Measuring Rates, Ocean Liner Supply, and Transit Times in Ocean Markets

with Armstrong and ComPair Data
Today’s Speakers

Matthew Harding
Principal, Transportation
CHAINalytics

Hayes Howard
CEO
American Shipper

Stacey Kapushy
Manager, Import/Export
Compliance & International Freight

John Schnorf
Director, Business Development
CHAINalytics
Today's Agenda

Opening Remarks and Chainalytics Overview

Chainalytics Benchmarking Solutions

ComPair Data Solutions

Armstrong World Industries on Benchmarking Value

Recap and Q&A
Who is Chainalytics?

Our Genesis
- Market Lacked Proven, Focused Supply Chain Analytics Competence
- "Best Analytical Minds in Supply Chain"

TODAY
- Over 70 FTEs Worldwide
- Strategic Growth Via Mergers & Acquisitions
  - Supply Chain Operations (Chainnovations)
  - Packaging Design and Optimization (Adalis Packaging Solutions Group)
- Our Clients
  - More Than 180 Unique Clients
  - 14 of AMR’s Top 25 Supply Chains
  - 57 Fortune 500 Companies
    - 5 of Top 10 Retailers
    - 7 of Top 10 Food & Beverage Manufacturers
    - 5 of Top 10 CPG Companies
    - 6 of Top 10 Forest, Paper and Packaging Companies
- Our Experience
  - More Than 375 Engagements

Empowering Fact-Based Decisions Across Your Supply Chain
Value-Driven Supply Chain Decisions

Supply Chain Design

Packaging Optimization

Sales, Inventory & Operations Planning

Logistics Operations

Transportation

Service Supply Chain

When should we buy or make product to make the best use of our capacity?

What is the best flowpath?

How much and where should inventory be positioned in the supply chain?

At what service level can we profitably satisfy demand?

Should our warehousing and material operations be insourced or outsourced?

How should we transport product through the supply chain?

Can we reduce our transport and logistics costs by improving cube utilization?

How well do our current operations mitigate repair and warranty costs?

How can we increase visibility to stakeholders?
Some of Our Clients

- Retail
  - Macy's
  - Walmart
  - Reliance Growth is Life
  - Kroger
  - Smart & Final
  - Big Lots
  - Meijer
  - BJ's Wholesale
  - PAPA JOHNS
  - Grainger
  - H-E-B
  - THE CHILDREN'S PLACE

- Food and Beverage
  - Mars
  - ConAgra Foods
  - Nestle
  - Dean Foods
  - Schreiber
  - PepsiCo
  - Olam
  - Ahold
  - AB InBev
  - White Wave
  - E & J Gallo Winery
  - LSP
    - Chemical/Process
    - Auto/Industrial
    - Packaging
    - Healthcare
    - Other Industries Served

- Home/Office Non-Durables
  - Avery Dennison
  - International Paper
  - Glorax
  - Fasson
  - Amway Global
  - P & G
  - Colgate-Palmolive
  - Domtar
  - MWV MeadWestvaco
  - GP
  - 3M
  - Gojo
  - Kimberly-Clark
  - A Family Company

- Home/Office Durables
  - Ricoh
  - Mohawk Industries
  - Formica
  - Oldcastle
  - Caroma
  - Godrej
  - Acuity Brands
  - Janus
  - General Electric
  - Allsteel

- High Tech
  - Lenovo
  - Ingram Micro
  - Harman
  - Apple
  - Lexmark
  - Samsung
  - HP
  - Philips
  - LG
  - DEI

- Communication and Utilities
  - NEC
  - Nokia
  - Ameren
  - SWN
  - arvato digital
  - T-Mobile
  - RIM
  - Huawei
  - Sprint
  - DIRECTV

- Packaging
  - Scholle
  - Convatec
  - Covidienn
  - Printpack Inc

- Healthcare
  - Bayer
  - DANA
  - Boeing
  - Cooper Tire & Rubber
  - Wyeth

- Auto/Industrial
  - DANA
  - SC Johnson
  - JMC Steel Group
  - Lockheed Martin
  - LyondellBasell
  - Corning

- Chemical/Process
  - Mosaic
  - Rubbermaid
  - Invista
  - Menlo Worldwide
  - Ryder
  - Con-Way
  - Momentive

- LSP
  - Exel
  - FedEx
  - K+N Lead Logistics
Ocean Rates and Business Landscape

- Forecasting ocean freight cost is near impossible
  - Volatility reigns supreme in ocean markets
  - Down 25% one year, up 30-50% the next
  - No clear direction in the industry to rectify

- Biggest challenges go beyond ocean transportation cost
  - Inventory implications, responsiveness, resilience
  - Landed cost, product pricing, time to market
  - For many – ocean rates impact global supply chain design implications
    - Insource vs. outsource
    - Domestic manufacturing vs. international
What options exist in the market? How is supply changing, what transit times are available?

