

The Munich Lectures 2009: Days Two and Three
Policy Lessons from Optimal Tax Theory

by

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Introduction

Normative second-best analysis gives insights, not categorical policy prescriptions

- ▶ Normative analysis based on workable models with well-motivated assumptions forces rigorous and systematic thinking about policy issues, and indicates where particular assumptions lead to in terms of possible policy consequences
- ▶ Different models based on some assumptions, about structure of model, functional forms, reactions to policies
- ▶ Normative models based on value judgments, and results may be sensitive to them
- ▶ One hopes results obtained from separate models apply in more complicated world

Constraints and Institutional Environment

- ▶ Resources and technology
 - ▶ Individual preferences
 - ▶ Competitive market environment
 - ▶ Objective function: welfaristic social welfare function
 - ▶ Information constraints
 - ▶ Policy instruments
- ▶ Role of political economy
 - ▶ An alternative mechanism for making decisions, subject to similar constraints
 - ▶ Normative analysis a benchmark for judging political outcomes
 - ▶ While the political process must be respected, voters and policy-makers can be informed and persuaded by normative analysis
 - ▶ Imposing political constraints on normative analysis defeats the purpose

Main Insights from Optimal Tax Analysis for Policy

- ▶ Corlett-Hague Theorem and extensions
- ▶ Atkinson-Stiglitz Theorem and extensions
- ▶ Production Efficiency Theorem
- ▶ Dynamic optimal taxation & taxation of capital income
- ▶ Progressivity
- ▶ Efficient business taxation
- ▶ Role of price and quantity controls
- ▶ Importance of information constraints

1 Uniformity of Commodity Taxes?: The Corlett-Hague Theorem

Representative consumer precursor to optimal nonlinear tax

- ▶ x_1, x_2, x_0 : Differential increase in tax on good most complementary with x_0 increases welfare
- ▶ Optimal tax generalization by Harberger

$$\frac{\tau_1}{\tau_2} = \frac{\epsilon_{11} + \epsilon_{22} + \epsilon_{10}}{\epsilon_{11} + \epsilon_{22} + \epsilon_{20}} \Rightarrow \tau_1 > \tau_2 \text{ if } \epsilon_{10} < \epsilon_{20}$$

- ▶ Uniform taxation if $u(f(x_1, \dots, x_n), x_0)$ with $f(\cdot)$ homothetic
- ▶ Inverse elasticity rule if $u_1(x_1) + \dots + u_n(x_n) + bx_0$ (Ramsey)
- ▶ Persons differ in w : Linear progressive tax if utility weakly separable & goods have linear Engel curves with identical slopes across individuals (Gorman polar form: Deaton)
- ▶ But, tax mix indeterminate: determined on other grounds

Nonlinear Income Tax Case: Atkinson-Stiglitz Theorem

- ▶ Optimal income tax setting with n goods, government observes y , anonymous purchases
- ▶ If utility weakly separable, $u(f(x_1, \dots, x_n), x_0)$, optimal commodity tax rates uniform (and indeterminate)
- ▶ Potential role of commodity taxes is to relax incentive constraint if mimickers consume different bundle than person mimicked
- ▶ Policy implication important
 - ▶ Prime facie case for uniform commodity taxes
 - ▶ Uniform VAT with no exemption for necessities
 - ▶ Potential implications for income versus consumption tax debate
- ▶ Note difference between Corlett-Hague prescription and Atkinson-Stiglitz

Extensions to Atkinson-Stiglitz Theorem

Continuous skills, n goods non-separable case:

$$\frac{t_k}{q_k} = \frac{\zeta \ell \alpha}{\lambda w f} \left(\frac{d(\log(u_k/u_1))}{d\ell} \right)$$

$\Rightarrow t_k/q_k > 0$ iff x_k more complementary with leisure than x_1

Discrete skills case with x_1, x_2, x_0 , optimal tax rate on x_1 :

$$\tau_1|_{\tau_2=0} = - \frac{\gamma \hat{u}_x^2 (\hat{x}_1^2 - x_1^1)}{\lambda (n_1 \partial \tilde{x}_1^1 / \partial q_1 + n_2 \partial \tilde{x}_1^2 / \partial q_1)} = \frac{\text{information effect}}{\text{efficiency effect}}$$

- ▶ Direct-indirect mix indeterminate: tax evasion important
- ▶ Konishi-Laroque-Kaplow: If $u(f(x_1, \dots, x_n), x_0)$, move to uniform goods taxes Pareto improving and satisfies constraints, given adjustment to income tax system
- ▶ Assumes person-specific tax adjustments feasible; otherwise only potential Pareto improvement (cf. compensation test literature)

Caveats to Atkinson-Stiglitz Theorem

Needs for goods: $u(f(x_1, \dots, x_{n-1}, x_n - r), x_0)$

- ▶ If r observable, Atkinson-Stiglitz Theorem applies
- ▶ If r not observable, Atkinson-Stiglitz Theorem does not apply:
if r & w correlated, differential tax on x_n
- ▶ If needs apply to leisure (eg, $u(f(x_1, \dots, x_n), x_0 - r)$),
Atkinson-Stiglitz Theorem applies
- ▶ r could be initial endowments (Cremer-Pestieau-Rochet)

Different Preferences

- ▶ Higher taxes on goods demanded more by higher-skilled persons (Saez 2002, Blomquist and Christiansen 2008)
- ▶ Intertemporal case: higher tax on future consumption if high-skilled have lower utility discount rates

Allocation of Time to Market and Non-Market Labor

Utility: $u(f(x_1, \dots, x_n), \ell_m, \ell_n)$

- ▶ If ℓ_n is household production
 - ▶ If (unobserved) benefits are included in argument ℓ_n , Atkinson-Stiglitz Theorem still applies
 - ▶ If household production produces good that is not separable from purchased goods, Atkinson-Stiglitz Theorem fails
 - ▶ Nonlinear tax structure affected in some unknown way
- ▶ If ℓ_n is hidden-sector labor
 - ▶ Income earned y_n used to purchase market goods
 - ▶ Atkinson-Stiglitz Theorem violated if y_n varies with y_m

