

Air cargo, the economic crisis and innovation

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Air Transport Colloquium, Antwerp,
06/12/2013

Air Cargo Industry in "Global Crisis"

By: From Transport Intelligence/John Manners-Bell | M: **Press Release No.: 54**
Date: 25 November 2010

Research

Two newly-published sets of **Passenger Demand Strengthens - Freight at a Turning Point?**
the slump in worldwide demand last year has continued into

Geneva - The International Air Transport Association announced international traffic results for a 14.4% increase in passenger demand and a 14.4% decrease in freight.

In January this year, freight demand was compared with a 22.6% increase.

[JOC](#) > [Air Cargo](#) > [International Air Freight](#)

Euro Crisis Could Reduce Global Air Cargo by \$4 Billion

Press Release No.: 2
Date: 31 January 2013

Bruce Barnard and Mike King, S

Passenger Demand Grew as Air Cargo Declined in 2012

Geneva - The International Air Transport Association (IATA) announced full-year traffic data for 2012 showing a 5.3% year-on-year increase in passenger demand and a 1.5% fall for cargo.

Press Release No.: 4
Date: 29 January 2009

Cargo Plummets 22.6% in December

Geneva - The International Air Transport Association (IATA) released international scheduled traffic results for both December 2008 and the full-year.

In the month of December global international cargo traffic fell 22.6% compared with December 2007. The same comparison for international passenger traffic showed a 1.5% increase. The international load factor stood at 73.8%.

Press Release No.: 33
Date: 2 August 2012

Slowing Passenger Growth Trend Continues - Cargo Markets Remain Weak

Geneva - The International Air Transport Association (IATA) announced global traffic results for June showing a continued slowing of growth in the demand for air transport. This is in line with weakness in business and consumer confidence.



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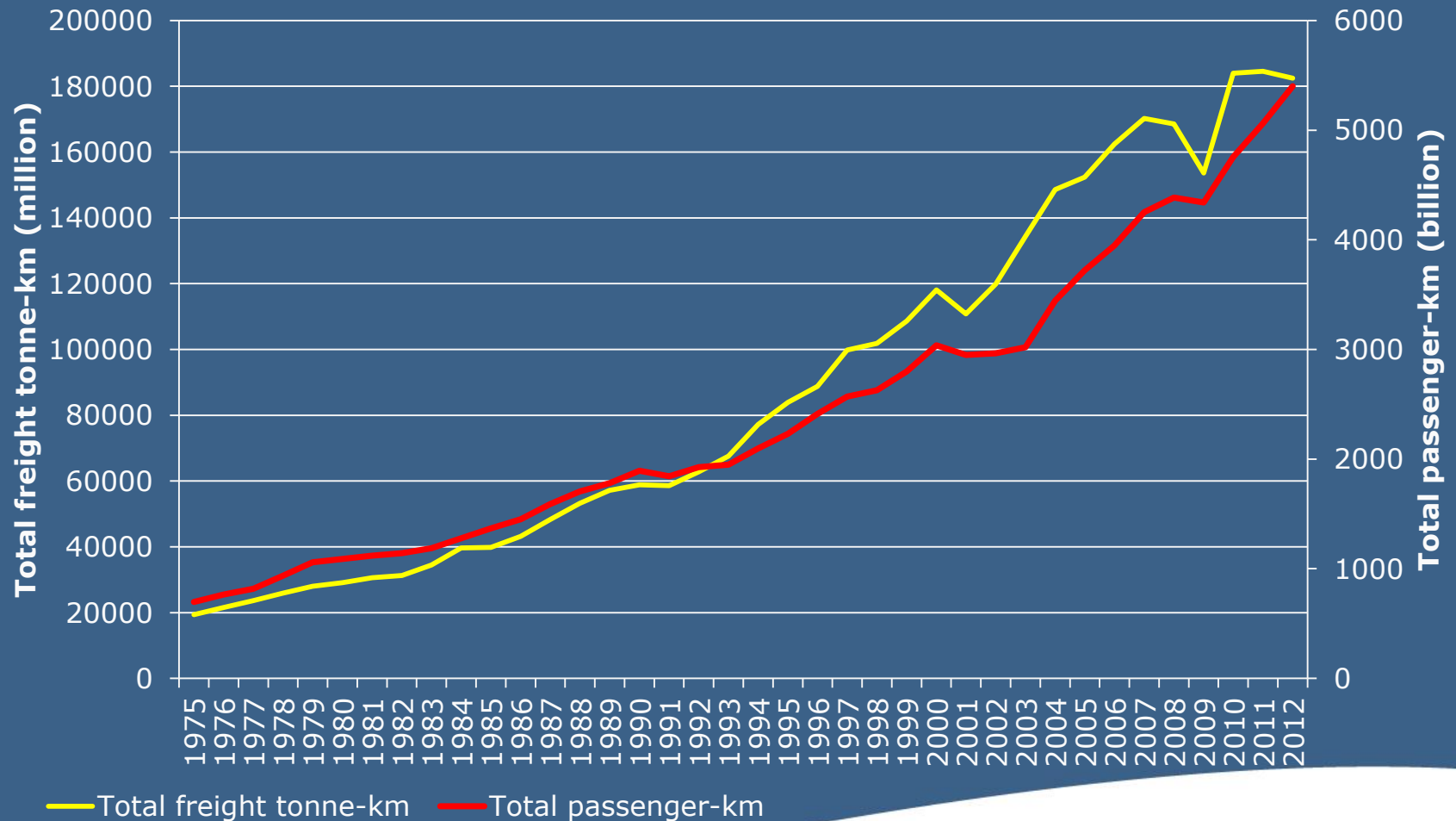
Research questions

