



# HANDOUT OF POLITICAL ECONOMICS

2022 – 2023 EDITION

*Written by Federica Di Chiara*



*Questa dispensa è scritta da studenti senza alcuna intenzione di sostituire i materiali universitari. Essa costituisce uno strumento utile allo studio della materia ma non garantisce una preparazione altrettanto esaustiva e completa quanto il materiale consigliato dall'Università.*

## INTRODUCTION

**Public Economics:** Economic policy chosen by a benevolent government or social planner

Very normative, recommendations that can be followed or not

Government intervention justified with either the market is inefficient and there are market failures or because of equity reasons

Different philosophical reasons behind: utilitarian criteria, Rawls

Normative approach to government intervention: aim is to design the most efficient policies for different economic contexts in order to enhance the economic welfare of society

Economic theory is less successful at presenting positive explanations for the observed economic policies as well as their differences across countries

**Political Economics:** Economic policy chosen by politicians subject to constraints and incentives

Different perspective: politicians take decisions because they are maximising something and they face constraints and incentives – more positive in nature

Provides an explanation of the observed public policies – starting point is to recognize that economic policies do not need to be efficient to be adopted

What are the motivations behind political decisions?

Economic policies need not to increase the economic well-being of every individual in society, but rather to obtain enough political support to be adopted by the policy makers and by the legislative body

Don't care about optimality

Uncover mechanisms behind some types of choices

Once these tools are there – talk about public policy, public debt, growth e.g. why has Italy not been growing for the last 20 years?

## POLITICAL ECONOMICS APPROACH

Individuals are examined as having a double role: they both economic and political agents

They have preferences over both economic outcomes (which drive their political behaviour) and on political outcomes (which drive their economic behaviour)

When the political institutions (at the macro level, not an individual level) take decisions, these are policies: foreign policies, economic policies, migration, etc.

Decisions impact society and everyday life

Look at market and economy

When politicians change economic stuff (pension systems, taxation systems, labour market, etc.) this impacts on the market

As public policies influence individuals' well-being and may modify their economic decisions, individuals will care about these policies and form opinions over that

People have economic preferences, utility functions and make economic choices

When this happens, individuals will start to form their preferences over economic policy

Individuals have preferences over consumption, but also over policies

Preferences might be driven by ideology to some extent, but also by economic reasons

People might vote for a party because of ideological reasons but in some cases there is also a

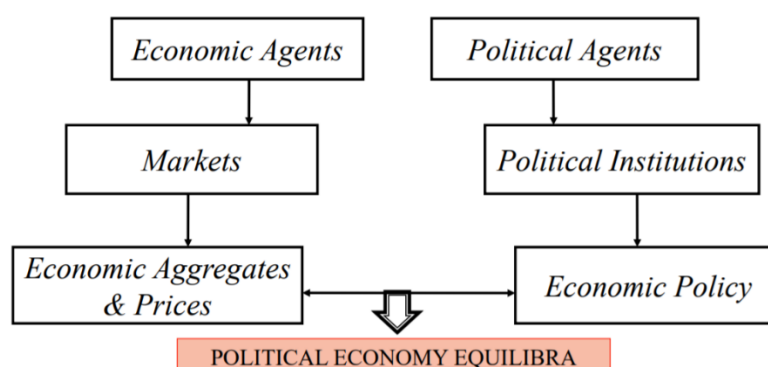
**CONVENIENCE ARGUMENT:** vote for a party that is going to benefit me in some way

The adoption of public policy depends on the preferences of individual agents

Indeed, typically individual preferences for a public policy differ depending on the impact of the policy on each individual's economic well-being

How are individual preferences converted into public policies?

Individual preferences over economic policies are formed somehow and then they feed back into the political institutions: voters have different preferences, these have to be and political institutions aggregate them into public policies



Consider individual in a double role as an economic and political agent

**Economic Agents** (firms, workers, consumers) individually take economic choices

Labour, Savings, Consumption Decisions

They select goods to consume and services to use, they choose how much to save, etc.

In doing this, they consider public policy as exogenously given

All these economic decisions come into the market and create demand and supply

They all meet in the market by means of demand and supply

When these get together, they determine the equilibrium quantities, prices and economic aggregates for exogenously given public policies

Markets may differ: perfect competition, oligopolies and monopolies

These systems make the rules of the game: rules decided either because of technology or because governments have granted regulations that make the market a monopoly

Rules decided to some extent by technological reasons or political will

e.g. Railways, airways used to be monopolies, but then were liberalized – choice of the politicians

Regulations: taxes impact on the market outcome

When imposing a tax on a market, that will have an impact

Imposition of a tax is done by the political part

**Political agents:** mostly individuals who now have political preferences

Individuals express their preference to determine those public policies which they regarded as exogenously given when they took their economic decisions

Preferences for a party, a candidate or a policy

e.g. vote for the party who is not going to put a tax on my house: political preference driven by economic determinants

Political agents are primarily voters, lobbyists and many others: can be as broad as one wants

Voters express their opinion over public policies and their preferences will depend on how the policy affects their utility or well-being

Through referenda, directly express preference over a policy

In countries where there is representative democracy, express it on a party or candidate

Once these preferences have been decided and sent out (vote for someone or something) enter the political institutions

Preferences are aggregated somehow – put things together through a political institutions

## POLITICAL INSTITUTIONS

Political institutions in political economics similar to markets in economics

Markets are the place where all individual preferences are brought together leading to the creation of aggregated outcomes and prices

Political institutions: agents express their preferences and institutions aggregate these preferences into policies which could be economic policy, foreign policy, migration policy and so on

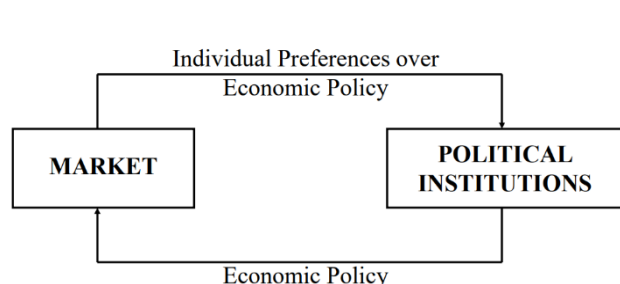
Political institutions may differ and therefore the policies that come as an outcome from them may differ too: if people meet in a perfectly competitive market or in a monopoly, outcomes are different

Similarly, depending on the political institution will get different outcomes

e.g. proportional vs majoritarian electoral systems are political institutions

Governments will have different economic incentives and policies

Aggregate preferences in a different ways



Individuals convey their preferences in elections, either through referenda or appointing political representatives

Public policies depend on the outcome of the election and will coincide with the winning proposal or with the policy decided by the winning candidate in a representative electoral system

Once public policies are implemented,

economic agents react by adjusting their economic behaviour and the market equilibrium may change. This behaviour closes the circle from economic markets to political institutions and back to economic markets

Asymmetry between the economic and political behaviour of individuals:

- Economic decisions: agents understand their individual action will not modify the existing economic and political scenario: each individual is too small to affect the economic aggregates
- In the political arena, individuals can be more powerful: if an individual is pivotal in an election, he may expect his most preferred public policy to be adopted by politicians seeking to secure his vote.

In choosing his most preferred policy the individual will consider that if his policy is implemented by the politicians, it will modify the economic and political context for everyone

e.g. if a low income worker is pivotal in an election, he may expect politicians to implement highly redistributive policies, but these are going to affect all workers, including those with high income and the whole economy

**Conflicts** of different types might emerge as a consequence of these dynamics:

- **Among individuals** (e.g., redistributive policies) – most open policies are redistributive in nature, give more power to some (e.g. firms) and not to all, someone will lose (consumers), because they are not Pareto-Efficient: this will create cleavages
- **Between individuals and politicians** (e.g., rents and corruption): they need each other. Politicians go after rents (ego rents and monetary rents). Conflict that is at the core of populism. When individuals vote, engage in an agency problem: send someone to represent you in parliament, to do some things, but new information may come around after and preferences might change. There might be cases in which politicians are elected but then there are unexpected economic shocks or a pandemic. Will they act in their own interest or in the interest of their citizens?
- **Among politicians** (e.g., rents and elections) – politicians want to win elections because of ego-rents (just power) or monetary rents: politicians are opportunistic or **OFFICE SEEKING**, they don't care about the policy but just to stay in power and so they might change the policies in order to stay in power. Alternatively, can have partisan politicians: they care about having their own preferences becoming a policy. Where do our politicians stand?

## WHICH POLICY INSTRUMENTS TO STUDY?

Related to conflicts among individuals.

Some key Issues: Redistribution (how targeted?), Dynamic Policies (public debt, growth), Rents

- **One-dimensional conflict.** Typical of broad redistributive programs (e.g.: welfare state programs) – everyone cares about that
- **N-dimensional conflict** (multi-dimensional conflicts). Typical of narrowly target redistribution (e.g: local public goods, agricultural subsidies, trade protection): most of times of interest to just a few people

When much of the game is concentrated among very few people and the loss is small and very disperse, people don't perceive it: something that cannot be studied with voting, something that happens at another level (e.g. lobbying)

## WHICH FORM OF POLITICAL PARTICIPATION?

Most of the time, going to talk about voting, but also lobbying and post-electoral politics

Post electoral politics: don't think about the voting part of it, but about how politicians that are already in power divide spending among different issues or topics

More about allocating a certain amount of money to be spent among different programs

Electoral rules: give different incentives to politicians

If politicians want to be re-elected, changing the electoral rule, the rules of the game change and the politicians will play the game differently

Political economics composed by politics and economics

In some cases, there will be different conflicts that are economic in nature: the redistributive part

Individuals, when voters, vote according to economic determinants

This is not always necessarily true e.g. in the case of populist vote

People are usually going to vote according to what their interest is

Vote for the party that takes care of individual interests

In the economic determinants the size of the different groups will matter: how many rich, poor and middle class are there will influence the economic determinants

The other element considered is going to be the political influence of different economic groups: this might come from the fact that have some kind of political determinants behind decision – some cultural or political determinant behind the choice to vote for someone

Put them together with the probabilistic model

Different assumptions on voter's behaviour lead to different answers:

1. Voters only care about policies. Then size of economic groups is all that matters. The outcome of the policy depends on how big the poor class is with respect to the rich or the middle class
2. Voters also care about "parties". They might care about ideology, political aspects, something else which is not economics: their degree of responsiveness might be different.

Then also responsiveness to policy favours matters.

e.g. a country with linguistic differences – voting according to economic determinants, might choose to vote for a party that is closer to the economic list but not on the same language. What happens?

Which cleavage is more salient? Might still want to stay with the linguistic identity and never vote for a party that has a different language, so will keep on voting for a party even though it disappoints people

Influence also reflects ability of economic groups to be politically organized.

Political influence also depends on the electoral rule

Start with individual preferences, then the aggregation mechanisms are analysed and the political institutions, as well as collective preferences

## ECONOMIC AGENT PROBLEM

### A GENERAL POLICY PROBLEM

(Economic and Politically) Maximizing Agents

Agents may differ according to an individual characteristic  $\alpha_i$  – heterogenous characteristics

If the problem is related to income,  $\alpha_i$  is the level of income

If the problem is about allocating resources to different regions,  $\alpha_i$  is the place where we live

Economic Agent:

- Maximize Utility function w.r.t. economic variable  $C_i$  subject to a budget constraint  $H$  – argument of the utility function, function of the policy
- Vector  $q$ : Set of economic policies
- Vector  $p$ : prices, data determined by the market – doesn't play a big role

Start with an utility function  $U$  having all the elements in it

- Economic determinant to maximise e.g. consumption
- $q$  is the economic policy, tax rate, transfer received: what we care about, taken as given in micro and changed to increase the welfare of individuals in public econ: here analysed to see what is the most preferred policy that individuals have
- $p$  are the prices of the goods, an interest rate, in a labour decision they are wage
- $\alpha_i$  related to individual characteristics

Maximise choosing the economic variable subject to a budget constraint that depends on all the 4 elements

$$\begin{aligned} \max_{C_i} U(C_i, q, p; \alpha_i) \\ H(C_i, q, p; \alpha_i) \geq 0 \end{aligned}$$

### INDIRECT UTILITY FUNCTION

Obtained in two steps

1. Take the utility function, maximise with respect to the economic variable and the optimal values of these economic variables are obtained as a function of the public policy
2. Substitute these optimal economic decisions and plug them back in the original utility function, that will thus depend on the public policy only

There is no  $C_i$  anymore, no economic variable because that has already been maximised – consumption becomes a function of the policy

Economic problem has been taken care of – however, the indirect utility function will depend on the policy

Economic interpretation: indirect utility function expresses the individual preference over public policy when the economic decisions at the individual level have already been taken

Individuals when expressing their views over the public policy in the political arena will first determine their most preferred public policy by maximising their indirect utility function with respect to this policy

Suppose we are choosing how much to work

Labour decision depends on the wages, how much we value leisure and the tax on labour

Take decision conditional on the tax on labour – get a decision on how to work depending on the labour tax: when labour tax changes, adjust labour decision accordingly

Eventually indirect utility function only depends on policy – defines how much an individual likes policy and this is driven by economic decisions

### EXAMPLE

Utility function made up by consumption and leisure: decision about how much to work and how much to have leisure, how much to consume

Utility function will be log-linear

$$\begin{aligned} U &= c + \alpha \ln(\text{leisure}) \\ U &= c + \alpha \ln(l) \end{aligned}$$

Consumption and leisure are chosen by the individual – going back to the general formulation,  $c$  and  $l$  both make up  $C_i$

$\alpha$ , assumed to be greater than 1, is a parameter which tells how much individual cares about leisure

**Time constraint:** one unit of time has to be divided between work ( $n$ ) and leisure in a one period model

$$1 = n + l$$

This depends on  $\alpha$ : it is a parameter that might be related to the individual attitude to work or it might be health related – if in bad health, working is very painful

High  $\alpha$ : someone that enjoys leisure a lot, related to individual effort in working

This is about preferences and not about outside constraints

### Budget constraint

Consumption financed by the number of hours worked minus the taxes paid

$\tau$  = average tax rate paid on labour

If  $\tau$  is 20%, receive 80% back after having paid taxes

$\omega$ : the number of hours/days worker

Also get a transfer  $T$ : something received regardless of the characteristics

$$C = (1 - \tau)n\omega + T$$

### Maximise utility function with respect to leisure

When choosing  $l$  you also choose  $n$  – e.g. 60 hours per week to allocate between work and leisure

$c$  and  $i$  are  $C_i$

Vector  $q$  is made up by both  $\tau$  and  $T$  are policy defined

$\omega$  is the price of labour: the wage

Maximise with respect to  $l$ , using the budget constraint

Can write  $n$  as write  $n$  as  $1 - l$

And put it inside the budget constraint

$$C = (1 - \tau)(1 - l)\omega + T$$

$$\begin{aligned} & \max_l c + \alpha \ln(l) \\ & \max_l (1 - \tau)(1 - l)\omega + T + \alpha \ln(l) \end{aligned}$$

Take the FOC with respect to  $l$

Maximise with respect to  $l$ , two effects by an additional hour of leisure:

- Happier because have an additional hour of leisure – how much happier told by the marginal utility of leisure, i.e. derivative of the budget constraint with respect to  $l$
- However, one more hour of leisure means that individual works one hour less – forego the net income on that hour – that is the marginal cost of consumption (consume less)

### FOC:

$$-(1 - \tau)\omega + \frac{\alpha}{l} = 0$$

First term is the cost due to the reduction in the marginal utility of consumption because of one hour less to work

Second term is the marginal utility of enjoying one more hour of free time

$$\frac{\alpha}{l} = (1 - \tau)\omega$$

$$\frac{l}{\alpha} = \frac{1}{(1 - \tau)\omega}$$

Optimal amount of leisure depends on:

$$l^* = \frac{\alpha}{(1 - \tau)\omega}$$



$\tau$  is the tax rate paid on labour

Labour depends on the preferences for leisure: the higher  $\alpha$ , the higher the leisure that will be chosen. It also depend negatively on wage (the higher the wage, opportunity cost of getting one hour of leisure is higher, so the lower the leisure you want) and positively on tax: if you get taxed more, this decreases net income and so don't work too much

Naturally, the optimal amount of work is going to be

$$n^* = 1 - l^*$$

The optimal consumption:

$$c^* = (1 - \tau)n^*\omega + T$$

Once decided how much free time to have, it is also going to tell residually how much to work and how much to consume

Optimal economic decision

Indirect utility function is going to be obtained by taking the utility function and putting stars in it

$$W = c^* + \alpha \ln(l^*)$$

$$W = (1 - \tau)n^*\omega + T + \alpha \ln(l^*)$$

$$W = (1 - \tau)\omega - \frac{\alpha}{(1 - \tau)\omega} (1 - \tau)\omega + T + \alpha \ln\left(\frac{\alpha}{(1 - \tau)\omega}\right)$$

$$W = (1 - \tau)\omega - \alpha + T + \alpha \ln(\alpha) - \alpha \ln(1 - \tau)\omega$$

Indirect utility function is obtained by the optimization of consumption and leisure

Arguments of the indirect utility function:

- $T$
- $\tau$
- $w$
- $\alpha$

No consumption and leisure in it: found what the optimal consumption and leisure were, optimised, so got rid of the economic problem

Now want to understand how people feel about the policy, whose parameters are  $\tau$  and  $T$

Use the indirect utility function to understand what are the individual preferences in terms of  $\tau$  and  $T$

We got rid of the economic problems: want to get rid of  $w$ , want to be left with the individual characteristics and the policy

At the point will be able to find the **BLISS POINT**: the preferred policy

Indirect utility function defined on policy: try to construct what are the economic determinants behind individual preferences

When thinking about a policy we like, really thinking about a policy that maximises individual utility

Political agent will want to maximise the indirect utility function

The optimization will depend on  $\alpha$ : different people with different  $\alpha$  will have different views on what the policy should look like

Eventually find the **Bliss point**: most preferred outcome by individuals

Government has a budget constraint as well - **public budget constraint**

To spend, also need to tax

Government budget constraint: government is giving out transfers  $T$

Government is financing those transfers through taxes

So taxes have to be equal to transfers

$\tau$  is the tax rate that gets multiplied by the  $n$  and  $w$  - at the same time  $n$  is different depending on the  $\alpha$ : not everyone is working the same hours per week

Need to consider an average  $n$ , an average choice of labour by individuals



$$T = \tau E(n^*)\omega$$

Budget constraint of the government will reduce the dimensionality of the problem by one unit  
In the indirect utility function of individuals are  $\tau$  and  $T$ , but can use the budget constraint of the government to reduce the problem to only  $\tau$  since there is a link between the two

In other words, when choosing a tax rate, also choose a transfer

Link between the two is going to be given by the budget constraint of the government

Choosing the tax rate, this will tell how much money is available for transfer

Substitute the  $n$  inside the government budget constraint

$$T = \tau\omega E\left(1 - \frac{\alpha}{(1-\tau)\omega}\right)$$

Averaging out with respect to  $\alpha$

Need to make some assumptions on what is the average  $\alpha$  and denote it as  $\bar{\alpha}$

$\bar{\alpha}$  is a number greater than 1 and the source of heterogeneity

The average health status of the population

If in good health, working is not a problem; if in bad health, difficult to work long hours

High  $\alpha$  is someone who is really sick, low  $\alpha$  is someone that can work

$$T = \tau\omega - \frac{\tau\omega\bar{\alpha}}{(1-\tau)\omega}$$

$$T = \tau\left(\omega - \frac{\bar{\alpha}}{1-\tau}\right)$$

Know that the government can choose how much to tax

Once that is chosen, this will also give the amount of transfers

$\tau$  enters twice in the determination of the government budget constraint

- If the government chooses to increase  $\tau$ , the amount of resources for the transfers increases as well - increase the tax rate and increase also the resources that can be obtained
- When the tax rate increases, the tax base shrinks because people work less

On one hand people have to pay more taxes, on the other hand people pay less taxes because they work less

$T$  is a function of  $\tau$

Can rewrite the indirect utility function depending on  $\tau$ , on  $\omega$  and  $\alpha$

Can maximise the utility of people, by only thinking about the tax rate

Once picking the tax rate, people understand that through the budget constraint of the government that will define their transfers

It is still the individual trying to decide on something, but now he is forming preferences over the entire policy which depend on the utility function

Individual is sufficiently smart to understand that there is a budget constraint: do not consider the tax and the transfer as two separate things but understand that if we are given more money, they are going to tax people more

Policy maker is using the budget constraint

$p$  depends on  $q$ : in the economy there are **general equilibrium effects**

If the government is taxing the labour market a lot, then the labour supply is going to shrink and eventually this is going to have an impact on wages as well, because demand and supply will change  
 $\omega$  is going to depend on  $\tau$ : not only people will choose how many hours to work depending on the tax rate but also the equilibrium wage will change

When the government makes decisions over policy, not only it is changing quantity, it is also changing prices - it changes people's behaviour, aggregates but also prices

If tax more labour income, this will change the employment rate and will also change the equilibrium wage on the market

IN THIS EXAMPLE, do not allow wages to depend on taxes and set them equal to 1  
 Want to understand the policy that the individual prefers  
 Maximise indirect utility function  $\tilde{W}(\tau, w = 1, \alpha)$  with respect to  $\tau$

$$\tilde{W} = (1 - \tau)\omega - \frac{\alpha}{(1 - \tau)\omega} (1 - \tau)\omega + T + \alpha \ln\left(\frac{\alpha}{(1 - \tau)\omega}\right)$$

$$\tilde{W} = (1 - \tau)\omega - \alpha + T + \alpha \ln(\alpha) - \alpha \ln(1 - \tau) \omega$$

Maximisation part - FOCs with respect to  $\tau$

$$-\omega + \frac{\partial T}{\partial \tau} + \frac{\alpha}{1 - \tau} = 0$$

By increasing the tax rate, pay more taxes (bad), get more leisure (good), get more transfers (good).  
 Need to go back and do the derivative of the government budget constraint

$$\frac{\partial T}{\partial \tau} = \omega - \frac{\bar{\alpha}}{1 - \tau} - \frac{\bar{\alpha}\tau}{(1 - \tau)^2}$$

When doing this derivative, try to get to the maximum of the Laffer curve  
 So can rewrite the FOCs of the indirect utility function

$$-\omega + \omega - \frac{\bar{\alpha}}{1 - \tau} - \frac{\bar{\alpha}\tau}{(1 - \tau)^2} + \frac{\alpha}{1 - \tau} = 0$$

$$-\frac{\bar{\alpha}}{1 - \tau} - \frac{\bar{\alpha}\tau}{(1 - \tau)^2} + \frac{\alpha}{1 - \tau} = 0$$

Multiply both sides by  $1 - \tau$

$$-\bar{\alpha} - \frac{\bar{\alpha}\tau}{1 - \tau} + \alpha = 0$$

$$-\bar{\alpha} + \alpha = \frac{\bar{\alpha}\tau}{1 - \tau}$$

$$(-\bar{\alpha} + \alpha)(1 - \tau) = \bar{\alpha}\tau$$

$$\alpha - \alpha\tau - \bar{\alpha} + \bar{\alpha}\tau = \bar{\alpha}\tau$$

$$\alpha - \alpha\tau - \bar{\alpha} = 0$$

$$\tau = \frac{\alpha - \bar{\alpha}}{\alpha}$$

The tax rate depends on the individual characteristics and with respect to the average persons: there is already some sort of redistributive policy going on

What I want as a policy is a function of who I am as an individual with respect to the average characteristic

The difference  $\alpha - \bar{\alpha}$  is what is driving this policy

# HOW DO WE AGGREGATE PREFERENCES?

Look at the political institutions and try to understand how the different types of preferences are going to be aggregated into collective preferences: the actual policy that will come out

If given individuals' preferences the public policy was invariant to the type of political institutions used to aggregate preferences, the political institution would be neutral

It would have no impact on the process of preferences aggregation and in determining public policy

Yet, political institutions are rarely neutral and they do shape policy outcomes

## Arrow's Impossibility theorem (1951)

Shows that there is no democratic mechanism that allows individual preferences over different policies to be aggregated in a consistent way

Ken Arrow shows that political institutions are not neutral: no desirable political mechanism is able to aggregate individual preferences consistently

In particular, there is no democratic mechanism allowing individual preferences to be aggregated consistently

Consistent means that individual preferences should be:

1. **Rational**: that is to say, complete and transitive – should be able to order anything and the ordering should have a transitivity property  
The political mechanism has to be able to compare and rank all possible outcomes of the public policy and this ranking has to be transitive
2. **Unrestricted domain**: should be able to accommodate in this democratic mechanism people with different preferences and should not let them out depending on the type of preferences that they have: doesn't matter what kind of preference they have  
Mechanism has to be able to produce an aggregate decision: a policy outcome
3. **Weak Pareto optimality**: if all of us are indifferent between A and B but there is one person that prefers A to B, as a collective preference we should all prefer A to B  
If one individual weakly prefers A to B (i.e. If individuals either prefer A to B or they are indifferent between A and B and no individual prefers B to A, then one mechanism has to rank A over B
4. **Independence from irrelevant alternatives**: choose between foreign and economic policy and then there are migration issues that are not being discussed – those alternatives, out of the table, should not matter for the decision that is reached

Cannot have them all together: political institutions are not neutral

A political institution would be neutral if given our preference, no matter the political institution used, always end out with the same policy – policy outcome is always the same regardless of the institution used

Arrow's impossibility theorem tells us this is not possible

Have to start thinking about the types of institutions used and the fact that depending on the institutions used can end out with different policies

Political institutions DO matter: study them, understand their characteristics and their impact on the policies – majoritarian, proportional: may end up with different results

It would be like saying that the type of market matters in economics

Political institutions can have an impact on the final outcomes in different ways

e.g. Given the initial preferences, will be aggregated differently

e.g. Given the institutions, politicians might act differently

## EXAMPLE OF NON-NEUTRALITY IN ELECTIONS

Consider 7 voters and 4 alternative policies (A, B, C, D) which are going to be ranked somehow  
Assume that politicians vote sincerely, according to their true preferences over the public policy  
There are different types of electoral mechanisms

- Plurality or majority voting
- Voting between two alternatives with Agenda setting
- Borda voting

7 people and alternatives on public education spending

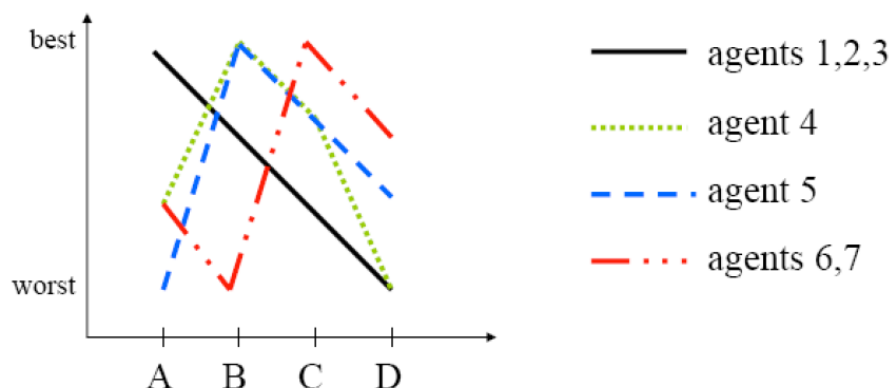
| Agents       |       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------|-------|---|---|---|---|---|---|---|
| Alternatives | best  | A | A | A | B | B | C | C |
|              |       | B | B | B | C | C | D | D |
|              | worst | C | C | C | A | D | A | A |
|              |       | D | D | D | D | A | B | B |

A = no spending  
B = low spending  
C = medium level spending  
D = high level spending

The first three all prefer alternative A: no public education whatsoever, their next level is low, medium and high (least preferred alternative) – these could be someone that do not use education or people that are paying money for it or those that would like their

money to be spent on something else: they are the NET CONTRIBUTORS of the system, e.g. the old Fourth person prefers some, medium, no spending and high spending

Preferences could be represented as:



Differences between agents: in one case, the preferences are **not single peaked**: they have more than one peak

## MAJORITY/PLURALITY VOTING

Everyone votes their first choice

A = 3 votes, B = 2 votes, C = 2 votes

A is going to win because it gets the most votes

That is not the only way in which we could aggregate preferences

## VOTING BETWEEN TWO ALTERNATIVES WITH AGENDA SETTING

In this meeting of 7 people there is a chair person that can decide the way in which the vote is brought about

The chair decides to make an order between the alternatives

- A vs B: A wins 5 to 2. The winner takes over C: the first 3 will prefer A over C, but then the next 4 will all prefer C over A and so C will win. Then C takes over D, C wins 7 to 0 – C winner

By changing the voting environment, the way in which political preferences are aggregated, reach two different results while starting from the exact same preferences

The agenda setter can reverse preferences

- vs C. Then the winner (C), is going to take on B. B will win. B against A – **A winner**

- A vs C. C is the winner, takes on B, B wins, and B also wins over D – **B winner**

Voting scenario complicated by the choice of voting strategically – most likely not even going to find equilibria in some strategies

Might want to misrepresent some preferences in order to get some results

Here assume sincere voting

The ability of setting the agenda allows to choose the order in which to vote and so to steer elections

### **BORDA VOTING**

**K=1:** one vote, give it to the policy that is most preferred

**K=2:** give two votes to the first, 1 vote to the second

This could be further expanded

A gets 6 votes, B gets 7 votes, C gets 6 votes, D gets 2 votes → **B winner**

Different voting mechanisms give different results

## POLITICAL INSTITUTIONS

They are not neutral

Two sources of decisions

1. **Motivation of the politicians:** can decide to portray politicians as being
  - a. **Opportunistic:** the ones that are office seeking, because of some ego-rents or monetary rents, the rewards from being elected. They are the ones that do not care about the policy, they will change their policy according to the possibility of being voted in power, they don't have their own individual preferences over policy, they will just try to accommodate other people's preferences
  - b. **Partisan:** they care about implementing the policy that they care about
2. **Timing of policy choice**
  - a. **Pre-election politics:** politicians make decisions during the electoral campaign. Run the electoral campaign and tell people what will do once in power. Behind this model, there is an idea of commitment about the policy. Policy decisions are taken before the elections: run on a platform and will indeed comply with the platform on which we are running
  - b. **Post-election politics:** an incumbent voted in power and then a challenger. There might be models of bargaining, such as the division of resources among ministers. People in power today, how are they going to split resources.

e.g. is the agency model: choose a policy as incumbent so as to be re-elected tomorrow: divergence between the two politicians is insofar as one has the power to do policy, while the other cannot. One is choosing, the other is just ideological

### ELECTORAL MODELS

- Median Voter theorem: electoral competition between two candidates
- Probabilistic voting: solves some of the things that the median voter model cannot solve

Both models are pre-electoral models and politicians are opportunistic

Citizen candidate: people start as citizens and then they have to choose whether or not to run as citizens. Endogenous supply of politicians: people decide whether they want to self select in becoming a politician

Might want to try and run not because office seeking but because have some preferences over people

Might decide to run or not depending on the existence of a politician or party that has positions closer to the one of the citizen: if such a party exists, it will take care of the individual's preferences; if traditional parties are too far from the citizen, he might choose to run

**LEGISLATIVE MODEL:** in Post Electoral models much more concerned about the power that governments have

Policy are decided after the elections when the government sets in and they decide what they are going to do

