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Bachelor of Commerce (B2001) | Level 1 • Part A Core | Monash University

Principles of microeconomics

Course Code: ECC1000 • Module 4 Notes

Module 4: Strategic Interaction, Game Theory, Market Failure, Inequality & Policy Design

Chapter 1: Game Theory and Strategic Interaction

1.1 Normal-Form Games, Dominant Strategies, and Nash Equilibrium

In competitive markets, price-taking agents respond solely to impersonal market prices. Yet many crucial economic interactions—oligopolistic price wars, climate treaties, wage bargaining, and natural resource extraction—involve **strategic interdependence**, where each agent's optimal action depends directly on what others choose to do. **Game theory** formalises strategic interaction through three elements: (1) a set of **players** $i \in \{1, \dots, n\}$; (2) a set of feasible **strategies** S_i for each player; and (3) **payoff functions** $u_i(s_1, \dots, s_n)$ mapping strategy profiles to utility or profit.

In a simultaneous-move **normal-form game**, a strategy s_i^* is a **strictly dominant strategy** if it yields a strictly higher payoff than every alternative strategy for player i regardless of what opponents choose. When every player has a strictly dominant strategy, the resulting profile is a **dominant-strategy equilibrium**. More generally, let s_{-i} denote the strategies chosen by all players other than i. Player i's **best response** $BR_i(s_{-i})$ is the strategy maximising $u_i(s_i, s_{-i})$. A strategy profile $(s_1^*, \dots, s_n^*)$ is a **Nash Equilibrium (NE)** if every player is simultaneously playing a best response to everyone else's strategy—so no player has a unilateral incentive to deviate:

$$u_i(s_i^*, s_{-i}^*) \geq u_i(s_i, s_{-i}^*) \quad \forall s_i \in S_i, \ \forall i \in \{1, \dots, n\}$$

Where:

- $u_i(s_i^*, s_{-i}^*)$ is player i's equilibrium payoff.
- s_{-i}^* denotes the equilibrium strategy choices of all other players.
- S_i is the complete set of strategies available to player i.

1.2 The Prisoner's Dilemma, Coordination Games, and Sequential Play

The most celebrated insight of CORE Econ's game-theoretic framework is that individual rationality does not guarantee collective efficiency. In the **Prisoner's Dilemma**, two players (e.g., two Australian agricultural producers deciding between sustainable Integrated Pest Management or toxic chemical pesticide, or two airlines deciding whether to cut airfares) each possess a strictly dominant strategy to "Defect" (use toxic pesticide / undercut fares). Yet mutual defection leaves both players strictly worse off than mutual "Cooperation", demonstrating a conflict between Nash Equilibrium and Pareto efficiency.

Game Class	Payoff Structure & Key Tension	Pure-Strategy Nash Equilibria	Economic Example & Institutional Fix
Prisoner's Dilemma	Defect strictly dominates Cooperate; mutual Defect is Pareto-inferior.	Unique: (Defect, Defect)	Over-pumping Murray-Darling groundwater; fixed via binding water caps and monitoring.

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Game Class	Payoff Structure & Key Tension	Pure-Strategy Nash Equilibria	Economic Example & Institutional Fix
Stag Hunt (Assurance)	Mutual cooperation yields highest payoff, but defecting avoids unilateral risk.	Two: (Cooperate, Cooperate) [Pareto-dominant] and (Defect, Defect) [risk-dominant]	Regional renewable grid investment; solved via government co-investment guarantees.
Hawk-Dove (Chicken)	Each player prefers to be aggressive only if the rival yields; mutual aggression is disastrous.	Two asymmetric: (Hawk, Dove) and (Dove, Hawk)	Two firms contesting a niche regional route; resolved via first-mover commitment or capacity norms.
Pure Coordination	Players share aligned incentives to match standards or conventions.	Two symmetric equilibria	Adoption of standardised EV charging plugs or driving on the left side of the road.

