

---

## Figures

---

3.1	Optimal consumption trajectories	55
4.1	Competitive and monopoly price paths	62
8.1	A model of the natural production function for a fish stock	110
9.1	The periodic solution under a linear objective function	127
9.2	Cutting pattern under a strictly concave objective function	129
9.3	The aggregate timber market	130
9.4	Identification of supply and demand	133
10.1	Case of two water users with identical demand curves	146
12.1	Global primary consumption of energy carriers	180
12.2	Supply curve for energy efficiency improvement measures: the case of steel production	186
13.1	Graphical representation of a 'normal' market, external costs, external benefits and pecuniary benefits	202
13.2	Efficiency and equity implications of an external cost	209
24.1	Welfare maximization and efficiency–equity trade-offs	355
27.1	Welfare impact on small countries from trade liberalization – production externality	405
27.2	Welfare impact on small countries from trade liberalization – consumption externality	406
29.1	Competitive market	436
29.2	Pure monopoly	438
29.3	Oligopoly	439
32.1	Nash equilibrium (point N) for the two-country case in which $\alpha_{ij} > 0$	476
32.2	Nash equilibrium (point N) for the two-country case in which $\alpha_{ij} = 0$	479
34.1	'Primary' and 'final' carbon taxes	508
39.1	Equilibrium regime as a function of environmental cost increases and trade costs	572
39.2	Effect of trade costs on country $f$ 's welfare and production	574
39.3	Contrast between restrictions that impact on marginal costs versus fixed costs	575
40.1	Externality diagram	587
44.1	A 'macro' view of the macroeconomy	636
44.2	Economy as isolated system	637
44.3	Ecosystem as subsystem of macroeconomy	638
44.4	Jevonian view of limits to growth of macroeconomy	641

*xii Figures*

46.1	Relation between income growth and environmental pressure	658
47.1	Environmental damage due to economic imperfections	683
47.2	Tunnelling through the environmental Kuznets curve using sustainable strategies	684
47.3	Timing and sequencing of economic policies to reduce environmental damage	687
47.4	Alternative development paths under different policy regimes	689
49.1	A cause-effect chain	723
58.1	A typology of evaluation methods	840
58.2	A visual representation of the evaluation table	849
58.3	A ranked visual representation of the evaluation table	849
59.1	Isoquant with thermodynamic limits on material and energy use	858
59.2	Learning curve with thermodynamic limits on unit cost	860
60.1	Zinc flow in mining and processing of zinc ores in the US, 1988	869
60.2	The materials cycle	873
60.3	Trace elements in coal	876
61.1	Conceptual representations of (a) the biogeochemical cycle and (b) the hydrological cycle	897
61.2	Ecological succession in a forest and a microcosm	901
61.3	The four ecosystem phases and the flow of events among them	902
61.4	Combined system of humans and nature	908
62.1	Four-box scheme for biogeochemical cycles	915
62.2	Carbon cycle: chemical transformations	922
62.3	Present-day carbon cycle: intermedia fluxes	923
62.4	Nitrogen cycle: chemical transformations	925
62.5	Present-day global nitrogen cycle: intermedia fluxes	927
62.6	Sulphur cycle: chemical transformations	931
62.7	Present-day global sulphur cycle: intermedia fluxes	932
62.8	Biospheric stabilization by denitrification	939
64.1	Flows in an economic system embedded in a natural system (environment)	957
67.1	General typology and assessment of wetland benefits and ecosystem valuation	1016
68.1	The homogeneous input-output table	1040
68.2	The physical input-output table	1047
68.3	Structure of a social accounting matrix	1052
68.4	Structure of the NAMEA	1053
68.5	A structural table of an economy	1056

73.1	A general illustration of an energy–economy–environment system	1124
76.1	Experimental economic triad	1182
78.1	Recent trends in the theoretical literature: a survey	1220
78.2	Recent trends in the applied literature: a survey	1221