

Special problems of benchmarking ports and airports

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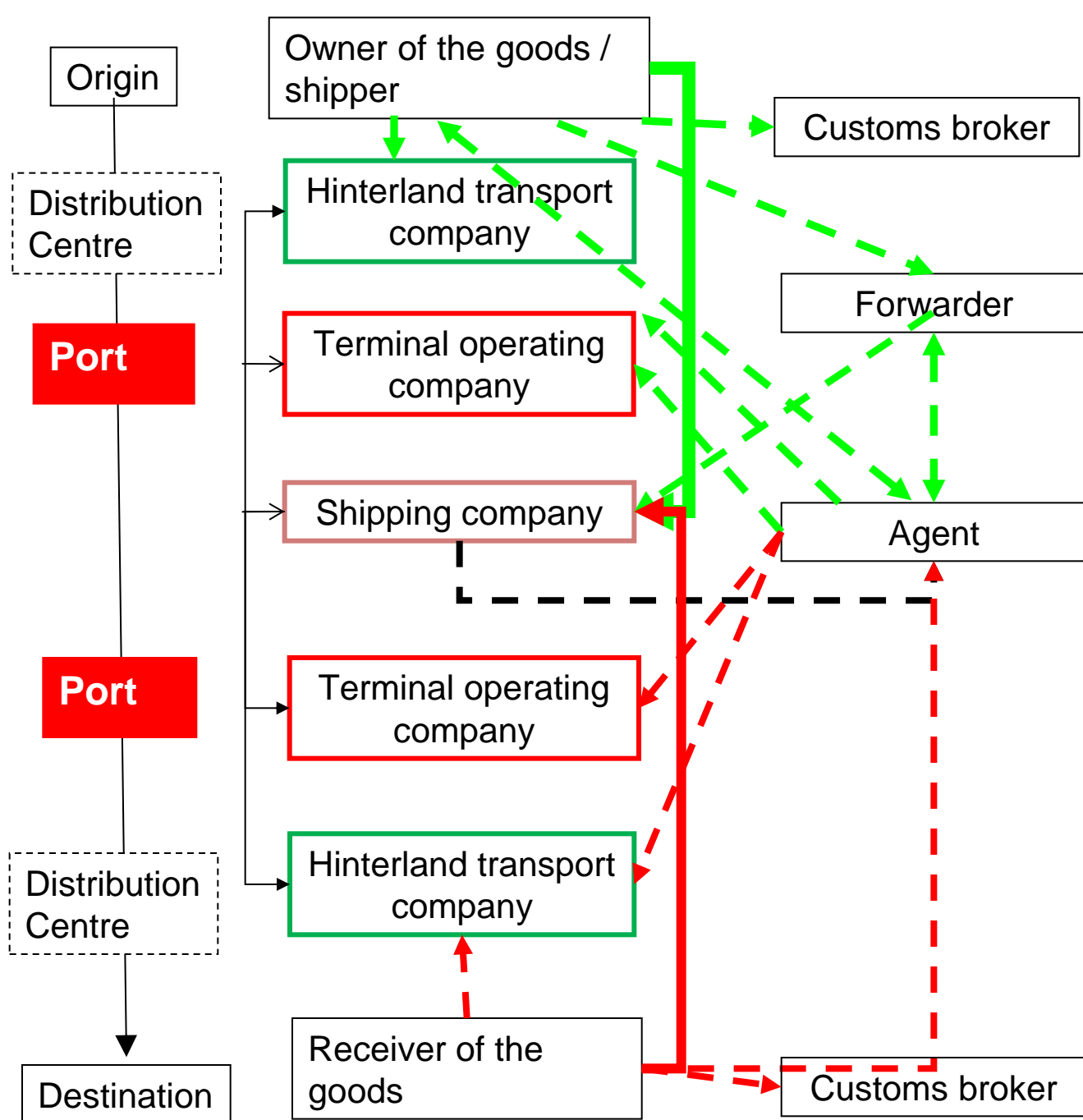
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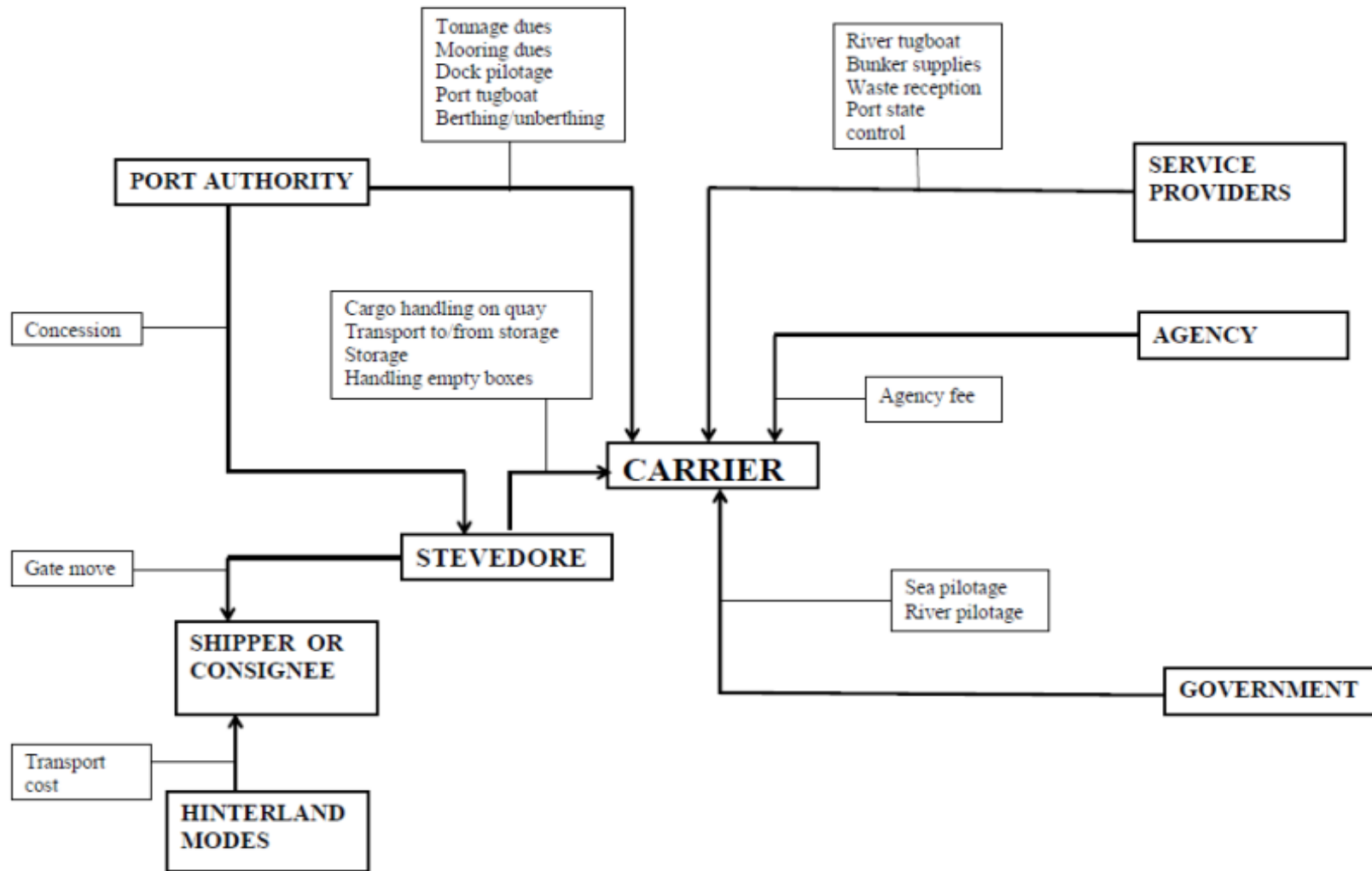


Ports and airports

- Crucial nodes in complex logistics chains
- Many actors are involved (cf next slide)
- Fierce competition, at all levels
- There may be a case in which one or more forms of market failure lead to allocative inefficiency
- Possible causes of market failure include market power, asymmetric information, externalities and public goods
- Need for regulation?



