Improving the Supply Chain and Investing in Infrastructure as a Means to Economic Growth

Presentation to

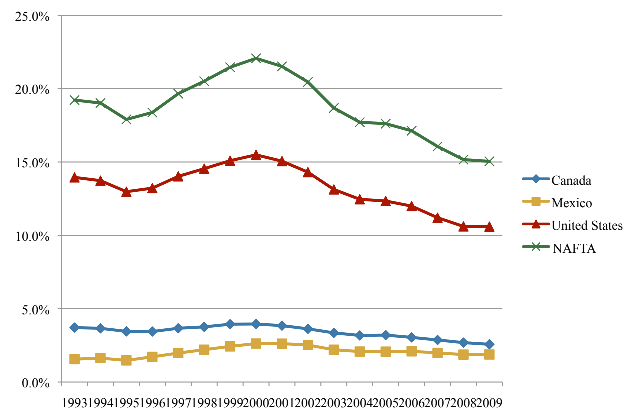
American Association of Port Authorities

September 21, 2010

Agenda

- A brief review of supply chain thinking and the changing business environment
- "Software" patches to improve the supply chain
- "Hardware" investment/upgrading to improve the supply chain
- Some concluding thoughts

NAFTA's Share of World Trade (a losing game)



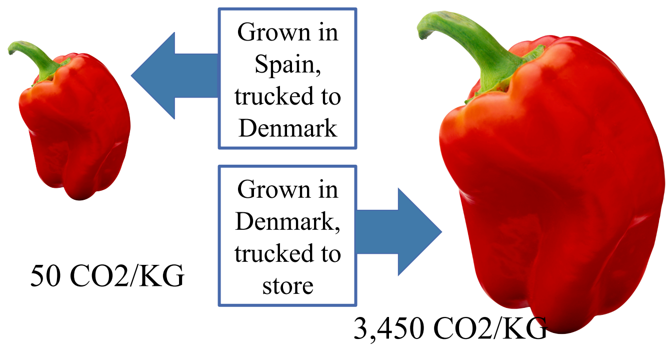
Source: Merchandise Trade from World Trade Organization (2009) International Trade Statistics Trade Database, downloaded September 10, 2010.

Changing Context: From Port Competition to Route Competition (& more)

- Traditionally ports competed for cargo in a limited hinterland. Today ports are part of complex supply chains that pit alternative origin–destination options against each other.
- Shift over the last 20 years:
  - Complex networks (nodes and links as opposed to markets)
  - Fewer (but more powerful) players but more stakeholders, more interests, interconnected relationships
  - Integration along supply chains
  - The rise of civil society and greater ability of stakeholders organize
  - An enhanced focus on security
  - A new interest in sustainability

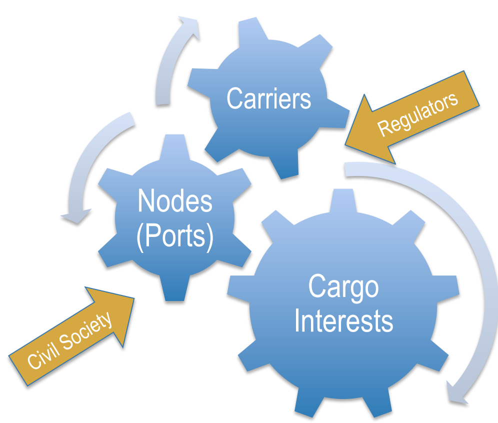
Less Transport Does Not Necessarily Mean Less Carbon

Question: Which is less Carbon intensive? The red pepper (he said tomato) grown in Denmark and sold in the Danish supermarket or the red pepper (he said tomato) grown in Spain and sold in the Danish supermarket ?



Source: Bo Cerup-Simonsen of Maersk Maritime Technology, July 2010.

The Players: Who Are They? Where is the Value Created?



