The impact of energy prices, scale economies and ECAs on the container industry

Mike Garratt & Antonella Teodoro

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Paper will consider:

- Supply, demand and profitability in the deep-sea container sector over recent years
- The impact of fuel price rises on liner behaviour
- Consolidation and the emergence of alliances
- Impacts of ECAs on vessels and choice of port
- The impact on ownership and control of the deep-sea container fleet

To answer the question:

"What does this mean for your portfolio"

Analysis based upon

- Our World Cargo Database (WCD) that covers and forecasts trade at county x county x commodity by tonnes and TEU
- Our Global containership databank covering deployment of each lo-lo and ro-ro ship
- Our Financials model that estimates detailed costs and revenues at the ship/string level by operator, allocating cargo by ship deployment
- Validated against industry results

Maersk's performances, 2013: MDST estimations v. Maersk results

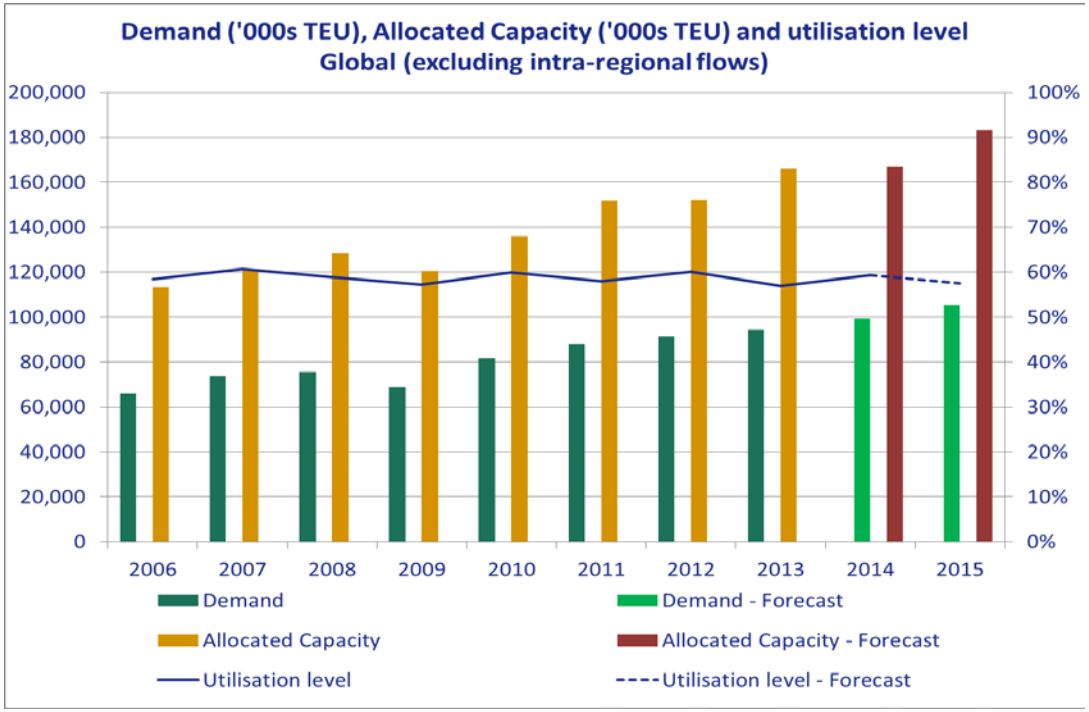
All Maersk services, 2013

	Maersk Annual Report 2013	Model (MDST) 2013
Demand (m TEU)	17.60	+2%
Capacity (m TEU)	2.63	-4%
Unit cost ($/TEU)	1,300	-6%*
Average rate ($/TEU)	1,337	-5%*
Bunker consumption (tonnes/TEU)	0.50	+1%
Average fuel price (US$/tonne)	595	+5%

*MDST excludes where line pays for inland haulage

- Maersk most transparent of the lines in its reporting
- Therefore provides opportunity to validate model results
- Model within 5% of most key comparators

Global demand v. supply (excl intra-regional)



Year Quarter	Demand (TEU)	Allocated Capacity (TEU)	Utilisation level (%)
2012Q1	21,762,626	37,020,018	59%
2012Q2	23,392,298	39,006,680	60%
2012Q3	23,513,725	37,727,883	62%
2012Q4	22,619,031	38,273,147	59%
2013Q1	22,505,586	38,809,924	58%
2013Q2	23,690,890	42,110,958	56%
2013Q3	24,303,619	41,043,684	59%
2013Q4	23,882,555	43,955,422	54%
2014Q1	23,362,889	40,794,248	57%
2014Q2	25,072,039	40,858,269	61%
2014Q3	**25,305,996**	**42,094,593**	**60%**
2014Q4	**25,413,669**	**43,170,142**	**59%**
2015Q1	**25,773,925**	**44,126,497**	**58%**
2015Q2	**26,390,112**	**45,216,414**	**58%**
2015Q3	**26,605,076**	**46,370,968**	**57%**
2015Q4	**26,560,659**	**47,336,381**	**56%**

