

March 2010

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## Modal Shift Study

A quantitative response to anecdotal  
evidence

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# Executive summary

- Air share of global containerized international trade dropped from 2.8% to 1.8% in terms of weight between 2000-2008. There are three causes for this decline:
  - Trade lanes with a high percentage of ocean transportation grew faster than lanes with a high air share
  - Trade of goods with a high propensity to be transported by air grew at a lower pace than average global trade
  - Modal shift: goods that were traditionally transported by air shifted to ocean transportation
- Modal shift has consistently been taking place, although at different intensities; without modal shift, annual air trade growth would have been 1.5 percentage points higher
- Commodities that saw the largest share of air trade shift to ocean during the 2000-2008 period were capital equipment and vehicles & parts
- Around two-third of the global modal shift took place at Intra Asia and North America inbound trade flows
- In 2008 a relatively large shift from air to ocean occurred, however this was, against the trend, partly reversed by a shift back to air in 2009. This correction was visible for all commodity groups except perishables, which continued to shift to ocean

# Modal shift: everyone talks about it...

*"... South American production is on the increase, but the air freight volumes are dropping because of goods being diverted to sea freight"*

Hellmann

*"The industry is undergoing a modal shift"*

United Air Cargo

*"A number of commodities have switched to sea freight, including technology"*

Kuehne + Nagel

*"...goods are unlikely to switch back to air even if there is an upturn in the market"*

Panalpina

*"Shippers can't cut cost by shifting production to cheaper places any longer, so logistics is the next domain of cost-cutting"*

Lufthansa Cargo

*"There will definitely be some substitution from air to sea, and this will remain a trend, but this won't fundamentally hurt the air cargo industry in the long run"*

KLM Cargo



**... but what is its impact?**

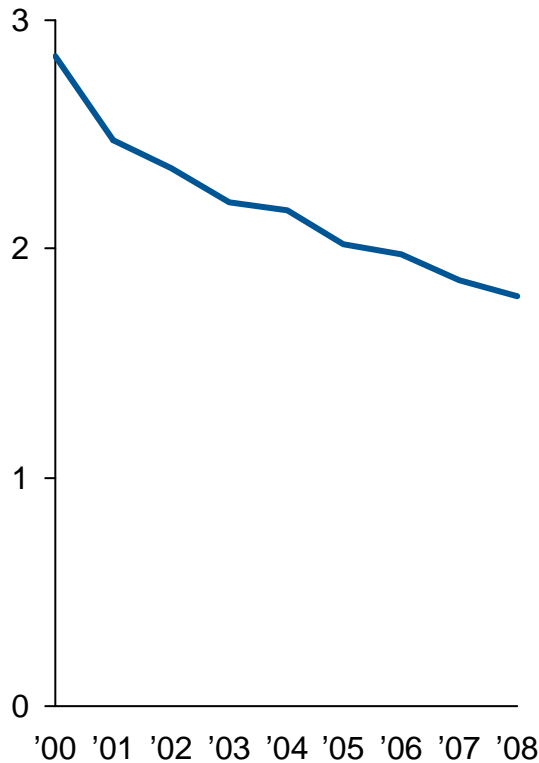
- Macro trends impacting global air share
- Modal shift developments between 2000-2008
- Modal shift from 2008 onwards

# Air share development in recent years

Air share of global containerized international trade dropped from 2.8% to 1.8% in terms of weight between 2000-2008; three factors contributed to this decline

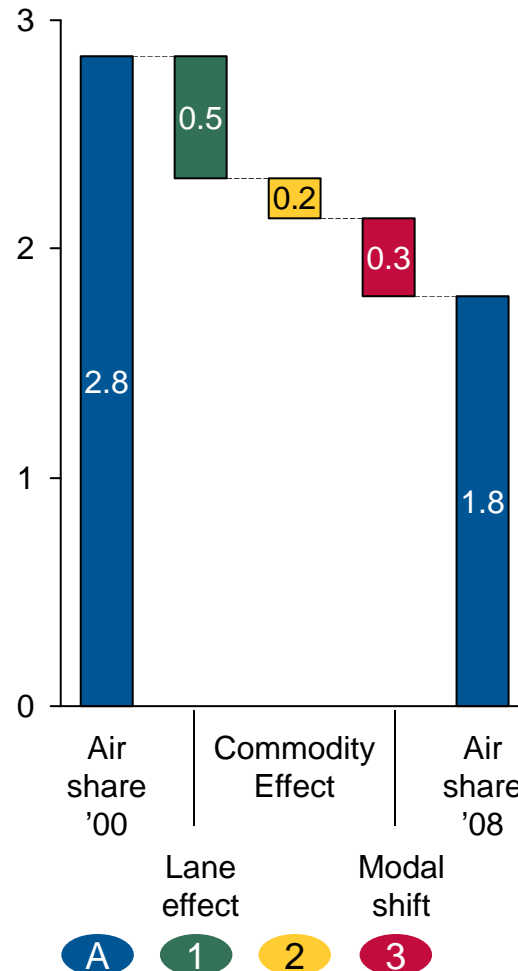
## Air share containerized trade

(% of weight)



## Drivers declining air share

(% of weight)



