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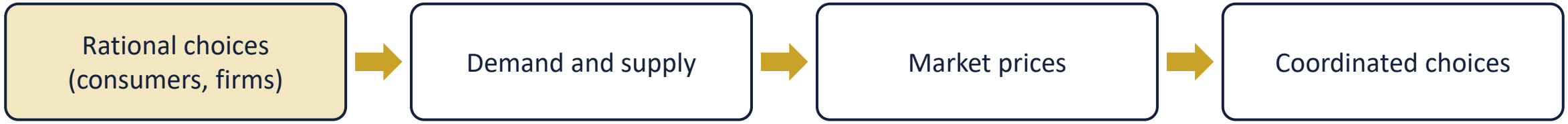
Public Economics

Lecture overviews, Chapters 1–10: from rational choices to policies, elections, interest groups and constitutions

Professor Roger D. Congleton

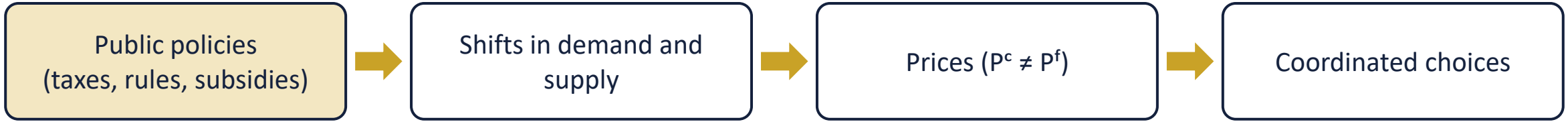
From choices to coordination: markets, then policy

(1) The neoclassical core



Net-benefit and utility maximization generate demand; profit maximization generates supply. Prices aggregate dispersed information and coordinate independent plans (Ch. 1–2).

(2) Exogenous public policy



Taxes, regulations, tariffs and subsidies drive wedges between buyer and seller prices and alter the extent of markets: markets remain, but are partly policy-determined (Ch. 2).

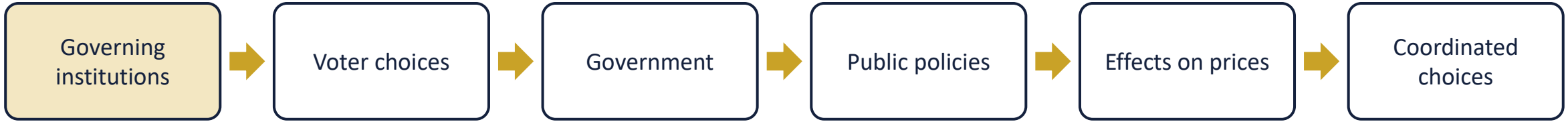
Endogenous policy: voters, then institutions

(3) Public choice: policies emerge from elections



Median voters, interest groups and bureaucrats determine which taxes, services, regulations and debt are adopted (Ch. 3–9).

(4) Constitutional political economy: the rules of the game



Electoral systems, the king-and-council division of authority and federalism determine who is pivotal, and therefore which policies emerge (Ch. 8–10).

(5) Two forces that bend every chain

Information

- Consumers and voters gather information only until its expected marginal benefit equals its marginal cost: rational ignorance.
- Biased expectations about benefits or tax costs (fiscal illusion) produce systematic over- or under-demand for services and debt.
- Unbiased but noisy estimates average out: the Condorcet jury theorem lets majorities aggregate information.
- Firms and groups subsidize favorable and “tax” unfavorable information; competing messages can raise perceived variance.

Rent seeking

- Firms divert resources from production into lobbying for entry barriers, tariffs, subsidies and tax preferences.
- Free riding keeps large consumer groups unorganized, so policy tilts toward small, concentrated producer interests.
- Competition for rents dissipates much of the prize: losses well beyond Harberger triangles.
- Consumers and firms also spend defensively (fences, compliance, avoidance), and bureaus lobby for larger budgets.

What is public economics?

1 · Why study it

Governments now spend more than a third of GNP and tax, regulate and subsidize most markets, far more than in 1900. Prices and outputs are partly policy-determined.

2 · Methodological individualism

Only individuals choose. Governments, firms and groups are analyzed through the rational choices of their members: voters, officials, bureaucrats, lobbyists.