- If no cut in allocated capacity utilisation for the deep-sea services falls to 56%
  - down from 61% in 2014 Q2
  - driven by growth in supply

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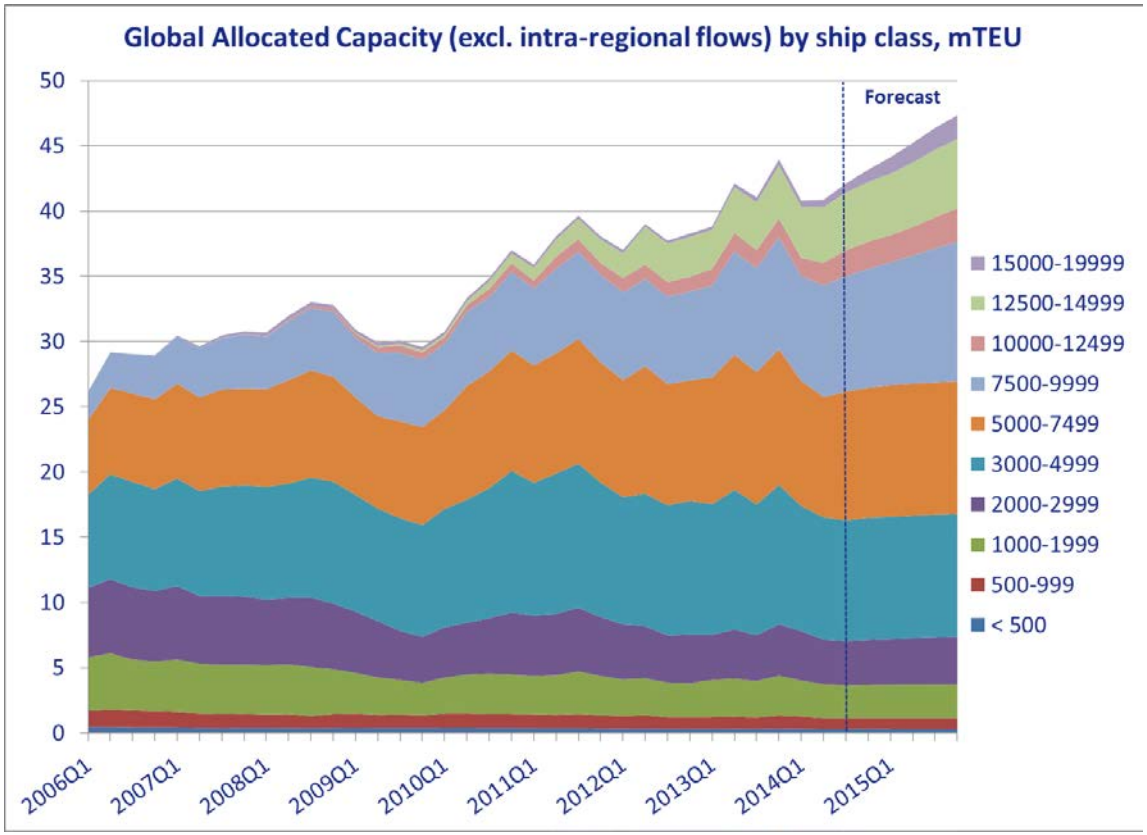
Forecast Supply by ship size
- global (excluding intra-regional flows)



- Overall capacity forecast to grow by c.12.5% between 2014Q3 and 2015Q4
  - class of ships bigger than 12,500TEU expected to grow by c.40%

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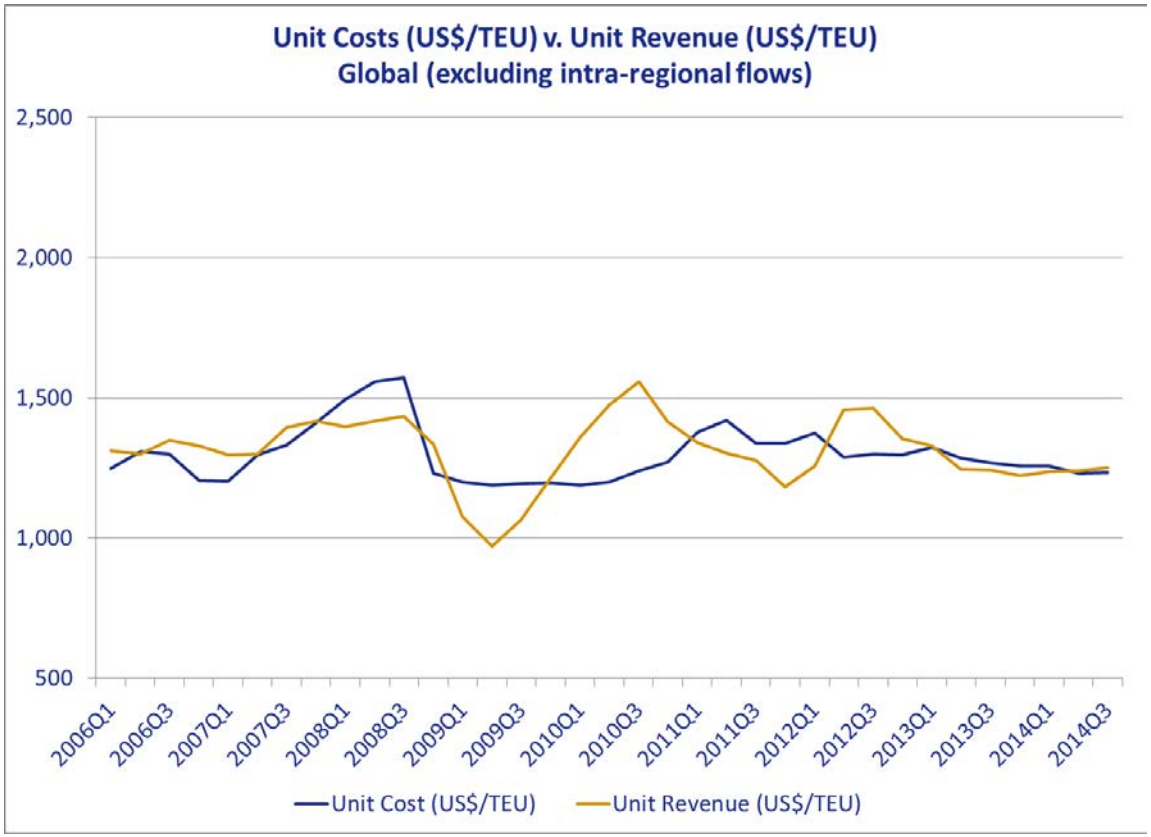
Unit Costs v. Unit Revenues



