

Skilled Cities, Regional Disparities, and Efficient Transport

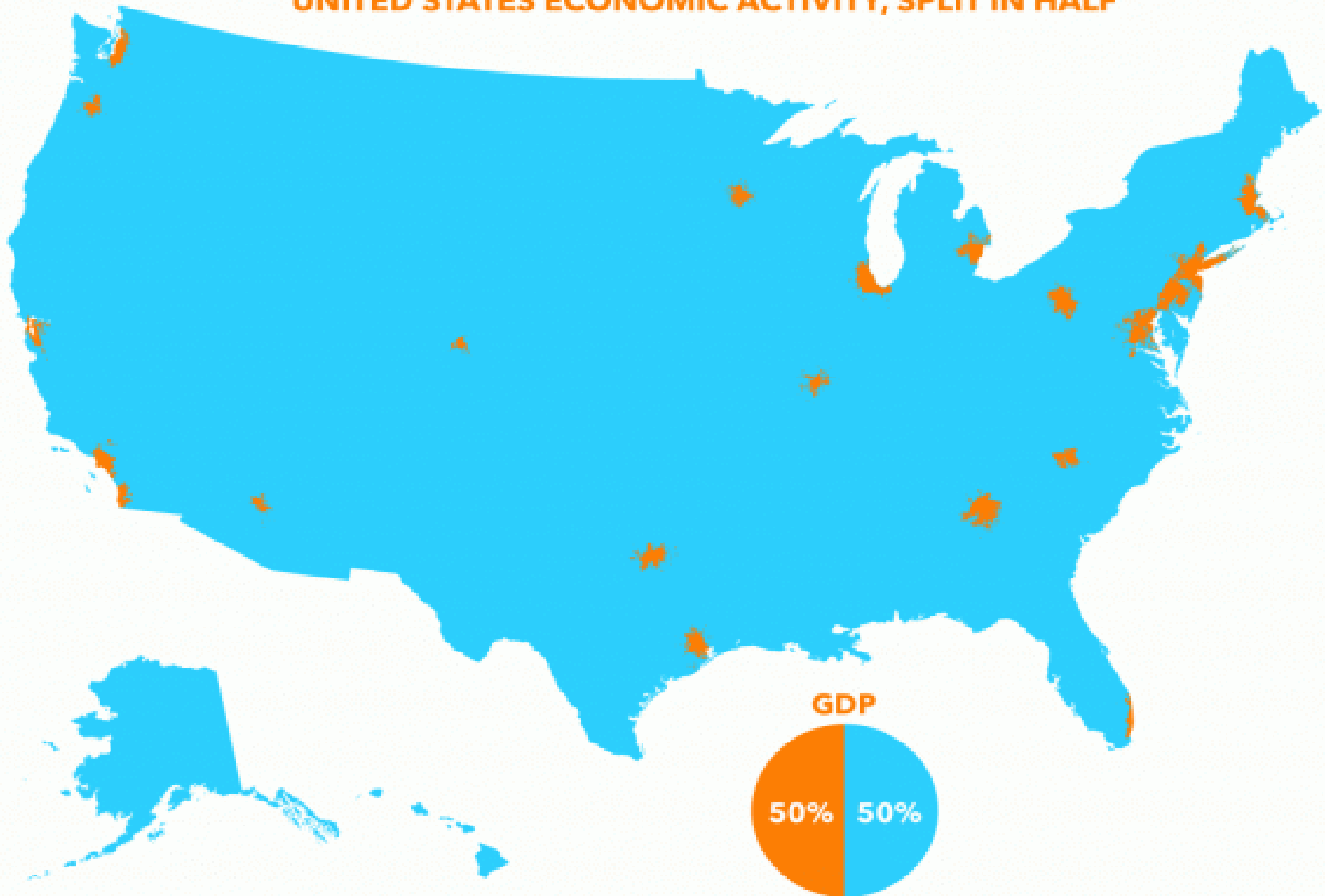
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GDP per inhabitant in PPS (NUTS3 region in 2011)



UNITED STATES ECONOMIC ACTIVITY, SPLIT IN HALF



Artistic

Spatial economics focuses on
the question

**Where do economic
activities locate?**

The fundamental question of spatial economics is then to explain *the existence of peaks and valleys in the spatial distribution of wealth and people.*

1. Location does matter

The first “law” of spatial economics: *If many activities can be located almost anywhere, few activities are located everywhere.*

Increasing returns

- Internal IR
- *External* IR
(agglomeration economies)

