

Class 12 Economics: Macroeconomics Formulas

Introductory Macroeconomics (NCERT), all 6 chapters · CBSE syllabus 2026-27 · NCERT textbook (Reprint 2026-27)

How to use this sheet. The CBSE 2026-27 Class 12 Economics paper has two parts: **Introductory Macroeconomics** (Part A, 40 marks) and **Indian Economic Development** (Part B, 40 marks). Part B has no formulas, so this sheet covers the Macroeconomics NCERT book. Chapter numbers match that book; Chapter 1 (Introduction) has no formulas. Microeconomics (elasticity, costs, consumer equilibrium) is examined in Class 11. Its formulas are on the [Class 11 Economics formula sheet](#). The amber box marked ★ **Syllabus only** covers a topic the 2026-27 syllabus lists but the current NCERT reprint does not spell out. It uses the standard method. Grey boxes marked ◇ **Not in 2026-27 syllabus** are in the NCERT book but not in the current syllabus. They are kept for reference.

1. National Income Accounting
2. Money and Banking
3. Determination of Income and Employment
4. Government Budget and the Economy
5. Open Economy Macroeconomics

2 National Income Accounting

BASIC CONCEPTS

- Net investment = Gross investment – Depreciation
- Final goods: for consumption or investment, not resold or used up in production. Intermediate goods: used up in producing other goods in the same year
- Stock: measured at a point of time (capital, wealth). Flow: measured over a period (income, investment, depreciation)
- Change in inventories = Production – Sales during the year

EXPENDITURE METHOD

- $GDP = C + I + G + X - M$
- C final consumption, I investment (incl. change in inventories), G government purchases, $X - M$ net exports

VALUE ADDED (PRODUCT) METHOD

- $GVA_i = \text{Sales}_i + \Delta \text{Inventories}_i - \text{Intermediate goods used}_i$
- $NVA_i = GVA_i - \text{Depreciation}_i$
- $GDP = \sum GVA_i = GVA_1 + GVA_2 + \dots + GVA_N$
- Counting only value added avoids double counting of intermediate goods.

INCOME METHOD

- $GDP = W + P + In + R$
- Wages (compensation of employees), profits, interest and rent. The three methods give the same GDP

AGGREGATES (MP = MARKET PRICE, FC = FACTOR COST)

Aggregate	Relation
GNP	$GNP = GDP + NFIA$ (NFIA = factor income earned from abroad – factor income paid abroad)
Net (domestic or national)	$NDP = GDP - \text{Depreciation}$; $NNP = GNP - \text{Depreciation}$
Factor cost	$\text{Aggregate}_{FC} = \text{Aggregate}_{MP} - NIT$, where NIT = Indirect taxes – Subsidies
National Income	$NI = NNP_{FC} = NNP_{MP} - (\text{Indirect taxes} - \text{Subsidies})$
Personal Income	$PI = NI - \text{Undistributed profits} - \text{Net interest paid by households} - \text{Corporate tax} + \text{Transfer payments to households}$
Personal Disposable Income	$PDI = PI - \text{Personal tax payments} - \text{Non-tax payments (fines, fees)}$

Chain: $GDP_{MP} \xrightarrow{+NFIA} GNP_{MP} \xrightarrow{-Dep} NNP_{MP} \xrightarrow{-NIT} NNP_{FC} = NI$.



