Principles of Economics II

Lecture 3: Political Economics

Fall 2021
Mitri Kitti

Outline

Preference aggregation and voting

- From individual preferences to social preferences
- Different voting systems
- Condorcet paradox
- Arrow's impossibility theorem
- The median voter model

Special interest groups and politics

Political economics

- **As we have seen, markets left on their own do not always reach a desirable allocation of resources**
  - Market outcomes may be inefficient or inequitable
- **Markets are an imperfect institution, but so is the government**
- **The field of political economics applies the methods of economics to study how the government and the political system works**
  - Sometimes referred to as political economy or public choice
  - Very close to political science in several ways

Preference aggregation

Group preferences

Let’s say we have to make a choice about the location of a new park, and we have only two options for the site

- A simple way to choose: majority vote

However, in many cases we have more than two options

- For example, a new park could be placed in many possible locations
- How can we proceed in this case?

Suppose we have three options and put up a vote where voters can rank the options

Voting results

Voter type:	Type 1	Type 2	Type 3
Percentage of electorate	35	45	20
First choice	A	B	C
Second choice	B	C	A
Third choice	C	A	B

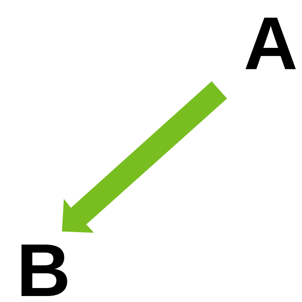
- We know the preferences of all voters
- Now let's use the individual preferences and choose the option preferred by the electorate
- But how should we do that?
- Consider first pairwise majority voting

Majority vote: A vs. B

	Type 1	Type 2	Type 3
Percentage of electorate	35	45	20
First choice	A	B	C
Second choice	B	C	A
Third choice	C	A	B

Majority rule: If the majority prefers A to B, then the group prefers A to B

A vs. B: 55% prefer A => A wins

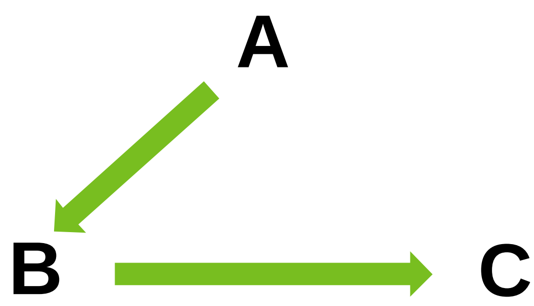


Majority vote: B vs. C

	Type 1	Type 2	Type 3
Percentage of electorate	35	45	20
First choice	A	B	C
Second choice	B	C	A
Third choice	C	A	B

B vs. C: 80% prefer B => B wins

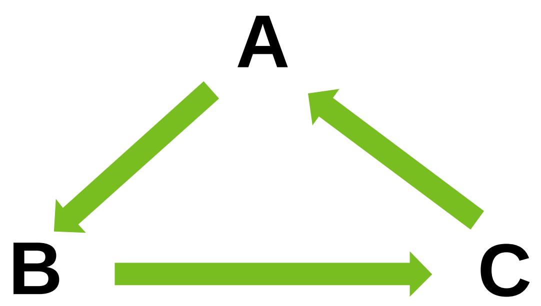
So, A beats B and B beast C
=> A is the voters' clear choice!
Or is it?



Majority vote: A vs. C

	Type 1	Type 2	Type 3
Percentage of electorate	35	45	20
First choice	A	B	C
Second choice	B	C	A
Third choice	C	A	B

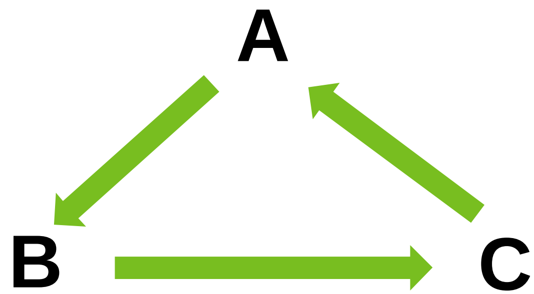
A vs. C: 65% favor C => C wins



Condorcet paradox

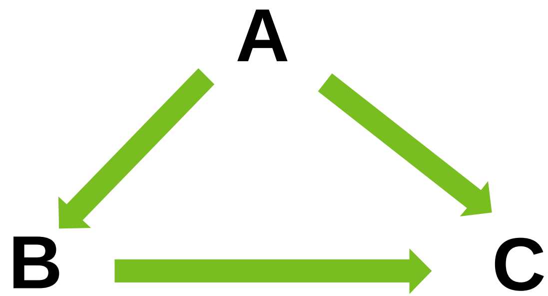
We have a cycle under pairwise majority voting:

- A beats B, B beats C and C beats A



Normally, we would expect preferences to be *transitive*:

- If A is preferred to B and B is preferred to C, we would expect A to be preferred to C



Condorcet paradox

The Condorcet paradox is that democratic outcomes do not always obey this property (Marquis de Condorcet, 1785)

- Pairwise majority voting might produce transitive preferences for the society, but it cannot be counted on to do so

Implications:

- The order in which options are voted against each other can affect the result
- Thus, setting the agenda can have a powerful impact on the outcome of an election
- Agenda setter is a powerful person!
- Majority voting by itself does not tell us what outcome a society really wants

Other voting systems

Plurality (or first past the post):

- Winner is simply the option with most number one votes => B wins

Two-round cutoff:

- First round: number of number one votes, majority wins
- If no majority, top two face off for majority vote
- In our case, no majority => A and B to the second round and A wins