Unlike simultaneous games, **extensive-form (sequential) games** represent moves along a decision tree where later movers observe earlier actions. Solving sequential games by **backward induction** eliminates non-credible threats and identifies the **Subgame Perfect Nash Equilibrium ($SPNE$)**. For instance, an incumbent supermarket threatening to start a ruinous price war if a rival enters a regional town may not carry out that threat once entry has actually occurred if accommodating the entrant yields higher post-entry profit than fighting.

1.3 Repeated Games, Social Preferences, and Mixed Strategies

When a Prisoner's Dilemma is played only once, defection is inevitable among purely self-interested agents. However, if the game repeats indefinitely (or with continuation probability $\delta \in (0,1)$ per round), players can sustain cooperation through conditional reciprocity such as **Tit-for-Tat** or a **grim trigger strategy** (cooperate until an opponent defects, then defect forever). According to the **Folk Theorem** intuition, cooperation becomes a Nash equilibrium whenever players are sufficiently patient (δ exceeds the temptation-to-cheat threshold). Moreover, CORE Econ highlights that human **social preferences** (altruism, fairness norms, and willingness to incur personal costs to punish free-riders) and supportive institutions transform social dilemmas into stable cooperation.

Some simultaneous games (such as penalty kicks in soccer, tax audits by the ATO, or matching pennies) possess no pure-strategy Nash equilibrium. In such cases, players randomise over pure strategies using a **mixed-strategy Nash equilibrium**, choosing probabilities (p^*, q^*) that make the opponent exactly indifferent between their pure strategies.

Worked Example 4.1: Solving Pure and Mixed-Strategy Nash Equilibria

Consider an inspection game between the Australian Taxation Office (ATO: Row Player) and a Small Business Taxpayer (Column Player). The ATO chooses between *Audit* (A) or *Do Not Audit* (N); the Taxpayer chooses between *Evade* (E) or *Comply* (C). Payoffs (ATO, Taxpayer) are:

ATO \ Taxpayer	Evade (E) — prob q	Comply (C) — prob $q_C = 1 - q$
Audit (A) — prob p	$(+6,\ -10)$	$(-2,\ 0)$
No Audit (N) — prob $p_N = 1 - p$	$(-8,\ +8)$	$(+2,\ 0)$

Step 1 (Check Pure-Strategy Nash Equilibria): Trace best responses: if Taxpayer plays E, ATO's best response is A ($+6 > -8$); if ATO plays A, Taxpayer's best response is C ($u_T = 0 > -10$); if Taxpayer plays C, ATO's best response is N ($+2 > -2$); if ATO plays N, Taxpayer's best response is E ($+8 > 0$). The best-response cycle never settles, so there is *no* pure-strategy Nash equilibrium.

Step 2 (Solve Taxpayer's Indifference for ATO Audit Probability p^*): For Taxpayer to randomise, expected payoff from E must equal expected payoff from C (which is 0):

$$E[u_T(E)] = p(-10) + (1-p)(8) = 0 \implies 8 - 18p = 0 \implies p^* = \frac{8}{18} = \frac{4}{9} \approx 0.444$$

Where:

- $p^* = 4/9$ is the equilibrium probability with which the ATO audits the taxpayer.

Step 3 (Solve ATO's Indifference for Taxpayer Evasion Probability q^*): For ATO to randomise, expected payoff from A must equal expected payoff from N:

$$E[u_A(A)] = q(6) + (1-q)(-2) = q(-8) + (1-q)(2) = E[u_A(N)]$$

$$8q - 2 = 2 - 10q \implies 18q = 4 \implies q^* = \frac{4}{18} = \frac{2}{9} \approx 0.222$$

Where:

- $q^* = 2/9$ is the equilibrium evasion rate.

Notice the strategic insight: in mixed-strategy equilibrium, raising the evasion penalty paid by the taxpayer (making -10 even more negative) lowers the *ATO's* required equilibrium audit probability p^* to keep the taxpayer indifferent, saving public enforcement resources.