Agenda setting: decide how to allocate resources

Allocation of policy jurisdictions

**LOBBYING MODELS:** can be applied either before or after the elections, in the form of campaign contributions or not

# THE MEDIAN VOTER

**CONDORCET WINNER:** a policy  $q^*$  that wins against any other feasible policy in a pairwise voting

Take  $q^*$  and compare it with any other policy  $q$ ,  $q^*$  always wins

**SINGLE PEAKED:** policy preferences of voter  $i$  are single peaked if

$$q'' \leq q' \leq q(\alpha^i) \text{ or } q'' \geq q' \geq q(\alpha^i)$$

Then

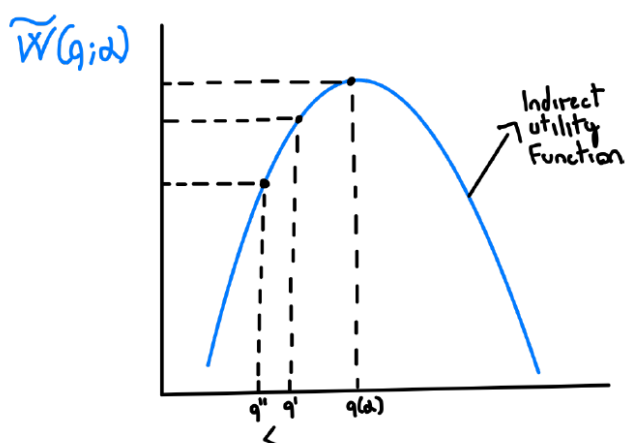
$$W(q''; \alpha^i) \leq W(q'; \alpha^i)$$

$q(\alpha^i)$  is the bliss point for individual  $\alpha$  – the most preferred policy by the individual

If  $q''$  is further away than  $q'$  from the bliss point of this voter, further away than  $q'$  to the right or to the left

In other words, if  $q'$  is closer to the bliss point than  $q''$ , then the individual prefers  $q'$  to  $q''$

If this is true, individual has single peaked preferences – best is to be at the peak of the preferences: moving away from the peak at the right or the left, going to prefer points that are closer to the maximum than points that are further away from it



Peak is given by  $q(\alpha^i)$ , the bliss point

The single peaked preferences tell that  $q'$  will be preferred to  $q''$ , because utility associated to  $q'$  is higher than the one associated with  $q''$

The same is true if done on the right of the utility function

Going back to the previous example: all preferences are single peaked except the ones of individuals 6 and 7

These preferences can actually make some economic sense. Agents 4 and 5 have intermediate preferences: prefer low spending, some prefer more high spending than others. Agents 6 and 7: they prefer medium spending in public education. Their next best is high spending in public education: they seem to care about public education. But then, their third best is no spending – no single peaked preferences

They think that public education is important and that low spending on public education is actually worse than no spending at all: it must be that they have an alternative

Their best alternative is to go to very good public schools, but if public schools do not receive enough money and are bad, then their best choice is to spend no money in public schools and go to private schools instead

Binary choices: voting choice made remains unidimensional and over public education spending, but individually can choose whether to stay in private or public schools

When there are binary choices over the spending issue, preferences might be not single peaked: on some issues it might make a lot of sense and this might be problematic

If it was public health spending rather than public education, it would be exactly the same thing



That would constitute a problem because when turning to median voter model, it requires that individuals have single peaked preferences

Throws away some of the people that might be around

### THEOREM

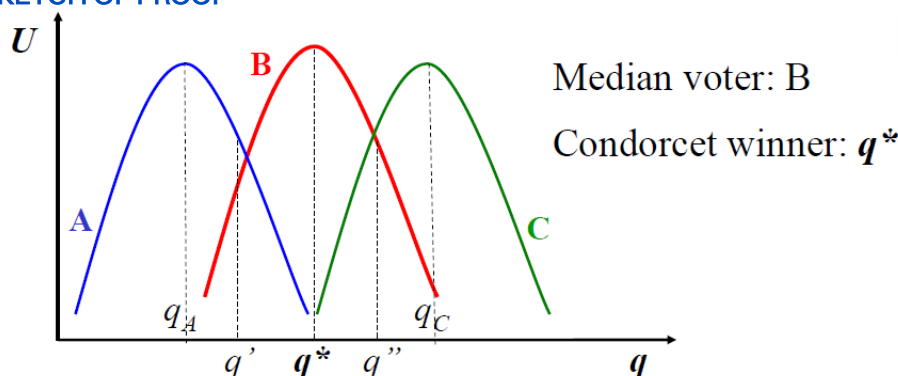
If all voters have *single-peaked* policy preferences over a given ordering of policy alternatives, a *Condorcet winner* always exists and coincides with the **median ranked bliss point** ( $q^*$ )

**Corollary:** The most preferred bliss point chosen by the median voter is going to be the unique equilibrium policy (stable point) under pure majority rule

Using the median voter model, the only thing to understand is the distribution of policy preferences. Then, find out who the median voter is, what he wants and that is going to be the policy outcome

If all have single peaked preferences, we go back to the Arrow's impossibility theorem: unrestricted domain fails, because cannot accommodate those that have single peaked preferences  
These are the ones that prefer the private system if the public system is not good enough  
A lot of people like this: first median voter failure

### SKETCH OF PROOF



Three individuals: the median voter is the one in the middle

To find the median voter in general, need to order the preferences of the individuals: put first the individuals that care about low spending, and then put the others

3 people: A, B and C

- A: wants to have low spending – his bliss point is at  $q_A$
- B: wants a medium level of spending – bliss point at  $q^*$
- C: the bliss point is  $q_C$

Median voter model tells that  $q^*$  is going to be the winner: there is no other policy  $q$  which is going to win against  $q^*$ , because  $q^*$  is the bliss point of the median

- Voting  $q'$  vs  $q^*$ : B will vote for  $q^*$ , C will vote for  $q^*$  as well because of single peaked preferences. On the contrary, A will prefer  $q'$  because it is closer to its bliss point
- Taking any point at the left of the bliss point of B  $q^*$ , that is always going to be defeated because B and C will always prefer  $q^*$  to any alternative to the left
- Voting  $q''$  vs  $q^*$ : B will vote for  $q^*$  but so will do A, who prefers  $q^*$  to any other point on the right

The median voter will always come out as winning:  $q^*$  always wins in a majority voting election

However, this argument only holds if the assumption about single peaked preferences is kept: as soon as we allow for single peaked preferences, then  $q^*$  is no longer going to be the favourite

### THE APPLICATIONS OF THE MEDIAN VOTER

Think about elections in which there is majority voting: people are going to give one vote only

This vote can be either for a political candidate or for a party, in which case there will be two candidates or two parties

Might vote for A or B

Alternatively can vote over an entire policy issue (e.g. in a referendum)

Median voter theorem usually implies that a choice will be made between two parties A and B

Candidates are assumed to be opportunistic: in order to be elected, the candidates will choose the median voter

If they were partisans, they would have their own bliss point

Voters, on the other end, care about the economic determinants: having found the indirect utility function, each voter votes its own bliss point

Applying the median voter, can express individual economic determinants

Policy outcome is going to be that, supposing there are two candidates, the candidates are going to converge to what the median voter wants in order to win elections: policy outcome is that both go towards the median voter's most preferred policy

Both parties A and B will converge in their policy choices towards the point chosen by the median voter

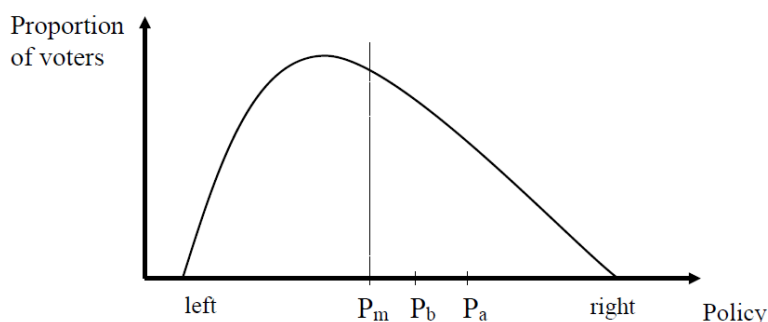
## DOWN'S – HOTELLING MODEL

The median's voter theorem may also be applied to a different type of majority voting election, where voters do not determine a specific public policy, but select a political candidate to hold office

Consider a majority voting election for political candidates or parties in which there are two opportunistic candidates running for office

The candidates' decision consists of selecting a political platform, which may focus on a specific public policy or a broader agenda that fits along a traditional left-to-right scale

Individual voters will have preferences over the political platform



On the vertical axis is the proportion of voters

Preferences for policy on the horizontal axis

A certain number of people that are left wing or have preferences for policy on the left and a certain number of people who have preferences for the policy on the right. How many of those, can be seen on the vertical axis

In other words, the graph is telling us the distribution of bliss points

Mass of voters who have different positions over a traditional left-to-right scale

A lot of people have distribution of people on the left, a lot on the right

$P_m$  is the most preferred policy by the median voter, i.e. the voter that splits the distribution in half so that 50% of the people are on the right and 50% of the people are on the left

In order to win elections, each candidate has to position the policy platform on the left-to-right political spectrum in order to maximise votes and thus the probability of winning elections

Party A and Party B position themselves respectively at  $P_a$  and  $P_b$  – party B wins because it gets all the vote of the people on the left of  $P_b$  and half of the votes of the people that are between  $P_a$  and  $P_b$

Office seeking selfish politician: move towards  $P_m$  so as to undercut as much as possible the other party

Both parties have to match what they do

Nash Equilibrium of the game is to position on the line in such a way to win the election: however, not going to win the election, there is going to be a tie

Tie breaker is going to be a toss of a coin: who wins is undetermined

Model won't tell which party wins, but simply what the policy will be – outcome is understanding what policy the two politicians will use as a platform to run on an election

A and B will separately choose to run on the platform  $P_m$

From a policy point of view, they would do exactly the same thing

Implications of the model:

- Policy moderation: move towards the median, more moderate policy, cutting off the extremes
- The two parties are almost undistinguishable as far as their policy position go
- Who wins and who loses is a toss of a coin

Model in which there is majoritarian voting and there are only two parties e.g. what happens in the US  
Democrats and Republicans looked very similar in terms of the policy outcome  
However this is no longer the case

### WHAT IS NOT IN THE MODEL?

**There are only two parties**, so this is not going to work in countries that have more parties

**One dimensional policy space**: for a long time, political scientists happy with this assumption, because they thought it was possible to boil down the world to a left/right binary choice, often pinned down on economic issues

Now there is a lot of discussion about the fact that one dimension is not enough – need to take into account also openness on some issues such as globalization

**Model is entirely driven by economic determinants**: but there might be cultural, ideological, political elements or other heterogeneity sources that can bring in one direction or another – elements that might be orthogonal to the policy

**Polarization** resulting from the existence of only two politicians

Supply is fixed – exogenous supply of politicians

No single peaked preferences can be allowed in the model

It doesn't take into account the abstentionism – some people abstain, for many different reasons

In many countries, abstention is becoming the largest party

Not accounting for a big phenomenon

Logic of the model is to get close to the middle because get more votes

But the idea would be very different if start thinking that when moving towards the centre might lose some people at the extremes: when moving away from people, when people don't find any representation in the political spectrum, these might find it attractive not to vote

This might give out a totally different type of political games

Might go after trying to mobilize the base – what really matters is to make sure that potential voters do not stay home but actually go out and vote

## DOWNES – HOTELLING MODEL WITH MULTIPLE PARTIES

Conditions:

1. The space is  $[0, 1]$ .
2. Voters are uniformly distributed: as many people on the right as on the left as on the centre, which might not necessarily be accurate
3. Voters have single-peaked preferences.
4. Office-seeking parties
5. Parties make Cournot-Nash conjectures

The conditions necessary and sufficient for an equilibrium among  $n$  parties ( $n \geq 2$ ) are:

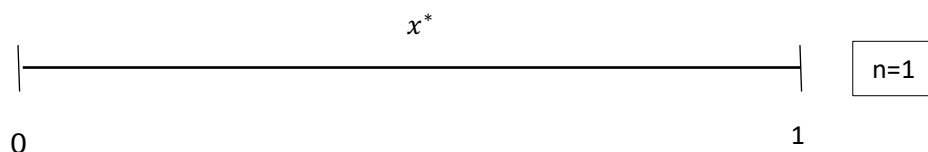
1. No party's potential electorate is smaller than any other party's half potential electorate: the electorate you get shouldn't be smaller than the one of another party. That is the case because if my electorate is smaller than half of another party's electorate, going to move towards the other party and steal half of that vote. There has not to be an incentive to move and share the votes with someone else, and for that to be the case the other party should not have twice the vote as me
2. Each peripheral party is paired with a neighbour: they are never alone, it is always convenient to be paired

There is an equilibrium. If one party moves, can it increase the chances of winning elections?

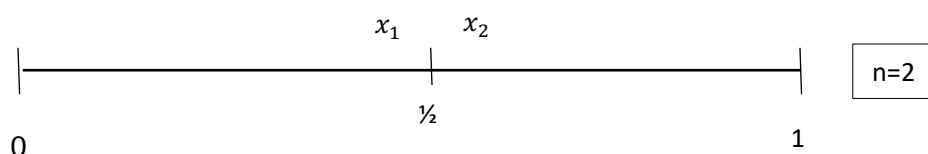
If it is an equilibrium, it will have to be the case that there is no better movement

Regardless of what other people do, cannot do better in terms of best response

In case of **one party running**, the location is indeterminate: they can do whatever they want

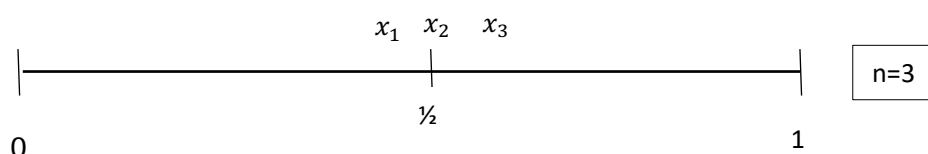


In case of **two parties running**, they will all meet to  $\frac{1}{2}$ , the median because of the uniform distribution from 0 to 1



If one of the two moves from  $\frac{1}{2}$  they are going to lose the election

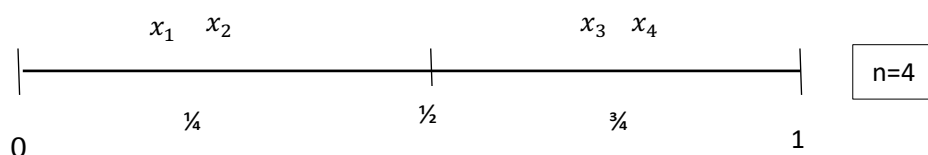
In case of **three parties running**, there is no equilibrium



They all stay in  $\frac{1}{2}$ : if they all move there, and  $x_2$  tries to move to the right, then they are going to steal the votes of  $x_1$ : that is more than  $\frac{1}{3}$  and so they will win the election

So the other will move as well: all parties will try to best respond to one another, and there will be no equilibrium

**In a 4 party environment:** two parties go to the right, two parties go to the left and position themselves at  $\frac{1}{4}$  and  $\frac{3}{4}$



Suppose that they are party  $x_3$ : can they do better?

Where do the parties fish for votes?

All the people from 0 to  $\frac{1}{4}$  are the electorate of  $x_1$  and  $x_2$ , as are the ones between  $\frac{1}{4}$  and  $\frac{1}{2}$

Similarly, those that are between  $\frac{1}{2}$  and  $\frac{3}{4}$  will vote for  $x_3$  and  $x_4$

Each party gets  $\frac{1}{4}$  of the vote

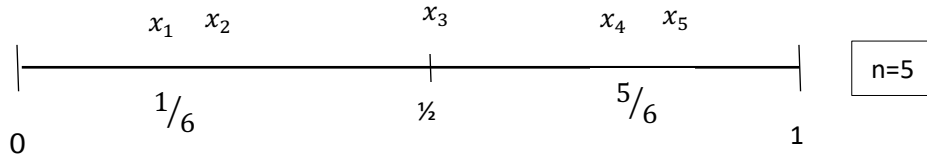
Supposing that  $x_1$  moves to the left, they get all the votes on the left, i.e. slightly less than 25%

On the other hand, however, they are going to lose all the vote on the right

They gain less than 25% and lose a little bit of 25% - that is not convenient

This positioning is an equilibrium, because by moving lose more votes than gained and this is true for all the parties

**5 parties:** there is going to be 1 centrist party sitting at  $\frac{1}{2}$ , two parties seating at  $\frac{1}{6}$  and two parties sitting at  $\frac{5}{6}$



What is going to happen is that  $x_1$  is going to get the votes in the middle, each one is getting 20% If move any of them, lose more votes than what is gained

Need to put more assumptions than before

There are more people at the centre than at the extremes, so uniform distribution is not ideal: very different results depending on how many parties are there

Median voter used in the context of two parties, because it allows to understand policy convergence towards the middle – going with more parties, cannot say anything in terms of understanding what the policy is

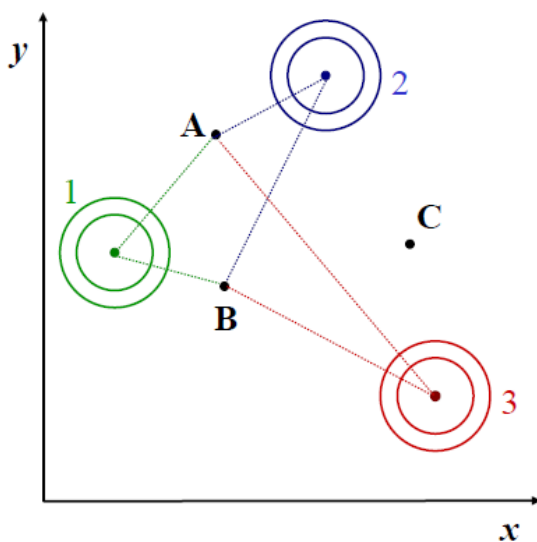
### SPATIAL VOTING MODELS

Address the issue of multidimensionality

With a unidimensional utility function: have one dimension which is  $q$  and then have the utility function and can plot the indifference curves

If have a utility function defined over two dimensions, not just  $q$ , need a tridimensional graph: an  $x$  axis, a  $y$  axis and then the utility function – only way in which it is possible to see the indifference curves Define utility function in a tridimensional space and then look at the indifference curves, which are going to be circles

In order to see this, can think that instead of having only  $q$ , have now  $x$  and  $y$  as arguments of the utility function



Want a certain level of  $x$  and  $y$  such that they increase, if they increase too much they start going down

Take the preferences for number 2, the circles which has the same utility

The closer to the top, the more utility you have As go away and circles become larger and larger, the utility is lower

Circles are indifference curves: different points of  $x$  and  $y$  that have the same utility (as the definition of indifference curve itself states)

Graph should be similar to the sketch of proof of the median voter theorem: the difference is that in the median voter theorem there was one-dimensionality, while here there are two dimensions of the policy

Difficult to assess who is the median voter in the

multidimensional space: cannot rank people in a line, because we are in an Euclidian space

A and B are two parties, they position themselves in the Euclidian space

There are three voters, who are they going to vote for?

- Voter 1: votes for B because it is closer than A and provides an higher utility than A
- Voter 2 chooses A
- Voter 3 will go for B

Now party A will want to move: had it been in a unidimensional space, A would have moved closer to B and to the median voter, but now can move diagonally as well

Could possibly move to C: this will get the votes of 2 and 3 and B is going to lose

Similarly, now the one in B would be better off moving towards A and will win against C

In the multidimensional space, there are the **Condorcet cycles**: don't find an equilibrium, will just cycle around

If one party goes in a certain position, the other has an incentive to move and so on

Unless very strict conditions are given, there is no equilibrium in multidimensional space: the median voter no longer provides answers

# PROBABILISTIC VOTING MODEL

A model that might solve some of the problems of the median voter model

## Introduction

Majoritarian voting model for two opportunistic candidates (or parties)

Two candidates, opportunistic and not partisan

**Voters** care about policy component

Can choose policy which have economic impact on the voters, but on top of that can also choose more social policy which need not to have an economic impact on the voters

As a voter, may care about economic determinants, but also the foreign policy my country decides to have, because also have preferences on foreign issues

**Policy component** is what the party can choose in order to convince the voter to vote for them: instruments that the party have and that they can use to convince voters to vote for them

Can choose  $x$  and  $y$ : e.g. welfare state and foreign policy

**Novelty:** Voters have preferences over the policy implemented by the winner but also over the identity of the candidate [**ideological/sympathy component**]

When the voter decides who to vote he doesn't just consider his economic preferences, not just vote depending on what the party can do for the voter

Vote for someone who takes care of interests

Throw in something that has to do with the identity of the candidate – identity, ideology, sympathy, some shocks that may occur to the personality of the candidate before the elections

Difference between the type of policy that can control as a politician and those things that cannot be controlled

Voter will vote according to things the politician can control (policy) and the policy could be multi-dimensional: economic policy that the voter directly cares about, foreign policy... - things on which politicians can make choices

Then there are things that politicians cannot change – politician with a certain ideology cannot pretend to be different

People might feel sympathetic and close to the politician or hate him

Can change some stuff and other not

In addition, there is going to be a common shock that politicians will have to face before the election and that might it one candidate or another: little they can do to avoid scandals (strong assumption, always have some crisis management)

Three components

- **Policy**, what the politician will be elected upon
- The **sympathy component**, which is going to be idiosyncratic (each voter has its own preference on the politicians)
- **Popularity shock**: have some skeletons in the closet and with some probability this might come up just before the elections – might be unlucky and something that the politician did 10 years ago might come up and kill his election prospects or the same could happen to his opponent

Shock is going to be common to everyone: all the electorate sees the shock in the same way, not idiosyncratic

New concept: **"Swing" voter** rather than "median" voter

Politicians will target those people who are more willing to change their mind

Go for the guys who are more easily swayed

In terms of candidates, there are going to be two, A and B, in a simple majoritarian election

Each candidate is opportunistic: only cares about winning the election

Candidates – simultaneously but independently – Determine their Policy Platform

This again some sort of Nash equilibrium game

The Policy Platform Consists of two Issue ( $x$ ,  $y$ ) – for example: Welfare State and Foreign Policy

Multidimensional policy space



Individual voting behaviour for each single person will depend on three things

1. **Policy component:** how the policy platform affects the utility function – look at where politician place  $x$  and  $y$  and derive a value of the utility function for those policies: weight the policy of the two parties according to the indirect utility function
2. **Individual ideology** towards a candidate. Made up of the individual preference: closer to one party rather than another for orthogonal components not related to the policy (e.g. raised in a family where they loved party A and so also voter loves party A). This is the idiosyncratic element
3. **Scandal component:** everyone feels the same about the scandal  
Strong assumption: a lot of scandals taking place lately in which it is not necessarily true that people with different political orientation read the scandal in the same way  
If the scandal hits a politician from the voters' supported party, he will tend to downplay it, justify it

Voters share some common  $\alpha$  – which depends on the cleavage that is being observed

The voters can be divided into 3 groups of individuals according to their income

Partition people according to income because talking about a redistribution policy it makes sense to choose that specific cleavage – this partition might change, according to the cleavage under consideration

Individuals belong to group which are what politicians can target

Income groups: individual  $i$  but on top of this also belong to group  $j$  – which can be Poor, Middle Income, Rich

Indeed, doesn't have to be income: partition could be about geographical location, could be according to age, gender

This partition is important because it is the cleavage that the policy of the politician will use

To study the allocation of resources across local areas, can think about partition about where people live: the policy politicians choose is going to affect them according to the area where they live

To study a policy that is intergenerational (intergenerational transfers such as pensions), then will use partition based on age

When talking about the group, think about the fact that the partition is exactly related to the policy the politician will be using

When using a certain policy, politician knows that all people in a certain group will be affected in the same way

Tax more the rich and give money to the poor: hit on the rich, all the group of the rich will be affected negatively; give money to the poor, all the group of the poor positively impacted

Effect of the policy is at the group level

Proportions of people in certain groups  $\alpha_p$

There are going to be a certain share of people that are Poor, middle income or rich

The sum of all proportions should be equal to 1

Within each group there is heterogeneity: people have different views towards the two candidates

Individual preferences orthogonal to the preferences – something exogenous to the politicians

Whatever policy the politicians can change belongs to the first part (the policy component), but the ideological component is exogenous

Within each group there are going to be people of a certain type with respect to the ideology:

individual  $i$  belonging to group  $j$ : individual ideology is going to be measured by  $\sigma^{ij}$

$\sigma^{ij}$ : individual specific characteristics depending on the groups

Since I am individual  $i$  in group  $j$ , what is my ideology? Whether the voter is closer to A or B

$\sigma^{ij} = 0$ : indifferent towards the two parties

$\sigma^{ij} > 0$ : voter ideologically closer to candidate B

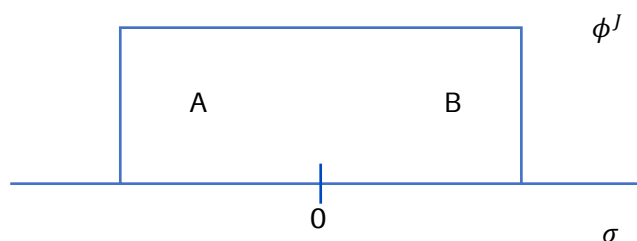
$\sigma^{ij} < 0$ : voter ideologically closer to candidate A

Naturally, if voter is closer to A he is further from B

### Individual ideology

Need to understand how people with different ideologies are distributed according to their group, related to the economic component that the party can target (rich, poor, middle income)

Assume that the distribution of ideology is uniform: strong assumption, but makes things simple



People with a positive sigma are more in favour of B, with a negative  $\sigma$  there are some in favour of A – there will be some in the middle that are indifferent between the two parties, some are equally distant from the party

Density  $\phi^J$  – density uniform and that tells how many people are in the distribution

If this is a uniform distribution, the individual at the upper bound is going to have a  $\sigma = \frac{1}{2\phi^J}$ , while the lower bound is  $\sigma = -\frac{1}{2\phi^J}$ : these are the types that are more ideologically extreme and less moderate

$\phi^J$  tells the height of the uniform distribution

The first description can be a description of how ideologically distributed the poor are

Can construct a new group with less people at the two extremes, more with a moderate position and still centred at 0 – think that this is the ideological distribution of the rich

The lower and upper bound now depend

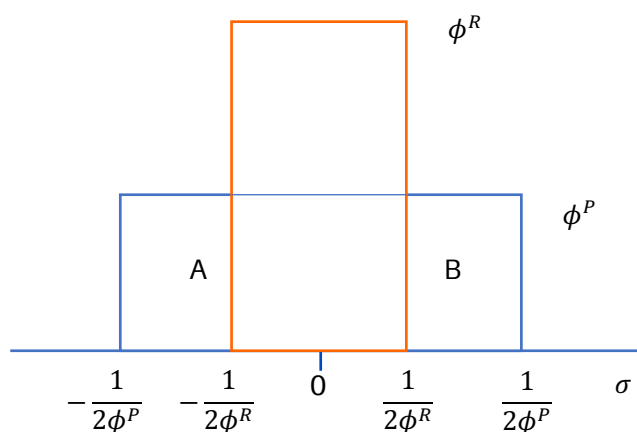
With this, learn that the rich care less about ideology, while poor people are closer to the extremes

If politicians, office seeking, use the policy to get re-elected – its easier to convince the rich rather than the poor, because the rich are less ideological

Difficult for party B to convince people at the other extreme of the spectrum to vote for them: would take a lot of concessions

Rich people easier to grab: want to try to convince the groups which are less ideological – easier to convince with the policy

Convince them with the tools: policy component – because cannot change the ideological component



Density crucial – statistics telling which group is more ideological and which group is less ideological

### POPULARITY SHOCKS

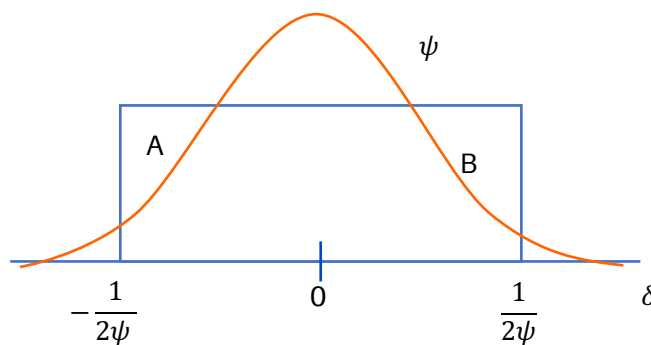
Right before the election something happens, and this might be in favour of one party or the other

Popularity shock is  $\delta$  (delta) – shock is common to everyone, regardless of the group

Extracted from a random distribution: you get lucky, you get very popular right before the election

Common to all voters: all see it in the same way

If something comes up about a politicians today, however, not all people are going to look at it in the same way: the opponents that are not going to vote for e.g. Trump will be even more convinced not to vote for him, but the guys from his party are going to still side with their candidate



Uniform distribution – probability of the shock happening

Something small could happen in favour of B if  $\delta > 0$ , something could happen in favour of A if  $\delta < 0$

At 0 there are no scandals

The two extremes the distribution takes value  $-\frac{1}{2}\psi$  and  $\frac{1}{2}\psi$

Policy chosen by party A would give people in group J a utility equal to

$$U^J = (X_A; Y_A)$$

This would be compared with the utility given by the policy of party B to the individual i.e.

$$U^J = (X_B; Y_B)$$

In the median voter model, less dimensions: only compared the utility given by policy  $X_A$  and  $X_B$

Here consider more dimensions

If  $\sigma$  and shock are positive, more in favour of B

Vote for B if the utility given by the policy chosen by them and individual preference and the common popularity shock is greater than the utility from party A

### TIMING OF THE GAME

1. **Electoral campaign:** candidates announce independently and simultaneously their policy platforms. The only thing they know at this stage is the distribution of the different groups, although he doesn't know the specific ideology of each individual, and the distribution of the shocks  
This is why they face the uncertainty of the shock  
Politician will try to maximise the probability of being elected but cannot know what happens when the shock hits
2. Before the election, a **shock** takes place that determines the average popularity of the candidates  $\sigma$
3. **Election:** Voters Choose their Favorite Candidate
4. **POLICY:** After the Election, the Winner Implement their Policy Platform

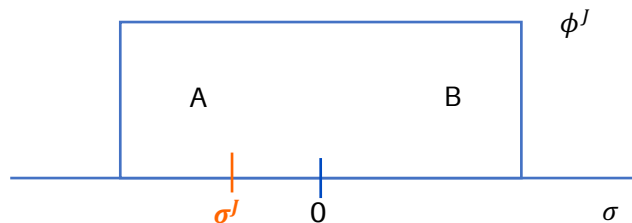
## SWING VOTER

$$\sigma^{ij} = U^j(X_A; Y_A) - U^j(X_B; Y_B) - \delta$$

Important: threshold such that if people are above the swing voter they vote for B, below the swing voter they vote for A

Never able to identify the swing voter – don't know  $\delta$ , because it gets realized after the politician chose the platform

Don't know where to put the swing voter in the uniform distribution: It is a random draw



Put it according to the slides to the left of 0 in orange

All the people with a  $\sigma$  below the swing voter will vote for A, all the people with  $\sigma$  above the swing voter vote for B – this is important because allows to count the number of votes the candidate gets

In the shoes of candidate A: try to maximise probability of winning

How many votes in this group?