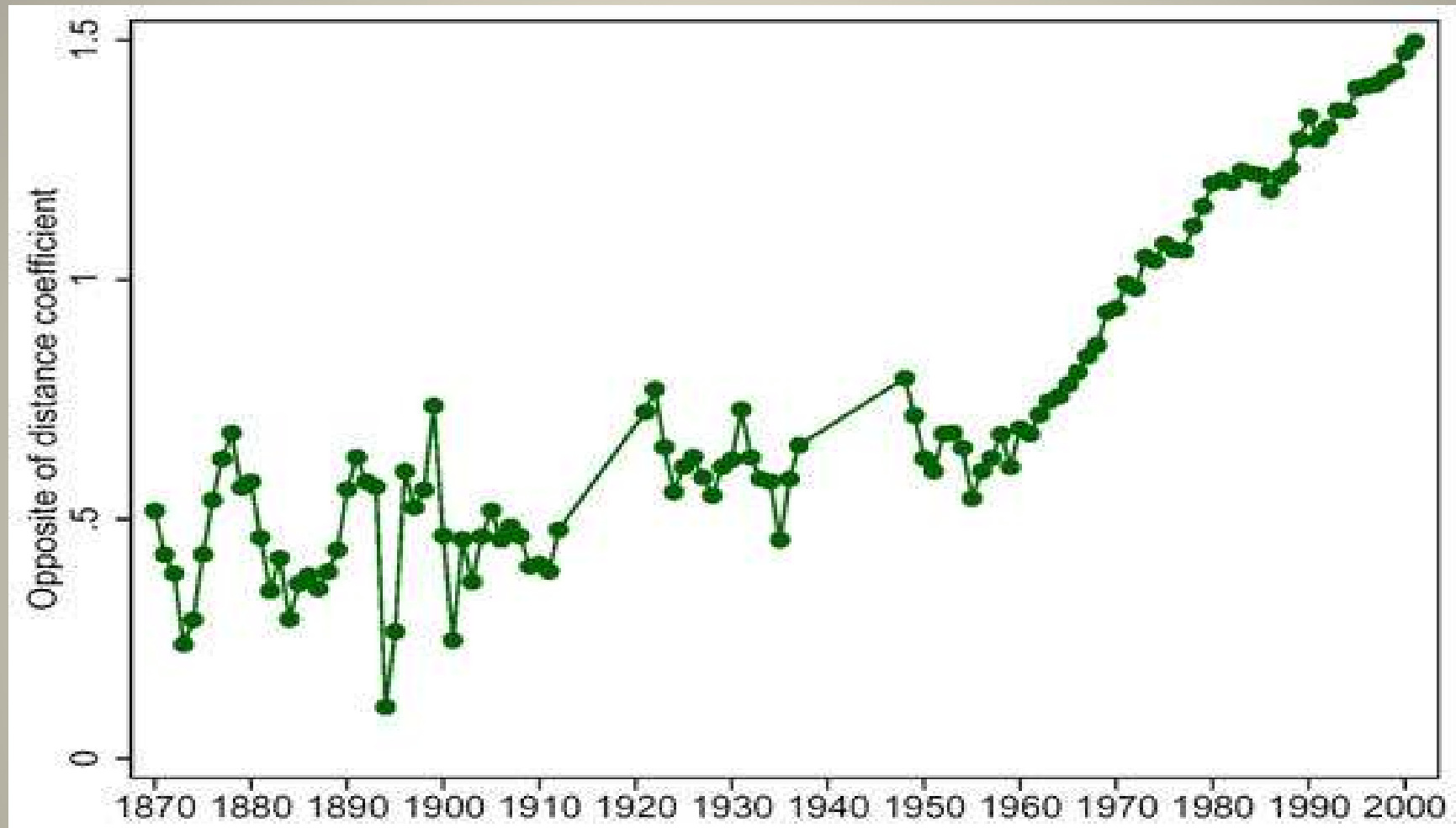
2. Moving goods and people is still costly

The second “law” of spatial economics: *The world is not flat because what happens near to us matters more than what happens far from us.*

Gravity equation

$$X_{rs} = G \frac{Y_r Y_s}{d_{rs}^{\delta}}$$

δ is slightly smaller than 1



The impact of distance on trade (1870-2001)

3. The fundamental trade-off in spatial economics

The spatial distribution of activities is the outcome of a trade-off between different types of **scale economies** and the costs generated by the **transfer of people, goods, and information.**

As transportation/trade costs **decrease** and/or the degree of increasing returns **rises**, economic activities get **more** geographically concentrated.

4. Spatial scales

At the *city* level, locations are disaggregated. Space is both the substratum of economic activity and a private good (**land**) that is traded among economic agents.

At the *interregional* level, locations are aggregated into **subnational units**. A region is part of a broader network through which various types of interactions occur.

5. Are locations fixed or variable?

Lowering transport/trade costs changes the nature and intensity of firms' and workers' incentives to move. To assess the full impact of trade and transport policies, we must understand how economic agents react to decreasing spatial costs.

Policy-makers often overlook the fact that their decisions affect the location choices made by firms and households.

Concepts & Framework

	Urban economics	Regional economics
Focus	Cities and metropolitan areas	EU, federal or large countries
Spatial scale	Location within cities	Location across regions
Capital mobility	Perfect	Imperfect/Perfect
Labor mobility	High via commuting	Low
Residential mobility	High/Low	Low
Transport of goods	Trucks	Road, rail, water, air
Transport of passengers	Car, bus, metro, rail, bike, walk	Road, rail and HSR, air
Major issues	Agglomeration versus congestion	Global efficiency versus spatial equity

Outline

-  **Regional issues**
 - Driving forces of regional development
 - What interregional transport policies
- **Urban issues**
 - What makes cities important?
 - Understanding city productivity
 - Commuting and housing
 - Congestion and transport policies
- **Summing up**

The First Industrial Revolution has exacerbated regional disparities by an order of magnitude that was unknown before.

The recent development of
NICTs is triggering a
new regional divide
that policy-makers and the
public opinion should be
aware of.

Although regional development agencies typically think of spatial inequality as “temporary disequilibrium” within the economy, **stable** spatial equilibria often display **sizable** and **lasting** differences in income and employment.