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Chapter 2: Market Failure — Externalities and Public Goods

2.1 Negative and Positive Externalities

Competitive markets maximise total surplus only when market prices capture all costs and benefits of production and consumption. An **externality** arises whenever an economic activity imposes an uncompensated cost (**negative externality**) or confers an uncompensated benefit (**positive externality**) on third parties outside the transaction. Because private decision-makers weigh only Marginal Private Cost (MPC) and Marginal Private Benefit (MPB), ignoring Marginal External Cost (MEC) or Marginal External Benefit (MEB), market equilibrium diverges from the social optimum ($MSC = MSB$):

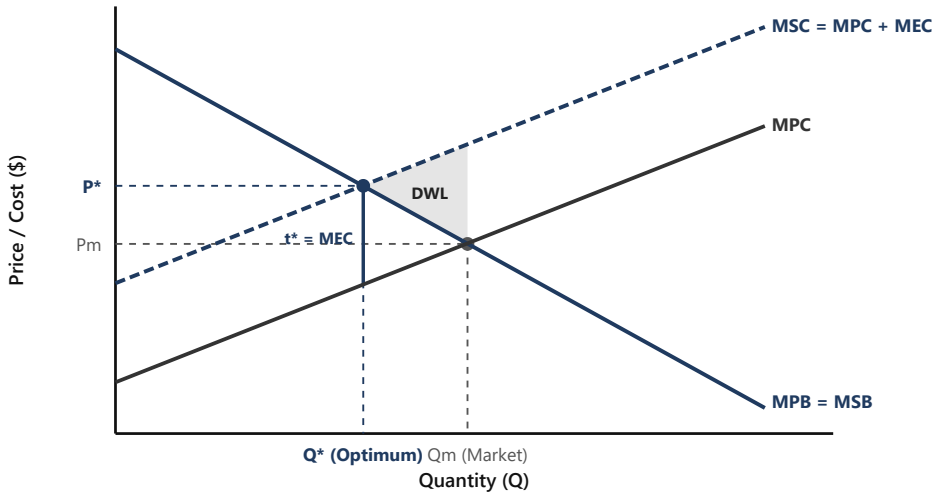
$$MSC = MPC + MEC, \qquad MSB = MPB + MEB$$

Where:

- MSC and MSB are Marginal Social Cost and Marginal Social Benefit, respectively.
- MEC is the marginal external damage imposed on third parties (e.g., greenhouse gas emissions, urban traffic congestion, or river salinity).
- MEB is the marginal spillover benefit conferred on third parties (e.g., childhood immunisation reducing transmission, rooftop solar grid stability, or basic R&D knowledge spillovers).

With a **negative production externality** ($MSC > MPC$), the competitive market overproduces at $Q_m > Q^*$ because firms do not pay for external damage. Every unit between Q^* and Q_m costs society MSC exceeding its social benefit MSB, generating deadweight loss. Conversely, with a **positive consumption externality** ($MSB > MPB$), the competitive market underproduces at $Q_m < Q^*$ because buyers fail to internalise spillover benefits to society.

Figure 4.1: Negative Production Externality, Deadweight Loss and Optimal Pigouvian Tax



2.2 Private Bargaining (Coase Theorem) and Public Remedies

Ronald Coase demonstrated that if property rights are clearly defined and enforceable and **transaction costs are negligible**, affected parties can negotiate privately to internalise an externality and reach the Pareto-efficient outcome Q^* regardless of who initially holds the legal property right (though initial property rights

determine who pays whom). In practice, however, bargaining fails when thousands of dispersed citizens face high coordination costs, asymmetric information, or free-riding—such as urban residents breathing industrial particulate emissions. Governments therefore deploy three corrective instruments:

- **Pigouvian Taxes and Subsidies:** Setting a corrective per-unit tax $t^* = MEC(Q^*)$ forces producers to face full social marginal cost ($MPC + t^* = MSC$), reducing output cleanly to Q^*. Symmetrically, a Pigouvian subsidy $s^* = MEB(Q^*)$ corrects underproduction of positive externalities (e.g., government subsidies for childhood vaccinations or R&D tax incentives).
- **Cap-and-Trade Permits:** Regulators fix total allowable emissions at Q^* and allow firms to trade permits; low-abatement-cost firms cut emissions and sell surplus permits to high-abatement-cost firms, achieving the target at minimum aggregate abatement cost (similar in mechanism to tradable credits under Australia's reformed Safeguard Mechanism for large industrial emitters).
- **Command-and-Control Standards:** Uniform bans or technology mandates are effective for acute toxins (e.g., banned asbestos or leaded petrol) but less cost-effective than price-based mechanisms when marginal abatement costs vary widely across firms.