Borda count:

- 3 points for being ranked #1, 2 points for being ranked #2 and 1 point if ranked #3 => B wins

Borda count

Voter type:	Type 1	Type 2	Type 3
Percentage of electorate	35	45	20
First choice	A	B	C
Second choice	B	C	A
Third choice	C	A	B

- A: 35*3 + 20*2 + 45*1 = 200
- B: 45*3 + 35*2 + 20*1 = 225 => winner!
- C: 20*3 + 45*2 + 35*1 = 185

Arrow's impossibility theorem

- **Is there a perfect election system?**
- **Kenneth Arrow (1972 Nobel prize winner) analyzed this issue in his 1951 book *Social Choice and Individual Values***
  - Starting point: assume that individuals in society have preferences for various possible outcomes A, B, C and so on
  - Then define a perfect election system and see whether there is a voting system that satisfies the definition

Arrow's impossibility theorem

Arrow assumed that society wants a voting scheme to choose among the outcomes that satisfies several properties:

- *Unanimity*: If everyone prefers A to B, then A should beat B
- *Transitivity*: If A beats B and B beats C, then A should beat C
- *Independence of irrelevant alternatives*: the ranking between any two outcomes A and B should not depend on whether some third outcome C is also available
- *No dictators*: There is no person who always gets his way, regardless of everyone else's preferences

Arrow's impossibility theorem

- **Arrow proved mathematically that no ranked voting system can satisfy all these properties**
- **Instead of going through the proof, let's try to get a sense of why the theorem is true using a couple of examples**
  - Condorcet paradox shows that majority vote fails to produce a ranking among the outcomes that always satisfies transitivity
  - Borda count, in turn, fails to satisfy the independence of irrelevant alternatives

Borda count without C

Voter type:	Type 1	Type 2	Type 3
Percentage of electorate	35	45	20
First choice	A	B	
Second choice	B		A
Third choice		A	B

- A: 55*2 + 45*1 = 155 => winner!
- B: 45*2 + 55*1 = 145

Arrow’s impossibility theorem

- **Arrow’s impossibility theorem is a deep and disturbing result**
  - It does not say, we should abandon democracy as a form of government!
  - It does say that no matter what voting scheme society adopts for aggregating preferences of its members, in some way it will be flawed as a mechanism of social choice

Notes on Arrow’s impossibility theorem

- **It is assumed that the voting rule should have unrestricted domain (work for all kinds of preferences)**
- **We can restrict the domain to “make democracy work”**
  - single peaked preferences (each voter has a best outcome, and other outcomes are ranked according to the distance to the best one), who would be the dictator in this case?
- **Arrow’s theorem in technical terms**
  - the pivotal voter is the same for each pairwise comparison (under the assumptions of the theorem except for dictatorship)
  - Pivotal voter for a pairwise comparison is a voter who could change the social preference by expressing different preference him/herself

Median voter model

Median voter model

One of the puzzles of politics is that in two-party electoral systems, parties often offer programs that are remarkably similar

- It provokes the criticism that democracy doesn’t offer a real choice
- You hear similar arguments in multi-party systems

Let’s see whether we can explain this phenomenon with a simple economic model: the median voter model

Ice cream sellers at the beach

Ice cream sellers at the beach

Imagine a stretch of beach along which bathers are spread evenly

- They can purchase ice cream from one or more mobile ice cream stands
- Initially we assume that every bather will buy one ice cream, and that all ice creams cost the same
- If there is more than one vendor, they will purchase the ice cream from the vendor located closest to them

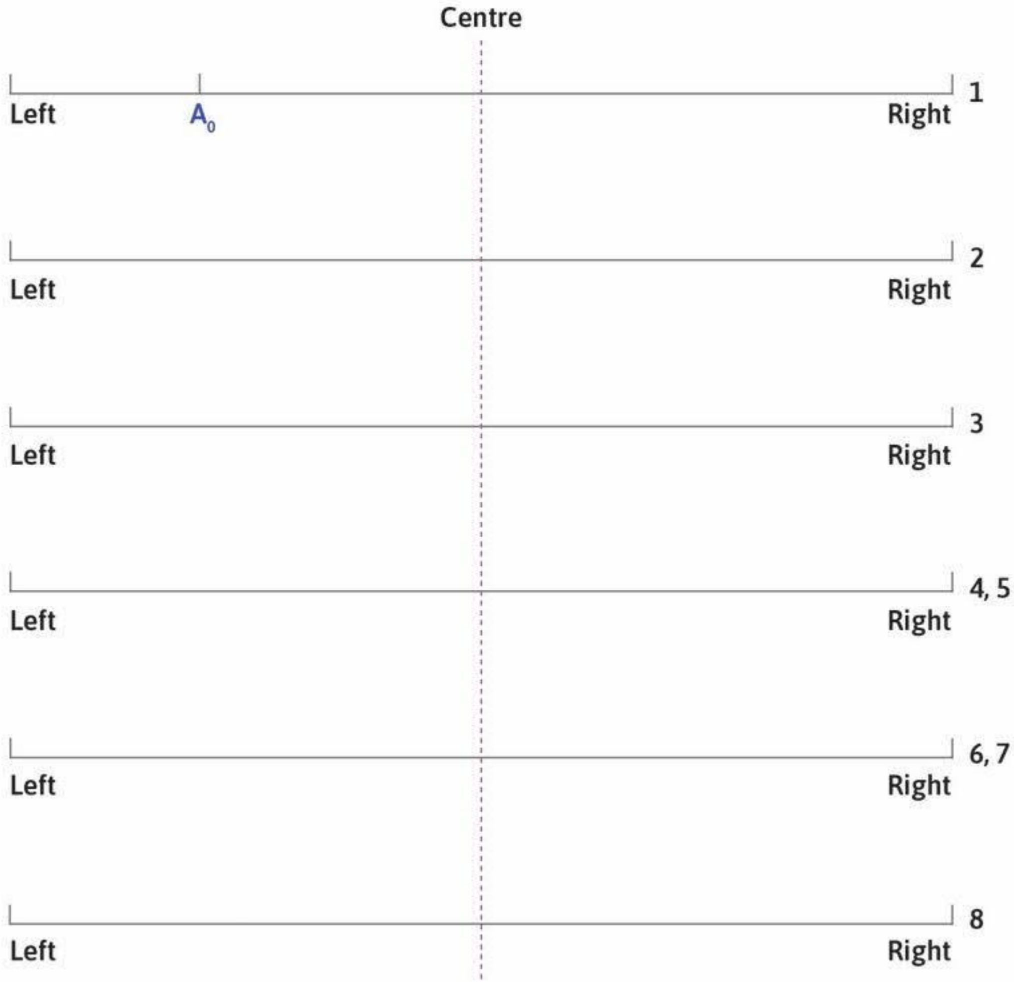
Understanding where the ice cream sellers locate on the beach will help us understand where political parties would locate along the high tax (left) to low tax (right) continuum