Allocation of Time to Consumption

Utility: $u(x_1, \dots, x_n, x_0, a_1x_1, \dots, a_nx_n, \ell)$, with
 $\ell + x_0 + \sum_{i=1}^n a_i x_i = h$

- ▶ If time spent consuming is perfect substitute for leisure
 - ▶ $u(x_1, \dots, x_n, x_0 + \sum a_i x_i, \ell) = u(x_1, \dots, x_n, h - \ell, \ell)$
 - ▶ All standard results go through
- ▶ If time spent consuming is perfect substitute for labor
 - ▶ $u(x_1, \dots, x_n, x_0, \ell + \sum a_i x_i) = u(x_1, \dots, x_n, x_0, h - x_0)$
 - ▶ Budget: $\sum q_i x_i = w(h - x_0 - \sum a_i x_i) - T(h - x_0 - \sum a_i x_i)$
 - ▶ Higher tax on good with higher time requirement a_i

Atkinson-Stiglitz Theorem will fail if consumption time is only an imperfect substitute for labor: taxes increase with time requirement

Externalities

Utility if x_1 a dirty good: $u(f(x_1, \dots, x_n), x_0, e(nx_1))$, $e'(\cdot) < 0$

- ▶ In first-best world: Pigouvian taxes and lump-sum redistribution
- ▶ In second-best world with nonlinear taxes:
 - ▶ No differential taxes on x_2, \dots, x_n (Atkinson-Stiglitz)
 - ▶ Corrective tax puts more weight on the marginal social damages of low-wage persons than high-wage persons (indirect redistribution)
 - ▶ Form of nonlinear income tax unaffected

Skills are Imperfect Substitutes

- ▶ Stiglitz (1982) result for two-skill-type optimal nonlinear income tax model: if high- and low-skilled workers are imperfect substitutes, optimal marginal tax rate on high-skilled persons should be negative (increases w_1/w_2)
- ▶ Naito (1999): in two-good extension, higher tax should apply to more skill-intensive good
- ▶ Saez (2002): If workers allowed to change occupations, Atkinson-Stiglitz Theorem applies even with endogenous relative wages, and zero tax rate at the top restored

Wage Uncertainty

Cremer and Gahvari (1995): Wage rates uncertain and some goods must purchased before wage rate revealed, other goods and labor supply must chosen after wage rate revealed

- ▶ No differential tax on goods purchased ex post
- ▶ Lower tax on goods purchased ex ante: under-demanded for self-insurance
- ▶ Provides justification for preferential treatment of housing and other consumer durables

Dynamic Optimal Nonlinear Taxation

Dynamic analog to Atkinson-Stiglitz Theorem in Golosov-Kocherlakota-Tsyvinski (2003)

- ▶ Lifetime utility an indefinitely discounted sum of $u(f(x_1, \dots, x_n), x_0)$
- ▶ Stochastically evolving skills for each person
- ▶ Resource constraints and intertemporal incentive constraints
- ▶ Government chooses ex ante future consumption and income bundles for all households
- ▶ Per-period analog of Atkinson-Stiglitz Theorem applies

Overall, Atkinson-Stiglitz Theorem provides reasonably strong case for uniform commodity taxation, though with perhaps special treatment of consumer durables

Case for and against Uniform Commodity Taxes

Pro

- ▶ Atkinson-Stiglitz (Deaton/Gorman)
 - ▶ No presumption necessities should face lower tax rates
 - ▶ What is relevant is deviations from weak separability (how relative valuations vary with leisure): no a priori presumption that goods demanded by high-income persons more complementary with leisure
- ▶ Administrative costs:
 - ▶ There are thousands of goods and services
 - ▶ Differential taxation would have to group goods with arbitrary distinctions
- ▶ Similar arguments apply intertemporally

Con

- ▶ Argument for preferential treatment of consumer durables
- ▶ Argument for higher tax of goods that consume time that is substitutable for labor

2 Production Efficiency: Implications

Diamond and Mirrlees (1971): If taxes optimal and profits taxed, production should be efficient

- ▶ Intuition: With production inefficiency, reduction in consumer price of a good consumed increases utility and the increased demand can be satisfied without sacrificing other goods
- ▶ Taxation of profits crucial, though violation has unclear effects
- ▶ Two implications of Production Efficiency Theorem:
 - ▶ No taxes on intermediate inputs: case for VAT
 - ▶ Producer prices as shadow prices in public sector

Note distinction with MCPF and supply of public goods

Production Efficiency: Caveats

- ▶ Taxes are far from optimal, though implications not obvious
- ▶ Analogous to piecemeal policy problem in second-best: not generally desired, but direction of deviations not obvious
- ▶ Newbery (1986): If only subset of commodities' consumption can be taxed optimally, welfare-improving to impose small tax on production of either untaxed or taxed commodity
- ▶ Choice of VAT versus trade taxes in LDCs with large informal sector: VAT preserves production efficiency in formal sector; trade taxes indirectly tax pure profits
- ▶ If skilled and unskilled labor imperfect substitutes, public sector can affect relative wages by increasing demand for unskilled labor inducing production inefficiency (Naito); argument does not apply if workers choose occupations (Saez)
- ▶ Production Efficiency violated internationally (Keen-Wildasin)

Production Efficiency Theorem still a useful benchmark

3 Capital Taxation and Choice of Personal Tax Base

- ▶ Treatment of capital income is what distinguishes income, consumption and dual income bases, as well as VAT and payroll taxes
- ▶ Insights gained from Corlett-Hague Theorem and the Atkinson-Stiglitz Theorem
- ▶ Some additional issues of dynamic nature
- ▶ Useful to distinguish between linear and nonlinear taxation

Linear Taxation

- ▶ Two-period interpretation of Corlett-Hague: x_1 , x_2 and ℓ_1
 - ▶ Interpretation that informed Meade Report and US Blueprints
 - ▶ Implementation: Only two of four possible taxes needed
 - ▶ Differential tax on x_2 if more complementary with x_0 : wage tax plus capital income tax
 - ▶ No presumption for consumption vs income tax (unless equal chance of substitute-complement relation)
 - ▶ Schedular tax of wage and capital income tax more tenable
- ▶ OLG version of Corlett-Hague model
 - ▶ In absence of intergenerational transfers, if $r > g$, may be preferable to augment Corlett-Hague tax with further tax on capital to increase, given form of utility function (Atkinson-Sandmo, King)
 - ▶ Mitigated by use of consumption vs wage tax (Summers), or debt policy/intergenerational transfers