How do differences in policy, choices and requirements, affect market position over the year?

How do outlook, contractual elements, procurement cycles, technology differ among my peers?

Which specific trades, markets do I have a cost advantage, where to focus improvement?

Am I paying a fair price for transportation?

Ocean Model-based Benchmark Consortium
Chainalytics
$25B in proven benchmarking processes
91 Reported models delivered annually all modes
Over 100 Trades supported in 2010

ComPair Data
114 Global Trade Routes
208 Ocean Carriers Measured
1636 Ocean Carrier Liner Services Tracked
4865 Vessels
807 Ports
Ocean Modeling Approach

Exhaustive Data Cleaning

Text Checks
- Equipment Size
- Equipment Type
- Contract Type
- NVOCC vs Common Carrier

Numeric Checks
- Seasonal Impacts
- Sea Freight Costs, BAF
- Dates, Transit Times
- Flag Nulls
- Flag Zeros

Geography Checks
- Determine Ports as needed
- Geocoding of all city state country
- Harmonize port names locations
- Calculate Nautical miles (Ocean Dist)
- Calculate Domestic Miles (PCM)
- Calculate Non-Domestic Miles (lat/lon)

Data Collection Nov/May

Econometric Modeling

1. Testing and Validation of Effects
   - Regional Trade Lane Definition
   - NVOCC vs Common Carrier
   - Equipment Size
   - Equipment Type
   - Contract Type
   - Inland moves
   - Transit Times
   - Nautical Miles
   - Peak Season Surcharge
   - Volume Discounts / Leverage
   - Product Value

2. Model Development
   - Rate Trends, Company Reports
   - Container Supply, Transit Time Analysis

Delivered Jan 31, June 30

HIGHLY INTERACTIVE

Import / Export / Global

Port to Port Import/Export
Door to Port Import/Export
Port to Door Import/Export
Door to Door Import/Export
Global Port Regions Supported - 2010 Model

- NEUS
- CARIBBEAN
- MEDITERRANEAN
- WEUR
- MIDDLE EAST
- BLKSEA
- W AFRICA
- E AFRICA
- S AFRICA
- AUS/NZ
- N CHINA
- JAPAN
- KOREA
- S CHINA /TW
- MEX-CENTAM
- PACIFIC ONLY
- NWUS
- SWUS
- SEUS
- CARIBBEAN
- WSA
- BRAZ-URG-ARG
- S CHINA /TW
- SE ASIA
- PHPINES
- S CHINA /TW
- SE ASIA
- AUS/NZ
Additional Parameters
- INLAND MOVES
- CARRIER vs. NVOCC
- SPOT vs. CONTRACT
- TIME PERIOD
- VOLUME DISCOUNTS
- PRODUCT VALUE
- PEAK SEASON

