Assessing Port Efficiency in OIC Member States

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Why Assessing OIC Ports' Efficiency

- To measure and compare productive efficiency of selected OIC ports
- To benchmark OIC port efficiency against that of international best practice
- To uncover and understand any underlying factors behind OIC ports' (in)efficiency
- To track potential shifts of productive efficiency over time
- To test convergence or divergence of productive efficiency across specific port groups
- To decompose and analyse sources of efficiency, e.g. technical v. scale v. Technology

Selected Ports under Study

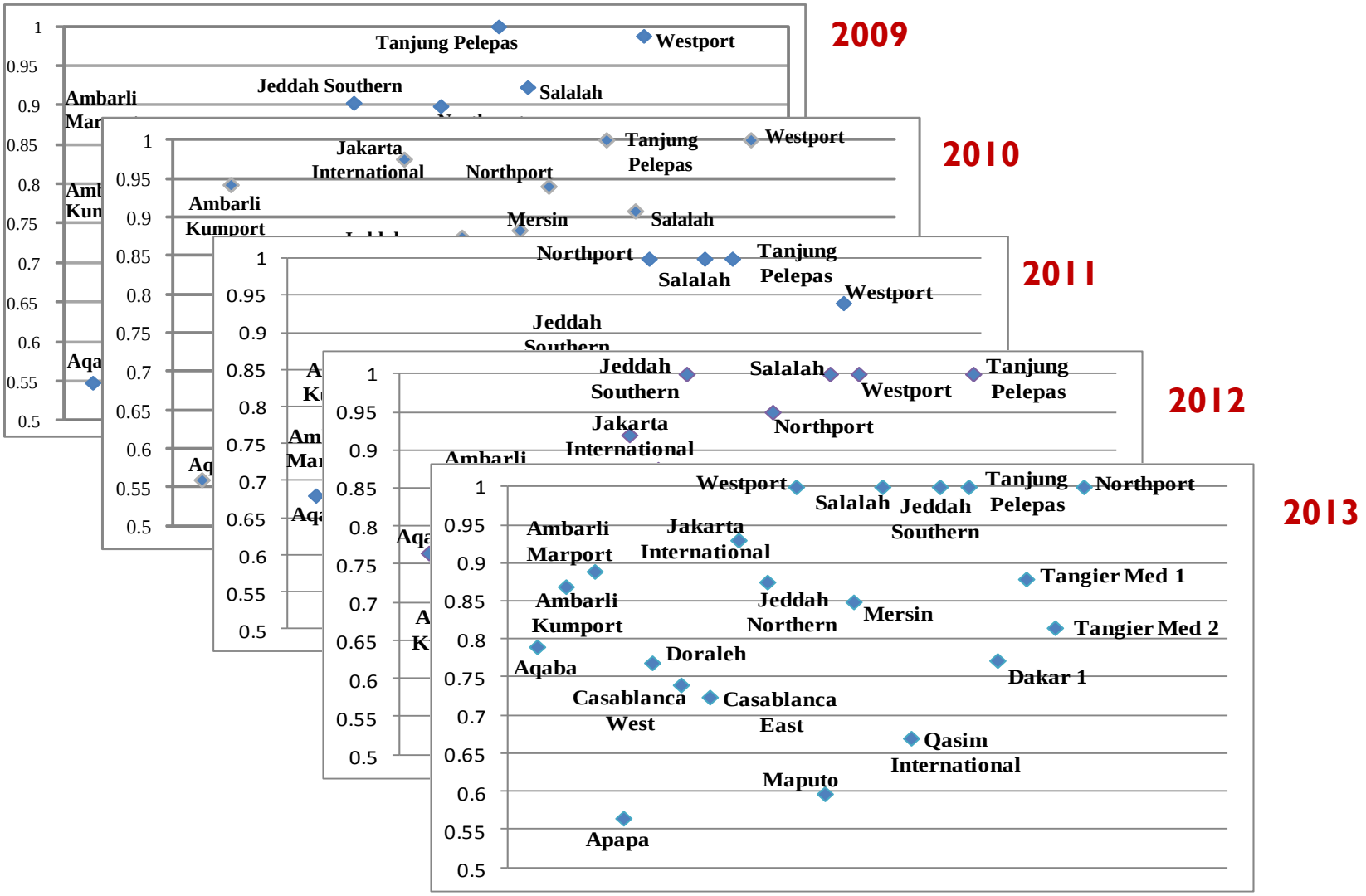
	Country	Port	Region	Type
OIC/ COMCEC selected ports	Senegal	Dakar	African group	Gateway
	Djibouti	Doraleh	African group	Transhipment & Transit
	Nigeria	Lagos	African group	Gateway
	Mozambique	Maputo	African group	Gateway & Transit
	Morocco	Casablanca	Arab group	Gateway
		Tangiers Med	Arab group	Transhipment
	Jordan	Aqaba	Arab group	Gateway & Transit
	Saudi Arabia	Jeddah	Arab group	Gateway & Transhipment
	Oman	Salalah	Arab group	Transhipment
	Turkey	Mersin	Asian group	Gateway
		Ambarli	Asian group	Gateway
	Malaysia	Tanjung Pelepas	Asian group	Transhipment
		Port Klang	Asian group	Gateway & Transhipment
	Indonesia	Tanjung Priok	Asian group	Gateway
	Pakistan	Port Qasim	Asian group	Gateway
Reference Ports	Singapore	Singapore	South East Asia	Transhipment
	Netherlands	Rotterdam	North Europe	Gateway & Transit
	China	Hong Kong	East Asia	Gateway
		Shenzhen	East Asia	Gateway