Labor Supply in Both Periods

Two periods with x_1, l_1, x_2, l_2

- ▶ Implementation: only three of five taxes needed
- ▶ If goods' taxes cannot be differentiated over time, but wage taxes can, no capital tax needed if $u(f(x_1, x_2), l_1, l_2)$ with $f(\cdot)$ homothetic (or expenditure function $e(A(q_1, q_2, u), (1 - t_{w1})w_1, (1 - t_{w2})w_2, u)$)
- ▶ If neither goods' nor wage taxes can be varied over time, second-best generally not implementable
- ▶ If wage rate constant, wage tax should decline with age if $r >$ utility discount rate; if wage taxes age-independent, capital tax useful (Alvarez, Burbidge, Farrell, Palmer)

Special Case

Utility: $u(x_1, l_1) + \beta u(x_2, l_2)$
with $\beta = 1/(1 + r)$, $w_1 = w_2$

- ▶ Optimal capital tax zero
- ▶ Constant tax on consumption or wages
- ▶ Corresponds to steady state

In multi-period context, constant tax on capital equivalent to increasing tax on consumption over time (Bernheim): suggests a low capital tax rate, or a capital tax rate that varies over time

Infinite-Horizon (Ramsey) Case

Utility; $u(x_0, \ell_0) + \sum_{t=1}^{\infty} \beta^t u(x_t, \ell_t)$

Taxes on wages and capital

- ▶ Capital income tax \Rightarrow 0 in long run (Chamley-Judd)
- ▶ If $u(x, \ell) = x^{1-\sigma}/(1-\sigma) + v(\ell)$, capital tax zero for $t > 0$
- ▶ Assumes representative agent model: but Ricardian equivalence violates biology/anthropology
- ▶ Assumes full commitment

Multi-Period OLG Model

Two-period life-cycle

- ▶ Zero-capital tax no longer generally applies unless
 - ▶ Steady state with no saving, or
 - ▶ Utility $u(x, \ell) = x^{1-\sigma}/(1-\sigma) + v(\ell)$
- ▶ Liquidity constraints favor capital taxes (Hubbard-Judd)
- ▶ Especially with wage uncertainty (Aiyagari)
- ▶ Simulations suggest high capital income tax (Conesa-Kitao-Krueger)

Inability to Commit

- ▶ Induces excessive capital taxation (Fischer)
- ▶ Samaritan's dilemma (Bruce-Waldman, Coate)
- ▶ Mitigated by various measures
 - ▶ Restriction to consumption taxation
 - ▶ Incentives for asset accumulation
 - ▶ Mandatory saving
 - ▶ Under-investment in tax enforcement
 - ▶ Social insurance
 - ▶ Training

Capital Taxation with Nonlinear Income Tax

- ▶ Information constraint highlights commitment issue
- ▶ Individuals reveal their types even in static setting
- ▶ In dynamic setting, commitment assumption particularly strong
- ▶ Dynamic nonlinear tax literature deals with it in three ways
 - ▶ Assume government can commit
 - ▶ Stochastically evolving wages
 - ▶ Seek time-consistent optima
- ▶ Legislative lags mitigate commitment
- ▶ Recently, some attempt to induce commitment by retrospective voting model

Assume government can commit

Dynamic Atkinson-Stiglitz Theorem

- ▶ Two-period case:

$$u(x_1) - h(\ell_1) + \beta u(x_2) = u(x_1) - h(y_1/w) + \beta u(x_2)$$

- ▶ Atkinson-Stiglitz Theorem satisfied: nonlinear tax on labor income only
 - ▶ Implies tax on lifetime earnings basis
 - ▶ Incentive constraint applies on lifetime basis
- ▶ In OLG setting,
 - ▶ If relative wages vary with capital stock, case for capital tax (Stiglitz)
 - ▶ If $r > g$, tax on capital to increase saving (cf. Atkinson-Sandmo, King)

Labor Supply Both Periods

Utility: $u(x_1) - h(\ell_1) + \beta(u(x_2) - h(\ell_2))$

- ▶ Inability to commit an issue
 - ▶ If individuals reveal types, lump-sum redistribution later
 - ▶ In multi-period setting, all could pretend to be worst type every year (Roberts)
 - ▶ Time-consistent outcome can be inferior to laissez-faire (Boadway-Marceau-Marchand, Konrad)
- ▶ With full commitment and period-specific nonlinear income taxes
 - ▶ No capital income tax
 - ▶ Marginal tax rates zero at top
 - ▶ Marginal tax rates at the bottom generally vary over time (no tax smoothing) unless relative wages do not change
 - ▶ If tax rates cannot be age-specific, capital taxation again relevant

Future Wage Rates Uncertain

Expected Utility: $u(x_1) - h(\ell_1) + \beta \sum_{i=1,2} \pi^i (u(x_2^i) - h(\ell_2^i))$

- ▶ Under-insurance in second period
- ▶ Tax on capital income: weakens incentive constraint
- ▶ Generalizes for heterogeneous first-period wages
- ▶ If uncertainty over output given the wage: 100 percent taxation for top earners

Human Capital Accumulation

- ▶ Learning by doing: w_2 increasing in ℓ_1 (Krause)
 - ▶ Marginal tax rate on low-skilled can be negative in first period
 - ▶ Increase in w_2 weaken period 2 incentive constraint
- ▶ Education (Jacobs-Bovenberg)
 - ▶ If human capital income untaxed, preferential taxation of capital; income vs earnings
 - ▶ With progressive tax on earnings, tax on capital income to mitigate education distortion
- ▶ Education risky (Anderberg):
 - ▶ Subsidize (tax) education if it decreases (increases) wage risk
 - ▶ Positive capital income tax for wage risk as before

Other Cases for Capital Tax

Different discount rates: $u(x_1) - h(\ell_1) + \beta^i(u(x_2) - h(\ell_2))$

- ▶ If β increasing in skill, tax capital income (Saez)