Base times the height

**Number of votes =**

$$\left(\sigma^j + \frac{1}{2\phi^j}\right)\phi^j = \frac{1}{2} + \sigma^j\phi^j$$

Take the expression of the swing voter and substitute it inside this:

$$\text{Number of votes} = \frac{1}{2} + [U^j(X_A; Y_A) - U^j(X_B; Y_B)]\phi^j + \delta\phi^j$$

Get half of the votes plus the distance between the utilities in the two policies offered: if the difference is positive, provide more utility than the other party and gain votes – obtain  $\phi^j$  votes, the density, the height – how many people move to you

The difference could be negative: A is outplayed by B, B gains votes over A

When  $\delta$  is **positive**, it favours B: lose votes, because get hit by a scandal

When  $\delta$  is **negative**, it favours A: gain votes

If as good as the other candidate and there are no shocks, get exactly half of the vote and the swing voter is at 0

Swing voter help is a threshold used to understand who is in favour and who is not

To win the election, it is not about getting more votes among one group – need to sum up all the votes obtained across the groups and these need to be more than  $\frac{1}{2}$

Total number of votes for A has to be greater than  $\frac{1}{2}$  – use summation signs over J: sum the Rich, the Poor and the Middle income people

Importantly, the different groups might not all have the same dimension, so put weights for the groups:  $\alpha^j$  is the proportion of the group

Total votes is the vote obtained in all the groups so sum all of the individual components across the different groups through summatory elements:

$$\Pi_A = \sum_J \frac{\alpha^j}{2} + \sum_J [U^j(X_A; Y_A) - U^j(X_B; Y_B)]\alpha^j\phi^j - \sum_J \delta\alpha^j\phi^j$$

$\sum_J \alpha^j = 1$  because it is the sum of the proportion of the three groups, so 100%

$$\Pi_A = \frac{1}{2} + \sum_J [U^J(X_A; Y_A) - U^J(X_B; Y_B)] \alpha^J \phi^J - \delta \sum_J \alpha^J \phi^J$$

$\sum_J \alpha^J \phi^J$  is the average density in society

Sum of density in each group - number of people in each group

It is a measure of how polarised society is - just a parameter that will not be used

Try to **win the election**: that happens when

$$\Pi_A > \frac{1}{2}$$

$$\Pi_A = \frac{1}{2} + \sum_J [U^J(X_A; Y_A) - U^J(X_B; Y_B)] \alpha^J \phi^J - \delta \sum_J \alpha^J \phi^J > \frac{1}{2}$$

Cancel the  $\frac{1}{2}$  and move the element on the right

Win the election if:

$$\sum_J [U^J(X_A; Y_A) - U^J(X_B; Y_B)] \alpha^J \phi^J > \delta \underline{\phi}$$

$U^J(X_A; Y_A) > 0$  good thing, because win over opponent B

For candidate A,  $\delta < 0$  is a good thing: supposing that the difference in utilities is 0, to win the election is sufficient to have a shock in favour

Can be so good that win even though we are unlucky?

Cannot control luck - can be so good that regardless of the outcome of luck still win?

$$\sum_J [U^J(X_A; Y_A) - U^J(X_B; Y_B)] \alpha^J \phi^J = \underline{\delta}$$

When get elected?

Put down  $\underline{\delta}$  somewhere close to 0 -  $\underline{\delta}$  means that if the realization of the shock is below  $\underline{\delta}$ , A wins; if  $\delta$  is above  $\underline{\delta}$ , A loses

Realization of the shock is out of the hands of the party - cannot do anything about the realization of  $\delta$ , but can change  $\underline{\delta}$  and try to move it right, so as to increase the range for which elections are won: even if the shock hits, still win

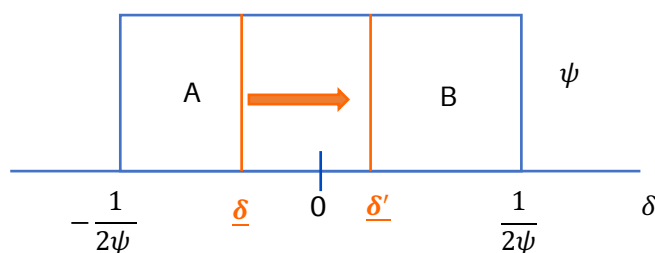
So good with the policy that even with a negative shock for A, still win

Increase the range over which I win, decrease the range over which I lose

This is a Nash equilibrium, so the actions of the players are symmetric

A pushes on the right, B people push it to the left - doing the same thing, in the end sit at 0, in the end who wins entirely depends on the shock

This model is used so as to understand what policy will be chosen so as to increase the probability of winning the election



Area over which we win:

$$\left(\underline{\delta} + \frac{1}{2\psi}\right)\psi = \frac{1}{2} + \underline{\delta}\psi$$

Probability of winning is

$$Prob\left(\Pi_A > \frac{1}{2}\right) = \frac{1}{2} + \psi \sum_j [U^J(X_A; Y_A) - U^J(X_B; Y_B)] \alpha^j \phi^j$$

$\psi$  just a parameter  
multiplied by  $\underline{\delta}$

Similarity: still look at what A and B do in their competition

This competition is now on X and Y, but looking at what happens on which single group

There is a choice to be made when choosing X and Y: when talking about redistributive policy, some group is going to be made better off and some other group will be worse off

Tension about who the politician wants to benefit and who gets to lose from the politician +

So shouldn't we think about several uniform distributions in which maybe the politician gets all the vote from that particular group and 0 from another?

When choosing X and Y, redistributing over J

If need to give more resources from one group and take resources from another, who to choose? It is going to depend on  $\alpha^j \phi^j$

For example, it might be that  $U^P(X_A; Y_A) > 0$ , but  $U^R(X_A; Y_A) < 0$  - so win the poor over the other guy

How many votes take home by favouring the poor and losing the rich? How large is going to be the prize, how many votes gained from that group and how many lost from the rich

Will be in favour of the groups that have high  $\alpha^j$  and high  $\phi^j$

Target the groups that are larger: if you win them, you get more votes

Also target the groups with higher density  $\phi^j$ , the parameter related to distribution

Prefer to target those groups that are less ideological

In this example, should target more the rich, because they are the less ideological and can be swayed more easily: Easier to convince the rich, because they are the ones with more money so they don't care about who to vote. Some redistributive policies - rich people less ideological, stark type of partition  
Among the poor, more difficult to sway people that are very polarized already - don't spend a lot of money on the people that will either vote for sure for you

Will choose a policy that targets the larger groups and the groups that are easier to convince, less ideological

No abstention here - if people were to abstain, wouldn't care, because would prefer to convince those that are actually voting

Elderly maybe less ideological and the more convinced by the economic determinants

Might be more salient to focus on the age cleavage

Convergence on the same policy platform: could be the median or the one of the middle class, but this is not necessarily the case

Convergence towards those who swing more and are easier to convince and the larger groups

Should target the people who are more active - if people abstain, not going to vote because don't trust politicians, not a swing voter but really hard to convince - money spent more efficiently in trying to convince other people

## LEGISLATURE STRUCTURE – MINIMUM WINNING COALITION MODEL

Post electoral model, model of bargaining called "Split a dollar"

Model in which look at the government body, e.g. the council of ministers, that has to decide how to allocate resources among different topics or alternatively, thinking of this as a negotiation among parties that have won the elections and now have to form the government

What happens behind the scenes AFTER the elections i.e. how the money is split

The legislature consists of

- $n$  members of districts: e.g. council of ministers splitting resources, but it might also be different districts splitting resources across regions
- Recognition rule that determines who makes the proposal: a rule designs who the chair person of this committee is – after this recognition there is a
- Amendment rule: proposal can be modified
- Voting rule: people vote on the modified proposal

Task: choose a non-negative distribution of one unit of benefits among members at majority voting

If there is 3, can decide to split 1 so that two share it and a third gets 0, but cannot have someone getting -1

**Proposal** is e.g. if there is three people, a vector with three components (how much X, Y and Z get)

Superscript  $i$  is the one making the proposal

Summing up all the  $x$ s have to get 1

If fight, no one gets anything and get a status quo vector = 0

**CLOSED RULE:** cannot make amendments to the proposal

Like the proposal and vote in favour

Don't like the proposal and vote against

Supposing that there are 3 people

First thing happening, there is a recognition rule e.g. throw a dice, decide randomly who gets to do the first proposal

Chair person supposed to be person number 1

Person number 1 makes the proposal

Two things can happen: vote

If the proposal is passed the game is stopped

Proposal accepted and split the money according to the rule – for the proposal to be accepted, need to have  $\frac{1}{2}$  of the people

If the proposal fails, start a new round – the person who made a proposal, loses the role as proposer and there is a new person recognized as chair in the second round

This occurs among equal members: need to be recognized initially who is the chair and that can also change

This is a repeated game

Discount the future payoffs – 1€ now is 1, but 1€ tomorrow is  $\delta 1$

Utility going to be  $\delta$  to the power of  $t$  times for  $x_j$  –  $j$  is who you are and  $k$  is who made the proposal

History of the game:

When making a decision think also about what happened in the past

Think who was the one who proposed before, what was proposed, what was voted

Remember also the previous rounds when choosing the new rounds on the line+

What is chosen will depend on the memory of the history of the game

Strategy will be a mapping of history in the current decision

There are two decisions that can be made

1. If you are recognized as a chair, can choose the vector



2. If you are not the chair, can vote yes or no

The chair does vote on their own proposal

Equilibrium is subgame perfect

Nature chooses: flip a coin, a random device tells who the chair person of the committee is  
Council of equal members and there is some device allowing to make an initial proposal, a way to split resources

The first person to make a proposal is person number 1: proposes vector  $x^1$

Cannot make amendment on the proposal and it gets voted immediately

Two things can happen

- Either the proposal is voted: the majority of the people agrees and the money is split
- No accord: a new person is recognised as the chair, makes a new proposal and the game goes on until one proposal is approved

If you are the chair once, you can be the chair also the second time – there can be no replacement

In order to understand decision of individuals, structure

**Discount rate:** has to do with preferences: want to get the money as soon as possible

If part of the budget is allocated tomorrow, the money received tomorrow is going to value less than the money received today

Discount rate is common to all members

If the player is also the recognized chair, he gets to choose the proposal

If he is not a chair, can only vote yes or no

When a decision is made or proposed, need to think about what has happened in the past

What has happened in the past matters for what is going to be done now

History of the game includes

- Who was recognized as chair
- What was proposed
- What was voted
- Need to know these for all the rounds of the game

Strategy tells how to map history into a motion or a vote

Equilibrium concept used is the subgame perfect Nash equilibrium

Think about closed rules (no amendment) and finite number of sessions

Consider two sessions only

1. Play today: if the proposal is accepted today, the game ends
2. If the proposal was not accepted yesterday, a new round is played. If the new proposal is accepted, the game ends; if the new proposal is refused, get the status quo, which is 0

Ties are broken in favour of the proposal

Backward induction: majoritarian proposal to give enough people enough money for the proposal to be voted

In the second period, need people to vote in your favour

Want to give the amount of money that allows to get to 50% of the vote

### Proposition 1:

A strategy configuration is a SPE for a two sessions,  $n$  (odd) members legislature with a closed rule and equal probability of recognition if and only if:

if recognized in the first session, a member makes a proposal to distribute  $\delta/n$  to any  $(n-1)/2$  other members and to keep to herself. If recognized in the second period, a member proposes to keep all the benefits;

each member votes for any first session proposal in which she receives at least  $\delta/n$  and votes for any second session proposal

Simplest possible environment we can think of

If happen to be the chair in the first session make a proposal to distribute  $\frac{\delta}{n}$  to  $\frac{n-1}{2}$

$\frac{R\delta}{n}$  is how generous we are going to be to other people:

$\frac{n-1}{2}$  is the people benefitted: that is what is needed to get a majority – need to get the minimum winning coalition: need to convince enough people so that myself and the others make up more than 50% of the voting groups

$\frac{n+1}{2}$  is the smallest number greater than  $\frac{n}{2}$

Since the total amount of money we had was 1, what is kept for the chair is  $1 - \left(\frac{\delta(n-1)}{2n}\right)$

In the next period, if recognized keep the money for the chair and tell all the others they get 0  
Because they are indifferent between 0 and 0 and ties are broken in favour of the proposal

Under this assumption, in the future will get 1 and leave 0 to anyone else

However, need to account for the probability of being recognized in the second period which is  $\frac{1}{n} \cdot 1 +$

$\left(1 - \frac{1}{n}\right) \cdot 0 = \frac{1}{n}$

$\frac{1}{n}$  is the expected payoff for tomorrow

Still, it needs to be discounted by  $\delta$ :  $\delta \cdot \frac{1}{n}$

Give to people today exactly their expected continuation payoff: what makes them indifferent between keeping money today and going into tomorrow and get 1 with probability  $\frac{1}{n}$  and getting 0 with probability  $\left(1 - \frac{1}{n}\right)$

If people are risk averse, they take the money today:  $\frac{\delta}{n}$  is the value of the lottery

Example:  $n=3$

Give a little bit less than 1/3 to all and keep the rest for itself

Numerical example

Win over one person and the other one

People in the first period would vote against the chair that proposes to keep 1 and give 0 to others, because there is a probability  $1 - \frac{1}{n}$  that the chair is not going to be reconfirmed at the second stage

When the game fails, Nature chooses and with 1/3 probability another person is going to choose

At that point, stage 2, can be sure that the chair will make a proposal such that the chair keeps 1 and the other get 0: something that will pass, because the alternative to vote against is the status quo (0, 0, 0)

In the second period, the proposal of the chair is always going to pass

So there is 1/3 probability of getting 1

At stage 1, will always vote against a proposal that gives 1 to the chair, because there is a 1/3 probability to get 1 at the second stage

Decision to give  $\frac{\delta}{n}$  is done in case we are the chair

In case the member is not the chair, each one will vote if they receive at least  $\frac{\delta}{n}$  and votes for any second session proposal

Being recognized: being called up to form the government

Have to decide who is going to be in the government – there are ideological reasons, but for sure, will need to target people so that there is a coalition government just up above the threshold

Minimum willing coalition: want to minimise the costs of being a coalition – want to minimize the amount of people with which to share resources

Never get to the second round of the game in equilibrium, but have to tell what happens in case we get to the node

The reason we don't get there has to be explained

Model used to explain redistribution in a divided society

Divisions along an economic element: typically employed VS unemployed

Second division is a more social/racial cleavage: black vs white

Policy is multidimensional: there are two instruments – unemployment benefit, instrument redistributing across employment status

If employed pay contributions, if unemployed receive transfers

Unemployment benefit is a transfer of resources from the employed to the unemployed

Affirmative action: quota on the jobs to minorities

How are the different groups of people going to combine to support one policy or another

## APPLICATION

Can think about 3 parties or coalitions that play a Legislative Bargaining

The three parties are:

White workers with high human capital: net contributors to the unemployment insurance, but they may not lose much from quotas because they are going to be unemployed anyway

White workers with low human capital: more likely to lose from affirmative actions – they are going to have reduced jobs as a consequence of quotas, but they are going to benefit from unemployment benefits

Black workers, both with high and low human capital: in favour of affirmative action

High human capital types are more likely to be employed so they dislike unemployment benefits

Blacks like Affirmative actions more than white

In presence of Affirmative actions, blacks like UB more than white controlling for Human capital

Preferences coming from utility functions

Try to share resources among the three types of groups

Main Result (Proposition 6): the possibility of affirmative action reduces the expected redistribution through taxes and UB

There is a potential alliance between high human capital white and black to lower taxes and Unemployment Benefits and increase the use of affirmative action

In the background is the idea of minimum winning coalition: what the two groups is to prefer affirmative action, detrimental to the white low human capital workers

The groups get together to choose a policy that is better than the one that would have been chosen alternatively

Alternative would have been more costly for the white high human capital – would have paid more from it

Can see coalitions that are awkward, strange in terms of ideology, that might come from the fact that they are convenient: black workers together with high human capital workers

# LOBBYING

Some groups or parties may try to lobby: exert some effort, provide some information, try to do something to sway the action of politicians in their way

Think about policy, often times regulations, which tends to have large impact on a small set of people and a much more moderate and sometimes irrelevant impact on much of the people

Typical example with a lot of losers and few winners

e.g. government setting up a market from being a perfect competition to a monopoly or oligopoly

Benefit the monopolist or oligopolist, giving concentrated benefits to those people – each consumer of the good will be hurt, thus some people will also stop buying the goods, while others will continue to buy but at a higher cost

Process that gives more power to some groups

**LOCAL PUBLIC GOOD PROVISION:** bridge, local redistribution

Think about 3 different groups of people, mainly in terms of defined in terms of geographical locations  
Geographical location allows to also talk about federalism

**Political process:**

1. Start with the social optimum determination
2. Complete fiscal federalism: Local public goods are determined locally
3. Partial fiscal federalism: Public goods are determined centrally [soft budget constraint] – healthcare: some things are decided at the local level, but the financing comes from the centre
4. Lobbying: consider what happens if one region is better than another at doing lobbying

## SOCIAL OPTIMUM

3 groups of individuals  $\{1,2,3\}$  with equal income  $y > 1$

Relative weights  $\alpha_1 + \alpha_2 + \alpha_3 = 1$

3 local public goods only benefits group  $i$  and is provided in equal per capita amounts  $g_i = \{g_1 + g_2 + g_3\} = 1$

Preferences for group  $i$  is given by the  $U_i = C_i + \ln(g_i)$  care about private consumption in group  $i$  and consumption of the local public good

Utilitarian social planner: a benevolent dictator caring about people in the country and care about them according to the weights and sizes of each group

**Social utility function**

$$U = \alpha_1 U_1 + \alpha_2 U_2 + \alpha_3 U_3$$

Will maximise the Utility function according to the public good  $\{g_1; g_2; g_3\}$

All the money in the economy is  $(\alpha_1 + \alpha_2 + \alpha_3)Y$

The total population is  $\alpha_1 + \alpha_2 + \alpha_3 = 1$

$Y$  is the total available amount of money and can choose to divide it by doing

Resource constraint: given a certain amount of resources  $Y$ , can split it among different groups

$$(\alpha_1 + \alpha_2 + \alpha_3)Y = \alpha_1(c_1 + g_1) + \alpha_2(c_2 + g_2) + \alpha_3(c_3 + g_3)$$

By being the social planner, can allocate resources as one wants: on the right hand side resource allocation

Only constraint is that there is a maximum amount of resources  $Y$  to respect

$$Y - \alpha_1 g_1 - \alpha_2 g_2 - \alpha_3 g_3 = \alpha_1 c_1 + \alpha_2 c_2 + \alpha_3 c_3$$

**Welfare function** to maximise is going to be

$$U = \alpha_1(c_1 + \ln(g_1)) + \alpha_2(c_2 + \ln(g_2)) + \alpha_3(c_3 + \ln(g_3))$$

Subject to the constraint

$$Y - \alpha_1 g_1 - \alpha_2 g_2 - \alpha_3 g_3 = \alpha_1 c_1 + \alpha_2 c_2 + \alpha_3 c_3$$

The weights are also present inside the utility function: can substitute them and substitute the right hand side of the resource constraint inside the welfare function to maximise

$$\max_{\{g_1+g_2+g_3\}} U = \alpha_1 \ln(g_1) - \alpha_1 g_1 + \alpha_2 \ln(g_2) - \alpha_2 g_2 + \alpha_3 \ln(g_3) - \alpha_3 g_3 + Y$$

Social planner has to choose  $\{g_1 + g_2 + g_3\}$

When the social planner increases  $g_1$ : gives more public good to group 1, but at the same time give less private good – trade off also occurs for  $g_2$  and  $g_3$

FOC with respect to  $g_1$

$$\frac{\alpha_1}{g_1} - \alpha_1 = 0$$

Marginal increase in the welfare function of the social planner when providing one more unit of public good to the people in group 1

This comes with a cost: less private consumption, that makes the citizen unhappy  $-\alpha_1$

Marginal utility of private consumption is going to be  $-\alpha_1$

Increase in marginal utility has to be equal to the marginal decrease in utility

Social planner is going to choose the optimal amount of public good which is 1

$$g_1^* = 1$$

$$\frac{\alpha_2}{g_2} - \alpha_2 = 0$$

$$g_2^* = 1$$

$$g_3^* = 1$$

Social planner treats the three groups equally and provides all of them with the same level of public good equal to 1

By choosing a level of public good and given the resource constraint is forcing on public and both private consumption

Social planner takes all the resources from the individuals: taxed all the income and then the social planner gives back public and private consumption

How can do this? Decentralize choices in some ways

This is the social planner maximising the social function: the best we can do for these people

Results could be different according to the different types of environment faced

## COMPLETE FISCAL FEDERALISM: LOCALLY DETERMINED PUBLIC GOOD

Each area independent, each makes their own decision – in region 1 they do something, in region 2 they do the same thing because they face exactly the same constraints and have the same incomes  
Fully decentralized provision

Each group  $i$  chooses to tax its members at a certain tax rate

Budget constraint for the individual is:

$$C_i = Y - \tau_i$$

Person in region  $i$  has an income  $Y$  and pays taxes equal to  $\tau_i$

$$g_i = \tau_i$$

Taking one euro taxes, convert it into one euro of public good

For each individual, utility function is going to be

$$U_i = C_i + \ln(g_i)$$

After taxes, no meaningful economic decision. Pay taxes, whatever is left is consumed

$$U_i = Y - \tau_i + \ln(g_i)$$

Taxation and public good are part of the same policy chosen by the government and indeed know that the choice of the public good and the choice of the taxes are linked: instead of writing  $\tau_i$  can write  $g_i$ , exploiting the fact that the government budget constraint makes the two equal

$$U_i = Y - g_i + \ln(g_i)$$

This is the INDIRECT UTILITY FUNCTION: entirely written in terms of the public good, i.e. the policy decided

To have more public good need to pay more for it, that is, tax more - that is the case of full decentralization

What is the optimal choice of  $g_i$ ?

Maximise the indirect utility function with respect to  $g_i$

FOCs with respect to  $g_i$

$$-1 + \frac{1}{g_i} = 0$$

Getting more public good, reduce private consumption because pay more taxes

As individual in the region immediately see the trade-off

To have more public goods, also have to pay more taxes and reduce private consumption

The benefit of  $g_i$  is given by  $\frac{1}{g_i}$  and on top of that pay a cost -1

The result is that

$$g_i = 1$$

Each region will want the same level of public good provision, equal to the one chosen by the social planner

A case in which by decentralizing the public good provision, get the same result as in the case of social planner

Aggregate spending is

$$g = \alpha_1 g_1 + \alpha_2 g_2 + \alpha_3 g_3 = 1$$

That is because  $g_1 = g_2 = g_3 = 1$  and  $\alpha_1 + \alpha_2 + \alpha_3 = 1$

## CENTRALLY FINANCED PUBLIC GOOD

Aggregate budget constraint is going to take a different form from the previous cases

Now it is going to be equal to the total spending equal to  $\tau$  (because ask the same tax rate to all groups), multiplied by the three groups

$$\alpha_1 g_1 + \alpha_2 g_2 + \alpha_3 g_3 = \tau(\alpha_1 + \alpha_2 + \alpha_3)$$

Tax rate no longer group specific

Individual utility remains the same

$$U_i = C_i + \ln(g_i)$$

Value private and public consumption at the same time

$$C_i = Y - \tau$$

Equal among all groups because all pay the same

Choose what to spend at a local level, the tax rate is chosen at central level

Take utility function for group  $i = 1$

$$\begin{aligned} U_1 &= C_1 + \ln(g_1) \\ U_1 &= Y - \tau + \ln(g_1) \end{aligned}$$

Take the  $\tau$  from the aggregate budget constraint to reduce the dimensionality of the problem and to see the problem in terms of only one variable

$$U_1 = Y - \alpha_1 g_1 - \alpha_2 g_2 - \alpha_3 g_3 + \ln(g_1)$$

Utility function of the first region depends positively on how much the region spends on the local public good provision, negatively on how much the region spends ( $-\alpha_1 g_1$ )

But now also have that the level of public good that the regions 2 and 3 are giving to themselves comes into the utility function of the first region

Pay for the public good provision for the other regions to some extent - not fully because there is an  $\alpha$  in front of it

To choose  $g_1$ , maximise the utility function with respect to  $g_1$

Get more public goods, but have to pay taxes on it

FOCs becomes:

$$-\alpha_1 + \frac{1}{g_1} = 0$$

Increase in the marginal utility remains the same

But now the marginal cost of the public good has shrink because  $-\alpha_1 < 1$

Internalize only a share of the cost

Pay only 1/3 on the share of the public good provision, not everything

$$g_1 = \frac{1}{\alpha_1}$$

Since  $\alpha_1 < 1$ , the entire fraction is bigger than 1

Spend more than would have in other case: this is what happens when there are soft budget constraints

In the previous case, internalizing everything, while here only internalize  $\alpha_1$  of it, not everything - incentive to spend more

However also the others are going to do exactly the same and provide on the basis of what they internalize

$$g_2 = \frac{1}{\alpha_2}$$

$$g_3 = \frac{1}{\alpha_3}$$

The total bill is going to be

$$g = \alpha_1 g_1 + \alpha_2 g_2 + \alpha_3 g_3$$

$$g = \alpha_1 \frac{1}{\alpha_1} + \alpha_2 \frac{1}{\alpha_2} + \alpha_3 \frac{1}{\alpha_3} = 3$$

Spend much more than in the social optimum case

Individuals not fully internalizing their choices and the cost of the public goods

On top of that small groups spend more, since they internalize even less

What happens if  $\alpha_1$ ,  $\alpha_2$  and  $\alpha_3$  are all different?

$$\alpha_1 = 0.1, \alpha_2 = 0.5, \alpha_3 = 0.4$$

$\alpha_2$  knows they are going to pay half of the bill, so it is going to be more self-conscious

$\alpha_1$  is paying a tenth of the bill: region 1, smaller and weighs much less on the cost of the entire country, is going to overspend more than the largest region which is going to pick up a larger share of the bill  
Concentration of benefits within each group (due to a local public good) and dispersion of costs (due to general taxation) leads to **OVERSPENDING**



## LOBBYING

When talking about lobbying, think about another way of providing public goods: think about the three regions as three actors that try to convince the politicians to favour them

Politicians are to a certain extent social planners that want to maximise the utility of everyone

But at the same side they have a selfish side in which they want to get contribution from the lobbyists

Model with a parameter that allows to understand what type of politicians we have:

- If entirely a social planner type, lobbyists can't do anything about the choices of the politician.
- But if you care about the contributions, they can use them to change the behaviour of the politician

Lobbying looks very similar to corruption in the model: talk about politicians getting resources from these groups

But that is not only what lobbyists do

In real life, lobbying is not only about shifting resources

Lobbying outside of the model is the action of people, firms providing information to officeholders in the government who might lack those information

Crucial aspect is information provision: provide that as a lobbyist

Need to give information to policy makers – so need to have access to politicians or cannot have lobbyists

### **The strategic communication of politically relevant information to government officeholders**

Activity which spends much more money than political campaign donations by order of magnitude and is becoming more and more important as an industry virtually everywhere

Many sectors depend directly or indirectly on government regulations

e.g. Sectors such as telecommunications have prices that are strictly related to regulations

Also other aspects are present:

1. Increased awareness of non-market issues: businesses realised that often it is not all about selling products
2. Growing lobbying industry on the supply side;
3. More watch dogs;
4. Increasing role of the media

Reason why policymakers might allow the access of lobbyists is related mostly to information

Policy makers do not have a knowledge in any particular sector: they take decisions on many different things but the knowledge that they have of specific sectors is very limited, as well as having limited time to make laws on different things

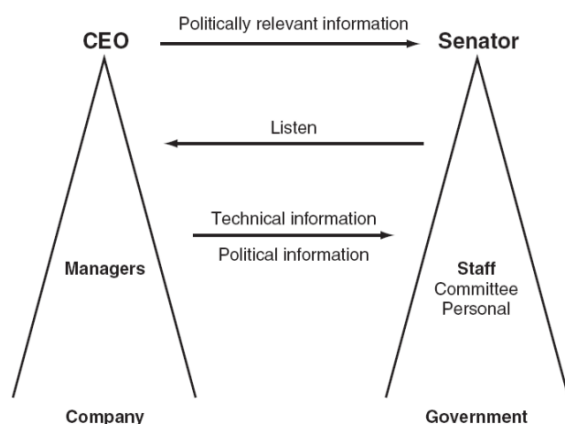
Rely on information being provided by bureaucratic structure in the ministries but often also from the outside environment: lobbyists have a privileged path to provide information to politicians

Type of information provided:

- **Technical information:** Consists of data and predictions about the consequences of alternative policies  
When pricing a national monopoly, need to have some understanding of fixed and the marginal costs: these info not easy to obtain.  
Lobbyists might convince politicians of what is the type of investment needed and what are the true costs of productions
- **Political information:** Pertains to the impact of an alternative on the constituents or policy interests of an officeholder  
Present in countries where the lobbying process is more developed  
Figure out who are the pivotal figures in the country's parliament and try to understand who are the politicians that have a specific sensibility towards some policies and provide them political information

e.g. Lobbyist wants to have subsidies or a regulation passed. The story to tell is that unless regulation is passed and provided, there might be people that are fired, maybe in specific areas: might want to find who are the representatives of those areas and inform them

In some countries more developed lobbying industry than another so this might not be present everywhere



Multilevel lobbying: there will be CEOs from top firms talking to top politicians  
Then it will be the job of the respective staffs to figure out the details of what has been decided at higher level

Some principles of effective lobbying: very related to communication strategies, more and more relevant in the last 20 years  
To the extent that lobbying is about providing information, how that is done is about what kind of communication strategy is used  
Communication more relevant recently for reasons related to social media, populism, etc.

Lobbying in a way is a mix of science and art: need to have hard fact, technical information related to the specific sector as well as political information: need to know institutional details to talk to the right people at the right time  
Need to know the specifics of the legislative process to do that

Why do politicians even listen to the lobbyists?

They do have incentives to back up their firms, they might say things that are not credible  
There can be lobbying done by a single firm autonomously or lobbying done by lobbying firms on behalf of other businesses

Especially when thinking about lobbying firms rather than single firms, these rely on their credibility: if they sell out wrong information, they go out of business  
This is why often times there are studies behind these phenomena

One of the important things that firms sell is access to politicians: many firms try to create occasions for the politicians to talk to top CEOs

43% of former MPs (1998-2005) in the US Parliament became lobbyists

For some years cannot move to lobby firms from the Parliament

Often firms and companies can enter in a bargaining situation with politicians

Dangerous business: information might sway policy in a way that makes it further away from the social optimal

A lot of controls, particularly in the US but also in the EU these controls are growing

Situation in which one region is better at influencing lobbying and put pressure on politicians  
Very specific, because lobbying is usually about providing information rather than rents and information

It can be more general

How is the social planner going to modify his choices when there is lobbying?

Assumptions:

Group 1 forms a lobby, whereas group 2 and group 3 don't

Why are some groups better than other, more prone to form a lobby whereas some other don't?

AA lobby will take action to obtain a favourable public good allocation

How do you solve free riding problem in lobbying groups?

How do we convince politicians? Choose to make some contributions

What kind of payment scheme to use?