South China to Long Beach

All South China to Long Beach

ECONOMETRIC OUTPUT

<table>
<thead>
<tr>
<th>Additional Parameters</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>40FT DRY CONTRACT CARRIER 2010Q3</td>
<td>$3,033.00</td>
</tr>
<tr>
<td>TEMP CONTROL ($/CONTAINER)</td>
<td>$1,127.84</td>
</tr>
<tr>
<td>20 FT ($/CONTAINER)</td>
<td>$(299.87)</td>
</tr>
<tr>
<td>45 FT ($/CONTAINER)</td>
<td>$378.38</td>
</tr>
<tr>
<td>HIGH CUBE ($/CONTAINER)</td>
<td>$77.60</td>
</tr>
<tr>
<td>NVOCC ($/CONTAINER)</td>
<td>$178.61</td>
</tr>
<tr>
<td>SPOT MARKET ($/CONTAINER)</td>
<td>$396.38</td>
</tr>
<tr>
<td>VOLUME DISCOUNT ($/ANNUAL VOL)</td>
<td>$(0.34)</td>
</tr>
<tr>
<td>2009 Q4 MARKET ADJUSTMENT ($/CONTAINER)</td>
<td>$(1,250.79)</td>
</tr>
<tr>
<td>2010 Q1 MARKET ADJUSTMENT ($/CONTAINER)</td>
<td>$(935.79)</td>
</tr>
<tr>
<td>2010 Q2 MARKET ADJUSTMENT ($/CONTAINER)</td>
<td>$(567.37)</td>
</tr>
<tr>
<td>ORIGIN INLAND ($/MILE, &gt;=250 MI)</td>
<td>$0.99</td>
</tr>
<tr>
<td>ORIGIN INLAND ($/CONTAINER, &gt;250 MI)</td>
<td>$337.85</td>
</tr>
<tr>
<td>DEST INLAND LONG BEACH - CENTRAL US ($/MI)</td>
<td>$0.74</td>
</tr>
<tr>
<td>DEST INLAND LONG BEACH - SOUTH EAST US ($/MI)</td>
<td>$0.91</td>
</tr>
<tr>
<td>DEST INLAND LONG BEACH - NORTH EAST US ($/MI)</td>
<td>$0.54</td>
</tr>
</tbody>
</table>

--- ADJUSTMENTS ---
**Dry 40 ft Port-Port Northeast US to Brazil**

- **95% CI Minimum Rate**
- **Average Rate**
- **95% CI Maximum Rate**
- **Actual Costs - Example Company**

### Additional Trade Benchmarking Output

**Tactical Rate Analysis**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2009Q4</th>
<th>2010Q1</th>
<th>2010Q2</th>
<th>2010Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>95% CI Minimum Rate</td>
<td>$1,950</td>
<td>$2,204</td>
<td>$2,311</td>
<td>$2,270</td>
</tr>
<tr>
<td>Average Rate</td>
<td>$2,076</td>
<td>$2,281</td>
<td>$2,385</td>
<td>$2,321</td>
</tr>
<tr>
<td>95% CI Maximum Rate</td>
<td>$2,202</td>
<td>$2,358</td>
<td>$2,459</td>
<td>$2,373</td>
</tr>
<tr>
<td>Actual Costs - Example Company</td>
<td>$1,950</td>
<td>$2,100</td>
<td>$2,395</td>
<td>$2,395</td>
</tr>
<tr>
<td>Volume</td>
<td>167</td>
<td>217</td>
<td>161</td>
<td>211</td>
</tr>
</tbody>
</table>
# Sample Report - Export

**MBBC OCEAN Model**

**Model Based Benchmarking Consortium**

*Model Run: December 2010*

## Modeled Statistics

<table>
<thead>
<tr>
<th>Total Shipment Volume</th>
<th>11,780</th>
<th>Containers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Market Cost</td>
<td>$21,193,538</td>
<td></td>
</tr>
<tr>
<td>Reported Shipping Cost</td>
<td>$21,800,326</td>
<td></td>
</tr>
<tr>
<td>Percent Above / Below Market</td>
<td>2.86%</td>
<td>ABOVE</td>
</tr>
<tr>
<td>Value Above / Below Market</td>
<td>$606,788</td>
<td></td>
</tr>
</tbody>
</table>

### Containers

| Containers BELOW Market | 3,168 | 26.9% |
| Containers ABOVE Market | 8,612 | 73.1% |

### Value

| Actual Value BELOW Market | 5,443,553 | 25.0% |
| Actual Value ABOVE Market | 16,356,774 | 75.0% |

## Outliers Not Modeled

<table>
<thead>
<tr>
<th>Total Shipment Volume</th>
<th>1,234</th>
<th>Containers</th>
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<tbody>
<tr>
<td>Reported Shipping Cost</td>
<td>$3,245,655</td>
<td></td>
</tr>
<tr>
<td>Percent Excluded (Volume)</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Percent Excluded (Spend)</td>
<td>13%</td>
<td></td>
</tr>
</tbody>
</table>
Additional Deliverables - Detailed Surveys
Strategic & Qualitative Assessment

2009 MBCC Global Trade Practices Survey

93. Please indicate your company’s most common or usual practice using software applications or outsourcing to automate or manage electronic paperwork filing:

- in-house
- purchased
- subscription
- third party
- outsourced
- external

Executive Summary

Model Overview

Overview of Model

Model Description

MODEL RESULTS

MODEL RESULTS

OCEAN MBCC Model Report for MBCC Member Companies

Ocean Model
December 2010 Release

Rate Outlook

Background

Current Market Quality Highlights

Weekly Market Position

Shipper Spend Category

Annual Spend (B)
World Liner Supply Analytics

Global Schedule Integration

Hayes Howard

October 27, 2011
ComPair is an outgrowth of *American Shipper* magazine

- Global and comprehensive coverage
- Both service and voyage based approach to data
- Focus on reliability and data integrity
- Research driven rather than data driven
- Researchers constantly update data and audit each service at least every 5 weeks
- Historical tracking of services
- World Line Supply Analytics
  - Capacity Analytics
  - Transit Analytics
- Global Ocean Carrier Schedules
  - Integrate data into systems
  - Deployed on mobile devices
- Web query tools
- Mobile Applications
• Query and Analysis
  • 144 Trade Routes
  • 208 Ocean Carriers
  • 1686 Liner Services
  • 4849 Vessels
  • 807 Ports

• Vessel Voyage Schedules
  • 111 Trade Routes
  • 131 Ocean Carriers
  • 8191 Ocean Carrier Services
  • 6180 Vessels
  • 599 Ports
• Service rotation segmented by trade route
  • Showing carriers offering space on each segment
• Vessels operating on service
  • Vessel capacity: DWT, TEU, Reefer Plugs
  • Draft, speed, owner, operator, flag, vessel deployment area
• Full service rotation detail
• Allocation estimates by trade route
• Vessel/Voyage schedule detail
Web query tools

- Query multiple origins and destinations to see all service options at once
- Compare transit times and days of departure and arrival
- See which carriers share space on each service
- Full rotation detail and vessel deployments
- Complete port and terminal detail
- Search services by port, port pair, carrier, alliance or vessel

www.ComPairData.com
World Liner Supply Capacity Analytics

- Analyze ocean carrier service networks, capacities and vessel deployment strategies over time
- 10 analytical breakdowns including
  - Deployed capacity by trade route
  - Detail breakdown by service, alliance and carrier group
  - Complete vessel deployment detail back to January 2008
  - Market share by alliance and vessel operator
  - Capacity management analysis with estimated capacity allocation
World Line Supply Transit Analytics

- Port to port transit analysis by carrier
- Country to country transit analysis by carrier
- Rotation detail by service in port to port query
- Sort of service by transit times with average weekly deployed capacity
- Quarterly historical transit data to July 2007
Integrated Ocean Carrier Schedules

- Daily data feed of vessel/voyage detail for all liner services by 131 carriers operating on 111 trade routes
- Comprehensive coverage of all containerized services on each trade route
- Ability to deploy competitive schedule data to sales people on mobile devices.
- Ability for shippers to integrate schedule data with allocation and service contract detail to improve control and decision making over shipment routing
**Global Advantage Logistics**

**Vessel Schedule Search**

<table>
<thead>
<tr>
<th>Preference</th>
<th>Allocation</th>
<th>ETD</th>
<th>EDA</th>
<th>TT</th>
<th>Carrier</th>
<th>Vessel</th>
<th>Voyage</th>
<th>String</th>
<th>Description</th>
<th>Book</th>
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<tr>
<td>Available</td>
<td>18 April 2010</td>
<td>27 April 2010</td>
<td>9</td>
<td>Evergreen</td>
<td>Wan Hai 305</td>
<td>KSS</td>
<td>STX PanOcean/KSS</td>
<td>Wan Hai/Evergreen Line/CNC-KSS</td>
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<td>23 April 2010</td>
<td>18 April 2010</td>
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<td>Yang Ming</td>
<td>Frisia Spee</td>
<td>KKH</td>
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<td>24 April 2010</td>
<td>10</td>
<td>Evergreen</td>
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<td>HKH</td>
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<tr>
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<td>TS Keelung</td>
<td>JTK</td>
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<td>Japan/Taiwan-JTK</td>
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<td>TS Lines</td>
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<td>KMS</td>
<td>STX PanOcean/KMS</td>
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<td></td>
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<tr>
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<td>Hueng-A</td>
<td>Heung-A Singapore</td>
<td>KMS</td>
<td>STX PanOcean/KMS</td>
<td>STX PanOcean/STX Lines/Heung-A/ARCL-KMS</td>
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</table>

Click on Vessel to see service detail

<table>
<thead>
<tr>
<th>ETD</th>
<th>Location</th>
<th>Type</th>
<th>Carrier</th>
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<td>Singapore</td>
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<td>KMTC</td>
<td>KMTC Incheon</td>
<td>KIS14N</td>
<td>KIS2</td>
</tr>
</tbody>
</table>
Access to competitive service information and analysis improves rate negotiation position

- Improved trade management
  - Immediate access to accurate capacity and deployment intelligence on a global basis
  - Ability to track carrier service network, deployment and capacity management strategies.