Pricing and payment of port bills



The changing port game

- Liner shipping consolidation: results in fewer ship calls with bigger vessels and higher peak handling numbers
- The customers increase their scale of cargo and become more powerful
- Container ports and their local actors: confronted with downwards pressure on tariffs and upward pressure on costs
- More co-operation of port authorities?

The changing port game (ctd.)

- A process that may be the catalyst for regulatory reform
- The potential consequences of dominant groups negotiating with other actors (e.g. TOC's) should be monitored on a continuous basis
- The owner of the goods and/or his forwarder should not become the victim of this changed power play

The actual use of port benchmarking

- Benchmarking a port as a whole is of limited value
- One should benchmark at actor's level
- Actors can have and/or use different benchmarks and indicators, but at some level they also have a joint interest in performance improvements
- Not only costs, also quality aspects
- Next slide: potential benchmark indicators

Potential benchmark indicators for a shipping line and a TOC

Shipping line	Terminal operator
<ul style="list-style-type: none">• Total time to service a vessel• Level of port dues• Level of handling charges• Level of storage charges• Flexibility of berthing (and handling) windows• Availability of feeder services• Access to hinterland infrastructure and modes	<ul style="list-style-type: none">• Profitability• Utilization degree of facilities• Dwell time• Flexibility of the operating system• Planning reliability• Distance/time cargo moves to the stacking zone

Benchmarking (Italian) port authorities

- Not to forget: the recent Italian port reform (from 57 ports to 16 Port System Authorities)
- Analysing port authority efficiency, using e.g. Data Envelopment Analysis (DEA)
- Concessions as one of the few remaining powerful tools, in order to realize the most efficient utilization of terminals and land
- The problem of distinguishing between heterogeneity and inefficiency
- Why not use the UNCTAD indicators?

Benchmarking (Italian) TOC's

- Recent literature (Pinto et al, 2017) deals with benchmarking operational efficiency of port terminals
- Manageable and unmanageable factors
- Most port terminal efficiency analyses use efficiency frontier methods, using either parametric or non-parametric models
- The danger: the contamination of exogenous effects in efficiency calculations

