

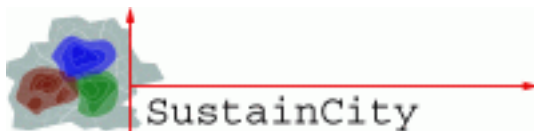
Policy insights, insights for sustainability

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outline

- 2 approaches to define sustainability?
- What is specific to sustainability of a city?
- Why is making good policy packages difficult?
- 5 types of policies, how to study them and what they can deliver:
 - Environmental policies
 - Transport policies
 - Social policies
 - Economic policies
 - Land use policies

Sustainability: 2 approaches

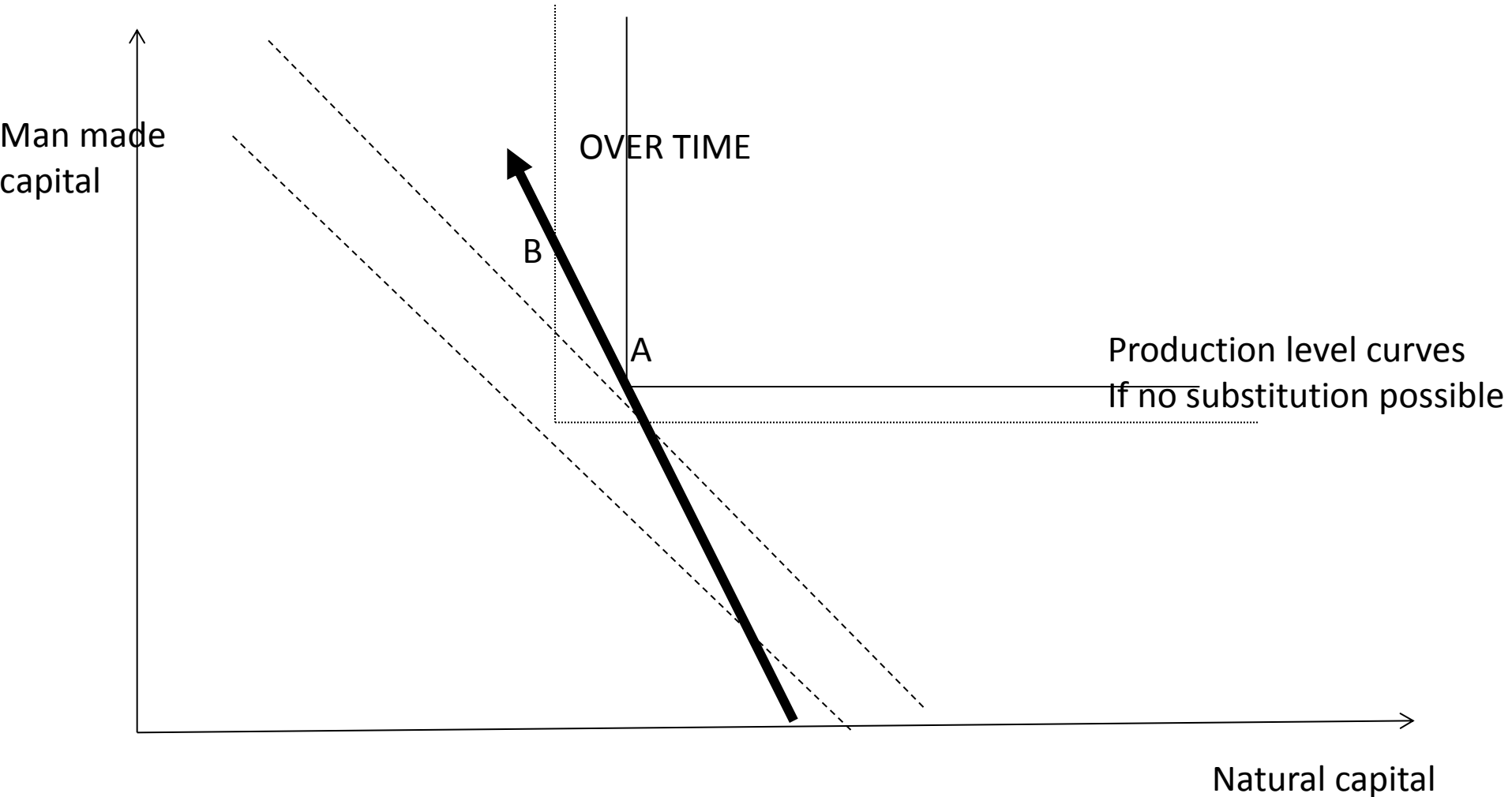
- Sustainability composite indicator
 - Indicator that is put forward by different interest groups and politicians
 - weighted sum of many indicators
 - Input but insufficient for decision making
 - Risk of double counting/ weights are often ambiguous
- Economic aggregation of indicators into welfare function
 - More consistency – avoid double counting
 - Trade offs between become explicit
 - Looking for alternative means to achieve the same objectives:
 - land use planning is not necessarily the best way to reduce CO2 emissions

