경제수학 제 3 장

거시경제학의 모형

모형정립 (Model Specification)

- Exogenous variable (외생변수): its value is determined outside the model
- Endogenous variable (내생변수): its value is determined within the model
- Autonomous: independent of the level of income and therefore exogenous
- We represent exogenous variables in our models just using the appropriate letters

소득과 직접세

- Y = income
- Y_d = disposable income
- T = total net direct taxation
- t = rate of income tax
- Disposable income is defined as

$$Y_d = Y - T$$

- Under a proportional income tax model

$$T = tY \text{ and so}$$

$$Y_d = (1 - t)Y$$

소비함수 (Consumption)

- C = consumer expenditure
- Consumption is a function of disposable income
- Using a linear consumption function we write
$$C = a + bY_d$$
- Substituting $Y_d = Y - T$ shows that consumption is also a function of income, namely
$$C = a + b(Y - T)$$

저축함수 (Saving)

- S = saving
- Disposable income (가처분 소득) is either consumed or saved, so
- Saving is defined by

$$S = Y_d - C = Y - T - C$$

한계적 성향 (Marginal Propensities)

- For the consumption function $C = a + bY_d$
- The marginal propensity to consume out of disposable income is b
- The saving function is $S = -a + (1 - b)Y_d$
- The marginal propensity to save out of disposable income is $1 - b$

지출부문 항목 (Expenditure Components)

- AD = aggregate demand
- I = investment expenditure
- G = government expenditure
- X = exports
- Z = imports
- W = withdrawals
- J = injections

총수요 (Aggregate Demand)

- Aggregate demand for home produced goods and services is given by

$$\text{AD} = C + I + G + X - Z$$

- Injections and withdrawals are defined as

$$J = I + G + X$$
$$W = S + T + Z$$

항목별 균형 (Balances for Each Sector)

- $T - G$ = government budget surplus
- $S - I$ = surplus in the private sector
  financial balance
- $X - Z$ = foreign trade surplus

균형소득 도출 (findiing Equilibrium Income)

- State the equilibrium condition $Y = \text{AD}$
- Write an expression for aggregate demand:

  $\text{AD} = C + I + G + X - Z$

  and by substituting the components, obtain term(s) containing Y
- Substitute for AD in the equilibrium condition
- Collect terms in Y on the left-hand side and solve for Y

Equilibrium Values

- Another macroeconomic equilibrium requirement, ensuring that plans are satisfied, is that withdrawals equal injections

$$W = J$$

- Find the value of equilibrium income and substitute it to find equilibrium values for the other variables

화폐시장 (Money Market)

- r = rate of interest
- MD = real total demand for money
- MS = real money supply
- Real Money Demand: MD = f(Y, r) where Y is real aggregate income and r is the rate of interest expressed as a decimal
- Real Money Supply: MS = k where k is a constant

화폐시장의 균형(Money Market Equilibrium)

- Equilibrium occurs when the rate of interest is such as to equate the real supply and real demand for money, given the level of income
- At different levels of income different rates of interest are required if equilibrium is to occur
- The LM curve plots points that represent different combinations of real aggregate income, *Y*, and the rate of interest, r, at which the money market is in equilibrium

To Find the Equation of the LM curve

- Money market equilibrium occurs when
  MD = MS
- Substitute expressions for MD and MS
- Solve for Y in terms of r
- To plot the LM curve, the convention in economics is to plot r on the vertical axis
- Rewrite the equation expressing r as a function of Y

To Find the Equation of the IS curve

- Goods market equilibrium occurs when
  $Y = \text{AD}$
- Substitute the appropriate components for AD
- C, I and Z are now all functions of Y and/or r
- Collect terms and solve for Y in terms of r
- To plot the IS curve, rewrite the equation expressing r as a function of Y

Equilibrium in the IS–LM model

- Overall macroeconomic equilibrium requires that Y in the LM equation equals Y in the IS equation
- Equate the expressions for Y and solve for r
- Substitute r back into either the IS or the LM equation to find the equilibrium Y
- Plot the IS and LM curves on the same graph and read the values of r and Y where they intersect