REAL GDP AND THE GDP DEFLATOR

- Nominal GDP: at current prices. Real GDP: at base-year (constant) prices
- $\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \quad (\times 100 \text{ as a percentage})$
- $\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{Deflator}} \times 100$

GDP AND WELFARE

- Higher GDP need not mean higher welfare, because of:
- Distribution of GDP (may become more unequal)
- Non-monetary exchanges not counted (domestic services, barter)
- Externalities not counted (e.g. pollution, a negative externality)

3 Money and Banking**MONEY SUPPLY**

- $M1 = CU + DD$
(currency held by the public + net demand deposits with commercial banks)
- Functions: medium of exchange, unit of account, store of value, standard of deferred payment
- Bank's net worth = Assets (reserves + loans) – Liabilities (deposits)

MONEY CREATION BY BANKS

- CRR = share of deposits a bank must keep as reserves with the RBI
- $\text{Money multiplier} = \frac{1}{\text{CRR}}$
- Total deposits created = Initial deposit (reserves) $\times \frac{1}{\text{CRR}}$;
loans = Total deposits – Reserves
- CRR 20%: multiplier 5, so ₹100 of reserves supports ₹500 of deposits and ₹400 of loans.

RBI'S TOOLS OF CREDIT CONTROL

Tool	What it is	To cut money supply (excess demand)	To raise it (deficient demand)
Cash Reserve Ratio (CRR)	Share of deposits kept with RBI	Raise	Lower
Statutory Liquidity Ratio (SLR)	Share of deposits kept in liquid assets (cash, gold, government securities)	Raise	Lower
Repo rate	Rate at which RBI lends to banks (short term, against securities)	Raise	Lower
Reverse repo rate	Rate RBI pays banks that park funds with it	Raise	Lower
Bank rate	Rate RBI charges on its loans to commercial banks	Raise	Lower
Open market operations	RBI buys/sells government securities	Sell	Buy
Margin requirement	Gap between loan value and value of the security	Raise	Lower

RBI functions: bank of issue (sole issuer of currency), banker to the government, banker's bank and lender of last resort, controller of credit.

◇ BROADER MONEY AND DEMAND FOR MONEY

- $M2 = M1 + \text{savings deposits with post office savings banks}$; $M3 = M1 + \text{net time deposits of commercial banks}$; $M4 = M3 + \text{total post office deposits (excl. NSC)}$
- Transaction demand $M_T^d = kPY$ ($k = 1/v$, v = velocity of circulation); speculative demand falls as the interest rate r rises;
 $M^d = M_T^d + M_S^d$



4 Determination of Income and Employment

CONSUMPTION AND SAVING

- Consumption function: $C = \bar{C} + cY$ ($\bar{C}$ autonomous consumption, $c = MPC$)
- $MPC = \frac{\Delta C}{\Delta Y}$, $MPS = \frac{\Delta S}{\Delta Y}$, $MPC + MPS = 1$
- $APC = \frac{C}{Y}$, $APS = \frac{S}{Y}$, $APC + APS = 1$
- Saving function: $S = Y - C = -\bar{C} + (1 - c)Y$
- $0 \leq MPC \leq 1$; APC can exceed 1 at low income (dissaving), but MPC cannot

EQUILIBRIUM OUTPUT

- Aggregate demand: $AD = C + I = \bar{C} + \bar{I} + cY$ ($\bar{I}$ autonomous investment)
- Equilibrium: $Y = AD$, or planned $S = I$
- $Y^* = \frac{\bar{A}}{1 - c}$, $\bar{A} = \bar{C} + \bar{I}$
- Ex ante = planned; ex post = actual. Unplanned inventory change makes ex post $S = I$ always

INVESTMENT MULTIPLIER

$$k = \frac{\Delta Y}{\Delta \bar{A}} = \frac{1}{1 - c} = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

- Rounds: $\Delta Y = \Delta \bar{A}(1 + c + c^2 + \dots)$; with $\Delta \bar{I} = 10$, $c = 0.8$: $\Delta Y = \frac{10}{1 - 0.8} = 50$
- $1 \leq k \leq \infty$: $k = 1$ when $MPC = 0$; $k \rightarrow \infty$ when $MPC = 1$. Higher MPC, bigger multiplier

FULL EMPLOYMENT, EXCESS AND DEFICIENT DEMAND

- Full employment: all factors of production employed. Equilibrium output need not be at full employment
- Deficient demand:** equilibrium output < full employment output; leads to unemployment and falling prices
- Excess demand:** AD exceeds output at full employment; leads to rising prices (inflation)
- Involuntary unemployment: people willing to work at the going wage cannot find work

