

# **Introduction to Positive Political Economy and Rational Choice**

Thomas Plümper

## **Rational Choice Assumptions**

Actors have preferences and options.

They evaluate their options according to the utility, they expect to achieve when they chose these options.

Actors chose the option that generates the highest expected utility.

## **What Rational Choice Models NOT assume...**

Actors know all options.

Actors know the true outcome of all options (perfect foresight).

Actors chose the option that generates the highest income.

Markets generate efficient solutions (in aggregate).

Markets (or rational decision-making) produces optimal outcomes for every actor.

## **A More Technical Account for Rational Choice Assumptions**

Completeness: all options can be ranked in an order of preference (indifference between two or more is possible).

Transitivity: if action  $a_1$  is preferred to  $a_2$ , and action  $a_2$  is preferred to  $a_3$ , then  $a_1$  is preferred to  $a_3$ .

**What are Deviations from Rational Behavior?**

## **What are Deviations from Rational Behavior?**

Reflex behaviour (though it seems rational to have reflexes...)

To knowingly select an option that gives a lower expected net utility than an alternative option. (But do actors do that?)

Example: Behavior perfectly determined by social norms, which actors follow despite other preferences.

But do we really really have an example?

Volunteers!! Stories!!!!

A note for quite a few guys I know:

Behavior that you do not understand, does not need to be irrational.

This in turn implies that behaviour we think we understand does not need to be rational, but now it becomes too philosophical for our purposes.

## **What some believe is a violation of Rationality (but it is not...)**

*Bounded rationality (Herbert Simon)*

Actors rationality is limited by lack of information and their willingness to gather information (because gathering information costs time and sometimes money)

Example: buying apples...

*Framing (Amos Tversky and Daniel Kahneman)*

Facing a lottery, actors may prefer a option that gives a lower expected utility.

Example 1:

Chose either 500 Pounds for sure, or a lottery that gives you -500 Pound with 50% or 1501 Pound with 50%.

Note: Both 'violations' satisfy standard rational choice assumptions. They just imply that information is not freely available and income does not translate directly into utility.

**Does this mean that Rational Choice Assumptions are correct?**

## **Does this mean that Rational Choice Assumptions are correct?**

It means *they can be correct*. Or, perhaps slightly less cryptic:

They are not wrong per se.

They are not wrong for the reasons that anti-RC scholars believe they are.

BUT: Usually, rational choice assumptions are “wrong” because they are simplifying. As wrong, as all other assumptions one can possibly make as well.

For example: models usually assume that actors have identical utility functions.

We assume that for

a) simplicity reasons and

b) because by allowing individual-specific utility functions we could ex post justify each behavior and outcome.

## **The Role of Assumptions in Science**

Assumptions simplify reality for a purpose:

to make models (theories) as simple as possible (but not simpler),

to ensure that models generate predictions.

## **The SLIGHTLY MORE QUALIFIED, but still Confused Position on Incorrect Rational Choice Assumptions**

*Unrealistic Assumptions in Rational Choice Theory*

by Aki Lehtinen and Jaakko Kuorikoski (Philosophy and the Social Sciences 2007)

University of Helsinki

The most common argument against the use of rational choice models outside economics is that they make unrealistic assumptions about individual behavior. We argue that whether the falsity of assumptions matters in a given model depends on which factors are explanatorily relevant. Since the explanatory factors may vary from application to application, effective criticism of economic model building should be based on model-specific arguments showing how the result really depends on the false assumptions. However, some modeling results in imperialistic applications are relatively robust with respect to unrealistic assumptions.

## **An Example: From Olson to Ostrom**

Before Olson's Logic of Collective Action, most social scientists believed that when different actors have identical preferences, forming a coalition (or: association, or club, or organized group, or lobby, or union, or party, and so on, ....) would be easy.

Olson argued that this assumption is plain wrong, because joining a group is costly, but if an actor joins such a group, her membership has little if any impact on the final outcome.

Hence, in many instances

THE OPTIMAL STRATEGY IS TO FREE RIDE

and enjoy the gains from the cooperation of the others.

Olsen then argues that cooperation among equal-minded depends on

group size

observability of free-riding

costs of exclusion or sanctions

## **Examples for Collective Action Problems**

Collective Good Provision (lighthouses)

preventing Club Goods from overuse (allmende, fishgrounds)

## A Nobel Prize for Political Science

**Elinor Ostrom**



How do 'real' actors manage to overcome the Tragedy of the Commons?

A step back: What would a non rational choice scholar argue?

## **Ostrom: The Allmende Problem revisited**

1. Clearly defined boundaries (effective exclusion of external unentitled parties);
2. Rules regarding the appropriation and provision of common resources are adapted to local conditions;
3. Collective-choice arrangements allow most resource appropriators to participate in the decision-making process;
4. Effective monitoring by monitors who are part of or accountable to the appropriators;
5. There is a scale of graduated sanctions for resource appropriators who violate community rules;
6. Mechanisms of conflict resolution are cheap and easy of access;
7. The self-determination of the community is recognized by higher-level authorities;
8. In the case of larger common-pool resources: organization in the form of multiple layers of nested enterprises, with small local CPRs at the base level.