Could give a lump sum to the politician: transfer in which do not incentivise them to do something for us

Give contributions in a contingent way: give some transfer, contribute to the electoral campaign but will do this according to the level of local public good sent to the group 1

Logic of principal agent model: owner of the firm, need to have people going around to sell stuff and have to decide how to compensate them

Contract is as incentive compatible as possible

Proposed contribution:

$$K_1(g_1) = U_1(g_1) - b_1 \geq 0$$

Contribution could be a fixed amount that doesn't incentivise politicians a lot or can make them be the last resort of the contract: on one extreme can just give a fixed amount, on the other, give the entire amount of money that is related to the local public good provided and keep only the fixed amount provided

e.g. mechanism between manager and seller

Every month return back just a fixed amount: maximised the amount of incentive given

Above that transfer that has to given back to the principal, agent will keep all the money for himself

The lobby Gives contribution equal to the difference between the utility of the lobby and a fixed amount

$b_1$ : the level of utility that group 1 keeps for itself and everything else is given to the politician

Utility for the lobby group depends on the level of public good provided  $U_1(g_1)$

Transfer to the politician is  $K_1(g_1)$ , that depends on the public good

Ask to give back a fixed amount and keep the rest for the politicians - highest possible incentive for the politician to send local public goods to group 1

$$U_1(g_1) - K_1(g_1) = b_1$$

The more utility given by the politician the more the lobby keeps

The government behaviour is modelled by the parameter  $\eta$

A government cares about the social welfare but also about the contributions they get from the lobbyists

On the one hand have the social welfare function and also the part that wants to have the contributions

$\eta$  is the parameter that shapes this interest

$\eta$  closer to 1 - care about social welfare a lot

$\eta$  goes to 0: care only about the contributions of the lobbyists

**OBJECTIVE FUNCTION of the government:** second part is specific, only pertains to the government and doesn't have any welfare component in it

$$W(g_1; g_2; g_3) = \eta(\alpha_1 U_1 + \alpha_2 U_2 + \alpha_3 U_3) + (1 - \eta)\alpha_1 K_1(g_1)$$

The  $\alpha_1 U_1 + \alpha_2 U_2 + \alpha_3 U_3$  part is the same discussed in the social optimum

$1 - \eta$  indicates how much he cares about the contributions of the lobby

If  $\eta$  goes to 1, social planner - if  $\eta$  goes to 0, care only about contribution

$K_1$  is  $U_1(g_1) - b_1$  - can rewrite the entire thing in terms of U and b

$$W(g_1; g_2; g_3) = \eta(\alpha_1 U_1 + \alpha_2 U_2 + \alpha_3 U_3) + (1 - \eta)\alpha_1 [U_1(g_1) - b_1]$$

$$W(g_1; g_2; g_3) = [\eta\alpha_1 + (1 - \eta)\alpha_1]U_1 + \eta(\alpha_2 U_2(g_2) + \alpha_3 U_3(g_3)) - (1 - \eta)\alpha_1 b_1$$

$$W(g_2; g_2; g_3) = \alpha_1 U_1 + \eta(\alpha_2 U_2(g_2) + \alpha_3 U_3(g_3)) - (1 - \eta)\alpha_1 b_1$$

Group 1 has utility weighted by the size

Group 2 and 3 have their utility weighted by  $\eta$ , which is less than 1

If  $\eta$  is equal to 1, go back to the social planner

If  $\eta$  is equal to 0, the government completely disregards group 2 and group 3

Maximises the function with respect to some constraints

Constraint for the government: aggregate budget constraint

Total amount of resources have to be divided among the different groups

$$\alpha_1 g_1 + \alpha_2 g_2 + \alpha_3 g_3 = \tau(\alpha_1 + \alpha_2 + \alpha_3)$$

With  $\alpha_1 + \alpha_2 + \alpha_3 = 1$

The right hand side is the total amount of resources, which is equal to the total amount of contributions provided to the government

Constraint for the individual

$$U_i = C_i + \ln(g_i)$$

$$C_i = Y - \tau$$

$$U_i = Y - \alpha_1 g_1 - \alpha_2 g_2 - \alpha_3 g_3 + \ln(g_i)$$

Have private consumption given by income minus the taxes paid to provide public goods. On top of that, get some utility from the provision of the public goods

Maximise the objective function with respect to  $g_1, g_2, g_3$

Choose the level of public goods for the society

$$\max_{\{g_1+g_2+g_3\}} W = \alpha_1 U_1 + \eta(\alpha_2 U_2(g_2) + \alpha_3 U_3(g_3)) - (1 - \eta)\alpha_1 b_1$$

$$W = \alpha_1[Y - \alpha_1 g_1 - \alpha_2 g_2 - \alpha_3 g_3 + \ln(g_1)] + \eta(\alpha_2 Y - \alpha_1 g_1 - \alpha_2 g_2 - \alpha_3 g_3 + \ln(g_2)) + \eta\alpha_3(Y - \alpha_1 g_1 - \alpha_2 g_2 - \alpha_3 g_3 + \ln(g_3)) - (1 - \eta)\alpha_1 b_1$$

FOC with respect to  $g_1$

$$\alpha_1 \left( -\alpha_1 + \frac{1}{g_1} \right) - \eta\alpha_2\alpha_1 - \eta\alpha_3\alpha_1 = 0$$

For people in group 1: marginal disutility of paying higher taxes + marginal utility of having more public good

Three negative terms related to the fact that financing the public good comes from taxing the other groups

Entire expression is multiplied by  $\alpha_1$ , which is positive, so can just delete it

Government decides the local public good

The government is going to treat different groups differently according to the different parameter

Move the negatives to the other side

$$\frac{1}{g_1} = \alpha_1 + \eta\alpha_2 + \eta\alpha_3$$

$$g_1 = \frac{1}{\alpha_1 + \eta\alpha_2 + \eta\alpha_3} > 1$$

The whole denominator is going to be less than 1 - the entire fraction is greater than 1

Give to group 1 more than they deserve

FOC with respect to  $g_2$

$$-\alpha_2\alpha_1 - \eta\alpha_2\alpha_2 + \frac{\eta\alpha_2}{g_2} - \eta\alpha_3\alpha_2 = 0$$

Get rid of  $\alpha_2$  as before, keep the positive on the left and get the rest on the right

$$\frac{\eta}{g_2} = \alpha_1 + \eta\alpha_2 + \eta\alpha_3$$

$$g_2 = g_3 = \frac{\eta}{\alpha_1 + \eta\alpha_2 + \eta\alpha_3} < 1$$

Lobbying makes spend more on the provision of public good for group  $g_1$  and less public good provision for group  $g_2$  and  $g_3$

If  $\eta$  is equal to 1: back to social planner and

$$g_1 = g_2 = g_3 = 1$$

If  $\eta$  is equal to 0:

$$g_1 = \frac{1}{\alpha_1}$$

$$g_2 = g_3 = 0$$

$g_2 = g_3 = 0$  - log of 0 is  $-\infty$ , people have almost negative infinity utilities but the government doesn't care about it because only care about group 1

Get a misallocation of resources due to lobbying

Some people are getting more, some are getting less - in the extremes, only one will get everything, the other not

In the model there is no presumption of aggregate overprovision: cannot tell if we are spending more or not, can only tell that there is misallocation

What makes one group more likely to lobby than another: related to the free riding problem

Lobbying groups face a free-riding problem: if other members of the group lobby contribute for me, why bother?

e.g.: Decrease in union density (but not coverage), as well as enrolling into a union

If a union exists, they provide benefits for all the workers, regardless of whether one is enrolled and paid to be part of the union itself

Some groups are better equipped to avoid free-riding problem: solve it if there is more information and more monitoring between people

e.g. Belonging to a union if part of a small factory: people know whether you signed up to the union or not; monitoring doesn't work if people work online

Easier to do lobbying if the group is smaller, even though it might be more difficult to get the public good provision if it is not very diffused

It depends on the type of lobbying done

Concentration of benefits: if gain little from the lobbying, not going to do that

e.g. changes in regulation affecting large groups

e.g. changes in regulation of taxi concentration of benefits is strong as well as the monitoring

Which groups are more likely to lobby?

- Less free-riding
- Smaller groups
- More concentration of benefits

# AGENCY MODELS

What is the role of elections in providing selection and accountability for politicians

Politicians are people that have their own incentives but may differ along two dimensions: the effort that they decide to make

On the one hand, they have to be convinced to make the right thing: models of accountability, in which elections will work as accountability devices

If don't behave, will be kicked out at next election

Models of selection of politicians: politicians might be of different types

Some politicians are good, some are bad but this is intrinsically related to who they are

Some politicians have high balance, so they are good

Others have low balance

Elections intended as moments in which to keep the good ones and get rid of the bad ones

Elections can have two different roles:

- Provide accountability to the politicians because politicians are all the same
- Elections as selection devices

## ACCOUNTABILITY MODELS

Politicians sent to parliament on behalf of the citizens

Alternative is to ask agents a commitment policy: tell exactly what is going to be done beforehand

These don't really work if the world is uncertain

Might happen that politicians have to take decisions in a world that is different from the one that was there during the elections

Delegate decision making to politicians because need them to make decisions on the spot as the world around them changes

Want to give discretion to the politician to choose policy after the state of the world has been observed

Three models

- Elections as accountability: politicians similar, convince them to do the right thing - FULL INFORMATION and then ASYMMETRIC INFORMATION

Information about the state of the world that the politicians will face

- Asymmetric information model is the one in which the politicians know more than the voters
- Career concerns: selection model

## ELECTIONS AS ACCOUNTABILITY

Elected Incumbent Politicians with full discretion over the policy - delegated by the voter to take decisions

Voters have to decide whether to keep the incumbent or to substitute him/her with another candidate

Politicians are Office-seeking: talk about rents, current rents, future rents

Voters can be homogeneous or heterogeneous (in income)

Policy ( $q$ ) consists of public good provision ( $g$ ), political rent ( $r$ ) and an income tax  $\tau y^i$

Policy in which get some money from the voters through taxation and then can either use money for public good provision or for political rents for the politician

Political rents can be read in many ways e.g. corruption

e.g. need money to run the party

Politician wants to be there and take some part of the pie: want to be sure to limit their power

The Main cleavage between Voters and Incumbent Politician is on rent extraction by Politicians

Politicians take resources through taxation from the people

They give back that money in the form of public good but some of the money remains in the hands of the government

Complete or Asymmetric Information between Incumbent Politician and Voters on the state of the world

## Model setup

Government Budget Constraint

$$\tau y = \theta g + r$$

$\tau y$  amount of total revenue obtained from taxation that is used to provide the public good or the rent where  $\theta \geq 1$  is the cost of providing the public good

A sort of production function of the public good

There are states of the world in which  $\theta$  is high and producing public good is very costly for the government

e.g. whether in boom or in an economic recession

If in a boom, easier to produce the public good by getting revenues from the people

$\theta$  is the shock at the beginning and the reason why might want to delegate, especially if the voters don't know it but politicians do

**Incumbent objective function:** made up by current rents and future expected rents

How much  $r$  is taken today will have an impact on how much the politician will get tomorrow

There is an election between the two periods:  $p_i$  is the probability of being re-elected

$$E(v_i) = r + \delta p_i R$$

Future rents  $R$  can be future monetary rents or ego rents

## Voters utility

$$W(q_i) = C_i + H(g)$$

$$C_i = Y - \tau y$$

$$C_i = Y - (\theta g + r)$$

Income minus taxes to be paid: can make this heterogeneous so as to have different incomes in the model

$\tau y$  is a proportional tax on income

$$W = [Y - (\theta g + r)] + H(g)$$

Individual likes the public good: realize that it is going to be costly

So if want the public goods, increase taxes

But don't like the rents, because they always enter negatively

Can find the bliss point of the voter

$g^*$  - optimal level of public policy obtained from the FOCs of the utility function

$$-\theta + H'(g) = 0$$

Voter would want an optimal  $r^* = 0$  because it is something that you only pay out, only for politicians

## Timing of events:

1. the cost of providing the public good,  $\theta$ , is realized and observed by everyone (voters and politicians)
2. Voters decide a reservation utility,  $\bar{w}(\theta)$ , for re-electing the incumbent: voters look at the individuals to decide whether they have done good enough
3. The Incumbent Politician set the policy,  $q_i = (g, r, \tau)$
4. Elections take place between the Incumbent and an Opponent

Voters fix the threshold and decide what is well enough

Voters are Homogeneous in Income (and thus in their preferences) - they are going to do the same thing, because they are all the same

Voters coordinate to punish the Incumbent Politician, if the utility they obtained from the Incumbent in office was too low

Keep the incumbent if the incumbent provides a certain level of utility and not otherwise



$$p_I = \begin{cases} 1 & \text{if } W(g(\theta), r(\theta)) \geq \bar{\omega}(\theta) \\ 0 & \text{otherwise} \end{cases}$$

Voters are going to keep the incumbent if the incumbent provides a utility which is at least as large as  $\bar{\omega}(\theta)$

$\bar{\omega}(\theta)$  is the threshold above which keep the politicians and below which don't

If the politician give more utility, keep them, otherwise keep them out

Have to decide where to pitch this level

$\bar{\omega}(\theta)$  depends on  $\theta$ : individuals observe the state of the economy or of the pandemic

If the state of the economy is bad, going to settle for lower utility

If the state of the economy is good, going to ask more out of politicians

Utility is contingent on the state of the world

Politician is facing a tradeoff: should he give enough public good to the voter so that they elect him again and he stays in office also tomorrow?

Either the politician can do everything in favour of the voters so he will get re-elected tomorrow and gets  $r$

The other alternative is to take everything today and then walk away - don't care about being re-elected, so just take everything today and forget about tomorrow

The incumbent sets up  $g^*$  so as to give a high enough utility to the voters

To please the voter: need to give them the public good that they want  $g^*$  but now also know that they would like to leave 0 rents (because when taking rents increase taxes and so decrease their utility)

$$r(\theta) = y - \theta g^* + H(g^*(\theta)) - \bar{\omega}(\theta)$$

Utility  $W \geq \bar{\omega}(\theta)$

$$y - \theta g^* - r + H(g^*(\theta)) = \bar{\omega}(\theta)$$

Know that need to give them what they wanted so as to be re-elected

The level of rents is going to be related to the

If plunder the voters and get re-elected, the expected utility is going to be

$$r(\theta) + \delta R$$

Total utility, today and tomorrow, that corresponds to get re-elected

The alternative to get everything today: the best that can be done is to put a tax rate of 100%, give them 0 in terms of public good and get all  $r$ , which is going to be equal to  $Y$

Expected utility is  $Y$

Prefer to be re-elected if

$$r(\theta) + \delta R \geq y$$

This important to know for the voter

Voter requires such a high level of utility that do not allow for any rents - not convenient for the politician to convince voter to be re-elected, so the politician will just take all the money today

What is the minimum level of rents to give to the politician so that they don't run away with the money is to allow rents to the politician to the extent that they are indifferent between behaving and remaining for two periods or running away

$$r(\theta) + \delta R = y$$

If they have no incentive to be re-elected, they become unaccountable

Maximum amount of rents allowed for the politicians is

$$r(\theta) = y - \delta R$$

In order for politicians not to walk away with all the money, cannot be too strict  
 Have to allow for some rents to be appropriate for the politicians  
 The optimal amount of rents depends on  $\theta$ : assume that we can all observe the state of the world, because there is perfect information  
 In a model like this, as long as  $r(\theta) + \delta R = y$  is satisfied, in elections incumbents are always re-elected  
 Can always keep them at the same level of rents

## ACCOUNTABILITY WITH ASYMMETRIC INFORMATION

Environment changes: asymmetric information on the state of the world

Politicians know what the state of the world is but voters don't

Politicians have an interest in showing that the state of the world is bad, because if they give voters lower  $g$  they can keep more rents from them

Asymmetric information provides **information rent**: can use this information to get more rent than expected

As a politician can convince voters that it is not possible to provide public goods because of the bad state of the voter

Voter still wants to judge politicians according to the level of utility provided, but now these cannot be made contingent on the state of the world provided

There are some states of the world in which politicians are going to be very happy to provide utility: can accommodate requests of the voters at low costs

There are going to be other states in which providing is very expensive

As a politician, if the state of the world is such that providing public goods is too expensive, take all the rents and give up any chance to be re-elected

In some cases, since the bar is set by the voter at the same level regardless of the state of the world, the politician will either do what the voters want (if it is not too expensive) or just take the rents and walk away

Voters still decide on reservation utility

Incumbent politician will satisfy this reservation utility and be re-elected only in some states of the world, while in others, better to leave

### Timing of events

1. the cost of providing the public good,  $\theta$ , is realized, but it is observed by the incumbent politician only
2. Voters decide a reservation utility,  $\bar{w}$  for reelecting the incumbent: now threshold is a fixed number
3. Contingent on the cost of providing the public good,  $\theta$ , the Incumbent Politician set the policy,  $q| = (g, r, \tau)$
4. Elections take place between the Incumbent and an Opponent

Voters still coordinate to punish the Incumbent Politician, if the utility they obtained from the Incumbent in office is too low - but they cannot observe  $\theta$

$$p_I = \begin{cases} 1 & \text{if } W \geq \bar{w} \\ 0 & \text{otherwise} \end{cases}$$

For the incumbent, now the policy chosen is going to be state contingent

If the cost of providing the public good is low  $\theta \leq \theta^*$ , will provide the public good, otherwise not

Again the Incumbent faces a Trade-off between current and expected future rent, which now depends on the realization of  $\theta$ . The incumbent optimal policy is

$$W = \begin{cases} \varpi & \text{for } \theta \leq \theta^* \\ 0 & \text{for } \theta > \theta^* \end{cases}$$

Where

$$y - \theta g^* - r + H(g^*(\theta)) = \bar{\omega}$$

There is some level  $\theta^*$  such that below this level it is going to be convenient to provide the public good, above it no

$$E(W) = \int_{\underline{\theta}}^{\theta^*} \varpi \cdot dF(\theta) + \int_{\theta^*}^{\bar{\theta}} 0 \cdot dF(\theta)$$

When  $\theta$  is between theta lower bar and theta upper bar, the politician will be willing to provide me with the utility I want

When  $\theta$  is above theta star the politician will prefer to

$\theta$  is the state of the world: think that its evolution evolves according to a normal distribution

If  $\theta < \theta^*$ , they will be happy to provide public good, if above it, the politician pays taxes

If the voters ask more, they provide more, but they lower the threshold

Tradeoff between the quantity obtained and the probability of getting it

Tradeoff given by the fact that politicians are considering the rents constraint

$$\begin{aligned} r(\theta) + \delta R &= y \\ r(\theta) &= y - \delta R \end{aligned}$$

Direct link between the request of the voters and the level of  $\theta$  such that the politicians will be willing to be re-elected

For the voters there is going to be a difference

Want to have a rent which is at least equal to  $y - \delta R$  in order to be willing to be re-elected

Plug this into the decision of the voter

The rent to be given in order to be re-elected is

$$y - \delta R = y - \theta g^* - r + H(g^*(\theta)) - \bar{\omega}$$

Can move things

$$\bar{\omega} = \delta R - \theta g^* + H(g^*(\theta))$$

This is the  $\theta^*$  that allows to satisfy both the politicians and the voters

If  $\theta < \theta^*$ , can give the same utility to voters and get even more rents - satisfying voters is even easier

But if  $\theta > \theta^*$  - to satisfy the voters, have to give up too much rents, not willing to do it

Solution of the model:

$\theta > \theta^*$ , voters get nothing, politician take  $y$  and probability of being re-elected is 0

$\theta < \theta^*$ , get elected for sure, voters are satisfied because give them what they want and the rent obtained depends on  $\theta$ , but certainly bigger than  $y - \delta R$

# MODEL OF SELECTION

Politicians are different: good and bad politicians, discuss their balance

It is also important what their actions are but it is also about their types

Strong assumption: politicians' types are not observable, both to people and to politicians themselves

Before becoming a politician, don't know how good you are, and neither do people

Voters don't know whether the politician is good or bad but they can try to understand type by observing their behaviour in power

From behaviour in office, infer whether politician is good or bad

Keep the politician in the next election only if good

## Government budget constraint

Different budget constraint this time but the cleavage is always the same: talk about the level of public good provided by the politician

It is still going to be true that this will depend on the total fiscal revenue able to raise minus the rents that the politician takes

Introduce  $\eta$ : the politicians' type

$$g_t = \eta(\tau y - r_t)$$

There is a certain amount of money available as a politician that comes from tax revenue

From this amount, will take some money  $r_t$ : the difference between the two is the amount of resources that will be used by the politician to provide the public good

How much public good will be provided depends on  $\eta$

If a good politician, and  $\eta$  is high, will produce a high amount of public goods

If you are a bad politician, will turn the resources into low public goods

High  $\eta$  is good, low  $\eta$  is bad – that is the valence of the politician

Constrain the rents: assume that rents have an upper bound, cannot go above a certain level

$$0 < r < \bar{r}$$

Important that the upper bound is lower than the total resources available

Even if politicians choose the highest possible level of rents there is still going to be money to be used for the public good provision

There is a distribution over which politicians are distributed

You can be a very bad type:  $1 - \frac{1}{2\xi}$  – this is the worse politician ever

The best politician has  $\eta$  equal to  $1 + \frac{1}{2\xi}$

$$\eta \in \left[1 - \frac{1}{2\xi}; 1 + \frac{1}{2\xi}\right]$$

Assume that average politician has an  $\eta$  equal to 1  $\rightarrow E(\eta) = 1$

Know that politician is going to have certain quality levels. On average, that is equal to 1, but he can be either a terrible person or the best politician: randomly drawn from a distribution

## Incumbent objective function

What does an incumbent politician want? What is the objective function?

Assume that the expected utility for the incumbent is equal to what they get today + what they get tomorrow

$$E(U_i) = r_1 + p_i \delta (R + r_2)$$

Today they get rent  $r_1$  in the first period – tomorrow, there is a probability  $p_i$  that will be re-elected, which times  $\delta$ , a discount factor, which is less than 1

In addition, get an ego rent  $R$  + monetary rents tomorrow  $r_2$

## Voters utility

Voters' utility is the consumption of today and the one of tomorrow

$$W = W_1 + W_2 = (Y_1 + Y_2)(1 - \tau)r_1 + \alpha(g_1 + g_2)$$

ATTENTION! In different models  $W$  might mean different things

Consumption is their income today and tomorrow net of taxes (disposable income) plus the consumption of the public good

$\alpha$  is a parameter, that we assume to be greater or equal to 1: it denotes how much we care about public consumption versus private consumption

$$\alpha \geq 1$$

Use a linear utility here

### Timing of the events

Incumbent politician is in office and chooses  $r_1$

Neither the politicians nor the voter know  $\eta$  – politician's type is unknown

Might have had some administrative experience, but in actual fact politicians don't really know how good they are going to be unless they are in action, there could be some level of uncertainty

Total revenues are fixed

At the beginning of the period the politician chooses  $r_1$

Given the total amount of money of total revenue, minus the choice of the rent, multiplied by the type, which we don't know, see what the final outcome is in terms of the public good

$\eta$  is drawn from a distribution which we don't know

Voters observe their utility – they are going to observe  $g$ , but that is not going to be very informative because they don't know  $\eta$  and neither  $r_t$

Signal extraction type of problem: observe the final outcome  $g$  but don't know whether the level of public good is due to having a good high quality politician who took a lot of rents or having a very honest politician who took little rents but is just not too good

In the next period, if we keep this politician, the same story is going to be true: want to make sure that we keep in office only those politicians who is of a good type

Voters observe utility, based on that they have to decide whether to keep these guys or not

Can observe  $g$ , but what we are interested in is  $\eta$

We are interested in the politicians type so as to keep the good ones and oust the bad ones

Replacing an incumbent means to get a draw from the distribution

Want to keep or oust an incumbent depending on what is going to be the alternative – on average, the alternative is going to be 1

If I can infer that the politician currently in power has an  $\eta > 1$ , will keep him

If  $\eta < 1$ , will kick the incumbent out of power and get a new draw from the distribution

Elections take place

- If the incumbent wins, the competence remains  $\eta$ ;
- If the incumbent loses, an opponent is appointed with competence  $\eta$  drawn from the distribution

In the second period, the politician (either the incumbent or the opponent) sets  $r_2$  and then the game ends

### Summing up the timing:

An incumbent politician is in office in period 1 and choose  $r_1$ , without knowing  $\eta$ ;

The value of  $\eta$  is realized and the public good provision,  $g_1$ , is determined;

Voters observe their utility but neither  $\eta$  nor  $r_1$

Elections take place

- If the incumbent wins, the competence remains  $\eta$ ;
- If the incumbent loses, an opponent is appointed with competence  $\eta$  drawn from the distribution;

The period-2 rent,  $r_2$ , is set and public good,  $g_2$ , is determined.

In this model, politicians and voters have the same information setting – they share ignorance

They are going to have to make an effort to understand the type

### PERIOD 2 – STRATEGY

Model of a democracy with a term limit: can only be in power for two terms

If you are in power for your last term: the rational thing to do is to set the maximum rent, since the politician has no more career concerns  $r_2 = \bar{r}$ , rents equal to the maximum level of rents

As a voter look at a level of utility in the second period equal to

$$g_2 = \eta(\tau y - r_2)$$

$$g_2 = \eta(\tau y - \tilde{r})$$

Set this to be lower than the total revenue, so that there is some money on the table also tomorrow to be transformed into tomorrow's public good

Want to keep a high  $\eta$  politician: in the next period how much public good obtained in the second period will depend on it

In the previous model punish them for not behaving, keep them on the basis of accountability

Here there is a selection argument: I want to keep a good one and kick out the bad ones

### OPTIMAL VOTING STRATEGY - voters

Voters do not know what the politician can do and they don't know the politician type BUT the politician doesn't know their own type

Voter can put himself in the politicians' shoes and try to understand how he is going to act

Politician is going to maximise his objective function

$$E(v_i) = r_1 + p_i \delta(R + r_2)$$

Politician is going to choose  $r_1$  to maximise the objective function

There is going to be a link between  $r_1$  and  $p_i$ : what I do today might actually change the probability of being voted in office

$\tilde{r}_1$  is the solution of the incumbent maximisation problem: voter is putting himself in the shoes of the politician and is trying to infer what the politician is going to do

Trying to understand what the politician will do means trying to infer  $\tilde{r}_1$

At the time of the election, given that the voters have some inference on  $\tilde{r}_1$ , they are going to have that

$$g_1 = \eta(\tau y - r_1)$$

At the time of the election, the voter will observe the level of public good, he has an inference on the level of rent that the politician has chosen  $\tilde{r}_1$

With the inference and observing the policy, then can make an inference on the voter's type

Voter makes an inference on what the politician will do: can do it because the voter has exactly the same information setting as the politician

When observe  $g$ , can also back up inferences on what  $\eta$  is going to be

The voter inference on  $\eta$  is going to be equal to

$$\tilde{\eta} = \frac{g_1}{\tau y - \tilde{r}_1}$$

This is the inference on the politicians' type that I can obtain

Optimal voting behaviour

$$\begin{cases} \tilde{\eta} \geq 1 & \text{keep the incumbent} \\ \tilde{\eta} < 1 & \text{oust the incumbent} \end{cases}$$

That is because on average the alternative is going to be a politician with  $E(\eta) = 1$

If  $\eta > 1$  it means that the type of the politician is better than average

$\tilde{\eta}$  has to do with the fact that the voters can make an inference after having observed  $g_1$  and given their inference on the rent, they can make an inference on the politicians' type

IMPORTANT: voters observe  $g_1$

$\eta$  remains constant across periods: if you are a good type, you remain a good type also in the second period

Know that choose  $r_1$  and this might change the probability of being re-elected

### INCUMBENT STRATEGY - politicians

Want to choose  $r_1$  without knowing competence level  $\eta$

Politicians choose  $r_1$  and know this might actually change the probability of being re-elected

What is the probability of being re-elected, i.e. that  $p_i = 1$ ?