3 · Positive versus normative

Positive: which policies are chosen, and with what effects?
Normative: which are better (from the utilitarian, Paretian, contractarian, cost-benefit perspectives)?

Keep the two separate.

4 · The focus of the course

Public policy choices and their effects in commercial societies within liberal democracies: market economies whose governments are chosen in elections under constitutional constraints.

Exogenous taxation, regulation and the extent of markets

Markets are not dead, but prices, outputs and the mix of firms are no longer determined by private choices alone.

Calculus foundations. Demand from utility maximization, supply from profit maximization; taking account of the "shift variables" that the diagrams hide.

Excise taxes. Two prices now clear the market, $P^c - P^f = t$; the burden is shared; excess burden grows with t^2.

Regulation. Rules on production methods and consumer choices (naturally) raise marginal cost and reduce supply; uneven rules "subsidize" the unregulated.

Price controls. Shortages for price takers; ambiguous output effects for price makers.

Tariffs. A tariff is an excise tax on a subset of suppliers.

Subsidies. A subsidy can be considered to be a negative tax. Again two prices clear the market, with $P^f - P^c = G$, where G is the per-unit subsidy.

The mathematics behind the tax-incidence diagram

Consumer (AI)

$$U = u(X_1, (Y - P_1X_1)/P_2) \Rightarrow X_1^* = x_1(P_1, P_2, Y)$$

Firm (Apex)

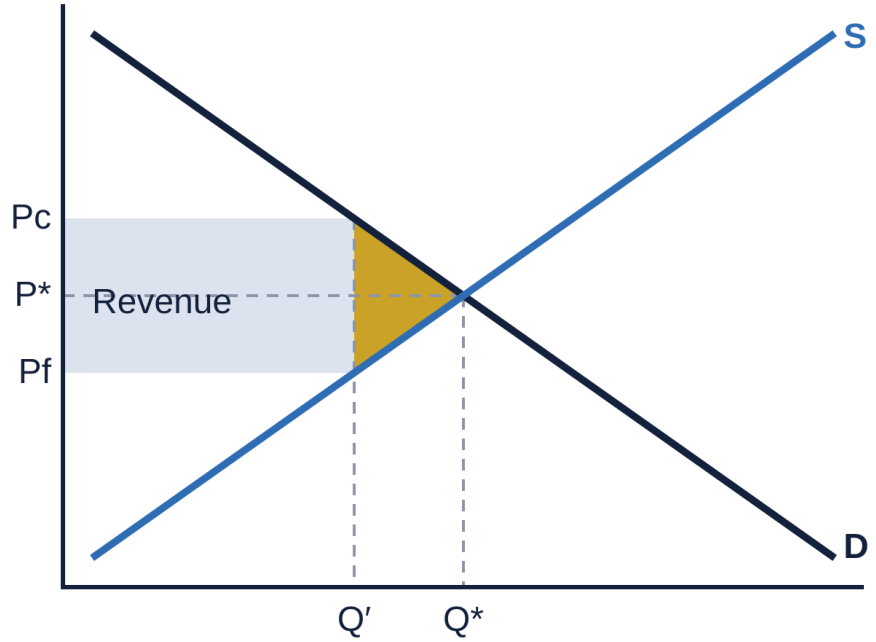
$$\Pi = P_1X_1 - c(X_1, w, r, T) \Rightarrow X_1^* = s_1(P_1, w, r, T)$$

Market with a per-unit excise tax t

$$N \cdot x_1(P_1^*, P_2, Y) = M \cdot s_1(P_1^* - t, w, r, T)$$

$$P_1^* = f(t, N, P_2, Y, M, w, r, T)$$

Revenue = tQ′. The total tax burden = ΔCS + ΔΠ, which **exceeds** revenue by the excess burden: about ½·a·t² when the curves are linear.



Gold triangle: excess burden (f + g). Blue rectangle: tax revenue (b + c).

Regulation, tariffs and subsidies change the equilibrium

Production regulation

$$\Pi = PQ - c(Q, w, r) - g(Q, R)$$

$$P - c_Q - g_Q = 0$$

$$dQ^*/dR = -g_{QR} \div (-\Pi_{QQ}) < 0$$

$$Q^s = m \cdot q_m(P, R) + n \cdot q_n(P)$$

Regulated firms supply less, the price rises, and unregulated rivals gain share and profit.