## Definitions

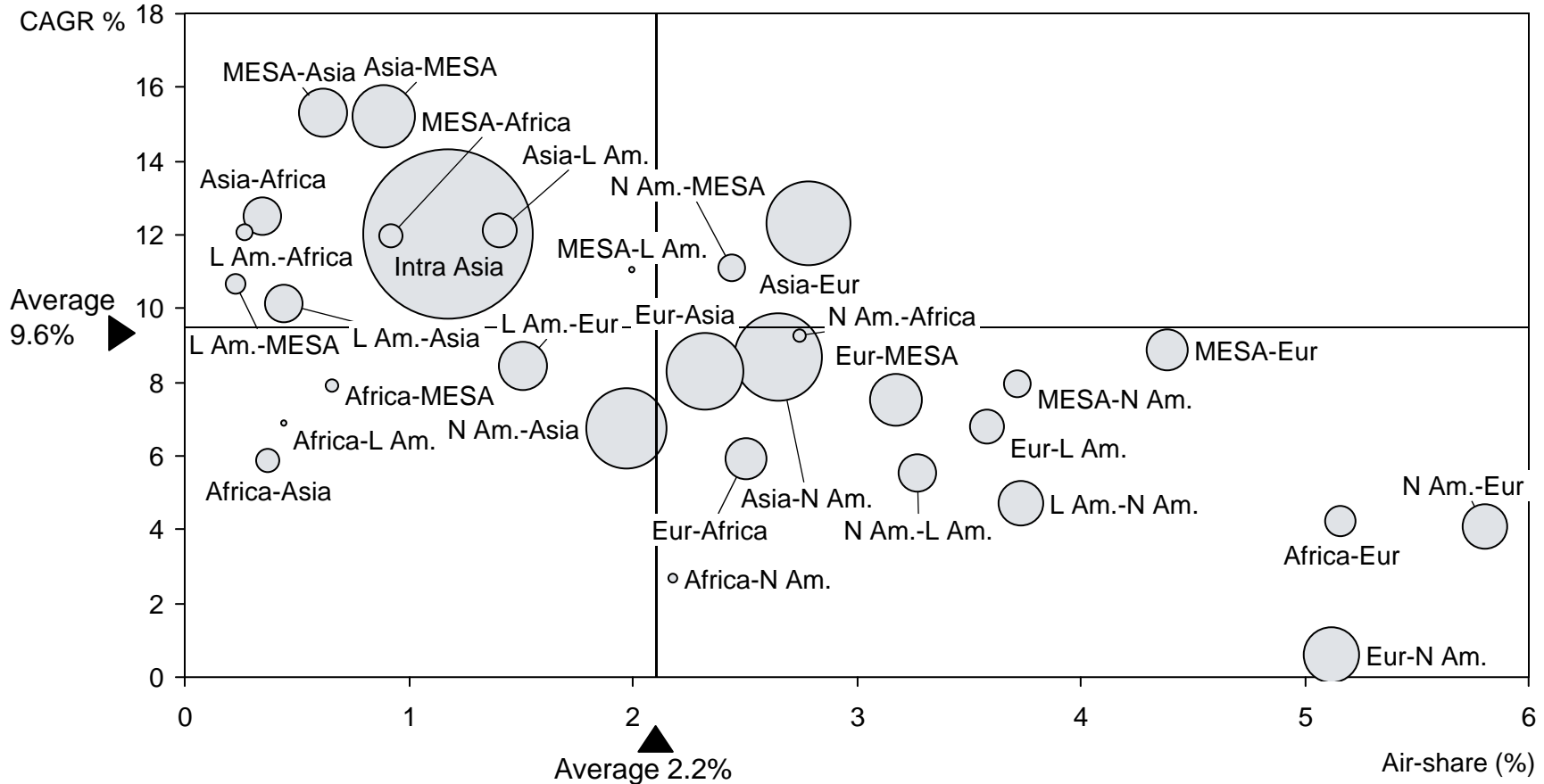
- A** Air Share  
Percentage of total international containerized trade that is moved by air
- 1** Lane Effect  
Change in air share due to uneven growth on trade lanes where air share deviates from global average
- 2** Commodity Effect  
Change in air share due to uneven growth of commodities where air share deviates from global average
- 3** Modal Shift  
Change in air share due to shift in mode of transportation; volumes shift from air to ocean and vice versa

Source: Seabury Global Trade Database; Seabury Yearly Modal Shift Cube

# Lane effect

In the past years lanes with low air shares grew faster than lanes with high air shares; as a result a smaller percentage of total trade is shipped by air in 2008 than in 2000