That is equal to the probability that  $\tilde{\eta} \geq 1$

When choosing  $r_1$ , we get  $g_1$  according to the usual budget constraint

$$g_1 = \eta(\tau y - r_1)$$

Politician knows that the probability of winning the election is  $\Pr[\tilde{\eta} \geq 1]$

$$\Pr[\tilde{\eta} \geq 1] = \Pr\left[\frac{g_1}{\bar{\tau}y - \tilde{r}_1} \geq 1\right]$$

Probability to win the election is obtained by substituting the realization of  $g_1$

$$g_1 = \eta(\bar{\tau}y - r_1)$$

$$\Pr\left[\eta \frac{(\bar{\tau}y - r_1)}{\bar{\tau}y - \tilde{r}_1} \geq 1\right]$$

Flip it over

$$\Pr\left[\eta \geq \frac{\bar{\tau}y - \tilde{r}_1}{(\bar{\tau}y - r_1)}\right]$$

This is the probability of winning the election

Voters think they know the  $r_1$  is going to be. With the inference on  $r_1$  in their head, they are going to observe  $g_1$  and make an inference on the politicians type

With this information, they decide whether to keep or oust from office the incumbent

Politicians want to maximise  $r_1$  but they don't want to lose the elections

Probability that  $p_i = 1$ , i.e. the probability of winning the election, is the probability that  $\tilde{\eta} \geq 1$

Probability of winning the election is the probability that  $\eta \geq \frac{\bar{\tau}y - \tilde{r}_1}{(\bar{\tau}y - r_1)}$

Realization of  $g_1$  comes from the act that the politician actually chooses  $r_1$

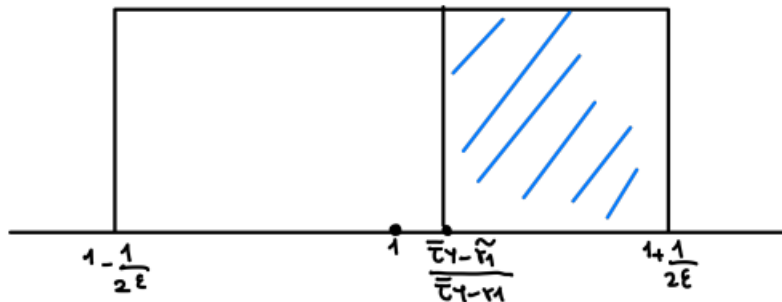
When choosing  $r_1$ , take money, but also reduce the probability that you are going to stick around

When voter makes his guess, the politician doesn't have any better information than the voter, no asymmetry of information - exactly the same as the politician

Calculate the probability of winning the election

Distribution of  $\eta$  has support over  $\left[1 - \frac{1}{2\xi}; 1 + \frac{1}{2\xi}\right]$  and it is a uniform distribution

Distribution from which  $\eta$  is randomly drawn is a uniform distribution centred at 1



Probability to win the election is the probability that  $\eta$  is bigger than  $\frac{\tau y - \tilde{r}_1}{(\tau y - r_1)}$

Probability of winning the election is going to be

$$p_i = \frac{1}{2} + \xi \left[1 - \frac{\tau y - \tilde{r}_1}{(\tau y - r_1)}\right]$$

Calculated the area of the uniform distribution from  $\frac{\tau y - \tilde{r}_1}{(\tau y - r_1)}$  to  $1 + \frac{1}{2\xi}$

Choice of  $r_1$  carries over an effect for  $p_i$  as well

Optimization for the politician is to choose  $r_1$

FOC with respect to  $r_1$

$$1 + \frac{\partial p_i}{\partial r_1} \delta(R + r_2)$$



Positive side - Take more rents: enjoy it and enjoy it now

However, taking more rents today will have an impact on the re-election probability:  $\frac{\partial p_l}{\partial r_1}$  by how much the probability of election is going to change when the politician takes more rents

When taking more rents, less probability to win election: so derivative is expected to be negative

$$\frac{\partial p_l}{\partial r_1} = -\xi \frac{\tau y - \tilde{r}_1}{(\tau y - r_1)^2}$$

In equilibrium,  $\tilde{r}_1 = r_1$

Because voter and politician have the same information: what the voter expects in equilibrium will coincide with what the politician is going to do in equilibrium

Politicians and the voters share exactly the same information

In equilibrium, the voter has got to get it right

Can substitute the derivative into the first order condition

$$1 - \xi \frac{\tau y - \tilde{r}_1}{(\tau y - r_1)^2} \delta(R + r_2) = 0$$

Thus we have

$$\frac{1}{\tau y - r_1} \delta(R + r_2) = 1$$

Ignore  $\xi$

$$\begin{aligned} \frac{\tau y - r_1}{\delta(R + r_2)} &= 1 \\ \tau y - r_1 &= \delta(R + r_2) \\ -r_1 &= -\tau y + \delta(R + r_2) \\ r_1 &= \tau y - \delta(R + r_2) \end{aligned}$$

Given that there is no asymmetric information, the voters can totally read into what the politician is doing

Voters can predict exactly what the politicians will do and given their predictions, politicians optimise and we can find out the level of  $r_1$  that they are going to choose

Get more rent today, reduce the probability of being in office tomorrow

If I am less likely to be in office tomorrow, I am forgiving tomorrow's rents

By how much is an increase in current rents going to have an impact on the probability of being re-elected tomorrow, that is going to be given by the derivative  $\frac{\partial p_l}{\partial r_1}$

Therefore the probability of being elected is

$$p_i = \Pr[\tilde{\eta} \geq 1] = \frac{1}{2} + \xi \left[ 1 - \frac{\tau y - \tilde{r}_1}{(\tau y - r_1)} \right]$$

$$p_i = \Pr[\tilde{\eta} \geq 1] = \frac{1}{2}$$

Probability of being re-elected is going to be equal to  $\frac{1}{2}$

Voters are going to be able to know exactly what is  $\eta$  - they are going to keep the  $\eta > 1$  and put out of office the  $\eta < 1$

50% of the time they keep the politician, 50% of the time they replace it

If you are a politician and you ask what is your probability of sticking around, the answer is 50% because you don't know your type

Since you don't know your type, if you are a bad type you are going to be replaced

Can modify the model by thinking about the fact that politicians have an informational advantage over the voters: they know their type better

If we expand the model, completely different type of signalling problem, the model is going to be extremely different

There is going to be an informational advantage: if a politician knows better, it is going to be a story of learning about the politician's type by the politicians

### Wrap up

3 models: the first 2 belong to the same category, the one in which we think about elections as accountability devices: politicians are all the same, they don't differ in types, but they might decide how much rents they want to take

If there is perfect information, still politicians are going to take rents but they are always going to be re-elected: look at the environment in which they live (high, low cost) and are going to please the voter according to the environment and always make it to the next round

In the same model, with asymmetric information, voters don't have the luxury to ask for different utility levels: they are going to do things on average: politicians will choose to be re-elected, they will behave, take low rents, give public goods when the state of the world is good; but they will prefer to steal everything when the state of the world is bad

Sometimes the incumbent wins, some other times the incumbent doesn't win

Here we have types: there are good and bad politicians, they are not all the same

High valence, low valence

This is about being good and capable: under the strong assumption that politicians don't know their type, they are going to try and balance the trade-off

i.e. if they take too much rents, they will be kicked out

Take a certain level of positive rents, in the following period, they are going to see whether they are elected or not

Given the information symmetry (in the sense that neither of them knows about types), voters will keep politicians 50% of times and kick them out the other 50%

### EMPIRICAL EVIDENCE: INCUMBENCY ADVANTAGE

Agency model gives the flavour that being in power is a good way to remain in power

Large literature dealing with it

Incumbency advantage: probability of being re-elected and try to define whether the probability of winning in an election is higher for someone running for the second term or more as opposed to someone who is not in power yet

Most convincing paper was published by Lee (2008)

Lee (2008) applied Regression Discontinuity Design to closed elections in single member districts

Incumbent politicians enjoy an increase of 7-8 percentage points in their vote shares in the US House election as opposed to their opponent

Incumbent politicians enjoy a 35-45 percentage points increase in the probability of securing their seat – increase probability of winning the election by about 1/3

Being in power is very useful to remain in power

Evidence came mostly looking at the US: easy to look at it because typically have one incumbent and one opponent, very easy to apply the methodology

In countries with more candidates or proportional systems where in one district you get more elected people, it is more difficult to observe the incumbency situation

### Why do we observe an incumbent advantage?

There could be several reasons in the model

Can exploit resources during electoral campaigns or during the term in office, can give public goods, staying in office gives plenty of resources to use to be re-elected and remain there

Being in office may mean that you are of an higher quality: were elected, won an election, in a world in which talent is uncertain and not observable having been elected may represent a positive signal – this is true when there is asymmetric information

Being an incumbent and having all these advantages, resources, send a quality signal because you were in power: all of this might also scare off the opponent

Quality level of the opponent might also decrease

This is true especially in case of a strong incumbent: no one wants to crush against them, because they know they are going to win the election almost for sure

A scare-off effect may arise as the incumbency advantage deters high quality opponents from running – thereby reinforcing the initial effect

An incumbency advantage emerges also in proportional systems in many developed countries (Ireland, Sweden, Germany, Denmark, Finland and Norway, but not in Italy)

In less developed economies (India, Indonesia and Brazil), the incumbency effect has often found to be negative

### INCUMBENCY ADVANTAGE IN FRANCE: PARTY LEVEL

Interesting two round election: election at time  $t$

On the horizontal axis, distance from the victory threshold: look at people who were elected or who lost the election at time  $t$  between winning and not winning

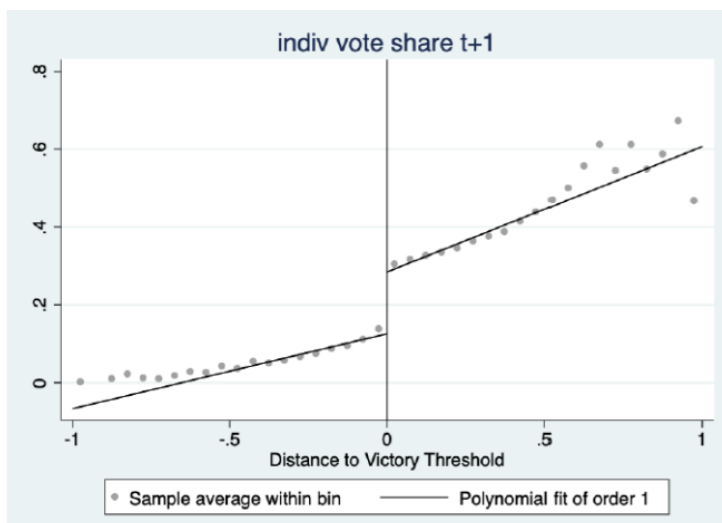
Points on the right are the politicians that won the election by a small margin from the opponent

On the left, someone who lost the election by a small margin

Points more to the right are points of people that won the election more by a landslide (large win) or lost by a landslide)

On the vertical axis is the vote share in the subsequent election i.e. election at  $t+1$

Compare people who won the election by a narrow margin, who lost the election by a narrow margin at time  $t$  and how many votes they got 5 years later, in the subsequent election.



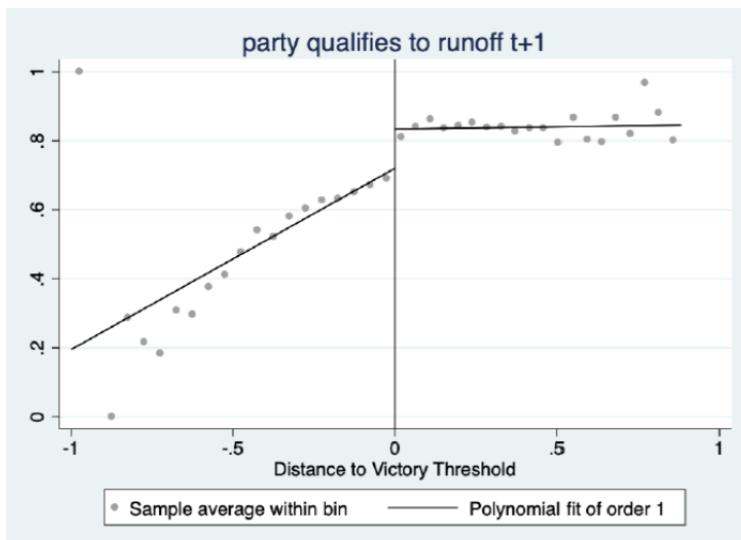
If very close to the line, then winning or losing is almost a causality: if you win or lose by 1% then it is almost a random assignment of victory or loss

Look at this because want to look at people who are similar on many characteristics

Some of them had the luck of winning the election, some were unlucky and lost

Then want to see what happens 5 years later: see a jump

Those who won the election at time  $t$  by a narrow margin, got many more votes in the next election as opposed to those who lost by a narrow margin



France has a 2 round majoritarian voting system

### Probability of qualifying to the runoff

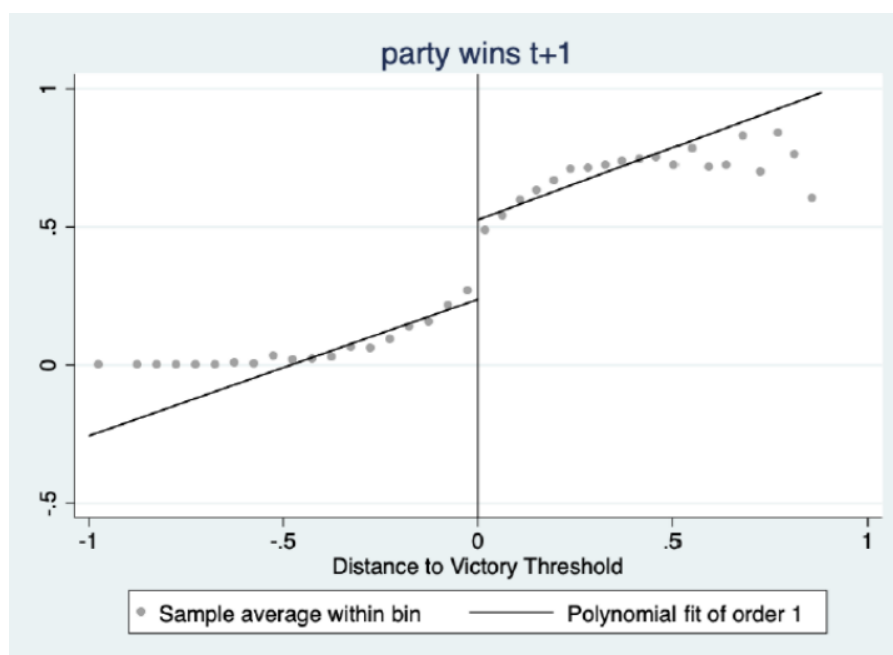
Didn't win the election in the first round but qualified for the second

There is a new jump

Having won the elections 5 years before helps you out in the subsequent elections (this is done at party level)

### Probability of winning at t+1

There is again a jump: if you won the election by a small margin, you are much more likely to win the election again at t+1 than the ones who lost by a small margin.



Looking at the individual level and the specific candidate, the same is true

Winning the election increases the vote share you will obtain in the next election, increase the probability to qualify for the second round and increase the probability of winning in the subsequent election

# COMPARATIVE POLITICAL ECONOMICS

Incentives for politicians to behave and to pursue some types of policy

Are those incentives going to be different according to the political system we live in?

Does it make a difference if we are in a presidential regime or in a parliamentary one, if we have elections run in a majoritarian or proportional system? How are the incentives that politicians face going to change

How do Electoral Rules affect the Economic Policy?

Electoral Rules:

District Magnitude (Number and Size of Voting Districts in a Country): number of MPs elected within a particularly district

In a proportional systems, more people are going to be elected in fewer districts, while in a majoritarian system only one MP

Electoral Formula (Degree of Proportionality): how the votes share are converted into the number of MPs in Parliament

Districts:

- Multiple District Elections: one MP elected in each district, more like the US
- Single District Elections: in proportional systems – election takes place at a country level e.g. Israel, the Netherlands

**Proportionality:** How votes translates to seats in individual electoral districts

Given the votes that a party has, how do these votes convert into party seats

In a pure proportional system, the ratio between seats and vote share is equal to 1

If a party gets 30% of the vote share, they get 30% of the seats in parliament

However, there could be other institutional agreements (thresholds to enter and majority premium) that modify this proportionality

More proportional system have a ratio of seats to vote share close to one for every party

Pure Majoritarian System (or first-pass-the-post): ratio between seats and votes = 0 if share of votes below 50%, and ratio  $\geq 1$  if share of votes above 50% - if you stay below 50% get nothing, if go above, get everything

In a majoritarian system, the number of party tends to be lower than in a proportional system –

Duverger's law: assume that we have the same number of parties under both systems

Empirically, know this is not true – but cannot handle that

A hard time dealing with this model in a proportional systems

Model closer to reality for majoritarian than proportional systems, better for majoritarian

Two parties and two situations: either one district (proportional system) or multiple district elections (majoritarian system)

This will provide very different incentives

In a majoritarian system, a multiple district elections, need to win a majority of the votes in a majority of the districts i.e. need to win 50% of the districts to get a majority

And to win single districts, get 50% of the votes

Meaning that could win the elections with slightly more than 30% of the total votes

Might get 0 votes in 49% of the district and concentrate all your vote in 51% of the districts and then in those districts only get 51% of the vote share, close to the 25% of the total vote share  
Observed in the US: sometimes the president who lost the election ended up with more votes than the other

In the proportional system: doesn't matter where you get the votes, because you need to get 50% of the total votes

Cannot be selective geographically, need to be more disperse: no matter where the vote is coming from, it is actually working

e.g. Spain is an example: proportional system, but then in every district only 4 or 5 members of the parliament are actually elected

It is proportional but not to such an extreme such as in the model

Object of the analysis is to understand how this is going to shape policy making?

How are different political incentives depending on different political rules going to shape policy making

Economic policy: spending possibilities

- **Targeted Redistribution** (e.g.: Local Public Goods, Transfers to specific regions or to geographically concentrated Individuals)  
Send money to specific regions, giving more money to a region rather than another (e.g. Lobbying model)  
Targeted redistribution can happen in many ways, but think of it as local public good provision most of the times
- **Provision of National Public Good or General Transfer Programs** (Ex: Administration of Justice, Police, Army, Social Security, spending on education) – all programs that cut across the geographic boundary, policies that go everywhere  
Redistribution that is not geographically limited or concentrated
- **Corruption or Party Financing or Inefficiency** – rents that politicians take for themselves

To balance the budget, also need taxation

## ECONOMIC MODEL

3 Groups of Voters of equal size, ( $J=1,2,3$ ) (Ex: differences in location or preferences over public goods or age)

Individuals care about: Private Consumption, Public Good, Political Ideology – use probabilistic voting model, giving ideology to these people

Within each group (geographically located), voters

Have a political ideology and individuals may differ according to their political ideology – each person within each group has a different political ideology and that might differ across groups

Within the group they have the same indirect utility function as far as the policy goes, but then they might differ on their ideology

Have the same preferences regarding the Economic Policy

Economic model is defined at group level: think of groups as geographical locations

It is always the same trade off

To Evaluate the Public Policy, we look at the Utility function of agents in group J

Individuals do not take meaningful economic decisions

They pay taxes, whatever is left they consume in private good and then they enjoy the public good provided to them

$$w^J = c^J + H(g)$$

$w^J$  – J because they are in group J, utility is J specific

$c^J$  is private consumption

$g$  is the public good and for simplicity, we assume  $H(g) = \ln(g)$  – not indexed by J

### UTILITY FUNCTION OF AGENTS IN GROUP J

$$w^J = c^J + \ln(g)$$

### INDIVIDUAL BUDGET CONSTRAINT:

$$c^J = 1 - \tau + f^J$$

Assume that everyone has 1 unit of resources, labour income that is equal to 1 for all individuals and groups – endowment economy

$\tau$  is tax rate financing transfers and provision of public good

$f^J$  is the transfer to people in group J only – local redistribution: send funds to specific areas of the countries, local public good enjoyed by people

Policy function is going to be:

$$f^1, f^2, f^3, g, r, \tau$$

There are three groups

Decide how much money to send to people in group 1, 2 and 3 – nation wide public good sent to everyone – make room for the politician, taking the rent – and then is taxation to fund all resources  
6 dimensions: with budget constraint, it will be reduced to 5

### INDIRECT UTILITY OF AGENTS IN GROUP J AS A FUNCTION OF THE PUBLIC POLICY

Going back to people's utility, can plug the individual budget constraint into the individual utility function

If you live in region J, then your utility is going to be:

$$w^J = 1 - \tau + f^J + H(g)$$

$$w^J = 1 - \tau + f^J + \ln(g)$$

### THERE IS NO ECONOMIC DECISION here

Utility function becomes immediately the indirect utility function once the budget constraint is plugged in

## PUBLIC POLICY

$$f^1 \geq 0$$

$$f^1 \geq 0$$

$$f^1 \geq 0$$

$$g \geq 0$$

$$r \geq 0$$

$$\tau \geq 0$$

Can give to all the three groups NON negative transfers

Can give NON negative public goods

Take non negative rents, but there could be a transaction cost  $\gamma$  – take  $r$  from the general resources, but some of the rents are lost and can only enjoy  $r - \gamma$

Assume a non distortionary tax rate  $\tau \geq 0$

Assume that people don't change their behaviour as a consequence of the taxation

This is done to avoid an overcomplication of the model

### BUDGET CONSTRAINT

$$3\tau = f^1 + f^2 + f^3 + r + g$$

That is to say, much we give to the three groups, how much the politician takes in rents and then the public good provision

Take  $\tau$  from three different groups

Change in the notation: in the probabilistic voting model there was  $\alpha$  i.e. the share of the different groups

Here, just use equal sized groups

## POLITICAL ISSUES

Political agents are two parties (A, B) and there are going to be three types of individuals, who live in different areas and care about the economic policy differently

They also differ within group in their level of ideology

Conflicts between the groups, cleavages to be studied:

One is among the voters in different areas – who do we give money to, group 1, 2 or 3?

The cleavage can be seen in  $f^1, f^2, f^3$

The other one is between the voters and the politicians: conflict is on  $r$

If take  $r$ , usually tax more voters or decrease transfers



Conflict between the two politicians – who wins the election, who gets the rent?  
 Want to know how the electoral system is going to shape this game  
 Will the electoral system say something about what happens to  $f^1, f^2, f^3, g, r, \tau$  or not?

## SOCIAL OPTIMUM – BENCHMARK

What would the social planner do when having to decide the provision of a nation wide public good, having to decide whether to send specific transfers to specific regions and finally to take rents for themselves?

Social planner cares about people living in different groups

Welfare function is going to be the sum of the utility of the different people

Social planner is going to maximise the following:

$$w^1 + w^2 + w^3 = 1 - \tau + f^1 + \ln(g) + 1 - \tau + f^2 + \ln(g) + 1 - \tau + f^3 + \ln(g)$$

$$w^1 + w^2 + w^3 = 3(1 - \tau) + f^1 + f^2 + f^3 + 3 \ln(g)$$

## BUDGET CONSTRAINT

$$3\tau = f^1 + f^2 + f^3 + r + g$$

Put the budget constraint inside the welfare function that social planner will maximise

Welfare function:

$$w^1 + w^2 + w^3 = 3 - 3\tau + f^1 + f^2 + f^3 + 3 \ln(g)$$

$$W = w^1 + w^2 + w^3 = 3 - (f^1 + f^2 + f^3 + r + g) + f^1 + f^2 + f^3 + 3 \ln(g)$$

$$W = w^1 + w^2 + w^3 = 3 - f^1 - f^2 - f^3 - r - g + f^1 + f^2 + f^3 + 3 \ln(g)$$

$$W = 3 - g - r + 3 \ln(g)$$

If we are the social planner, what to do with the different policies

If we are the social planner, need to find out what is  $f^1, f^2, f^3, g, r$

Social planner will set  $r = 0$ : they enter negatively in the function, if we increase  $r$  that is going to be a cost

Don't want rents, because they are bad for people and we don't care about the politicians as we are the social planner

If increase  $r$ , it is going to be a cost on the people, so  $r = 0$

To find the value of  $g$ , do the FOC with respect to  $g$

$$-1 + \frac{3}{g} = 0$$

$$g = 3$$

The transfers to the three groups  $f^1, f^2, f^3$  are all equal to 0 for the social planner

In this economic environment, they are actually not well defined

Suppose to give something to group 1 and  $f^1$  is positive, give money to group 1, but taking away the same amount from  $f^1$  in taxes

Given that there is no cost of taxation, it is indetermined because it is just money going around: with one hand, give something, and get something back through taxation

But if there is some distortionary taxation, for sure don't want to do it: give something but in order to get it back, need to tax, so will distort individual choices – just plug 0 in it

Social planner cares about the three groups equally, so don't want to benefit one over the other

## SOCIAL OPTIMUM

No rents

Positive level of public good:  $g = 3$

Positive non-distortionary tax

No transfers to regions

## POLITICAL MODEL

Change the game and try to see what happens in very different circumstances

Look at the probabilistic voting model, in the proportional and the majoritarian

In the majoritarian, three different districts and need to win 2 districts out of 3

In the proportional, still have 3 areas but it doesn't matter where get the votes, just need to win 50% of the votes

Politicians are 2 candidates running for office, they have to make a multidimensional choice on the elements of the policy -  $q_a = (f^1, f^2, f^3, g, r, \tau)$  vector

This is going to be a good representation in the case of the majoritarian model, but not a good assumption for the proportional system (but this is the best the model can do)

$\tau$  is the tax rate that is determined residually as the tax rate that is necessary to cover up for public goods and rents

Similar to the agency model, but different environment

Before the election - pre-electoral model

The two candidates (A and B) are on equal foot, there is no incumbent and candidates A and B are going to choose what to do

Politicians care about winning the election because when they win the election they get rents

Candidates care about the monetary and the ego rents they are going to get in case of winning the election

There is a transaction cost, however, so they are only going to get  $\gamma r$  rents

Only get those rents with a probability of victory in the election  $p_i$  ( $i = \{A, B\}$ )

$$p_i(\gamma r_i + R)$$

Choose the vector of the policy, including  $r$ , which enters the objective function and is going to have an impact on the probability of winning the election

Trade-off: should get more rents for oneself or use the money to win the election?

Taking more rents will decrease the probability of winning the election

A and B are candidates that are on equal footing, look at next election, they have no advantage over the other and are just trying to win the elections

Politicians will try to maximise the Expected rents

$$p_i(\gamma r_i + R)$$

Expected rents are made up by the probability of winning the election: if you don't win, you don't get the rent

If win, get monetary and ego rent - there is a transaction cost, denoted by  $\gamma \geq 1$

Some of the money won't be pocketed

### PROBABILISTIC VOTING MODEL: TIMINGS

Candidates will announce their platform:  $q_A$  and  $q_B$ , including the rents

Then there is going to be the shock to average popularity  $\delta$

After that the election and one of the two policies will get realised

### CANDIDATE'S INFORMATION SET

The politicians know the distribution in each of the three groups (region)

They know the probability distribution of the shock, the support of the shock but they don't know what the realization of the shock is going to be

They don't know the ideological position of each voter, but know that in each group there are going to be some ideological distributions

Key aspect in the model: try to work around the ideological distribution

Look into the ideology distribution of the different groups and try to understand who to target more

Separate the three districts: want to make sure that one district is more in favour than party A, one more in favour of party B and the other one is more up for grab

For ideological reasons there are some regions that are closer to one party than another

There are some geographical areas that are more right wing, others more left wing

This is also persistent over time

Assume that

Group 1 favours candidate A

Group 2 is neutral

Group 3 favours candidate B

Do this by assuming that the distribution of ideology is centred on 0 for group 2, but centred not on 0 for the other two groups

For the other two groups the distribution is either a little bit more to the right or to the left: this allows to make the assumption that the two groups are biased in favour of one candidate or the other

On top of this assume that group 2 is also more concentrated than groups 1 and 3

$\phi$ : concentration of swing voters in each group - people in group 2 are less ideological, more concentrated

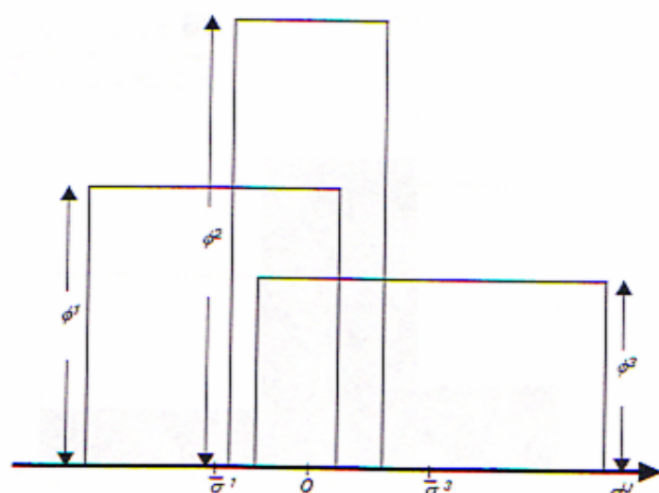


Figure 8.1

Group 1 is the one on the left: not centred on 0, but a negative number

They favour one of the two candidates

On average, the ideology is in favour of one of the two candidates

The other group, opposite to this, is group 3 - they have an average  $\delta$  which is non zero, but actually positive

More in favour of another candidate, prior to looking at the policy (ex-ante)

Third group is going to be centred around 0 - the one we are accustomed to in probabilistic voting

The other assumption we are making is that group 2 has a higher density than the other, whereas the other group is more spread out

Not only groups 1 and 3 are more ideologically biased, on top of that they are also more spread out

These 3 differences will drive some of the results

There are some regions of a state that are more right wing, others are more left wing and this is orthogonal to the policy chosen by the party

It is just that they have been historically closer to one or the other

## CANDIDATE DECISION

Need to understand how the different candidates will choose different policy, thinking about how this policy has an impact on the voters' decision

Idea is that

An increase in Public Good or a decrease in the Tax Rate affects all people in all groups, in the same way, it affects groups' swing voters in the same direction.

Transfers instead affect different groups differently

An increase in the Transfer to group 1 financed by a decrease of the transfer to group 3 moves the Swing Voters in opposite direction: the Candidate gains votes if there are more Swing Voters in group 1 than in group 3.

Will eventually give more Transfers to group 2, because that is the group with more Swing Voters  
Will get more votes in that group

## PROPORTIONAL SYSTEM – SINGLE DISTRICT ELECTIONS

Make the strong assumption that it is a single district election

Countries with only one district corresponding to the election itself and all the MPs are elected in the very large districts

Perfect proportional representation: ratio of seats share to vote share is equal to 1

e.g. if you get 2% of the vote, you get 2% of the seats

There are two parties here

To win the election, need to win more than 50% of the votes: doesn't matter where you win the votes, can be anywhere in the district

Country is one big district but still has East, West and Centre, which are still going to have different ideologies

Candidate A is more likely to get more votes in one district rather than another

Probability of winning the elections for candidate A is the probability that the sum of the votes in the three regions is greater than 50%

Candidate A probability of winning the election depends on the realization of the shock in popularity  $\delta$   
 $\alpha = \frac{1}{3}$  because the three regions are equal sized – divided by 1/3, it is just the  $\alpha$  in the probabilistic voting model, assume that the three regions have equal size

$$p_A = \text{Prob}_{\delta} \left[ \frac{\pi_{A,1} + \pi_{A,2} + \pi_{A,3}}{3} \geq \frac{1}{2} \right]$$

## TRANSFERS

What are the political costs and benefits of giving transfers to one group or another?

Suppose to give a 1 unit transfer to group 1

When doing this, the political benefit is that people are going to be happy, as they receive 1 unit – gain votes in this group

How many votes will the politician get?

$\phi^1$  is the magnitude of the swing voters that will come along the politician that gives them 1 unit of transfer in group 1

$\phi^1$  is the magnitude or the size of the density of the swing voter in a specific group, but when giving them 1 unit of transfer, change their marginal utility

The number of votes obtained is the product between how many swing voters are out there and how much they benefit from the transfer, so this should be multiplied by the marginal utility that is given them

$$\phi^1 MU$$

When giving people 1 unit of the transfer, their marginal utility is going to be equal to 1: use a model that is linear in private consumption and this transfer is going to match 1:1 in a utility of 1 (**linearity assumption**)

Give 1 euro, so you are happier than 1

How many swing voters out there?  $\phi^1$ : the share of people that I am buying by giving them this transfer  
However, this comes at a cost: have to increase taxes

To get 1 euro, need to increase taxes by 1/3 in each one of the groups

1/3 of the resources from group 1, 1/3 from group 2 and 1/3 from group 3  
This means that the political cost is going to be

$$-\frac{1}{3}(\phi^1 + \phi^2 + \phi^3)$$

So in total get a cost and a gain:

$$-\frac{1}{3}(\phi^1 + \phi^2 + \phi^3) + \phi^1 < 0$$

Is this worth it?

It depends on whether the gain is bigger than the cost

This boils down to the assumption we made earlier, that is to say  $\phi^2 > \phi^1$  and  $\phi^2 > \phi^3$

To give money to anyone of these group, give that to people in group 2, because they have a higher  $\phi$

Want to make sure that they get  $\phi^2$ , while tax the other two guys

If I transfer money to group 1, the benefit of giving money to the group minus the cost of taking money away from the other 2 groups is going to be negative: it is not worth it, because will lose more votes than gained when taxing the other 2 groups and giving a transfer to 1

This implies that  $f^1 = 0$ : it is not a good policy, it will make the politician lose votes

The same is going to be true in case we wanted to provide a unit of transfers to group 3

$$-\frac{1}{3}(\phi^1 + \phi^2 + \phi^3) + \phi^3 < 0$$

The only thing the politician will want to do is to give a unit of transfer to group 2: higher density of swing voters there and that is where the candidate is getting more votes

Cost-benefit analysis in terms of votes shows that the politician is getting more votes by giving them 1 euro, than losing when taxing everyone

Group 2 is a group to which resources will be given

$$-\frac{1}{3}(\phi^1 + \phi^2 + \phi^3) + \phi^2 > 0$$

There is going to be a positive  $f^2$ , while  $f^1$  and  $f^3$  are going to be 0

## PUBLIC GOOD

Public good enters the utility function of individuals with a logarithm: when giving public good to people, their marginal utility is not going to be 1, but something else

How much public good should the politician give?