Economic approach to sustainability

- 2 dimensions:
 - Current generation: quality of life, utility
 - Quality of life: consumption (income - productivity)
 - Transport (congestion, accessibility, accidents)
 - Air quality
 - Public Safety, other local public goods
 - Future generations: preserve the stocks of capital that are important for their utility
 - Productive capital (knowledge, infrastructure,..)
 - Quality of the environment (green areas, historic buildings)
 - Assessment by specific techniques (revealed preference or stated preference techniques)
 - Stock of Greenhouse Gasses

Sustainability-graphically

the optimistic view (easy substitution) and the pessimistic view (difficult substitution)



Economic approach to sustainability

- Normative approach: How are alternatives judged ?
 - Efficiency:
 - equivalent income associated to living in given house at a given location so enjoying amenities, having low/high travel costs etc.)
 - Equity
 - spatial, over generations, etc
 - capabilities approach (« potential for utility realisation ») of SEN rather than traditional« utility»?
 - Capability: example is health condition, school quality etc.
- Positive view: what will happen if certain policies are used
- **Political economy point of view**: makes people select particular policies?
 - what is impact on their own welfare?
 - How do they perceive it?
 - What is their role in the decision process?
 - What is role of different layers of government?

What is specific to sustainability at the level of a city or region- 1?

- Natural capital stocks that matter:
 - local parks, local air quality
 - Not GHG emissions:
 - incentive has to come from more global authority (EU or even better Self Enforcing Environmental Agreement)
 - can best take the form of a tax or shadow price
 - no quantity objective (“carbon lean or carbon free” city is wrong objective) as the place of emissions does not matter for the climate – if it can be done cheaply ok, otherwise better somewhere else

Why economists are pessimistic on international negotiations (Barrett 1994)

Prop 2: With constant Marg Benefits, the self enforcing IEA will consist of

2 countries if $N=2$

3 countries if $N>2$

Illustration for 10 identical countries with constant Marg Benefit per country and Quadratic Abatement Cost gives equilibrium effort of 16% of the optimum effort

What is specific to sustainability at the level of a city or region- 2?

- People can easily move between cities
- Implies that any important improvement in the welfare of the inhabitants of one city
 - Either attracts new people until the utility is equalized again with the rest of the region – this supposes new housing supply
 - Or when city remains “closed”, a windfall profit for the owners of city property and for renters with long term contract
 - This will drive political decisions of cities

outline

- 2 approaches to define sustainability?
- What is specific to sustainability of a city?
- **Why is making good policy packages difficult?**
- 5 types of policies, how to study them and what they can deliver:
 - Environmental policies
 - Transport policies
 - Social policies
 - Economic policies
 - Land use policies