- Improve profitability by exercising greater control of shipment routing
APL said it moved 229,300 FEUs (40-foot equivalent units) in the four-week period ending Sept. 23. 5 percent more than in the same 2010 period but average revenue per FEU was $2,501 for the four-week period, 19 percent less than in the same period last year.

Drewry Shipping Consultants says "an excess of capacity on key routes, as well as poor discipline from carriers means that container shipping lines will not cover their cost of capital in 2011 and many will lose money once again."

Erxin Yao, president of OOCL (USA), urged the shipping industry to pay more attention to pricing services profitably and fostering innovation rather than trying to hold onto market share.
Robert Kusiciel, vice president of inbound transportation for Wal-Mart said the container shipping industry should adopt his company's consistent low-price concept in order to reduce price and demand volatility.

Zhang Ye, president of the Shanghai Shipping Exchange, said his institution is seeking permission from Chinese authorities to open up its electronic platform for trading container freight rate derivatives to shippers and carriers around the world.

The U.S. Federal Maritime Commission has published a proposed rulemaking to amend its rules to provide common carriers and their customers with certainty and flexibility if they decide to use long-term contracts that adjust based on a freight rate index that reflects changes in market conditions.
Stacey Kapushy
Manager of Import/Export Compliance & International Freight
October 27, 2011
Leading manufacturer of floors and ceilings for use in renovation and new construction

- $2.8 billion in sales in 2010
- Based in Lancaster, PA
- Serving global customers from eight countries
- 33 manufacturing locations, 21 in the US
- Approximately 9,500 employees
- Product portfolio includes: acoustical ceiling systems, resilient flooring, engineered & solid wood flooring, ceiling suspension & grid systems
Organizational Alignment

Stacey Kapushy
Manager of Import/Export Compliance & International Freight

Responsibilities:

• International carrier negotiation
• Metrics and reporting
• Compliance with government agency requirements
• Audit: freight cost and compliance
• Government program participation: ISA, C-TPAT, PM Statement
• Utilization of FTZ
Asia/Australia/India – US:
Imports 6048 TEU (84%)
Exports 1472 TEU (46%)

Europe – US:
Imports 1080 TEU (15%)
Exports 320 TEU (10%)

Latin America – US:
Imports 20 TEU (<1%)
Exports 864 TEU (27%)

North America total container volume of 10,400 TEU is primarily driven by imports from Asia
### Ocean Freight Management - SWOT

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Non-seasonal shipping pattern</td>
<td>• Staffing</td>
</tr>
<tr>
<td>• Volume</td>
<td>• Internal Automated Systems</td>
</tr>
<tr>
<td>• Port pairs are easily accessible with strong port infrastructure</td>
<td>- Lacking shipment visibility beyond order/payment</td>
</tr>
<tr>
<td></td>
<td>- Per lane cost</td>
</tr>
<tr>
<td></td>
<td>• Job/project/customer order driven lead times</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Investigate Export volume cost reduction opportunities</td>
<td>• Market Volatility</td>
</tr>
<tr>
<td>• Leverage Europe and Asia volume</td>
<td>• Fuel Fluctuation</td>
</tr>
<tr>
<td>• E-Sourcing and cost reduction initiatives</td>
<td>• Government Regulation</td>
</tr>
<tr>
<td>• Compare CHAINalytics data to secure at or below market levels</td>
<td>• Geo-Political Environment</td>
</tr>
</tbody>
</table>
Benefits of Partnering with CHAINalytics

• Guidance for budget projections

• Reflective view of comprehensive shipment volume and spend

• Ability to focus on “above market” opportunities

• Cost driver analysis

• Unbiased comparison to provide to senior management
Thank you for attending!

Q&A Session

CHAINalytics

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hh@shippers.com