The Economics Behind the Awarding of Terminals in Seaports: Towards a Research Agenda

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The economics behind the awarding of terminals in seaports: towards a research agenda

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Theme setting

- Research agenda on terminal concessions
  - What are current practices in seaports?
  - Which academic research has been done?
  - Which issues are promising avenues for further research?
  - Which methodologies to use?

- Presentation based on two recent papers
  - Notteboom, Theys, Pallis & De Langen (2009) The economics behind the awarding of terminals in seaports: issues in the pre-bidding phase
  - Theys, Notteboom, Pallis & De Langen (2009) The economics behind the awarding of terminals in seaports: towards a research agenda

Today's agenda

- Literature overview
- Process analysis of awarding of seaport terminals
- Issues during pre-bidding phase
- Issues during pre-qualification phase
- Issues in selection phase
- Issues in post-bidding phase
- Towards a research agenda

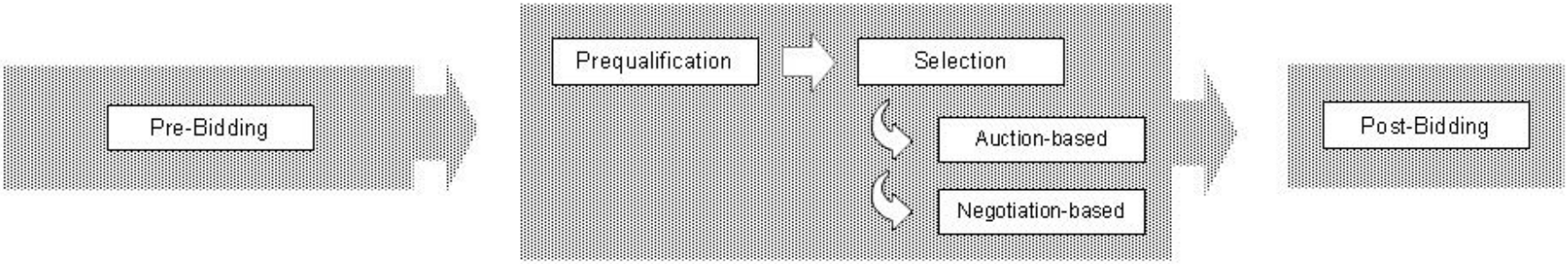
Literature overview

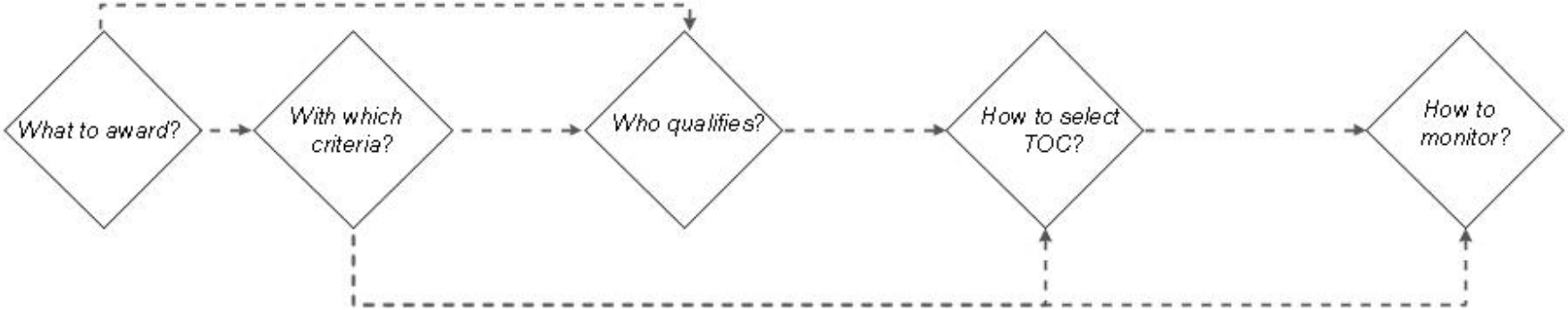
- Engel et al. (2004): Terminal awarding on basis of Demsetz-alike auction (application Valpariaso & San Antonio)
- Juan et al. (2004): quantitative methodology for designing concession agreements (Port of Valencia) with regular concession fees and a one-off lump-sum goodwill payment
- Notteboom (2007): Seaport concessions as Public-Private-Partnerships with a port governance function
- Pallis, Notteboom & De Langen (2008): Concessions and entry barriers
- Theys, Notteboom, Pallis & De Langen (2009): Types of terminal awarding procedures, with elaborate research agenda
- Notteboom, Theys, Pallis & De Langen (2009): Detailed discussion of the pre-bidding phase, with preparatory procedures
- Theys & Notteboom (2009): Discussion of impact of and techniques to determine concession duration
- Ferrari & Basta (2009): DEA-approach to concession fees

- Recent research area
- Few academic papers available
- Strong interest past two years

Process analysis of seaport terminal awarding

Four phases in the process





Issues during pre-bidding

What will be concessioned and under which conditions?