- Between 2012Q3 and 2014Q3 estimated unit cost down by c.5%
  - allowing those investing in larger and more cost effective ships to address falling rates they have caused!

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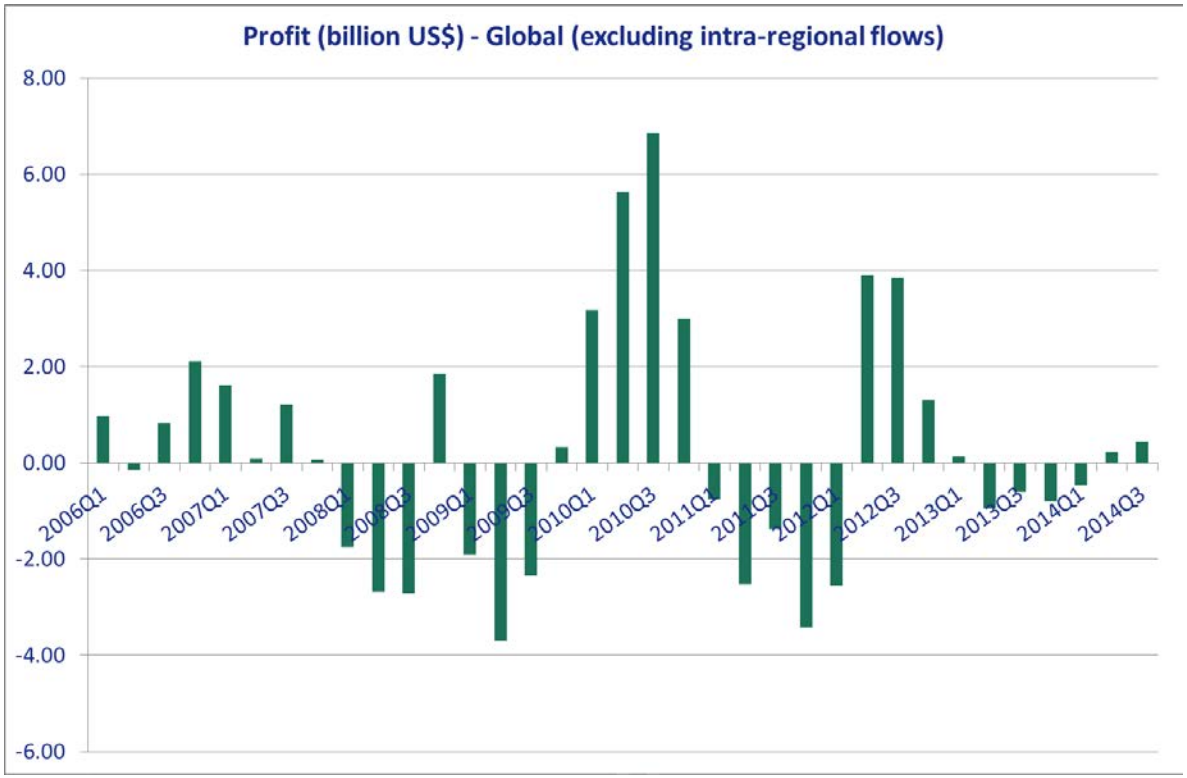
Overall liner industry profits



- For the whole industry, unit cost reductions insufficient to mitigate reduction in unit revenue
- Reduction in unit cost key toward more sustainable services

