Soochow University International Programs

2021 SCUIP Winter Session I
ECON202

Lecture 8: Mid-term Revision

ECON202: Macroeconomics
Soochow University

Topics Covered So Far

- Introduction to Macroeconomics

- Measuring a Nation's Income

- Measuring the Cost of Living

- Unemployment

- Production and Growth

- Saving, Investment, and the Financial System

- The Basic Tool of Finance

Introduction to Macroeconomics

- A positive analysis examines the economic consequences of an economic theory, but it does not address its desirability.

- A normative analysis tries to determine whether a certain economic policy should be used.

Introduction to Macroeconomics

The classical approach:

- The invisible hand of economics: general welfare will be maximized (not the distribution of wealth) if:
    ▷ there are free markets
    ▷ individuals act in their own best interest

- To maintain markets' equilibrium — the quantities demanded and supplied are equal:
    ▷ Markets must function without interventions
    ▷ Wages and prices should be flexible

- Thus, according to the classical approach, the government should have a limited role in the economy.

Introduction to Macroeconomics

The Keynes approach

- Keynes (1936) assumed that wages and process adjust slowly.

- Thus, markets could be out of equilibrium for long periods of time and unemployment can persist.

- Therefore, according to the Keynesian approach, governments can take actions to alleviate unemployment.

- The government can purchase goods and services, thus increasing the demand for output and reducing unemployment.

- Newly generated incomes would be spent and would raise employment even further.

Introduction to Macroeconomics

Evolution of the Classical-Keynesian Debate:

- After stagnation – high unemployment and high inflation – of the 1970s, a modernized classical approach reappeared.

- Substantial communication and crosspollination is taking place between the classical and the Keynesian approaches.

- The macroeconomic analysis nowadays is based on the analysis of individual behaviour (i.e. microeconomic foundations of macroeconomics).

Measuring a Nation's Income

Income and Expenditure

- Gross Domestic Product (GDP) measures total output in the economy.

- GDP also measures total income of everyone in the economy.

- GDP also measures total expenditure on the economy's output of goods and services.

- For the economy as a whole, output = income = expenditure, because every dollar of expenditure by a buyer is a dollar of income for the seller.

Measuring a Nation's Income

Gross Domestic Product (GDP)

- Definition: the market value of all final goods and services produced within a country in a given period of time

- Goods are valued at their market prices, so:
  ▹ Things that don't have a market value are excluded, e.g. housework you do for yourself

Measuring a Nation's Income

Gross Domestic Product (GDP)

- Definition: the market value of all final goods and services produced within a country in a given period of time

- Final goods are intended for the end user.

- Intermediate goods are used as components or ingredients in the production of other goods.

- GDP only includes final goods, as they already embody the value of the intermediate goods used in their production (avoid double counting).

Measuring a Nation's Income

Gross Domestic Product (GDP)

- Definition: the market value of all final goods and services produced within a country in a given period of time

- GDP includes tangible goods (like DVDs, mountain bikes, beer)

- GDP also includes intangible services (dry cleaning, concerts, cell phone service)

Measuring a Nation's Income

Gross Domestic Product (GDP)

- Definition: the market value of all final goods and services produced within a country in a given period of time

- GDP includes currently produced goods, not goods produced in the past.

Measuring a Nation's Income

Gross Domestic Product (GDP)

- Definition: the market value of all final goods and services produced within a country in a given period of time

- GDP measures the value of production that occurs within a country's borders, whether done by its own citizens or by foreigners located there (i.e. geographical concept).

Measuring a Nation's Income

Gross Domestic Product (GDP)

- Definition: the market value of all final goods and services produced within a country in a given period of time

- Usually a year or a quarter (3 months)

Measuring a Nation's Income

The Components of GDP

- Recall: GDP is total spending.

- Four components
  ▷ Consumption (C)
  ▷ Investment (I)
  ▷ Government Purchases (G)
  ▷ Net Exports = Export - Import (NX)

- These components add up to GDP (denoted Y)

$$Y = C + I + G + NX$$

Measuring a Nation's Income

- Consumption excludes house purchasing.

- Investment does not mean the purchase of financial assets like stocks and bonds.

- Government purchases excludes transfer payments (e.g. social security, unemployment insurance benefits).

Measuring a Nation's Income

Real versus Nominal GDP

- Nominal GDP values output using current prices. It is not corrected for inflation.