Skills and longevity

- ▶ If expected longevity is increasing in skills (Cremer-Lozachmeur-Pestieau), tax capital income

Unobserved wealth transfers

- ▶ Tax capital income: indirect consumption tax (Boadway-Marchand-Pestieau)

Overall, reasonably strong case for capital income tax

4 The Issue of Progressivity

- ▶ Even in a first-best world, no presumption of highly progressive lump-sum tax
- ▶ Maximin outcome with heterogeneous skills: average tax rates can rise or fall with income (Sadka)
- ▶ If ability to generate utility varies, even direction of redistribution depends on aversion to inequality
- ▶ If preferences differ, direction of redistribution ambiguous
- ▶ Relevance of luck vs effort complicates things

Standard Mirrlees-Stiglitz Second-Best Setting

- ▶ Mirrlees-Tuomala
 - ▶ For interior skills, marginal tax rates change mildly
 - ▶ Marginal tax rate at the top zero if distribution bounded
 - ▶ At the bottom, MTR is positive with discrete distribution, or bunching
- ▶ Maximin case (Boadway-Jacquet)
 - ▶ Marginal tax rates decline throughout skill distribution
 - ▶ Average tax rates concave and single-peaked
- ▶ Information limits to redistribution significant

Other Assumptions on Labor Supply

- ▶ Extensive margin
 - ▶ If labor choice is participation, negative MTR at bottom (Saez)
 - ▶ If fixed cost of working, negative MTR at bottom even with intensive margin (Boadway-Marceau-Sato)
 - ▶ Occupational choice: same results as intensive-margin case
- ▶ Different tastes for leisure: Laziness versus difficulty working
- ▶ If income cannot be observed: self-reporting with audit and penalty
 - ▶ Redistribution severely constrained (Chander-Wilde)
 - ▶ With audit errors, redistribution more constrained
- ▶ Human capital accumulation
 - ▶ Endogeneity of human capital reduces optimal earnings tax progressivity (Bovenberg-Jacobs)
 - ▶ Mitigated by subsidizing human capital accumulation

Uncertainty and Earnings Tax Progressivity

- ▶ If uncertainty resolved before labor supplied, but after saving decision, argument for capital tax
- ▶ If labor supplied first, progressivity affected
- ▶ Progressivity higher or lower with ex post vs ex ante uncertainty (Eaton-Rosen) \Rightarrow Progressivity enhances insurance but reduces precautionary labor supply:
- ▶ Depends on balance between coefficient of risk aversion and coefficient of prudence (Low-Maldoom):

$$P(x) = -\frac{u'''(x)}{u''(x)} \bigg/ \frac{u''(x)}{u'(x)} : \quad P(x) \uparrow \Rightarrow \text{Prog} \downarrow$$

- ▶ Social insurance may induce socially-beneficial risk-taking (Sinn): enhance case for progressivity
- ▶ To extent that risk is insurable, less needs to be done via income tax (Cremer-Pestieau)

Relaxing Constraints on Second-Best Optimal Policy

- ▶ Standard way information constraints imposed demanding
 - ▶ Cannot observe characteristic(s), but know distribution
 - ▶ Can observe incomes
 - ▶ Constraints relaxed by adopting distorting policies
- ▶ Consider now other ways of relaxing incentive constraints
 - ▶ By supplementary policy instruments
 - ▶ By acquiring more information
- ▶ Supplementary policies and information relevant even if government not exploiting information constraint to fullest
- ▶ Non-standard policy instruments also rationalized to mitigate commitment problems

Public Goods and the Marginal Cost of Public Funds

- ▶ Given $u(x, g, \ell) = u(f(x, g), \ell)$, with optimal nonlinear income tax, Samuelson Rule applies
- ▶ If g is more complementary with leisure,

$$\sum_i \frac{u_g(x_i, g, l_i)}{u_x(x_i, g, l_i)} > MRT_g$$

- ▶ Kaplow-Gauthier-Laroque extension: Given $u(f(x, g), \ell)$, Samuelson Rule should still apply regardless of income tax
- ▶ If income tax linear (Atkinson-Stern), and g separable

$$\sum_i \frac{u_g(x_i, g, l_i)}{u_x(x_i, g, l_i)} = MCPF \cdot MRT_{gx} > MRT_{gx}$$

Quantity Control: In-Kind Transfers

- ▶ In-kind transfers common, and may be more important than tax-transfer system
 - ▶ Public housing, food stamps, school lunches public transportation, public education, public health care
 - ▶ Private charities also provide in-kind transfers: food and clothing banks, shelter
 - ▶ Subsidies of particular goods an alternative, especially if retradable

Arguments for In-Kind Transfers

- ▶ Paternalistic altruism, assuming altruism counts
- ▶ Target those in need: food banks, second-hand clothing, public housing
- ▶ Quantity controls to relax incentive constraint
 - ▶ Compulsory provision with supplementary purchases if a substitute for leisure (lower-wage persons have higher willingness to pay than mimicker)
 - ▶ Opt-in with no supplementary purchase if a complement with leisure (restricting demand makes mimicking less attractive)
 - ▶ Public provision dominates subsidy in substitute case
 - ▶ In-kind transfers Pareto-dominate subsidy in case with no labor-leisure choice (Blackorby-Donaldson)

Price Controls

- ▶ Regulation of maximum or minimum prices
 - ▶ Minimum wage
 - ▶ Maximum rents (rent controls)
 - ▶ Costless to government
 - ▶ Harmful in first-best world

- ▶ Focus on minimum wage (\underline{w})
 - ▶ Traditional argument: monopsony labor demand
 - ▶ Other labor market imperfections: efficiency wages, frictional search
 - ▶ Focus on second-best arguments