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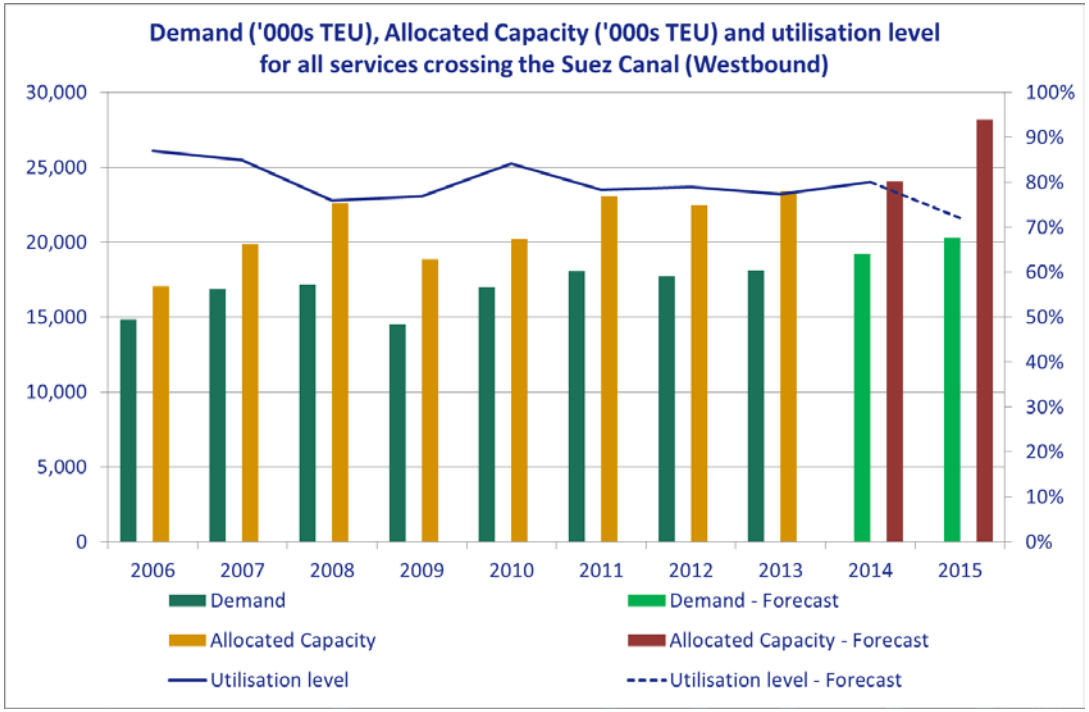
Demand v. Supply
- trade lanes crossing the Suez Canal WB



Year Quarter	Demand (TEU)	Allocated Capacity (TEU)	Utilisation level (%)
2012Q1	4,355,137	5,621,183	77%
2012Q2	4,600,381	5,482,255	84%
2012Q3	4,524,563	5,700,872	79%
2012Q4	4,236,094	5,657,670	75%
2013Q1	4,455,270	5,790,726	77%
2013Q2	4,477,132	5,900,483	76%
2013Q3	4,691,255	5,833,590	80%
2013Q4	4,488,317	5,896,473	76%
2014Q1	4,623,879	5,819,133	79%
2014Q2	4,902,167	5,938,528	83%
2014Q3	**4,884,170**	**6,002,365**	**81%**
2014Q4	**4,849,037**	**6,291,117**	**77%**
2015Q1	**5,024,995**	**6,583,836**	**76%**
2015Q2	**5,099,723**	**6,904,446**	**74%**
2015Q3	**5,100,720**	**7,219,526**	**71%**
2015Q4	**5,053,332**	**7,471,903**	**68%**

- If no cut in allocated capacity utilisation for westbound Suez routes falls to 56%
  - down from 61% in 2014 Q2

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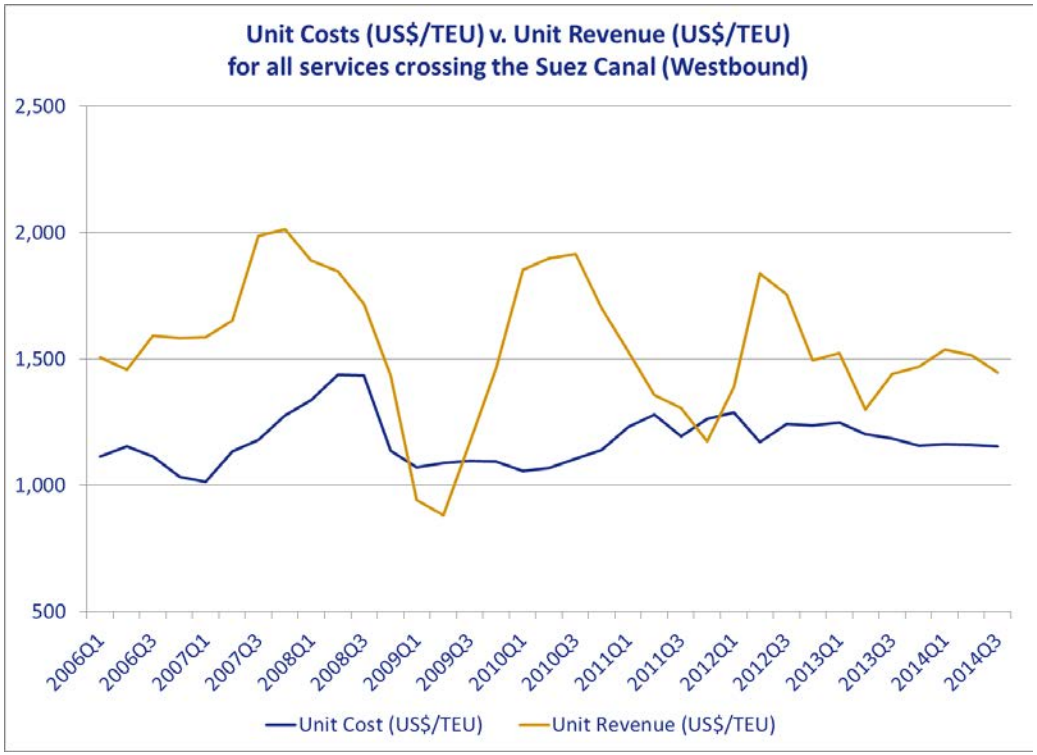
Unit Costs v. Unit Revenues
- trade lanes crossing the Suez Canal WB