### Lane growth versus air share, containerized trade, 2000-2008

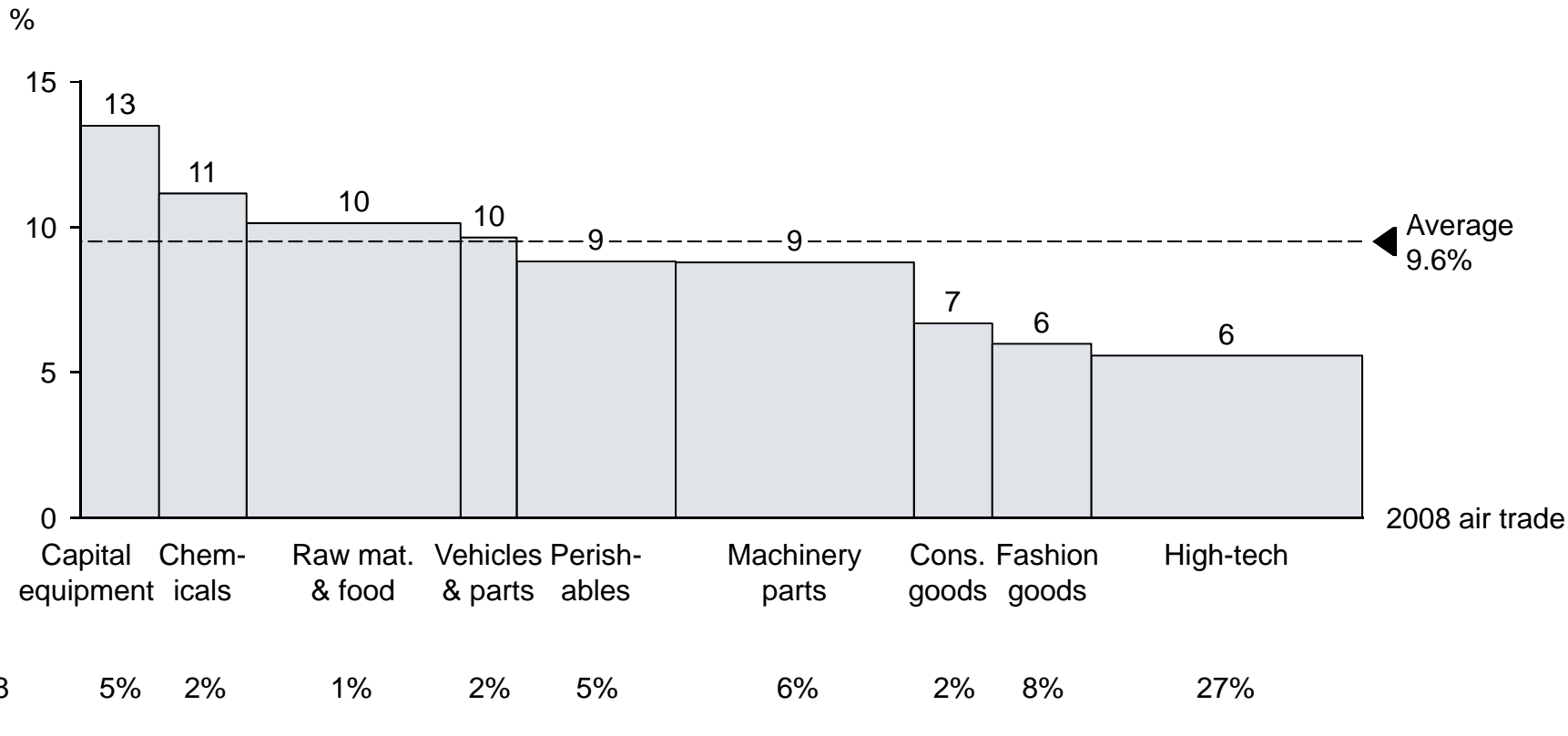


Source: Seabury Global Trade Database

# Commodity effect

The majority of commodities with a high air share grew at a lower pace than worldwide trade average; especially high-tech lagged during this period

## CAGR containerized trade in terms of weight, 2000-2008



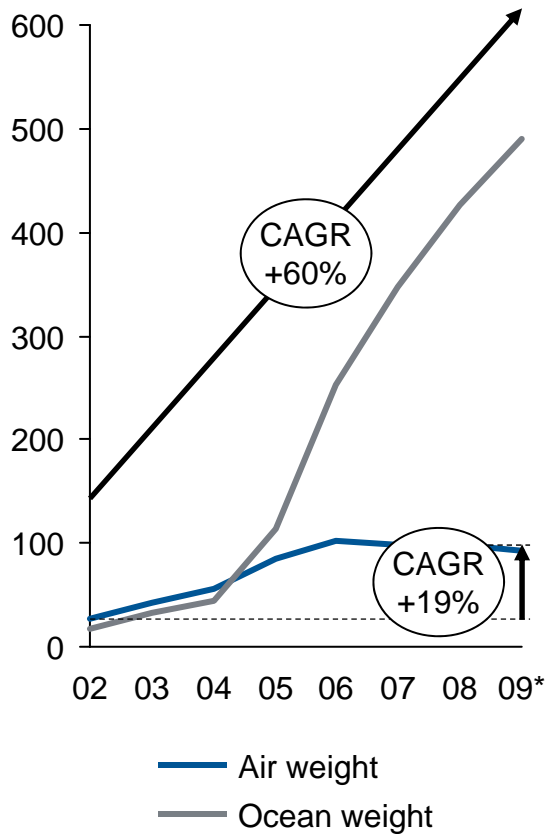
Source: Seabury Global Trade Database

# Modal shift

Modal shift was among other things caused by high-tech goods that reached the end of their product life cycle and shifted from air to ocean transportation