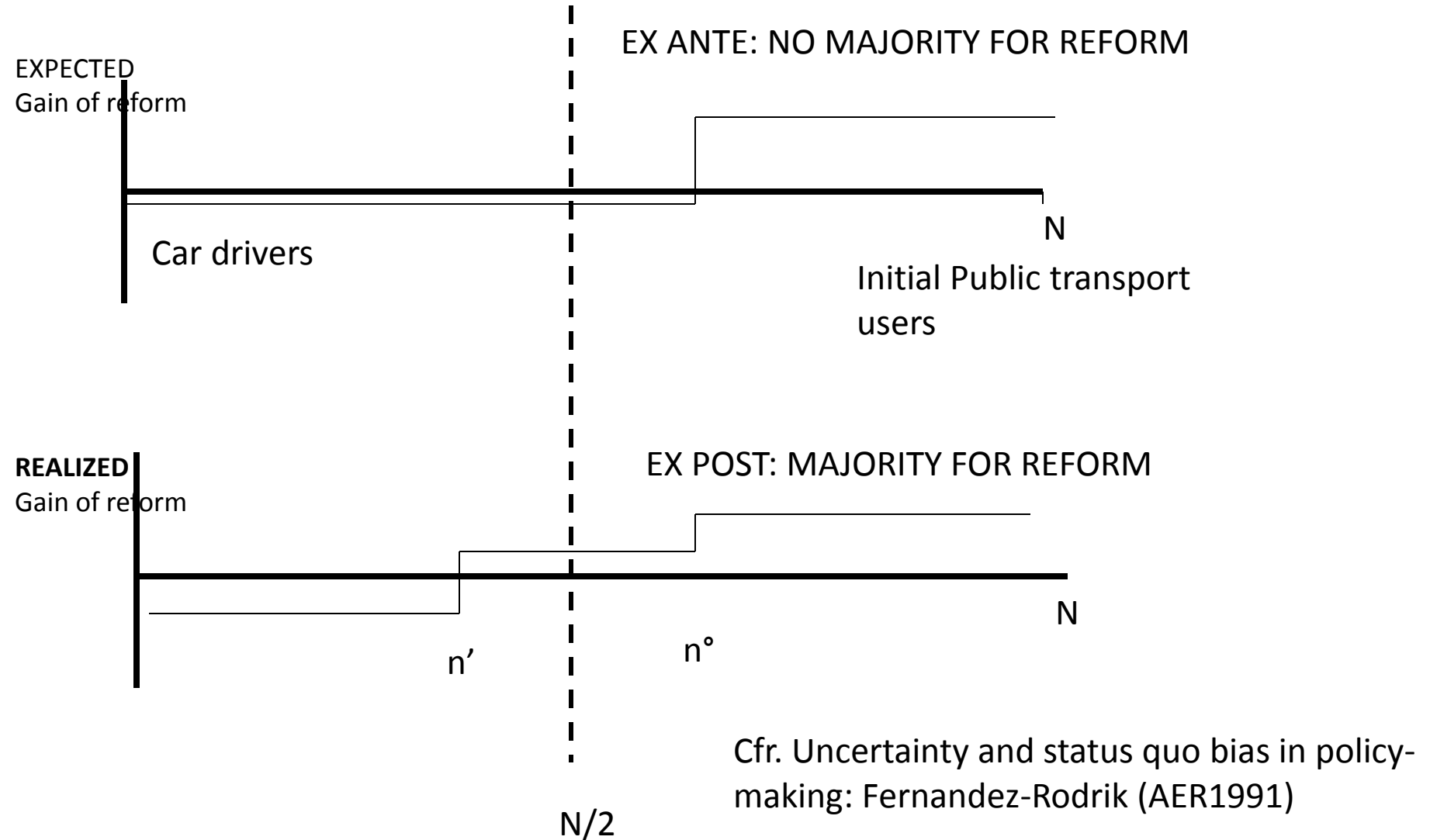
Why is making policy packages difficult 1 ?

- Policy makers face « acceptability » constraints
- Qualified majority
- Assymmetric information problem: public and politicians may not know the detailed effects and propose projects that do look good but aren't good
- Politicians may have a short horizon (max 2 terms in office):
 - they only want to propose policy proposals with return for voters in the short term and projects with good economics in longer term may never be accepted

Why is making policy packages difficult 2 ?