## **Why Ostrom cannot have the last word on this (despite the Nobel)**

We know that the threat of collective sanctions can prevent free-riding.

BUT: Sanctions are costly. Therefore, it is not easy to make the threat of sanctions credible (especially of course when implementing the sanctions is more costly than the costs incurred by the free-rider)

AND (more importantly), the implementation of sanctions creates a second order collective action problem (because free-riding on sanctions is an optimal strategy).

## **Rational Choice and Political Economy**

Political Economy uses the Rational Choice assumptions to model the interaction between

governments

parties

voters

lobbies

unions

independent central banks

movements

rebel groups

courts

consumers

corporations (aeh, also banks of course...

and so on...

What then do we assume about these actors?

## **Governments**

**What is the utility function of governments and parties?**

## **Governments**

What is the utility function of governments and parties?

opportunism: maximize probability of winning elections

partisan (ideological): minimize the distance between partisan preferences and implemented policies

benevolent: maximize the aggregate welfare

note 1: the maximization of aggregate welfare also maximizes the utility of each single individual if (but only if) redistribution is costless and all decisions are taken by unanimity.

note 2: a status quo is likely to be pareto-efficient if the number of actors is large.

## **Parties as Organizations**

What happens if we assume that parties are not actors per se, but consists of actors (called party members) that interact with each other?

Who joins a party? Why?

What follows for partisan preferences if

- a) parties depend on the mobilization of members?
- b) parties do not depend on the mobilization of members?

**Should MoP support the policy preference of the party or should they vote according to the preferences of their constituents?**

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Empirically, MoPs tend to vote more independently of their parties in majoritarian systems. Explain!



## **Voters**

What do voters maximize?

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What do voters maximize?

Utility: vote for the party that implements a set of policies which maximizes the expected utility of the voters.

Ideology: vote for the party that promises a set of policies which are most similar to their own policy preferences.

NOTE: In the first assumption, voters are interested in policy outcomes. In the second assumption, voters are interested in policies.

Discuss redistributive policies using this distinction. Which assumption makes more sense? Why?

**How do voters vote (well, if they don't abstain)?**

## **How do voters vote (well, if they don't abstain)?**

### *Forward versus Backward Locking Voting*

Downs suggests forward locking voting.

„To ignore the future when deciding how to vote [...] would obviously be irrational, since the purpose of voting is to select a future government.” (Downs 1957: 40)

„The patterns of flow of the major streams of shifting voters graphically reflect the electorate in its great, and perhaps principal, role as an appraiser of past events, past performance, and past actions. It judges retrospectively; it commands prospectively only insofar as it expresses either approval or disapproval of what has happened before.” (Key 1966: 61)

## **A Critique of Prospective Voting**

Time Inconsistency: Elected governments are not bound to their manifesto.

What can voters do to tie governments to their promises?

## **A Critique of Retrospective Voting**

Past performance does not need to be a predictor of the future.

Economic cycles can only mildly be influenced by the government.

Pure retrospective voting creates huge incentives for a manipulation of the business cycle.

Why would voters therefore decide on the basis of politicians good or bad luck?

Are voters solely interested in outcomes (economic voting) or also (and perhaps dominantly) in policies?

## **Evidence**

Electoral outcomes are relatively stable over time – more stable than the business cycle.

BUT:

There is plenty evidence for conditional political business cycles.

Duch and Stephenson:

Rational voters condition the economic vote on whether incumbents are responsible for economic outcomes, because this is the optimal way to identify and elect competent economic managers under conditions of uncertainty. This model explores how political and economic institutions alter the quality of the signal that the previous economy provides about the competence of candidates. The rational economic voter is also attentive to strategic cues regarding the responsibility of parties for economic outcomes and their electoral competitiveness. Theoretical propositions are derived, linking variation in economic and political institutions to variability in economic voting.

## A Unified Model?

Assume a two-dimensional policy space  $[x_j, y_j]$ . The distance  $d_{ij}$  between voter  $i$

and party  $j$ :  $d_{ij} = \sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}$  .

In deterministic models voters minimize

$$\tilde{d}_{ij} = d_{ij} + \mu_{ij} .$$

If we add a retrospective element voters minimize

$$u_i(j) = -\left[ (x_i - x_j)^2 + (y_i - y_j)^2 \right]^{1/2} + \mu_{ij} + \alpha_i (\Delta w_i - \Delta \tilde{w}_i) \quad \text{if } j \text{ is incumbent}$$

$$u_i(j) = -\left[ (x_i - x_j)^2 + (y_i - y_j)^2 \right]^{1/2} + \mu_{ij} - \alpha_i (\Delta w_i - \Delta \tilde{w}_i) \quad \text{else.}$$

The model can explain some puzzles:

“We begin by parsing my statement that the incentives for, capacity for, and effects of electioneering or partisaneering should vary predictably from policy to policy across “domestic and international, political-economic, institutional, structural, and strategic contexts.” (Franzese 2002)

Moreover, the model also suggests

ideological autonomy (=deviation from median-voter position) partly depends on the business cycle. The better the state of the economy, the higher the ideological autonomy of the government.

## Combinations

## Predictions

	<i>voter</i>	
<i>government</i>	prospective	retrospective
partisan		
opportunistic		
benevolent		

To make predictions, we need to know how voters process information. Do they learn and unlearn?

