

# FORMULA SHEET

## MACROECONOMICS

**Aggregate Expenditure in a Simple Model Without Government or Foreign Sectors**

$$AE = C + I$$

**Allocative Efficiency Condition**

P = MC, or more precisely,  
Marginal Social Benefit (MSB) = Marginal Social Cost (MSC)

**Autonomous Spending Multiplier**

$$\text{Multiplier} = \frac{1}{1 - \text{MPC}} = \frac{1}{\text{MPS}}$$

### Balanced Budget Multiplier

$$\text{Balanced Budget Multiplier} = \frac{1}{1-MPC} + \left( -\frac{MPC}{1-MPC} \right) = \frac{1-MPC}{1-MPC} = 1$$

### Bank's Reserve Ratio

$$\text{Reserve Ratio} = \frac{\text{Bank Reserves}}{\text{Total Deposits}}$$

### Budget Deficit

$$\text{Budget Deficit} = \text{Federal Government Spending} - \text{Tax Collections}$$

(A negative deficit indicates a surplus.)

### Capital-Account Balance

$$\text{Capital-Account Balance} = \text{Foreign Purchases of Home Assets} - \text{Home Purchases of Foreign Assets}$$

### Consumer Price Index

$$\text{CPI} = \frac{\text{Base Year Quantities} \times \text{Current Year Prices}}{\text{Base Year Quantities} \times \text{Base Year Prices}} \times 100$$

### Consumption Function

$$C = C_a + MPC(Y)$$

### Current-Account Balance

$$\text{Current-Account Balance} = \text{Trade Balance} + \text{Services Balance} + \text{Unilateral}$$

### Distributive Efficiency Condition

$$\frac{MU_F}{P_F} = \frac{MU_C}{P_C}$$

### Equality of Leakages and Injections

$$S + T + M = I + G + X$$

### Equation of Exchange

$$MV = PQ$$

### Gross Domestic Product

$$\begin{aligned} \text{GDP} &= C + I + G + (X - M) \\ \text{GDP} &= \text{NI} + \text{Depreciation} + \text{Indirect Taxes} - \text{Subsidies} + \text{Net Income of Foreigners} \end{aligned}$$

### Gross Domestic Product Deflator

$$\text{GDP Deflator} = \frac{\text{Current Year Quantities} \times \text{Current Year Prices}}{\text{Current Year Quantities} \times \text{Base Year Prices}} \times 100$$

### Income in a Simple Model Without Government or Foreign Sectors

$$Y = C + S$$

### Inflation Between Two Years

$$\text{Inflation Between Years Y and Z} = \left[ \frac{\text{CPI in Year Z}}{\text{CPI in Year Y}} - 1 \right] \times 100$$

### Marginal Propensity to Consume

$$\text{MPC} = \frac{\text{Change in Consumption}}{\text{Change in Income}}$$

### Marginal Propensity to Save

$$\text{MPS} = \frac{\text{Change in Saving}}{\text{Change in Income}}$$

**Marginal Propensity to Save and Marginal Propensity to Consume Sum**

$$MPC + MPS = 1$$

**Merchandise Trade Balance**

$$\text{Merchandise Trade Balance} = \text{Value of Merchandise Exports} - \text{Value of Merchandise Imports}$$

**Nominal Interest Rate**

$$\text{Nominal Interest Rate} = \text{Real Interest Rate} + \text{Anticipated Inflation}$$

**Production Efficiency Condition**

$$\frac{w}{r} = \frac{MP_L}{MP_K}$$

**Real GDP**

$$\frac{\text{Nominal GDP}}{\text{CPI}^* \text{ for the same year as the nominal figure}} \times 100$$

\*CPI or GDP deflator

**Real Interest Rate**

$$\text{Real Interest Rate} = \text{Nominal Interest Rate} - \text{Anticipated Inflation}$$

**Slope**

$$\frac{\text{Rise}}{\text{Run}}$$

**Tax Multiplier**

$$\text{Tax Multiplier} = -\frac{MPC}{MPS}$$

**Total Amount of Deposits Resulting from an Initial Deposit That Is Ultimately Held as Reserves**

$$\text{Simple Money (or Deposit) Multiplier} = \frac{1}{\text{Required Reserve Ratio}}$$