- Many puzzles in city policy making
 - why do we see massive photovoltaics on houses in Germany?
 - why support for electric cars that save CO₂, a global pollutant and so no direct effect on the city welfare?
 - Why do we see universal bus service in some regions?
 - Avoids rent seeking by costly districts (Glazer & Proost)
 - Why do some cities succeed in implementing road pricing and do some others fail?
 - Ex ante uncertainty explanation: drivers use average loss ex ante as guide for voting on proposals (see De Borger & Proost) while ex post they may gain
 - Policy makers can not commit to long term policies
 - Promise low taxes to attract new business but once new business is there, they increase taxes, result is that firms won't come
 - politicians decide to build very capital intensive (and costly) trams or metro to lock in the next politicians

Ex ante vs ex post majority on road pricing



5 types of policies, how to study them and what they can deliver

- Environmental policies
- Transport policies (SUSTAINCITY)
 - Pricing and infrastructure
- Social policies
- Economic policies
- Land use policies (SUSTAINCITY)

Environmental policies (Air Quality) 1

- Most important policy is still “end of pipe”
 - Get clean engines (gasoline instead of diesel: gasoline generates more taxes and is less polluting)
 - Catalytic converter for cars (conventional pollution by cars decreased by factor 2 or more)
 - Natural gas home heating instead of coal (Beijing, London smog 1952) etc.
- Reducing CO₂ emissions by reducing volume of traffic is usually not very cost effective
 - For car users there is already a 200 Euro/ton CO₂ tax under the form of a gasoline excise tax

Environmental policies (Air Quality) 2

- 152 cities in 9 EU countries have Low Emission Zones that try to improve concentration of air pollutants via different types of policies (Public transport, banning older cars)
- According to Wolff&Perry, the most successful policy in Germany was banning more polluting cars, the better supply of Public Transport performed more poorly
- MODEL: transport models but need for a good emission + diffusion module

Many options for transport/environment measures

Taxonomy of policy measures that address external effects of through traffic (legend: 0 = no (or negative) effect; +: positive effect).

	Reduces traffic volume in city	Speed reducing effect	Requires large public investment	Reduction of external cost per car kilometer	Impact on urban traffic by the local population
Tolls	+	0	0	0	+
Noise barriers, quiet asphalt, footbridges	0	0	+	+	0
Speed restrictions, increasing the red phase of traffic lights	+	+	0	+	+
New traffic lights, speed bumps, etc.	+	+	+	0	+
Emission standards for cars	+	0	0	+	+
Low emission zones	+	0	0	+	+
Bypass capacity	+	0	+	0	+

Source: De Borger&Proost (2013)

Transport policies (with fixed OD)

- Main problems are congestion (road + public transport) and traffic safety
- Pricing measures to address congestion
 - Road tolls (by time of day, preferably “fine” tolls and zonal tolls rather than cordon tolls)
 - Parking policies (have been used intensively)
 - Time and location differentiated public transport prices (accompanying road pricing and even useful in isolation)
- Building bypasses + public transport extensions?
 - Brussels (larger Ring), Lyon, Grand Paris (RER)
 - Yes but the city governments will have insufficient incentives (and money) to build them
 - Wrong constraint on revenues: toll on ringroad that has to pay for its construction but this will result in the wrong flows
 - Difference in incentives between governments
- Models:
 - Multi modal transport models (certainly in the EU) to start with and land use models for longer term