## Paradox of Voting

Here is the paradox:

Why do voters vote at all, if

the utility difference between party (coalition) A and party (coalition) B is relatively small

and

the cost of voting is small but positive

and

the individual influence on the electoral outcome is tiny?

$$1/N [u_i(p1) - u_i(p2)] < c_i$$

alternatively, some folks prefer

$$1/\sqrt{N} [u_i(p1) - u_i(p2)] < c_i$$

In Muller's words: "The probability of being run over by a car going to or returning from the polls is similar to the probability of casting the decisive vote." (p. 305)

## Poor Solutions to the Paradox of Voting

A taste for voting...

...voting itself increases the voters' utility

... minimum regret  
(Ferejohn and Fiorina)

vote to make sure that the worst candidate will not win...

A not so awful, but unsatisfactory solution

Abstention is not an equilibrium in a PD

## **Alternative:**

How large is the probability of being decisive really?

You may also ask:

How large is the probability of being NOT decisive?

<100 % ???

depends probably on forecasts...

## **Strategic Voting**

So far, we assumed that voters vote sincerely.

But is that true?

And what does it mean?

## **Strategic voting and why the term sincere is nonsense**

What is Strategic Voting?

What is the behavioral difference between sincere and strategic voting?

Is strategic voting really insincere?

## **What is strategic voting and what is so strategic about strategic voting?**

Strategic Voting: Voting for a party whose manifesto is not closest to the voter's preferences.

Why would voters vote 'non-sincerely'?

'balancing'

potential influence on coalition formation

institutional factors such as a 5 percent hurdle

else?

## **Institutions that allow 'Simple Balancing'**

Presidentialism

Bicameralism/ Federalism

Multiparty Government/ Coalitions

## **Balancing in the American System**

Split Ticket Voting

President and House of Representatives (Senate)

Two separate ballots for presidential elections and house of representative elections

Accordingly, voters can vote for different candidates/parties in both elections.

Midterm Elections

Rule: Parties that hold the 'White House' lose in the midterm elections (relative to the vote share in the previous 'main' election).

## **More Complicated Balancing in the German System**

Federalism Bundestag and Bundesrat

Bundestag. Country-Level

Bundesrat. State-Level

Bundestag

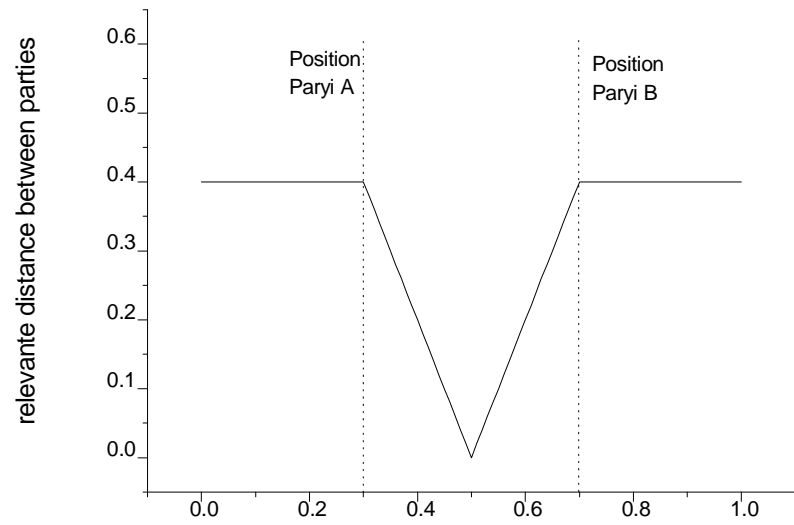
Mixed-system of proportional and majoritarian voting (dominantly representational)

Bundesrat

State governments send representative based on government in the state and the number of votes of that state

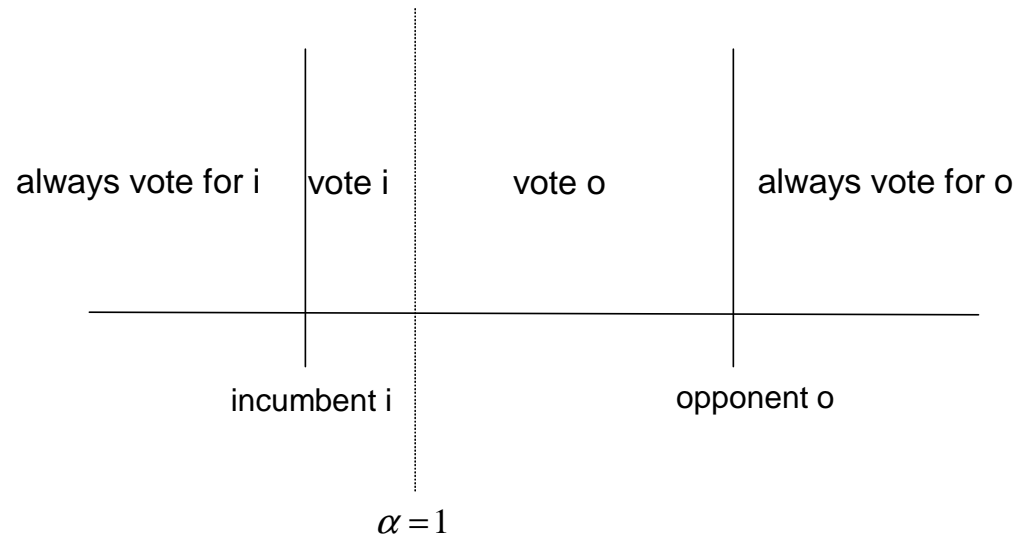
State	current gov.	Votes	population
Baden-Württemberg	CDU/FDP	6	10.7
Bayern	CSU	6	12.5
Berlin	SPD/PDS	4	3.4
Brandenburg	SPD/ CDU	4	2.6
Bremen	SPD/ CDU	3	0.7
Hamburg	CDU	3	1.7
Hessen	CDU	5	6.1
Mecklenburg	SPD/ PDS	3	1.7
Niedersachsen	CDU/ FDP	6	8.0
Nordrhein-Westfalen	CDU/ FDP	6	18.1
Rheinland-Pfalz	SPD/ FDP	4	4.1
Saarland	CDU	3	1.1
Sachsen	CDU/ SPD	4	4.3
Sachsen-Anhalt	CDU/ FDP	4	2.8
Thüringen	CDU	4	2.4