Illustration for Belgian provinces

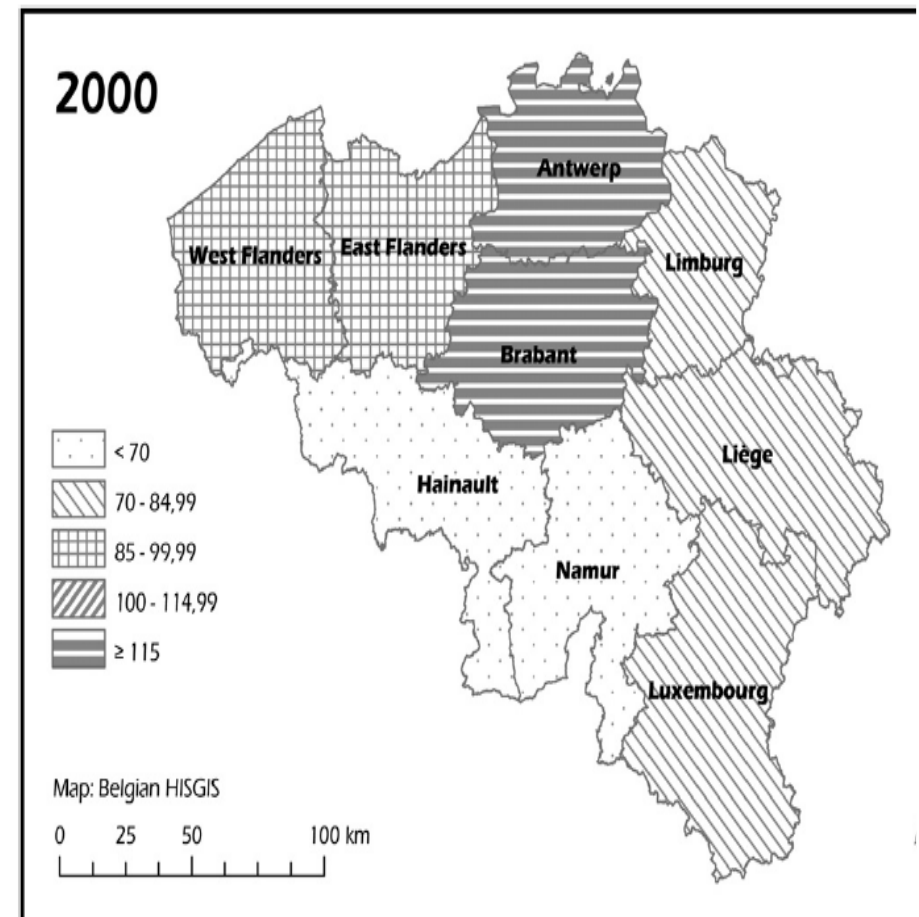
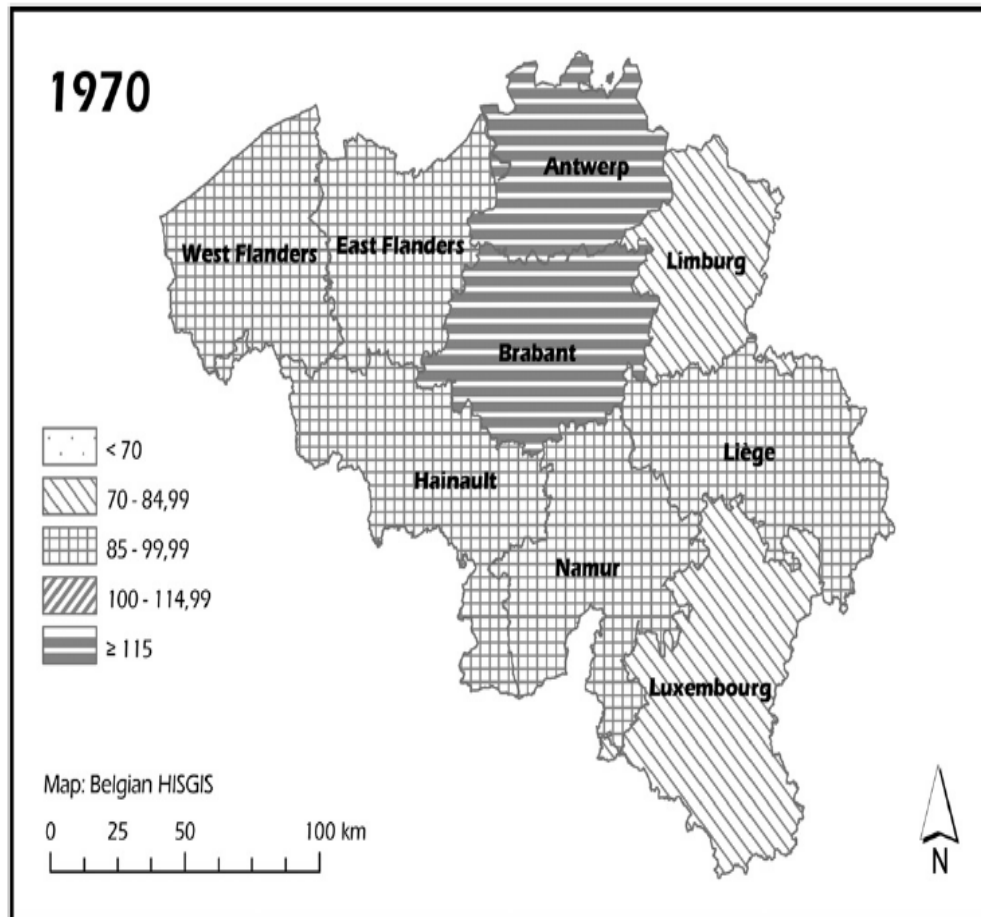
Table 2

Relative regional GDP, 1896–2000 (current prices, Belgium = 100). Sources: 1896–1947: see text. 1970: Nationaal Instituut voor de Statistiek, *Economische groei van de provincies en de taalstreken van 1970 tot 1974* (Statistische en econometrische studiën, n° 43), Brussels, 1976. 2000: www.belgostat.be, domein 799, table 10.