Data and Variables

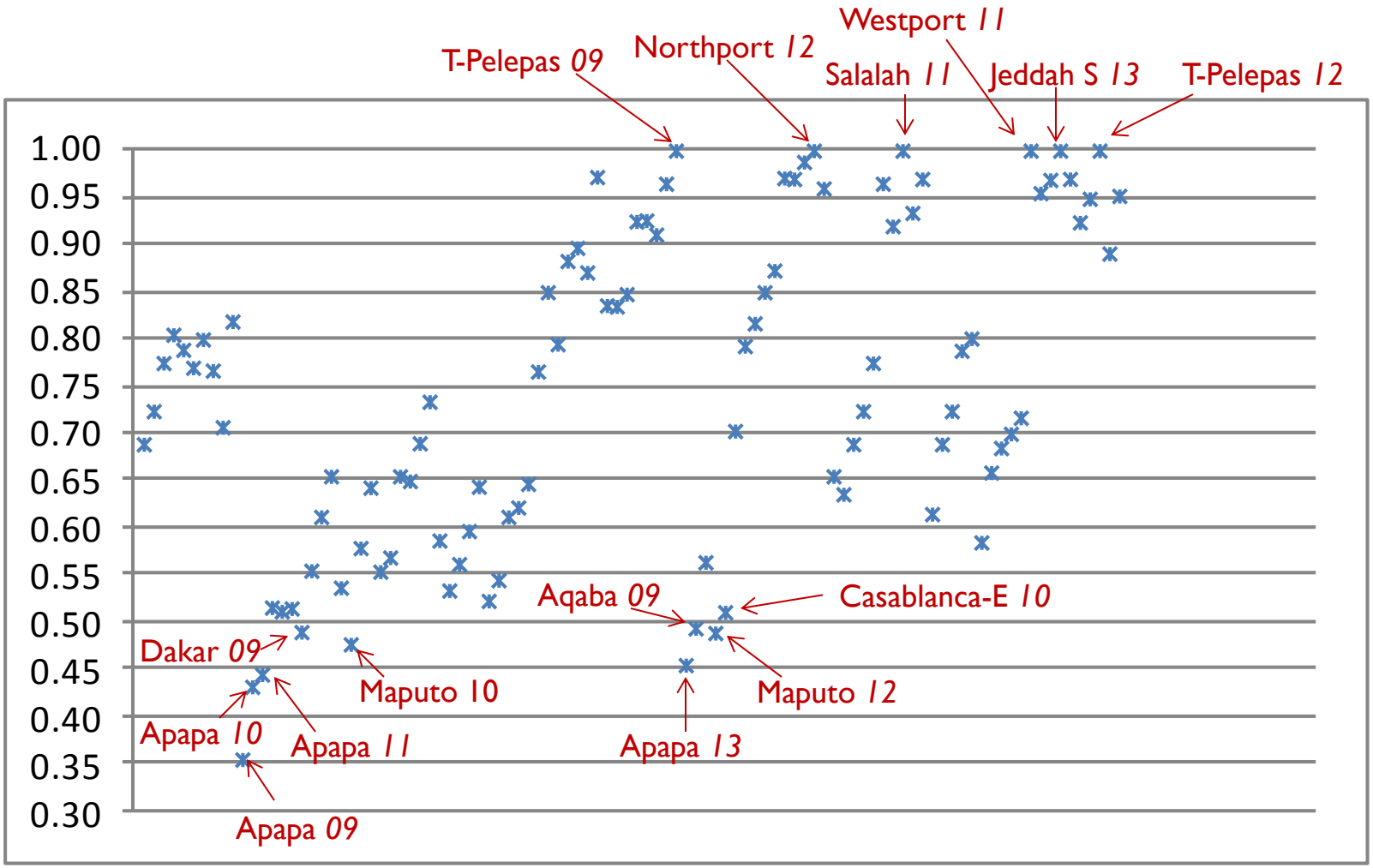
- ✓ 12 purposefully selected ports from OIC countries, plus 4 best in-class international ports, resulting into 26 container terminals (20 OIC and 6 reference ports)
- ✓ 5-year time frame (2009-2013)…resulting into a panel dataset of 130 terminal-*DMUs*
- ✓ Use of engineering standards and weighted indices in variable definition
- ✓ Use DEA to estimate port efficiency under cross-sectional and panel data analysis
- ✓ Use MPI to track productive efficiency and decompose sources of efficiency

