NET & SET Economics: Public Economics

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1. Market Failure and Remedial Measures: Asymmetric Information, Public Goods, Externality

Market failure occurs when free markets fail to allocate resources efficiently (Pareto optimally). It provides the main justification for government intervention (Musgrave's allocation function).

Sources of market failure

- Public goods, externalities, asymmetric information, imperfect competition (monopoly), incomplete markets, merit and demerit goods, unemployment and inflation, inequitable distribution.

Public goods

Feature	Private good	Pure public good	Common resource	Club good
Rival in consumption	Yes	No	Yes	No
Excludable	Yes	No	No	Yes
Examples	Food, clothing	Defence, street lighting	Fisheries, forests	Cable TV, toll roads

- **Samuelson (1954):** efficient provision where the **sum of individual marginal rates of substitution = marginal rate of transformation** (ΣMRS = MRT). Demand curves are added **vertically** (unlike private goods, horizontally).
- **Free-rider problem:** people conceal preferences, so markets under-provide public goods.
- **Lindahl equilibrium (voluntary exchange model, Wicksell–Lindahl):** each person pays a tax price equal to his marginal benefit; total = cost.
- Preference revelation: Clarke–Groves tax mechanism; voting.
- **Merit goods (Musgrave):** goods society wants consumed regardless of individual preference (education, health); **demerit goods** (tobacco, alcohol).
- **Tragedy of the commons (Hardin, 1968);** Elinor Ostrom's community management.

Externalities

- A cost or benefit imposed on third parties not reflected in market prices.
- **Negative production externality:** marginal social cost > marginal private cost → over-production (pollution).
- **Positive consumption externality:** marginal social benefit > marginal private benefit → under-consumption (vaccination, education).
- **Pecuniary vs technological externalities;** only technological ones cause inefficiency.

Remedies

- **Pigouvian tax/subsidy:** tax equal to marginal external damage at the efficient output.
- **Coase theorem (1960):** with well-defined property rights and zero transaction costs, private bargaining leads to an efficient outcome regardless of who holds the rights.
- Regulation and standards (command and control), **tradable pollution permits** (cap-and-trade, J.H. Dales), merger/internalisation, public provision.

Asymmetric information

- **Adverse selection** (hidden information — lemons problem, insurance), **moral hazard** (hidden action), principal–agent problem.
- Remedies: compulsory insurance, mandatory disclosure, licensing, certification, warranties, deductibles, regulation of financial markets.

Government failure

- Public choice theory (Buchanan, Tullock): rent-seeking, bureaucratic budget maximisation (Niskanen), lobbying, information limits — intervention may also fail.

Exam pointers: non-rival and non-excludable; ΣMRS = MRT (Samuelson); vertical summation; Lindahl pricing; Pigouvian tax vs Coase theorem.

2. Regulation of Market — Collusion and Consumers' Welfare

Why regulate

- Monopoly and collusion raise prices above marginal cost, cause deadweight loss, transfer consumer surplus to producers and reduce innovation and choice.
- **Natural monopoly** (decreasing average costs — utilities): marginal-cost pricing causes losses; options are average-cost pricing, two-part tariffs, subsidies, public ownership.

Collusion

- **Explicit collusion:** cartels (OPEC) agree on price, output or market sharing; joint profit maximisation like a monopoly.
- **Tacit collusion:** price leadership, conscious parallelism.
- Cartels are unstable — each member has an incentive to cheat (prisoner's dilemma); stable with few firms, homogeneous products, high entry barriers, repeated interaction.
- Bid rigging, resale price maintenance, exclusive dealing, predatory pricing are anti-competitive practices.

Approaches to regulation

Approach	Description
Rate-of-return regulation	Prices set so firm earns a fair return on capital; **Averch–Johnson effect** — over-capitalisation
Price-cap (RPI − X) regulation	Price allowed to rise by inflation minus an efficiency factor (Littlechild, UK)
Yardstick competition	Firm compared with others' performance
Competition (antitrust)	Prohibits cartels and abuse of dominance; reviews mergers

Approach	Description
law	
Public ownership	State provides the good directly

- **Capture theory (George Stigler, 1971):** regulators end up serving the regulated industry.
- **Contestable markets** reduce the need for regulation.

