Port Reform, Privatization, and Regulation

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Primer on Port Terminology

- Panamax vessel – the maximum size vessel that can transit the Panama Canal; capacity = about 4,300 TEUs
- Post-Panamax vessel – vessels larger than those that can transit the Panama Canal – the third generation post-Panamax vessel is about 12,500-TEU capacity
- TEUs – 20-foot equivalent unit denoting marine container size, port or terminal capacity, or vessel capacity
- Terminal – the area inside a port normally consisting of a berth (for handling the vessel), backup area (for storing the cargo, also referred to as storage area, and a gate (for entering and exiting the terminal)
- Ship-to-shore gantry or mobile harbor cranes – equipment used for handling movements between the berth and the vessel
- Yard cranes – equipment used for placing or removing containers in or from the storage area
- Ships’ gear – vessel cranes used to move cargoes to/from the vessel
What are the logistics nodes of a port?

- Storage yard
- Gate
- Gantry cranes
- Berth
Why port performance is important

- Clark, Dollar, Micco (2001) – port inefficiency increases distance by 60%.
- Hummels (2001) – inventory costs due to transport delays are equivalent to 0.8%/day of delay of the value of the goods being delivered.
- Wilson, Mann, Otsuki (2003) – port efficiency more important than Customs and e-business.
- Kent, Fox (2004) – assess impact of port inefficiency on welfare – port inefficiency, when mitigated, induces GDP growth by 0.47 percent.
- Djankov, Freund, and Pham (2006) -- each additional day required for a shipment imposes “extra” economic distance of 70 km per day.
What are the emerging trends that affect logistics performance?

• Port operations performance being constrained by factors outside port gate
• Inter-port competition has evolved to inter-corridor competition
• Direct calls becoming more competitive with minimum handling volume of 500 moves/call
• Fuel prices negating labor cost advantages – aka the China factor
• Larger vessels being introduced by carriers in response to Panama Canal Expansion
• Introduction of regional security protocols
• Port expansion being constrained by urban development
• Countries generally are not mindful of the potential for monopolistic or oligopolistic abuses by terminal operators
Panama Canal Expansion Program

Existing Locks

- Chamber length 305m (1,000’)
- Vessel length 294.3m (965’)

Post-Expansion Locks

- Chamber length 427m (1,400’)
- Vessel length 366m (1,200’)

12m (39.5’)
0.6m (2’)
32m (106’)
33.5m (110’)

48.8m (160’)
15.3m (50’)
3m (10’)
55m (180’)

Chamber length 305m (1,000’)
Vessel length 294.3m (965’)
Chamber length 427m (1,400’)
Vessel length 366m (1,200’)
How are fuel costs affecting competitiveness?

Source: U.S. Crude Benchmark Prices, U.S. Department of Energy; Shipping Costs – estimated averages from sample data from shipper manifests/carriers and phone quotes from freightforwarders; projected costs calculated by Nathan Associates Inc.
Logistics costs and fuel prices

• Soaring transport costs, not tariff barriers, pose the greatest challenge to trade today
• Using GTAP model, early results indicate:
  – At $20/barrel, transport costs equivalent to 3% tariff rate
  – At $80/barrel, transport costs equivalent to tariff rate of 9%
  – At $150/barrel, transport costs equivalent to tariff rate of 11% (same as tariff rates in 1970)
• Long-distance routes especially vulnerable
  – Every 10% increase in distance = 4.5% increase in total transport cost
What are the solutions to counter fuel cost disadvantages?

• Squeeze more efficiencies out of the logistics chain
• Establish regional distribution centers
• Build intelligent logistics thinking into the transport system
Port Administration Models

• Virtually all ports are governed by port authorities

• Two port administration models
  – Operating Port (also called public service port) – port authority provides assets and conducts cargo and vessel handling
  – Landlord Port – port authority provides assets and engages private sector participation in the form of leases, concessions, operating agreements, or management contracts

• Vast majority of maritime countries worldwide have adopted landlord model
Port Functions in a Landlord/Post-Privatization Environment

- national port development planning
  - master planning
  - maintenance management
  - construction supervision

- operational regulation
  - economic regulation/tariff setting
  - competition regulation

- aids to navigation
  - pilotage
  - tug assist
  - safety and security
  - operations planning
  - property management

- accounting/finance
  - legal/risk management
  - contracts/leases
  - concession supervision
  - personnel
  - marketing/promotion/customer service

Planning/Engineering

Operational

Regulatory

Administration

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Port Privatization

- Port privatization refers to who provides the service, and not necessarily who owns the asset.
- Port privatization can occur via:
  - Concessions (usually implying long-term agreements and substantial private sector investment)
  - Leases and Operating Agreements (normally shorter term, with no substantial investment requirements)
  - Management contracts (private sector is paid to provide the service)
  - Licensing (licenses awarded to provide stevedoring services)
Where privatized services (in red letters) are provided in the port logistics chain

- 12 areas of activity occurring
  1. Pilotage
  2. Line handling
  3. On-board inspections
  4. Gangs (workers) mobilized for vessel handling
  5. Seal inspected
  6. Container moved from berth to storage or for evacuation or Customs processing
  7. Container is stored
  8. Container is placed on chassis
  9. Truck/container is scanned
  10. Truck/container is weighed
  11. Gate processing
  12. Truck leaves terminal