Tariffs

$$q(P^c, Y, P^O) = \Sigma_i \, s_i^{\,m}(P^c - t) + \Sigma_j \, s_j^{\,n}(P^c)$$

$$dP^c/dt > 0, \;\; d(P^c - t)/dt < 0$$

An excise tax on foreign suppliers only: shared by foreign firms and domestic consumers; domestic producers expand. With no domestic supply, a small country's tariff passes through fully.

Subsidies

$$P^c = P^f - G$$

$$q(P^c, Y, P^O) - s(P^c + G, w, r) = 0$$

$$dP^c/dG = -s_P \div -(q_P - s_P) < 0$$

A negative tax: consumers pay less, firms receive more; benefits are shared and entry follows in the long run.

Electoral politics: the median voter as a Nash equilibrium

Duncan Black: the median voter always votes with the majority (weak form), and her ideal point beats every alternative (strong form).

Anthony Downs: two candidates competing for votes converge on the median: a Nash equilibrium, not a representative agent; the electoral counterpart of perfect competition.

Implications: Median voter characteristics matter (median income, age and education), but dispersion does not.

Turnout, PR coalitions, electoral colleges and parties shift who is pivotal.

Elections tend to be close when candidates are pragmatists and attempt to maximize their vote shares.

Limits: rational ignorance and fiscal illusion; bureaucratic agency problems (Niskanen); majoritarian cycles in two or more dimensions (Plott; not always caused by odd tastes: as with "divide the pie" choices).

Lunch by majority rule. Ideal points: Al $5, Bob $10, Cathy $20

Options	Al	Bob	Cathy	Outcome
$10 vs $20	10	10	20	10 MP 20
$5 vs $20	5	5	20	5 MP 20
$5 vs $16	5	5	16	5 MP 16
$10 vs $5	5	10	10	10 MP 5
$12 vs $10	10	10	12	10 MP 12

Bob's column matches the outcome column (weak form); whenever the median voter's ideal point is on the ballot, it wins (strong form of the median voter theorem). For example, when $10 is on the ballot it wins.
MP indicates majority preferred.

A neoclassical median voter model of public services

Voter i: a pure public good financed by a head tax

$$U_i = u(C_i, G), \quad W_i = C_i + T, \quad g(G) = NT$$

$$\Rightarrow \; U_i = u(W_i - g(G)/N, G)$$

First-order condition (eq. 3.6)

$$U_C \cdot (g_G / N) = U_G$$

Ideal point and comparative statics (3.7–3.11)

$$G_i^* = \gamma(W_i, N), \quad \partial G^*/\partial W > 0, \quad \partial G^*/\partial N > 0$$

The median voter (median wealth)

$$G_v^* = \gamma(W_v, N)$$

- g_G / N is the voter's marginal cost share: the "tax price" of G.
- Demand rises with wealth, so the median-wealth voter is pivotal.
- Services grow when median income or the number of taxpayers grows: a model of government growth.
- Signing uses strict concavity and positive cross partials.
- Fiscal illusion biases expected MB or MC, and so over- or under-demand.

Elections and the domain of tax-financed services

Private goods

Schooling, medical services: chosen when the tax price beats the market price.

Public goods

Defense, air quality: vertical sum of MB curves; club goods in between.

Social insurance

Health, unemployment, pensions: risk sharing for risk-averse voters.

Transfers

Demogrants: redistribution limited by the deadweight cost of taxes.

- A voter prefers government provision only when the tax price and expected service level yield more net benefit than the market (Fig. 4.1: area I versus area II).
- Under equal cost shares the median voter's G*(Bob) generally differs from the Pareto level G**, where ΣMB = MC; the tax system determines who the median voter is.
- Since Samuelson (1954), budgets have shifted from public goods toward insurance and transfers, now the largest items in national budgets.