	1896	1937	1947	1970	2000
Antwerp	91.1	107.3	106.9	115.1	117.3
Brabant	104.0	119.6	120.6	118.6	142.2
West Flan.	64.2	77.7	76.3	97.3	93.3
East Flan.	80.5	85.9	85.1	87.9	86.8
Hainaut	136.0	105.1	103.3	86.5	66.3
Liège	119.9	111.5	110.5	98.9	75.5
Limburg	63.7	75.4	80.1	77.8	84.0
Luxemburg	94.4	66.4	77.3	73.2	70.3
Namur	109.9	84.5	87.8	85.2	69.1
Standard deviation	24.4	18.6	16.4	15.6	25.3

Illustration for Belgium 1970-2000

Hainaut's GDP/cap decreases from 86.5% to 66.3%



The **agglomeration force** is generated by firms' desire for **market access**, while the **dispersion force** is generated by firms' desire to avoid **market crowding**.

The distribution of firms across regions can be viewed as the **balance** between these two opposing forces.

The economic performance of regions is affected not only by their **industrial mix** and **relative positions** in the web of relations, but also by the spatial **mobility** of goods, as well as that of capital and labor.

Therefore, to assess the full impact of market integration and of the monetary union, it is crucial to have a good understanding of **how firms and workers react to lower trade and transport costs.**

A large market increases the profitability of the firms established there: locations with good **access** to several markets offer firms a greater profit because these locations let firms **save on transportation costs** and **lower their average production cost** by selling a bigger output.

Market potential matters

There is a wealth of empirical evidence suggesting that **market access** is associated with **higher wages and employment**.

$$MP_r \equiv \sum_s \frac{Y_s}{d_{rs}}$$

Human Capital

Regional disparities are more driven by differences between workers than by differences between places.

France: about 50% of spatial inequality is explained by the distribution of human capital.

Are regional disparities a bad equilibrium outcome?

The **unevenness** of regional development may be viewed as the **geographical** counterpart of **economic growth**, which is driven mainly by large and innovative cities.

Trade-off between spatial equity and global efficiency?

If some regions are richer, it follows that others are poorer. It thus seems logical to make **spatial equity** a criterion of regional economic policy.

The underlying principles of **spatial equity** are **ambiguous vis-à-vis** the principles of **interpersonal equity**.

1. When you help poor regions, you also help the **rich people** who live in those regions.

2. The **political acceptability** is a growing problem when we have regional political representation.

Interregional transport issues

- *Two objectives*
 - decrease trade costs,
 - promote the development and structural adjustment of lagging regions.
- *And two instruments*
 - subsidize cross border transport investments,
 - regulate pricing by member states or private suppliers.

30 TEN-T priority projects



Interregional transport: What are the issues

- *Poor selection of investment projects*
 - out of the 30 TEN-T priorities in 2005 (project total 300 billion Euro), only15 make sense,
 - massive investments in HSR, but many lines will never reach the 10 Million passengers per year needed to justify a HSR link.
- *How to assess the growth effect on lagging regions?*
 - even if the investment is paid mainly by EU, the main beneficiaries can be the rich regions rather than the poor

Interregional transport issues: How to better use existing infrastructure?