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Privatization and Inducing Competition

Structural Strategies

- Introduce competitive pressures
- Competition reduces the level of regulation needed
- Balance sought between
  - efficiency gains from economies of scope
  - cost reductions from competitive pressures
Structural Remedies

• Introduce new berths/terminals: requires suitable site for expansion and sufficient volumes

• Divide existing port into competing terminals (terminalization): via dedicated terminals or “overlapping” activity

• Divide port operations within the terminal by
  – Privatizing the vessel stevedoring operation and
  – port authority operates the yard area
  – assignment of yard areas to stevedoring companies
  – allowing stevedoring companies to provide both vessel stevedoring and yard/storage services without any assigned areas

• Short-term operating agreement/lease/management contract
“Overlapping” Competition Concept

- Different levels of service
- Not all ships require same level of service
Structural Remedies: Additional Principals

- Avoid participation of carriers in terminal operations: risk of conflict of interest
  - preferential berthing to their own ships
  - discounts in berth handling charges to their own ships
  - access to proprietary data of competitors
Regulatory Strategies

• Tariff filing to monitor for and discourage anti-competitive behavior
• Setting of tariffs to prevent monopolistic behavior
• Encourage communication between port planners and regulators to determine if structural remedies are available
### Decision Framework for Selecting Remedies

#### Operational Environment

<table>
<thead>
<tr>
<th>Port Setting</th>
<th>Facility Setting</th>
<th>Volume</th>
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<tbody>
<tr>
<td>small port</td>
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#### Competitiveness Indicators

<table>
<thead>
<tr>
<th>Transport options</th>
<th>Berth utilization</th>
<th>Relative tariff competitiveness</th>
<th>Port profitability</th>
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<tr>
<td>1</td>
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#### Solutions

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<tr>
<th>Structural Remedies</th>
<th>Regulatory Remedies</th>
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<tr>
<td>S4</td>
<td>R1</td>
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<td>R1</td>
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<tr>
<td>S2,S3</td>
<td>N/A</td>
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Transport Option Codes:
1 - no other ports or intermodal options
2 - no possibility for facility expansion/construction of a new port
3 - possibility to expand existing facility
4 - possibility to construct a new port/terminal nearby
5 - other port or intermodal options

Structural Codes:
S1 - introduce new berths/terminals
S2 - divide existing port into terminals
S3 - divide operation within the terminal
S4 - short-term operating agreement/lease/management contract

Regulatory Codes:
R1 - file/monitor tariffs
R2 - set tariffs/profitability limits

Shift in Transaction Flows Post-Privatization

Pre-privatization

Port Authority

Carrier

Tug assist
Pilotage
Dockage
Vessel stevedoring
Empty handling/storage
Terminal handling charge
Channel and navigation fees

Shipper

Yard storage
Stuffing-Destuffing
Warehousing

Post-privatization

Port Authority/Government

Carrier

Tug assist
Pilotage
Dockage
Vessel stevedoring
Crane service
Terminal handling charge
Channel and navigation fees

Terminal Operator

Port Authority/Government

Other Operators

Shipper

Yard handling/storage
Stuffing-Destuffing
Warehousing

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The Need for Competition Regulation

• In vast majority of cases, it is possible to induce competition
• Existence of competition suggests a “light-touch” regulatory approach – monitoring performance as opposed to setting tariffs
How do we regulate ports?

- Transport options: availability of other port-of-call options serving the same hinterlands
- Operational performance: ships waiting time, berth occupancy/utilization rates
- Tariff comparisons with historical rates, with rates at other ports in the same country and with theoretical rates based on “model port” costs
- Financial performance: financial profit should not be “abnormally” high. Return on equity and return on assets should be related to investment
Assessing extent of competition

## Relative importance of monitoring criteria

<table>
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<tr>
<th>Criteria</th>
<th>Score Weight</th>
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<tr>
<td>Transportation Options</td>
<td>60%</td>
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<tr>
<td>weekly sailings</td>
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<td>transport costs (land, port)</td>
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<tr>
<td>Operational Performance</td>
<td>10%</td>
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<tr>
<td>berth utilization</td>
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<tr>
<td>ship’s waiting</td>
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<tr>
<td>Tariff Comparison</td>
<td>20%</td>
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<td>port cost differential</td>
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<td>theoretical rates</td>
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<tr>
<td>Financial Performance</td>
<td>10%</td>
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<td>return on equity</td>
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<tr>
<td>return on assets</td>
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</tbody>
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Imposing performance criteria in concession contracts

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How can USAID support efforts to improve port and logistics performance?

- Assist countries establish regulatory mechanisms to assure competitive behavior among port operators
- Assure that the ability to induce competition is adequately considered in the design of concession programs
- (Continue to) Promote development of corridor options
- Conduct diagnostics of logistics chains to assist countries and donors prioritize interventions and investments
- Train country planners and economists to conduct port and logistics analysis to establish benchmarks and monitor performance on periodic basis
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