- How was the air cargo sector affected by the crisis?
- Did the air cargo sector suffer more than other sectors?
- Did the crisis lead to new innovations (technical and processes)?

Overview

1. Air Cargo and the Economic Crisis
2. Modelling the Air Cargo Sector
3. Air Cargo and Innovations
4. Conclusions

Air cargo and the economic crisis



Market changes

Bankruptcies

- Kitty Hawk Aircargo (2008)
- Gemini (2008)
- Ocean Airlines (April 2008)
- Cargoitalia (December 2011)
- Jade Cargo International (December 2011/June 2012)
- Avient (April 2013)
- ACG (May 2013)
- Evergreen International Airlines? (November 2013)

Market changes

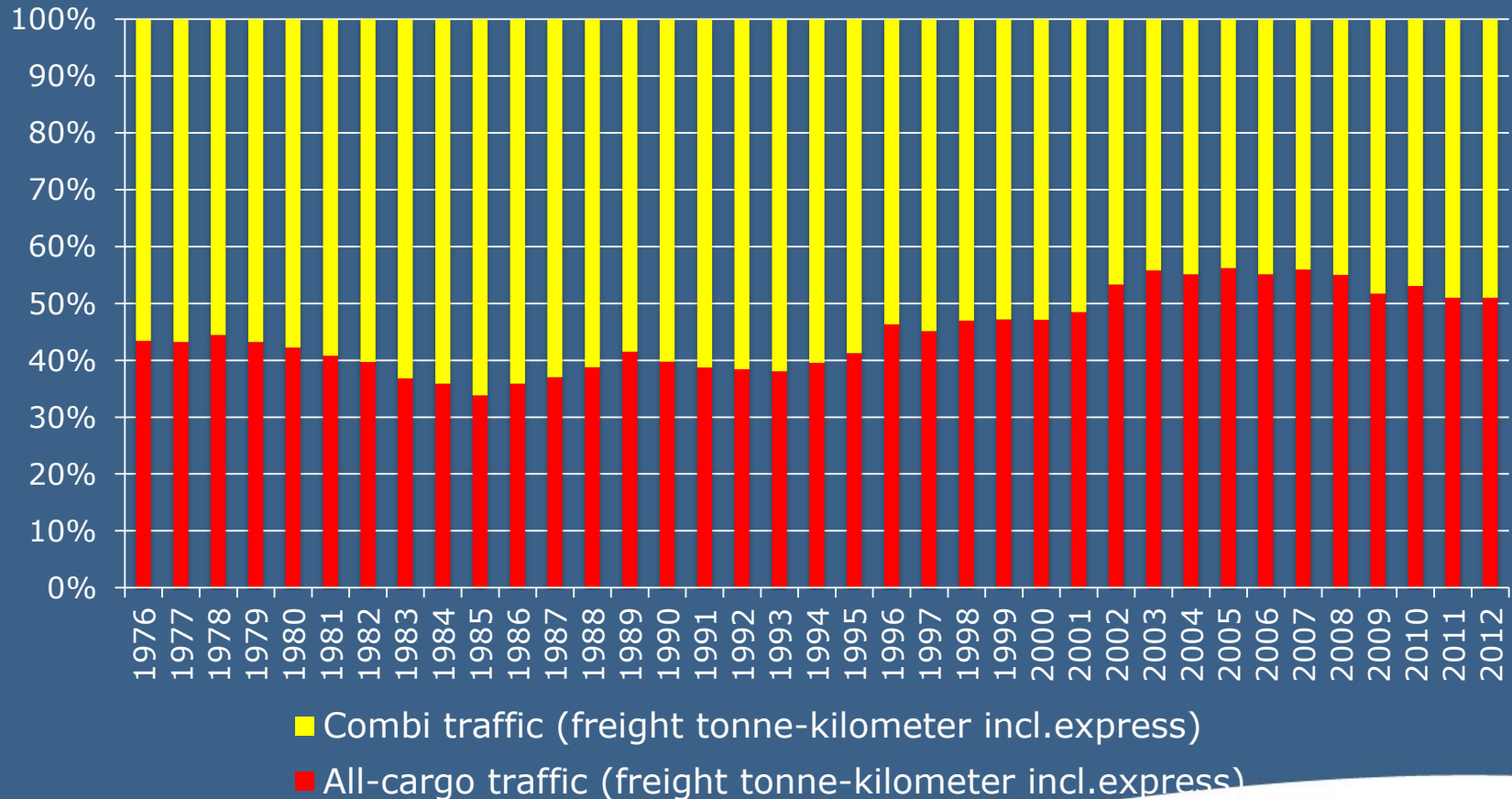