- The consequence between 2012Q3 and 2014Q3:
  - Unit revenue down by 17.6%
  - Unit cost down by 7.3%
- Unit costs less volatile than unit revenue!

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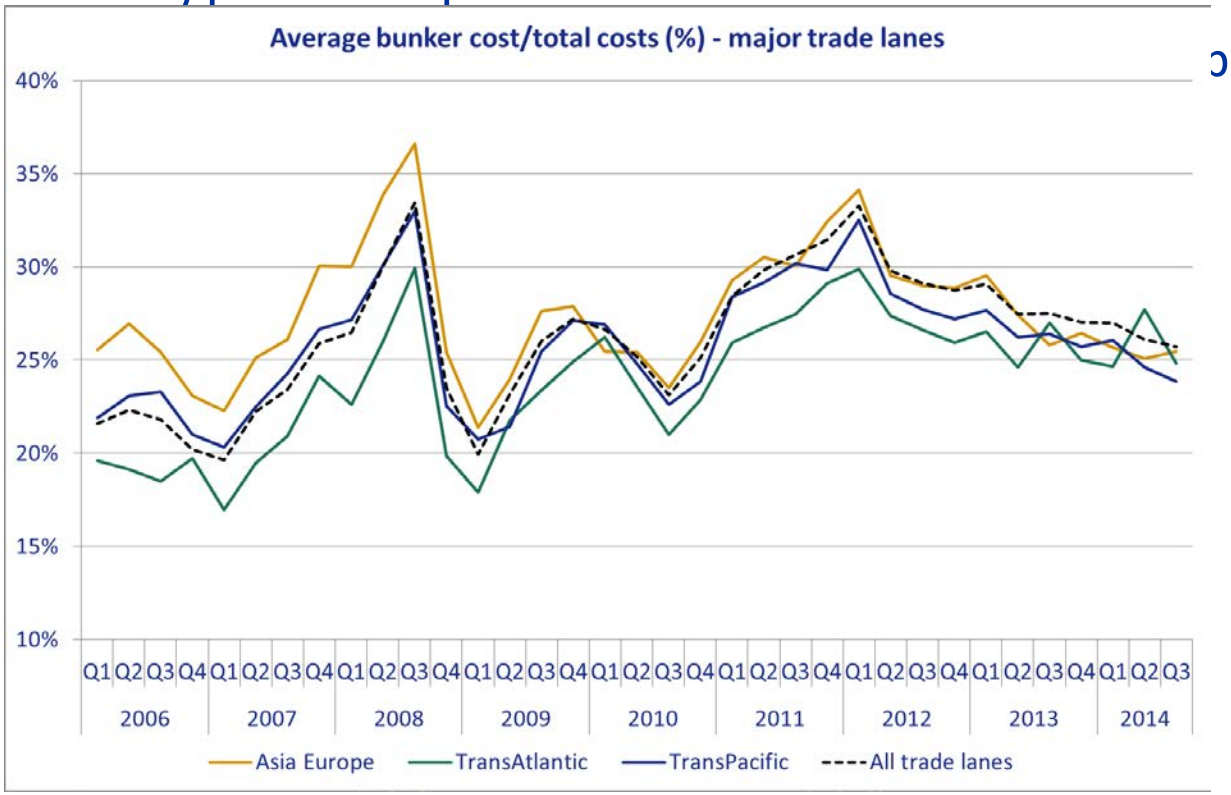
Bunker costs v. total costs

Total costs accounted for by bunkers peaked in 2008

– proportion falling as lines adapted their strategies to a post conference/price competitive environment.