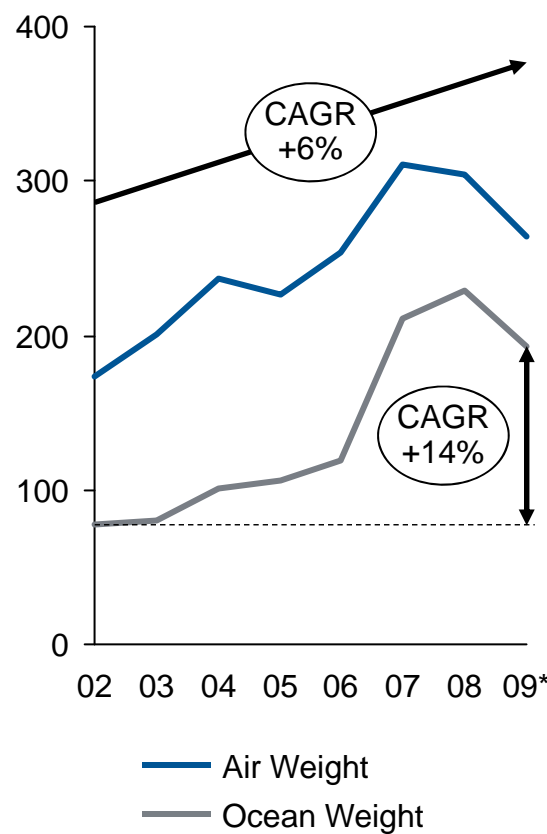
## LCD products

International trade, tons x 1,000



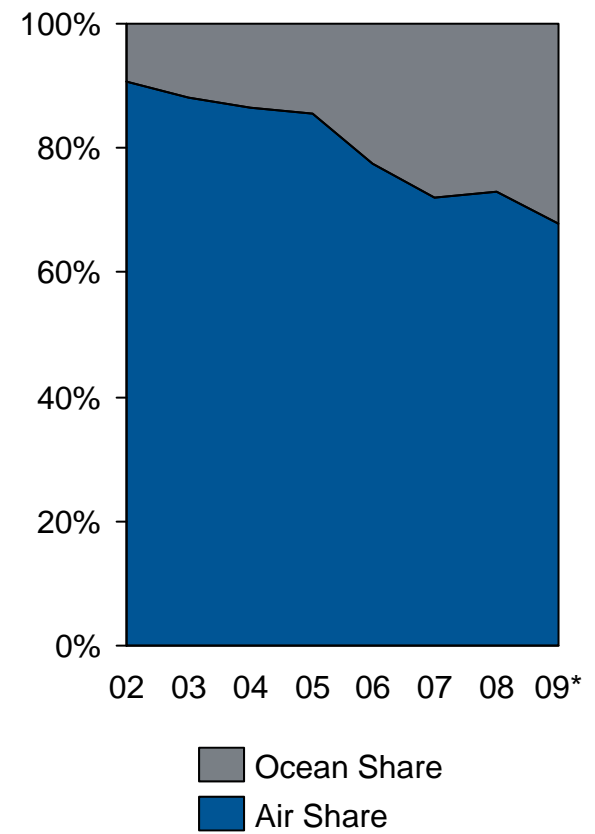
## Integrated circuits & chips

International trade, tons x 1,000



## Laptops

Weight share of Intl trade, %



\*partly estimated  
 Note: containerized trade only  
 Source: Seabury Global Trade Database

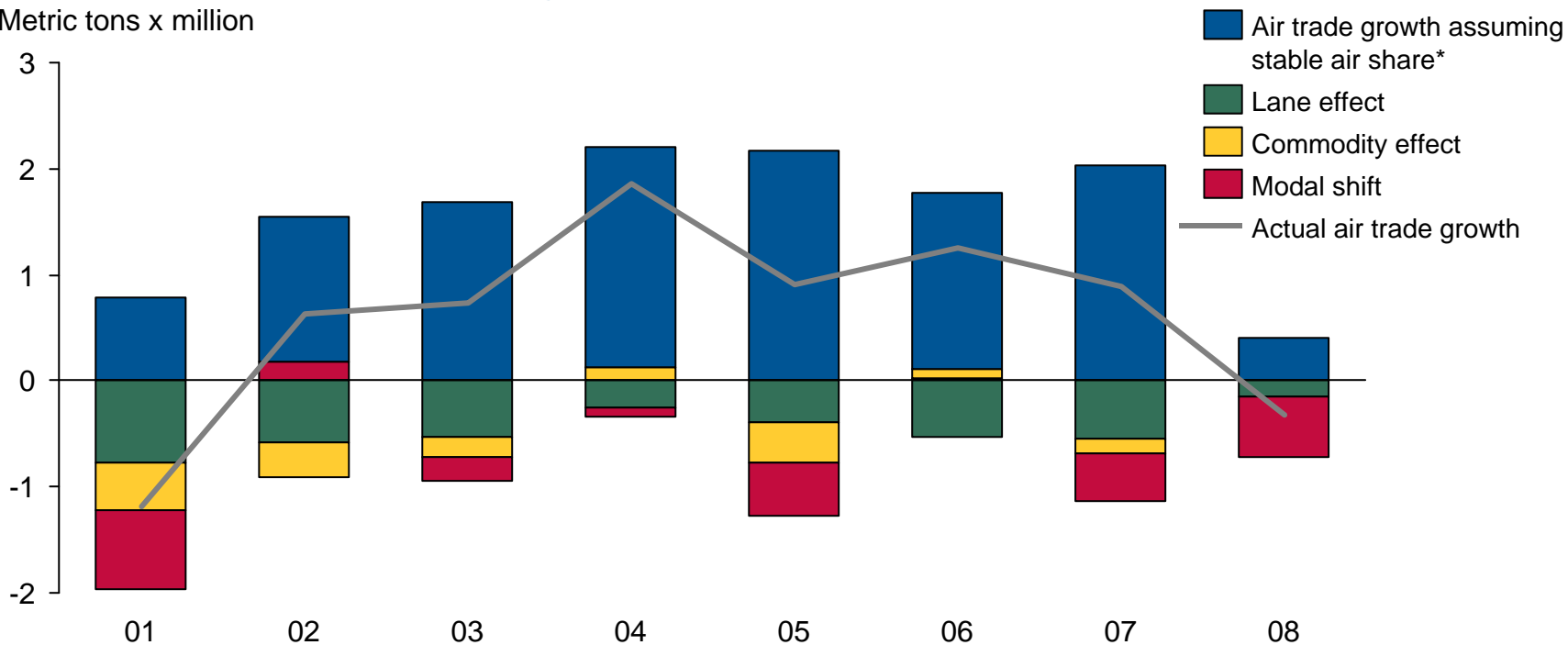
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# Yearly modal shift