Ice cream sellers at the beach

A single vendor, April, is at the beach

She has the entire market to herself, so it doesn't matter where she is located

Suppose she is at a location shown by A_0

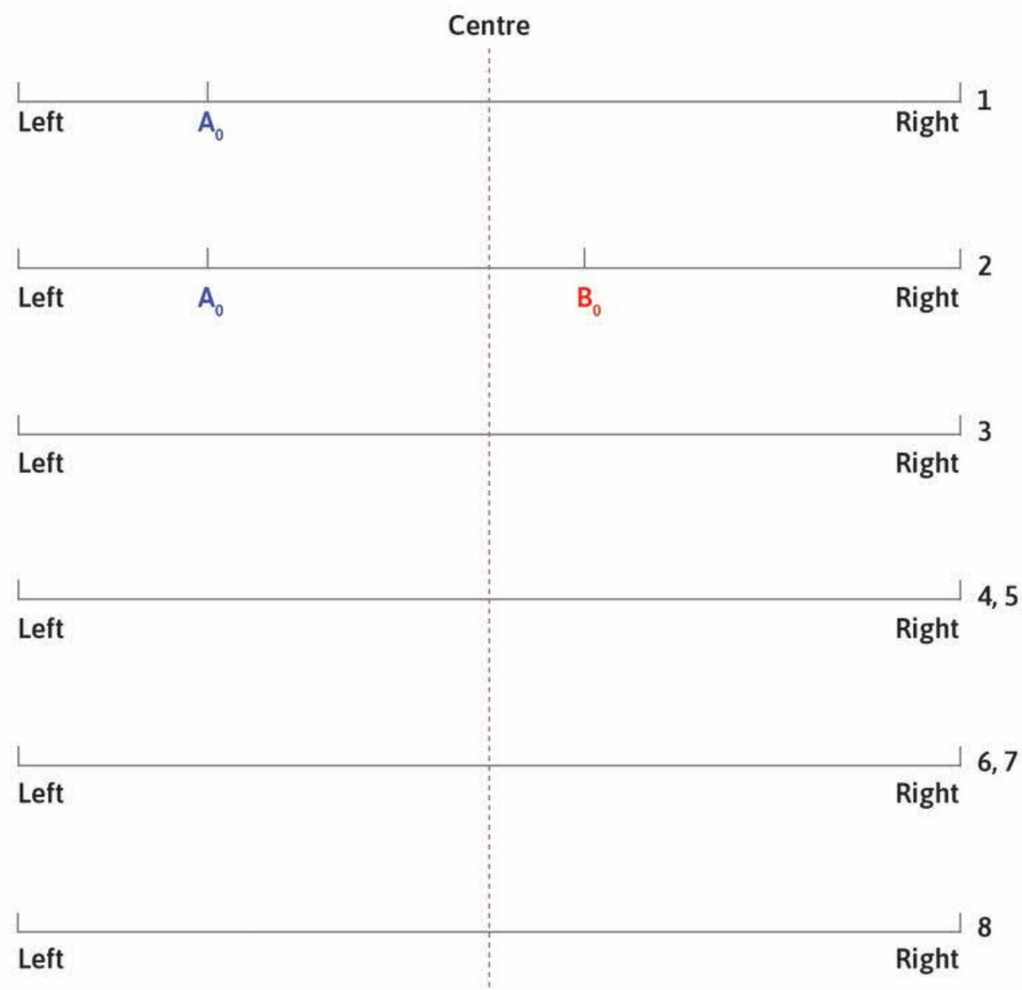


Ice cream sellers at the beach

Where will another vendor, Bob, locate in order to maximize his sales?