# Theory of Strategic Voting



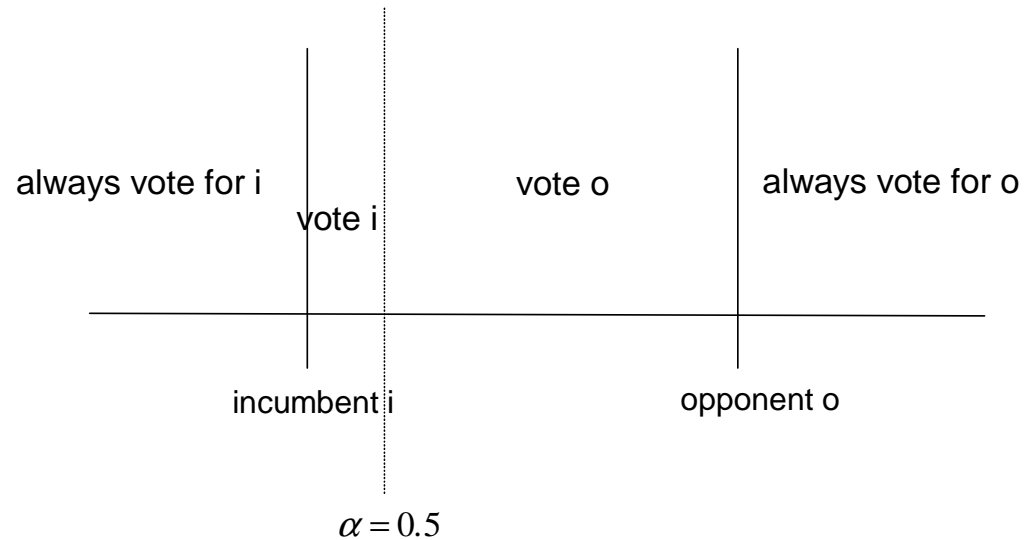
# The Logic of Policy Moderation

$$q = p_1 + \alpha(p_2 - p_1)$$



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$$q = p_1 + \alpha(p_2 - p_1)$$



Accordingly, the smaller the influence of the opposition party (dominating, say, the 2<sup>nd</sup> chamber) on policies, the higher the incentive to vote strategically!

Plausible?

## **Rethinking Strategic Voting**

The notion of strategic voting depends on the assumption of spatial electoral models – i.e. that voters vote for the party closest to their policy preferences.

But seen from the perspective of strategic voting, this assumption does not make much sense.

Rather, voters vote for one party as to maximize their utility.

To maximize utility, voters have to vote for

relatively small parties (to strengthen their bargaining position in coalition negotiations),

parties in opposition (to increase their influence on policy outcomes)

or to vote against

governing parties (to moderate their influence on policy outcomes)

## **An Exercise in Modeling: Deterministic versus Probabilistic Voting**

What is deterministic and what probabilistic voting?

Is one more realistic than the other?

Or is our model just incomplete? (but what is a complete model?)

## **Why formal modelers like probabilistic voting**

it gives equilibria if the stochastic term is large enough

meaning: changes in the party position do not increase vote share

Why probabilistic voting is nonsense:

equilibria only occur if the stochastic term is large enough

Meaning: if almost no voter uses spatial information to cast the vote (all voters randomize their vote) we get an equilibrium

Unfortunately: every constellation of a party position is an equilibrium because if voters do not use spatial information, changes of the party position do not lead to changes in votes. Hence: every constellation is an equilibrium.

## **Government Formation in Multiparty Systems**

### **Issues raised by Laver 1998:**

office versus policy-seeking politicians

how useful is the assumption of purely office-seeking politicians if we try to explain government formation/ dissolution?

The concept of the minimal winning coalition (Riker 1962; Axelrod 1970)

(depends on policy seeking politicians) Why?

apply to the German case, how many minimal winning coalitions do exist?