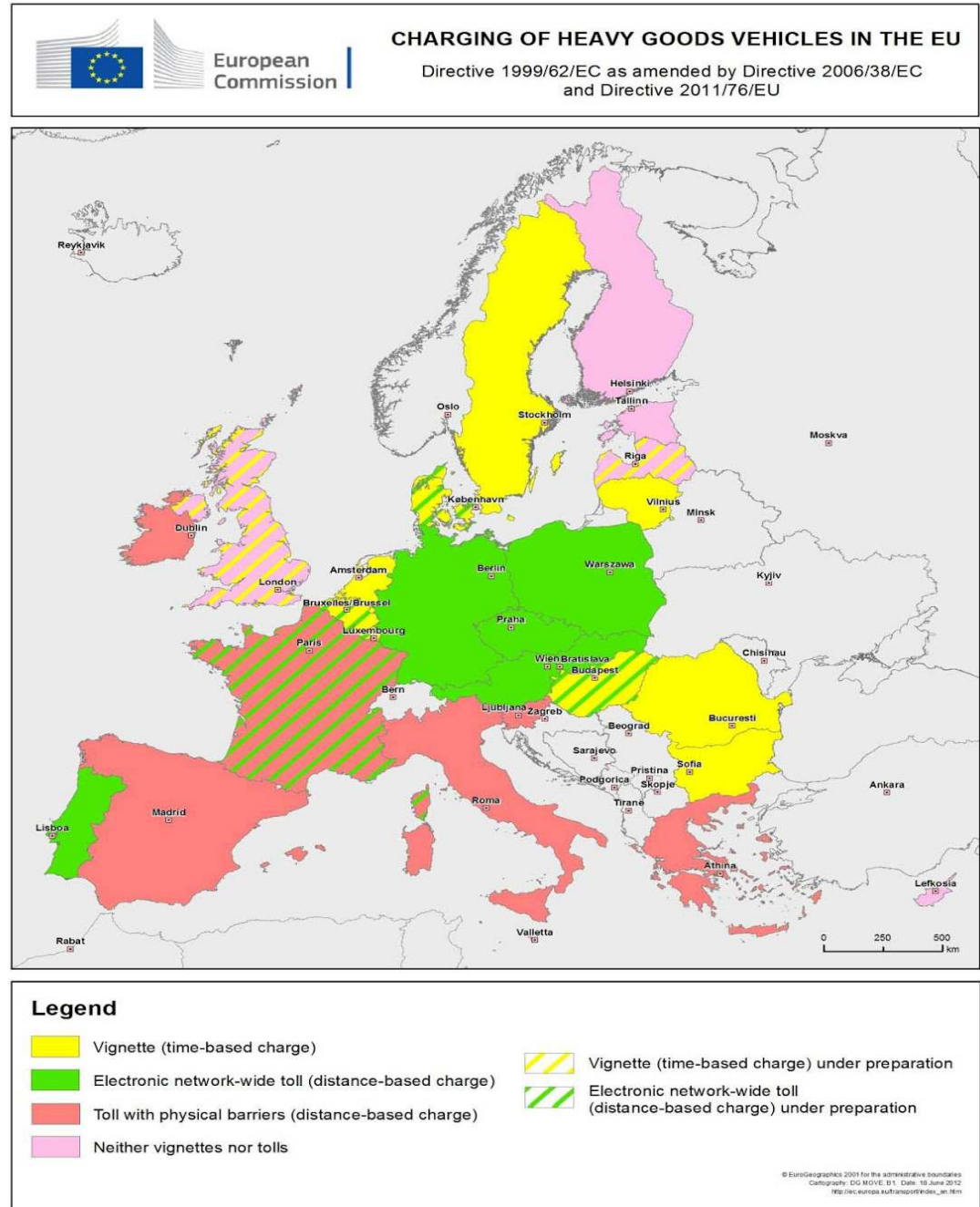
- Organizing and pricing freight flows can be improved.
- US share of freight by rail is 41%; in EU it is 11%.
- Distance charging of trucks is replacing diesel excises, but leads to massive tax exporting and will hamper trade.

Truck charging

- Pricing Trucks in an integrating EU
 - Diesel taxes but tax competition
 - Some countries (FR, IT) use tolls linked to infrastr spending
 - Other countries started yearly vignettes (Eurovignette)
 - Now more and more countries introduce distance charges

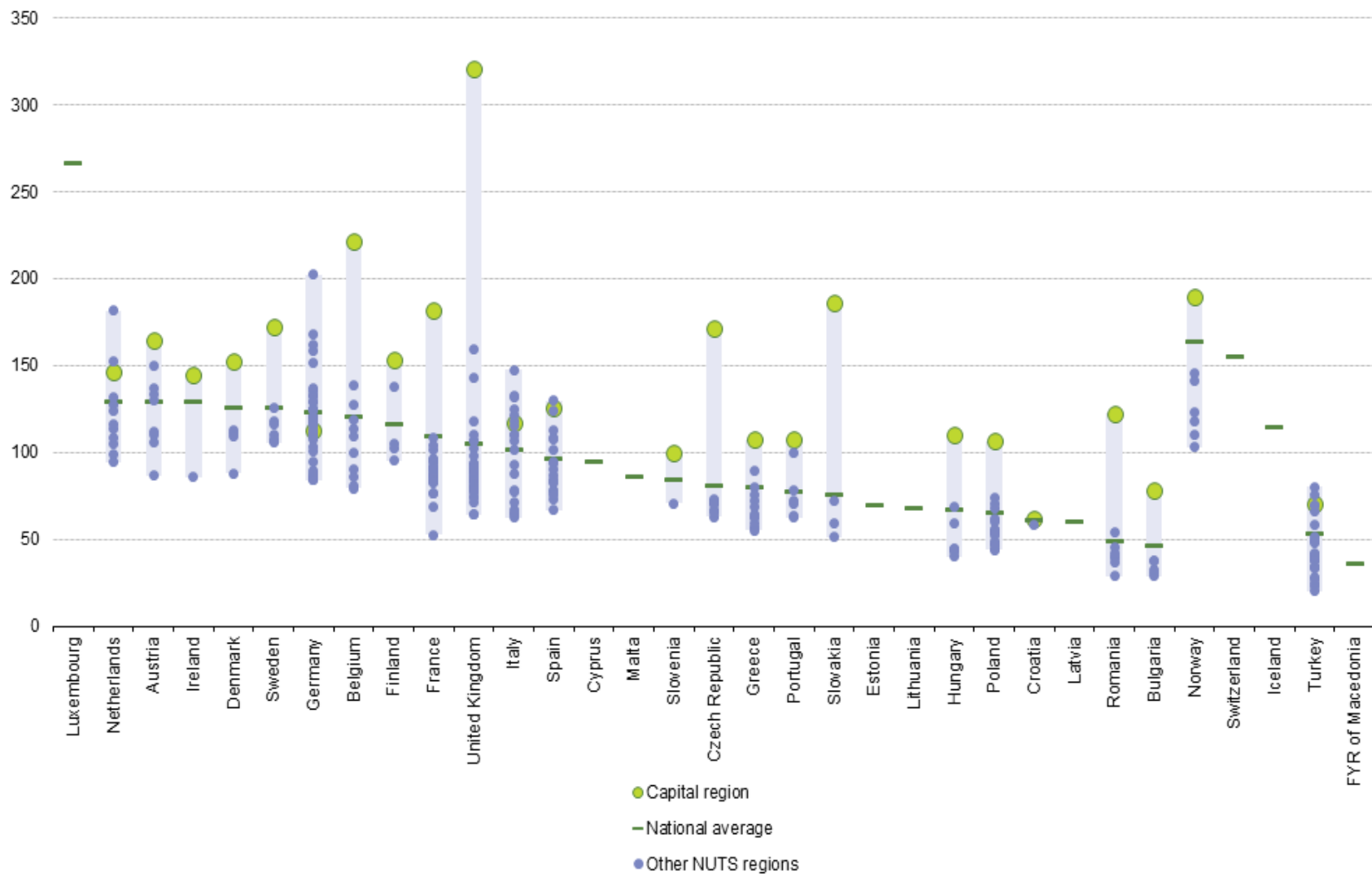
What will be the equilibrium of this game?