Example of a carrier in difficulties

- Cargolux

New airlines

- Western Global Airlines
- Aerospace One
- CDI Cargo Airlines

Cutting down full-cargo capacity

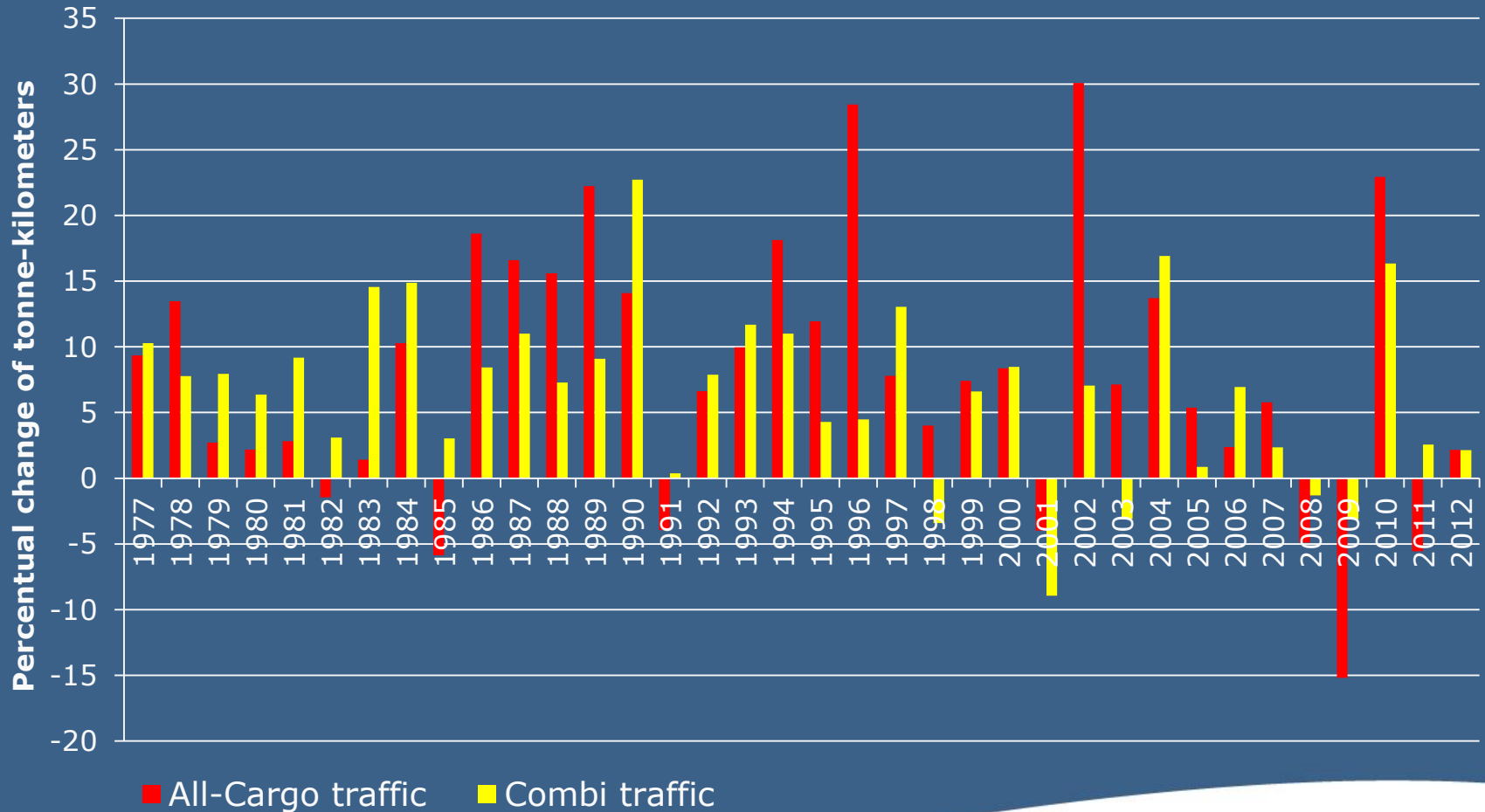


Cutting down full-cargo capacity

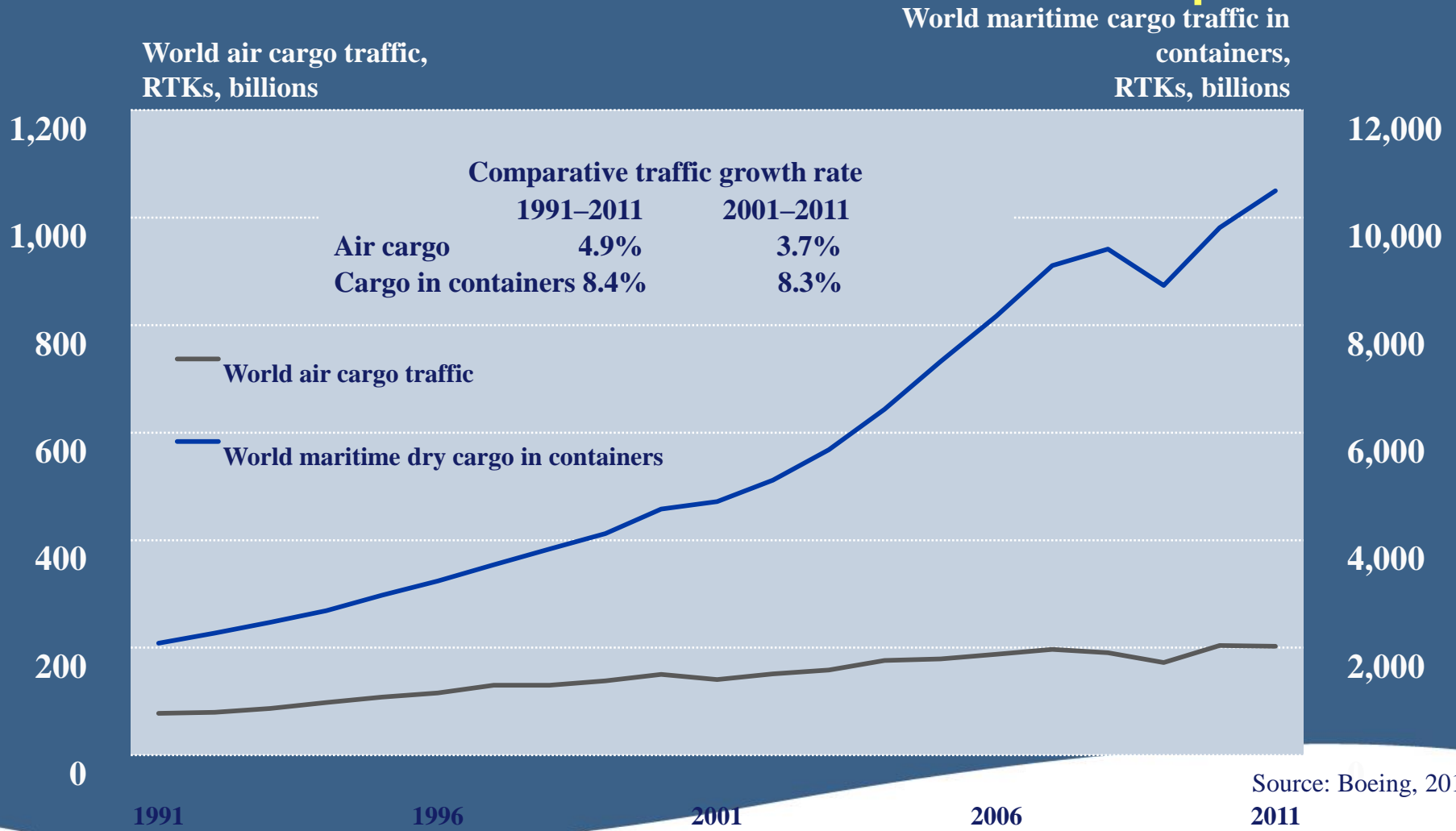
"Where have all the freighters gone?"