Bundestagswahl 2009

	Voters	%	Seats
Wahlberechtigte	62.132.442		
Wähler	43.997.633	70,8	
Ungültige Stimmen	640.091	1,4	
Gültige Stimmen	43.357.542	98,6	
Davon			622
SPD	9.988.843	23,0	146
CDU/CSU	14.655.004	33,8	239
FDP	6.313.023	14,6	93
DIE LINKE	5.153.884	11,9	76
GRÜNE	4.641.197	10,7	68
NPD	635.437	1,5	–
REP	193.473	0,4	–
FAMILIE	120.716	0,3	–
Die Tierschutzpartei	230.572	0,5	–
PBC	40.391	0,1	–
MLPD	29.551	0,1	–
BüSo	38.789	0,1	–
BP	48.284	0,1	–
PSG	2.97	0,0	–
Volksabstimmung	22.998	0,1	–
ZENTRUM	6.093	0,0	–
ADM	2.895	0,0	–
CM	6.825	0,0	–
DKP	1.903	0,0	–
DVU	45.925	0,1	–
DIE VIOLETTEN	32.078	0,1	–
FWD	11.271	0,0	–
ödp	132.395	0,3	–
PIRATEN	845.904	2,0	–
RRP	100.606	0,2	–
RENTNER	56.515	0,1	–

how do parties select one among the possible minimal winning coalitions?

spatial explanations?

formateur (Baron 1991): maximize leverage (who is the formateur?)  
(power indices)

DeSwann: (minimal range coalition)

advantage: unique equilibrium  
disadvantage: often wrong

Grofman: spatial model, proximity between parties

## **Dividing the Cake: Negotiations in Coalition Formation**

the coalition's position is a weighted sum of the coalition member's positions

what defines the weight?

$$p_{c(a,b)} = \alpha p_A + (1 - \alpha) p_B$$

$$q_{c(a,b)} = \beta q_A + (1 - \beta) q_B$$

$$\alpha \cong \beta ?$$

$$\alpha + \beta = 1 ?$$

$$\alpha \neq \beta$$

$$\alpha, \beta = \frac{V_A}{V_A + V_B} ?$$

$$\alpha + \beta = \frac{2V_A}{V_A + V_B} ?$$

## Minority Governments

astonishingly common:

An alternative arrangement is a looser alliance of parties, exemplified with [Sweden](#). There the long governing Social-Democrats have governed with more or, mostly, less formal support from other parties; in the mid-[20th century](#) from Agrarians, after [1968](#) from Communists, and more recently from Greens and ex-Communists, and have thus been able to retain executive power and (in practice) legislative initiative. This is also common in Canada where parties can rarely cooperate enough to form a coalition, but will have loose agreements. Minority governments ruled Canada from 1921 to 1930, 1957 to 1958, 1962 to 1968, 1972 to 1974, 1979 to 1980 and currently in 2004, the [Liberals](#) have been elected into a minority government. (source: wikipedia)

### **Why would a non-governmental party 'tolerate' a minority government?**

why is it often one party tolerating a minority government, rather than the government searching for different support in different issue-areas?

Baron: A minority government remains in office because a majority of the legislature does not vote against it.

## **Baron Model**

parties are policy-oriented  
party preferences are given  
seats in parliament are given

policies implemented by a coalition government are closer to the formateur's party preference

this might be contingent on fact that the number of possible coalitions  $> 1$

and on the quest whether a small party is pivotal

## **Laver/Shepsle**

the credibility of proposals for alternatives of the incumbent government

stability of minority governments results from the absence of a credible (invulnerable?) alternative

Surplus Majority Governments

(supermajoritarian governments)

increases the power of the dominant party in government because it abandons pivotalism of a 'junior coalition member'

## **Dissolution of Governments**

How is the making of governments related to the breaking of governments?

Baron: coalitions dissolve when one party changes its preferences

### **King et al.:**

- bargaining process (the longer, the more fragile the coalition)
- formation attempts
- opposition influence
- party system fragmentation
- majority status of government
- electoral volatility
- polarization of political system
- opposition concentration

### Critical Events

- slump of the economy
- exogenous shock
- crises duration

## **Why Government 1**

### **Governments as Solution to the Underprovision of Public Goods through Collective Action**

#### **Public Goods, Collective Action and Political Science**

Before Olson:

Everyone thought that agents which have identical interests and preferences, have no problem to organize their cooperation.

For instance, if workers have identical interests (higher wages), they will eventually join or establish a union, which then demands higher wages.

But that's wrong.

Olson has shown that cooperation is not self-enforcing even if agents have identical interests, since

public good is costly  
each individual is better off if the other individuals provide the public good.

.

In other words:

Cooperative provision of public goods creates collective action problems, which resemble a prisoner's dilemma.

## **Mechanism that ensure cooperation in the presence of collective action problems**

1. Combine public goods with almost private goods  
i.e. automobile clubs organize free technical help for members  
(technical help is an insurance, hence not in any strict sense a public good, but rather a 'club good')

2. punish free-riders  
here is where the 'state' comes in...