Source: Blank, Brooks and Quigley (2009)

Thinking About Global Supply Chains and Market Access

- The cargo interest has become more powerful since the mid 1990s as…
  - Telecom deregulation and a cheap Internet for buyer-seller communication, tracking and tracing, security management became globally available
  - Shipping lines with too much capacity chased too little cargo resulting in a serious decline in transport costs
- Velocity of cargo is key in high-value product supply chains…
  - Time-based competition for high value goods—door-to-door time (but price-based for low value goods—slow steaming here means ports get dropped)
  - Supply chain decisions are increasingly based on service volatility (standard deviation of time) around price, transit time and frequency. That volatility is called reliability.
- The ease of doing business has become critical and everyone's getting better at streamlining…

Regulation: Commercial Document Requirements Vary by Country

(a measure of access)

Region or Economy	Documents for export (number)	Documents for import (number)
OECD average (2009)	4.3	4.9
Canada	3	4
Mexico	5	5
United States	4	5
Singapore	4	4
Hong Kong, China	4	4
Netherlands	4	5
OECD average (2007)	4.8	5.9

Source: World Bank Doing Business Report
http://www.doingbusiness.org/ExploreTopics/TradingAcrossBorders

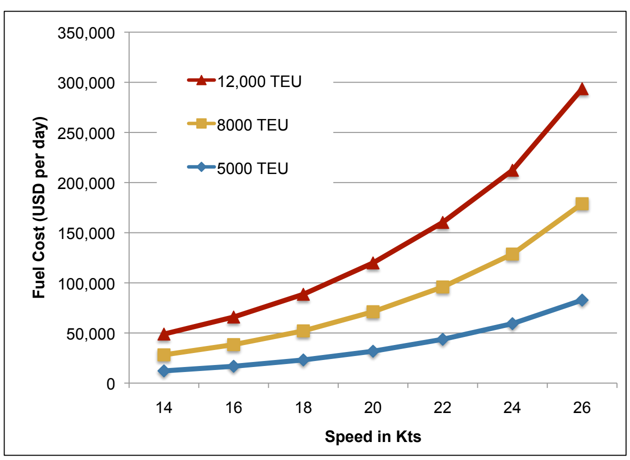
It is Also About Time and Cost…

Country	Time to export (days)	Cost to export (US$ per container)	Time to import (days)	Cost to import (US$ per container)
OECD average	10.5	$1090	11	$1146
Canada	7	$1610	11	$1660
Mexico	14	$1472	17	$2050
United States	6	$1050	5	$1315

Source: World Bank *Doing Business* web site.

Every day of delay is equivalent to 70 kms further from the market (World Bank—Djankov, Freund, and Pham, 2010).

Slower Schedules Reduce Costs for Carriers



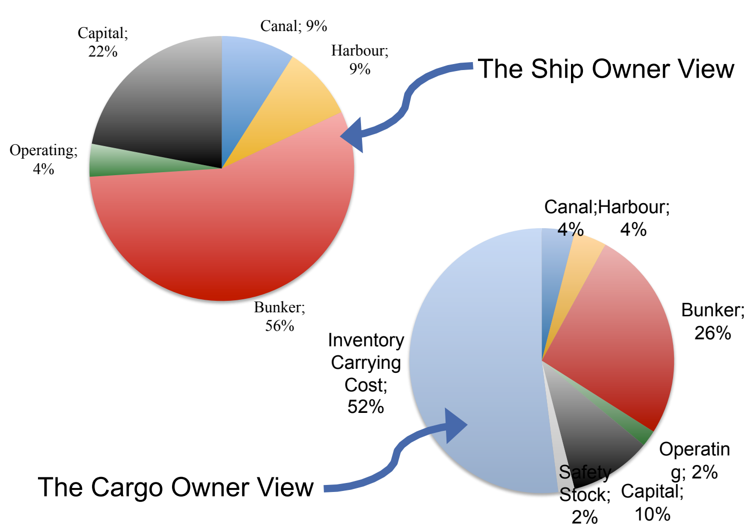
Source: Notteboom and Vernimmen (2009), Table 3.

… But Extend Transit Time for the Unhappy Customer

	Sailing time (in days) at speed (in knots)			
	20	22	24	25
Shanghai-Dalian	1.20	1.09	1.00	0.96
Dilian-Qingdao	0.58	0.53	0.49	0.47
Qingdao-Ningbo	1.07	0.97	0.89	0.85
Ningbo-Singapore	4.46	4.06	3.72	3.57
Singapore-Rotterdam	17.40	15.82	14.50	13.92
Total	24.71	22.47	20.60	19.77

Source: Notteboom and Vernimmen (2009), Table 8.