- Real GDP values output using the prices of a base year. Real GDP is corrected for inflation.

Measuring a Nation's Income

GDP and Economic Well-Being

- Real GDP per capita is the main indicator of the average person's standard of living.

- But GDP is not a perfect measure of well-being.

- GDP does not value:
  ▷ the quality of the environment
  ▷ leisure time
  ▷ non-market activities (e.g. child care a parent provides his or her child at home)

Measuring a Nation's GDP

Then why do we still care about GDP?

- Having a large GDP enables a country to afford better schools, health care, etc.

- Many indicators of the quality of life are positively correlated with GDP.

Measuring the Cost of Living

The GDP Deflator

- The GDP deflator is a measure of the overall level of prices.

- Definition:

$$\text{GDP deflator} = 100 \times \frac{\text{nominal GDP}}{\text{real GDP}}$$

- One way to measure the economy's inflation rate is to compute the percentage increase in the GDP deflator from one year to the next.

Measuring the Cost of Living

The Consumer Price Index (CPI)

- Measures the typical consumer's cost of living.

- The basis of cost of living adjustments in many contracts and in social security.

Measuring the Cost of Living

How the CPI is calculated?

- Fix the basket

- Find the prices

- Compute the basket's cost

- Choose a base year and compute the index

$$100 \times \frac{\text{cost of basket in current year}}{\text{cost of basket in base year}}$$

- Compute the inflation rate

$$\text{inflation rate} = \frac{\text{CPI this year} - \text{CPI last year}}{\text{CPI last year}} \times 100\%$$

Measuring the Cost of Living

Problems with the CPI:

- Substitution bias

- Introduction of new goods

- Unmeasured quality changes

- Each of these three problems causes CPI to overstate cost of living increases.

Measuring the Cost of Living

Contrasting the CPI and GDP deflator

- Imported consumer goods
  ▷ included in CPI
  ▷ excluded from GDP deflator

- Capital goods
  ▷ excluded from CPI
  ▷ included in GDP deflator

- The basket
  ▷ CPI uses fixed basket
  ▷ GDP deflator uses basket of currently produced goods and services

Measuring the Cost of Living

General Rule for Correcting for Inflation

- If you know a dollar amount in year a, what is the equivalent dollar amount – in purchasing power – in year b?

- Year b amount $=$ Year a amount $\times \dfrac{\text{CPI in Year } b}{\text{CPI in Year } a}$

Measuring the Cost of Living

Real vs. Nominal Interest rates

- The nominal interest rate
  - ▷ the interest rate not corrected for inflation
  - ▷ the rate of growth in the dollar value of a deposit or debt

- The real interest rate
  - ▷ corrected for inflation
  - ▷ the rate of growth in the purchasing power of a deposit or debt

- Real interest rate = nominal interest rate - inflation rate

Unemployment

What is labor market all about?

- Labor supply and labor demand

- At the equilibrium …
  ▷ Employment (number of employees; total working hours …)
  ▷ Wage rate (the return to labor)

- Unemployment (those who do not have jobs and are actively searching for jobs)

- One of the most closely watched macro variables by policy makers.

Unemployment

- Unemployment rate ("u-rate"): % of the labor force that is unemployed

$$\text{u-rate} = 100 \times \frac{\text{\# of unemployed}}{\text{labor force}}$$

- Labor force participation rate: % of the adult population that is the labor force

$$\text{labor force participation rate} = 100 \times \frac{\text{labor force}}{\text{adult population}}$$

Unemployment

The Duration of Unemployment

- Most spells of unemployment are short:
  ▷ Typically 1/3 of the unemployed have been unemployed <5 weeks, 2/3 have been unemployed < 14 weeks.
  ▷ Only 20% have been unemployed > 6 months.

- Yet, most observed unemployment is long term.
  ▷ The small group of long-term unemployed persons has fairly little turnover, so it accounts for most of the unemployment observed over time.

- Knowing these facts helps policymakers design better policies to help the unemployed.

Unemployment

Cyclical Unemployment vs. the Natural Rate

- The natural rate of unemployment
  ▷ the normal rate of unemployment around which the actual unemployment rate fluctuates

- Cyclical unemployment
  ▷ the deviation of unemployment from its natural rate
  ▷ associated with business cycles

Unemployment

Explaining the Natural Rate

- Even when the economy is doing well, there is always some unemployment, including:

- **Frictional unemployment**
  - ▷ It takes time to find a job that suits you.
  - ▷ short-term for most workers
  - ▷ occurs when labor supply equals to labor demand

- **Structural unemployment**
  - ▷ occurs when there are fewer jobs than workers
  - ▷ occurs when wage is kept above equilibrium
    - i) minimum-wage laws; ii) unions; iii) efficiency wages
  - ▷ usually longer-term

Production and Growth

Productivity

- A country's standard of living depends on its ability to produce goods and services.