Minimum Wage in Second-Best Setting

- ▶ Case where \underline{w} reduces hours of work
 - ▶ \underline{w} welfare-improving with linear progressive income tax (Guesnerie-Roberts)
 - ▶ \underline{w} not useful with optimal nonlinear income tax (Allen)
- ▶ Case where \underline{w} creates involuntary unemployment
 - ▶ Variable- w case: \underline{w} welfare-improving if accompanied by UI (Marceau-Boadway): fixed cost of work
 - ▶ Fixed- w continuous-type case with $w < \underline{w}$ unemployed: \underline{w} accompanied by rule that all low-income workers accept job offers increases welfare and maybe employment (assumes \underline{w} enforceable) (Boadway-Cuff)
 - ▶ Extensive-margin with w observable: \underline{w} welfare-improving if unemployment efficiently rationed (Lee-Saez)

Quantity Control: Workfare

- ▶ Rationales
 - ▶ Labor market experience
 - ▶ Change attitudes to work
 - ▶ Break family cycle of poverty
 - ▶ Payment to society for transfer
 - ▶ Screening device to target needy
- ▶ Focus on screening argument
 - ▶ Requires opportunity cost of workfare less for intended transfer recipients than for potential mimickers
 - ▶ Whether workfare welfare-improving depends on cost of scheme

Besley and Coate Workfare Scheme

- ▶ Opportunity cost is w : workfare crowds out market work
- ▶ Workfare non-productive
- ▶ Government minimizes cost of minimum level of consumption (neglects benefit of leisure)
- ▶ Workfare may or may not be cost-reducing

Welfarist Approach to Workfare

- ▶ Workfare combined with optimal nonlinear tax (Cuff, Brett)
- ▶ When workfare applied to low-skilled, minimum level of productivity of workfare (> 0) to be welfare-improving
- ▶ If low-skilled differ in preference for leisure (LL and LH)
 - ▶ If LH most deserving (disabled), non-productive workfare never used
 - ▶ If LH least deserving (lazy), non-productive workfare may be welfare-improving
 - ▶ If LH includes both types, redistribution could go either way; workfare could worsen since it screens out most deserving
 - ▶ Government attitudes to difference preferences not clear: direction of redistribution affected
 - ▶ Government may prefer not to reward or penalize preferences: Principle of Responsibility discussed later

Policy to Influence Wage Distribution

- ▶ Efficient (and first-best) education policy would concentrate resources on most able: widens wage distribution
- ▶ Should education be used to reduce wage gap, and enhance equality of opportunity, complementing optimal nonlinear tax?
- ▶ Using education policy to reduce wage inequality inefficient
 - ▶ Reduces size of pie available for redistribution
 - ▶ More costly to separate types if wages more equal
- ▶ Better to use education efficiently and rely on income tax for redistribution

Making Use of, and Acquiring, More Information

- ▶ Standard informational assumptions not necessarily most realistic
 - ▶ Government may have less information (self-reported income in tax evasion models), or more (wage rate in extensive-margin models)
 - ▶ Auditing and monitoring become important
 - ▶ Information may be more complicated: multiple characteristics
 - ▶ Observability of some characteristics may be helpful
- ▶ Explore here some consequences of observable characteristics, and of monitoring

Observable Characteristics: Tagging

- ▶ Observable signal correlated with relevant characteristic
 - ▶ Used to target transfers to deserving recipients
 - ▶ Poverty alleviation programs in developing countries
 - ▶ Analogous to statistical discrimination
- ▶ Example: Tagging applicants for disability (Parsons)
 - ▶ Able can mimic disabled by not working (extensive margin)
 - ▶ Two categories: tagged & untagged, with Type I & II errors
 - ▶ Redistribution within groups limited by incentive constraint
 - ▶ Lump-sum transfers from tagged to untagged groups: More redistribution if tag more accurate and aversion to inequality lower
 - ▶ Tagging reduces social welfare if aversion to inequality high enough

Problems with Tagging

- ▶ Tagging may stigmatize (Jacquet)
 - ▶ Loss of self-esteem
 - ▶ Resentment from community
 - ▶ Deters application
 - ▶ Argument for universality
- ▶ Tagging involves agency costs
 - ▶ Interests of social workers and government misaligned:
Selection of case-worker types: matching of sympathetic and unsympathetic caseworkers to tasks (Prendergast)
 - ▶ Effort of social workers unobservable: Agency costs of tagging mechanisms (obtaining information on case-worker effort by monitoring or number of untagged able workers: Boadway-Sato)
 - ▶ Effect of complexity on Type II errors and take-up (Kleven-Kopczuk)

Problems with Tagging, cont'd

- ▶ Tagging raises commitment issues
- ▶ Tagging and nonlinear income tax
 - ▶ Different groups face different nonlinear income taxes: more progressive in higher-income groups
 - ▶ Tagging in Mirrlees model (Immonen-Kanbur-Keen-Tuomala simulations): MTRs decline with skill in higher-income group, rise with skill in lower-income group; social welfare significantly higher with tagging
 - ▶ Two-skill model with intensive labor supply (Boadway-Pestieau): Tagging always welfare-improving if SWF has constant absolute aversion to inequality
 - ▶ Require correlation of tag with skills (federalism example)
 - ▶ Horizontal inequity of tagging

Ex Post Monitoring

- ▶ Case of tax evasion
 - ▶ Necessary complement to the self-reporting of tax liabilities
 - ▶ Usual assumption: random monitoring with no errors and penalty if caught
 - ▶ Taxpayers report based on an expected utility calculation
- ▶ Other examples of ex post monitoring
 - ▶ Environmental regulations
 - ▶ Health and safety regulations
 - ▶ Minimum wages
 - ▶ Pay or employment equity rules
 - ▶ Expenditures of bureaucrats

Penalties may be insufficient to ensure compliance

Drawbacks to Approach to Modeling Tax Evasion

- ▶ Predicts more tax evasion than observed
- ▶ Does not predict comparative statics well
- ▶ Does not explain relatively low penalties
- ▶ Neglects aversion to breaking law
- ▶ Assumption of error-free auditing strong

Application to Optimal Income Tax Case

- ▶ Combining error-free auditing with standard approach to optimal redistribution:
 - ▶ Truthful revelation of incomes
 - ▶ Significant constraint on redistribution
- ▶ With errors of audit or reporting:
 - ▶ Revelation principle may not apply
 - ▶ Innocent taxpayers may be punished
 - ▶ Optimal redistribution is further constrained.
- ▶ Nonetheless, studying full compliance case illustrates constraints on second-best policies in ideal setting
 - ▶ Example of monitoring job search activities in UI and welfare programs
 - ▶ Monitoring job applications and acceptances improves insurance or redistribution
 - ▶ Still, policies restricted by need to induce compliant behavior