2.3 Rivalness, Excludability, and Public Goods

Goods are classified along two structural dimensions: **rivalry in consumption** (whether one person's consumption diminishes another's ability to consume the same unit) and **excludability** (whether non-payers can be feasibly barred from access):

	Excludable	Non-Excludable
Rivalrous	**Private Goods** (flat whites, laptops, groceries) — efficient via competitive markets.	**Common-Pool Resources** (ocean fisheries, Murray-Darling groundwater, congested roads) — prone to *Tragedy of the Commons*.
Non-Rivalrous	**Club Goods / Artificially Scarce** (streaming services, toll roads, Pay-TV) — zero MC of extra user; exclusion causes DWL.	**Pure Public Goods** (national defence, Bureau of Meteorology forecasts, street lighting, basic research) — severe *Free-Rider Problem*.

For a **pure public good**, market demand cannot be summed horizontally because every citizen consumes the identical total quantity G. Instead, society's marginal willingness to pay equals the **vertical sum** of individual marginal valuations. Under the **Samuelson Condition**, optimal public good provision G^* equates the sum of individuals' Marginal Rates of Substitution to the Marginal Rate of Transformation (marginal cost of providing the public good):

$$\sum_{i=1}^{n} MRS_i(G^*, x_i) = MRT(G^*, x)$$

Where:

- MRS_i is individual i's marginal willingness to pay for the public good in units of the private numeraire good x.
- MRT is the marginal resource cost of producing one more unit of the public good G.

Because individuals can enjoy a non-excludable good without contributing, rational self-interest creates the **free-rider problem**, leading voluntary private markets to severely underprovide public goods and necessitating tax-financed public provision.

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Worked Example 4.2: Optimal Pigouvian Tax and Samuelson Public Good Provision

Part A (Pigouvian Tax): Suppose Australian cement manufacturers face competitive inverse demand $P = 180 - Q$ and marginal private cost $MPC = 20 + Q$. Production emits particulates imposing marginal external damage $MEC = 0.5Q$ (in dollars per tonne, where Q is in thousands of tonnes).
Market Outcome: Equate $MPB = MPC$:

$$180 - Q_m = 20 + Q_m \implies 2Q_m = 160 \implies Q_m = 80, \qquad P_m = 100$$

Social Optimum: Compute $MSC = MPC + MEC = 20 + Q + 0.5Q = 20 + 1.5Q$. Equate $MSB = MSC$:

$$180 - Q^* = 20 + 1.5Q^* \implies 2.5Q^* = 160 \implies Q^* = 64, \qquad P^* = 180 - 64 = 116$$

Where:

- $Q^* = 64$ thousand tonnes is the socially optimal output and $P^* = 116$ dollars is the socially optimal price.

Optimal Pigouvian Tax (t^*): Evaluate MEC at $Q^* = 64$: $t^* = 0.5(64) = 32$ dollars per tonne. Imposing $t^* = 32$ lifts firm cost to $MPC + 32 = 52 + Q$; equating $P_d = 180 - Q = 52 + Q$ yields $Q = 64 = Q^*$. Deadweight loss avoided by the tax is $DWL = \frac{1}{2}(MSC(Q_m) - MPC(Q_m))(Q_m - Q^*) = \frac{1}{2}(0.5 \times 80)(80 - 64) = 320$ thousand dollars.
Part B (Samuelson Public Good Sum): Suppose a rural Victorian shire has two resident groups (100 farmers and 100 townsfolk) valuing bushfire early-warning sirens (G) with individual marginal benefits $MB_F = 12 - 0.1G$ and $MB_T = 8 - 0.1G$, and marginal cost $MC(G) = 600$ dollars per siren. Vertically summing marginal benefits across all 200 residents:

$$\sum MB = 100(12 - 0.1G) + 100(8 - 0.1G) = 2,000 - 20G$$

Equate $\sum MB = MC$:

$$2,000 - 20G^* = 600 \implies 20G^* = 1,400 \implies G^* = 70$$

If left to private purchase by any single resident ($\max MB_i = 12 < 600$), zero sirens would be built.