- Destination/commodity of terminal specified, or not?
- One large plot or number of smaller ones?
- What are key conditions of concession?
  - Duration, fees & fee structure?
  - Performance targets, bonuses & penalties?
  - Final asset compensation, right-to-end?
- Which risk division between PA and TOC?
- Which investment division between PA and TOC?
- Which responsibility division (e.g. dredging)?

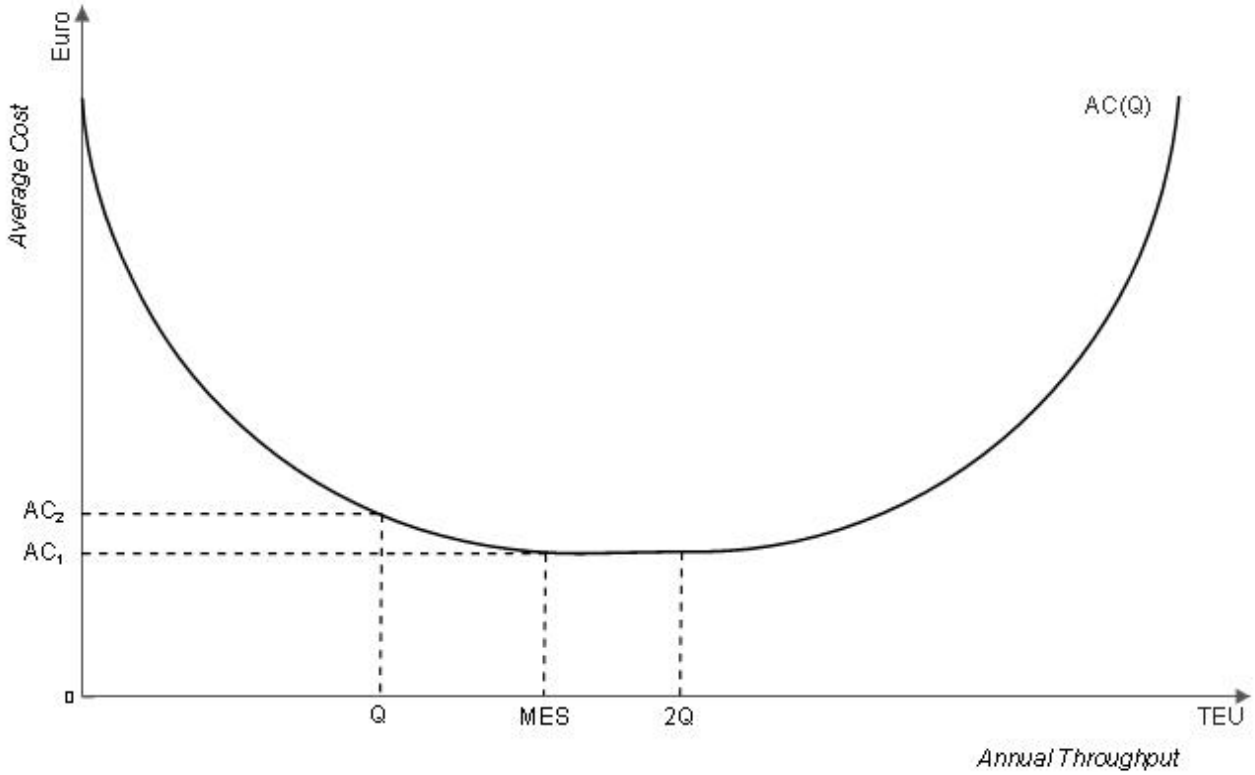
Splitting and/or phasing

- Options related to the splitting and phasing of a terminal site

	Terminal sections	
	One	**Two or more**
One point in time	No phasing No splitting	No phasing Splitting
Timing of the concessioning **Spread over several moments/years**		Phasing Splitting

‘Minimum efficient scale’ considerations

- Illustrative minimum efficient scale for container terminals



Risks involved for an Operator: Key Variables to be considered

Variable	Stage of development of terminal site leased to private operator (1)	Nature of the Market (2)
Potential Conditions	Undeveloped site to develop infrastructure (1.a)	No established regional trade; projections based on visionary cargo, or new free trade zone (2.a)
	Greenfield site with infrastructure developed to site boundary (1.b)	Established regional trade, substantial transhipment and lower barriers to entry (2.b)
	An improved site with a quay line, paved yard but without buildings or handling equipment (1.c)	Established hinterland general cargo trade but low container penetration factor (2.c)
	A site with all civil works completed but supplies quay cranes & yard handling equipment (1.d)	Established regional & national container trade but open to competition from other terminal operators within the same or nearby port (2.d)
	A fully developed site including quay cranes but supplies yard handling equipment (1.e)	Established container trade, need for facilities and high entry barriers (2.e)

Issues in pre-qualification

Who qualifies as a concessionaire?

