the transactions that the capital account records?

The *capital account* records foreign investment in the U.S. minus U.S. investment abroad. Any statistical discrepancy is also recorded in the capital account.

3. What are the transactions that the official settlements account records?

The official settlements account records the change in U.S. official reserves.

4. Is the United States a net borrower or a net lender and a debtor or a creditor nation?

The United States is a net borrower and is a debtor nation.

5. How are net exports and the government sector balance linked?

Net exports is the value of exports of goods and services minus the value of imports of goods and services. Net exports is equal to the sum of *government sector surplus or deficit* plus *the private sector surplus or deficit*. The government sector balance is equal to net taxes minus government expenditure on goods and services. If the government sector balance is negative, then the government sector has a deficit, that is, a budget deficit. So if the government budget deficit increases and the private sector balance, which equals saving minus investment, does not change, the value of net exports becomes more negative.

Page 233 (page 635 in *Economics*)

1. What is a flexible exchange rate and how does it work?

A flexible exchange rate policy is an exchange rate that is determined by demand and supply with no direct intervention in the foreign exchange market by the central bank. In this arrangement, the forces of supply and demand with no direct central bank intervention are the only factors that influence the exchange rate.

2. What is a fixed exchange rate and how is its value fixed?

A fixed exchange rate policy is an exchange rate that is pegged at a value decided by the government or central bank. The central bank directly intervenes in the foreign exchange market to block the unregulated forces of supply and demand from changing the exchange rate away from its pegged value. For instance, if a central bank wanted to hold the exchange rate steady in the presence of diminished demand for its currency, the central bank props up demand by buying its currency in the foreign exchange market to keep the exchange rate from falling. If the demand for its currency increases, the central bank increases the supply by selling its currency and keeps the exchange rate from rising.

3. What is a crawling peg and how does it work?

A crawling peg exchange rate policy selects a target path for the exchange rate and then uses direct central bank intervention in the foreign exchange market to achieve that path. A crawling peg works like a fixed exchange rate except that the central bank changes the target value of the exchange rate in accord with its target path.

4. How has China operated in the foreign exchange market, why, and with what effect?

From 1997 until 2005, the People's Bank of China fixed the Chinese yuan exchange rate. Over this time, the demand for the yuan increased, so the People's Bank of China supplied additional yuan to keep the exchange rate constant. By supplying yuan, the People's Bank acquired large amounts of foreign currency. In addition, by fixing its exchange rate China essentially pegged its inflation rate to equal the U.S. inflation rate. Since 2005 the yuan has been allowed to appreciate slightly as the People's Bank moved to a crawling peg exchange rate policy. The exchange rate has not been allowed to change much, so over the long run the Chinese inflation rate remains closely tied to U.S. inflation.

Ch 10:

Page 249 (page 651 in *Economics*)

- 1. If the price level and the money wage rate rise by the same percentage, what happens to the quantity of real GDP supplied? Along which aggregate supply curve does the economy move?**

If the price level and the money wage rate rise by the same percentage, there is no change in the quantity of real GDP supplied and a movement occurs up along the *LAS* curve.

- 2. If the price level rises and the money wage rate remains constant, what happens to the quantity of real GDP supplied? Along which aggregate supply curve does the economy move?**

If the price level rises and the money wage rate remains constant the quantity of real GDP supplied increases and the economy moves along the *SAS* curve.

- 3. If potential GDP increases, what happens to aggregate supply? Does the *LAS* curve shift or is there a movement along the *LAS* curve? Does the *SAS* curve shift or is there a movement along the *SAS* curve?**

If potential GDP increases both long-run aggregate supply and short-run aggregate supply increase and the *LAS* curve and *SAS* curve shift rightward.

- 4. If the money wage rate rises and potential GDP remains the same, does the *LAS* curve or the *SAS* curve shift or is there a movement along the *LAS* curve or the *SAS* curve?**

If the money wage rate rises and potential GDP remains the same there is a decrease in short-run aggregate supply and no change in long-run aggregate supply. The *SAS* curve shifts leftward and the *LAS* curve is unchanged.