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Chapter 3: Asymmetric Information and Principal-Agent Problems

3.1 Hidden Characteristics: Adverse Selection, Signalling, and Screening

Standard equilibrium models assume both sides of a transaction observe product quality and risk identically. **Asymmetric information** arises when one party holds private information unavailable to the other. When private information exists *before* a contract is signed (**hidden characteristics**), markets suffer from **adverse selection**.

George Akerlof's classic "Market for Lemons" illustrates how adverse selection can unravel a market. If used-car sellers know whether a vehicle is a high-quality "peach" or a defective "lemon", while buyers observe only average quality, buyers offer only a blended average price. If that blended price falls below the reservation value of peach owners, peach owners withdraw their vehicles, lowering average quality further until only lemons trade —an extreme market failure. Similar dynamics afflict private health insurance: if insurers charge a single pooled premium, low-risk healthy individuals drop out, leaving a high-risk pool that drives premiums relentlessly upward.

Markets and governments mitigate adverse selection through three mechanisms:

- **Signalling (Informed Party Moves First):** High-quality agents take costly actions that low-quality agents cannot profitably mimic, credibly revealing their type—such as Michael Spence's job-market education model (tertiary degrees signal innate productivity when studying is less costly for high-ability workers) or comprehensive manufacturer warranties.
- **Screening (Uninformed Party Moves First):** Insurers and employers offer a menu of contracts inducing self-selection—for example, offering lower-premium car insurance policies paired with high excess deductibles (attractive to safe drivers) versus high-premium zero-excess policies (selected by higher-risk drivers).
- **Mandatory Pooling & Regulation:** Australia avoids health insurance death spirals through universal **Medicare** funding alongside **community rating** and **Lifetime Health Cover** age-loading incentives that encourage younger, lower-risk Australians to maintain private hospital cover.

3.2 Hidden Action: Moral Hazard and Principal-Agent Incentives

When information asymmetry arises *after* a contract is signed (**hidden action**), the market suffers from **moral hazard**: an insured or contracted agent takes greater risks or exerts less effort because the principal cannot perfectly observe their behaviour. Examples include motorists parking carelessly once comprehensively insured, bank executives taking excessive tail risks under implicit bailout expectations, or employees shirking when supervision is costly.

Principals mitigate moral hazard by aligning incentives through partial risk-sharing (insurance excesses, co-payments, and no-claim bonuses), performance-contingent pay (sales commissions, executive equity vesting), and **efficiency wages** (CORE Econ's labour-discipline model, where paying a wage above market clearing creates an employment rent forfeited upon dismissal).

Worked Example 4.3: Adverse Selection Unravelling in Used Vehicles

Suppose 50 per cent of used utes in a regional market are high-quality (H) worth \$30,000 to buyers and \$26,000 to sellers, and 50 per cent are low-quality (L) worth \$14,000 to buyers and \$10,000 to sellers. Buyers cannot distinguish H from L prior to purchase.

Step 1 (Expected Value Under Pooling): If both types remain for sale, a risk-neutral buyer's maximum willingness to pay is:

$$E[WTP] = 0.50(30,000) + 0.50(14,000) = 22,000$$

Where:

- $E[WTP] = 22,000$ dollars is the expected buyer valuation across the 50/50 pool.

Step 2 (Market Unravelling): Because $E[WTP] = 22,000$ falls below the 26,000-dollar minimum reservation price of H sellers, every H owner refuses to sell and exits the market. Rational buyers deduce that only L utes remain ($E[WTP] = 14,000$), so equilibrium collapses to L utes trading between \$10,000 and \$14,000, forfeiting the \$4,000 gains from trade per H ute. If an independent mechanical inspection costing \$1,000 credibly certifies H status, H utes trade at \$30,000 (netting \$29,000, well above \$26,000), restoring the full market.