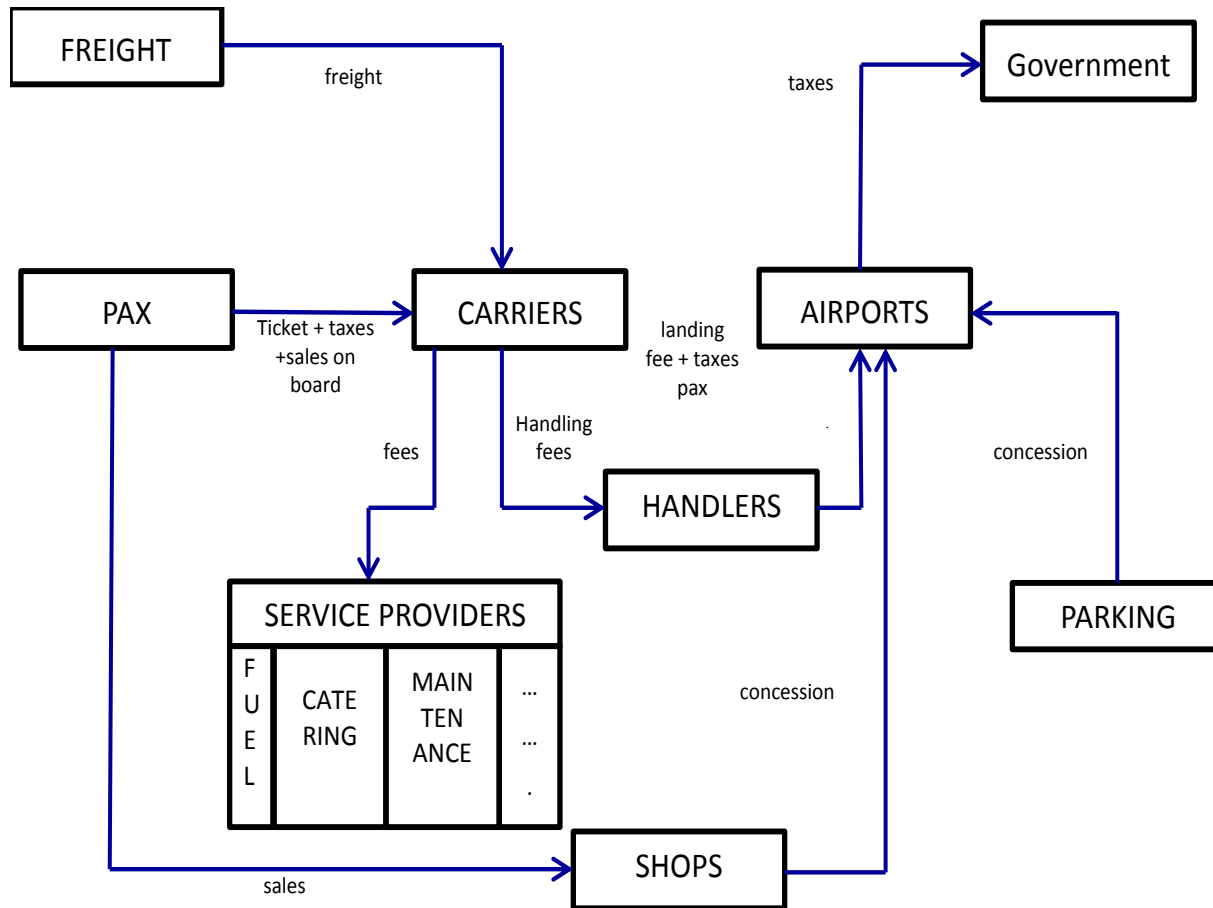
Operational performance indicators commonly used in the port industry (Pinto et al, 2017)

Indicator	Description
Throughput	Total amount of cargo handled in tons (or containers) in a given period
Load size/Tonnage per ship	Average amount of cargo handled per ship call
Ships arrival rate	Average number of ship calls per day
Berth occupancy rate	Percentage of total time with ship alongside berth
Storage occupancy rate	Ratio between total cargo stored (in average) and the rated capacity of the facility
Total time in port	Average time spent by the ships in the port area
Queue time	Average time spent by the ships in the queue
Gross (net) loading/unloading rate	Average amount of cargo loaded/unloaded between the arrival and the departure of ships (excluding non-operational times)

Start gathering information

- Is there enough competition, at each level, from shipping companies to TOCs, pilots, towage companies and other service providers?
- Is there any risk of collusion between actors, both horizontally (e.g. between TOCs) and vertically (between a shipping line and a TOC)?
- Are there any barriers to entry and/or exit in the port market (cf. contestability theory)?
- To do's: analyse co-operation; costs, including economies of scale and/or scope

The case of airports



The actual use of airport benchmarking

- One big difference with seaports: quite a lot of airports are privately owned, or in the process to get privatized
- The result: financial indicators get emphasized, together with indicators measuring capacity utilization (e.g. runway slots) and efficiency
- Quite a number of benchmarking studies (e.g. ATRS, CAA, ...)

Conclusions

- Both seaports and airports have a lot in common: very competitive sectors; some may have monopoly power
- Both are very complex environments
- Increasing market power can be abused
- Benchmarking can be useful as a means of monitoring
- Problems identified (e.g. inefficiency and/or abuse of monopoly power)? Then there may be the need for regulation