Challenges for Second-Best Optimal Policy Analysis

- ▶ Recent advances in economic thinking force re-thinking assumptions of normative analysis
- ▶ Identify more pressing challenges and review preliminary approaches to addressing them
- ▶ Begin by recalling fundamental underpinnings of standard second-best theory
- ▶ Then, turn briefly to three broad challenges
 - ▶ Commitment
 - ▶ Heterogeneous preferences and utility
 - ▶ Behavioral issues

Fundamental Aspects of the Standard Approach

- ▶ Principal-agent approach with uninformed benevolent government as principal and fully informed rational households as agents
- ▶ Objective is social welfare function
- ▶ Assumes welfarism: respects individual preferences
- ▶ Government knows preferences, often assumed to be identical
- ▶ Preferences aggregated according to aversion to inequality
- ▶ Where value judgments obtained an open question: some social consensus presumed (perhaps revealed by commective choices)
- ▶ Government can commit to information-constrained second-best policies

1 The Commitment Issue

- ▶ Order of decision-making can have a profound effect on policy outcomes
- ▶ Inability to commit to future capital taxes
- ▶ Inability to commit to redistribution announced before information revealed
 - ▶ About behavior of potential recipients
 - ▶ About individual characteristics revealed
- ▶ In federalism context, order of decisions levels of government and private agents relevant
 - ▶ Standard case: federal, then state, then agents
 - ▶ Soft budget: state, then federal, then agents
 - ▶ Migration inefficient: agents move first
- ▶ Time-consistent equilibria highly inferior
- ▶ Ex ante policies might mitigate or pre-commit government behavior

The Commitment Issue, cont'd

- ▶ Problem applies even in one-period settings, in principle
- ▶ Most attention in literature has been to multi-period examples
- ▶ Problem only applies to second-best policies
- ▶ No natural way to assume government can commit in simple models
- ▶ In real world, time taken to legislate policies might solve the problem, and account for the fact that commitment problems only arise with very long private decisions (natural resources, individual wealth, human capital accumulation)
- ▶ May be more of a problem where relevant characteristic stays same over time: tagging case
- ▶ Commitment not feasible if future contingencies cannot be foreseen: promises are incomplete implicit contracts

2 Heterogeneous Preferences and Utility

- ▶ Standard approach assumes identical preferences and utility functions
- ▶ Differences in utility function, same preferences
 - ▶ Must make value judgment about utility-generating capacities of different persons
 - ▶ Aversion to inequality becomes important: Utilitarianism favors high utility-generators; Maximin favors low utility-generators
- ▶ Differences in preference orderings
 - ▶ Almost certainly the case
 - ▶ Most tax policies discriminate by preferences
 - ▶ No apparent principle for aggregating utilities of persons with different preferences
 - ▶ Weights given to different persons matters for policy

Dealing with Differences in Preferences: One Proposed Approach

- ▶ In standard approach, persons compensated for inferior endowments of characteristics
- ▶ What about difference in preferences?
 - ▶ If preferences exogenous, interpersonal utility comparisons difficult
 - ▶ If individuals control own preferences, maybe they should be responsible for the consequences
 - ▶ Principle of Responsibility vs Principle of Compensation
- ▶ Example: difference in skills and taste for leisure:
 $u(x) - \gamma g(y/w)$
 - ▶ Suppose persons responsible for γ , not w
 - ▶ Principle of Responsibility (PoR): Equal Transfer for Equal Wages (ETEW)
 - ▶ Principle of Compensation (PoC): Equal Welfare for Equal Preferences (EWEP)

Pitfalls with the Approach

- ▶ Principles generally incompatible: Figure 1
- ▶ One compromise: treat PoR as primary, and compromise on PoC
 - ▶ Requires trading-off inequality of different w -types
- ▶ Alternatively, treat PoC as primary
 - ▶ Requires trading off utility of different γ -types
- ▶ Difficult interpersonal comparisons necessary and yet to be studied
- ▶ Problems compounded if types not observable
- ▶ ETEW and EWEP both arbitrary
 - ▶ EWEP equivalent to maximin
 - ▶ ETEW interprets equalizing opportunities as identical lump-sum transfers for given wage type
 - ▶ Ranking of deviations from ETEW unclear

