SMART CITIES - BEYOND TECH

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CoR-Jaspers Workshop
1. SMART IS NOT JUST ABOUT TECH
2. SMART MEANS BEING INTERNATIONALLY COMPARABLE
Administrative boundaries are not the answer
A functional definition for cities (EU/OECD)

- Definition of Functional Urban Areas based on population density in 1km² cells that are matched to municipal boundaries and connected via commuting patterns.

- Urban centres are identified by aggregating densely populated 1km² cells. Urban centres with at least 50,000 inhabitants are kept.

- They are matched with the boundaries of the lowest administrative level for which statistical data is typically available (NUTS5/LAU2)

- Urban centres and the less densely populated municipalities in the commuting zone are combined into Functional Urban Areas based on commuting flows (>15%).

- [http://measuringurban.oecd.org](http://measuringurban.oecd.org)
3. SMART REQUIRES PRODUCTIVE
Sources of agglomeration economies


• **Sharing** facilities, inputs, gains from specialisation
  firms may face lower costs for specialised non-traded inputs that are shared locally in a geographical cluster.

• **Thicker labour markets**: labour market pooling; better matching
  gain from reduced labour acquisition and training costs in thick local labour markets with abundant specialised labour force

• **Knowledge spillovers**: learning about and spreading new ideas
  face-to-face contact can enable tacit knowledge spillovers through increases in the intensity of the interactions with other firms or individuals
The productivity increase associated with increasing a city’s population are in the order of 2-5.0% for a doubling in population size.

– This implies, e.g., that moving from a city of roughly 50000 inhabitants to the Paris agglomeration – on average - increases productivity by an order of magnitude of 20%.

Proximity to nearby populous cities affects positively the productivity of a city, implying that – in a certain sense - cities can utilise the agglomeration of their neighbours.

– For a given city, if the population (discounted by distance) that lives in other cities within a 300 km radius, is doubled

=> the productivity of the central city increases by 1-2 percent.
4. SMART MINIMISES AGGLOMERATION COSTS
Are large cities good for their residents?

• Large cities have benefits and costs...

- Housing prices
- Congestion
- Pollution
- Crime
- Inequality
- Wages
- Jobs
- Public Transp.
- Amenities
- Markets
5. SMART MEANS WELL GOVERNERD
Horizontal administrative fragmentation is common as cities outgrow their historic boundaries (more than 10 local governments in 75% of OECD Metropolitan Areas; more than 100 in 22%).

This may lead to undesirable outcomes due to lack of cooperation and negative externalities.

Evidence from case studies points to administrative fragmentation indeed having negative effects.

This is confirmed by more systematic econometric evidence:

City productivity & administrative fragmentation

- Productivity increases by 2-5% for a doubling in population size.
- Productivity falls by 6% for a doubling in number of municipalities (for given population size).

![Graph showing productivity differential vs. local governments per inhabitant (standardised).]
Less fragmented urban agglomerations have experienced higher economic growth.
Higher administrative fragmentation is associated with higher segregation of people in different municipalities.

Hypothesis: Fragmented metropolitan governance can facilitate segregation at the level of local units.

Controlling for country fixed effects and other city characteristics (i.e. income, population, spatial structure), higher administrative fragmentation is associated to higher spatial segregation by income in different municipalities.
6. SMART MEANS SERIOUS ABOUT THE METROPOLITAN SCALE
• Approximately 280 metropolitan areas with more than 500,000 inhabitants exist in OECD countries
• Two-thirds of them have some form of metropolitan authority
• Great variety in tasks and competencies
Fields of activity of surveyed MGBs

- Spatial planning: 78.6%
- Transport: 66.1%
- Regional Development: 46.4%
- Water and sewage: 21.4%
- Culture: 35.71%
- Waste: 12.5%
- Tourism: 32.1%
- Healthcare and aging care*: 14.3%
- Environment*: 12.5%
- Social welfare & housing*: 12.5%
- Others: 8.9%

* The asterisk indicates fields that are not primary fields.
• Urban sprawl creates negative externalities in Metropolitan areas (MAs)
• Cooperation is a way to internalize the externalities when making policy decisions
• \textbf{Sprawl decreased in MAs with governance body, but increased in those without!}

\textbf{Governance bodies can reduce sprawl}

\textbf{Change in Urban Sprawl}

\begin{figure}[h]
\centering
\begin{tikzpicture}
\begin{axis}[
    xbar, bar width=0.5cm,
    ymin=-0.9, ymax=1.5,
    xlabel=Change in Urban Sprawl,
    ylabel=,
    ytick distance=0.2,
    xtick={-0.8,-0.6,-0.4,...,1.4},
    xticklabels={-0.8,-0.6,-0.4,-0.2,0,0.2,0.4,0.6,0.8,1,1.2,1.4},
    yticklabels={1.4,1.2,1,0.8,0.6,0.4,0.2,0,-0.2,-0.4,-0.6,-0.8},
    xmajorgrids=true,
    ymajorgrids=true,
    x dir=reverse,
    legend pos=north east,
]
\addplot coordinates{(1.5,0){0.5,1)}{0.3,2)}{0.1,3)}{0,4)}{0,-0.1)}{0,-0.3)}{0,-0.5)}{0,-0.7)}{0,-0.9)}{0,-1.1)}{0,-1.3)}{0,-1.5)}
\legend{With Governance Body, Without Governance Body}
\end{axis}
\end{tikzpicture}
\end{figure}

Difference significant at the 99%-level after controlling for log-population levels and country specific trends.
Governance bodies can increase well-being

- Citizens are more satisfied in MAs that have sectoral authorities for public transport.
- Those MAs have also lower pollution levels (PM).

Share of Citizens Satisfied with Public Transport

Based on European Urban Audit perception survey. Difference significant at 95% level.
• Within countries, cities with fragmented governance structures have lower levels of productivity.
  – For a given population size, a metropolitan area with twice the number of municipalities is associated with 5-6% lower productivity.
• Effect mitigated by almost half when a governance body at the metropolitan level exists.
7. SMART MEANS OPEN DATA
8. SMART USES & IMPROVES THE POTENTIAL OF YOUR SURROUNDING REGION
Beyond city size and governance

**Human capital, high-tech and knowledge intensive services** oriented cities make their residents more productive

Smaller cities can "borrow" agglomeration benefits

Benefits are not limited to cities but positively affect accessible regions

Annual per capita GDP growth rates (1995-2010) and driving time to the closest metro area of 2 million or more inhabitants

Ahrend and Schumann (2014)
The presentation draws from:


Ahrend and Schumann (2014) “Does regional economic growth depend on proximity to urban centres?”


OECD (2015) Governing the City

OECD (2012) Redefining Urban: a new way to measure metropolitan areas
For info or further questions on this seminar and the activities of the JASPERS Networking Platform, please contact:

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