The market to the right of April is larger than the market to the left, so he might locate in the middle of the stretch of beach to the right of April, at point B_0

He would get all the bathers to his right and those to his left who are closer to him than to April



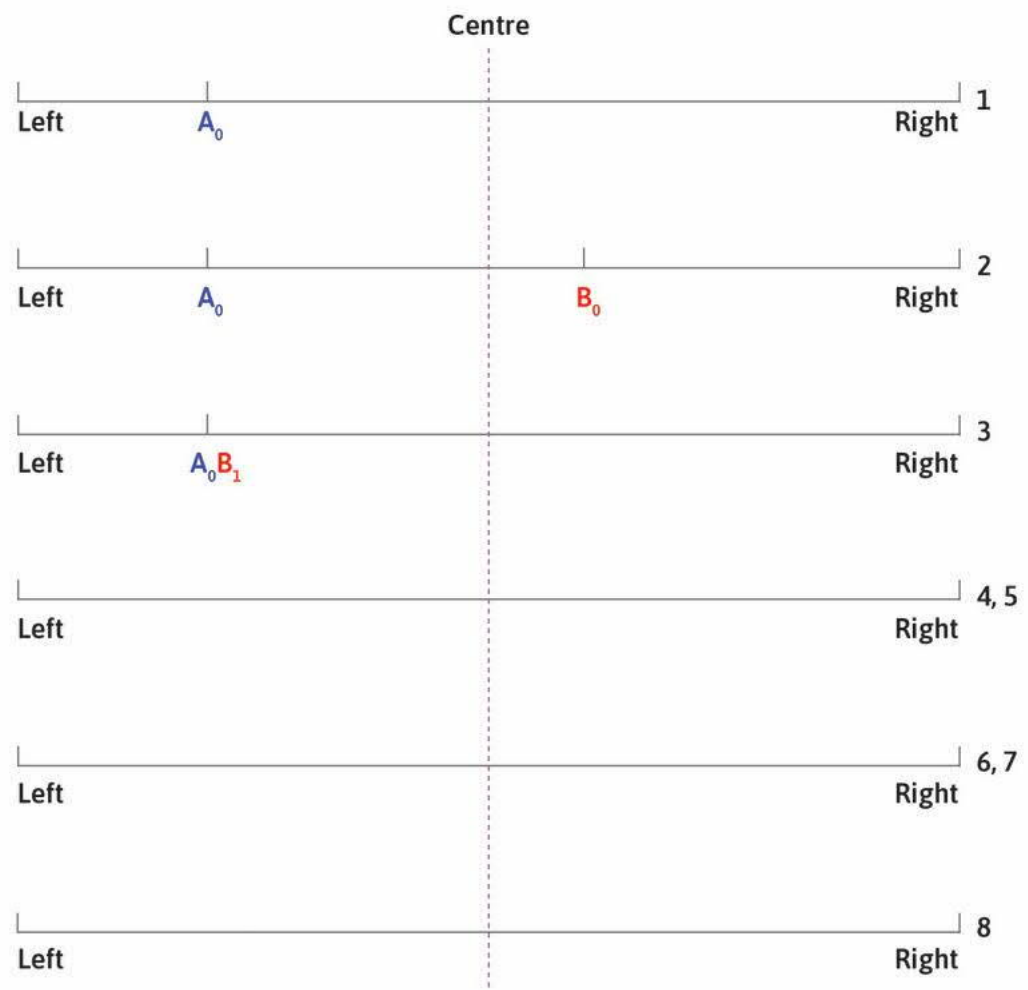
Ice cream sellers at the beach

But Bob could expand sales by shifting to the left, towards April

He will be able to gain customers to his left, who were previously closest to April, but are now closest to him, while losing none of those customers to his right

How far would he go? He will end up just to the right of April

Is this a **Nash equilibrium**?