- Model of fuel tax and distance charge competition leads to low diesel taxes and high distance charges
- What regulation makes sense?



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(¹) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Switzerland: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates.

Source: Eurostat (online data code: nama_r_e2gdp)

Greater Paris produces **30%** of the French GDP but receives **22%** of the **disposable income**. Thus, **8%** of the GDP is redistributed toward the other French regions.

Greater London's share of the GDP in the United Kingdom is **23%** while its share in the UK's disposable income is about **16.7%**.

In Belgium, the NUTS-2 region **Brussels-Capital** produces **20.6%** of the Belgian GDP but receives only **10.3%** of the disposable income.

A warning is in order

- Large cities need not be vibrant, whereas small ones need not be dormant
- Big need not be beautiful

Why do we care about cities at the Age of Internet?

“density economies”

$$\log \text{wage} = \alpha + \beta \log \text{empden} + \varepsilon$$

Why do we care about cities at the Age of Internet?

“density economies”

$$\log \text{wage} = \alpha + \beta \log \text{empden} + \varepsilon$$

β ranges from 3 to 11%

It is rather 3%

Cities produce tradables

... but cities produce mainly

**b2b and b2c (nontradable)
services**

Agglomeration economies

- **Sharing**
- **Matching**
- **Learning (F2F)**

The various facets of knowledge

Learning-by-doing

Learning from others

Spillovers are more profitable to
skilled workers

Back to human capital

- Acquiring human capital enhances not only the productivity of the worker who acquires it but also the **productivity of others**.
- What is important for the economic performance of cities is that **skilled workers seem to benefit more from the presence of other skilled workers than unskilled workers**.

The various facets of knowledge

Learning-by-doing

Learning from others

Tacit knowledge: “*We can know more than we can tell*” (Michael Polanyi)

But is it that new?

In *Lives of the Most Excellent Painters, Sculptors, and Architects*, Vasari (1550) writes:

“It is a habit of *Nature* when she makes one man very great in any art, not to make him alone, but at the same time and in the same place to produce *another to rival him*, that they may aid each other by *emulation*.”

The world supply of land vastly exceeds the demand for land

- So the price of land should be zero... but this is not what we observe.
- What does this price measure?

How to measure the pros and cons of proximity?

The land rent whose value capitalizes through competition for location the advantages and disadvantages of a location within the city (e.g. the proximity to the employment centers or railway stations).

**The price of land in large cities
is evidence that physical
proximity still matters for a
certain number of activities**

The price of land in large cities is evidence that physical proximity still matters for a certain number of activities

and physical proximity still matters for the exchange of **uncodified information**

Why is housing expensive in large cities?

Because proximity matters.

Otherwise firms and people wouldn't pay high land rents.

Regulation can be housing even more expensive?

- The past rise in housing costs is driven mainly by an excessive regulation of housing and land markets.
- Artificial rationing of land limits the growth of the cities and affects mainly the young and the poor.

Governance of metropolitan areas

The core city still dominates the metropolitan area's secondary business centers and attracts cross-commuters from the suburbs. Agglomeration economies being internalized (even partly) in wages, **the economy of the core city generates some wealth effects that impact the suburban jurisdictions positively.**

**How big is commuting in
large cities?**

Well, it's pretty big.

A Parisian spends on average about **one working month** in commuting per year, while the commuting time spent by an adult working in Manhattan amounts to losing between **three and seven weeks of work.**

Urban transport trips

External costs	Costs in euro cents	
	Cars (by passenger-kilometer)	Public transport (by vehicle-kilometer)
Climate cost	0.8	2.1 (bus)
Environment cost	4.3	21.4 (bus)
Accident cost	0.3	
Congestion cost	0.6 to 242	0 to 576 (bus)
Wear and tear infrastructure cost	0.8	2.7 (bus)

- In European cities, cars are the dominant transport mode (70 percent), while public transport (rail, metro, and bus) accounts for the remaining share
- But public transport is important for commuting in big cities.