Page 253 (page 655 in *Economics*)

- 1. What does the aggregate demand curve show? What factors change and what factors remain the same when there is a movement along the aggregate demand curve?**

The aggregate demand curve shows the relationship between the quantity of real GDP demanded and the price level when other influences on expenditure plans remain the same. When there is a movement along the aggregate demand curve, the price level changes and other factors such as expectations, fiscal and monetary policy, and the world economy remain the same.

- 2. Why does the aggregate demand curve slope downward?**

The aggregate demand curve slopes downward because of the wealth effect and two substitution effects. First, a rise in the price level decreases real wealth, which brings an increase in saving and a decrease in spending—the wealth effect. Second, a rise in the price level raises the interest rate, which decreases borrowing and spending—an intertemporal substitution effect as people decrease current spending in favor of future spending—and increases the price of domestic goods and services relative to foreign goods and services, which decreases exports and increases imports—an international substitution effect.

3. How do changes in expectations, fiscal policy and monetary policy, and the world economy change aggregate demand and the aggregate demand curve?

Aggregate demand increases and the *AD* curve shifts rightward if: expected future income, expected future inflation, or expected future profits increase; government expenditures increase or taxes are cut; the quantity of money increases and the interest rate is cut; the foreign exchange rate falls; or foreigners' income increases. The reverse changes decrease aggregate demand and shift the *AD* curve leftward.

Page 259 (page 661 in *Economics*)

1. Does economic growth result from increases in aggregate demand, short-run aggregate supply, or long-run aggregate supply?

Economic growth results from increases in long-run aggregate supply. Economic growth occurs because the quantity of labor increases, capital is accumulated and there are technological advances over time. All three of these factors increase potential GDP and shift the *LAS* curve rightward.

2. Does inflation result from increases in aggregate demand, short-run aggregate supply, or long-run aggregate supply?

Inflation results from increases in aggregate demand that exceeds the increase in long-run aggregate supply. As the aggregate demand curve shifts rightward the price level rises. Increases in *AD* that exceed increases in *LAS* produce inflation.

3. Describe three types of short-run macroeconomic equilibrium.

Short-run macroeconomic equilibrium occurs when the quantity of real GDP demanded equals the quantity of real GDP supplied. There are three types of short-run equilibrium: below full-employment equilibrium where a recessionary gap exists with real GDP less than potential GDP; above full-employment equilibrium where an inflationary gap exists with real GDP greater than potential GDP; full-employment equilibrium where no gap exists and real GDP equals potential GDP.

4. How do fluctuations in aggregate demand and short-run aggregate supply bring fluctuations in real GDP around potential GDP?

Fluctuations in aggregate demand with no change in short-run aggregate supply bring fluctuations in real GDP around potential GDP. For instance, starting from full employment, a decrease in aggregate demand decreases the price level and real GDP and creates a recessionary gap. In the long run the money wage rate (and the money prices of other resources) falls so that short-run aggregate supply increases and the economy returns to its full employment equilibrium. Starting from full employment, a decrease in short-run aggregate supply decreases real GDP and raises the price level. The fall in real GDP combined with a rise in the price level is a phenomenon called *stagflation*.

Page 261 (page 663 in *Economics*)

1. What are the defining features of classical macroeconomics and what policies do classical macroeconomists recommend?

Classical macroeconomists believe that the economy is self-regulating and always at full employment. Classical macroeconomists assert that the proper government policy is to minimize the disincentive effects of taxes on employment, investment, and technological change.

2. What are the defining features of Keynesian macroeconomics and what policies do Keynesian macroeconomists recommend?

Keynesian macroeconomists believe that if the economy was left alone, it would rarely operate at full employment. To achieve and maintain full employment the economy needs active help from fiscal and monetary policy. Aggregate demand fluctuations combined with a very sticky money wage rate are the major sources the business cycle. Keynesian macroeconomists assert that active fiscal and monetary policy, designed to offset fluctuations in aggregate demand, are the proper government policies.

3. What are the defining features of monetarist macroeconomics and what policies do monetarist macroeconomists recommend?