In 2008 the combination of minimal trade growth (air plus ocean) in combination with modal shift caused air trade to decline

## Impact macro trends on air trade growth

Metric tons x million



**Although relatively high, 2008's modal shift was not unusual and similar to 2001, 2005, and 2007**

\*Stable air share refers to an annual air trade growth equal to the total trade growth for that same year

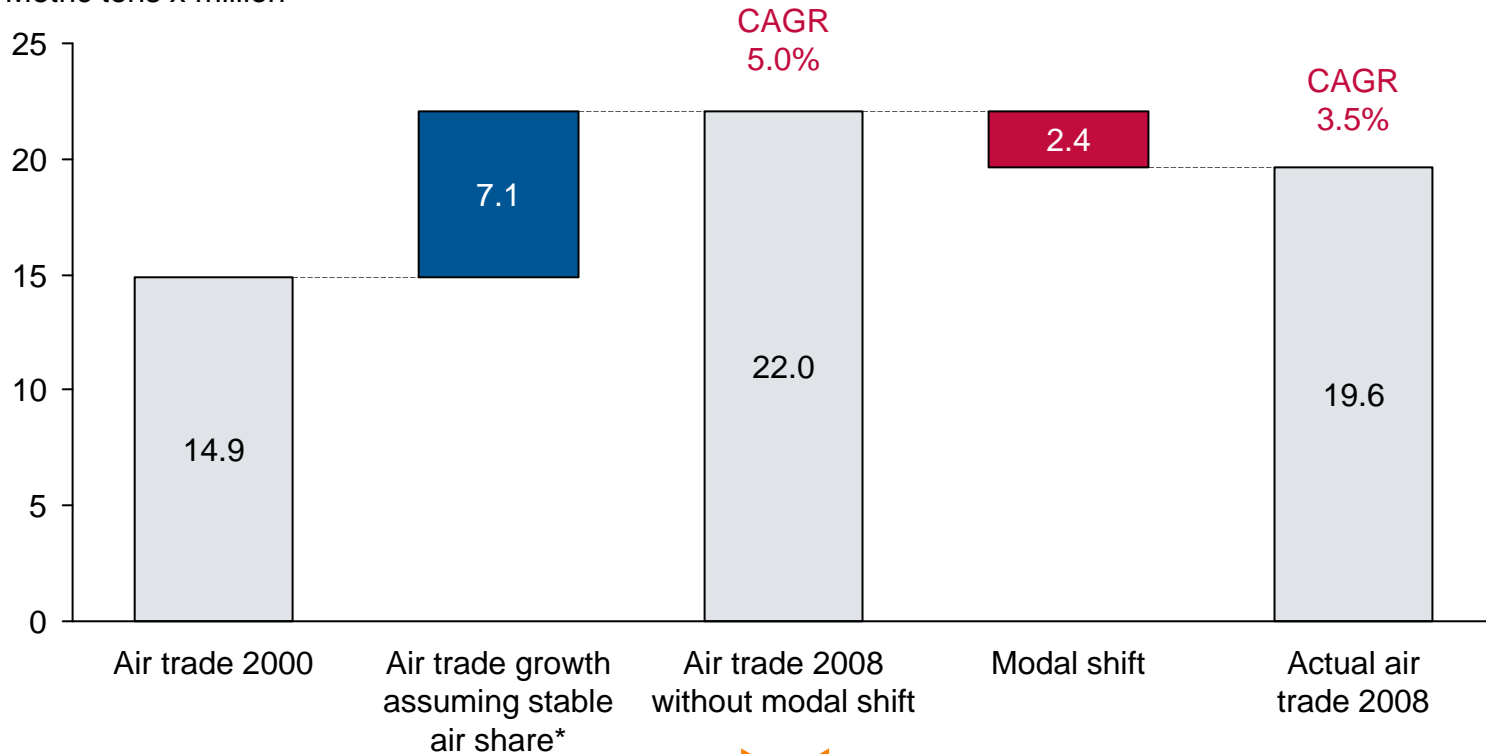
Source: Seabury Yearly Modal Shift Cube; Seabury analysis

# Impact of modal shift on air trade growth

Without modal shift, annual air trade growth between 2000-2008 would have been 1.5 percentage points higher

## Air trade growth 2000-2008

Metric tons x million



**Modal shift of 2.4 million tons equals capacity of ~24,000 747F flights at full load**

\*Stable air share refers to an annual air trade growth equal to the total trade growth for that same year; excluding the downward impact of lane and commodity effect  
Source: Seabury Yearly Modal Shift Cube; Seabury analysis