Whose Inventory Carrying Costs Have Just Gone Up



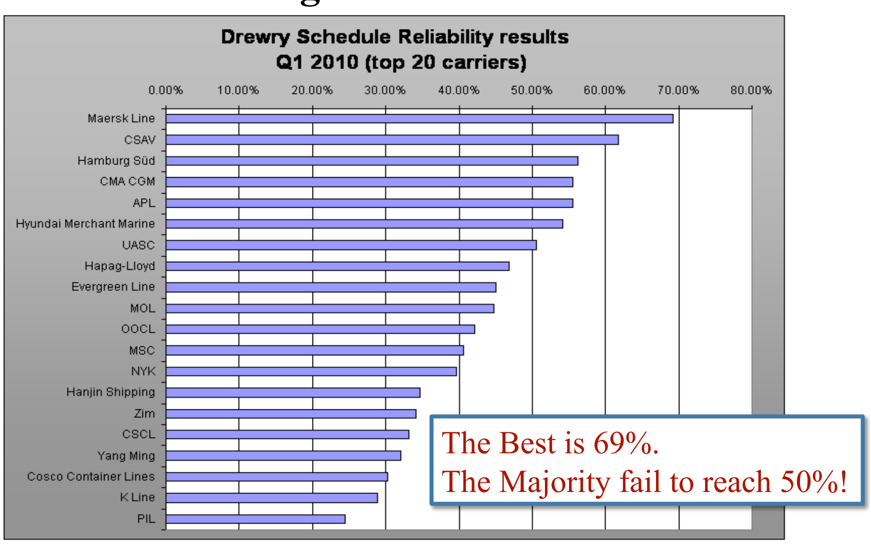
Source: Eefsen and Cerup-Simonsen (2010), IAME, Figure 9A

Transit Times (at 22 knots) (Asia/N. America East Coast)

Transit Time From (days: hours)	Mumbai (India)	Port Kelang (Malaysia)	Singapore	Laem Chabang (Thailand)	Hong Kong (China)
E. coast ports					
Halifax	14:13	17:21	18:06	19:20	21:00
NY/NJ	15:01	18:20	19:05	20:18	21:23
Norfolk (via Suez)	15:18	19:00	19:12	21:01	22:06
Norfolk (via Panama)			24:13	23:12	20:21
W. coast ports					
Vancouver	18:01	13:19	13:01		
Los Angeles	19:03	14:22	14:13		

Source: World Ports Distances Calculator (http://www.distances.com.)

Carrier Schedule Reliability is Damaging to Cargo Interests…



Source of data: Mike White's IAPH presentation June 2010.

The Perspective of the Cargo Interest

For products moving from Shanghai to Chicago or Toronto, Chow (2007) found that:

- Non-transportation costs range from 52 to 67 percent of total logistics cost!
- The importance rises with value of commodity.
- Reliability is a key consideration. For example, Total Logistics Costs for apparel moving Shanghai–Chicago, the range is considerable:

in CA$	Vancouver	LA/Long Beach	Halifax
Best Case	$251,500	$241,500	$314,500
Worst case	$472,250	$508,00	$394,250

Food for Thought About Opportunity Identification

- Where is the value proposition? Where are the opportunities? (I see this as a route-specific evaluation each port must do alone. Use your customers and your customers' customers to find the answer.)
- Infrastructure investment (Is an infrastructure play required?)
- Supply chain restructuring (Is there a compelling case for route change?)
- Coalition building (Are universities, trade associations, MOUs,… effective in building relationships?)
- Can AAPA use its clout to address non-port issues?
- What is your port's vision? Mine includes improved port performance …

A 5-Step Process to Thinking About Supply Chain Improvements

① Identify your customers' and users' requirements (what are they seeking from the supply chain?)
② Find out their priorities for the various parts of the chain
③ Evaluate your performance on both what you control and what you influence
④ Fix the gaps on those items of importance to the customer and <u>determinant</u> in their assessment of your performance
⑤ Help your supply chain partners with fixes they control via
- Information-sharing
- Coalition-building
- Identifying financial support and sources

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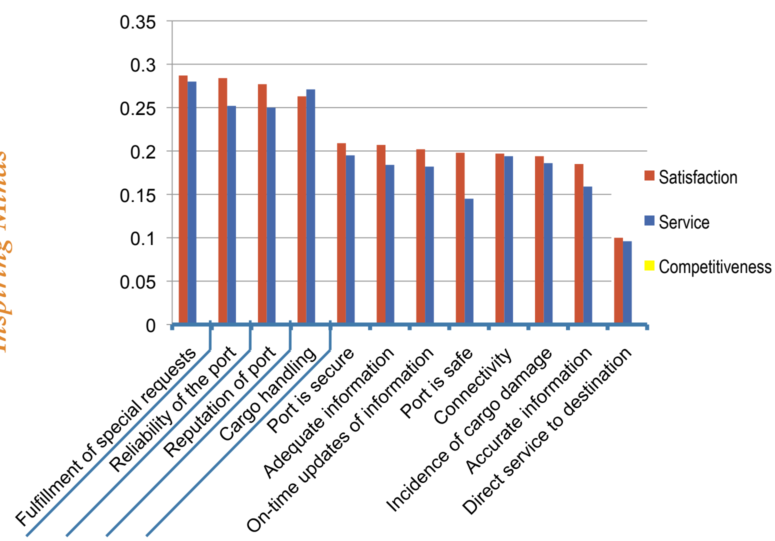
Determinant Importance of Attributes for Satisfaction, Service Quality