Monetarist macroeconomists believe that the economy is self-regulating and will typically operate at full employment *if* monetary policy is not erratic and the money growth rate is kept steady. The major source of business cycle fluctuations are similar to the Keynesian view, that is, changes in aggregate demand combined with a sticky money wage rate. However, according to monetarist macroeconomists, the changes in aggregate demand are the result of fluctuations in the growth rate of money caused by the Federal Reserve. Monetarists assert that the proper government policies are low taxes, to avoid the disincentive effects stressed by classical macroeconomists, and steady monetary growth.

Ch 11:

Page 273 (page 675 in *Economics*)

1. Which components of aggregate expenditure are influenced by real GDP?

Consumption expenditure and imports are influenced by real GDP. Both increase when real GDP increases.

2. Define and explain how we calculate the marginal propensity to consume and the marginal propensity to save.

The marginal propensity to consume is the proportion of an increase in disposable income that is consumed. In terms of a formula, the marginal propensity to consume, or *MPC*, equals $\Delta C/\Delta YD$. where Δ means "change in." The marginal propensity to save is the proportion of an increase in disposable income that is saved. In terms of a formula, the marginal propensity to save, or *MPS*, equals $\Delta S/\Delta YD$. The sum of the *MPC* and the *MPS* is 1.0.

3. How do we calculate the effects of real GDP on consumption expenditure and imports by using the marginal propensity to consume and the marginal propensity to import?

The effects of real GDP on consumption expenditure and imports are determined respectively by the marginal propensity to consume and the marginal propensity to import. In particular, the effect of a change in real GDP on consumption expenditure equals the marginal propensity to consume multiplied by the change in disposable income. Similarly, the effect of a change in real GDP on imports equals the marginal propensity to import multiplied by the change in real GDP.

Page 277 (page 679 in *Economics*)

1. What is the relationship between aggregate planned expenditure and real GDP at equilibrium expenditure?

Equilibrium expenditure occurs when aggregate planned expenditure equals real GDP.

2. How does equilibrium expenditure come about? What adjusts to achieve equilibrium?

Equilibrium expenditure results from adjustments in real GDP. For instance, if aggregate planned expenditure exceeds real GDP, firms find that their inventories are below their targets. In response, firms increase production to meet their inventory targets. And, as production increases, real GDP increases. The increase in real GDP increases aggregate planned expenditure. Eventually real GDP increases sufficiently so that it equals aggregate planned expenditure and, at that point, equilibrium expenditure occurs.

3. If real GDP and aggregate expenditure are less than equilibrium expenditure, what happens to firms' inventories? How do firms change their production? And what happens to real GDP?

If real GDP and aggregate expenditure are less than their equilibrium levels, an unplanned decrease in inventories occurs. The unplanned decrease in inventories leads firms to increase production to restore inventories to their planned levels. The increase in production increases real GDP.

4. If real GDP and aggregate expenditure are greater than equilibrium expenditure, what happens to firms' inventories? How do firms change their production? And what happens to real GDP?

If real GDP and aggregate expenditure are greater than their equilibrium levels, an unplanned increase in inventories occurs. The unplanned increase in inventories leads firms to decrease production to restore inventories to their planned levels. The decrease in production decreases real GDP.

Page 282 (page 684 in *Economics*)

1. What is the multiplier? What does it determine? Why does it matter?

The multiplier is the amount by which a change in autonomous expenditure is multiplied to determine the change in equilibrium expenditure and real GDP. A change in autonomous expenditure changes real GDP by an amount determined by the multiplier. The multiplier matters because it tells us how much a change in autonomous expenditure changes equilibrium expenditure and real GDP.

2. How do the marginal propensity to consume, the marginal propensity to import, and the income tax rate influence the multiplier?

The marginal propensity to consume, the marginal propensity to import, and the income tax rate all influence the magnitude of the multiplier. The multiplier is smaller when the marginal propensity to consume is smaller, when the marginal propensity to import is larger, and when the income tax rate is larger.