- Cathay Pacific
- Air France/KLM
 - Shed four of 14 freighters in next two years
- FedEx
 - Retired 10 aircraft in 2013, speeding up withdrawal of 76
- TNT
 - Intercontinental capacity reduction (not only due to crisis)

Cutting down full-cargo capacity



Shift to maritime transport?



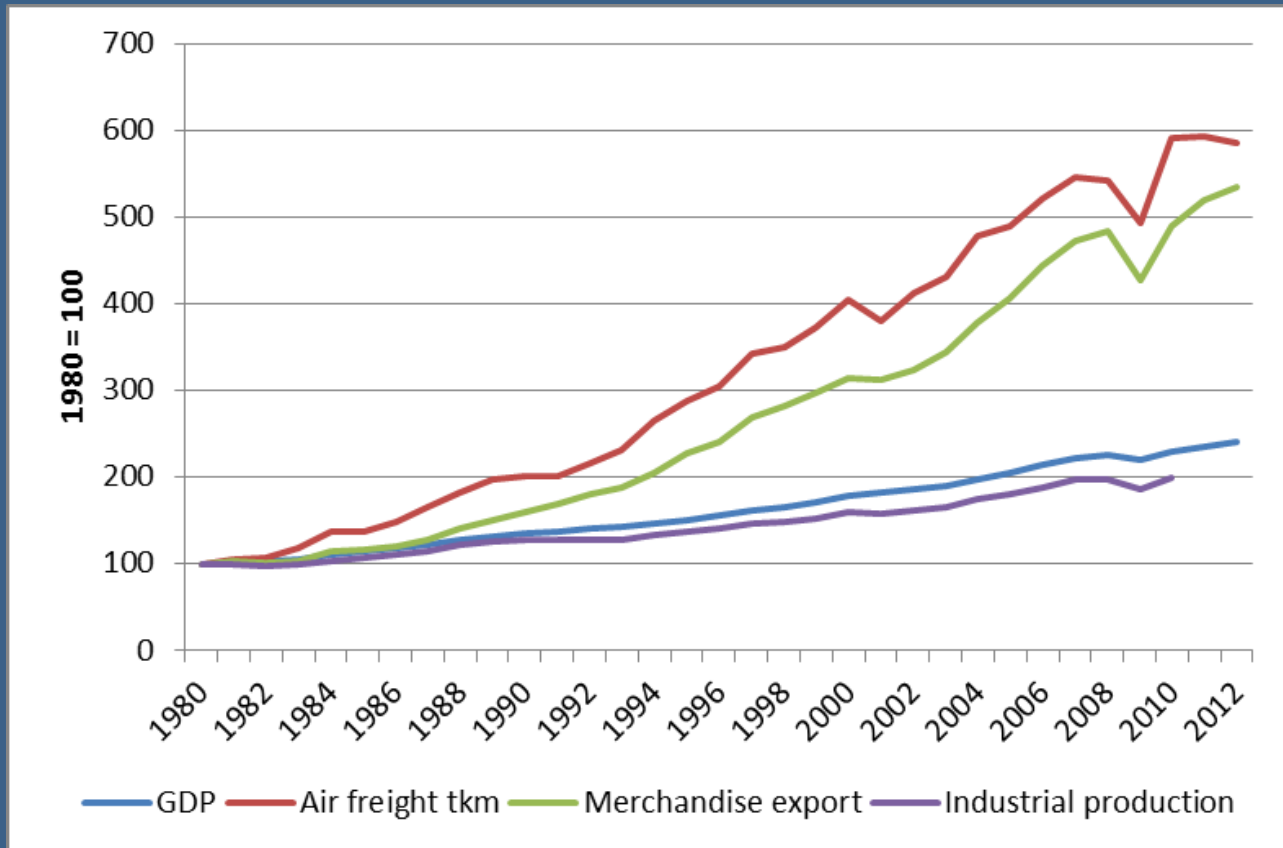
Shift to maritime transport?