- This ability depends on productivity: the average quantity of goods and services produced per unit of labor input.
  Y = real GDP = quantity of output produced, L = quantity of labor,
  productivity = Y/L (output per worker, real GDP per capita)

- When a nation's workers are very productive, real GDP is large and incomes are high.

- When productivity grows rapidly, so do living standards.

Production and Growth

Things that improve productivity

- Physical capital per worker
  ▷ diminishing marginal return; catch-up effect
  ▷ sacrifice current consumption

- Human capital per worker
  ▷ sacrifice current consumption

- Natural resources per worker
  ▷ sacrifice current consumption

- Technological knowledge
  ▷ sacrifice current consumption

Saving and Investment

- We can boost productivity by increasing physical capital, which requires investment.

- Since resources scarce, producing more capital requires producing fewer consumption goods.

- Reducing consumption = increasing saving.
  ▷ This extra saving funds the production of investment goods

- Hence, a tradeoff between current and future consumption.

Saving and Investment

Financial system

- Financial markets
  ▷ Stock market
  ▷ Bond market

- Financial intermediaries
  ▷ Bank
  ▷ Mutual fund

Saving and Investment

Saving and Investment in National Account

- In a closed economy, $S = I$.

- National saving = private saving ($Y - T - C$) + public saving ($T - G$)
  ▷ Positive public saving (T > G): budget surplus
  ▷ Negative public saving (T < G): budget deficit

Saving and Investment

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 (i.e. real interest rate), which is both the return to saving and the cost of borrowing.

- Supply side (i.e. National saving)
  ▷ household with extra income (i.e. private saving)
  ▷ budget surplus (i.e. public/government saving)

- Demand side (i.e. Investment)
  ▷ firms borrow the funds they need to pay for new equipment, factories, etc.
  ▷ household borrow the funds they need to purchase new houses

Saving and Investment

Effects of government policies

- Taxes can affect saving

- Taxes can affect investment (i.e. investment tax credit)

- Government budgets can affect saving

Saving and Investment

Policy 1: Saving incentives

- **An income tax cut** increases the incentive for households to save, at any given interest rate.
  - -- The supply curve of loanable funds shifts to the right.
  - -- The equilibrium **interest rate decreases**.
  - -- The quantity of **saving and investment increases**.
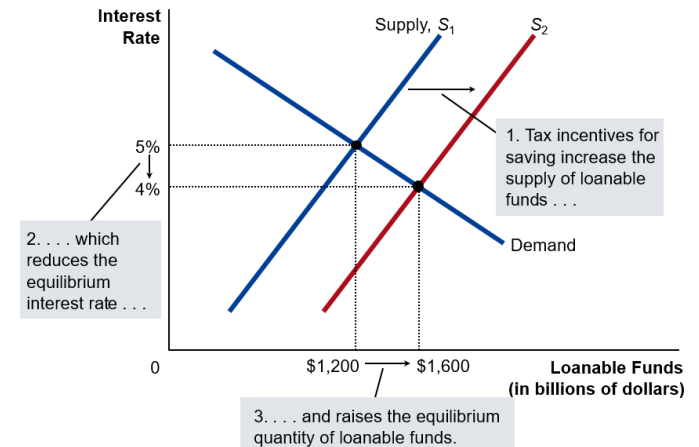
Saving and Investment

Policy 2: Investment tax credit.