3. How do fluctuations in autonomous expenditure influence real GDP?

Fluctuations in autonomous expenditure bring business cycle turning points. When autonomous expenditure changes, the economy moves from one phase of the business cycle to the next. For example, if autonomous expenditure decreases, equilibrium expenditure and real GDP decrease and, as a result, the economy enters the recession phase of the business cycle.

Page 287 (page 689 in *Economics*)

1. How does a change in the price level influence the AE curve and the AD curve?

A change in the price level *shifts* the AE curve and creates a *movement along* the AD curve.

2. If autonomous expenditure increases with no change in the price level, what happens to the AE curve and the AD curve? Which curve shifts by an amount that is determined by the multiplier and why?

A change in autonomous expenditure with no change in the price level shifts both the AE curve and the AD curve. The AE curve shifts by an amount equal to the change in autonomous expenditure. The multiplier determines the magnitude of the shift in the AD curve. The AD curve shifts by an amount equal to the change in autonomous expenditure multiplied by the multiplier.

3. How does an increase in autonomous expenditure change real GDP in the short run? Does real GDP change by the same amount as the change in aggregate demand? Why or why not?

In the short run, an increase in aggregate expenditure increases real GDP. However, the increase in real GDP is less than the increase in aggregate demand because the price level rises. The more the price level rises (the steeper the SAS curve) the smaller the increase in real GDP.

4. **How does real GDP change in the long run when autonomous expenditure increases? Does real GDP change by the same amount as the change in aggregate demand? Why or why not?**

In the long run, an increase in aggregate expenditure has no effect on real GDP, that is, real GDP does not change. The change in real GDP—zero—is less than the change in aggregate demand. The change in real GDP is nil because, in the long run, the economy returns to its full-employment equilibrium. In the long run, an increase in aggregate expenditure raises the price level but has no effect on real GDP.

Ch 12:

Page 305 (page 707 in *Economics*)

1. How does demand-pull inflation begin?

Demand-pull inflation begins with an increase in aggregate demand. The increase in aggregate demand increases real GDP and the price level.

2. What must happen to create a demand-pull inflation spiral?

When the economy is at an above full-employment equilibrium, the money wage rate rises which decreases the short-run aggregate supply. The decrease in the short-run aggregate supply decreases real GDP and raises the price level. If nothing else changes, the price level eventually stops rising. To create a demand-pull inflation spiral, aggregate demand must persistently increase, and the only way in which aggregate demand can persistently increase is if the quantity of money persistently increases.

3. How does cost-push inflation begin?

Cost-push inflation begins with an increase in the money wage rate or an increase in the money prices of raw materials, which decreases aggregate supply. The decrease in aggregate supply raises the price level and decreases real GDP.

4. What must happen to create a cost-push inflation spiral?

If the Fed responds to each decrease in aggregate supply by increasing the quantity of money, aggregate demand increases and freewheeling cost-push inflation ensues.

5. What is stagflation and why does cost-push inflation cause stagflation?

Stagflation occurs when real GDP decreases and the price level rises. Cost-push inflation causes stagflation when aggregate supply decreases because a decrease in aggregate supply raises the price level and decreases real GDP.

6. How does expected inflation occur?

Expected increases in aggregate demand or expected decreases in aggregate supply create expected inflation because they change the expected price level. For example, in anticipation of an increase in aggregate demand, the money wage rate rises by the same percentage as the price level is expected to rise. With the correct expectation, real GDP remains equal to potential GDP and unemployment remains at its natural rate.

7. How do real GDP and the price level change if the forecast of inflation is incorrect?

If the actual inflation rate exceeds the forecasted inflation rate, the price level rises by more than expected and real GDP exceeds potential GDP. If the actual inflation rate falls short of the expected inflation rate, the price level rises by less than expected and real GDP is less than potential GDP.

Page 308 (page 710 in *Economics*)

1. How would you use the Phillips curve to illustrate an unexpected change in inflation?

An unexpected change in inflation results in a movement along the short-run Phillips curve. In particular, an unexpected increase in the inflation rate lowers the unemployment rate and an unexpected decrease in the inflation rate raises the unemployment rate.

2. If the expected inflation rate increases by 10 percentage points, how do the short-run Phillips curve and the long-run Phillips curve change?