Consumer welfare in India

- **MRTP Act, 1969** → replaced by the **Competition Act, 2002**; **Competition Commission of India (CCI)** established 2003, fully operational 2009. Prohibits anti-competitive agreements (Section 3), abuse of dominance (Section 4), regulates combinations (Sections 5–6). Competition (Amendment) Act, 2023 introduced deal-value thresholds and settlements/commitments.
- **Consumer Protection Act, 2019** (replacing the 1986 Act): Central Consumer Protection Authority, e-commerce rules, product liability, three-tier commissions (district, state, national).
- Sector regulators: TRAI, SEBI, IRDAI, CERC, PNGRB, AERA.

Exam pointers: cartel instability; Averch–Johnson effect; price-cap regulation; Stigler's capture theory; Competition Act 2002 sections.

3. Public Revenue: Tax and Non-Tax Revenue, Direct and Indirect Taxes, Progressive and Non-Progressive Taxation, Incidence and Effects of Taxation

Sources of public revenue

- **Tax revenue:** compulsory payment without direct quid pro quo.
- **Non-tax revenue:** fees, fines, penalties, licence fees, special assessment, escheat, gifts and grants, prices of public enterprises (dividends and profits), interest receipts, spectrum and mining auction proceeds, RBI surplus transfer.

Direct and indirect taxes

Feature	Direct tax	Indirect tax
Impact and incidence	On the same person	Impact on one, incidence shifted to another
Examples	Income tax, corporation tax, wealth tax, property tax	GST, customs duty, excise duty
Merits	Equitable, progressive, certain, elastic	Convenient, wide coverage, hard to evade, can discourage harmful goods
Demerits	Evasion, disincentive to work/save	Regressive, inflationary

Progressivity

- **Proportional:** same rate at all income levels.

- **Progressive:** average rate rises with income (marginal rate > average rate) — vertical equity.
- **Regressive:** average rate falls as income rises (most commodity taxes in effect).
- **Degressive:** progressive up to a point, then proportional.

Canons and principles of taxation

- **Adam Smith's canons:** equality, certainty, convenience, economy. Added later: productivity, elasticity, flexibility, simplicity, diversity.
- **Benefit principle** (Lindahl, Wicksell): tax according to benefit received.
- **Ability-to-pay principle:** objective (income, wealth, consumption) and subjective (**equal sacrifice** — equal absolute, equal proportional and **equal marginal (least aggregate) sacrifice** — Mill, Edgeworth, Pigou).
- **Optimal taxation: Ramsey rule (1927)** — tax goods in inverse proportion to their price elasticity of demand (inverse elasticity rule); Mirrlees (1971) optimal income tax; Diamond–Mirrlees production efficiency theorem.
- **Laffer curve:** beyond some rate, higher tax rates reduce revenue.

Incidence of taxation

- **Impact:** the person on whom the tax is legally imposed. **Incidence:** the person who finally bears the money burden. **Shifting:** forward (to buyers) or backward (to factor suppliers).
- Incidence depends on elasticities: the more inelastic side bears more of the tax. Share borne by buyers = Es/(Es + Ed).
- Perfectly inelastic demand → full burden on buyers; perfectly elastic demand → full burden on sellers.
- Under monopoly, the price rises by less than the tax (with linear demand and constant MC, by half).
- **Theories:** concentration theory (Physiocrats — all taxes fall on land), diffusion theory (Mansfield, Thiers), modern (demand–supply) theory; **Harberger's general equilibrium model (1962)** of corporate tax incidence.
- **Capitalisation of tax:** a tax on durable assets reduces their capital value.
- **Excess burden (deadweight loss)** of a tax rises with the square of the tax rate and with the elasticities of demand and supply (Harberger triangle).

Effects of taxation

- On ability and willingness to **work, save and invest**: income effect (work more) vs substitution effect (work less).
- On distribution (progressive taxes reduce inequality), on production allocation, on prices and stability (built-in stabiliser).
- **Tax buoyancy** (response of revenue to GDP including discretionary changes) vs **tax elasticity** (automatic response).