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Changes in speed and ship size

Shipping lines reduced % bunkers in total costs by:

- Slow steaming
- Raising individual ship capacities

Example: Asia-Europe

	2006	2013	% change 2006-2013
Services	48	35	
Ships	375	369	
Ships/Service	7.8	10.5	
Average Speed (Knots)	20.2	16.1	-20%
Average Size (TEU)	5,613	10,077	80%

2006 – 2013

- 20% cut in speeds
- 80% increase in ship capacity

Are these strategies sufficient to guarantee positive financial results in the future?

– inevitable need to rationalise capacity

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Recent line behaviour: market concentration

	Present fleet (overall fleet)				Newbuilds (>3,000TEU)		Present + newbuilds	Future - as announced by shipping lines	
	No. owned	No. chartered	Total No. of ships	Mean ship capacity TEU	No. of ships	Mean ship capacity TEU		No. of ships	Mean ship capacity TEU
2M Members									
-Maersk	*73*	*45*	*118*	*9,365*	*11*	14,760	*129*		
-MSC	*56*	*62*	*118*	*9,610*	*43*	*12,516*	*166*		
2M Members Total	**129**	**107**	**236**	**9,487**	***54***	***12,973***	**290**	**185**	**11,279**
CKYHE-Green Alliance	135	106	241	7,683	53	12,062	294		
G6 Alliance	170	101	271	7,284	27	10,993	298		
Ocean 3	89	64	153	8,229	63	12,795	222	159	9,719
All Alliances	**523**	**378**	**901**	**8,171**	**197**	**12,206**			
Others	56	49	105	4,620	95	6,869			
Total	**579**	**427**	**1,006**	**7,762**	**292**	**10,600**			

	2M members	Ocean Three
Present fleet	236 + 54 on order = 290	153 + 63 on order = 226
Planned fleet	185	159
Vessels cut	105	67
Mean ship capacity	+18% to 11,279 TEU	+18% to 9,719 TEU

- Lines have clear interest in disposing of the smaller vessels
- In the expectation they will leave the market!

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Fuel costs more important than capital costs

In a 25 year lifetime an 18,000 TEU ship (2013 prices)

- costs $150m
- consumes $0.6 billion value of bunkers at current prices
- and moves $93 billion worth of goods

- fuel economies dictate investment decisions
  - but cargo value dwarfs shipping costs
  - slow steaming may not suit every shippers' requirements!

Maersk Line vs. overall industry: 2013 - scale rewarded!

Maersk Line performances:

- 10.6% decrease in unit cost (falling bunker consumption and operational cost savings) led to **225% increase in profit** despite 7.2% decrease in average freight rate (with demand increased by 4.1%)
  - reflected in our model

But based on our model overall industry* (exc. intra-reg):

- Only 2.4% decrease in unit cost accompanied by 9.1% decrease in unit revenue implies profits more than halved despite demand increasing by 3.4%

** Based on MDS Transmodal, Financials model (August 2014)*

A specific eco impact on the sector: ECAs in Europe and North America

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Rate increases proposed by the lines to address ECA regulation (1st January 2015)

Major customer alert warnings send out so far on how much bunker surcharge might increase (based on current fuel costs):

- Maersk: $50-$150/FEU
- MSC: $15-$130/TEU
- CMA-CGM: $40-$230/FEU
- Unifeeder:$84/loaded container

Do these estimates by the lines make sense?

Worked examples

1. Transatlantic
2. N Europe - Gulf & ISC - Far East
3. Transpacific

Estimates based on the assumption that Marine Gas Oil 50% more expensive than higher sulphur heavy fuel and current fuel prices (i.e. average so far for 2014Q4 of $557/tonne)

Bunker costs increase due to ECA regulation (1st January 2015) - MDST estimates are:

	Before ECA		
	Transatlantic	N Europe - Gulf & ISC - Far East	Transpacific
Frequency	52	52	52
No of Vessels	5	11	5
Average Vessel Size	5,767	12,355	4,058
Load factor	0.8	0.8	0.8
Loadings	2	2	2
Speed	16.25	18.22	18.86
Bunker consumption (day at sea)	77	157	100
Number of Ports	7	11	5
Total Distance	8,575	22,065	11,687
Panama	0	0	0
Suez	0	2	0
SECA Distance			
Bunkers	$961,784	$4,468,520	$1,453,285
Fixed Cost	**$2,647,470**	**$12,554,143**	**$2,645,126**
Bunker % of total cost	**36%**	**36%**	**55%**
SECA Distance/overall distance	**0%**	**0%**	**0%**
Bunker cost($)/TEU	$208	$452	$448
Total unit cost($)/TEU	**$574**	**$1,270**	**$815**

	After ECA		
	Transatlantic	N Europe - Gulf & ISC - Far East	Transpacific
Frequency	52	52	52
No of Vessels	5	11	5
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Speed	16.25	18.22	18.86
Bunker consumption (day at sea)	77	157	100
Number of Ports	7	11	5
Total Distance	8,575	22,065	11,687
Panama	0	0	0
Suez	0	2	0
SECA Distance	2,693	1,626	785
Bunkers	$1,105,899	$4,628,683	$1,500,763
Fixed Cost	**$2,791,585**	**$12,714,305**	**$2,692,604**
Bunker % of total cost	**40%**	**36%**	**56%**
SECA Distance/overall distance	**31%**	**7%**	**7%**
Bunker cost($)/TEU	$240	$468	$462
imbalance factor	1.2	1.6	1.2
Total unit cost($)/TEU	**$605**	**$1,286**	**$829**