★ MEASURES TO CORRECT THEM

- Deficient demand:** raise government spending; cut taxes; raise money supply (cut CRR/repo/bank rate, buy securities)
- Excess demand:** cut government spending; raise taxes; reduce money supply (raise CRR/repo/bank rate, sell securities)



5 Government Budget and the Economy

RECEIPTS AND EXPENDITURE

- **Revenue receipts:** neither create a liability nor reduce assets (tax: direct and indirect; non-tax: interest, dividends, fees, fines, grants)
- **Capital receipts:** create a liability or reduce assets (borrowings, recovery of loans, disinvestment)
- **Revenue expenditure:** creates no asset, reduces no liability (salaries, interest, subsidies, pensions)
- **Capital expenditure:** creates an asset or reduces a liability (roads, machines, repaying loans)

MEASURES OF GOVERNMENT DEFICIT

- Revenue deficit = Revenue expenditure – Revenue receipts
- Fiscal deficit = Total expenditure – (Revenue receipts + Non-debt creating capital receipts)
- Fiscal deficit = Net borrowing at home + Borrowing from RBI + Borrowing from abroad
- Primary deficit = Fiscal deficit – Net interest liabilities
- Balanced budget: receipts = expenditure; surplus: receipts > expenditure; deficit: receipts < expenditure

◇ FISCAL POLICY MULTIPLIERS

- With taxes and transfers: $Y^* = \frac{\bar{C} + \bar{I} + G - c\bar{T} + c\bar{T}R}{1 - c}$
- Government spending multiplier $\frac{\Delta Y}{\Delta G} = \frac{1}{1 - c}$; tax multiplier $\frac{\Delta Y}{\Delta T} = \frac{-c}{1 - c}$; transfer multiplier $\frac{c}{1 - c}$
- Balanced budget multiplier ($\Delta G = \Delta T$) = 1; with proportional tax $T = tY$: multiplier $\frac{1}{1 - c(1 - t)}$

6 Open Economy Macroeconomics

BALANCE OF PAYMENTS: ACCOUNTS

- Balance of trade (BOT) = Exports of goods – Imports of goods
- Net invisibles = exports – imports of services, transfers and income flows
- Current account balance = BOT + Net invisibles
- Capital account: purchase and sale of assets (FDI, portfolio investment, loans, banking capital)
- A current account deficit is financed by a capital account surplus (net capital inflow)

BOP SURPLUS AND DEFICIT

- Current account + Capital account $\equiv$ 0 when there is no reserve change
- Overall balance = Current account + Capital account + Errors and omissions
- Overall balance > 0: surplus, reserves rise. < 0: deficit, reserves fall (official reserve sale)
- **Autonomous** ("above the line") transactions happen for their own sake; **accommodating** ("below the line") ones fill the gap

EXCHANGE RATES

- Nominal exchange rate e = price of foreign currency in domestic currency (₹ per \$)
- **Flexible:** set by demand for and supply of foreign exchange. $e \uparrow$ = **depreciation** of the rupee; $e \downarrow$ = **appreciation**
- Demand for forex comes from imports, buying foreign assets, travel abroad, speculation; supply from exports, foreign investment and tourists in India
- **Fixed** (pegged): set by the government. Raising e = **devaluation**; lowering it = **revaluation**
- **Managed floating:** market-determined, with central bank intervention to limit swings



◇ OPEN ECONOMY INCOME DETERMINATION

- $Y = C + I + G + X - M = C + I + G + NX$; imports $M = \bar{M} + mY$ (m = marginal propensity to import)
- $Y^* = \frac{\bar{A}}{1 - c + m}$, Open economy multiplier = $\frac{1}{1 - c + m}$
(smaller than the closed economy multiplier $\frac{1}{1-c}$)

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