The demand for income-security (health) insurance

Healthy (prob. 1 − P) and sick (prob. P), club dues or tax rate t

$$U^H = U((1-t)\omega W, H - W)$$

$$U^S = U((1-t)\omega W + G, S - W), \quad G = t\omega \Sigma W_j / PN$$

Work-leisure choices (4.7a, 4.7b)

$$U_Y{}^H(1-t)\omega = U_L{}^H ; \quad U_Y{}^S[(1-t)\omega + t\omega/PN] = U_L{}^S$$

Reservation price M*: membership leaves expected utility unchanged

$$M^* = m(t, P, S, H, \omega, N)$$

$$\partial M^*/\partial P > 0, \quad \partial M^*/\partial S < 0, \quad \partial M^*/\partial t \gtrless 0$$

- Strictly concave utility means risk aversion: a premium up to $V^e - V^{ind}$ is worth paying.
- The ideal club sets $\partial M^*/\partial t = 0$, balancing benefits when sick against dues when healthy.
- Why shift to tax finance? Progressive taxes discount insurance for most voters; governments rarely go bankrupt; adverse selection undermines private clubs; ideology.

Electoral demand for transfers: Meltzer–Richard

Proportional tax t finances an equal demogrant G

$$C_i = (1 - t)y_i(t) + G, \quad t \cdot Y^A(t) = G$$

$$U = u[(1 - t)y_i(t) + t \cdot Y^A(t)]$$

First-order condition (4.19): MC of taxes = MB of the demogrant

$$y_i(t) - (1 - t) \cdot dy_i/dt = Y^A + t \cdot dY^A/dt$$

Median voter's program

$$G^* = t^* \cdot Y^A(t^*)$$

No incentive effects: below-average incomes want t = 100%, above-average want t = 0: a polar case.

Deadweight losses (dy/dt < 0) raise MC and lower MB, allowing an intermediate t*.

Right-skewed income puts the median below the mean, so demogrants are larger.

"Just deserts" norms moderate redistribution; altruism increases it.

Interest groups and endogenous regulation

The political counterparts of monopoly, possible because voters are rationally ignorant of many policies.

Olson (1965)

Large groups free ride; small groups with concentrated stakes organize and win at the margin.

Stigler (1971)

Regulation as a good the industry acquires: entry barriers, higher prices, higher profits.

Peltzman (1976)

Regulators maximize political support, balancing producer gains against consumer losses.

Becker (1983)

Groups compete for influence; deadweight losses discipline transfers toward efficient forms.

Tullock · Krueger

Resources spent seeking rents are social losses; contest rules determine dissipation.

Niskanen (1971)

Bureaus maximize budgets; all-or-nothing offers can double output in the linear case.

Collective action and political support

Olson’s free-rider problem

Member 1 \ Member 2	Contribute	Free ride
Contribute	(1, 1)	(−1, 2)
Free ride	(2, −1)	**(0, 0) Nash**

Illustrative payoffs: each contribution costs 3 and yields 2 to every member. Free riding is dominant, so the group stays unorganized although both prefer (1, 1). The dilemma worsens as groups grow.

Peltzman: support from N groups affected by regulated price P

$$S = \Sigma_i S_i(P)$$

$$dS/dP = \Sigma_i \partial S_i/\partial P = 0 \text{ at } P^*$$

P* balances the marginal support gained from groups favoring higher prices against the support lost from those favoring lower prices.

Stigler is the limiting case, with consumer weight near zero. Becker: without Olsonian free riding, maximizing influence resembles maximizing social welfare.

Tullock's efficient rent-seeking contest

Lottery contest: prize Π, unit cost C, others' total effort R_o

$$\Pi^e = \Pi \cdot R_i/(R_i + R_o) - C \cdot R_i$$

Best reply (5.8)

$$R_i^* = -R_o + (\Pi \cdot R_o / C)^{\wedge}½$$

Symmetric Nash equilibrium with N rivals (5.11, 5.13)

$$R_i^{**} = [(N-1)/N^2] \cdot (\Pi/C)$$

$$C \cdot N \cdot R_i^{**} = [(N-1)/N] \cdot \Pi$$

Dissipation rate (N − 1)/N

Rivals N	Share of prize spent
2	50%
3	67%
10	90%
→ ∞	100%

Posner (1975): monopoly and regulation losses ≈ 3.4% of GNP, over thirty times the triangle estimates.

Normative ideas and choices among tax systems

Utilitarian

Maximize aggregate utility: Ramsey, Pigou, cost-benefit; diminishing MU favors progressivity.

Paretian

An improvement makes someone better off and no one worse off; Samuelson conditions.

Contractarian

Agreement is the test: Rawls' veil of ignorance, Buchanan's veil of uncertainty, Lindahl.