- Incumbents allowed to bid, or not?
- Only TOCs, or also shipping lines, LSPs, etc?
- Minimum company size required for bidders?
- Minimum experience required for bidders?
  - Local, regional or global?
  - For same cargo type?
- How to set prequalification thresholds?
  - Benchmarking?
  - Quantitative vs. qualitative approach?
- Requirements met at company or business unit level?

Incumbents allowed to bid?

- Incumbent vs. entrant
  - Incumbent possibly higher probability of winning
  - Entrant cannot bid too low
  - Potential problems with incumbent as only operator
    - Factual monopoly
    - Hold-up problem
- So excluding incumbents? Not necessarily…
  - Good relations of incumbent with major shippers
  - Potentially unfair competition with entrants, e.g. Busan (Korea)
    - Incumbents in congested old port not allowed to bid for new port terminals
    - Incumbents likely to loose market share
- Difficult issue! More insight needed!
  - E.g. San Antonio & Valparaiso (Chile)

Experience requirements?

Terminal operating experience

	All terminal types	Specific terminal types
Same port	Local / No Specialisation	Local / Specialisation
Regional	Regional / No Specialisation	Regional / Specialisation
Global	Global / No Specialisation	Global / Specialisation

Examples

- Piraeus (Greece): $\geq$ 3 years with each $\geq$ 5m TEU
- Constantza (Romania): $\geq$ 5 years with each $\geq$ 1m TEU

Issues in selection

How is the concessionaire selected?

- Which type of awarding procedure?
  - Competitive or direct?
  - Prequalification or not?
- Which objectives and measures?
  - Maximum revenue, throughput, added value, employment, …?
  - Minimum handling rate, concession duration, …?
- Use of auction-based component?
  - Which auction type?
  - Which valuation type?
  - Issue with collusion?
  - Use of reserve price?
  - Overbidding and use of bid bonds?
- Use of negotiation-based component?
  - How many candidates allowed during negotiations?
  - Negotiations on individual or collective base?
- How to deal with entry barriers?
  - Favour small companies?
- Favour incumbants?

Choice of selection procedure?

		Pre-Bidding	Awarding Procedure: Pre-Qualification	Awarding Procedure: Selection: Auction-Based	Awarding Procedure: Selection: Negotiation-Based	Post-Bidding	Potential Pitfalls
Direct	A	■			→ ■	→ ■	▪ Threat of substantial market power ▪ Likely to be subjective ▪ Potential problems with acceptance of decision by stakeholders
Competitive	B	■		→ ■		→ ■	▪ "Scoring" auction necessary (potentially subjective) ▪ Not all aspects easily quantifiable ▪ No "personalisation" possible ▪ Threat of overbidding and collusion
	C	■	→ ■	→ ■		→ ■	▪ No "personalisation" possible ▪ Threat of overbidding and collusion
	D	■			→ ■	→ ■	▪ If many interested TOCs: time-consuming due to many negotiations ▪ If few interested TOCs: undermined market power for PA ▪ Potentially inefficient due to negotiation with inappropriate candidates ▪ Potentially subjective
	E	■	→ ■		→ ■	→ ■	▪ If many interested TOCs: time-consuming (but better than D) ▪ If few interested TOCs: undermined market power for PA (more than D) ▪ Potentially subjective
	F	■		→ ■	→ ■	→ ■	▪ "Scoring" auction necessary (potentially subjective) to reduce inefficiency risk of negotiation with inappropriate candidates ▪ Threat of compensating overbidding during auction with hard negotiations
	G	■	→ ■	→ ■	→ ■	→ ■	▪ Complex procedure ▪ Threat of compensating overbidding during auction with hard negotiations

Issues in post-bidding

How to materialize and enforce the agreement?

- Which legal instruments to use?
- How to deal with violation and dispute settlement?
- How to deal with renegotiation?

Renegotiation as a result of the crisis?

- Throughput guarantees?
- Concession fees, durations, investment levels?
- Entire concession contracts?

Towards a research agenda

9 key topics

1) What are objectives of PAs during awarding?
2) Which awarding procedures are best?
3) How to determine concession duration?
4) How to determine concession fee (structure)?
5) How to determine throughput guarantees?
6) How to give performance incentives?
7) What is minimum efficient scale?
8) How to deal with entry barriers?
9) How to deal with renegotiation?

Thank you for your attention!

Questions?