Indian tax structure (key features)

- **GST** introduced on 1 July 2017 (101st Constitutional Amendment, 2016) — destination-based, dual GST (CGST, SGST, IGST); GST Council (Article 279A). From 22 September 2025 rates were rationalised largely into two main slabs of 5% and 18%, with a 40% rate for demerit and luxury goods.

- New Income-tax Act, 2025 replaces the Income-tax Act, 1961 with effect from 1 April 2026.

Exam pointers: impact vs incidence; elasticity rule for tax burden; Ramsey rule; Adam Smith's canons; equal marginal sacrifice; Laffer curve.

4. Public Expenditure

Classification

- Revenue vs capital expenditure; developmental vs non-developmental; plan vs non-plan (discontinued in India from 2017–18); transfer vs non-transfer (exhaustive) expenditure (Pigou); productive vs unproductive.

Theories of growth of public expenditure

Theory	Author	Core idea
Law of increasing state activities	Adolph Wagner (1883)	As per capita income rises, public expenditure rises faster than national income (income elasticity > 1)
Displacement effect	Peacock and Wiseman (1961)	Expenditure rises in steps: crises (wars) displace tolerable tax levels upward (displacement), which do not return afterwards (inspection, concentration effects)
Critical limit hypothesis	Colin Clark	Taxation beyond 25% of national income causes inflation
Development model	Musgrave and Rostow	Public investment share is high at early stages of development, falls in middle stages, and transfer spending rises at mature stages
Baumol's cost disease	William Baumol	Productivity lags in labour-intensive public services raise their relative cost
Bureaucracy model	Niskanen	Bureaucrats maximise budgets

Principles (canons) of public expenditure

- **Findlay Shirras:** canons of benefit, economy, sanction, surplus. Others: elasticity, productivity, equitable distribution.
- **Dalton's principle of maximum social advantage:** public expenditure and taxation should be carried to the point where the marginal social benefit of expenditure equals the marginal social sacrifice of taxation. Musgrave called it maximum welfare principle.

Effects of public expenditure

- On production (ability and willingness to work, save, invest; reallocation of resources), distribution (transfers, subsidies) and economic stability (compensatory spending).
- **Evaluation:** cost–benefit analysis, zero-based budgeting, performance and outcome budgeting.

Exam pointers: Wagner's law; Peacock–Wiseman displacement effect; Dalton's maximum social advantage; Shirras's canons.

5. Public Debt and its Management

Public debt is borrowing by the government from within the country (internal) or abroad (external).

Classification

- Internal vs external; productive (reproductive) vs unproductive (deadweight) debt; voluntary vs forced; short-term (treasury bills), medium and long-term (dated securities); funded vs unfunded (floating); market loans, small savings, provident funds.

Burden of public debt

- **Classical view (Smith, Ricardo):** public debt is unproductive and a burden on future generations.
- **Keynesian / Lerner (functional finance):** internal debt is "what we owe ourselves" — no net burden, only transfers between groups.
- **Buchanan (1958):** future generations bear the burden because they pay the taxes to service the debt.
- **Modigliani (1961):** debt crowds out private capital formation, so future generations inherit a smaller capital stock.
- **Ricardian equivalence (Barro, 1974):** debt and taxes are equivalent; rational households save to meet future taxes.
- **Real burden** of external debt: transfer of resources abroad for repayment and interest.
- **Domar's debt-burden model (1944):** debt–income ratio converges to a stable level if national income grows at a constant rate; the burden is manageable when growth is high.

  Sustainability condition: debt-to-GDP ratio stabilises when the primary balance offsets $(r - g) \times$ debt ratio; if $g > r$, debt is sustainable even with small primary deficits.

Redemption (repayment) methods

- Sinking fund, conversion (to lower interest), refunding (new loans to pay old), terminal annuities, purchase from the market, budgetary surplus, capital levy, repudiation (rare).

Debt management in India

- Managed by the RBI as banker and debt manager to government; **Public Debt Management Cell** in the Ministry of Finance (move to an independent agency proposed).
- **FRBM Review Committee (N.K. Singh, 2017):** debt-to-GDP as the main anchor — 60% for general government (40% Centre, 20% States).
- Union Budget 2025–26 adopted a debt-to-GDP glide path, aiming for Centre's debt of about 50 ± 1% of GDP by 31 March 2031.