Variable	Minimum	Maximum	Mean	Standard Deviation
Terminal area (1000 m^2)	105	2650	730	505
Maximum Draft	10	18	14	2
LOA	305	4875	1515	993
STS-crane index	2	390	55	57
Yard stacking index	6	212	35	35
Internal trucks and vehicles	2	390	55	57
Gates	3	37	10	7
Terminal throughput (1000 TEU)	350	9600	1526	1465

Efficiency Results for OIC Ports: Cross-Sectional Analysis



Efficiency Results for OIC Ports: Panel-Data Analysis

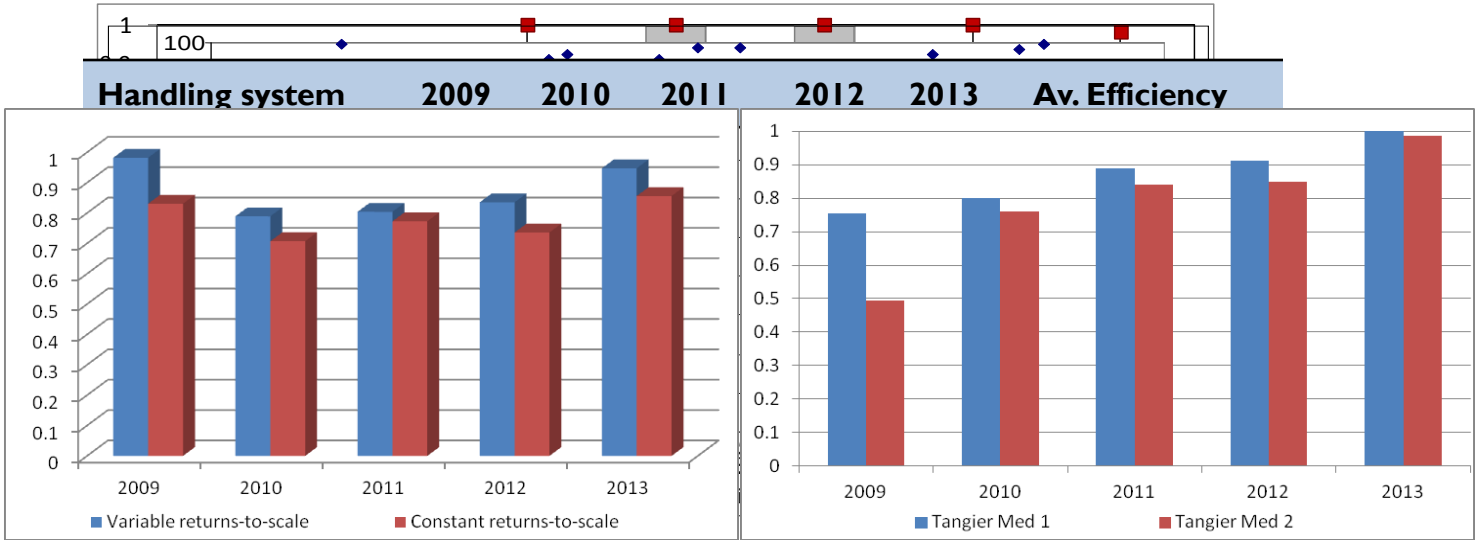


Efficiency Results for OIC and Reference Ports: Panel-Data Analysis

- When adding the 6 reference ports to the terminal dataset, the average efficiency of OIC ports drops between 10-15%.