Bunker cost (or saving)/all FEU loaded	**$68**	**$40**	**$32**
Bunker cost - cost increase (%)	**15%**	**4%**	**3%**
Total cost - cost increase (%)	**5%**	**1%**	**2%**

lower for Transatlantic

marginally higher for Asia – Europe

highly sensitive to ship speed and choice of port

- ECA regulation raise total costs by 1%-5% depending on route

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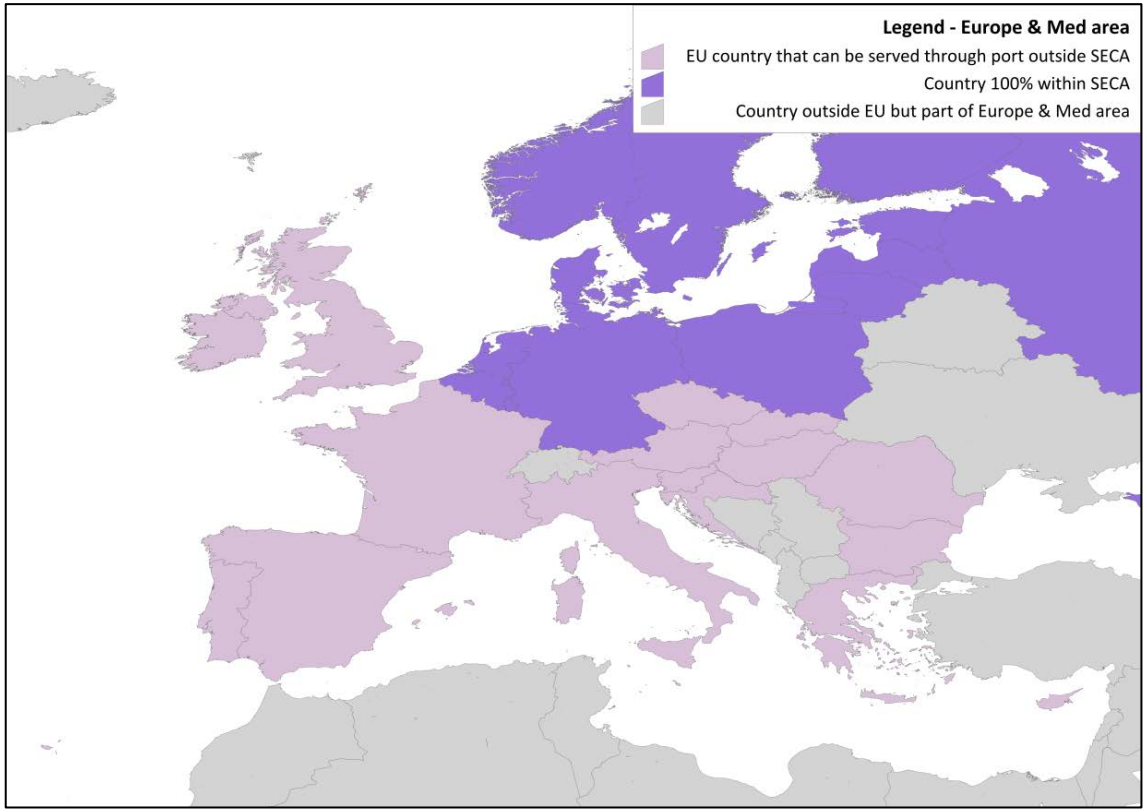
Lines' options to ECAs include:

- Switch to scrubbers and LNG: LNG offers major savings but requires re-investment (few new LNG ships being ordered)?
- Increasing proportion of traffic through North Mediterranean and Atlantic ports:
    - depends on improved intermodal links
- Charge more: but experience suggests unlikely to succeed
- Almost certainly ECAs reinforce a commitment to fewer and larger vessels.

Europe & Med market: are ports in SECA countries vulnerable?



- 53% of unitised deepsea traffic to/from EU for countries outside SECA
  - % increases to c.70% including Med countries outside EU
- Shipping lines increasing presence in Southern European ports to serve central Europe
  - 2M launching 10 Asia-Med services and 12 Asia-N Europe services
- North Sea and Channel Ports currently include 4 largest Euro/Med ports
  - Will they retain their hegenomy?