3. try to transfer public goods into club goods  
for instance, unions negotiate wage increases only for their members, BUT employers grant those wage increases to all employees

hence: unions want to maximize membership incentives, corporations minimize membership incentives

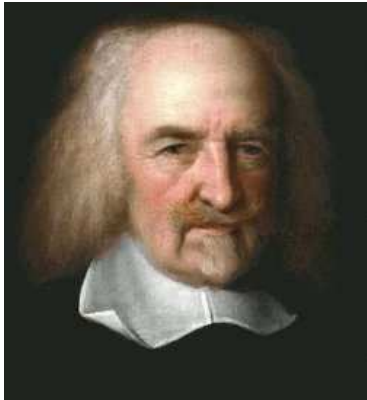
4. collect contributions and pay someone for the provision of the public good

cooperation becomes more visible, and thus free-riding is easy to see  
for instance, charity organizations give stickers to those who gave some money

else?

## Some old farts on the state

for example Hobbes



In [\*Leviathan\*](#), Hobbes set out his doctrine of [modern natural right](#) as the foundation of [societies](#) and legitimate [governments](#). In the [natural condition of mankind](#), while some men may be stronger or more intelligent than others, none are so strong and smart as to be beyond a fear of violent death. When threatened with death, man in his natural state cannot help but defend himself in any way possible. Self-defense against violent death is Hobbes' highest human necessity, and rights are borne of necessity. In the state of nature, then, each of us has a right to everything in the world. Due to the scarcity of things in the world, there is a constant, and rights-based, "war of all against all" ([\*bellum omnium contra omnes\*](#)). Life in the [state of nature](#) is "solitary, poore, nasty, brutish, and short" (xiii).

But this state of [war](#) isn't in man's best interest. According to Hobbes, man has a self-interested and materialistic desire to end war — "the passions that incline men to peace are fear of death, desire of such things as are necessary to commodious living, and a hope by their industry to obtain them" (xiii, 14). He forms peaceful societies by entering into a [social contract](#).

(source: Wikipedia)

or: John Locke



Locke posits a [state of nature](#) as the proper starting point for examining politics. Individuals have rights, and their duties are defined in terms of protecting their own rights and respecting those of others. Through the [law of nature](#), which Locke describes as "reason," we are able to understand why we must respect the natural rights of others (including the right to property for which one has laboured). In practice, the law of nature is ignored and so government is necessary; this can be created only by the consent of the governed, which can be had only to a commonwealth of laws.

(Source Wikipedia)

and many, many more...

have just argued that the state provides the public good of individual safety

**They make two claims, and both are trivial, but still a bit wrong:**

a) public goods cannot be provided in the absence of a state.

b) the provision of public goods is in everyone's interest.

## **The Samuelson Rule and Optimal Public Good Provision**

The Samuelson-Rule is pretty simple:

It suggests that governments provide as many public goods, as maximize the aggregated utility of the population.

This state is reached if the increase in aggregate utility from the provision of an additional unit of public goods is just as large as the aggregate increase in utility would be from the production of private goods by the same input factors.

This rule highlights the fact that governments collect taxes (use resources) to produce public goods. The production of public goods thus reduces the production private goods. The production of public goods is thus only welfare enhancing if the utility from the public good (produced input from labor and capital) exceeds the utility from the production of private goods by the same amount of capital and labor.

## An Algebraic Statement of the Samuelson Model

(<http://www.gams.com/solvers/mpsge/samuels.htm>)

### **Zero Net Profit for Private Production**

The unit cost of production in sector  $A_s$  is given by a nested Leontief - Cobb-Douglas function defined over the cost of intermediate inputs and primary factors with ad-valorem taxes on factor demands. Unlike the Harberger models, tax rates in this model are determined endogenously. In equilibrium, the unit cost must be no less than the market price of output:

$$-\Pi_s = \sum_g p_g B_{gs} + \phi_s \left( \prod_f (w_f (1 + \tau t_{fs}))^{\alpha_{fs}} \right) - p_s \geq 0 \quad \forall s$$

### **Zero Net Profit for Public Sector Contractors**

The unit cost of public provision is determined by the market price of commodity inputs to the Leontief activity. Input requirements are defined by a vector of public sector input coefficients,  $a_g$ . In equilibrium, the price paid by the government equals the cost of market inputs:

$$\sum_g p_g a_g - p_G \geq 0$$

### **Income Balance for Government**

Government tax income ( $PT$ ) is determined by the value of tax revenue, calculated using activity levels, compensated demands, market prices and ad-valorem tax rates. In equilibrium, the value of tax revenue equals the market cost of public sector output:

$$PT = \sum_s \frac{\partial \Pi_s}{\partial (w_f (1 + \tau t_{fs}))} AL_s w_f \tau t_{fs} = p_G G$$

### **Income Balance for Households**

Household income is determined by the net of tax return to primary factors plus the imputed value of public provision:

$$M_h = \sum_f w_f E_{fh} + v_h G$$

### **Market Clearance for Private Goods**

Producer output is equal to the sum of intermediate plus final demand:

$$AL_g \geq \sum_s AL_s B_{gs} + \sum_h \frac{\gamma_h M_h}{e_h(p)} \left( \frac{e_h(p)}{p_g} \right)^{\sigma_h}$$

where  $\gamma_h$  is the household budget share devoted to the consumption of goods, and  $e_h$  is the "unit expenditure function" which may be written:

$$e_h(p) \equiv \left( \sum_i \beta_{ih} p_i^{1-\sigma_h} \right)^{\frac{1}{1-\sigma_h}}$$

### **Personalized Markets for Public Goods**

We assume a "pure" public good in this model, hence each household may attach a different marginal valuation to public provision in an equilibrium. In order to compute these marginal values, we include a separate public good "market" for each household which balances the level of provision with the household "demand":

$$G = \frac{\mu_{Gh} M_h}{v_h}$$

in which  $\mu_{Gh}$  is the budget share of public goods in the top-level Cobb-Douglas preferences of household  $h$ .

