Economic development paths of port-cities: specialization vs. diversification

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Brief outline

• Introduction
• Models of port-city evolution
• Measures of port-city relations
• Main results of a global analysis
• Implications for policy and practice
• Discussion and further research paths
Introduction

• Most researches on port cities point at decreasing benefits of port activities and lowering interdependence between ports and cities.
• But there is a drastic lack of evidence in terms of comparative study on a large-scale due to scarcity of relevant data.
• Empirical results drawn from a study on population and container traffic of port cities from 1970 to 2005: diversity of trajectories.
• Ongoing works on the 1890-2010 period for an analysis of the evolution of the global maritime network and port cities: new responses?
Models of port-city evolution

- **Spatial models:**
  - lack of space and congestion at urban core (e.g. upstream), relocation of modern terminals at non-urban locations (Bird, 1963)
  - revitalization of former port areas, waterfront redevelopment (Hoyle, 1989)

- **Economic models**
  - port and maritime functions are catalysts at initial stages of urban growth but gradually lose their importance as cities grow other functions and become « autonomous » (Murphey, 1989)
  - self-agglomeration and lock-in effect depend on the proximity and connection of the port city to another large (non-port) city (Fujita and Mori, 1996)

Many factors: site, situation, respective port and urban performance within their respective networks

« Port cities as systems within systems of cities AND systems of ports » (cf. Berry, 1964)
**Measures of port-city relations**

- **Necessity of one single and robust measure but:**
  - limited comparability of impact estimates (e.g. employment in specific sectors, value-added)
  - no study on long-term evolution; most studies within a single country (Belgium, Italy...)
  - no disaggregated measure of city-related port traffic and port-related urban traffic

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<th>Types of specialization</th>
<th>Description</th>
<th>Outcome for port-city studies</th>
<th>Possible sources for international comparison</th>
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<tr>
<td>Land use</td>
<td>Surface of port areas and other areas (industry, residence, services…)</td>
<td>Share of port areas in total built-up (urban) areas</td>
<td>“1000 Cities” database (Duisburg University)</td>
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<tr>
<td>Local economic structure</td>
<td>Employment in port-related industries</td>
<td>Share of port-related industries in the local economy</td>
<td>Eurostat, USA, Gripaios (1999)</td>
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<tr>
<td>Port hinterland</td>
<td>Spatial distribution of freight flows</td>
<td>Share of city in total port traffic/hinterland</td>
<td>None</td>
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<tr>
<td>City modal split</td>
<td>Modal distribution of freight flows (e.g. sea, air, rail, road, river…)</td>
<td>Share of port in total city traffic</td>
<td>None</td>
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<tr>
<td>Weight</td>
<td>“Stock” indicators of ports and cities</td>
<td>Correlation analysis, relative concentration index</td>
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<td>Compare port cities with non-port cities (unemployment, GDP, wage levels…)</td>
<td>See performance indicators</td>
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Previous findings on port-city interaction measures

- Port traffic often associated with low or decreasing regional economic performance in developed countries (De Langen; Ducruet, Hall; Lever; Grobar…)
- Port traffic not always in accordance with urban size and concentration of service activities (Slack; O’Connor; Jacobs et al.)
- However traffic variety (rather than size) influenced by urban size (Ducruet et al.)
- Region-specific interactions, maintained correlation between port traffic and urban size in some regions, not in others; hub effect in port systems under pressure
- Recent work on Chinese port cities showing strong correlation between port growth and urban economic growth
Port traffic variety in Europe

Air & maritime traffic specializations in different subnetworks
Methodology for a global comparison

Relative concentration index (1970-2005)
- based on population and container traffic of cities within their region
- definition of different types of port cities based on thresholds
- takes into account various scales and phenomena: urban size and growth, port size and growth, relative shares, port competition, local constraints, traffic shifts
- how has port function stabilized, increased or decreased in a given city compared with other cities and other functions?
Summary of findings: typology of port-city trajectories in the world
Implications for practice and policy and further research

• **Limits of the method and results:**
  - Relative concentration index does not account for a precise « impact » measure but highlights interesting trends while facilitating comparisons
  - Port performance and traffic may increase relatively to urban size while benefits may decrease: difficult to conclude

• **Towards recommendations:**
  - Large port cities do not always lose their port functions (resilience to regional and global changes)
  - General cities rarely become hubs, hubs rarely transform into general cities; « cityports » more likely to diversify or specialize
  - RCI better indicator than sole traffic to identify « turns » in specific trajectories: result of a project / strategy to rejuvenate port functions (i.e. betterment of hinterland access, upgrading of facilities, expansion plans)
  - can point at strengths or weaknesses of port functions in cities beyond sole traffic throughputs: how have certains port cities resisted external and internal pressures?
Further research:
- expand the time frame (1890-2010)
- extend to other commodities (general cargo, bulks)
- work on regional rather than urban level where socio-economic data is more available (GDP, employment by sectors)
- calculate a maritime-dependence index based on the accessibility of port and non-port cities in combined networks (air, road, sea, rail)