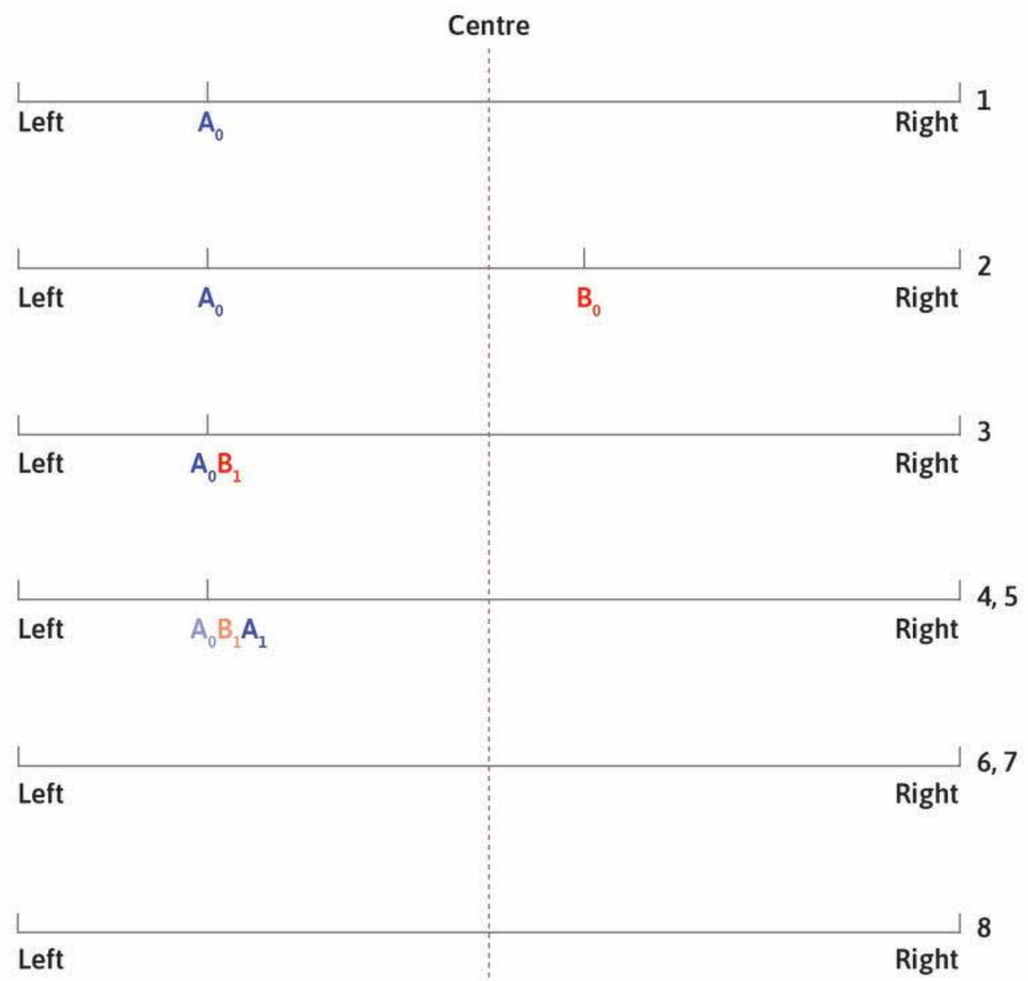


Ice cream sellers at the beach

No, April, understanding the profit-maximizing logic that Bob has just acted on, will shift immediately to the right-hand side of Bob, to A_1

Then she will get the larger market

But then Bob will do the same, and they will keep leap-frogging over each other until they are back-to-back in the middle of the beach



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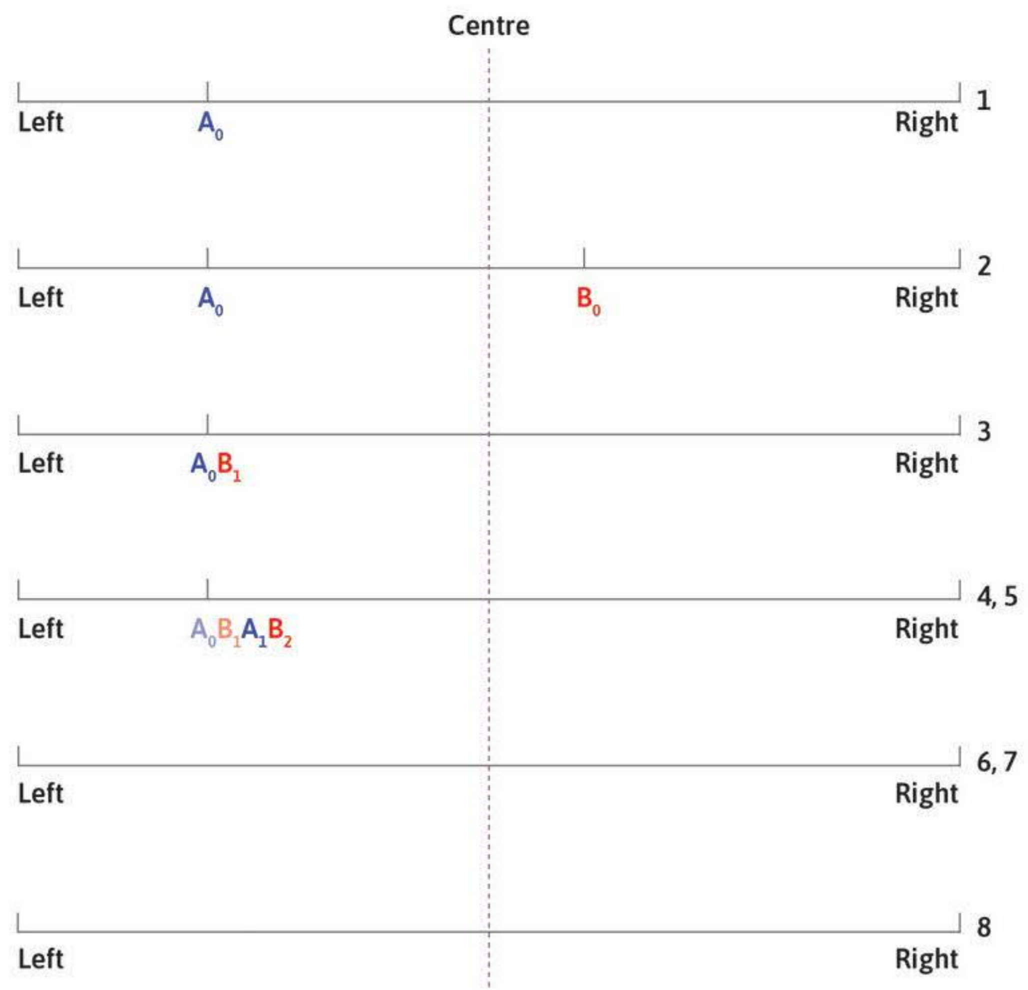
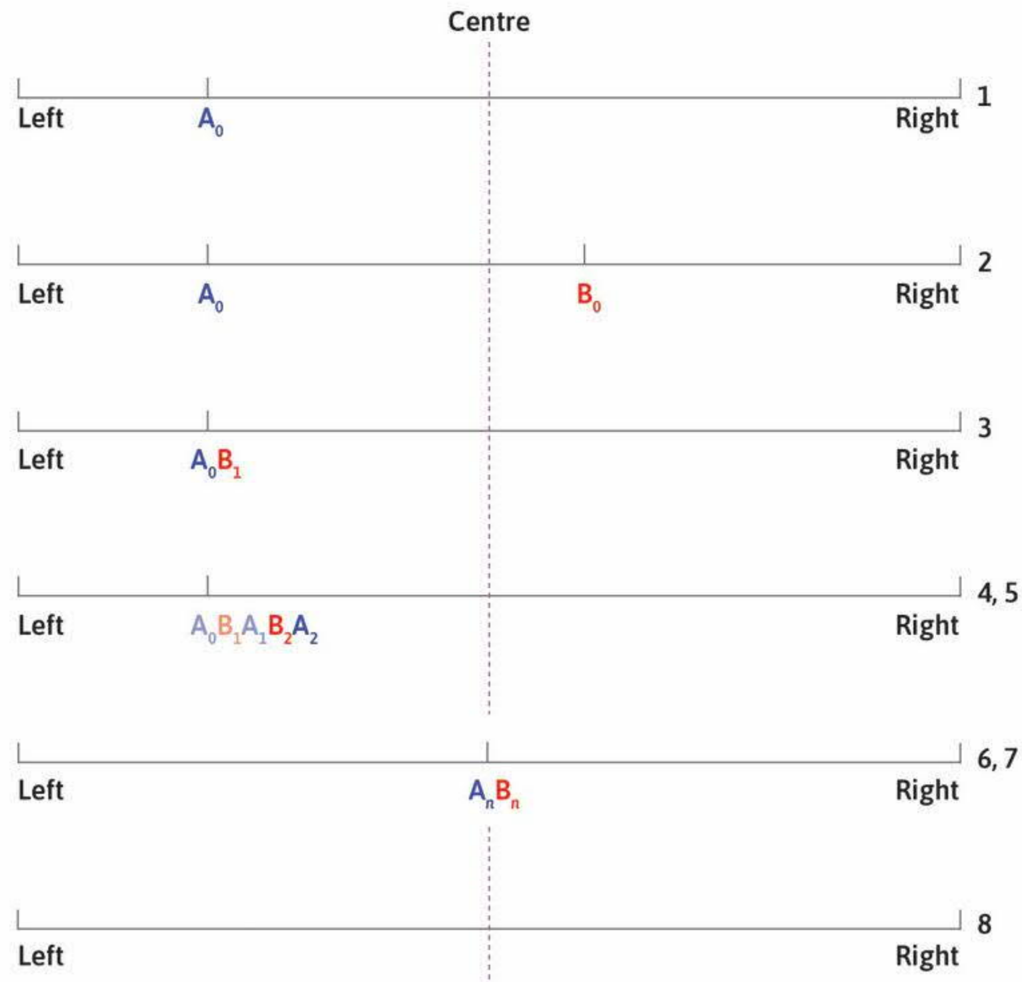