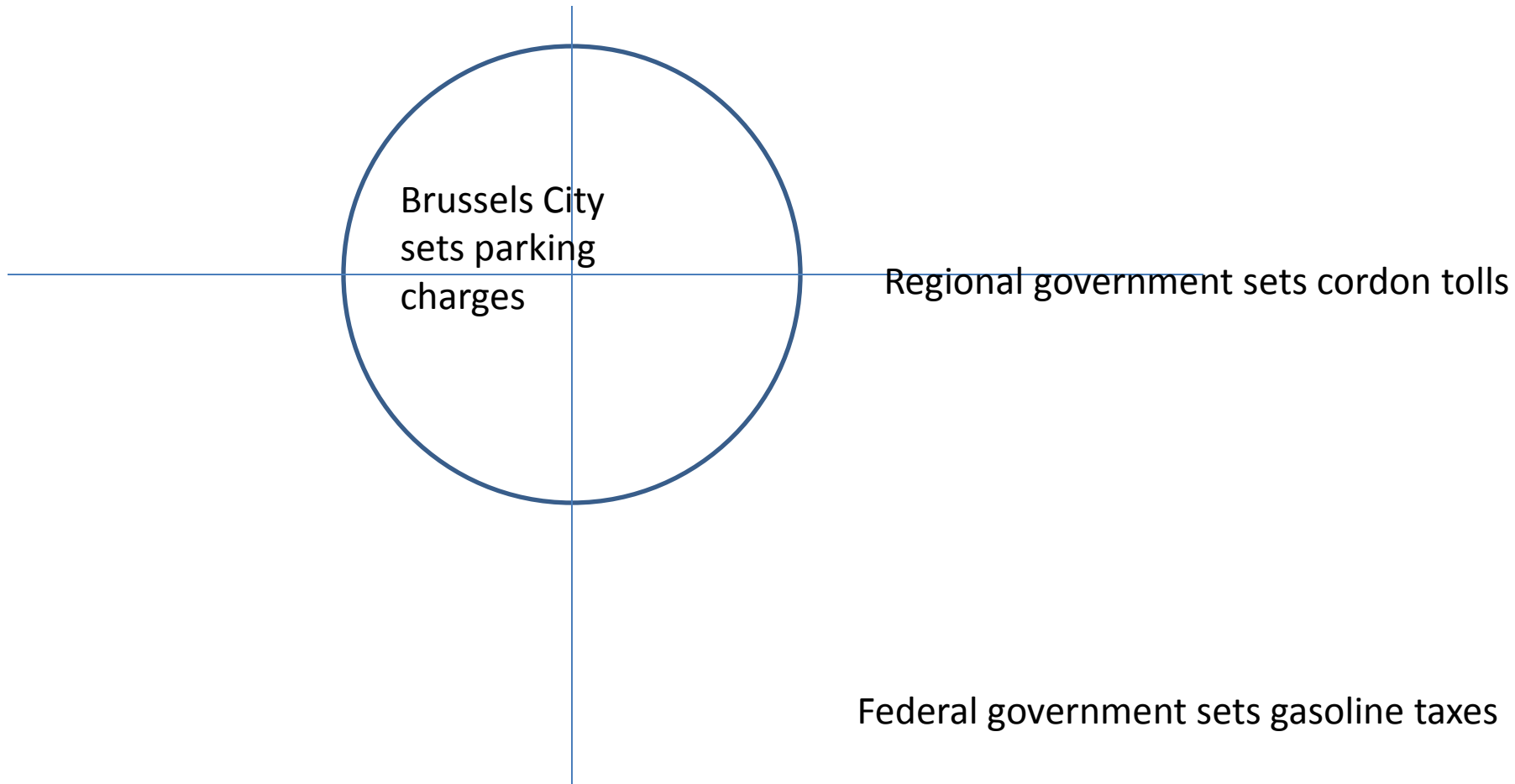
Zonal toll of 3 Euro pour la Petite Couronne with peak transport prices + 10% and -10% --keeping OD fixed

Z_PC péage [euro/veh]	3	3	3
Prix Transports publics	0%	10%	-10%
Utilité (avant redistrib)			-
pauvres (25% pop)	<u>157.0</u>	<u>-62.0</u>	<u>383.6</u>
riches (75%)	<u>690.0</u>	<u>121.0</u>	<u>1271.1</u>
Total	<u>847.0</u>	<u>58.9</u>	<u>1654.6</u>
Recettes publiques			-
Péage	<u>1518.1</u>	<u>1520.0</u>	<u>1516.1</u>
Parking	<u>-81.1</u>	<u>-74.6</u>	<u>-87.6</u>
Recettes Transport public	<u>240.5</u>	<u>802.8</u>	<u>-351.2</u>
Taxes voitures	<u>-204.2</u>	<u>-167.7</u>	<u>-241.2</u>
Coûts opérationnels addit.	<u>662.2</u>	<u>317.0</u>	<u>1021.2</u>
Bien être total			-
MCPF =1	<u>1658.0</u>	<u>1822.4</u>	<u>1469.5</u>
Double weight for poor	<u>2017.7</u>	<u>2201.2</u>	<u>1806.8</u>

Lyon – ringroad



Non-coordinated government charges leads to too high charges



Looking forward to final results of case studies for Paris, Zurich, Brussels

- That do better than my simplistic models without endogenous land use....
- THANK YOU