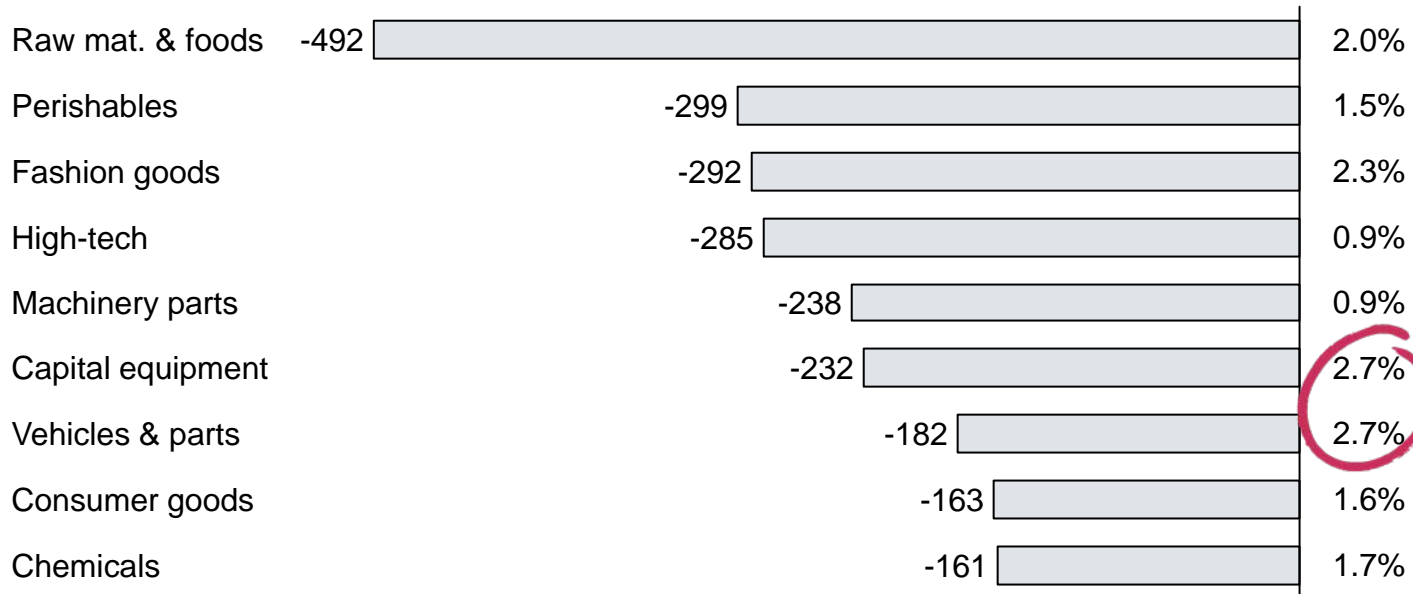
# Modal shift per commodity

All product groups experienced modal shift in 2000-2008 period

## Cumulative modal shift of total trade, 2000-2008

Metric tons x 1,000

Modal shift as % of product group's total air trade 2000-2008:



**Capital equipment and vehicles & parts saw the largest share of air trade divert to ocean transportation**

Source: Seabury Yearly Modal Shift Cube

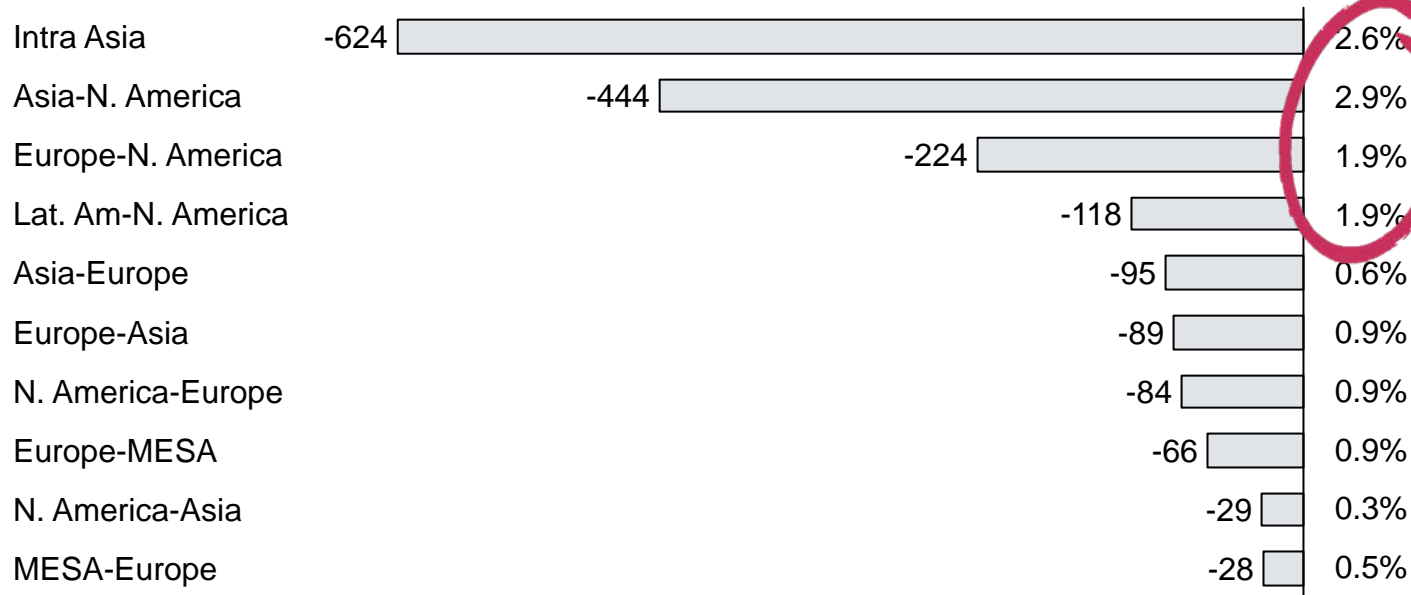
# Modal shift per lane

Large diversity in intensity at which trade lanes experienced modal shift

## Cumulative modal shift, 10 largest trade lanes, 2000-2008

Metric tons x 1,000

Modal shift as  
% of lane's  
total air trade  
2000-2008:



**Intra Asia and North America inbound lanes saw largest shift from air to ocean transportation in both absolute and relative terms**

Source: Seabury Yearly Modal Shift Cube

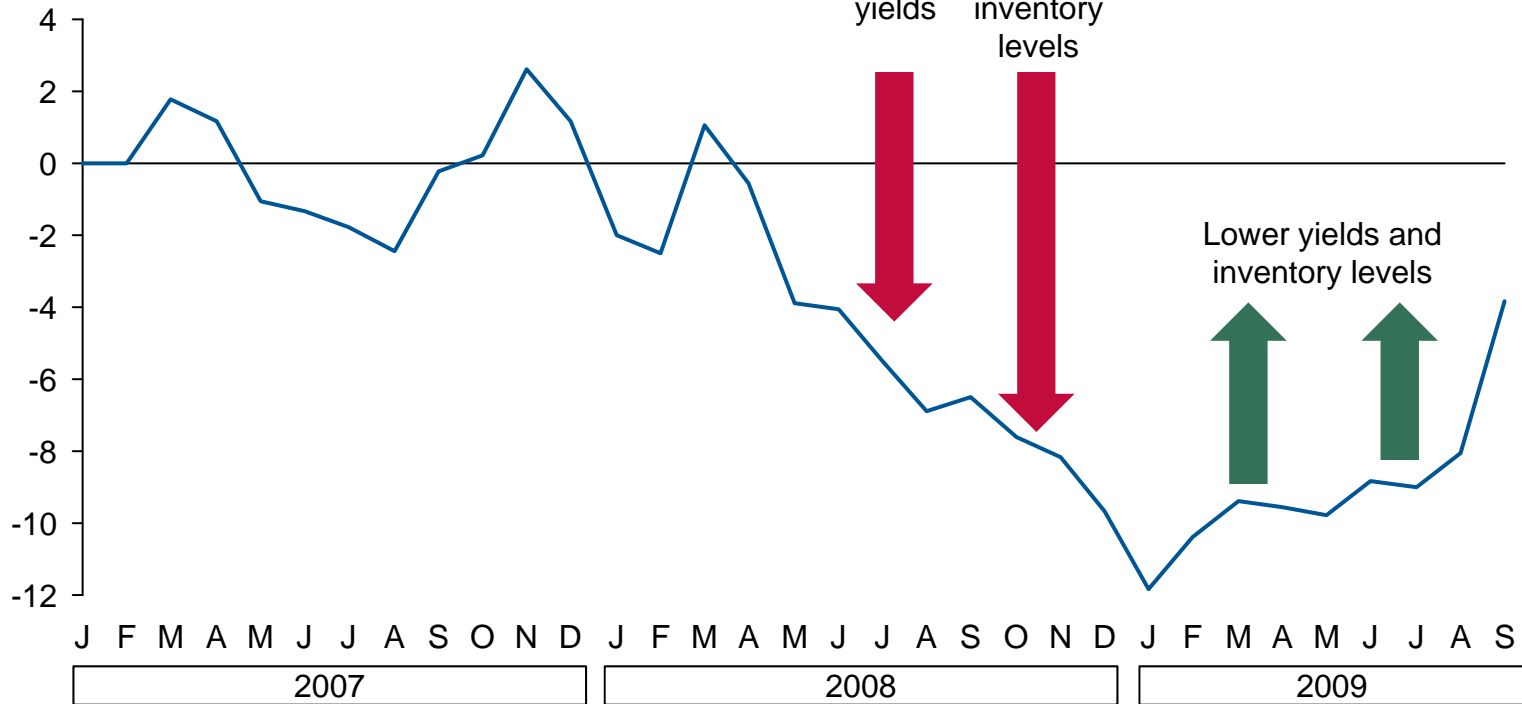
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# Modal shift 2008-2009

Air lost significant volume to ocean in 2008, while reverse trend was visible in 2009

## Modal shift, cumulative

% of Jan. 2007 air weight\*



\*Negative modal shift indicates shift from air to ocean, positive modal shift indicates move from ocean to air