- Among voters taxation is zero-sum, so tax systems are prone to majoritarian cycles.
- Shared voter interests: transparent, stable taxes whose burdens are easy to estimate and whose agency costs are easy to spot (Congleton 2024).
- Shared norms, such as Smith's proportionality, narrow the domain of cycling at some cost in transparency.

Behind the veil: which society?

$(5, 5, 5)$ $(8, 8, 5)$
$(12, 7, 4)$ $(18, 5, 2)$

Equal chance of being each person.

Normative provision: Bentham, Samuelson and Lindahl

Benthamite welfare, G financed by a proportional income tax (6.1–6.2b)

$$W = \Sigma_i U^i((1 - c(G)/Y)Y^i, G)$$

$$\Sigma_i U_G{}^i = \Sigma_i U_C{}^i(c_G / Y)Y^i$$

Samuelson, no tax system assumed (6.3–6.9)

$$L = W(U^1, \ldots, U^N) - \lambda \cdot T(G, X)$$

$$\Sigma_i U_G{}^i / U_X{}^i = T_G / T_X$$

Lindahl benefit taxes

$$MTC_i(G^{**}) = MB_i(G^{**}) \text{ for every } i$$

- The Samuelson rule (ΣMRS = MRT) is independent of the social welfare function; only the distribution of private goods depends on W.
- It describes a benevolent planner, not what democracies choose.
- Lindahl taxes make G** every voter's ideal: unanimity is possible, but each MB curve must be revealed (Clarke tax).

Excess burden, Pigovian taxes and marginal rates

Ramsey norm

For a given revenue, deadweight loss is larger where demand and supply are elastic: tax (and subsidize) inelastic markets.

Broad, neutral or lump-sum taxes avoid the relative-price (substitution) effect and dominate narrow excise taxes.

Pigovian tax

$$t = MC_x(Q^{**})$$

Shifts the market from Q* to Q**, where SMB = SMC. It raises social net benefits: no excess burden unless t exceeds the marginal external cost. Hence the “double dividend” debate.

Labor–leisure

$$U = u(H - W, wW - \tau(wW))$$

$$w(1 - \tau_Y)\cdot U_C = U_L$$

The marginal tax rate τ_Y, not the average rate, drives the work-leisure choice.

The political economy of public debt

Why wouldn’t the median voter prefer debt to taxes?

Debt is not just deferred taxation: it is rolled over, partially defaulted on through inflation, and partly held because regulations require it.

Benign reasons: life-cycle smoothing and Ramsey tax smoothing over recessions and capital projects.

Biases: burden shifting to those who cannot vote, short planning horizons, fiscal illusion, and strategic constraints on future majorities.

Interest groups favoring services now are better organized than those favoring surpluses.

11 of 90

years with a US federal surplus in the 90-year record plotted in the chapter.

Deficits are the norm, not the Keynesian pattern; the large spikes are WWII, 2008–09 and Covid-19.

Four median-voter models of debt finance

Ramsey tax smoothing (7.4–7.10)

$\min t_1 Y_1 + a \cdot t_1^2 Y_1 + (t_2 Y_2 + a \cdot t_2^2 Y_2)/(1 + r)$

$\Rightarrow t_1^* = t_2^* = T / (Y_1 + Y_2/(1 + r))$

Equal rates minimize excess burden: borrow in recessions and for capital goods.

Barro: Ricardian equivalence (7.11–7.23)

$U_{G1} / U_{G2} = 1 + r$; tax FOCs contain no t

With homogeneous, dynastic voters only the present value of taxes matters: debt is neutral and voters are indifferent.

Buchanan–Roback: burden shifting

Interior only if $Y_1^v / \Sigma Y_{1i} = Y_2^v / \Sigma Y_{2i}$

If the median voter's tax share falls in period 2 (e.g., retirement): $t_1 = 0$ and period-1 services are fully debt-financed.

Tabellini–Alesina; cost uncertainty

$U^e = \alpha \cdot u(C_1, G_1, C_2, G_2) + (1-\alpha) \cdot u(C_1, G_1, C_2', G_2')$

Debt constrains a rival future majority; uncertain future costs shift services toward the present.

Fiscal federalism: relationships among governments

Grants downward

Lump-sum grants have income effects; matching grants also change relative prices. Puzzle: the flypaper effect.