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Determinant Importance for Satisfaction, Service Quality & Competitiveness

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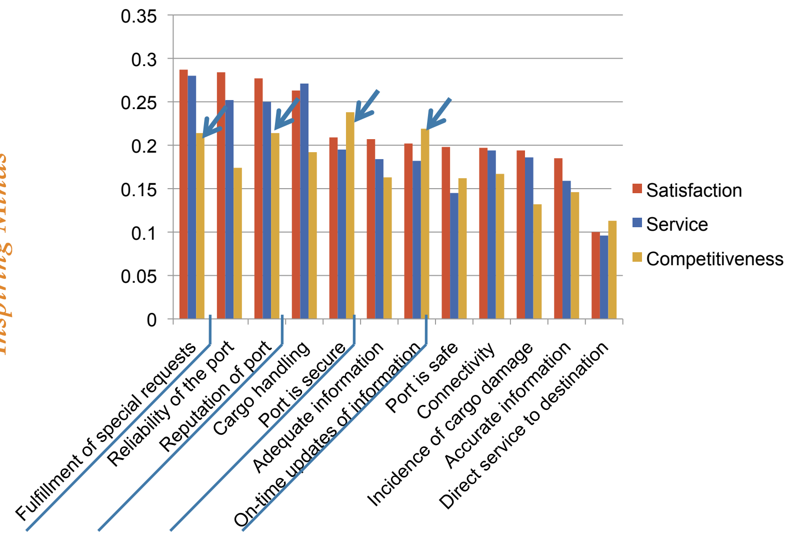


What Did We Find? Determinant Attributes for Cargo Interests

Evaluation Criteria	Overall Satisfaction	Competitiveness	Effectiveness in Service Delivery
Effectiveness of decision-making process (e.g., altering schedules, amending orders, changing processes to meet our demands)	0.384	0.333	0.296
Port authority responsiveness to requests	0.309	0.299	0.206
Terminal operator responsiveness to requests	0.300	0.178	0.211
On-schedule performance	0.295	0.257	0.215
Capability of employees (can they accommodate our needs?)	0.286	0.143	0.200
Ability to develop/offer tailored services to different market segments	0.267	0.270	0.205
Cost of rail / truck / warehousing	0.213	0.229	0.179
Availability of rail / truck / warehousing companies	0.190	0.184	0.118
Overall cost of using the port	0.000	0.000	0.000

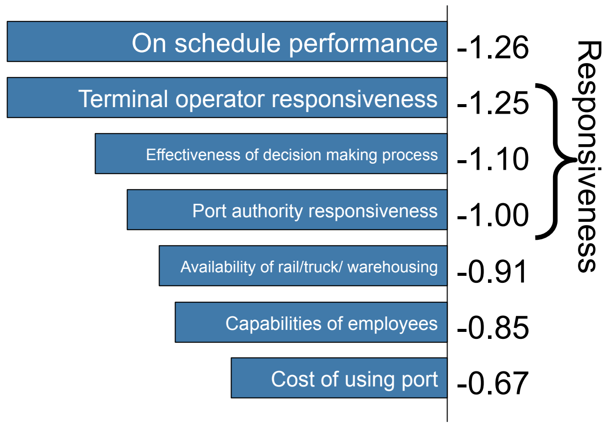
Responsiveness

Performance

Cost

Read as "Effectiveness of decision-making is the most influential evaluation criterion in determining a user's overall satisfaction with a port with an NPE score of 0.384."