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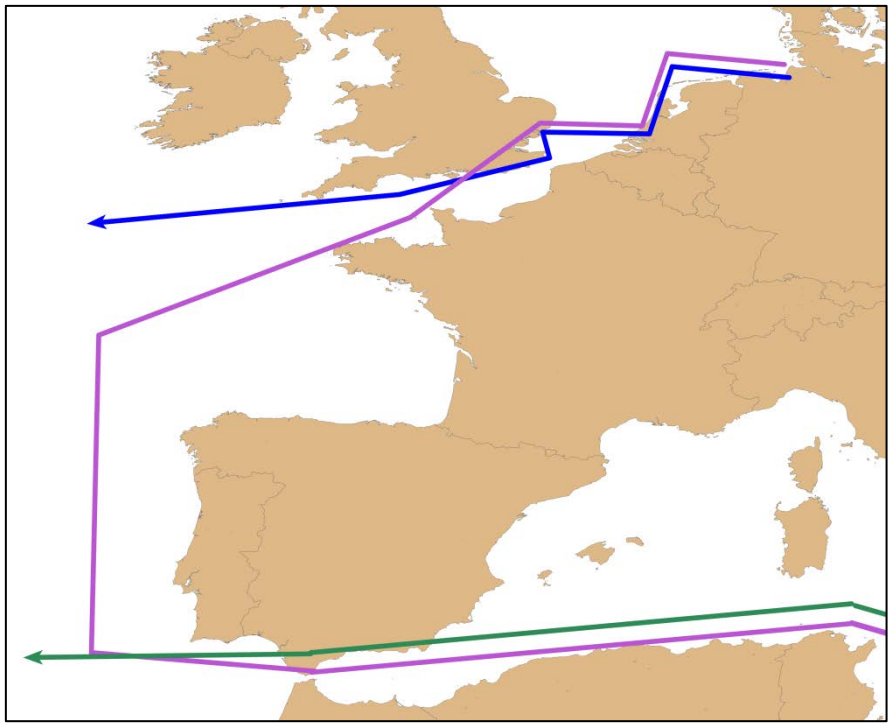
Avoiding SECA by serving UK & France from Atlantic not North Sea ports

Before

Far East - N Europe

N Europe - N America

Far East - Med - North America

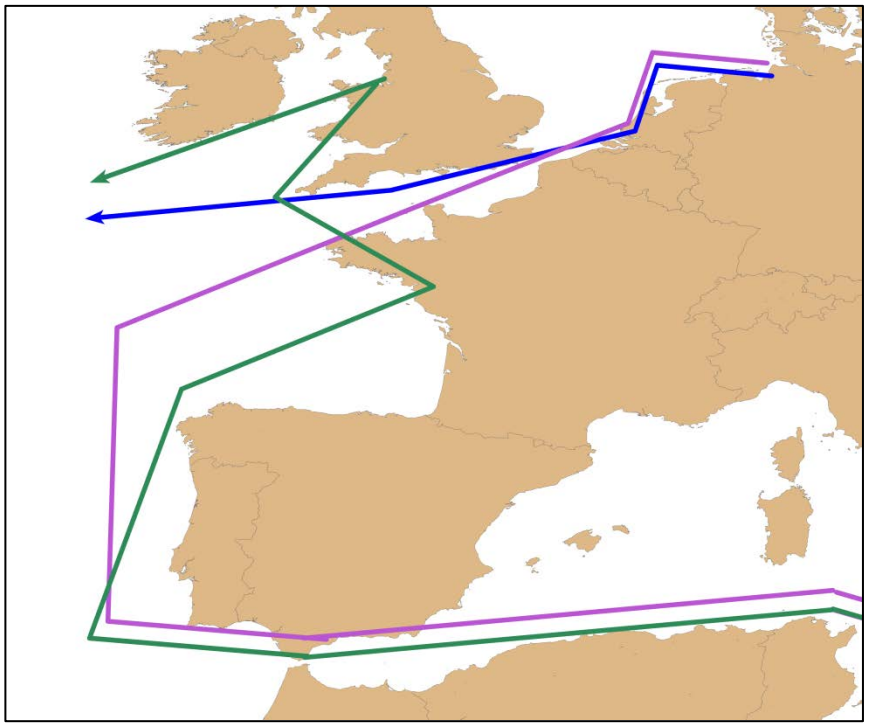


After

Far East - N Europe

N Europe - N America

Far East – Med – French & UK Atlantic ports - North America



- those ships to North Sea only for SECA countries

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Serving UK & France from Atlantic coast: results

- Modelling impact on maritime network costs

	Network Cost ($m)	
	Before	After
Far East - N Europe (cut call and cap.)	$13.28m	$10.22m
N Europe - N America (cut call and cap.)	$3.49m	$2.06m
Far East - Med - North America (add call and cap.)	*$7.65m*	*$11.54m*
Total Network Cost ($m)	$24.42m	$23.83m

Add a diversion to two NW European ports OUTSIDE SECA

=> Maritime saving/unit: £64/loaded container moved

- Saving would be higher if we also took inland costs into account

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Conclusions

Regardless of ECA:

- Long term rising bunker costs AND the end of the conference system led to
  - Slow steaming and investment in much larger more economical **replacement** ships
  - Alliances to justify their scale to create global networks against which replaced smaller container vessels would be uncompetitive

ECAs could:

- Encourage investment in LNG powered vessels
- Raise costs to shippers and lead to disputed surcharges
- Divert some traffic to rail and to non SECA ports within Europe

Overall

Energy, eco and regulatory factors have re-established the need for the lines to make long term commitments to their fleets.

Thank you

http://www.mdst.co.uk

http://www.boxtradeanalyser.com/