Lobbying upward

Regional projects funded from national taxes invite pork-barrel politics: the fiscal commons problem.

Competition across

Mobile residents and tax bases discipline governments: Tiebout sorting, yardstick competition.

Tiebout (1956): with costless mobility and many fiscal packages, “voting with one’s feet” yields least-cost provision, homogeneous communities and Lindahl-like taxes.

Limits: moving costs, economies of scale and intergovernmental externalities (NIMBY problems).

Oates’ decentralization theorem: assign each service to the smallest government that realizes its scale economies; uniform central provision loses net benefits.

Asymmetric federalism emerges from constitutional bargaining among unequal regions.

Two fiscal commons: pork barrels and shared tax bases

The pork-barrel dilemma ($ billions)

Region A \ Region B	Build road	Don't build
Build water project	**(−2, −3) Nash**	(+2, −4)
Don't build	(−4, +1)	(0, 0)

Road costs 10, benefits A 1, B 6; water project costs 12, benefits A 8, B 2; costs shared equally. Pressing for one's own project is dominant for both, yet both prefer (0, 0). Remedies: local finance or rigorous cost-benefit tests.

Linear market: $Q^D = a - bP$, $Q^s = cP$; excise tax t

$$R = tQ^* = (at - bt^2)c / (b + c)$$

One revenue-maximizing Leviathan (8.3–8.4)

$$t^* = a/2b, \text{ output halved}$$

Two governments share the base, $t = t_1 + t_2$ (8.5–8.8)

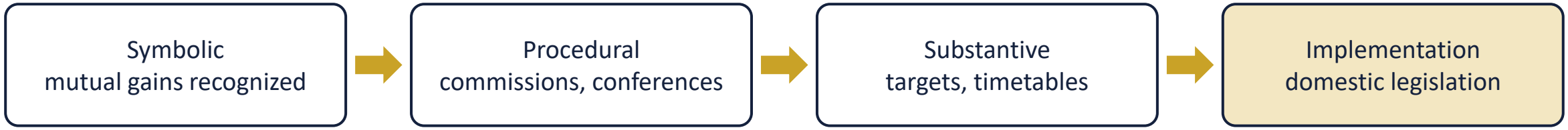
$$t_i^* = (a - b \cdot t_j)/2b \Rightarrow t_i^{**} = a/3b$$

$$t_1^{**} + t_2^{**} = 2a/3b > a/2b$$

Independent taxation of a common base overshoots the top of the Laffer curve (Flowers 1988).

International externalities and treaties

International externalities are government failures: sovereign regulators ignore effects abroad. Treaties are Coasian contracts that must be self-enforcing.



- Every substantive treaty passes through the earlier stages, so symbolic and procedural treaties are far more common; some are "environmental cheap talk."
- Evidence: democracies and richer, freer countries sign, ratify and cut emissions more; CFC cuts look like voluntary provision more than treaty effects (Murdoch and Sandler 1997).
- Enforcement rests on reputational "performance bonds" among nations that deal repeatedly.

Why sign, and who regulates more?

Expected net benefits by stage (9.1a–c). $\Delta(k) = B(k) - C(k)$; $p_1 = P(\text{Proc}|\text{Symb})$, $p_2 = P(\text{Subst}|\text{Proc})$

$$\text{Net}(\text{Symb}) = \Delta(\text{Symb}) + p_1 \cdot \Delta(\text{Proc}) + p_1 p_2 \cdot \Delta(\text{Subst})$$

$$\text{Net}(\text{Proc}) = \Delta(\text{Proc}) + p_2 \cdot \Delta(\text{Subst})$$

$$\text{Net}(\text{Subst}) = \Delta(\text{Subst})$$

Pivotal policymaker's preferred standard R (9.2–9.4)

$$U^e = \iint u(E, \alpha_i \cdot y(R)) \cdot e(E \mid R, y(R), R^W, Y^W)\, dE\, dt$$

$$R_i^* = r_i(\alpha_i, T_i, N_i, R^W, Y^W)$$

A dictator's large income share α_i and short horizon T_i imply laxer standards than the median voter's.

Abatement without a treaty

1 \ 2	Abate	Don't
Abate	(1, 1)	(−2, 3)
Don't	(3, −2)	**(0, 0) Nash**

Illustrative: abating costs 5 and gives each country 3. A treaty seeks (1, 1) but must be self-enforcing.