- Even tough, the results mirror those of the cross-sectional analysis with Apapa-2009 the least efficient. Other OIC ports (Maputo-2010, Dakar-2009, Casablanca East-2010) also show particularly low efficiency scores.
- The 100% efficient ports are those of Hong Kong International (HIT), Singapore (PSA), Tanjung Pelepas (PTP), and Shenzhen (YIT).
- Northport, Westport and Salalah depict an equally high performance as the one set by reference international ports

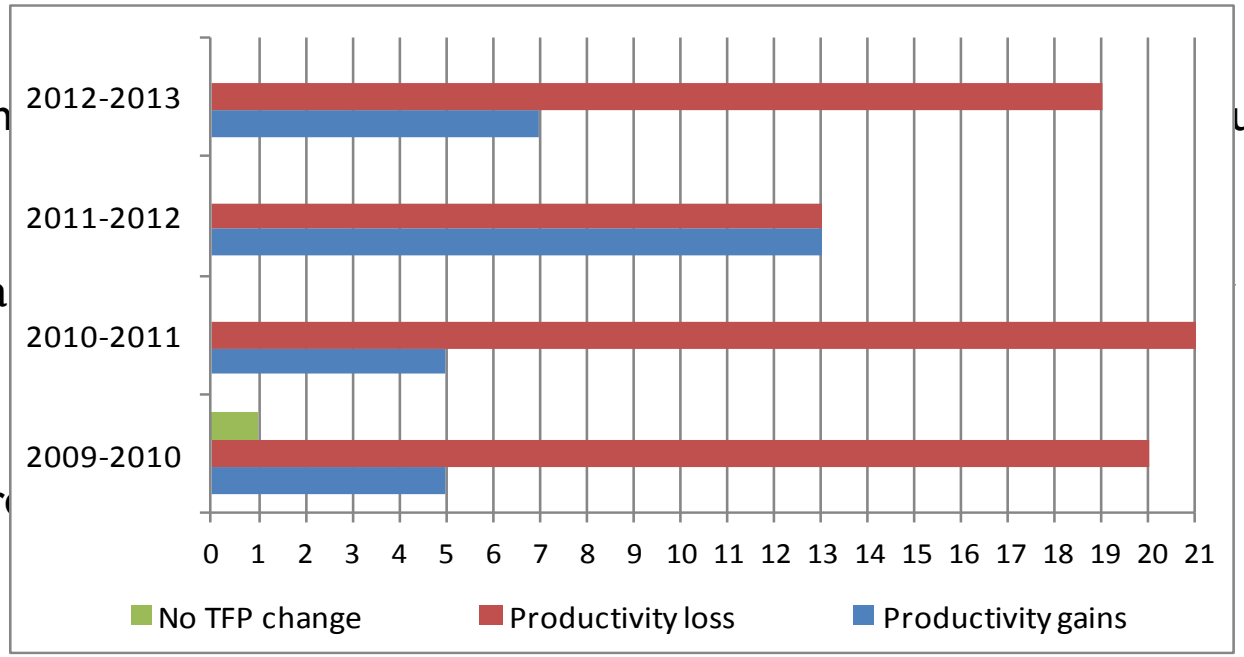
Analysis of Efficiency by Terminal Groups

- Institutional structures and port efficiency
- Traffic type and port efficiency
- Technological / handling systems and port efficiency
- Size and incremental investment and port efficiency