### **Market Clearance for Factors**

The aggregate supply of factors equals the sum of producer and consumer demand. Producers pay taxes on factor inputs, consumers do not because we consider these demands to be "leisure" or "household production". Consumer demands for factors are specified as Cobb-Douglas (constant budget shares):

$$\sum_h E_{fh} = \sum_s AL_s \frac{\partial \Pi_s}{\partial (w_f (1 + \tau t_{fs}))} + \sum_h \frac{\mu_{fh} M_h}{w_f}$$

### ***Samuelson Rule for "Optimal" Provision of Public Goods***

The tax rate multiplier is adjusted to balance the marginal cost of public provision with the summation across households of marginal willingness to pay. Due to the existence of household factor demand, factor taxes are necessarily distortionary and there will be an excess social cost of public funds. For this reason, the Samuelson rule is neither necessary nor sufficient for optimal provision. We apply the rule here merely to illustrate the programming methodology, even though the resulting equilibrium may be "suboptimal":

$$p_G = \sum_h v_h$$

## **Redistribution by the Production of Public Goods**

'Winners' of Public Good Production

actors that heavily use public goods

actors that contribute moderately to its provision (that pay little taxes)

'Loser' of Public Good Production

actors that rarely use public goods

actors that contribute a lot to its provision

Redistribution by Provision of Public Goods

Free Higher Education

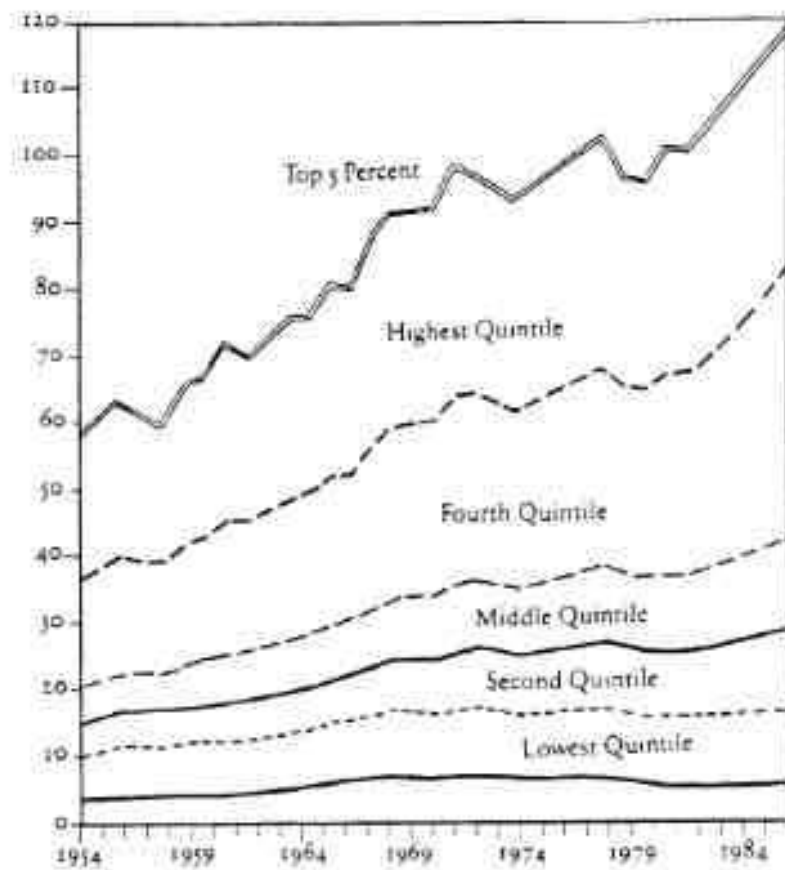
## **Why Government 2: Redistribution**

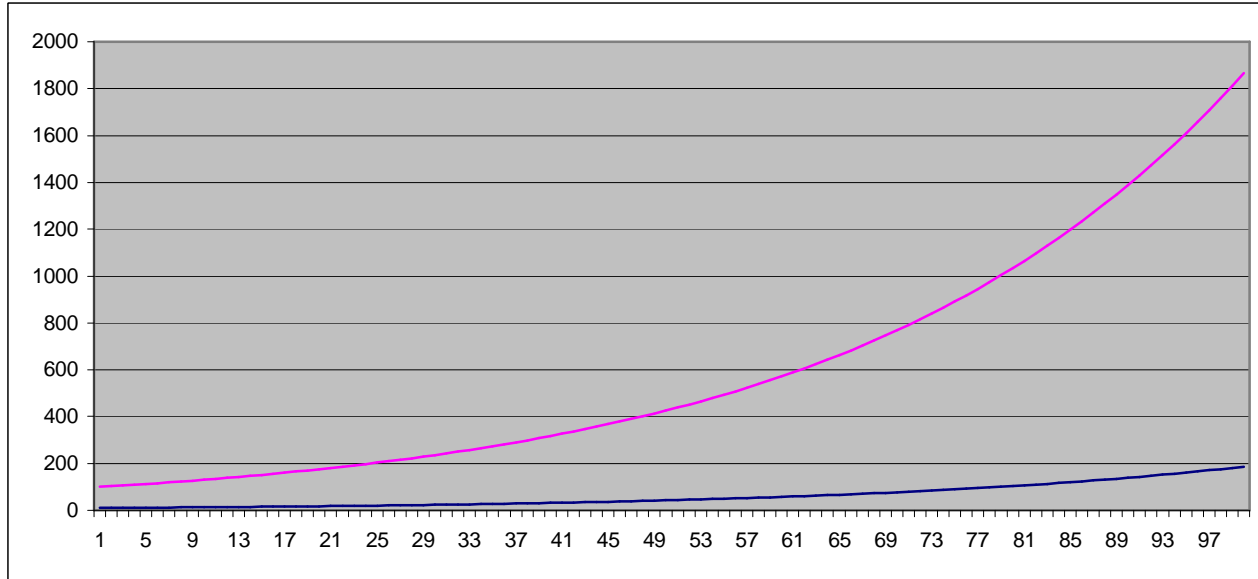
Why do governments redistribute income?

- to achieve an optimal level of income inequality  
(optimal might mean: growth maximizing)
- to provide benefits for important groups of voters  
(swing voters, median-voters)
- to achieve second order goals, such as environmental protection
- else?

## Some remarks on the development of income inequality in the USA

Mean Incomes of Population Quintiles, 1954-86  
Thousands of US dollars





Both functions grow with a rate of 3%.

Income Inequality in the US

<http://www.census.gov/prod/2000pubs/p60-204.pdf>

## Major Policy Instruments to Redirect Income

- tax policy
- subsidies
- social transfers
- monetary policy
- regulation
- trade policy
- cultural policy
- ..

Is there any policy that does not redirect income?  
NO.

## The Meltzer-Richards Model

pre-tax income: productivity times hours worked

individuals maximize utility, which is an increasing concave function of consumption (=productivity\*hours worked - taxes) and leisure  $z$

$$c = (1 - \tau)l\kappa + v$$

where  $c$  is consumption,  $\tau$  the tax rate,  $l$  is times worked ( $1-l$  is thus leisure) and  $v$  are government transfer to the individual,  $\kappa$  is productivity.

Government's transfers cannot exceed the tax rate times the taxed income (no deficits).

This model suggests that poorer individuals prefer higher taxes.

The model's predictions are often interpreted as

The lower the median voter's income relative to the mean income, the higher the degree of redistribution c.p.