Where did we end up?



Parking for e-cars refuelling, or parking for bikes?



Transport policies form an inefficient patchwork

- Main instruments: high gasoline and diesel taxes, large public transport subsidies, and environmental and carbon regulations
- Has led to too fuel efficient cars, dirty diesel cars, congestion on roads, and congestion in public transport sectors

What do we need?

Road pricing by time of day

Peak load pricing for public transport

Carbon taxes in line with other sectors

What we do not need

- Emphasis on fuel efficient vehicles as they come at a high cost because more fuel efficient vehicles do not address the other mileage related externalities.
- RoW will probably not join us in strong climate actions, and then oil will be used anyway by the RoW.
- It is not the fuel use but the excessive size of transport flows at certain times and places, which are the problem.

The call for new infrastructure

1. In many metropolitan areas, there is a call for additional public transport and road capacity to cope with increasing congestion.
2. There is growing evidence that building more infrastructure need not solve congestion as long as there is no proper pricing.
3. When planning cities, there is a need for better land use models, integrating business, housing and transport infrastructure.

Land use and transport models are coming on steam slowly - illustration

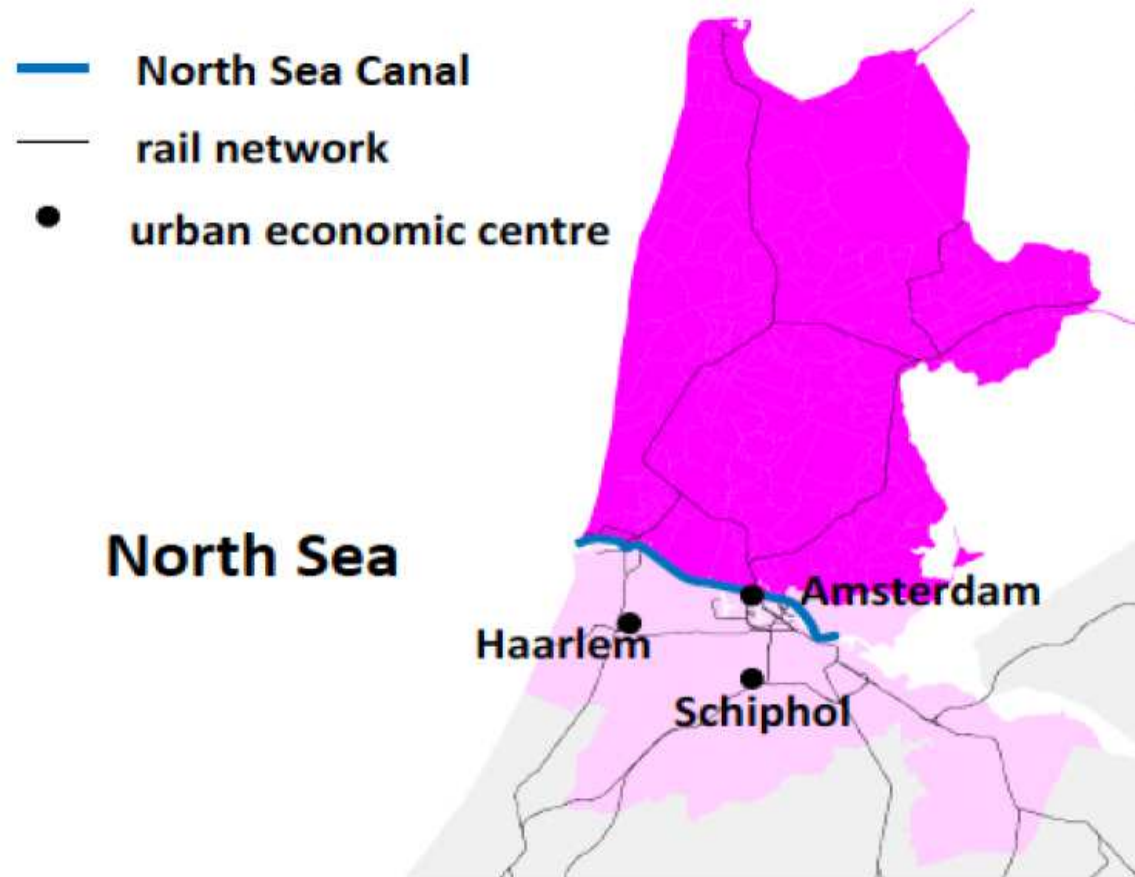


Figure 1 Location of the case study and the tunnel connection between North and South of Amsterdam (source: Teulings et al.2014)