- An investment tax credit increases the incentive firms have to borrow for investment purposes. So, it
  -- Shifts the demand curve for loanable funds to the right.
  -- The **interest rate increases** and **saving and investment increase** as well.
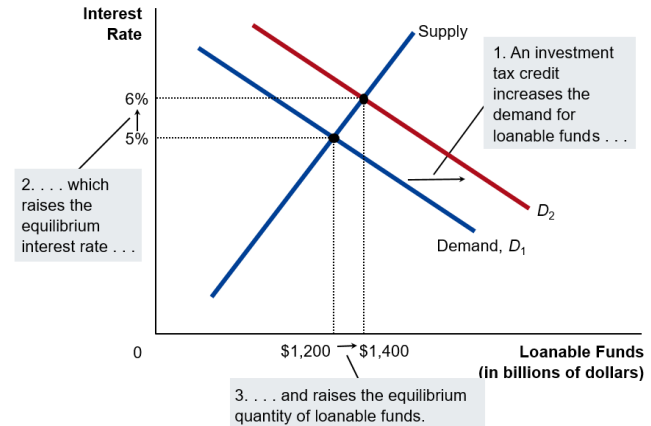
Saving and Investment

Policy 3: Budget deficit

- Government borrowing to pay for its budget deficit reduces the supply of loanable funds available to pay for investment by households and firms (the private sector).

- This fall in investment is referred to as crowding out.
  -- The budget deficit borrowing crowds out private borrowers who are trying to find loans for investment.

- An increase in the budget deficit decreases the supply of loanable funds.
  -- The supply curve of loanable funds shifts to the left.
  -- The interest rate increases.
  -- Saving and investment decreases.
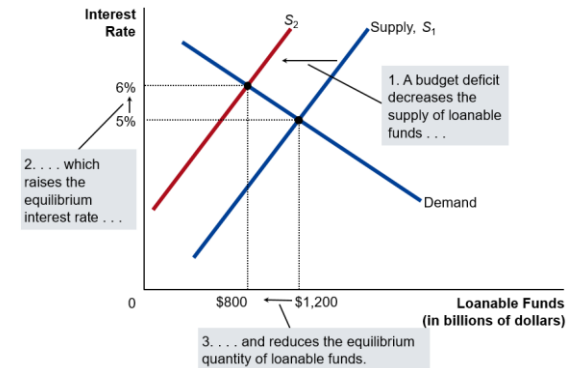
Basic Tool of Finance

- Agents (households and/or firms) are forward-looking.

- Agents have rational expectations.
  - ▷ How much will I earn in ten years?
  - ▷ Will I have enough money for retirement?
  - ▷ Will the market demand goes up next year?
  - ▷ When should we do innovation?

Basic Tool of Finance

Present value (PV) vs. Future value (FV) (Time value of money)

- The present value of a future sum: the amount that would be needed today to yield that future sum at prevailing interest rates.

- Related concept:
  The future value of a sum: the amount of the sum will be worth at a given future date, when allowed to earn interest at the prevailing rate.

- In general, FV = PV $(1 + r)^N$
  where r denotes the interest rate (in decimal form)

- Solve PV to get: PV = $\dfrac{FV}{(1+r)^N}$

Basic Tool of Finance

Effect of real interest rate on investment and saving:

- **Present value helps explain why investment falls when the interest rate rises.**

- Will saving rise or fall if interest rate goes up?
    ▷ Rise? Perhaps. Now saving earns higher interest, we have stronger incentives to save.
    ▷ Falls? Perhaps. If I used to save for retirement, now higher interest rate gives me higher return so I do not have to save that much.
    ▷ Substitution effect vs. Wealth effect
    ▷ Theoretically, the impact of interest rate on saving is ambiguous.

Basic Tool of Finance

Compounding:

- **Compounding**: the accumulation of a sum of money where the interest earned on the sum of earns additional interest (i.e. interest on interest)

- Because of compounding, small differences in interest rates lead to big differences over time.
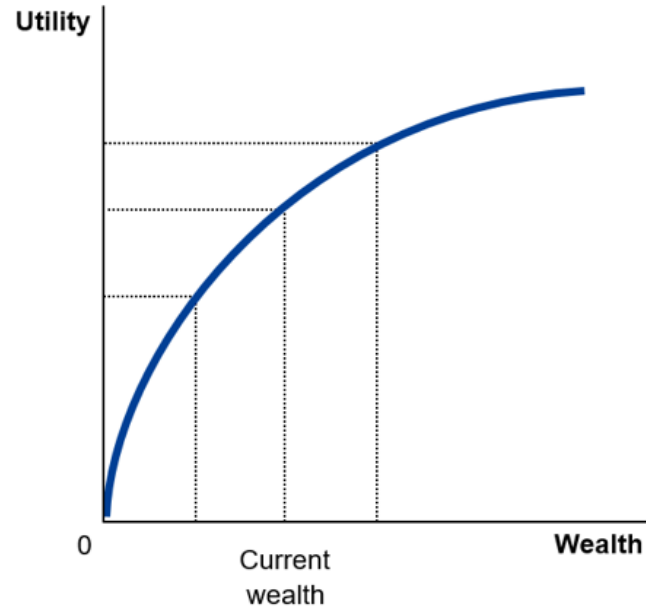
Basic Tool of Finance

- The Rule of 70:

  ▷ If a variable grows at a rate of x percent per year, that variable will double in about $70/x$ years.