DISCUSS!

## **Dixit-Londregan Model**

In this model, two parties with different policy preferences compete for the votes of the electorate.

The utility of voters depend on two factors:

the distance between his policy position and the position of the party in power, and on his consumption, which is a function of his/her pre-tax income and transfers s/he receives.

Transfers are directed to 'groups' (rather than to the population or to the individual).

The model is non-trivial, but its main results are the following:

In equilibrium, each party offers a vector of transfers which maximize its total votes, taking the other parties vector of transfers into consideration (subject to a balanced budget constraint).

The basic model has been used to derive predictions on the parties' response to different reaction function of voters.

Most importantly, it can be shown that BOTH parties are more likely to target swing voters to direct transfers to voters that can be targeted more efficiently.

These are two different, even competing predictions:

if parties know core voters better, they can target them more efficiently, however, they matter far less for the electoral outcome than swing voters.

DISCUSS!

## **WSJ Model: Pork-Barrel Politics**

Pork Barrel refers to a situation in which a collectively financed program is directed to a small group though the social costs exceed the social benefits.

In the US context, Pork Barrel is explained by the decision-making mechanism in the US congress.

The Weingast, Shepsle, Johnson model suggest that there are  $J$  legislative district, and each congressman has an incentive to provide goodies to his district's electorate.

Projects are financed by tax revenues, which have a unspecific origin, that is: tax income from California might be used to finance a bridge in Delaware.

Btw. the same logic applies to decision-making in the EU.

Buchanan and Tullock argue that congressmen exchange support, that is, they support each others projects. This behavior is called logrolling.

Fiorina and Baron model legislative processes based on logrolling. In short, they suggest that the congress should decide firstly on the size of budget, then on its distribution.

## **Grossman and Helpman: Lobbying and Redistribution**

The standard model of lobbying for special interests is by Grossman and Helpman.

They assume opportunistic governments, voters with mean interest  $v$  and interest groups with interest  $c$ .

In the absence of organized special-interests, the government would implement a policy according to the mean (median) voters' interest. With organized interests, the interest group might pull the government away from this policy.

In doing so, the interest group commands over two instruments:

it can transfer 'resources' and 'information' to the government.

The equilibrium of the game depends on the reaction function of the voters, the heterogeneity of interests among organized interests, and the resources/information over which the interest-group commands.