Port Performance Summary Gap Sizes for Cargo Interests: Port B



No Differences:
Cost of rail, truck and warehousing, or ability to provide tailored services

Environmental Practices of Ports Are Relevant Over Longer-Term

- Adams et al (2009) benchmark the current state of port environmental management.
- Conclusions:
  - Ports will have devote more time to winning community support
  - Environmental policies do not confer competitive advantage.
  - Lack of environmental policies will become a competitive disadvantage

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Getting the Right "Hardware"

- The investment needed may not always be at the port. Inland DCs may be part of the port flow solution, e.g., extracting more from existing port capacity.
- In addition to the usual bridges, highways and border crossings, other investments can facilitate supply chain restructuring
- Belzer and Howlett (2009) confirmed that infrastructure investment may result in stimulating the manufacturing sector elsewhere.
- Conclusion: It isn't just about building manufacturing in your location, but about partnerships to locate new developments elsewhere that grow traffic at the port.

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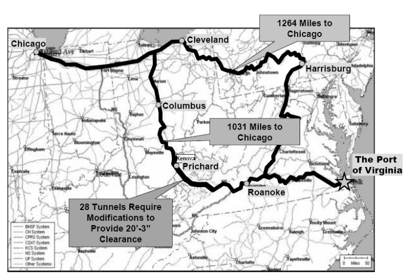
Infrastructure Investment

- Examples of Infrastructure Investment
  - Heartland Corridor (streamlining a complex and difficult route to be seamless and fast; key is the public: private nature of this investment)
  - Prince Rupert (building business for an underutilized corridor)
  - Kansas City (polished development but the strategy needs work)



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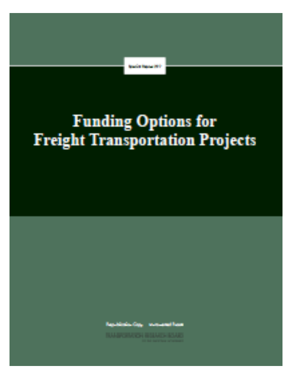
Restructuring the Supply Chain

- Examples of pulling business through a port:
  - Savannah: Distribution Parks and Transload (exceptional execution to build traffic where it didn't flow given the existing network)
  - Canadian Tire (the balancing of an imbalance operation; improved asset utilization via the extraction of empty moves)
  - Dallas Fort Worth inland port development (putting the players together to make the corridor work)

Photo: InboundLogistics.com

Special Report 297: Funding Options for Freight Transportation Projects

- U.S. ports have a wide array of available funding mechanisms, wider than Canadian ports
- User charges are possible for U.S. ports as well
- Key to public funding is demonstration of public benefits (mitigation of social costs like congestion, road safety, noise, air pollution…, but also including benefits to non-commercial traffic, e.g. that by the taxpayer.)



Since its release, Obama has announced legislation to develop a permanent infrastructure bank, one of the options proposed in this report. (September 7, 2010 announcement)

Financing Requires Coalitions and Creativity

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- The global economic crisis has "chilled" traditional forms of capital for all but the most robust of firms.
- The container shipping industry is not a likely source of future funding as it has yet to absorb its coming "double dip"
- Stimulus funding is possible as most governments are tentative about pulling the plug but the window is closing. There is the promise of US$70B for roads, railways and airports that may address landside access issues for ports.
- Ports are in a good position to broker coalitions and public-private partnerships at all levels. The key will be building the business case along with social cost mitigation.

Some Concluding Thoughts

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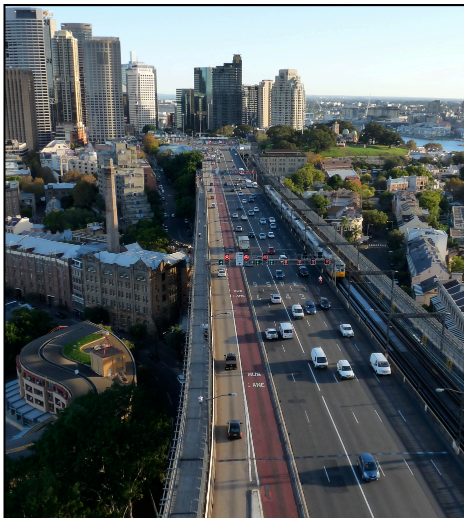
- Ports are no longer as powerful as they once were in the global distribution of goods
- Making ports attractive as part of a routing option may be about focusing on responsiveness and efficient goods transfer processes ("software")
- When investment is needed, focus on what will work best for cargo interests and the lines will follow the lead of their most important customers
- Be wary of "snake oil salesmen" who project trade growth as exponential and a return to "business as usual".
- Key issues:
  - U.S. security rules have had their price
  - The global economic crisis forced all to re-examine their practices
  - Restructuring isn't over yet.



Successful gateway ports are all about velocity and reliability.

Thank You!

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