Politician could give public good to everyone: all three groups are going to be happy by their marginal utility

However, this is now the marginal utility of the public good, that is to say  $\frac{1}{g}$

Utility function is private consumption +  $\ln g$

$$U = c + \ln(g)$$

So MU with respect to  $g$  is going to be the derivative of  $\ln g$ , that is to say  $\frac{1}{g}$

Public good provided will be

$$(\phi^1 + \phi^2 + \phi^3)MU(g)$$

Intuitively, suppose that the level of public good is 0:  $\ln(0)$  goes to  $-\infty$

People are very unhappy, dying to get the public good

Initially, when giving the public good, people are going to be super happy: that is a policy the politician really wants to do because it will make people very happy and the MU matters, as the politician swings voters according to  $\phi$ , but how much they are actually swung depends on the utility provided

When thinking about the cost benefit analysis in terms of how many votes are moved, should think about the density in each group and also about how happy you will make them: initially with the public good provision, will make them very happy

Because if  $g \approx 0$  then giving them public good is really something they enjoy a lot

One thing that can be done is to give public good to the people

$$\frac{(\phi^1 + \phi^2 + \phi^3)}{g}$$

This is how many more votes you are going to get by giving public good to these people

The alternative is to use the euro and give it to group 2 only

Issue now is: suppose you have 1 euro only in your pocket, what would you do?  
 Would you give it to group 2 or would you use it for the the public good provision?  
 That depends on which of the two expressions is larger

$$\frac{(\phi^1 + \phi^2 + \phi^3)}{g} \gtrless \phi^2$$

Given the level of  $g$ , if the left hand side is greater, give it to the public good  
 If the right hand side is larger, give it to the people in group 2  
 When the two are equal, the politician is going to be indifferent  
 Indifference will tell us how much public good we are going to end up having

Indifferent when

$$\frac{(\phi^1 + \phi^2 + \phi^3)}{g} = \phi^2$$

$$\frac{g}{\phi^1 + \phi^2 + \phi^3} = \frac{1}{\phi^2}$$

$$g = \frac{\phi^1 + \phi^2 + \phi^3}{\phi^2} < 3$$

$g$  is less than 3 because  $\frac{\phi^1}{\phi^2}$  is less than 1,  $\frac{\phi^2}{\phi^2} = 1$ , while  $\frac{\phi^3}{\phi^2}$  is less than the 1

When you sum them up, result is going to be less than 3

Politicians will use public good: when people have no public good at all, giving it to them will make them super happy, so it is something that we want to do

However, how much do we want to give them? Not the optimal solution, not what the social planner will do

Public good is less than optimal:  $g^s < g^* = 3$

This is because we also want to give money to  $f^2$ : do not use a lot of public good, but also target group 2 to some extent

Some money will go to the public good, some money will go to the second group, because that is where the swing voter is

Use the public good to an extent which is less than optimal: some money will be given to  $f^2$ , but will the politicians use rents and to what extent?

Here maximum amount of resources available is 3: we assumed income is equal to 1 for the three groups, if you tax all of them will get at maximum 3

Social planner took all the resources and gave them to the public good: politician will get some rents, give some public good and also target group 2 with transfers

## CORRUPTION

How much money we keep for ourselves? How much rents to take?

1 euro endowment, there are two things that can be done

On one hand, use the euro to improve the probability of winning the election

On the other hand, can just pocket the euro

Problem is that can only pocket the euro if you win the election: trade-off

The expected gain of taking one more euro is  $p\gamma$

Only take that one more euro if you do win the election: taking one euro away from the general taxation, will only pocket  $\gamma$  out of this

The expected gain of setting aside 1 euro for the politician is going to be  $p\gamma$  i.e. the probability of actually winning the election and what you would effectively can pocket

On the other hand, might try to use that euro to try to increase the probability of winning the election

If you try to increase the probability of winning the election, this is working through an increase in  $p$   
 Question is: if I use this euro, how much do I increase  $p$ ?  
 Increase  $p$  by

$$\frac{\phi^2}{\phi^1 + \phi^2 + \phi^3}$$

By how much, using one euro, you can increase the probability of winning the election

It captures the political costs: 1 additional unit of rent could be transferred to voters in group 2

Need to also multiply this by the rents that the politician can have

$p(R + \gamma r)$  is the objective function of the politician

If I increase rents, on one hand, decrease the probability of winning the election

$$\frac{\partial P}{\partial r}(\gamma r + R) + P\gamma = 0$$

Taking more rents, get more in case the politician wins

$\frac{\partial P}{\partial r}$  is the decrease in the probability of winning the election that is associated with taking more rents: if you take more rents, it is less likely that people vote for you

In the agency model, if you are using rents, do not give public goods to citizens

If you are using rents in this model, you are not providing them with  $f$  or  $g$

Use resources in a different way than trying to please the voters

$\frac{\partial P}{\partial r}$  is what the politician could have done to win the elections - could have used this money differently to win the election, rather than pocket them

$\frac{\partial P}{\partial r}$  boils down to

$$\frac{\phi^2}{\phi^1 + \phi^2 + \phi^3}$$

That is to say: I tax people in the three groups and then give the money to  $\phi^2$  only

This is the change in the probability of winning the election which is associated with taking the rents: idea is that if I don't take one euro for the rents and use it to win the election, can tax people and lose their support, but then give that money to people in group 2. It is the net gain

This can also be considered as the opportunity cost of taking rents: these are the votes you could have had if you didn't take the rents but used the money otherwise

In the end the politician will get some positive rent ( $r_s > 0$ , not optimal), such that

$$\frac{\phi^2(R + \gamma r)}{\phi^1 + \phi^2 + \phi^3} = p\gamma$$

## IMPLICATIONS

In proportional system, need to always assume that the tax is non distortionary

Tax rate has to balance the government budget constraint

$\tau = 1$  - take all the money and redistribute it, as it is a feature of non-distortionary taxation

Government takes all the money and then it provides public goods, but less than efficient

It gives the money to the group that is more mobile

The more "Mobile" (swing voters) is the Middle Class the higher is the "political" opportunity cost of the Public Good compared to the direct Transfer.

We also get some corruption in this model

The more "imperfect substitute" (voters with strong ideologies: "polarized") are the two candidates, the higher is the Corruption.

Analogously, the more "Mobile" (swing) voters exist the lower is the Corruption.



## MAJORITARIAN SYSTEM – MULTIPLE DISTRICT ELECTIONS

This is like the UK or the US

Win the election if you win the majority of the districts

If vote share > 50%, ratio seats share to votes share greater than one

To win the election, need to win 2 out of 3 districts

A wins for sure in one district, B wins for sure in the other district

The only question is who wins in the pivotal state? Who wins that, wins the election

This is very much what happens in several countries in which some regions don't swing at all and then there are some states that tend to swing – need to try to get win in those swinging states

Three Electoral Districts correspond with three Groups

In Electoral District 1, Ideology favours Candidate A

Electoral district 3, Ideology favours candidate B

A wins for sure in district 1, B wins for sure in district 3

In electoral district 2, there is no strong ideology – this is the only district up for grabs

- Thus, Candidate A:
  - Wins for sure in District 1
  - Loses for sure in District 3

- Thus, Candidate B:
  - Loses for sure in District 1
  - Wins for sure in District 3

Party A doesn't care about district 3, because know they will lose for sure

But also don't care about district 1, because win for sure in district 1 and don't need to pander votes there

No need to spend money in district 1 – it is a secure seat – in the same way, not worth to spend money in district 3, because that will be a lost seat for sure

### TRANSFERS

Looking at political costs and benefit, only concentrate on Group 2

Should we transfer money to group 1? Don't do that with proportional systems either, but also here

The fact of gaining votes in district 1 is immaterial – don't care

Political benefit is 0: don't care about votes won here

The only thing that comes out is  $-\phi^2$ , which is the cost of raising money in group 2 to give it to group 1

The same is true for group 3

$$-\phi^2 < 0$$

As a consequence, there are going to be no transfers to individuals in group 1 and 3:  $f^1 = f^3 = 0$

Only give money to group 2

$$-\frac{\phi^2}{3} + \phi^2 > 0$$

Transfers to individuals in group 2:  $f^2 > 0$

### PUBLIC GOOD

In the previous case, look at the benefit in terms of votes obtained when giving the public good and compare it with the alternative i.e. giving money to group 2

The alternative is going to remain the same, but in this case don't care about the votes obtained in the first or third district: would get more votes by giving them more public goods, but that is till not going to change the outcome

Do not spend resources there, do not internalize the benefit coming from that group because it is immaterial to the politician

Could win this election with a little bit more than 25% of the total votes: what we really need to secure is 50% of the votes in district 1 and 50% of the votes in district 2: that is all we need

Can get 0 votes in district 3, but only need to get 50%+1 votes in the other two districts  
Do not care about the fact that the public good gives more votes, because do not internalize those

Trade-off becomes between:

Transfer to group 2:  $\phi^2$

Public good provision:  $\frac{\phi^2}{g}$

And therefore, the level of public good which will be provided is

$$g^M = \frac{\phi^2}{\phi^2} = 1$$

Will only consider the trade-off private good VS public good for group 2: the fact that when providing the public good, I also give that to group 2 and 3 is something that is not internalized: don't care about it, don't count the additional vote provided by group 1 and 3

Effectively public good still goes to everyone, but the only difference is that politically the public good provided in districts 1 and 3 is lost – doesn't help to win the election

Save on the public good and give more transfers to group 2: this will help winning the election

Public good is less than optimal

$$g^M = 1 < g^S < g^* = 3$$

Majoritarian is giving less public good than proportional and proportional is giving less public good than the social optimum

Majoritarian system: need to give some public good because the people in group 2 care about it, but do not overdo this because actually can target them directly

Politicians will pander votes in group 2 much more in the majoritarian than in proportional

## CORRUPTION

If the politician was to spend money to win the election, he would know better what to do

1 euro spent on trying to win the election is more effective in a majoritarian system than it is in a proportional system

When spending 1 euro in a majoritarian system, the share of votes per euro that I am getting is higher than in a proportional system

Can target directly people in group 2 and that is all we care: in a proportional system use money to get the votes everywhere and that is going to be more inefficient

In choosing the level of rent or corruption, a politician maximises her expected rents

$$p(R + \gamma r)$$

Previous ratio is going to turn into:

$$\frac{\phi^2}{\phi^1 + \phi^2 + \phi^3} < \frac{\phi^2}{\phi^2}$$

Benefit and the cost are going to acquire only to people in group 2

Only concern in terms of benefit and costs is related to group 2 and so the ratio is larger than the one in the proportional system

The opportunity cost of not using the money to win the election is going to be larger for the majoritarian system, so use less rents

The whole negative side becomes larger

If I have 1 euro in the proportional system could pocket it or try to increase the probability of winning the election: when doing that can either provide a public good or give money to group 2

In case we give money to group 2, increase vote share in group 2 but decreases it in other areas

When doing this in a majoritarian system, that will be more effective: give money exactly to those people that I need to win the election

The value for money in a majoritarian system, when it comes to campaigning or give money to voters, is more effective

This will lead to take lower and lower rents

There is still going to be a positive level of corruption, but that is going to be lower than in the proportional case

$$r^M < r^S$$

## SINGLE VS MULTIPLE DISTRICT ELECTION

Give more to group 2 in a majoritarian than in a proportional system, but that is reversed for the rents  
In the proportional system the opportunity cost (in terms of number of votes and probability of winning the election) is going to be lower

In proportional system, can take more rents, because that 1 euro spent on trying to win the election is less effective

In majoritarian system, when taking 1 euro away from giving it to the voters, I know that I am decreasing my probability of winning more – opportunity cost is higher

It is true that you have to convince less people, but the price of convincing people is not the same

In the majoritarian system the idea is that people in Group 1 come from free, but those in Group 2 are pretty expensive, because both candidate A and B are fighting for those people

Give them a lot of resources:  $f^2$  actually needs to be very large

In a proportional system, going to pander around people and use programs that reach everywhere (pensions, healthcare)

In a majoritarian system, less willing to provide large programs that are appreciated everywhere  
Instead of increasing pensions or healthcare, actually try to use programs that are district specific

More local public goods than national ones

We wanted to understand the incentives that electoral rules provide to politicians: set up a model in which there are two politicians that have to choose an array of policies (policies that go in the direction of transferring local public goods to three districts, national public good, can take some rents for themselves, need y of public goods: to tax to balance the budget)

Incentives differ across different electoral rules

Under the majoritarian system, look for more geographically localised transfers: need to convey money into specific districts

Expect more targeted local redistribution

There is going to be a smaller supply of public goods: some will have to be given, but giving too much will be inefficient

There is going to be less corruption: opportunity costs of corruption is actually stronger

Incidentally, also models that look at accountability give the same results

Models in which you are one party and you are in power

Voters have to decide whether to keep you or oust you from office

In a majoritarian system, tend to be more accountable: voters know exactly who their representative in the district is

There is a 1:1 mapping of who is voted and who is in power

In a proportional system that is not true, because in 1 district maybe 10 representatives have been elected

This accountability in the agency model is actually weaker – voted for a party and that party brought up 3 people in my districts

If I don't like what the three people are doing, am I going to punish the party or not?

In a proportional system, the link is much looser

Corruption is more punishable in a majoritarian system also because of the accountability mechanism

Political accountability in post – electoral model

Proportional: Large party list, low personal accountability

Majoritarian: Often one candidate per list → Stronger accountability

More local transfers, less public good and less corruption in a Majoritarian system

Tax rate very residual: with no costs of taxation, just take all the money and redistribute them

If we do have taxes that are distortionary, would have a situation in which in a majoritarian system you would have higher taxes: you don't care about taxing people in group 1 and 3

The fact that you don't feel the political cost of taxing people in group 1 and 3, would mean that you tax them more so that you can give the money to people in group 2

This was related to the ratio: give the money to people in group 2, you tax everyone and you feel it because you are losing votes

In the majoritarian system, the only thing that you care is people in group 2, but don't care about the others

Since in the model the tax rate was non distortionary, just take the money and redistribute all of it

But if the taxation was distortionary, expect more taxes in the majoritarian system

## PRESIDENTIAL VS PARLIAMENTARY REGIME

Comparison often evident in the literature: but in Italy at least the electoral model is more discussed

Why are they different? Division of Power (Check and Balance) and Political Accountability

Presidential system: big cleavage and difference in incentives is the strong separation of powers between Congress and the President (ex: US). High Political Accountability

Predictions: in a presidential regime Small Government, Less Corruption, Low Spending in Public Good and Redistribution

Presidential regime is closer to what would happen in the majoritarian electoral system

Parliamentary regime: legislative cohesion, due to the existence of a confidence vote, parties in the parliament do not want to lose their agenda setting power

Different type of accountability: with the vote of confidence, would need to have more legislative cohesion

To stay together parties would split resources and increase the budget to find more agreement

To find an agreement they'd spend more money

Predictions: Large Government, More Corruption, High Spending in Public Good and Redistribution and also more public debt

## EMPIRICAL EVIDENCE

Typically cross country regressions, not up to the standards, but incentives play out in the way we would expect, in the way the model suggests

Government Expenditure:

Countries with Majoritarian Elections have on average lower expenditure: 5% of GDP

Countries with Presidential Regimes have on average lower expenditure: 5% of GDP

Government Expenditure Composition:

Countries with Majoritarian Elections have on average lower Transfers: 1-2% of GDP

Countries with Parliamentary Regimes have on average higher social security expenditure

Corruption:

Countries with Proportional Elections have on average more corruption

No difference between Countries with Presidential or Parliamentary Regimes.

Growth Promoting Economic Policies:

Countries with Presidential Regimes have on average lower Growth

No difference between Countries with Majoritarian or Proportional Elections .

# ELECTORAL CAMPAIGNS: EXPERIMENTAL EVIDENCE FROM ITALY

Empirical evidence from experiments in Italy

Something also related to how candidates communicate

There are several choices when running an electoral campaign

Electoral Campaigns have become increasingly more important, perhaps due to media, big data and big money going to electoral campaigns

Several crucial issues:

- Why do Candidates Campaign? (i) Get-Out-The-Vote: to convince the core supporters to vote. (ii) To swing the undecided voters.  
In the mid-90s, Get-Out-The-Vote strategy: convince people to vote rather than abstain  
In many countries the relative majority are people who don't vote
- How should Candidates Campaign? (i) Positive, convincing Messages (ii) Negative, aggressive Messages
- Which tone to use?  
Positive tone: message about the balance of the candidate  
Negative: being aggressive against the opponent
- On which issues should Candidates Campaign? (i) Ideology, (ii) Competence, Valence, (iii) Honesty
- Where should Candidates Campaign? Where should we put the money? (i) Media, (ii) Canvassing – people knocking doors in the US (iii) Mailing, (iv) Robocall

Big choices for an electoral campaign: intrinsically related to the type of candidate that we have

Probably the characteristics of the candidate are going to matter for these choices

Choices might interact: to go negative, need some tools; to go positive, others

Several crucial issues:

- Should the Characteristics of the Candidate Matter for these decisions?
- Should these choices interact?
- How to use Big Data and Social Media to build a successful campaign?
- Should the closeness of the race, the number of candidates or timing in the election matter?

There is also a timing in the campaign: might start the campaign in a certain way and then change the way the campaign goes overtime

Often times, change the campaign manager overtime

Might switch to other people and change strategy OR might have a strategy that from the very beginning sees you going nice at the start and then turn nasty, as things go by

Could have a game plan that is to change the messages over time

## NEGATIVE CAMPAIGNING

Broad definition of negative campaigning: any criticism made by one candidate against another (Geer, 2006).

In **Positive** campaigning a **Sender** and a positive **Message** are identified – one person and one message stand out

One candidate is proposing something and sending out a message

In **Negative** campaigning a **Sender** (of the message), a **Receiver** (of the attack) and a negative Message are identified.

Might have the feeling that you have one person and one message, but that is not true

Actually have 2 people and one message: a sender and a receiver of the message

In a negative campaign someone is attacking someone else – two people on the stage

Fundamental difference goes on top of the tone (Positive or negative) but is also related to the fact that two people are involved VS only one of them

Positive message: provides information on the sender, on the politician that goes out there and provides the message

Negative campaigning provides information on two people: the Receiver of the attack and on the Sender

Talk trash about an opponent, revealing information that I think might be beneficial but that also says something about the character of the sender

It reveals that I am actually willing to go down that route and attacking someone else

Negative ads may be more informative than deceptive positive messages (Jamieson, 2000).

Positive messages are often promises that might be deceptive

Typically, voters tend to have a certain level of mistrust in politics and politicians

Positive message might be not very well perceived or at least not highly trusted

Negative ad perceived as very informative: say something specific to attack the opponent – that thing I say is something that people can evaluate

Negative ads might include a lot of things: differ in their tone (from slightly critical to plainly aggressive) and content of the attack (could be personal, could be on policy issues, competence, ideology, honesty, character of the politician). Similarly for positive messages

Does negative campaigning help to change the minds of uncommitted voters and/or to mobilize core voters?

Study: try to understand the extent to which negative advertisement has effects that we can call Receiver and Sender effects

**Receiver effect:** What happens to people under attack?

Empirical evidence suggests that negativity indeed reduces the voters' evaluation of the targeted politician (see Kahn and Kenney, 1999). People revise their expectations having obtained this new flow of information – re-evaluate this person

But, this does not necessarily lead to lower political support for the receiver (Lau et al., 2007)

e.g. how much political capital a politician has? If really trust a person and a new information comes in, will upgrade my beliefs about this person, but won't change much choices: less happy to vote for this person but still vote for them

In other cases, if a voter was more marginal, one attack might lead him to abstain or change preference

**Sender effect:** Effect that you have when you flash out the negative message: what is going to happen to you?

Is it going to increase popularity?

Going negative may have a backlash effect, by decreasing the support for the sender (see Kahn and Kenney, 2004, Lau and Rivner, 2009): people might perceive that you were unfair, that you were willing to go very aggressive

This may depend on the tone of the negative ad, its degree of fairness, the senders' characteristics, and the ordering (timing) of negativity.

## THEORETICAL FRAMEWORK

3 Parties: A, B, C. No differences in ideology nor in their policy.

A voter  $i$  has sympathy for a party and not for another

Sympathy for party  $j$  between  $(0; S)$  – political capital:  $s_j^i \in (0, S)$

No sympathy for the others:  $s_{-j}^i = 0$

Parties valence (how good the party is) is common to all voters and is made by a shock  $\hat{\delta}_j$  which goes against party  $j$  (probabilistic voting model)

We have three parties, so need more shocks

Then there is the electoral campaign:  $e_j$  – is it going to increase or decrease your popularity? That depends on the choices made during the campaign

Do not talk about choosing the policy, but how to fight the battle of the electoral campaign

Party's valence:

$$\delta_j = \hat{\delta}_j + e_j > 0$$

If you are a voter  $i$  of type A, you are going to vote for party A if the sum of how much you care about party A (that is the party you care about) plus the valence is greater than the valence of the other party



$s_A$  is the ideology towards party A

$$s_A^i + \delta_A \geq \text{Max}(\delta_B, \delta_C)$$

You are from Party A, so most likely if there is no shock you are going to vote for party A regardless

Go for the other parties only if the shock is really big against party A – go for either party B or C

Can think of  $s$  as the  $\sigma$  (sigma) in the probabilistic voting model and the  $\delta$  as  $\delta$

Depending on the  $\sigma$  or the  $\delta$ , you are going to vote for A, B or C

Only difference is that we have 3 parties now rather than 2

### Electoral campaign with 3 candidates

If all parties run positive campaigns, the valence factor is 0 – normalized value

$$e_A = e_B = e_C = 0$$

In case of a negative campaign run by party B against party A

Typically you are negative against the incumbent: easy thing to do, because the incumbent has an history

Much easier to dig into the history and go negative against the incumbent – typically the incumbents are the ones that tend to attract most of the negativity

Let's assume that the shock is the same across parties ( $\hat{\delta}_A, \hat{\delta}_B, \hat{\delta}_C$ )

Negative campaign might create different combinations of sender and receiver effects

#### Example 1

Negative campaign has a negative impact on the receiver only – this is what people think when doing electoral campaigning

$e_A < 0$  – decrease the valence of A, the attack is going to be effective and nothing happens to B and C:

$$e_B = e_C = 0$$

Fewer people that intended to vote for party A will still vote for this party

Some people, those that did not have a strong attachment to party A (i.e. those with  $s_A^i \geq -e_A$ ) are going to switch to the other parties (either B or C)

#### Example 2

Negative effect on the Sender only

People see the negative attack and think that it is not good to do the negative attack – stand against him

Will have a negative  $e_B < 0$

Party B is going to lose votes and these are going to go to the two parties

#### Example 3

Negative Sender and receiver effects: people are sick and tired of the negativity in politics

They believe that what has been said might be true, so reduce support for party A, but also reduce support for party B – punish both  $e_A < 0$  and  $e_B < 0$

If this happens, these are all going to be all votes and will go towards the party that stayed out of the negative campaigning, party C -  $e_C = 0$

A core supporter of party A is going to try to justify the negative advertisement, reduce the evaluation of the party but do not walk away

Some other people might be more marginal and just walk away

### Electoral campaigning with 2 candidates

Can look at the two candidate campaigning

**Example 1:** Negative Receiver effect – the attacking party will win

$$e_A < 0 \text{ and } e_B = 0$$

**Example 2:** Negative sender effect: the party which has been attacked will win

$$e_B < 0 \text{ and } e_A = 0$$



**Example 3:** If there are both sender and receiver effects then it depends on the relative magnitude: which party is going to lose more votes  
 $e_A < 0$  and  $e_B < 0$

### Theoretical predictions: 2 candidates

All theoretical possibilities, combining the 3 possibilities: positive, 0 or negative sender effect and positive, 0 or negative receiver effect

|              |          | Sender (S)  |  |   |
|--------------|----------|---|--|---|
|              |          | Positive  | Zero                                       | Negative  |
| Receiver (R) | Positive | <u>Case I: <math>\Delta R &gt; \Delta S</math></u><br>R votes $\uparrow$<br>S votes $\downarrow$<br><br><u>Case II: <math>\Delta A &lt; \Delta B</math></u><br>R votes $\downarrow$<br>S votes $\uparrow$ | R votes $\uparrow$<br>S votes $\downarrow$ | R votes $\uparrow$<br>B votes $\downarrow$  |
|              | Zero     | R votes $\downarrow$<br>S votes $\uparrow$  | No Effect                                  | R votes $\uparrow$<br>B votes $\downarrow$  |
|              | Negative | R votes $\downarrow$<br>S votes $\uparrow$  | R votes $\downarrow$<br>S votes $\uparrow$ | <u>Case I: <math> \Delta R  &lt;  \Delta S </math></u><br>R votes $\uparrow$<br>S votes $\downarrow$<br><br><u>Case II: <math> \Delta R  &gt;  \Delta S </math></u><br>R votes $\downarrow$<br>S votes $\uparrow$ |

If there are no effects, we are in the baseline

If the sender effect is negative and there is a positive receiver effect, then the sender loses votes and the receiver gains votes

Can do that for three candidates as well: two possible effects – but the combination might do something to the receiver

Negative effect for both: receiver loses votes, Sender loses votes, the third guy just gains votes (because he was playing nice)

|              |          | Sender (S)  |  |  |
|--------------|----------|---|--|--|
|              |          | Positive  | Zero   | Negative   |
| Receiver (R) | Positive | <u>Case I: <math>\Delta S &gt; \Delta R</math></u><br>R votes $\downarrow (=)$<br>S votes $\uparrow$<br>I votes $\downarrow$<br><br><u>Case II: <math>\Delta S &lt; \Delta R</math></u><br>R votes $\uparrow$<br>S votes $\downarrow (=)$<br>I votes $\downarrow$ | R votes $\uparrow$<br>S votes $\downarrow$<br>I votes $\downarrow$ | R votes $\uparrow$<br>S votes $\downarrow$<br>I votes $\downarrow$ |
|              | Zero     | R votes $\downarrow$<br>S votes $\uparrow$<br>I votes $\downarrow$  | No Effect  | R votes $\uparrow$<br>S votes $\downarrow$<br>I votes $\uparrow$   |
|              | Negative | R votes $\downarrow$<br>S votes $\uparrow$<br>I votes $\downarrow$  | R votes $\downarrow$<br>S votes $\uparrow$<br>I votes $\uparrow$   | R votes $\downarrow$<br>S votes $\downarrow$<br>I votes $\uparrow$ |

### Identifying the effects

Comparing 2 and 3-Candidate elections can help to identify the sign and the relative magnitudes of these effects

Consider the case of both Negative Sender and Receiver effects:  $e_A < 0$  and  $e_B < 0$  In a 2-Candidate election, the winner depends on the relative magnitude

In a 3-Candidate election, the idle candidate will always get the votes of the other parties

## Field experiment: Cava de' Tirreni, 2015

Field Experiment during the 2015 Municipal election in Cava de' Tirreni, randomising positive or negative advertisement

Cava de' Tirreni: town with 46 thousand voters and 55 electoral precincts, 40km south of Naples.

Elections on May 31st, 2015

Electoral Background: center-right incumbent, two main opponents from centre-left and civic list. All males

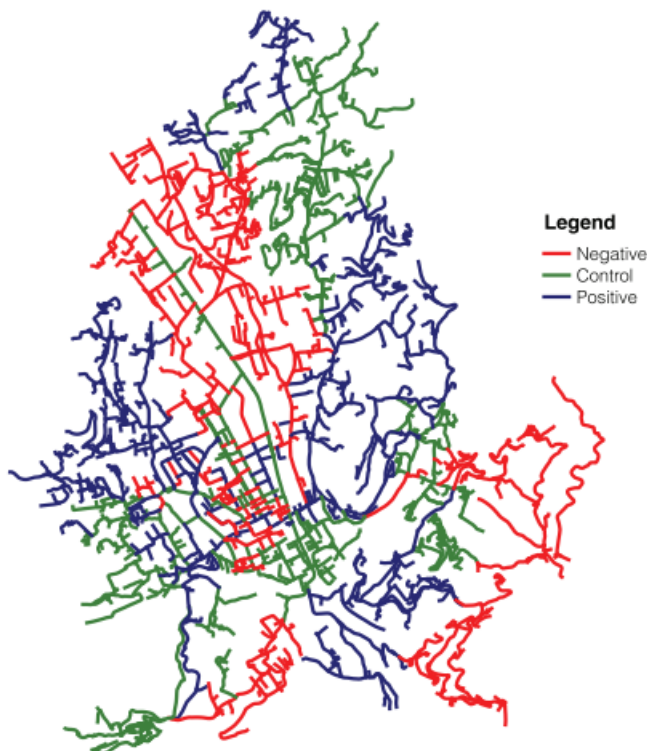
There are some evidence showing that negative and positive campaign might have different effects on men and women

If a men is attacking a woman or viceversa, this might have different effects

Field Experiment: Canvassing done by 20 volunteers (aged 18-25) from May 10th to May 30<sup>th</sup>

City was randomised in three groups: 1 group was receiving negative canvassing, one was receiving positive canvassing, the third group was the contro

Negative/positive in 18 precincts (and around 15,500 voters) each.



Among the three candidates, one of the two opponents (the one from the civic list) is the sender and the incumbent is going to be the Receiver. The center-left candidate would be the idle guy  
Actual campaign was running side-by-side the experiment: candidates did their own campaign, but on top of what was happening in the campaign, there was also randomization of positive/negative messages

Canvassing is super difficult in Italy: people do not expect young people to knock at their door and talk to them about elections: advertisement in the city so that people knew they were to expect someone knocking at the door

Left fliers in the different districts + buzz the interphone trying to talk to people: in some cases people let them in

In one case they were talking about how good the candidate was, in other cases they were talking shit about the current mayor

Fliers, hangers and message they were providing

Most of the time, people did not allow volunteers to come upstairs because they were scared about it

Randomized experiment by distributing positive and negative sides



Randomization was the tone but was not the issues

## Results

### No change in the turnout rate

|                             | Turnout rate        | Turnout rate       | Turnout rate        |
|-----------------------------|---------------------|--------------------|---------------------|
| Negative campaign           | -.722<br>(2.09)     | -.490<br>(1.99)    |                     |
| Intensive Negative campaign |                     |                    | -1.793<br>(2.39)    |
| Constant                    | 69.977***<br>(1.16) | 139.661<br>(73.90) | 70.608***<br>(1.41) |
| Baseline Treatment          | Positive            | Positive           | Positive            |
| Controls                    | No                  | Yes                | No                  |
| Obs.                        | 36                  | 36                 | 30                  |
| R-Squared                   | 0.003               | 0.099              | 0.019               |

In some cases negative campaign was more intense than in other places: in some cases volunteers were able to go to the streets and leave fliers, in some other cases there were more difficulties as volunteers were on the outskirts of the city

### Incumbent vote share

|                             | Incumbent vote share | Incumbent vote share | Incumbent vote share |
|-----------------------------|----------------------|----------------------|----------------------|
| Negative campaign           | -.357<br>(1.42)      | -.087<br>(1.23)      |                      |
| Intensive Negative campaign |                      |                      | -1.013<br>(1.67)     |
| Constant                    | 24.683***<br>(1.19)  | 41.813<br>(32.04)    | 25.080***<br>(1.41)  |
| Baseline Treatment          | Positive             | Positive             | Positive             |
| Controls                    | No                   | Yes                  | No                   |
| Obs.                        | 36                   | 36                   | 30                   |
| R-Squared                   | 0.002                | 0.271                | 0.014                |

There is a minus sign as if the incumbent was losing votes, but this is actually not statistically significant. We cannot say that there was any impact on the incumbent's vote share: he might be losing some votes, but in the end we cannot tell with the observations that we have (36 i.e. precincts) whether this is statistically significant.

If anything, this would be a negative sender effect.