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Chapter 4: Inequality, Redistribution and Australian Microeconomic Policy Design

4.1 Measuring Economic Inequality: Lorenz Curves and the Gini Coefficient

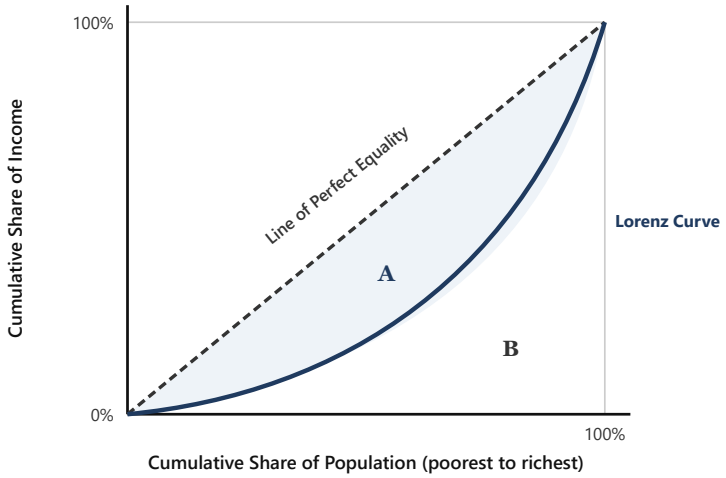
While efficiency focuses on the size of the economic pie, **equity** examines how income and wealth are distributed across households. Economists distinguish between **market income** (wages, business profits, dividends, and rent before government intervention) and **disposable income** (market income minus direct taxes plus cash transfers), as well as **final income** (adding imputed in-kind benefits such as public healthcare and schooling). Inequality is tracked via quintile ratios (such as the P90/P10 decile ratio), the **Lorenz curve**—which plots cumulative population share ranked from poorest to richest on the horizontal axis against cumulative income share on the vertical axis—and the **Gini coefficient (G)**:

$$G = \frac{A}{A + B} = 2A = 1 - 2B$$

Where:

- A is the area between the 45-degree Line of Perfect Equality and the Lorenz curve.
- B is the area underneath the Lorenz curve (since total area of the unit triangle is $A + B = 0.5$, $G = 2A$).
- $G = 0$ represents complete equality (every household earns identical income) and $G = 1$ represents complete inequality (one household captures all income).

Figure 4.2: Lorenz Curve and Geometric Derivation of the Gini Coefficient (G = A / (A + B))



For grouped data across k equal population intervals (such as quintiles of width $w_k = 1/k$) with cumulative income shares $Y_0 = 0, Y_1, \ldots, Y_k = 1$, the trapezoidal approximation computes the Gini coefficient directly:

$$G = 1 - \frac{1}{k} \sum_{i=1}^{k} (Y_{i-1} + Y_i)$$

Where:

- k is the number of equal population groups (e.g., $k = 5$ for quintiles).
- Y_i is the cumulative share of total income held by the bottom i groups ($Y_0 = 0, Y_k = 1$).

4.2 Pre-Distribution, Redistribution, and Australian Tax-Transfer Design

CORE Econ distinguishes two complementary levers for narrowing inequality: **pre-distribution** policies that alter market-income endowments and bargaining power *before* taxes and transfers (such as public schooling, universal healthcare building human capital, Fair Work Award minimum wages, and vigorous antitrust enforcement curbing monopoly rents), and **redistribution** policies that adjust disposable income *after* market outcomes via progressive taxation and targeted transfers.

Australia's tax-transfer system combines a **progressive personal income tax** administered by the Australian Taxation Office (ATO)—featuring a tax-free threshold and rising marginal tax rates across higher income brackets—with tightly **means-tested cash transfers** (Age Pension, JobSeeker, Family Tax Benefit) and universal in-kind services (Medicare, public schools). According to ABS Household Income and Wealth surveys, Australia's market-income Gini sits near 0.45, whereas progressive taxes and targeted transfers reduce the disposable-income Gini to roughly 0.32, demonstrating substantial fiscal redistribution. Effective policy design balances equity gains against potential labour-supply disincentives (high effective marginal tax rates when transfer taper rates stack onto income tax brackets, especially for secondary earners facing childcare costs).

