Commentary and presentation materials are based on the personal views of the speaker and may not coincide with opinions held by Moffatt & Nichol or its employees.
1. You don't know where you're going until you know where you've been

2. We don’t know what will happen in the future, but we know what may happen and therefore can plan for it

3. Ports are, and should be, champions of infrastructure development

4. Conclusion
You don’t know where you’re going until you know where you’ve been
Three broad themes discussed at the 2008 AAPA Shifting Trade Lanes conference in Tampa, FL

1. The weakening economic outlook
   – 60/40 chance of recession
   – Potential shock housing/sub-prime credit markets

2. The expected future opening of the Panama Canal
   – Favoring all-water route to US East Coast via Panama Canal
   – Increase in Caribbean transshipment

3. Capacity limits in Los Angeles & Long Beach lead to new gateways for U.S. cargo, especially in Mexico
   – Punta Colonet
   – Intermodal route from Lazaro Cardenas to U.S.
How well did our predictions pan out?

GREAT FINANCIAL CRISIS (GFC)

PANAMA CANAL EXPANDS

U.S. EAST COAST GAINS SHARE

- West Coast
- East Coast
- Gulf Coast
US container trade growth continues to outpace overall economic growth at roughly 1.8X GDP

U.S. CONTAINER TRADE GROWTH & GDP

Source: AAPA; MN


Source: AAPA; MN
Alliances dominate the Transpacific trade lane, less so on Transatlantic

SHARE OF ALLIANCE SERVICES FROM DEPLOYED CAPACITY

Vast majority of Trans-Pac capacity is in alliance services

Source: Bluewater
Average vessel sizes have increased on the order of 50-100% over the past decade

<table>
<thead>
<tr>
<th>Port</th>
<th>NY/NJ Max</th>
<th>LA/LB Max</th>
<th>Global Max</th>
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<tr>
<td>LALB</td>
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<td>18,000</td>
</tr>
</tbody>
</table>

*Mobile 2012-2018
*Tampa 2012-expected average following COSCO service deployment

Source: COMPAIR
AAPA 2019 Planning for Shifting Trade

Liner Consolidation and Alliances

Existing Alliances

2M
- Maersk Line
- MSC

CKYHE
- China Cosco Shipping Corp.
- K Line
- Yang Ming
- Hanjin Shipping
- Evergreen

G6
- APL
- Hapag-Lloyd
- HMM
- Mitsui OSK Lines
- NYK Line

O3
- CMA CGM
- China Cosco Shipping Corp.
- UASC

New Alliances (April 1, 2017)

2M ALLIANCE + HMM
- Maersk Line
- MSC
- HMM

THE ALLIANCE
- Yang Ming
- K Line
- Hapag-Lloyd
- Mitsui OSK Lines
- NYK Line

OCEAN ALLIANCE
- CMA CGM
- China Cosco Shipping Corp.
- Evergreen
- OOCL

New Alliances Structure (July 1, 2017)

2M ALLIANCE + HMM
- Maersk Line
- MSC
- HMM

THE ALLIANCE
- Yang Ming
- Hapag-Lloyd
- Ocean Network Express

OCEAN ALLIANCE
- CMA CGM
- China Cosco Shipping Corp.
- Evergreen
- OOCL

COSCO acquires OOCL

* Hanjin Shipping was declared bankrupt in early 2017
** APL has been acquired by CMA CGM
*** UASC has merged with Hapag-Lloyd
**** Ocean Network Express will market services from April 1, 2018
Maersk acquisition of Hamburg Sud expected end-2017
Consolidation trickling down to terminals and port authorities
Strong container growth at many North American ports

2018 TEU volume (in millions) and year-on-year growth rate for selected ports

- New Orleans, 0.6M
- Prince Rupert, 1.0M
- Houston, 2.7M
- Savannah, 4.3M
- Norfolk, 2.8M
- NYNJ, 7.1M
- Oakland, 2.5M
- Charleston, 2.3M
- LALB, 17.5M
- NWSA, 3.8M

Source: MN estimates, port authority websites

2018 estimated US port growth: 5.1%
We don’t know what will happen in the future, but we know what may happen and therefore can plan for it.
In the U.S., economic fundamentals look ok for now, but headwinds exist and policy uncertainty looms over the near term.
Fewer levers left to manage the next recession; global growth slowing

THE US BUDGET DEFICIT IS INCREASING

OECD: GLOBAL GDP GROWTH IS LOSING MOMENTUM

OECD Economic Outlook, 21 November 2018
There is a lot of near-term uncertainty, but infrastructure is long-term

GLOBAL ECONOMIC POLICY UNCERTAINTY, JANUARY 1997 TO DECEMBER 2018

Source: PolicyUncertainty.com; Baker, Bloom and Davis
US Containerized Volume Growth Projections

**US Container Growth Projections**

- 2018-2030 CAGR: 2.7%
- 2040 CAGR: 2.9%
- 1.9% CAGR
- 3.0% CAGR

**Market Share Projections by Coast**

- Share of US
- 2010, 2015, 2020, 2025, 2030, 2035, 2040
- West
- East
- Gulf
Several factors have the potential to alter our planning for trade lane growth
China’s effort to reduce waste imports is shifting US waste paper export trading partners

**EXPORTS OF US WASTE PAPER (6-MONTH MOVING AVERAGE)**

Source: US Trade Online
IMO 2020 could (temporarily?) shift up to 1.2 million TEU of discretionary cargo to the West Coast

LALB – NORTH ASIAN IMPORTS – BASE CASE

LALB – NORTH ASIAN IMPORTS – LOW SULFUR HFO

Source: MN

Cost Advantage of LALB over NYNJ for North Asian Import destined for Chicago
US – China tariff hikes would slow GDP growth

IMPACT ON GDP AND TRADE BY 2021, PERCENT DIFFERENCE FROM BASELINE

Source: OECD
Conflicting trends and a diversity of business strategies for serving inland markets

HIGHLY CONGESTED HIGHWAYS, 2045

PRECISION RAILROADING

Source: USDOT, Bureau of Transportation Statistics, 2017
Ports are, and should be, champions of infrastructure development
Smart infrastructure investment precedes, follows and facilitates trade growth

SAVANNAH, GA: MASON MEGA RAIL 2020

Source: GPA / Stephen A. Morton
Smart infrastructure investment precedes, follows and facilitates trade growth

TAMPA, FL: MASTER PLAN: VISION 2030

Source: Port Tampa Bay
Conclusion
Major Themes

1. US economy strong but showing signs of weakness; Global growth slowing
2. Near-term uncertainty over major economic policies, including trade policy
3. IMO 2020 has potential to cause short-term congestion challenges in West Coast
4. Longer-term macro fundamentals favor continuation of slow shift to East and Gulf Coasts, provided proper planning
5. Landside connectivity is an evolving challenge
6. Efficient freight networks require multiple entities working together
7. Infrastructure needs a champion: port authorities are that champion
THANK YOU

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