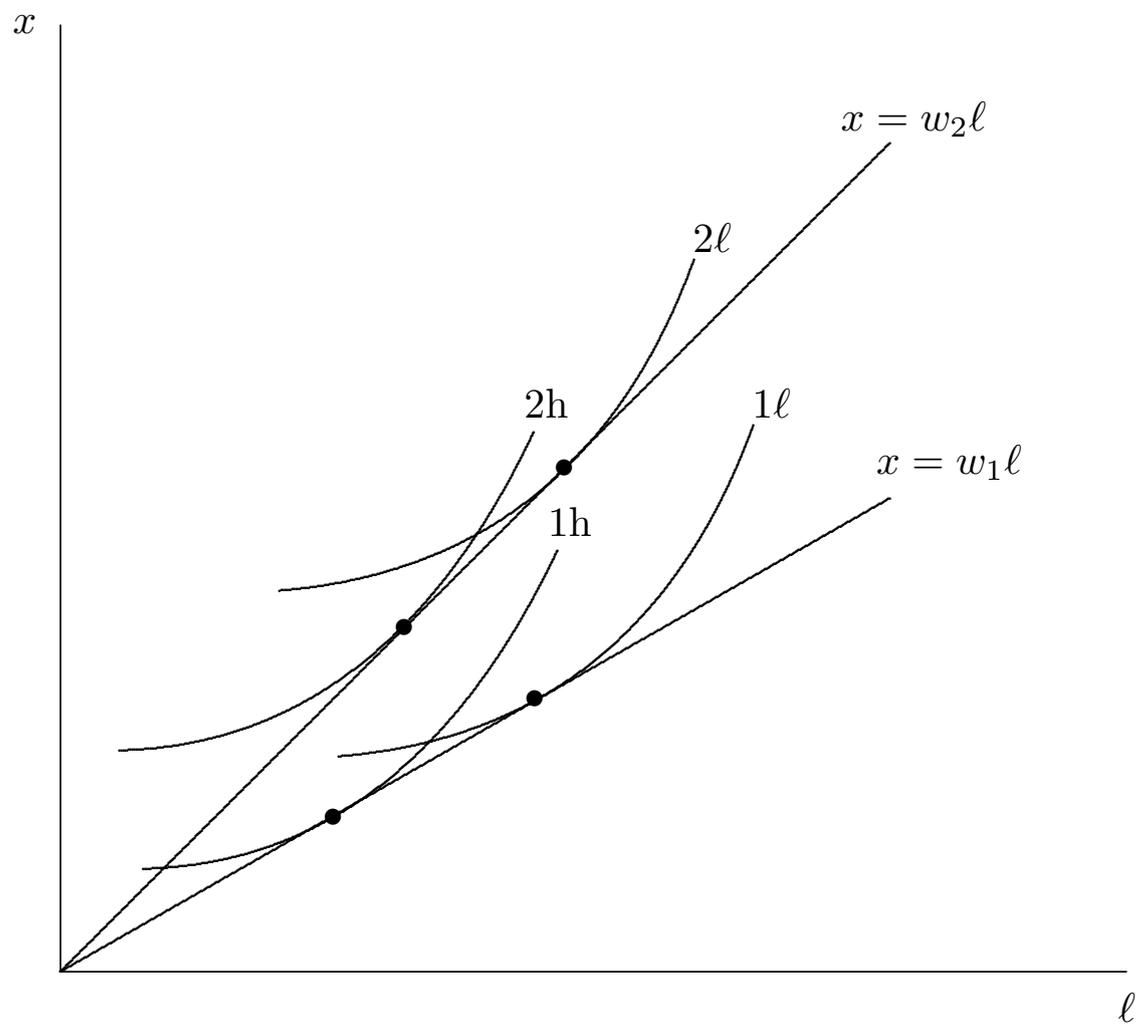


Figure 1

Attempts to Get Around Pitfalls

- ▶ Define reference preferences to get social ordering: arbitrary and violates Pareto
- ▶ Roemer equality of opportunity criterion:

$$\sum_i \min_i \{u(x_{ij}) - \gamma_j g(y_{ij}/w_i)\}$$

— treats worst-off persons of different preferences arbitrarily (by averaging)

- ▶ Principles of Compensation and Responsibility appealing: avoids penalizing persons for their preferences
- ▶ Operationalizing these ideas an important challenge

Interdependent Utilities

- ▶ Can take different forms
 - ▶ Altruism: paternalistic or not
 - ▶ Joy-of-giving
 - ▶ Avarice/envy
 - ▶ Happiness from one's relative status or circumstances (e.g., family)
- ▶ May motivate transfers of income, goods, services (private or public), or individual effort, or be passive
- ▶ Social welfare status of interdependent utility
 - ▶ Strict welfarists would count it (Kaplow)
 - ▶ Others would not double count (Hammond, Harsanyi)

Normative Consequences of Altruism

- ▶ If altruism of donor counts
 - ▶ Externality generated by voluntary transfer
 - ▶ Justifies a Pigovian subsidy, based on social utility of recipient
 - ▶ Extension to case where one makes a transfer to one's future self (saving)!
- ▶ If altruism of donor does not count
 - ▶ Transfer raises recipient's utility, but lowers donor's
 - ▶ Size of Pigovian transfer much lower
- ▶ Other factors
 - ▶ Reciprocal altruism reduces social benefit of transfer: may eliminate case for subsidy (Archibald-Donaldson)
 - ▶ Some forms of reciprocity may enhance case for intervention: excessive effort to improve one's relative status
 - ▶ Third parties may benefit from transfer: larger externality
 - ▶ Altruism should count even where no transfer made
 - ▶ Implication for families stark: high utility = high taxes

Altruism and Redistribution Policy

- ▶ Subsidy of transfers is alternative to gov't redistribution
 - ▶ Subsidy less costly
 - ▶ Private donors may target better, but more selectively
- ▶ Motivation for transfers affects case for policy
 - ▶ Intended versus unintended
 - ▶ Required
 - ▶ Social, moral or religious duty
- ▶ Persons may differ in altruism
- ▶ Altruists may prefer government to donate instead of selves
- ▶ Government donations may crowd out private donations (Ostrom), or voluntary donations may crowd out demand for government donations (Baron)

3 Behavioral Issues

Three types of behavioral anomalies

- ▶ Bounded rationality
- ▶ Non-rational choices
- ▶ Non-self-interested choices

Bounded Rationality

- ▶ Individuals lack relevant information
- ▶ Optimal choice too complicated or time-consuming
- ▶ Examples
 - ▶ Complex goods and services: financial, electronic, communications products
 - ▶ Health, educational legal, insurance, services
 - ▶ Quality of consumer durables
- ▶ Policies help
 - ▶ Product regulation
 - ▶ Decisions taken on consumer's behalf: pension investments
 - ▶ Regulation of educational, health and other services
- ▶ Consumer may overestimate future satisfaction/happiness from income and purchases
 - ▶ Case for corrective action not clear

Non-Rational Choices I: Time-Inconsistent Preferences

- ▶ Over-weighting immediate payoff at expense of long-term
 - ▶ Under-saving
 - ▶ Over-eating and poor eating choices
 - ▶ Consuming habit-forming products
 - ▶ Gambling
 - ▶ Under-exercising
 - ▶ Procrastinating
- ▶ Some such behavior may be rational, but
 - ▶ Lab evidence of choice reversals/time inconsistent choices
 - ▶ Consumption tracks income
 - ▶ Evidence of pre-committing future saving decisions
 - ▶ Evidence consistent with quasi-hyperbolic discounting

$$u(y_0) + \frac{1}{1 + \beta} \sum_{t=1}^T \frac{u(y_t)}{(1 + \delta)^t}$$

More on Time-Inconsistent Preferences

- ▶ Evidence from neuroeconomics
 - ▶ Two separate neural systems affecting choices: 'hot' and 'cold'
 - ▶ If cold system busy, hot system dominates: choice reversals
 - ▶ δ reflects cold, β reflects hot system
- ▶ Decision-theoretic models devised to rationalize time-inconsistent preferences
 - ▶ Gul-Pesendorfer: person tempted by inferior choice ex ante, where there exists costly self-control device: yields preferences for pre-commitment
 - ▶ Bénabou-Pycia: conflict between temptation and self-control a conflict between divided selves: planner and doer
 - ▶ Fudenberg-Tirole: dual-self model consistent with competing = neural systems
- ▶ Should government intervene paternalistically?
 - ▶ Perhaps, if it is in person's long-run interest
 - ▶ Information problems abound