A 10 percentage point increase in the expected inflation rate shifts the short-run Phillips curve vertically upward by 10 percentage points. (Each point on the new short-run Phillips curve lies 10 percentage points above the point on the old Phillips curve directly below it). A 10 percentage point increase in the expected inflation rate does not change the long-run Phillips curve.

3. If the natural unemployment rate increases, what happens to the short-run Phillips curve and the long-run Phillips curve?

An increase in the natural unemployment rate shifts both the short-run and long-run Phillips curves rightward by an amount equal to the increase in the natural unemployment rate.

4. Does the United States have a stable short-run Phillips curve? Explain why or why not.

The U.S. short-run Phillips curve shifts with changes in the expected inflation rate and the natural unemployment rate, so it is not stable.

Page 313 (page 715 in *Economics*)

1. Explain the mainstream theory of the business cycle.

Mainstream business cycle theory attributes business cycles to fluctuations in aggregate demand growth. According to the mainstream view, potential GDP grows steadily and aggregate demand, while generally growing slightly faster than potential GDP, at times grows more slowly than potential GDP and at other times grows significantly more rapidly than potential GDP. When aggregate demand grows more slowly than potential GDP, the price level falls below its expected level and the economy slides into a recession so that real GDP is less than potential GDP. When aggregate demand grows more rapidly than potential GDP, the price level rises above its expected level and the economy moves into a strong expansion accompanied by inflation.

2. What are the four varieties of the mainstream theory of the business cycle and how do they differ?

The four varieties of the mainstream theory are the Keynesian cycle theory, the monetarist cycle theory, the new classical cycle theory, and the new Keynesian cycle theory. These theories differ according to the factors they believe are the most responsible for causing fluctuations in the growth of aggregate demand. Keynesian cycle theory asserts that fluctuations in aggregate demand growth are the result of fluctuations in investment driven by fluctuations in business confidence. The monetarist cycle theory says that fluctuations in both investment and consumption expenditure lead to fluctuations in aggregate demand growth and that the basic source of the fluctuations in investment and consumption expenditure is fluctuations in the growth rate of the quantity of money. New classical cycle theory claims that the money wage rate and the position of the short-run aggregate supply curve are determined by the rational expectation of the price level, which in turn is determined by potential GDP and the expected aggregate demand. As a result, only unexpected changes in aggregate demand growth lead to business cycles. Finally, new Keynesian cycle theory says that money wage rates and the position of the short-run aggregate supply are determined by rational expectations of the price level from the past. As a result, both expected and unexpected fluctuations in aggregate demand growth lead to business cycles.

3. According to RBC theory, what is the source of the business cycle? What is the role of fluctuations in the rate of technological change?

Real business cycle (RBC) theory says that economic fluctuations are caused by technological change that makes productivity growth fluctuate. Fluctuations in the rate of technological change are the impulse that create the business cycle.

4. According to RBC theory, how does a fall in productivity growth influence investment demand, the market for loanable funds, the real interest rate, the demand for labor, the supply of labor, employment, and the real wage rate?

According to real business cycle theory, a fall in productivity growth decreases investment demand and the demand for labor. The decrease in investment demand decreases the demand for loanable funds and lowers the real interest rate. Via the intertemporal substitution effect, the lower real interest rate decreases the supply of labor. Because both the demand for labor and the supply of labor decrease, employment decreases. The real wage rate also falls because the decrease in the demand for labor exceeds the decrease in the supply of labor.

5. What are the main criticisms of RBC theory and how do its supporters defend it?

Critics of the real business cycle theory level three criticisms at it: 1) the money wage rate is sticky; 2) the intertemporal substitution effect is small so that the small changes in the real wage rate cannot account for large changes in employment; and, 3) measured productivity shocks are likely to be caused by changes in aggregate demand so that business cycle fluctuations cause the measured productivity shocks. Real business cycle supporters respond that 1) the real business cycle theory is consistent with the facts about economic growth and it explains the facts about business cycles; and 2) real business cycle theory is consistent with a wide range of microeconomic evidence about labor supply, labor demand, investment demand, and the distribution of income between labor and capital.