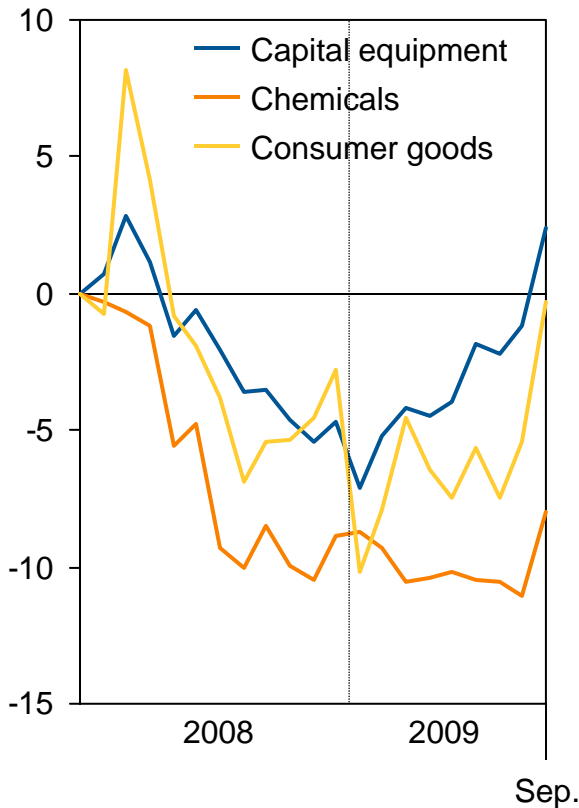
Source: Seabury Monthly Modal Shift Cube

# Causes 2009 reverse modal shift

All commodity groups, except for perishables, contributed to the modal shift from ocean to air in 2009

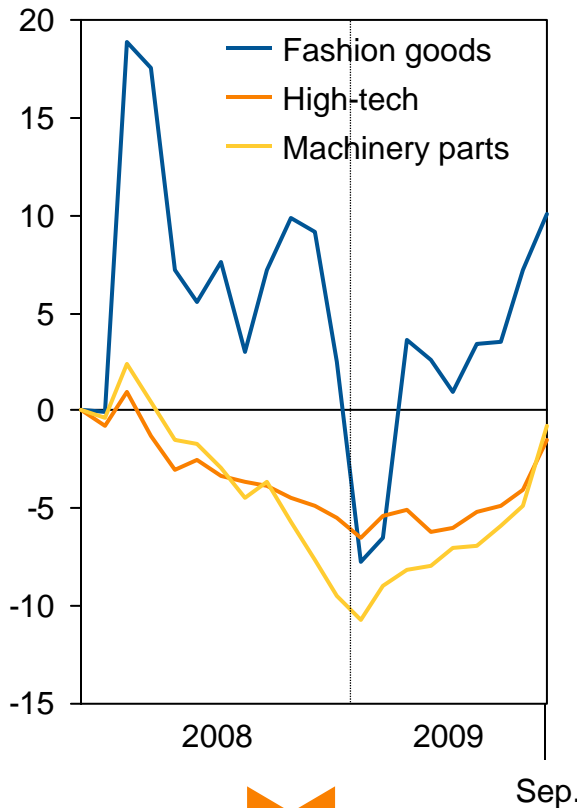
## Modal shift

Modal shift as % of Jan. '08 air weight



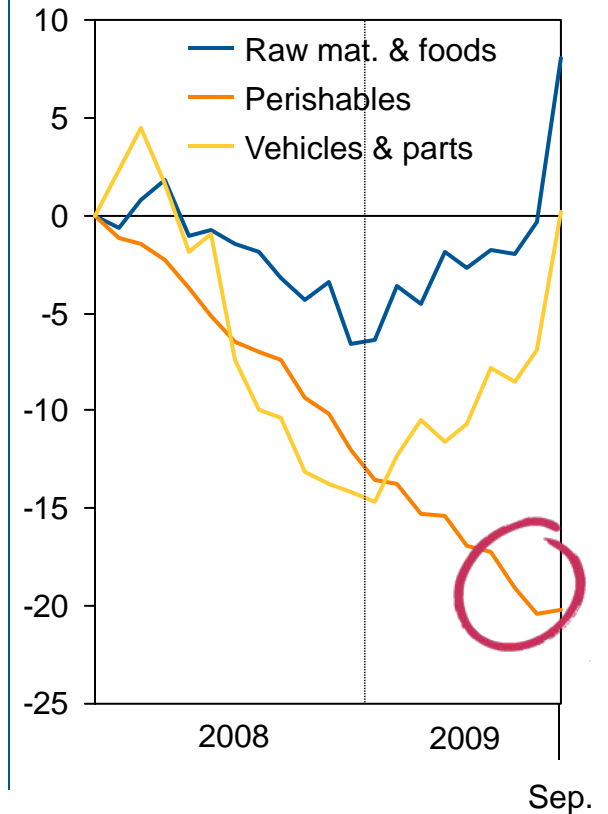
## Modal shift

Modal shift as % of Jan. '08 air weight



## Modal shift

Modal shift as % of Jan. '08 air weight



**Air to ocean shift of fresh fruits continued in 2009; likely caused by a combination of improved quality of ocean cool containers and decreased prices of fresh fruits in 2009**

Note: Negative modal shift indicates shift from air to ocean, positive modal shift indicates move from ocean to air

Source: Seabury Monthly Modal Shift Cube

## Is modal shift here to stay?

Seabury believes that the recent positive shift from ocean to air is temporary, and that modal shift will continue to put pressure on air trade in the future

The plausible reasons for the unusual shift to air in the first three quarters of 2009 are all temporary:

- Yields (net and including fuel surcharge) already grew in the fourth quarter of 2009, making air transport more expensive
- The swiftness with which the replenishment of stocks took place, thereby rushing goods from air to ocean transportation, will most likely slow down as stock levels reach their new equilibrium

What remains are two fundamental drivers for the shift to ocean

- Shippers continuously searching to reduce logistics costs
- Products advancing through their product life cycle, making speed less and price more important in the choice of transportation mode

# Contact details

For more information, please contact...

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