Non-Rational Choices II: Framing and Other Effects

- ▶ Framing effects: Example of pension options
 - ▶ Enrolment much higher under opt-out choice
 - ▶ Rate of contribution also depends on default options
 - ▶ Asset allocations & post-retirement saving distributions
- ▶ Salience of taxes
 - ▶ Effect of electronic tolls on increases
 - ▶ Hidden versus visible commodity taxes
- ▶ Schelling effect: Persons prefer both higher bonuses for poor for having children than for rich, and higher penalties for rich for being childless than for poor
- ▶ Neutrality bias: Prefer separate income tax filing for married couples more when it is presented in a format that emphasizes the effect of marriage than in one that emphasizes the effect of the number of earners (where one-income earners pay more)
- ▶ Status quo bias: Prefer the status quo over any change
- ▶ Prefer more progressivity in tax burdens when taxes expressed in percentages than in euros

Policy implications unclear: Choice among conflicting options

Non-Self-Interested Choices

- ▶ Experimental evidence: individuals choose against self-interest (dictator games, public good contribution games, bargaining games)
- ▶ Casual observation suggests many instances of cooperative behavior, even in anonymous situations
 - ▶ Tipping
 - ▶ Volunteering
 - ▶ Workplace effort
 - ▶ Law-abiding behavior
 - ▶ Charitable giving
 - ▶ Green behavior
- ▶ Motives not clear: social norms, duty, ethics, signaling, altruism, evolved behavior

Non-Self-Interested Choices, cont'd

Policy response not obvious

- ▶ Voluntary donations for moral reasons does not generate double counting
- ▶ Should government credit utility loss from selfless behavior?
- ▶ Hard to distinguish motives for behavior
- ▶ Government policies that reward such behavior to entice persons who need encouragement may undermine/crowd out those who do not

4 Political Economy

- ▶ Normative second-best analysis maximizes a SWF s.t. two types of constraints
 - ▶ Resource constraints
 - ▶ Information constraints
- ▶ Also, some institutional constraints (eg property rights, competition)
- ▶ Normative approach controversial: does not reflect actual policies
- ▶ Should political economy constraints be imposed?
- ▶ Alternatives
 - ▶ Ignore political economy considerations
 - ▶ Add political economy constraints to normative problem
 - ▶ Rely solely on political economy approaches

To address that, summarize main features of political economy models

General Political Economy Approach

- ▶ Use of abstract models to emphasize particular relevant points
- ▶ Is approach as convincing as in economics?
 - ▶ Objectives of decision-makers not as clearly defined as profit- or utility- maximization
 - ▶ No analog of economic markets for coordinating outcomes
 - ▶ Complex and multi-dimensional issues
- ▶ Typically involve economic issues and focus on one of two dimensions
 - ▶ Internalize free-riding (efficiency)
 - ▶ Redistribution
- ▶ Existence of political equilibrium unresolved (Arrow problem)
- ▶ Example of probabilistic voting not convincing

Modeling Choices

- ▶ Behavioral assumptions
 - ▶ Voters: self-interest, ideology, social preferences?
 - ▶ Politicians: maximize votes, ideology, special interests
 - ▶ Other actors: bureaucrats, advisors, lobbyists, activists
- ▶ Collective Decision-making Institutions
 - ▶ Direct democracy
 - ▶ Political parties
 - ▶ Legislative bargaining
 - ▶ Division of powers
- ▶ Order of decision-making, commitment
 - ▶ Politicians, then elections, then outcomes: Direct democracy, party competition
 - ▶ Elections, then politicians: Citizen candidate
 - ▶ Politicians, then outcomes, then elections: Retrospective voting (Ferejohn, Besley)
 - ▶ Politicians announce platforms simultaneously or sequentially (Downs)
 - ▶ Not all contingencies foreseen

Modeling Choices, cont'd

- ▶ Commitment affects political outcomes
 - ▶ Type of candidate
 - ▶ Efficiency of outcomes
- ▶ Devices to mitigate political commitment problem
 - ▶ Strategic voting
 - ▶ Retrospective voting
- ▶ Asymmetric information
 - ▶ Hidden action of politicians (Barro, Ferejohn)
 - ▶ Political selection (Besley-Smart)
 - ▶ Bureaucrats vs politicians
 - ▶ Third parties: lobbyists (Grossman-Helpman)
 - ▶ Political activists (Aldrich, Roemer)
 - ▶ Advertising (Coate)

Implications for Normative Analysis?

- ▶ Diverse array of political economy models, many non-intersecting
- ▶ Not clear what constraint could be imposed
- ▶ Political economy models are alternative models of decision-making with deterministic outcomes, rather than constraints from which choices can be made
- ▶ Normative models on their own are useful
 - ▶ Serve as benchmark for judging institutions and outcomes
 - ▶ Informs political decision-makers and voters
- ▶ Are normative and political economy models necessary conflicting?
 - ▶ Argument can be made that voters vote expressively, given irrationality of voting
 - ▶ To that extent, political economy models reflect normative views of electorate
 - ▶ Many policies difficult to explain if voters voted selfishly

Synchronization of Normative and Political Economy Agendas

- ▶ Key issue remains as to what extent normative values can be revealed through the political process
 - ▶ Aversion to inequality
 - ▶ Social discount rate
 - ▶ Treatment of persons with different preferences for leisure
- ▶ Useful question for political economy research agenda