4.3 Australian Competition Policy and the ACCC

Market efficiency and equitable consumer outcomes also depend on competition law. In Australia, the **Australian Competition and Consumer Commission (ACCC)** enforces the *Competition and Consumer Act 2010* (Cth), whose microeconomic mandate spans two pillars:

- **Part IV — Anti-Competitive Conduct:** Prohibits hard-core **cartel conduct** (price fixing, bid rigging, output restrictions, and market sharing, carrying civil penalties and criminal sanctions); prohibits **misuse of market power** (section 46, barring firms with substantial market power from conduct having the purpose, effect, or likely effect of substantially lessening competition); and reviews **mergers and acquisitions** (section 50) that risk substantially lessening competition in concentrated industries.
- **Schedule 2 — Australian Consumer Law (ACL):** Targets information asymmetries and behavioural exploitation by banning **misleading or deceptive conduct** (section 18), false representations, unfair contract terms in standard-form small-business and consumer contracts, and unconscionable conduct.

Worked Example 4.4: Computing the Gini Coefficient Before and After Fiscal Redistribution

Suppose a stylised economy of five equal income quintiles ($k = 5$) generates the following annual market income distribution (in thousands of dollars per household): Q1 (poorest) $= 20$, Q2 $= 40$, Q3 $= 60$, Q4 $= 80$, Q5 (richest) $= 200$. Total market income $= 400$.

Step 1 (Market-Income Gini): Quintile shares are $s_1 = 0.05, s_2 = 0.10, s_3 = 0.15, s_4 = 0.20, s_5 = 0.50$. Cumulative shares Y_i are $Y_0 = 0$, $Y_1 = 0.05$, $Y_2 = 0.15$, $Y_3 = 0.30$, $Y_4 = 0.50$, $Y_5 = 1.00$. Applying the trapezoidal Gini formula:

$$G_{\text{market}} = 1 - \frac{1}{5}[(0 + 0.05) + (0.05 + 0.15) + (0.15 + 0.30) + (0.30 + 0.50) + (0.50 + 1.00)]$$

$$G_{\text{market}} = 1 - \frac{1}{5}(0.05 + 0.20 + 0.45 + 0.80 + 1.50) = 1 - \frac{3.00}{5} = 1 - 0.60 = 0.40$$

Where:

- $G_{\text{market}} = 0.40$ measures pre-tax, pre-transfer income inequality.

Step 2 (Apply Progressive Tax and Transfer Schedule): Suppose the government levies a 25 per cent flat tax on market income exceeding \$40 (collecting \$0 from Q1 and Q2, \$5 from Q3, \$10 from Q4, and \$40 from Q5, yielding total tax revenue $T = 55$ thousand dollars), and distributes a targeted cash transfer of $+20$ to Q1, $+15$ to Q2, $+10$ to Q3, and $+10$ to Q4 (budget-balanced total transfers $B_T = 55$).
Disposable incomes become: Q1 $= 20 + 20 = 40$; Q2 $= 40 + 15 = 55$; Q3 $= 60 - 5 + 10 = 65$; Q4 $= 80 - 10 + 10 = 80$; Q5 $= 200 - 40 = 160$. Total disposable income remains $Y_{\text{total}} = 400$.
Step 3 (Disposable-Income Gini): New shares are 0.1000, 0.1375, 0.1625, 0.2000, and 0.4000, giving cumulative shares $Y_1 = 0.1000$, $Y_2 = 0.2375$, $Y_3 = 0.4000$, $Y_4 = 0.6000$, $Y_5 = 1.0000$. Compute G_{disp}:

$$G_{\text{disp}} = 1 - \frac{1}{5}[0.1000 + 0.3375 + 0.6375 + 1.0000 + 1.6000] = 1 - \frac{3.675}{5} = 1 - 0.735 = 0.265$$

Where:

- $G_{\text{disp}} = 0.265$ is the post-tax, post-transfer Gini coefficient, demonstrating a 33.75 per cent reduction in measured inequality ($G : 0.400 \to 0.265$) through progressive fiscal redistribution.

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