- Example:

  ▷ If interest rate is 5%, a deposit will double in about 14 years.
  ▷ If interest rate is 7%, a deposit will double in about 10 years.
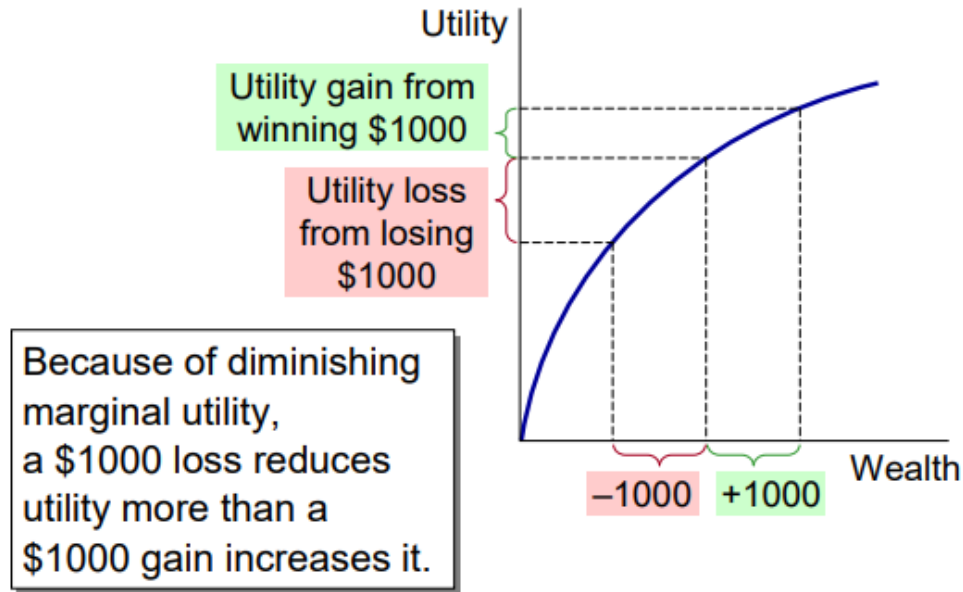
Basic Tool of Finance

Utility function for risk averse people:

As wealth rises, the curve becomes flatter due to **diminishing marginal utility**:

the more wealth a person has, the less extra utility he would get from an extra dollar.

Basic Tool of Finance

Risk aversion explanation using utility curve:

Basic Tool of Finance

Two ways to manage risk:

- Insurance
  - ▷ adverse selection
  - ▷ moral hazard

- Diversification
  - ▷ can reduce firm-specific risk
  - ▷ cannot reduce market risk

Tradeoff between risk and return:

- Higher risk, higher return

Basic Tool of Finance

Asset valuation

- When deciding whether to buy a company's stock, you compare the price of the shares to the value of the company.

  ▷ If share price > value, the stock is overvalued. (sell)
  ▷ If share price < value, the stock is undervalued. (buy)
  ▷ If share price = value, the stock is fairly valued.

- Value of a share
  = PV of any dividends the stock will pay
  + PV of the price you get when you sell the share

- One way to value a stock: fundamental analysis, the study of a company's accounting statements and future prospects to determine its value.

Basic Tool of Finance

Efficient Markets Hypothesis

- The theory that each asset price reflects all publicly available information about the value of the asset.

- Stock prices determined by supply and demand.
  In equilibrium,
    ▷ the number of people who believe a stock is overvalued exactly balances the number who believe it to be undervalued
    ▷ the typical person perceives all stocks fairly valued

- The efficient markets hypothesis implies that it is impossible to consistently "beat the market".

Mid-term Exam

- Weight: 30% of the final grade

- Closed book and calculators are allowed.

- 2 hours + 10 minutes reading time

- 3 Sections
  ▷ Section A: True/False (MUST provide the justification reasons) (4 questions, 20 marks in total)
  ▷ Section B: Multiple Choice (20 questions, 60 marks in total)
  ▷ Section C: Problem Solving (4 questions, 20 marks in total)

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