Exam pointers: burden of debt — Lerner vs Buchanan vs Modigliani; Domar model; Ricardian equivalence; redemption methods.

6. Public Budget and Budget Multiplier

Budget

- An annual financial statement of estimated receipts and expenditure of government (Article 112 of the Indian Constitution — "Annual Financial Statement"; Article 202 for States).

- **Revenue budget** (revenue receipts and revenue expenditure) and **capital budget** (capital receipts — borrowings, disinvestment, loan recovery — and capital expenditure).
- Types: **balanced**, **surplus**, **deficit** budget.
- Budgeting techniques: line-item, **performance budgeting** (USA, Hoover Commission), programme budgeting (PPBS), **zero-based budgeting** (Peter Pyhrr), **outcome budgeting** (India, 2005), **gender budgeting** (India, 2005–06), green budgeting.
- In India the Railway Budget was merged with the Union Budget from 2017–18 and the Budget date moved to 1 February.

Deficit concepts

Deficit	Definition
Revenue deficit	Revenue expenditure − Revenue receipts
Effective revenue deficit	Revenue deficit − Grants for creation of capital assets
Fiscal deficit	Total expenditure − (Revenue receipts + Non-debt capital receipts) = total borrowing requirement
Primary deficit	Fiscal deficit − Interest payments
Monetised deficit	Net RBI credit to government (ended through automatic ad hoc T-bills in 1997)

Budget multipliers (Keynesian model with lump-sum taxes, MPC = b)

- Government expenditure multiplier = $1/(1 - b)$.
- Tax multiplier = $-b/(1 - b)$.
- Transfer payment multiplier = $b/(1 - b)$.
- **Balanced budget multiplier = 1 (Haavelmo theorem, 1945):** an equal rise in government spending and taxes raises income by the same amount.
- With proportional income taxes (rate t): G multiplier = $1/[1 - b(1 - t)]$; balanced budget multiplier < 1.
- Open economy: leakages through imports reduce multipliers.

Exam pointers: fiscal vs primary vs revenue deficit; balanced budget multiplier = 1; Haavelmo; zero-based budgeting.

7. Fiscal Policy and its Implications

Fiscal policy is the use of government expenditure, taxation and borrowing to achieve macroeconomic objectives.

Objectives

- Full employment, price stability, economic growth, equitable distribution, BoP equilibrium, resource mobilisation for development.
- **Musgrave's three functions:** allocation, distribution, stabilisation (*The Theory of Public Finance*, 1959).

Instruments and approaches

- **Discretionary policy:** deliberate changes in taxes and spending; pump priming (temporary spending to revive the economy) vs compensatory spending (sustained).
- **Automatic (built-in) stabilisers:** progressive taxes, unemployment benefits — counter-cyclical without new decisions.
- **Formula flexibility.**
- **Functional finance (Abba Lerner):** fiscal policy judged by its results, not by budget balance.
- Counter-cyclical vs pro-cyclical fiscal stance; fiscal space.

Implications and limitations

- **Crowding out:** deficit financing raises interest rates and displaces private investment (complete in classical case; partial in Keynesian).
- **Crowding in:** public infrastructure investment can raise private investment.
- **Ricardian equivalence** weakens debt-financed stimulus.
- Policy lags, political business cycles, inflationary effects of deficit financing, debt sustainability.
- In developing countries: mobilisation of savings, capital formation, reducing inequality, controlling inflationary pressures, limited automatic stabilisers.

Fiscal rules in India

- **FRBM Act, 2003** (in force from 2004): targets to eliminate revenue deficit and limit fiscal deficit to 3% of GDP; amended 2012 (effective revenue deficit), 2015 and 2018 (debt as main target, escape clause for national security, war, calamity, structural reforms or sharp fall in growth).
- During the pandemic the fiscal deficit rose to 9.2% of GDP (2020–21); a glide path brought the Centre's fiscal deficit target to 4.4% of GDP for 2025–26, after which the debt-to-GDP ratio became the operational anchor.
- States: fiscal responsibility legislation; borrowing limit of about 3% of GSDP (with extra room tied to power-sector reforms).

Exam pointers: Musgrave's three functions; crowding out vs crowding in; automatic stabilisers; FRBM Act targets and amendments.