### Treated challenger vote share

|                             | Treated Challenger vote share | Treated Challenger vote share | Treated Challenger vote share |
|-----------------------------|-------------------------------|-------------------------------|-------------------------------|
| Negative campaign           | -.84<br>(1.29)                | -1.041<br>(1.22)              |                               |
| Intensive Negative campaign |                               |                               | -.803<br>(1.55)               |
| Constant                    | 15.147***<br>(0.88)           | -26.785<br>(28.43)            | 15.090***<br>(1.41)           |
| Baseline Treatment          | Positive                      | Positive                      | Positive                      |
| Controls                    | No                            | Yes                           | No                            |
| Obs.                        | 36                            | 36                            | 30                            |
| R-Squared                   | 0.012                         | 0.175                         | 0.010                         |

Receiver: negative sign, as if there was a negative receiver effect but not statistically significant due to a lack of statistical power.

## Untreated challenger vote share

|                                | Untreated<br>Challenger<br>vote<br>share | Untreated<br>Challenger<br>vote<br>share | Untreated<br>Challenger<br>vote<br>share |
|--------------------------------|--|--|--|
| Negative campaign              | 3.67*<br>(1.83)                          | 3.284**<br>(1.46)                        |  |
| Intensive Negative campaign    |  |  | 4.49**<br>(2.17)                         |
| Constant                       | 27.592***<br>(1.40)                      | 31.631<br>(33.60)                        | 27.256***<br>(1.77)                      |
| Baseline Treatment<br>Controls | Positive<br>No                           | Positive<br>Yes                          | Positive<br>No                           |
| Obs.                           | 36                                       | 36                                       | 30                                       |
| R-Squared                      | 0.105                                    | 0.463                                    | 0.136                                    |

Look at the effect of the other guy, the one who stayed out of the negative campaigning,  
Vote share actually increases

If we compare those precincts where the candidate from the civic list was attacking the mayor with districts in which the candidate from the civic list was running a positive campaign, we observe that where he went negative, the third candidate gained votes

Spill over effect: the two were fighting each other and the third guy in the end got benefits: positive spill over effect

## Discussion of the results

Field experiment: real election

However, this is not a control setting: why is this happening? What is the channel exactly?

1. Is this because of valence? We reduce the valence for the incumbent and the other guy was perceived to be good?
2. Party ideology: you tell me not to vote for the incumbent but do not vote for the other guy because too distant from him ideologically? Maybe not, because sender was from the centre
3. Strategic voting:  
Sometimes, might not be voting for the first choice because do not think he's going to be elected  
Might prefer the second choice for this reason  
B is attacking A, so don't vote for A, but maybe think that B is not going to make it to the second round and so vote for the other guy  
This could have happened because of the Vote share: Incumbent 24.5%, Treated Challenger 14.7%, Untreated Challenger 29.4%: not worth to vote for the attacker because he's not going to make it to the runoff

## Survey experiment

Decide to run a different type of experiment: made up a fictitious city and a fictitious election race  
Designed a race for mayor in which could do 2 things:

To some people we asked to live in the city and vote for the mayor, with only 2 candidates

There were only the Incumbent and the challenger

Challenger was either having a positive message or attacking the incumbent

In the other experiment are three candidates: one challenger goes against the incumbent or goes positive, the third guy doesn't do anything - try to see whether there is a spillover effect or not

Here can identify the channel as it is possible to control for many things

## Castelgufo

Respondents to our survey are presented with a fictitious scenario: a (small) city in the centre of Italy (with the imaginary name of "Castelgufo") where elections for mayor are about to be held.

We provide background information on the city (tourism, local industries) and on the political debate (local transportation, tourism, the car-free city centre, garbage collection)

Three (or two) Candidates run for mayor.

They all belong to civil lists - common in municipal elections. There is No ideological component. - don't make people vote based on ideology

Similar names: Baldi, Landi and Vanni

If you see positive messages from all of the three it should be almost 1/3 of the vote share for each of them, because you might like one face more than another  
When going negative, see if this changes anything  
Similar demographics characteristics (married males in their forties with children). Baldi is the incumbent mayor. Landi and Vanni are the challengers  
Respondents are told that all candidates have similar probability of winning. Aim: avoid strategic voting behaviour  
Hired three professional actors: Landi is the treated challenger; Vanni is the untreated challenger

Respondents receive the initial information on the city and the election  
Respondents are shown an electoral video of each candidate (performed by a professional actor), in a random order.  
Control Group: Positive ads by all candidates – expect voters to be indifferent  
Treatment: Negative ad by the treated challenger (Landi) against the Incumbent (Baldi) and Positive ads by the Incumbent (Baldi) and the other challenger (Vanni) in the 3-Candidate election and by the Incumbent (Baldi) only in the 2-Candidate election  
Also changed the intensity of the treatment: Intensity of Treatment: Same words (negative message) with moderate or aggressive tone.  
Also, do not allow for abstention – having seen the video, cannot skip the voting part

In a lab or survey experiment can ask them why vote for the candidate (in a tweet)?  
Questions on the Treated Challenger (Landi): perception about the tone of the campaign, ideology, valence:

1. how good would he be as a mayor? Is the message sent out going to change your perception of how good this candidate is
2. how cooperative would he be?
3. how extreme is he?

Demographics and questions on political orientation, trust, competitiveness, risk aversion  
Is the respondent more or less right wing?  
Can use stuff to understand heterogeneity

Don't like person going negatively: is that related to the fact that you don't like competitiveness  
Incentivized Questions (Tests): Competitiveness, Overconfidence, Risk Aversion, Cooperation

Compare 2 and 3-Candidate elections to identify the sign and the relative magnitudes of Sender and Receiver effect

There are only two candidates: the incumbent and the candidate OR three candidates

Can peace out the channels

People in a survey were exposed to an experiment with no ideology and no strategic voting: voting for one of the three should be based on ex-ante indifference

People that were asked when all went positive was all 1/3

Survey experiment with NO Ideology and NO Strategic voting. With all positive messages: Incumbent 34.7%, Treated Challenger 29.4%, Untreated Challenger 35.9%

Comparing the baseline with the other two situations

## 2 CANDIDATE ELECTIONS:

Compare the vote for the incumbent and that for the candidate

Compare going negative against the baseline treatment when the individuals go positive

Do not control for the individual characteristics of the respondent in the first column: pure randomisation

Negative campaign increases the incumbent share by 8% and the candidate is decreasing by 8 percent as well

Controlling for other stuff, the result doesn't change

When doing a randomised control trial, the characteristics of the three groups are balanced across groups

Want to make the groups comparable, otherwise the experiment goes away

Characteristics tend to be orthogonal when the survey is done

Compare the negative aggressive with the negative: additional effect of being negative aggressive  
Sum the coefficients of columns 4, 5, 6 to the first three columns  
When the candidate goes negative aggressive he loses 13 points more, so in total about 20%  
If you go negative, you lose – if you go negative aggressive you lose even more

### 3 CANDIDATE ELECTION

What happens when comparing the three candidate election

Comparison is now different:

Have the incumbent, the treated challenger and then the other challenger (the guy who doesn't do anything)

The baseline is that everyone goes positive

Alternatives are that there is a negative treatment or an aggressive treatment: add a third guy who is always positive to see whether he benefits from the fight that the first two are going to engage on

#### Incumbent

Compare the baseline with the negative treatment, talking about the votes of the incumbent, he may be losing 4 or 5% of the votes, but that is not statistically significant

Adding the aggressivity to the challenger, nothing really changes

Being negative or being negative aggressive doesn't make any difference for the vote of the incumbent

Incumbent seems to be losing some votes, but not many

#### Treated challenger

In the first three columns compare positive vs negative

When go negative the treated challenger loses about 13%

He's not losing much more when he goes aggressive – he loses some 12% points but that IS NOT statistically significant

When the

The untreated challenger is getting 17% of votes: exactly what the other two were losing

The third guy gets more vote

This is a controlled experiment: neutral – people don't feel attached to anything in particular, no personal stakes here

Preferences for the tone not for the ideology or anything

The attacker always loses

The difference is that in the first case, if they go negative aggressive they lose  $8 + 13.5$

When choosing between two people, really put effort in understanding the message: if one goes really negative, prefer the incumbent; if go negative aggressively moved towards the incumbent even more

In the second case do not observe this: as soon as there is a third to give votes to, do that immediately  
Do not have an alternative in the first case, but in the second, there is a neutral individual that is getting all the votes

#### Understand the channels

Questions in terms of behaviour: what people think about the

Whether the treaty challenger is collaborative or not?

On the first three columns compare the first type of cooperation: is he more collaborative when he goes positive or negative?

No difference between the two cases

But showing the negative and the negative aggressive, the latter is associated with a lack in trust and cooperativeness, so might dislike him because of this

When there are 3 candidates, as soon as there is a campaign, immediately think he is not going to be cooperative

Being negative makes think of someone that is not going to be cooperative when he's going to be a mayor

Also ask whether the individual is going to be a good mayor

When he goes negative, people think of him more as a bad mayor: same with the three candidates

More or less extreme: when he goes negative, think of him as more extreme

Can be right or left wing extreme

This is true no matter i

Take the electoral campaign which exists and add on to it our experiment

On top of this, add one thing

The candidate going positive or negative against the incumbent

Can think of this as one deviation from the equilibrium campaign

This will favour the third candidate

### Possible channels leading to this:

Why do politicians go Negative? Why has negative campaigning become more pervasive over time?

Untested Channels

1. Trailing behind and/or Less Funding: a strategy of desperation to try to mobilize the base or try to keep them home
2. Distant Ideology
3. Response to previous attacks: someone who is trailing behind attacks and so respond

No clear effect of going negative

Political science literature has no clear empirical message on whether going negative has a positive effect or not

Difficult to find empirical evidence: looking at the equilibrium policy, difficult to identify the effect of negative campaign on the policy

But digging deeper into negative campaign behavior...

Hide behind a sponsor: 85% of ads sponsored by groups (not directly by the candidates) are negative vs. 50% of those sponsored by candidates or parties in 2012 US presidential campaign (Fowler and Ridout, 2012).

There is usually not a one to one candidate facing: try to avoid the backlash effect

Less Negative campaigning in 3-Candidate Elections, such as primaries

Reasons behind one wants to go negative might be to mobilize basis - portra

Can convince supporters not to vote at all: try to keep at home strategy, rather than swinging

A lot of negative campaigning exists: the first negative act done by Lyndon Johnson

Daisy Ad about nuclear war

First negative campaign ad ever produced

It was aired only once, but

Negative campaign not so much done by one candidate against the other, but sometimes it is done by another person



# MEDIA AND POLITICS

Media is a market, there is a supply and demand

On the one hand there is information provider and an heterogeneous public (demand)

This heterogeneous public has

Some people might prefer not to have bad news even if the bad news

Media as agenda setter: set the issues the public opinion talks about

They have a big role about what people think are going to be the topic of the day

Media Bias and media capture: are the media captured by interest groups?

## ROLE OF MEDIA

What is the Role of the Media in Society?

Private & Public Media

What do the Media sell?

The news media has incentives to cover an issue which is of interest to viewers and readers

Independence & Credibility or Bias?

## MODEL OF MEDIA NEWS

Allows to understand

- Whether the media want to cover a certain topic
- How they are going to do it

Level of coverage depends on audience interest: what stays on the news and for how long really depends on what people prefer

Type of Treatment chosen to appeal and retain an audience:

- Straightforward presentation of facts and events e.g. news agencies
- Interpretation of the facts and events
- Exploration of their potential significance and ramifications e.g. what is next, what is the significance
- Advocacy of a course of action, more normative type of investigation, what is the course of action that should be taken Some things are important, on some other things people care much less

By crossing the demand side and what should be important, there are 4 different patterns

On the low important, low significance for society, in the bottom corner: find low coverage, factual treatment - press news agencies types of information

Only few people care about these issues

Some other things are expected to be important: issues that people don't like to watch, listen or read much, but still high relevance

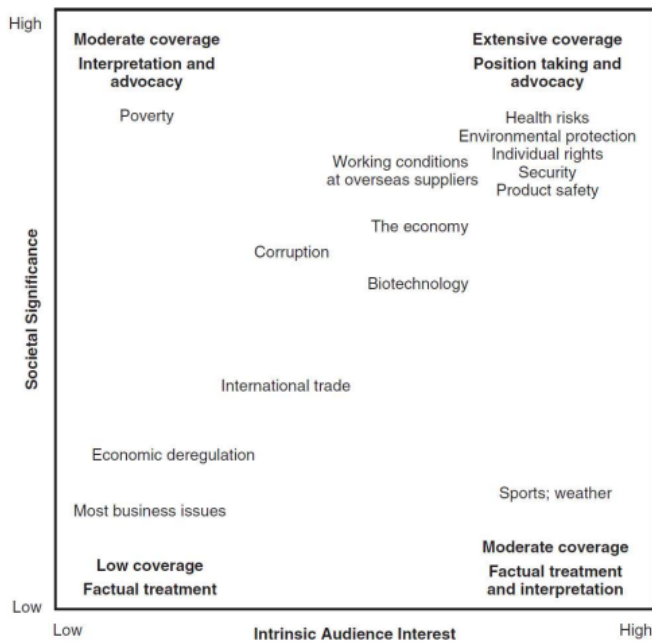
Poverty: people perceive its importance but not too much attention to these

Coverage and interpretation as well as factual interest

Extensive coverage: COVID and war on Ukraine now

Matrix gives the idea of what kind of treatment and coverage will obtain depending on the topic

Media are important for politicians



Citizens seek to Control the Politicians. Typical Principal (Citizens) – Agent (Politicians) Relation with Agency Cost and Imperfect Control: media play a big role in trying to reduce asymmetric information

Media play a pivotal role in shifting from the model of asymmetric information to perfect info Both Adverse Selection (at elections) and Moral Hazard (retrospective voting) With Imperfect Information, Politicians (Agents) can extract rents from Citizens (Principals): media helps citizens to control politicians Moreover, there exists heterogeneity across Citizens' Preferences and Level of Information

Difference in preferences of getting informed or the type of information they get If the media provides a truthful signal about the state of the world, that would improve the accountability for the politicians and reduce transaction cost

Truthful information is important for democracy and the world: expect media to do this

But media might have different interests, so they may or may not provide information

On the demand side, citizens may decide to disregard this information or they can decide to acquire only the type of information they like: they have certain preferences over others

People self select in the type of news they like, they subscribe to newspapers that have a similar vision to their etc

Politicians on top of this may be able to Distort the Information provided by the Media, thereby reducing control and increasing rents.

Some type of Media Bias and Media Capture might therefore exist

"A rational man can become well informed for four reasons:

1. he may enjoy being informed for its own sake, so that information as such provides him with utility;
2. he may believe the election is going to be so close that the probability of his casting the decisive vote is relatively high;
3. he may need information to influence the votes of others
4. he may need information to influence the formation of government policy as a lobbyist.

Nevertheless, since the odds are that no election will be close enough to render decisive the vote of any one person, or the votes of all those he can persuade to agree with him, the rational course of action for most citizens is to remain politically uninformed" [Downs, 1957]

Option 1: like to consume news, for my own kind of utility

Option 2: being the deciding voter, need to know things so as to make choices

Option 3: might try to modify the way in which other people think

Option 4: work with information

Being pivotal is extremely difficult and unlikely to happen and given that it is difficult to influence people, there is a free riding problem

Dealing with information is difficult in politics: either people get informed because they like to get informed or it is difficult to be crucial in an election

People have very little knowledge of what goes on in politics

Campbell et al. (1960): the electorate "knows little about what government has done (...) or what the parties propose to do".

Converse (1964): only 10% of the interviewed could define the meaning of "liberal" or "conservative" Neuman (1986): even the most vivid concepts of political life are recognized by only a little over half the electorate"

There is some fundamental lack of knowledge among people

Delli Carpini & Keeter (1996): only 13% of the more than 2000 political questions examined could be answered correctly by 75% or more of those asked, and only 41% could be answered correctly by more than half the public".

There is some fundamental lack of knowledge but there is also high heterogeneity

Political knowledge highly correlated with education, income, race, gender, age.

In general, it might be related to demand for consumption

People that get more informed are more informed ALSO about politics

However, some voters tend to be specialists (e.g. blacks more informed than whites on racial issues, females more than males on gender issues)

Political science has struggled on whether the information matters for politics or not, empirically Information and media important because they can help monitor the politician and reduce the informational rent

Media DO play an important role, but this is not uncontroversial – there are different theories on this

### THEORIES OF INFORMATION IRRELEVANCE

**"Behaviour irrelevance hypothesis"**: voters use short-cuts (endorsement, partisanship). Lupia and McCubbins.

Information relevance: people don't need to be very well informed because they tend to pick the movement and party and then do what the party tells them to do

When they vote, people don't collect a lot of information about what is going on but they either trust the endorsement of one speaker or the party messages: since the party told you that this is the right thing to do, you start believing this

Parties exist and their long term relationship with voters makes information acquisition irrelevant

**"Outcome irrelevance"** (full information equivalence): a poorly informed population may be able to reach the same outcome as a perfectly informed one (Feddersen and Pesendorfer).

They argue information is not relevant

Suppose that some people are more informed than others for some reason

If a large share of the population is not informed is better

Know that the best thing that can be done is to abstain and leave the other informed people to vote and decide for them as well

This is how they justify the fact that turnout rates at election are much higher among educated people than others

Strategic delegation by the uninformed to the informed implies that information increases participation.

Theory trying to explain whether someone votes and whether they are educated

### THEORIES OF INFORMATION RELEVANCE

Having informed voters matters for politics

Can use the media to infer the quality of the politician

More Media Consumers & More Coverage of Politics increases

- i. share of informed voters;
- ii. responsiveness of voters to perceived competence of politicians: more able to oust politicians that are not good type, so increase the accountability of politicians
- iii. effort and valence of politicians

However, the empirical problem is that media consumption and coverage of politics are endogenous

Either find a way to randomise it, or if you always watch the same channels, that is self-selection

Why do Voters demand News about Politics? Two main motivations:

**Private motive**: to some it is entertaining; need to obtain info that influence private actions, such as job search, welfare, taxation, else;

**Voting motive**: to make better electoral choices, but a free riding problem exists

## SUPPLY SIDE

Why do Media outlet (Newspapers, TV) supply News about Politics?

At the end of the day, newspapers are mostly private enterprise seeking to maximize profits in a sector with increasing returns to scale (due to fixed cost of news gathering)

Market in which there is DEMAND for news: unclear whether people would pay more for them

Suppliers are going to generate profits if they have subscribers and/or advertisement

When providing news:

Sell a service to people, something that is becoming less and less important over time

Generate traffic on webpages or television channels

In most areas, try to get people to watch something and then sell the people to the advertisement

Programmatic advertisement: pre-loaded videos that get started before watching something else

Now most news outlet sell to the advertisers the audience watching that 30 seconds video

A media company sells the people: what kind of people to sell to the advertisers?

People with high propensity to consume, those to target to sell something

The media needs to create programs to the people that eventually are going to be watched by the right people

The media are going to target different groups of people, not on the basis of ideology but on the basis of market choices

This creates a distortion in the media market which is more an more business drive: very little politically driven

There are empirical evidence on the role of information

Stromberg (2004): radio fostered turnout and increased New Deal spending in certain counties

The amount of resources that go to certain types of counties or others is going to depend on radio penetration

Countries that have a higher radio penetration are going to be targeted more

In those places where the radio arrives, get more spending: people will know that funds have been sent and this might change their voting behaviour

Similar ideas in development economics: relief after natural disaster

After natural disaster, some places that were better connected with others through media got more relief than others, and earlier

Empirical evidence speaks against the idea of "behaviour irrelevance hypothesis"

Information matters for politics but it does so in a desirable, positive way

Politicians change their behaviour to target more educated people, but is that outcome more desirable or not?

Distort the spending towards the people that are more informed, not the ones that are more in need

However, underlying idea that people that are more educated make better choices

## AGENDA SETTING HYPOTHESIS

Relevance or irrelevance of mass media in politics?

Mass media can influence public opinion by manipulating the salience attributed to issues (McCombs & Shaw [1972])

Most people think that media can influence public opinion by informing them and leading them towards one idea or other: can give more information to people, but that doesn't necessarily change their time

Information is like a signal: issue I don't know anything about, start reading about that and get a series of signals, that are going to change my prior

Have a prior initially: distribution about what happens is spread out

The more and more learn about something, the more the distribution converges towards a certain point

Know that it works in a certain way

However people select information: very keen on listening to things that they are already in line with

The press may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about." [Cohen, 1963]

There is one thing that media are very good at doing: select what people should think about: they are very good at doing agenda setting, something that was much stronger when only few traditional media provided the information

There was some form of monopoly of information

With the existence of social media, there could be a diversified supply

Readers cannot distinguish between

- i. "I did not see any news about X today because nothing important happened regarding X
- ii. "I did not see any news about X today because, although something important happened, the media decided not to publish it"

Way more true in an environment in which the media is a monopolist

Could have a situation on which the media talks, they keep staying on an argument

## MEDIA BIAS

Different media provide the same information differently or give the same information differently, reading the same fact in different ways

The economic way of thinking about this is that bias go away in a competitive market

If there is a competitive market, which often is not there in media OR if people don't want to buy news reports that are biased, then in a competitive market bias should go away

Problematic because:

- Media markets are not perfect: they are an oligopoly
- People might actually have a preference for bias

This has to do with the issue of cognitive bias: lie to listen to things that you believe true

Tend to like to stay in the same eco chamber

If that is the case, people like to buy product that are tailored to preferences: so the market, the media outlet, are going to target different people depending on their demand

Media bias that comes from the business element of the market: there are biases, because some want to listen specific things

Want to target those that are likely to spend more: give programs the spin that people are going to like

Target program to sell to people that are more important to the advisers

Mass media bias might be created on public policy: media portrays some information flows, which are what they care about

"Some kind of communication on some kind of issues, brought to the attention of some kind of people under some kinds of conditions, have some kinds of effects" [Berelson, 1948]

Identification is a big issue

**Italian example: in the year 1996 and 2001**

Tab. 1: Vote (%) in the single-member ballot (2001)

|          |       | voted 2001 |       |       |       |        |
|----------|-------|------------|-------|-------|-------|--------|
|          |       | Uilvo      | other | CdL   | none  | total  |
| Mediaset | 0     | 24.28      | 2.65  | 14.21 | 15.71 | 56.84  |
|          | 1     | 6.82       | 1.40  | 24.28 | 10.66 | 43.16  |
|          | total | 31.10      | 4.05  | 38.49 | 26.36 | 100.00 |

Tab. 2: Vote (%) in the single-member ballot (1996)

|          |       | voted 1996 |       |       |      |          |       |
|----------|-------|------------|-------|-------|------|----------|-------|
|          |       | Uilvo      | other | Polo  | Lega | Polo+Leg | none  |
| Mediaset | 0     | 35.45      | 1.08  | 13.11 | 2.72 | 15.83    | 13.47 |
|          | 1     | 6.79       | 0.68  | 16.87 | 1.96 | 18.82    | 7.87  |
|          | total | 42.25      | 1.76  | 29.98 | 4.68 | 34.65    | 21.34 |

Strong correlation between people not watching Berlusconi's TV and voting on the left both in the single-member ballot and the proportional ballot  
Problematic for identification issue

DellaVigna & Kaplan (2007) exploit the natural experiment induced by the timing of the entry of the Fox News Channel in US local cable market

Fox News is significantly to the right of all other mainstream television networks

It is therefore likely to have a significant effect on the available political information in a cable market.

Is watching Fox News make you more Republican?

Identification issue comes from the fact that if you are a Republican you want to watch It  
Empirical strategy: compare the change in the Republican vote share for the towns that received Fox News with those that had not

Have a treatment and a control group: control is made by those that cannot watch Fox News, while the treatment is the possibility to watch Fox News

This is known as INTENTION TO TREAT: looks very similar to a randomised experiment

Compare the citizens but make sure these are not too different from one another

Pre-1996, news broadcasts took up a small share of Fox Broadcasting Corporation programming.

Distribution of Fox News started in October 1996.

In June 2000 Fox News was present in 20% of US cities with an audience of 17.3% of US population.

20% of towns with cable service in the 28 state sample (34% of the population of these states)

Summary of 105,201 respondents to a August 2000 - March 2001 survey

|         | Dem   | Rep   |
|---------|-------|-------|
| Fox     | 29,4% | 37,5% |
| Non Fox | 32,4% | 26,2% |

Democrats watch less Fox News than Republicans

Town-level data on Fox News availability

Match with 1990 and 2000 Census data

Final sample: 9,256 towns from 28 states (representing 65.9% population and 68.6% votes cast in the 28 states)

Within this sample are 284 counties (which consist of 3,890 towns) that incorporate both towns with Fox News and towns without.

Fox News availability: is it correlated with Republican vote share?

Controlling for different characteristics: the availability of Fox News is not related to the vote shares for the Republicans

Controlling for individual characteristics, it is not true that there is a selection bias: whether they watch it or not doesn't make them more or less republicans

What about the vote share CHANGE between 1996 and 2000?

The change becomes positive and statistically significant

Having the possibility to watch Fox News, it is going to make them vote more Republican

When controlling for demographics and other stuff, the effect is still positive and significant

Watching Fox News, you become more Republican, by 1 or 2% - FOX NEWS EFFECT

According to DellaVigna & Kaplan, Fox News shifted an estimated 200,000 votes from the Democrats to the Republicans

Effect is relatively small in absolute terms, but thinking about the fact that the margin of victory in some areas was very small, it becomes highly relevance

Given to the fact that elections were very tight, the Fox News effect became very important

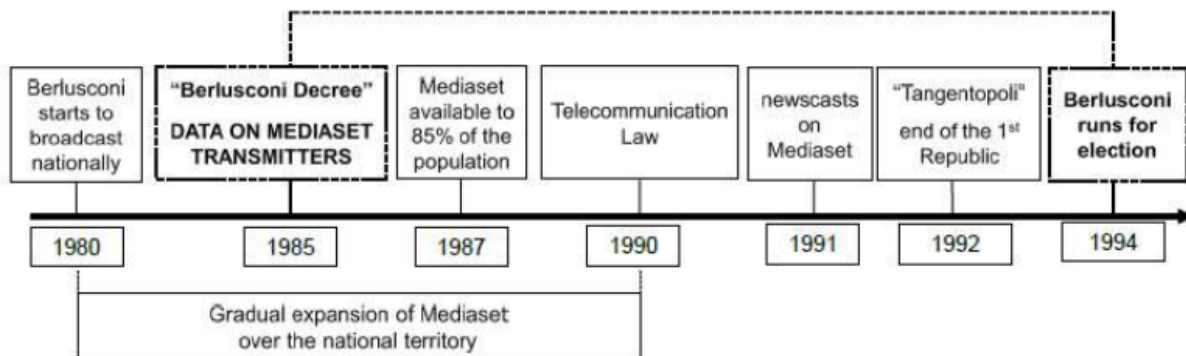
Fox News shifted an estimated 10,757 votes in Florida. Bush's official margin of victory in Florida was 537 votes

Not so strong in absolute terms, but relevant in political outcomes

MEDIASET: mostly broadcasting tv series, movies and cartoons, rather than news



Durante, Pinotti & Tesei examine the political outcomes in municipalities that had/had not access to Mediaset prior to 1985.



Share of programs that has information basis was very tiny in Mediaset, started to increase only at the beginning of the 90s

Most of the things were light entertainment, tv series and movies

The researchers used a measure of signal intensity: very much driven by geography

Two municipalities close to one another

Because of geography, you could watch it in one area but not in another

Durante, Pinotti & Tesei use voting data on National elections (lower house) at municipal level from 1976 to 2013.

Municipalities initially covered by Mediaset significantly more likely to vote for Berlusconi's party in 1994, when he first ran for office.

This effect persists for almost two decades, very pronounced for heavy TV viewers (very young and the old)

Could you watch Canale 5 or not?

Places where Canale 5 was available in the mid-80s were places where people voted more for Berlusconi in 1994

Difference between the two papers

Fox News is all about news, discuss information

Mediaset is not about news: there was NO news at the time – can make the argument that this is about popularity at the time

Berlusconi more popular in the areas in which there was his TV

Long term effect of movies and Tv and media in general

### WHO SHOULD OWN THE MEDIA?

Public Interest Theory: Due to Positive Externality, Government (Pigouvian argument) should provide information (ex BBC)

Market might be producing too little information, so might give control to the public sector

But what if the market is necessary to control the governments?

Public Choice Theory: Government will use this power to distort info in its favour

Djankov et al. (2003): strong correlation between Government Ownership and bad economic outcomes, as well as lower freedom of press, political and economic freedom

In some cases, having government control information might make it more biased



# WELFARE STATE: facts, data and relevant issues

Tools that a government has: government can spend and then it needs tax

Spending comes under different labels: economic policies include government expenditure such as:

- Welfare state (transfers)
- Consumption: provision of public goods
- Investments
- And taxation
- Direct taxes: imposed on labour, capital income, corporate taxes
- Indirect taxes: VAT
- Contributions e.g. paying an insurance premium – contributions made because we are paying for something e.g. unemployment benefits, pensions, eligibility to a program might be dependent on the contributions made in the past
- Unemployment benefit: might be covered by unemployment insurance if you did pay in the past
- Pension: you get it if you contributed in the past

That is by no means the only way in which the government can intervene

Government can make regulations on:

- Labour market: employment protection legislation, etc.
- Goods market: what kind of product a certain store can sell, opening hours
- Financial market – huge regulations
- Trade policy – regulations in trade across countries

Government intervention in production: state owned firms

In the 70s, this was a major thing: interrails, airway companies, telecom were all state-owned firms

Several decades of liberalization: but in some countries they are still there e.g. China

Government becomes one of the players of the economy

Main difference between spending, regulating or being one of the actors in the market is that when you do spending or taxing you change the equilibrium in the market because you change quantities and so change prices

But when you do regulations you are really changing the rules of the game: it is not like you are not having an impact on the market

e.g. can regulate a market which used to be perfectly competitive and make it an oligopoly – only few people can sell that good because of government regulations

When moving from perfect competition to oligopoly, quantities produced are going to decrease

Prices are going to increase: impact on people

That is a way of redistributing: giving more market power, firm has opportunity to make more money

Regulating is a very powerful way of making redistribution – different from taxation

Other public goods typically provided by the government – don't think of them as something that has an economic content, but they do

- Defence
- Legal system
- Judiciary system

## SIZE OF GOVERNMENT: EXPENDITURE

Countries do different things – level of government intervention is everywhere particularly large

In most countries, the government is intermediating 50% of GDP

Some countries do this more than others: France 57%, in Scandinavian Europe it is about 52.9%, in the Anglo-Saxon world it is much smaller (38% in the US)

Differences in size but also in the composition: when the government intervenes in the economy, what is it that it does, exactly?