Institutions affect policy at the margin

The rules of the game decide who is pivotal: majority rule makes the median voter matter; contest rules shape rent seeking.

King and council: prime ministers are agents of the parliamentary majority; presidents can disagree with legislatures, forcing cross-party compromise.

De jure versus de facto constitutions; degree of decentralization.

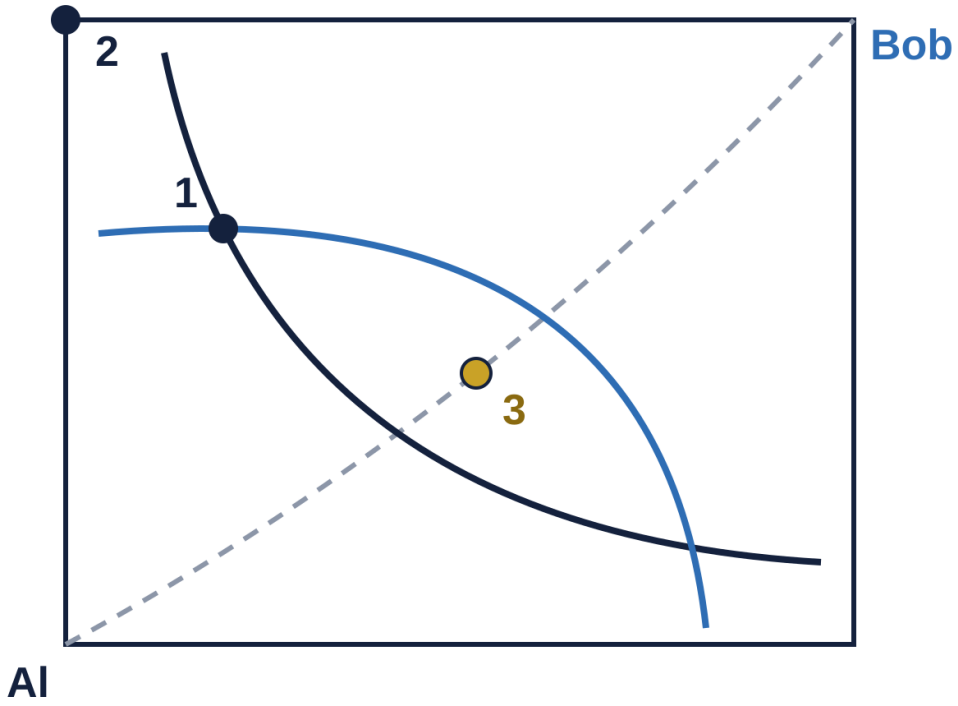
Evidence: Persson–Roland–Tabellini (2000); Knack–Keefer (1995); democracy raises income and growth (Doucouliagos–Ulubaşoğlu 2008); de facto judicial independence and growth (Feld–Voigt 2003).

Two forms of majoritarian representation

Feature	Proportional (lists)	First past the post
Districts	Multi-member	Single-member
Parties seated	Often 4–5 or more	Usually 2–3
Who matters	Party elites order lists	Candidates, primaries
Spending tilt	Broad national programs	Targeted, “bring home the bacon”
Executive	Usually parliamentary	Parliamentary or presidential

Persson and Tabellini (1999, 2004): PR favors general programs, which may help explain Scandinavia’s broader safety nets.

Origins of constitutions and constitutional exchange



Axes measure authority over two policy domains. Both prefer 3 to 1 or 2: gains from trading authority exist even from a complete separation of powers (2).

Formeteurs: extractive states (stationary bandits) keep authority with the "king"; productive states keep it with the "council."

Delegation leads both toward a king-and-council template.

Exchange is a voluntary transfer of authority; so is constitutional reform among agenda setters and veto players (Congleton 2011a, 2013).

Without good design and supporting norms, productive states drift toward extractive ones.

CHAPTER 12 · THE FOREST FROM THE TREES

Institutions → voters and interest groups → policies → prices → coordinated choices

- Markets still coordinate most economic activity, within constraints chosen through politics.
- Policies are endogenous: median voters, interest groups, bureaus and competing governments explain their level and form.
- Institutions determine who is pivotal; normative theories matter when voters and officials internalize them.

Exam 2 · Monday, November 16 · two pages of handwritten notes allowed