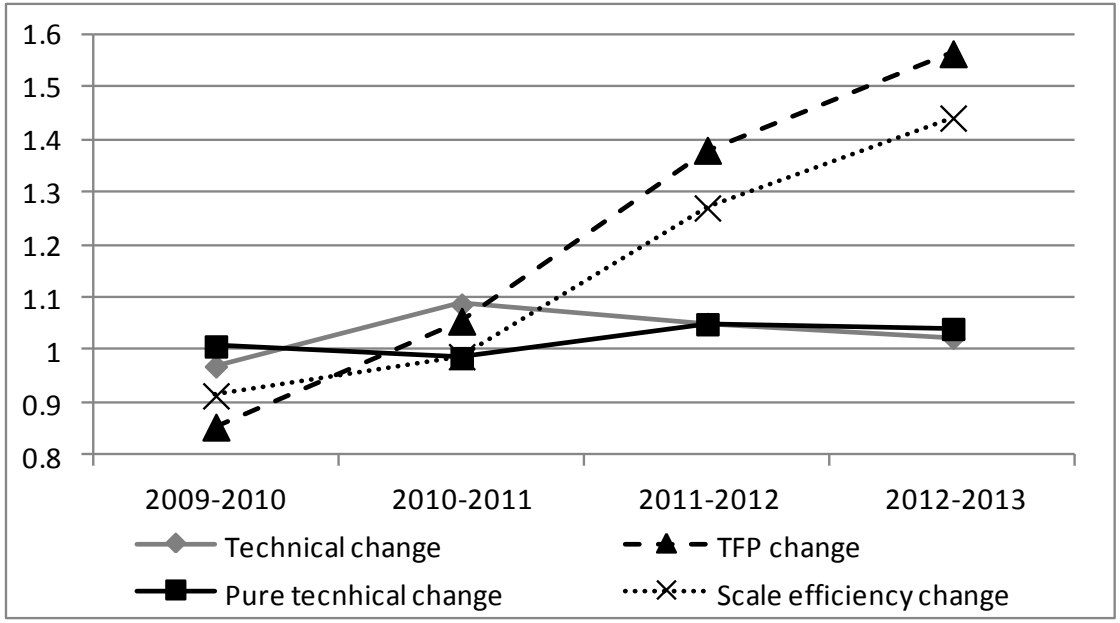
Productivity Change: Multi-Year Analysis

- Regressing average productivity change for OIC ports over all pair-years.
- Aqaba, Am … uctivity change
- Apapa, Salala … change
- Port Qasim r…



Productivity Change Analysis: Efficiency Decomposition

- Decomposing total factor productivity (TFP) into pure, scale, and technology components



- TFP and its sub-categories do not all follow similar productivity trends
- Average pure efficiency change has been flat across all observation periods
- TFP and scale efficiency changes followed same trend upward trends
- Technological change followed a different pattern from other indices

Productivity Change Analysis by Terminal Group

- Private-sector ports do not exhibit a similar TFP change to that of public sector ports.
- Private-sector ports show higher technology change to that of public sector ports
- Gateway ports do not exhibit a similar TFP change to that of transhipment ports.
- Gateway ports show higher scale change to that of transhipment ports.
- Large scale ports show up to 50% more productivity change than that of small ports
- Large scale ports exhibit a similar TFP change to that of transhipment ports.

Analysis of Logistics Trade Efficiency

- Relying on data from global indices: LSCI, LPI, and trading across borders indicators.
- LSCI analysis shows Malaysia, Egypt, Morocco, Saudi Arabia and Turkey well connected to global shipping networks
- Countries lest connected are Qatar, Guinea Bissau, Guyana, Brunei, Iran, Iraq, Guinea, Mauritania, Comoros, Libya, Algeria, Tunisia, Maldives, Kuwait, Bangladesh, & Mozambique.
- LPI analysis shows Malaysia, Turkey, Saudi Arabia, Indonesia, Morocco, and Oman come on top of the rankings; while Djibouti and Mozambique come at the bottom.
- OF LPI components, the quality of infrastructure, ease of shipments, and timeliness; those seem to be highly correlated to port performance.
- Trading across border indicators show the exorbitant time lag and trade cost imposed on landlocked OIC countries.
- Analysis also shows trade and export costs in Mozambique, Nigeria and Senegal can be twice as much as those in Malaysia, Morocco, and Turkey.

Six Main Performance and Policy Recommendations

1. Compile and Publish Detailed Port KPIs
2. Conduct Port Performance and Yardstick Benchmarking
3. Improve Port Performance through Competition and PSP
4. Incorporate Performance Requirements in Concession Agreements
5. Upgrade Port Assets and Invest in Technology to Improve Port Productivity
6. Improve Trade Logistics Efficiency to Reduce Port Costs and Delays

THANK YOU

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