The first element is government consumption

Government consumption is itself divided in "goods and services" and "wages"

Services that government in different countries provide have two types of cost:

One is the wage for public employees, the other is the cost to materially provide those services

Scandinavian countries spend a lot in goods because they provide a lot of social services: wages are up to 14% of GDP, they have a lot of public employees - in other countries it is a lower statistic

Subsidies to firms + property income not particularly relevant

Social benefit and other transfers: government giving money to people under different headers (pensions, unemployment benefits)

There are large difference: the more generous are the Continental European countries, while the less generous are the Anglo-Saxon countries

Everywhere, the largest part of government budget

A lot of money goes around, given back to people by the government

Gross investment: government investing directly in the economy, mostly to build infrastructures

Numbers are not too big

Largest portion of government intervention is about transferring resources and providing services to people

| Country                     | Total (%)   | Consumption (%)    |             | Subsidies (%) | Property Income (%) | Social benefit and other transfers (%) | Gross Investment (%) |
|-----------------------------|-------------|--------------------|-------------|---------------|---------------------|--|----------------------|
|                             |             | Goods and services | Wages       |               |                     |  |                      |
| Austria                     | 52,5        | 6,31               | 10,59       | 1,41          | 2,47                | 26,41                                  | 5,32                 |
| Belgium                     | 55,1        | 4,28               | 12,71       | 3,45          | 3,18                | 27,39                                  | 4,12                 |
| France                      | 57,3        | 5,12               | 13,02       | 2,22          | 2,17                | 29,90                                  | 4,88                 |
| Germany                     | 44,1        | 4,74               | 7,68        | 0,87          | 1,76                | 25,74                                  | 3,36                 |
| Netherlands                 | 46,2        | 6,28               | 9,17        | 1,22          | 1,44                | 24,22                                  | 3,90                 |
| <b>Continental Europe</b>   | <b>51,1</b> | <b>5,3</b>         | <b>10,6</b> | <b>1,8</b>    | <b>2,2</b>          | <b>26,7</b>                            | <b>4,3</b>           |
| Greece                      | 49,9        | 4,75               | 12,12       | 0,91          | 4,03                | 23,29                                  | 4,83                 |
| Italy                       | 51,3        | 5,50               | 10,16       | 1,89          | 4,62                | 25,36                                  | 3,74                 |
| Portugal                    | 51,7        | 5,81               | 11,81       | 0,70          | 4,91                | 22,48                                  | 5,99                 |
| Spain                       | 44,5        | 5,28               | 11,04       | 1,09          | 3,39                | 20,74                                  | 2,93                 |
| <b>Mediterranean Europe</b> | <b>49,3</b> | <b>5,3</b>         | <b>11,3</b> | <b>1,1</b>    | <b>4,2</b>          | <b>23,0</b>                            | <b>4,4</b>           |
| Denmark                     | 56,0        | 9,25               | 16,55       | 2,08          | 1,51                | 22,37                                  | 4,20                 |
| Finland                     | 58,1        | 11,51              | 14,20       | 1,31          | 1,24                | 25,37                                  | 4,43                 |
| Norway                      | 45,6        | 6,19               | 13,99       | 1,87          | 0,64                | 18,23                                  | 4,71                 |
| Sweden                      | 51,8        | 8,38               | 12,62       | 1,70          | 0,85                | 23,57                                  | 4,64                 |
| <b>Scandinavian Europe</b>  | <b>52,9</b> | <b>8,8</b>         | <b>14,3</b> | <b>1,7</b>    | <b>1,1</b>          | <b>22,4</b>                            | <b>4,5</b>           |
| United Kingdom              | 43,8        | 11,24              | 9,35        | 0,55          | 2,69                | 16,58                                  | 3,37                 |
| United States               | 38,0        | 6,26               | 9,86        | 0,33          | 3,49                | 14,71                                  | 3,32                 |

## SIZE OF GOVERNMENT: REVENUES

In order to give money to people, need to tax them

Tax wedge: taxes paid by workers adding also the social security contributions (also the ones paid by the employers)

Numbers for several countries and different periods overtime

Can read them vertically to highlight cross-country differences: taxes much lower in Switzerland and Anglo-Saxon countries, much higher in Continental Europe

Alternatively, can look t how countries have evolved overtime

Ireland: used to be a country where up until the early 90s, the tax wedge was around 40%, then there was a huge fiscal reform - taxes were slashed by a lot

Decreased to about 20/25% - this is how Ireland was able to bring a lot of companies' headquarters in Dublin - more fiscally convenient

Other countries had a much more stable profile: tax wedges in Italy have always been high and around the same value - overall the range is the same

In the Netherlands country started off at the top of the chart - taxing quite a lot, then they had to reduce the tax rate as well, along with expenditure, in the 90s

Tax wedge come down

Happens to small open economies: pressure coming from the outside and tend to compete on international markets - international pressure pushes to be competitive by cutting taxes

| Code | Country        | Year |      |      |      |      |      |      |      |
|------|----------------|------|------|------|------|------|------|------|------|
|      |                | 1981 | 1987 | 1993 | 2000 | 2004 | 2007 | 2010 | 2015 |
| AUS  | Australia      | --   | --   | --   | 31,0 | 31,0 | 31,0 | 31,0 | 28,4 |
| BEL  | Belgium        | 49,8 | 53,5 | 54,6 | 57,1 | 55,4 | 55,6 | 55,9 | 55,3 |
| CAN  | Canada         | 24,7 | 29,0 | 30,8 | 32,9 | 31,9 | 31,3 | 30,4 | 31,6 |
| DNK  | Denmark        | 42,7 | 47,7 | 46,9 | 42,1 | 38,9 | 39,1 | 36,4 | 36,4 |
| FIN  | Finland        | 42,4 | 45,5 | 49,3 | 47,5 | 44,2 | 43,9 | 42,3 | 43,9 |
| FRA  | France         | -    | -    | -    | 50,4 | 50,3 | 49,7 | 49,9 | 48,5 |
| DEU  | Germany        | 41,9 | 45,1 | 46,4 | 52,9 | 52,2 | 51,8 | 49,1 | 49,4 |
| IRL  | Ireland        | 34,7 | 42,7 | 40,0 | 28,9 | 24,1 | 22,2 | 25,8 | 27,5 |
| ITA  | Italy          | 47,3 | 49,4 | 49,2 | 47,1 | 46,3 | 46,4 | 47,2 | 49,0 |
| JPN  | Japan          | 17,3 | 21,4 | 21,2 | 24,7 | 27,3 | 29,3 | 30,2 | 32,2 |
| NLD  | Netherlands    | 48,3 | 49,5 | 45,7 | 40,0 | 38,8 | 38,7 | 38,1 | 36,2 |
| NOR  | Norway         | 43,1 | 42,6 | 36,8 | 38,6 | 38,1 | 37,5 | 37,3 | 36,6 |
| PRT  | Portugal       | 29,9 | 34,5 | 33,3 | 37,3 | 37,4 | 37,3 | 37,1 | 42,1 |
| ESP  | Spain          | 37,4 | 37,9 | 38,0 | 38,6 | 38,8 | 39,0 | 39,7 | 39,6 |
| SWE  | Sweden         | 50,8 | 51,7 | 45,6 | 50,1 | 48,4 | 45,3 | 42,8 | 42,7 |
| CHE  | Switzerland    | 29,1 | 28,5 | 28,7 | 22,9 | 22,2 | 22,4 | 22,1 | 22,2 |
| GBR  | United Kingdom | 37,6 | 36,0 | 32,6 | 32,6 | 33,9 | 34,1 | 32,6 | 30,8 |
| USA  | United States  | 35,3 | 30,6 | 31,2 | 30,8 | 30,5 | 30,9 | 30,7 | 31,7 |

## WELFARE STATE PROGRAMS

- Pensions: most relevant one, at least size-wise → Longevity risk: you don't know your date or death, therefore you don't know how much to save, how much money you need. Pension systems pay an annuity, inflation indexed monthly stream of payments, which only ends when you don't need anymore
- Healthcare → Health risk: need to go to the hospital for whatever reason
- Long term care- historically very small, but given the current demographics, it will become a big issue in the future → Cognitive decline: risk of not being self-sufficient in the future
- Unemployment benefit → Dismissal risk: if you get fired, this covers you
- Basic income or safety net → Poverty risk
- Education → Family: may be financially constrained and cannot send children to school; different people might have different perception of what is the need of education for children - having a mandatory public education system prevents from incurring into the risk that your family doesn't think education is something to pay for

All the welfare state programs respond to some sort of risk, they cover some risks

They are an insurance against certain type of risks

More in the public economic type of thinking

Why should the government provide insurance? Can't the insurance be provided by some other

Welfare state and the government doesn't need to be the only provider of insurance - there can be others

But often, due to asymmetric information, moral hazard and adverse selection, don't see a lot of private markets for this

Long term care insurance: provider of insurance is family

Provider of many of the insurances for many of the risks is FAMILY

Similarly, during crises, when young people lose their job, they go back to their parents' homes again

### WELFARE STATE EXPENDITURE ON GDP

1980s golden age of welfare state – relatively generous

Welfare state beneficiaries were not that many in the Eighties: healthcare, pensions, elderly people were not that many, things are changed

In 2011 there are many more elderly people and many more will come in the future

| 1980                       |               |                |              |                    |               |           |
|----------------------------|---------------|----------------|--------------|--------------------|---------------|-----------|
|                            | <i>France</i> | <i>Germany</i> | <i>Italy</i> | <i>Netherlands</i> | <i>Sweden</i> | <i>US</i> |
| Welfare state Expenditures | 20,8          | 23,0           | 18,0         | 24,1               | 28,6          | 13,3      |
| Pension                    | 9,6           | 10,9           | 8,9          | 6,7                | 8,4           | 6,3       |
| Family Benefits            | 2,4           | 2,3            | 1,1          | 2,4                | 3,9           | 0,8       |
| Labour Market              | 0,0           | 0,5            | 0,6          | 2,1                | 1,6           | 0,9       |
| Health                     | 5,6           | 6,8            | 5,5          | 5,0                | 8,3           | 3,7       |
| Housing                    | 0,4           | 0,1            | 0,0          | 0,3                | 1,1           | 0,0       |

| 2011                       |               |                |              |                    |               |           |
|----------------------------|---------------|----------------|--------------|--------------------|---------------|-----------|
|                            | <i>France</i> | <i>Germany</i> | <i>Italy</i> | <i>Netherlands</i> | <i>Sweden</i> | <i>US</i> |
| Welfare state Expenditures | 31,4          | 25,5           | 27,5         | 23,5               | 27,2          | 19,0      |
| Pension                    | 13,8          | 10,6           | 15,8         | 5,5                | 7,4           | 6,7       |
| Family Benefits            | 3,6           | 3,1            | 2,0          | 2,1                | 3,6           | 1,2       |
| Labour Market              | 2,3           | 1,8            | 1,7          | 2,4                | 1,8           | 0,7       |
| Health                     | 8,6           | 8,0            | 7,0          | 7,9                | 6,7           | 8,0       |
| Housing                    | 0,8           | 0,6            | 0,0          | 0,4                | 0,4           | 0,3       |

Looking at 1980, a lot of difference across countries in terms of spending in GDP: money primarily spent in Pensions, but there are other programs as well e.g. Health

Health and Pensions are the most important programs

Some money will also go to family benefits and housing

Family benefits: money related to having children or small children

Transfers come as unemployment benefits: passive labour market policy – you get fired, you get the policy and then there are active labour market policy

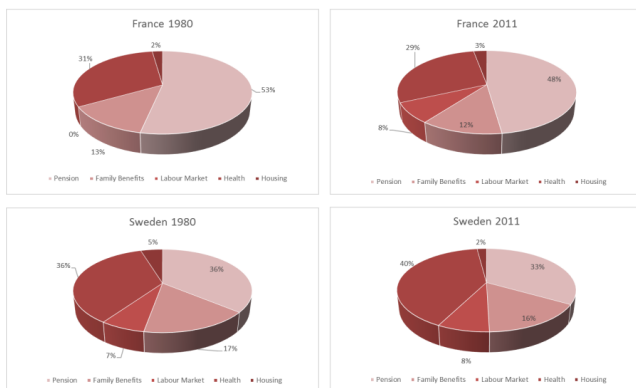
In 2011, numbers increase almost everywhere, except for those countries where the numbers were already large

In Sweden and the Netherlands, their welfare state was already mature in the 80s and stayed there

In other countries, the Welfare state increased (Italy, US and Germany)

Most of the money still goes to pensions and health

## COMPOSITION OF THE WELFARE STATE



In France, especially in the 80s but also in 2011, the welfare state is balanced: a lot of money going to pensions and healthcare, but there is still room for labour market benefits and family benefits  
Pensions and healthcare: main recipients are the elderly on both accounts

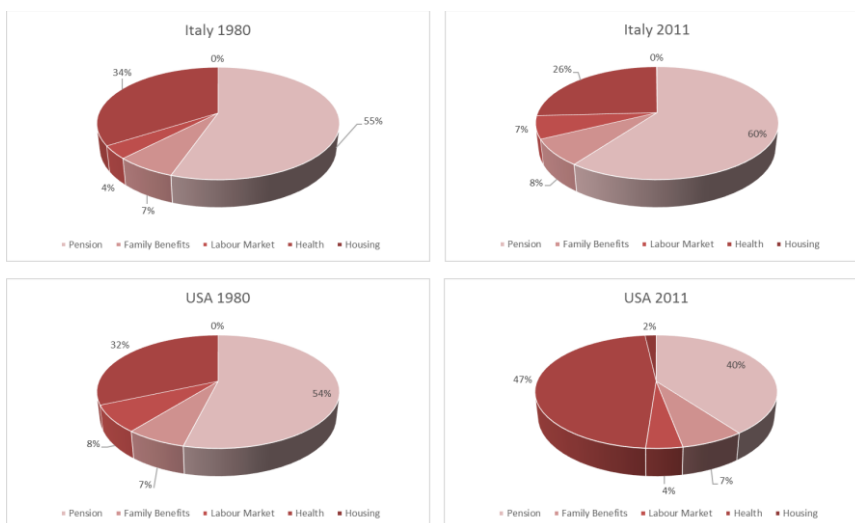
When talking about the labour market and family benefits, that is money that tends to go to younger people and adults

Labour market policy designs differ among countries: at the very least it goes to adult people

Young people that enter the labour market do not have previous contributions

Therefore in many countries they are not eligible for unemployment benefits

Unemployment benefits tends to go to people that have a history of contribution, but still younger than 65.



Italy and the US have two very different welfare systems

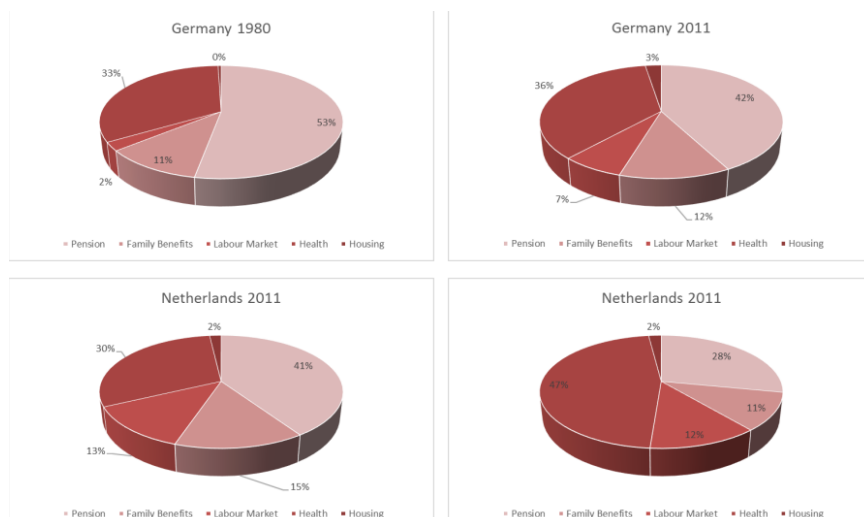
Italy spends way more than the US - but summing pensions and health both Italy and the US they tend to provide almost all of welfare state money to these two items (89% of the entire welfare state in 1980)

86% in 2011 of the entire welfare spending goes to the elderly - in the US most of the spending goes to healthcare, they have the Medicare going to the elderly

There is also Medicaid going to the poor individuals

Two different systems: age cleavage in redistribution is very evident

Germany and the Netherlands are more balanced



Lot of money going to pension, lot of money to healthcare, but some remains for the others

### EXPENDITURE ON EDUCATION

Expenditure in education and healthcare – show an outcome

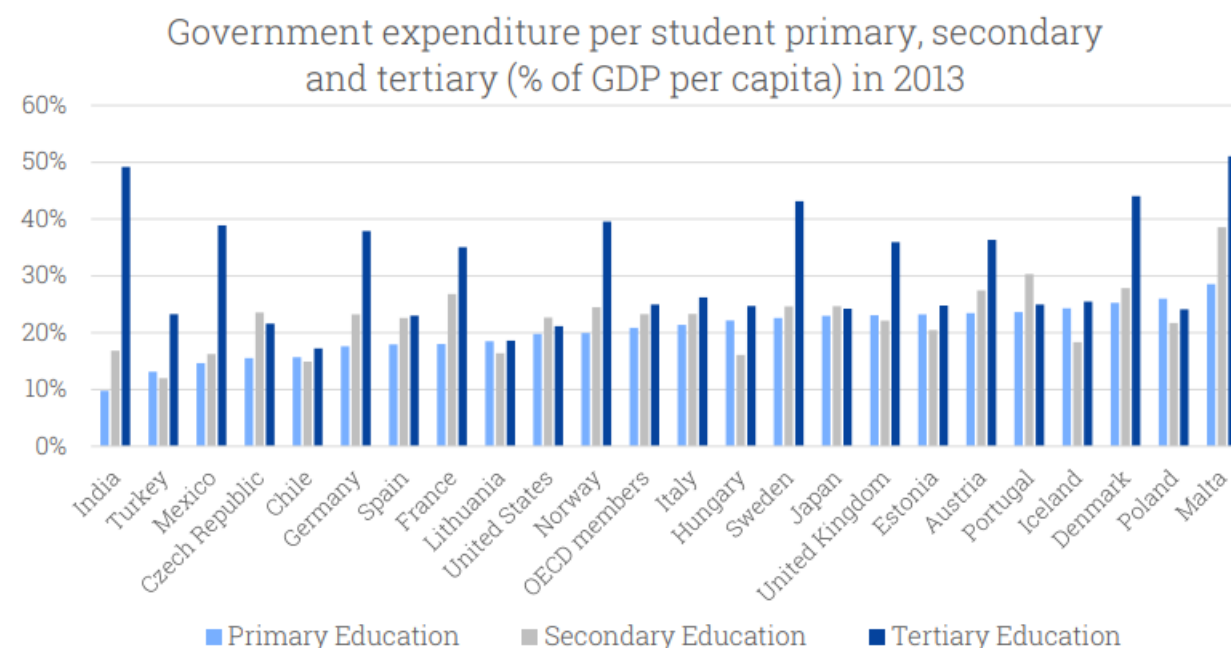
Argument is that the two are not correlated: if you spend more, you don't necessarily get more

Production function of many of these services is actually more complex than just throwing money in it

It is not only about how much money you spend but also how you spend that

Spending money is a good thing to get to the final outcome, but should do that in an efficient way

Government expenditure per student primary, secondary and tertiary (% of GDP per capita) in 2013



Source: World Bank, World Development Indicators 2018.

More variation in tertiary education: some countries give it for free, others don't – level of spending in that area varies dramatically

This is not related to outcomes obtained



## PISA TEST – educational outcome

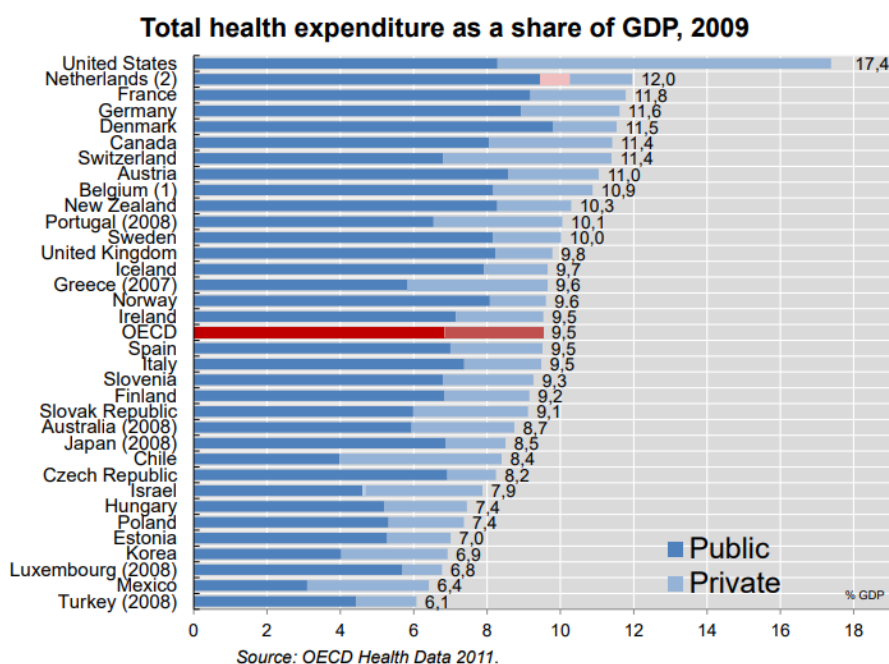
15 years old in different countries



In each country there is a sample of 15 years old students that take this test  
 Standardized tests in maths, science, reading, financial literacy and other categories  
 They are given to students regardless of the grades they are in as long as they are at least 15 years  
 Goal is to compare people of the same age in different countries  
 What comes out of this is that there is not a huge correlation between how much you spend and where you are standing in this ranking of how good 15 years old students are  
 Can discuss how good this measure is, can discuss about whether countries should prepare students also for testing or not, but the rankings in general do not correlate with spending  
 There is much more in the production function of the services provided by governments

## HEALTH EXPENDITURE

Similar situation as with education outcomes



US is the biggest spender in healthcare: public and private spending, but still off the chart with respect to other countries  
 Spain and Italy spend the same as OECD average



But this spending is not increasing longevity

Countries that have the highest life expectancy, there are Japan, Switzerland, Spain, Italy

SLIDE 16

These countries do not spend huge amounts in healthcare, much less than countries as US

Access to healthcare is only one input in the production function of health capital – how well you think depends on several things

Even when we spend, the efficiency argument on spending is something that we should consider

## REGULATIONS

In the labour market, there are three things that come to mind

1. Relevance of the unions: relevance in the labour market negotiations depends on
  - a. Density
  - b. Coverage
  - c. Centralization
2. How relevant unions are depends on laws: politics ends up in allowing unions to be more or less representatives of workers
3. Degree of Employment Protection legislation: how difficult or easy it is to dismiss a worker
4. Labour income taxation

## UNIONS

| Country        | Density <sup>1</sup> (%) |      |      | Coverage <sup>2</sup> (%) |      |      | Centralization <sup>3</sup> (%) |
|----------------|--------------------------|------|------|---------------------------|------|------|---------------------------------|
|                | 1999                     | 2008 | 2013 | 1999                      | 2008 | 2013 | 1999                            |
| France         | 9,1                      | 7,6  | 7,7  | 95,0                      | 98,0 | 98,0 | 2,0                             |
| Germany        | 29,0                     | 19,1 | 18,1 | 92,0                      | 61,4 | 57,6 | 2,0                             |
| Spain          | 21,1                     | 17,2 | 16,9 | 78,0                      | 79,3 | 77,6 | 2,0                             |
| Italy          | 23,7                     | 33,9 | 37,3 | 82,0                      | 80,0 | 80,0 | 2,0                             |
| United States  | 14,3                     | 11,9 | 10,7 | 18,0                      | 13,1 | 11,9 | 1,0                             |
| Japan          | 24,0                     | 18,2 | 17,6 | 21,0                      | 17,6 | 17,1 | 1,0                             |
| European Union | 43,1                     | 29,6 | 27,9 | 82,3                      | 66,9 | 61,9 | 1,9                             |

**1. Percentage of workers enrolled in a union**

**2. Percentage of workers whose wage is determined by the union**

**3. Degree of Centralization of the wage Bargaining 1 at firm level, 3 central**

Union density is the share of workers that enrolled in a union: people have to pay the membership into the union

Participate into something and pay the ticket for it: what services in exchange for that?

Very low participation in France: unions are irrelevant in France

There is more membership in the US than in France – some sectors in the US are highly unionized

In some countries, union density is high because they also provide services for the people enrolling e.g. they manage the unemployment benefits

But for the others, unless those services are only provided by the union, what really matters is the second indicator: coverage

Union density is not the only way of measuring the power of the union

Union coverage: tells what is the percentage of workers being signed and negotiated by the unions

In France, 98% of the contracts are signed by unions

Doesn't matter if you are part of the union or not, no matter what the contract is going to be signed by the union

On one hand the unions have huge power because they negotiate each single contract, on the other hand there is an issue of representation, because these unions don't seem to have a lot of membership Why is this happening?

Free riding: why pay a membership into a union that is going to cover my contract no matter what?

Union membership is cohort specific: it used to be very important for elderly workers and has been declining over time

Why this happened? Depends on policies that unions have had over time, protecting more the elderly workers and less the younger ones; whatever the reason, there is a cohort effect

Coverage: how important unions are in signing the contract

Unions not so relevant in the US: there are only some sectors in which unions matter a lot

In France, it is practically everywhere; in Italy 80%

Centralization: tells at what degree of centralization the wage bargaining is brought about

That can be either at economy wide negotiation; at sector level (different contracts for different sectors); firm level

## EMPLOYMENT PROTECTION LEGISLATION

Italy: Art 18 – how easy it is to fire workers

Indicator provided by the OECD is done for two groups of workers: temporary and regular workers

**Regular workers:** those that have a permanent contract

Indicator in 1985 on the x-axis

Indicator varies between 0 and 6: 0 means that the labour market is very flexible

Can almost fire at will

On the other hand: 6 – labour market very rigid

On the y-axis is the EPL degree in 2013

45° line: if a country is sitting on that line or close to the line, the EPL has not changed between 1985 and 2013

Some countries have a much more flexible labour market, some others a more regulated one

Countries with more flexible labour market are the Anglo-Saxon ones: United States, Canada, UK, Australia, Switzerland

At that point, reach medium ground and from that point on find European countries

In some countries the market is very flexible, in others it is much more regulated

Liberalising these markets, reforming these markets is almost impossible: changed a lot only for Portugal and Spain

Labour market did not change almost for anyone in 40 years

Huge persistence in the labour market regulations

Extremely difficult to change labour market regulations

## Temporary workers

Degree of regulation for temporary workers

Still see a huge heterogeneity across countries and with previous graph

Those countries that were very much deregulated in the regular workers are also very much deregulated for temporary workers

Not very different rankings: but there is a bunch of countries below the 45° line

These countries did liberalize their markets for temporary workers

Several European countries there

Introduced some liberalisation in the labour market, but only for some temporary contracts

These graphs explain the origins of the so-called **DUAL LABOUR MARKET**

It is a labour market in which you have two types of contracts: regular workers and temporary workers

These two types of contracts are given to different people

Age cleavage: senior workers tend to have permanent contracts

Younger people tend to jump from temporary contract to temporary contract

Overtime: more requirement and demand for liberalization in the labour market, driven by liberalization

Need labour market to be more flexible, but only provide that flexibility for the temporary workers

Create a labour market in which all the flexibility is provided by temporary workers

2 groups with more flexibility: young people and migrants – those that smooth out the business cycle

If you need to hire people, you hire them

If you need to fire people, don't need to do that because they expire anyway

This is driven by changes in regulations that occurred for temporary workers but not for regular workers, protecting the older workers

There is no correlation (or at least no linear correlation) between unemployment rate and degree of EPL

Regulation in the labour market, it is preventing firms from hiring, but also changing their hiring behaviour

EPL is decreasing both firing and hiring rates: firms are less willing to hire people if they know they cannot fire them

DO not expect a linear relation

Outcome on the labour market

There are two ways to look at labour market

Look at the **unemployment rate**: people who don't have a job but are actively looking for one over the total workforce

Unemployment rate different across countries: how many of the people that are active on the labour market are actually looking for a job

**Look at labour force participation**: all the people in the labour market divided by the adult population

Huge differences e.g. Switzerland: Labour force participation is 84% - more than 4 people out of 5 in the age group 18-65 are on the labour market

e.g. Spain: Labour force participation decreases at 75,45 percent

In Italy this number is 65% - only a bit more than 3 people out of 5 are active on the labour market

What are the other people doing and who are the other people?

Some of them are the early retirees, female unemployment pretty large (second lowest employment in Europe for women), NEET: those that are not studying nor working

Try to see the link between the introduction of regulation and unemployment

### Income inequality

If economy is too unequal, there is injustice and the government will intervene

Anglo-Saxon countries tend to be more unequal; median income countries among OECD countries are more unequal (Mexico, Turkey, larger Gini Coefficient)

Scandinavian countries more equal

Southern European countries - more equal, but they have grown more unequal over time

It is close to the UK: inequality has been increasing in the last decades

### Wealth inequality

Inequality better related to stocks of money - very difficult to get data on very rich people

Difficult to measure the right part of the income distribution

Each country has their own survey but they are not comparable

Switzerland: top 10% family hold 70% of the country's wealth

More skewed in terms of wealth

There is a lot of wealth inequality: driver for public economics, but also political economics and people's preferences for redistribution and for what the politicians will want to do

## Demography

Welfare state is a lot about providing insurance - other providers can be the public sector, family, charity, etc

There are other ways to have an insurance: one is self insurance

Self insurance from the risk of unemployment is saving

### Models of welfare state

- Corporative (Continental Europe: France, Belgium, Germany)
  - Good degree of social protection for selected groups of individuals, hierarchical structure, collective bargaining
- Social-Democratic: (Scandinavian countries)
  - High degree of social protection for all residents, large use of markets } Family: (Mediterranean Europe: Italy, Spain, Greece)
- High degree of social protection for the bread-winner, conservative, little use of the market }  
Liberal: (US & Anglosaxon countries)
- Low degree of social protection, insurance obtained in the markets, individualistic

## AGING

Take it as an exogenous shock – how is this going to change our world and the welfare state

Aging is due

Lower Fertility – after (post WWII) Baby boom

Lower Mortality, increased expected longevity at old age

Huge compositional effects in the population: much smaller cohorts of younger people and larger cohorts of older people

Population pyramid changes dramatically

## Fertility rate in OECD countries

2.1 kids per woman keeps the population constant

OECD average is 1.6

In Italy, fertility is around 1.2/1.3

Conditional life expectancy

How many more years you can expect to live when you are 65

This has been growing over time

A woman in the OECD would expect to live 16 additional years in 1950 if she made it to 65, now that is more than 20 years

In Italy it is even more than that

Once people retire, they live for a longer period

## Population structure (Year 2000)

Population structure used to be a pyramid, but now it has become a kite

Blue one is in 2000, the white one is the expectancy in 2050

Additional years of longevity will not necessarily be good years – health issues

Spending in terms of long-term healthcare is going to be larger

## Dependency Ratio in the EU

Important indicator: tells the share of young people over the working age population

How many adults are out there to support the young?

Dependency ratio of the young has been declining: fewer kids and many more adult people


Supporting the young has become easier

Supporting the elderly has become a nightmare instead

Dependency ratio of retirees to workers has been increasing: more retirees for the working population

More expensive to support them

 [http://bit.ly/Peer2Peer\\_Bocconi](http://bit.ly/Peer2Peer_Bocconi)

 [http://bit.ly/Blab\\_Bocconi](http://bit.ly/Blab_Bocconi)

 <https://www.blabbocconi.it/dispense/>

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For doubts or suggestions on the handout:



**FEDERICA DI CHIARA**



+39 3279948330



@federicadichiara8

For info about our teaching division:



**GIOVANNI  
BARBARO**



+39 3277175240



@gianni\_barbaro2



**CARLOTTA  
CAROMANI**



+39 3703723764



@carlottacaromani