Ice cream sellers at the beach

At this point, neither has an incentive to move as they have divided the customers exactly in half

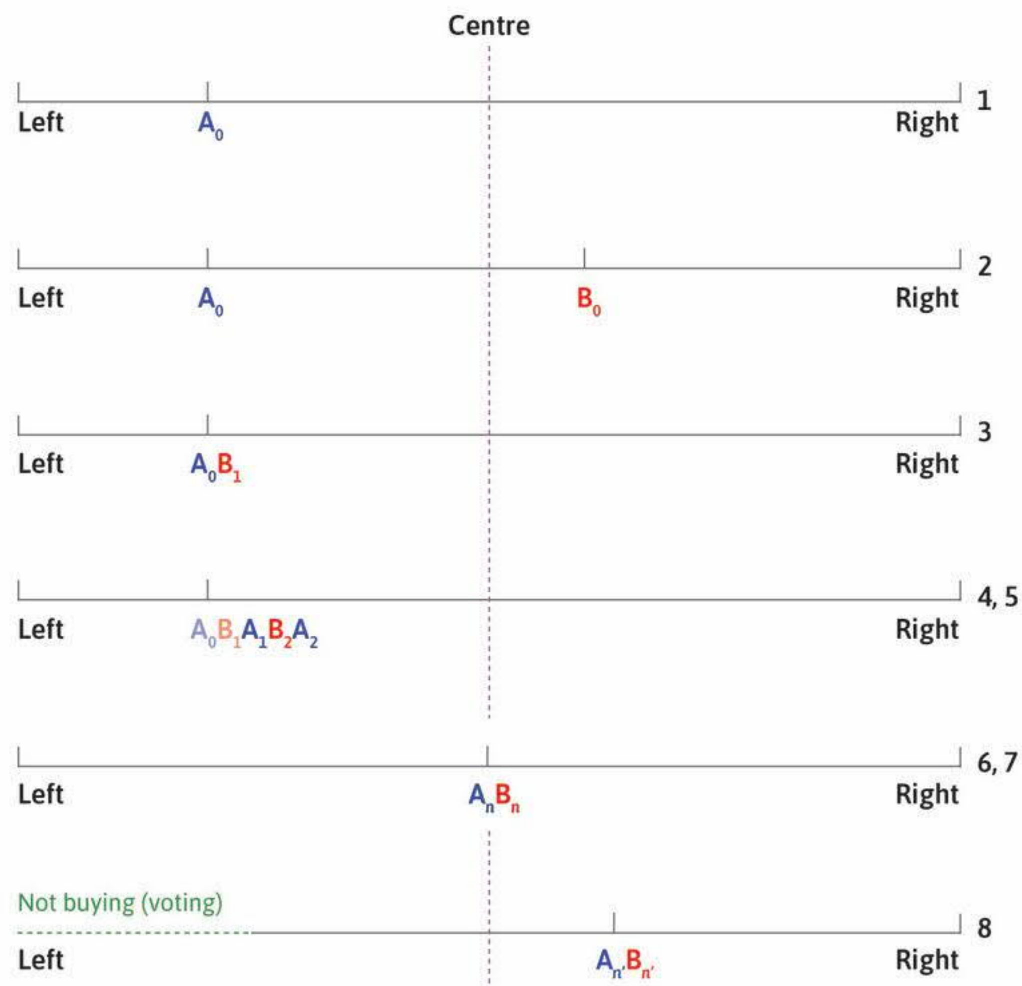
This is a **Nash equilibrium** under the rules of the game we have set out



Ice cream sellers at the beach

Imagine that the bathers on the far-left part of the beach are not going to buy ice cream under any condition (they are like the citizens who do not vote).

