The Panama Canal Expansion: Myths and Realities for the North American Economy

Jean-Paul Rodrigue
Professor, Dept. of Global Studies & Geography, Hofstra University, New York, USA
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Potential Impacts of Transoceanic Passages and Canals

Operational Impacts
- Improved capacity, reliability and transit time.
- Lower unit costs.

Substitution Impacts
- Cargo diversion.
- Changes in routing and transshipment.

Induced Impacts
- New and expanded trade relations.
- Development of transshipment hubs and logistics zones.
## The Panama Canal Expansion: Myths vs Realities

<table>
<thead>
<tr>
<th><strong>MYTHS</strong></th>
<th><strong>REALITIES</strong></th>
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<tbody>
<tr>
<td>• Exaggerating the benefits</td>
<td>• Underestimating the costs</td>
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<td>• More port traffic (each port capturing 100% of the growth)</td>
<td>• Economies of scale (lower shipping costs; will they be passed on?)</td>
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<td>• Creates trade (boost for exports)</td>
<td>• Changing trade relations (mostly in Latin America)</td>
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<td>• Larger ships calling the East Coast (dredging “urgent”)</td>
<td>• New shipping routes (likely more transshipment)</td>
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Main Routing Alternatives between the Pacific and Atlantic
Tonnage and Number of Transits, Panama Canal, 1915-2014
Main Routing Alternatives between East Asia and Northern Europe
Tonnage and Number of Transits, Suez Canal, 1975-2014
Global Exports and Container Throughput, 1980-2013

- Container Throughput (in millions of TEU) vs. Merchandise Exports in Current $US Trillions
- R² = 0.98

Note: TEU stands for Twenty-Foot Equivalent Unit.
Global Trade Stalling and Diverging

CPB World Trade Index by Volume, 1991-2014 (2005=100)

- World Trade
- Imports (Advanced Economies)
- Exports (Emerging Economies)
- Latin America (Exports)

The main driver has lost momentum
“Regionalization” of trade?
The North American East and West Coasts Dominate...
... but Growth has Shifted to South America / The Caribbean
Monthly Container Traffic at the Port of Los Angeles, 1995-2014
Monthly Container Traffic at the Port of New York, 2005-2014
Main Trade Routes Using the Panama Canal, 2012

- **US East Coast**: 14.4 M tons
- **US West Coast**: 9.7 M tons
- **Europe**: 27.6 M tons
- **WCCA (West Coast Central America)**: 12.2 M tons
- **WCSA (West Coast South America)**: 84.3 M tons

WCCA: West Coast Central America
WCSA: West Coast South America

Source: Data from Panama Canal Authority.
Shipping Rate from Shanghai to Selected North American Ports for a 40 Foot Container, Mid 2010

Vancouver: $2,300
Los Angeles: $2,110
Houston: $1,300
New York: $2,100
Montreal: $4,040

46% 62%
The North-American Container Port System and its Multi-Port Gateway Regions
Evolution of Containerships: The New Panamax

**Early Containerships (1956-)**
- 500 – 800 TEU

**Fully Cellular (1970-)**
- 1,000 – 2,500 TEU

**Panamax (1980-)**
- 3,000 – 3,400 TEU

**Panamax Max (1985-)**
- 3,400 – 4,500 TEU

**Post Panamax (1988-)**
- 4,000 – 5,000 TEU

**Post Panamax Plus (2000-)**
- 6,000 – 8,000 TEU

**New Panamax (2014-)**
- 12,500 TEU

**Post New Panamax (2006-)**
- 15,000 TEU

**Triple E (2013-)**
- 18,000 TEU

**Dimensions**
- LOA – Beam – Draft
- 4 containers across
- 4 containers high on deck
- 4 containers high below deck

**TEU**
- 500 – 800
- 1,000 – 2,500
- 3,000 – 3,400
- 3,400 – 4,500
- 4,000 – 5,000
- 6,000 – 8,000
- 12,500
- 15,000
- 18,000

**Units**
- TEU: Twenty-Foot Equivalent Units
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**Containers**
- 4 containers across
- 4 containers high on deck
- 4 containers high below deck

**Triple E (2013-)**
- 18,000 TEU
- 400x59x15.5
Main East and Gulf Coasts Port Infrastructure Developments Associated with the Expansion of the Panama Canal

**Channel Clearance**
- Most directly related to the Panama expansion.
- The 50 feet “magic number”.

**Port Infrastructure**
- Dealing with a new operational environment.
- Super-post-Panamax cranes, improved piers, and yard equipment.

**Hinterland access**
- Indirectly linked with the expansion.
- Setting of intermodal corridors and inland ports.
Channel Depth at Major North American Container Ports

MLW Channel Depth (Containership Capacity)
- Panamax or less (4,200 TEU) (Less than 39 feet)
- Panamax (4,500 TEU) (39-40 feet)
- Post-Panamax (6,000 TEU) (40-45 feet)
- Post-Panamax Plus (8,000 TEU) (45-48 feet)
- New Panamax (12,000 TEU) (48-50 feet)
- Post New Panamax (16,000 TEU) (52 feet and above)
Baltic Dry Index and Container Shipping Rates, 2000-2014 (2000=100)
Average TEU per Port Call by Containership Size along a Maritime Range

- Minimum Required
- 3 Calls
- 4 Calls
- 5 Calls

**First post-expansion phase**

**Second post-expansion phase**
## Impacts of Larger Containership Calls on Port Hinterland Traffic

<table>
<thead>
<tr>
<th>Ship Type</th>
<th>Length (m)</th>
<th>Width (m)</th>
<th>Height (m)</th>
<th>Capacity (TEU)</th>
<th>Trucks</th>
<th>Trains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panamax (4,500 TEU)</td>
<td>290</td>
<td>32</td>
<td>12.5</td>
<td>1,700</td>
<td>850</td>
<td>4.25</td>
</tr>
<tr>
<td>Post Panamax (8,000 TEU)</td>
<td>300</td>
<td>43</td>
<td>14.5</td>
<td>3,500</td>
<td>1,750</td>
<td>8.75</td>
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</tbody>
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- **Panamax (4,500 TEU)**
  - 13 containers wide
  - 1,700 TEU per port call
  - 1.7 hectares of stacking
  - 850 Trucks (2 TEU each)
  - 14 km
  - 4.25 Trains (400 TEU each)
  - 8.5 km

- **Post Panamax (8,000 TEU)**
  - 17 containers wide
  - 3,500 TEU per port call
  - 3.5 hectares of stacking
  - 1,750 Trucks (2 TEU each)
  - 28.8 km
  - 8.75 Trains (400 TEU each)
  - 17.5 km
AMAX Round-the-World Route, 2005-2007

Lianyungang > 5 days > Port Kelang > 12 days > Damietta > 9 days > Valencia > 8 days > New York > 17 days > Los Angeles > 11 days > Lianyungang

Rotation: 62 Days
Proposed Routes for the Nicaragua Canal

Constructions costs?
Political risks?
Market potential?
Competition?
Conclusion: Pragmatism Will Prevail

- West Coast too pessimistic and East Coast too optimistic
  - Labor issues on the West Coast remains an important factor.
  - Changing trade structure in Latin America; declining importance of the East Coast.
  - Growing importance of the Suez Canal.

- What does this mean for the region?
  - Limited significant direct impacts; NOT MUCH.
  - Slightly lower container transportation costs.
  - Reinforcement of hinterland services (corridors and inland terminals).
  - More shipping options.

- Neglect of the impacts of disadvantages of scale