Effect of adding 2 more train tunnels to North of Amsterdam

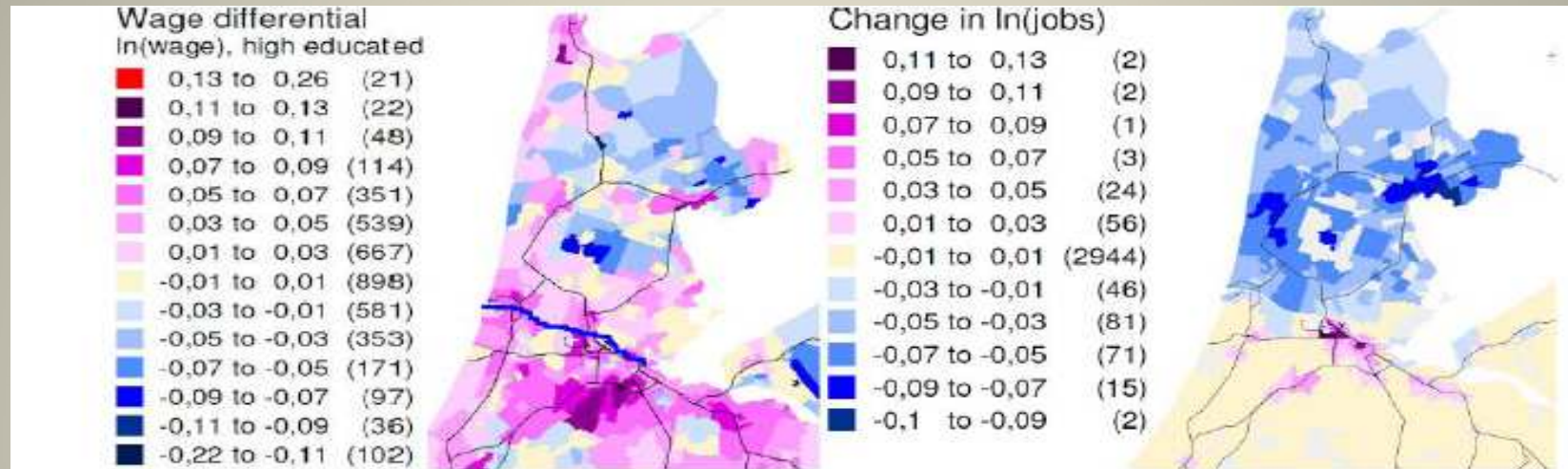


Figure 9. Higher land prices and higher population north of canal

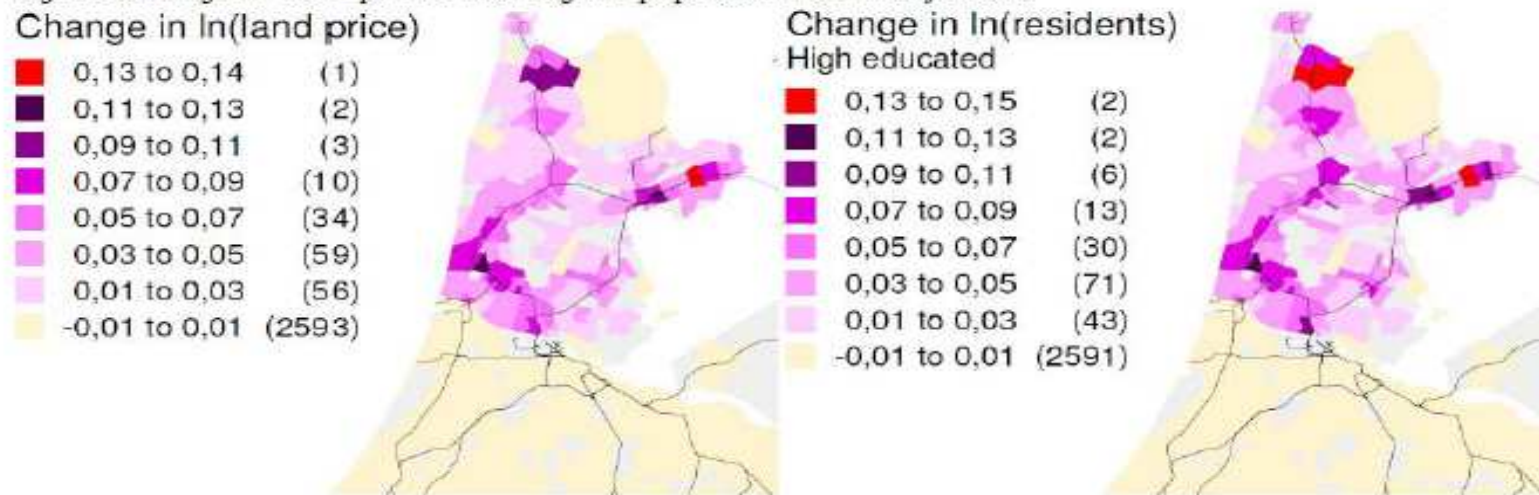


Figure 2 Effects on wages, jobs and prices and residents after adding two more train tunnels

Summing up

1. The spatial economy is replete with (technological and pecuniary) externalities.

2. Most results suggest a trade-off between global efficiency and spatial equity.

3. Transport subsidies targeted to better connect the poorer or more peripheral regions do **not necessarily** help these regions.

4. More attention should be given to the quality of **local institutions**.

5. If anything else, the development of **human capital** should be the main target of urban policies. Rather than spending billions of euros on large infrastructures and fancy buildings, **local governments** should use **congestion pricing** and **promote the supply of affordable housing.**

6. Housing and transportation markets are intimately intertwined with **local labor markets**.

7. European and national employment policies that ignore the **urban environment in which jobs are created** are likely to be unable to deliver their full potential.

What not to do

- Example of a spray-gun policy:
Wallonia will spend 1.1 billion over 438 projects.
- Too much money is spent on buildings and infrastructures.

Glaeser: the oversupply of structures and infrastructures is the hallmark of stagnating and declining cities.

Thank you for your attention