Then April and Bob will locate in the centre of those who *do* vote at points $A_{n'}$ and $B_{n'}$



Median voter model

- **To return to politics, we can think of voters as arranged along a left-to-right spectrum (high tax, low tax)**
- **If there are two parties, and voters will always vote for the party offers offering policies closest to their views**
  - The only Nash equilibrium would be for both parties to propose policies in the middle of the left-right spectrum
  - Voters in the middle of the left-right political spectrum would be offered two party platforms very much to their liking
  - Those more distant from the centre would have to choose between two platforms that they wouldn't like very much

Median voter model

- **The citizen in the centre – called the median voter has two advantages**
  - She gets to choose between two platforms very close to her preferences
  - She is a ‘swing voter’: can cause political parties to move by changing her preferences

Median voter model in reality

- **In reality, political parties may not always choose to locate ‘in the middle’, for several reasons:**
  - Not everyone votes – voters will abstain if neither platform is attractive e.g. the least well-off in many countries
  - Importance of money and political activities beyond voting e.g. organising meetings, participating in social media
  - Political parties care about things other than getting elected – may want to stay in line with their own values
  - Voters are not evenly distributed along a political spectrum

Median voter and public goods

Assume a vote on the public good with a given cost to voters

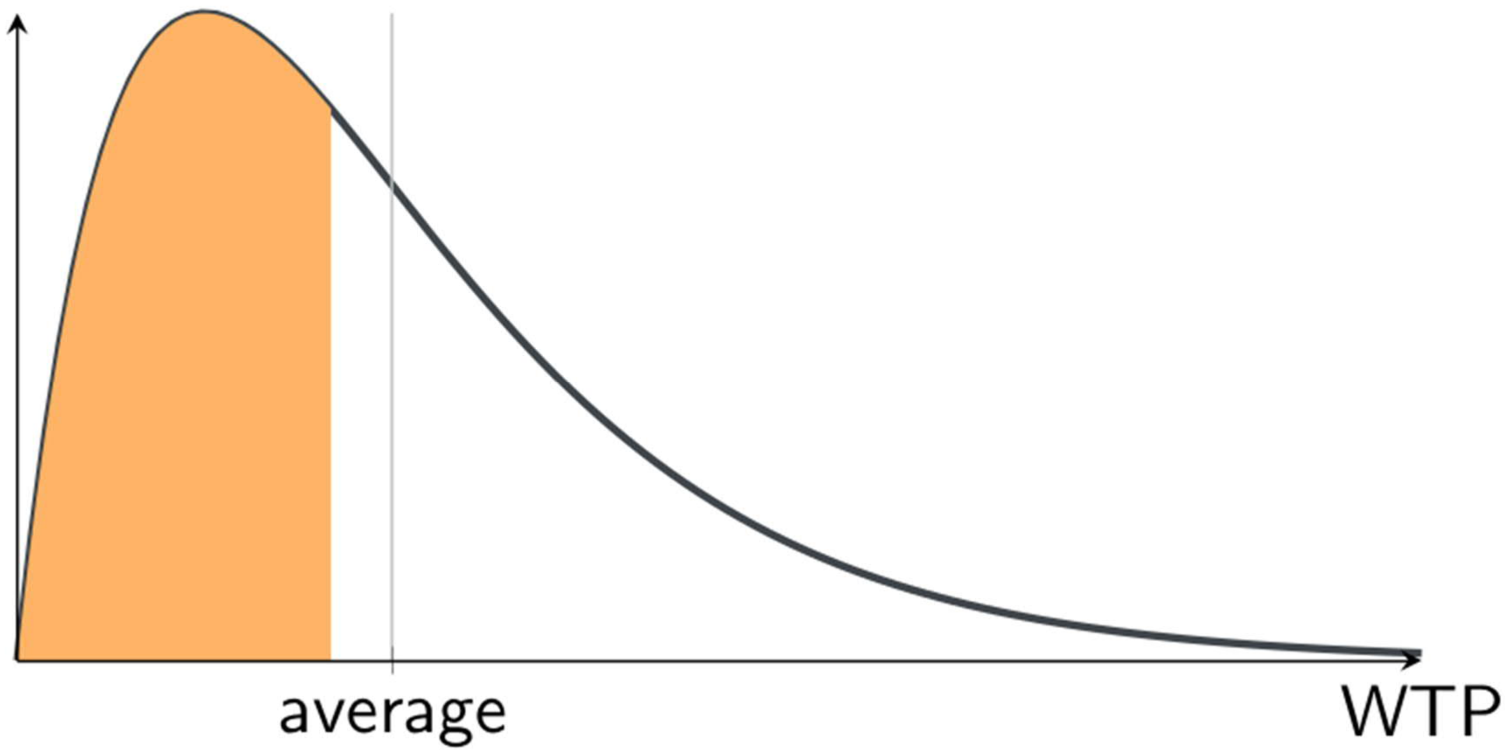
- Majority rule: the investment to public good is accepted if majority of voters accept it
- Note: only one dimension (willingness to pay) and single peaked preferences

Median voter theorem: the outcome of majority rule is optimal for the median voter

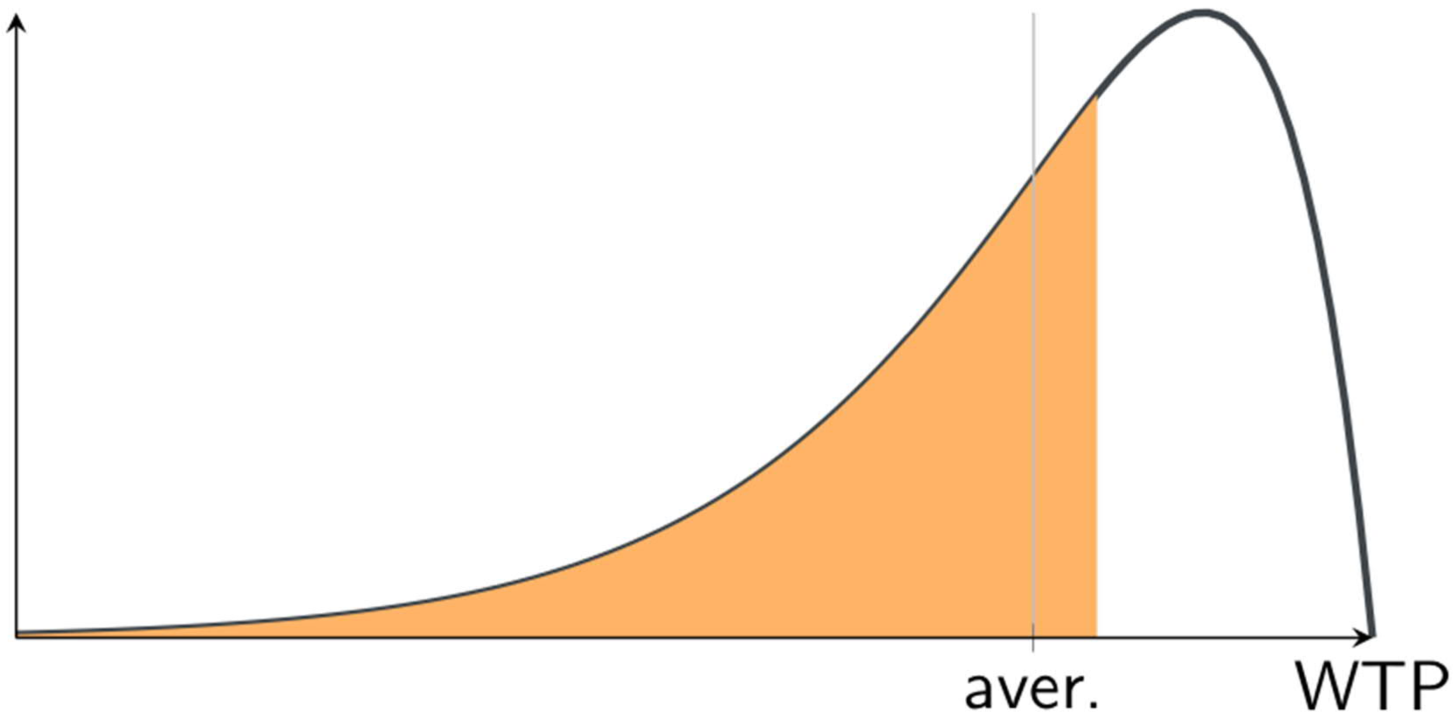
Example: road investment costs 40 000, 1001 voters

- 500 voters are willing to pay 100, and the rest have WTP=0
- Outcome of majority vote: investment is not done

Median voter and public goods



Median voter and public goods



Regulation – interest groups

Land use regulation

Land use regulation can, in principle, raise welfare by correcting market failures

- Blocked views, lost green space, congestion in the n'hood etc.
- We regulate the location of polluting plants, but also building height, amount of new housing supply etc.

However, land use regulation happens at the local level

- Land- and homeowners' asset values depends on housing supply and land use regulation
- Incentives of homeowners in the voting booth ("homevoter") and the incentives of politicians who get elected

Incentives of local politicians

The urban planner is an agent of current residents of the municipality

- Current residents can vote in municipal elections
- People living in other municipalities do not have a democratic channel to affect land use regulation and housing supply even though they are affected by the regulation

The goals of the current residents may be in conflict with the goals of future residents (or wannabe residents)

- Not-In-My-Back-Yard (NIMBY)
- It is not clear that land use policy should be at the local level

Special interest groups

Consider a reduction in tariffs on imports of clothing:

- Makes less-expensive clothing available to the population, but reduces the employment in the domestic clothing industry
- Confers a total of €1 million of costs on the 500 clothing workers and €2 million of benefits on 2 million consumers of clothing

Now consider the challenges facing those seeking to organize campaigns against and for the policy:

- Each worker in the domestic industry would lose €2,000 a year if the legislation were passed, so most would support the ‘anti-import’ cause, and be against the tariff reduction
- Each consumer will benefit by €1 if the legislation passes, so few people would be willing even to send an email to their legislator

Summary

- **Political economics applies the methods of economics to study how the government and the political system works**
- **Aggregating individual preferences into group preferences is difficult**
  - Condorcet paradox, Arrow’s impossibility theorem
- **Parties as suppliers of the political agenda, voters as the demand side**
  - Median voter model
- **Special interest politics**