- Maritime transport remains much cheaper than air transport
- Some shippers shift to maritime transport
 - Example: Ericsson and Adidas
- Maritime transport is increasingly reliable
- Air freight forwarding market shrinking while sea freight forwarding market is growing
- Interest rates are low and therefore companies can afford a longer transportation time

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World air freight and world economic activity



Sources:

air freight tkm: ICAO

GDP in constant USD of 2005: Worldbank

Industrial Production:
industry value added in
constant USD of 2000:
Worldbank

Merchandise exports
(volume) in USD of
2005: Worldbank and
IMF

Error Correction Model¹⁴

$$\Delta \ln TKM_t = \beta_1 \Delta \ln MERCH_t + \beta_2 \Delta SHAREMANU_t + \beta_3 \Delta DUM91_t + \delta (\ln TKM_{t-1} - \alpha_0 - \alpha_1 \ln MERCH_{t-1} - \alpha_2 SHAREMANU_{t-1} - \alpha_3 DUM91_{t-1} + \varepsilon_t)$$

TKM	world air freight in tkm (ICAO)
MERCH	world merchandise export in USD of 2000 (World Bank and IMF)
SHAREMANU	share of manufactures in the value of world merchandise exports
DUM91	=1 from 1991

Δ are first differences, \ln indicates logarithms, and ε is the stochastic error term.
The long run equilibrium relation is given by

$$\ln TKM_t = \alpha_0 - \alpha_1 \ln MERCH_t - \alpha_2 SHAREMANU_t - \alpha_3 DUM91_t$$

DOLS estimation of the long run relationship ¹⁵

Dynamic Least Squares (DOLS)

Sample (adjusted): 1982 2011

Included observations: 30 after adjustments

Fixed leads and lags specification (lead=1, lag=1)

Long-run variance estimate (Bartlett kernel, Newey-West fixed, bandwidth = 4.0)

		Coefficient	Std. Error	t-Statistic	Prob.
C	α_0	-0.510759	0.113649	-4.494170	0.0003
LNXMERCH	α_1	0.994847	0.017237	57.71422	0.0000
SHAREMANU	α_2	1.126920	0.108990	10.33965	0.0000
DUM91	α_2	-0.066906	0.019696	-3.396953	0.0034
R-squared		0.999226	Mean dependent var		5.670220
Adjusted R-squared		0.998680	S.D. dependent var		0.525810
S.E. of regression		0.019106	Sum squared resid		0.006206
Durbin-Watson stat		1.997155	Long-run variance		0.000291

ECM for world air freight and world merchandise export¹⁷

Dependent Variable: D(LNXTKMICAO)

Method: Least Squares

Sample (adjusted): 1983 2012

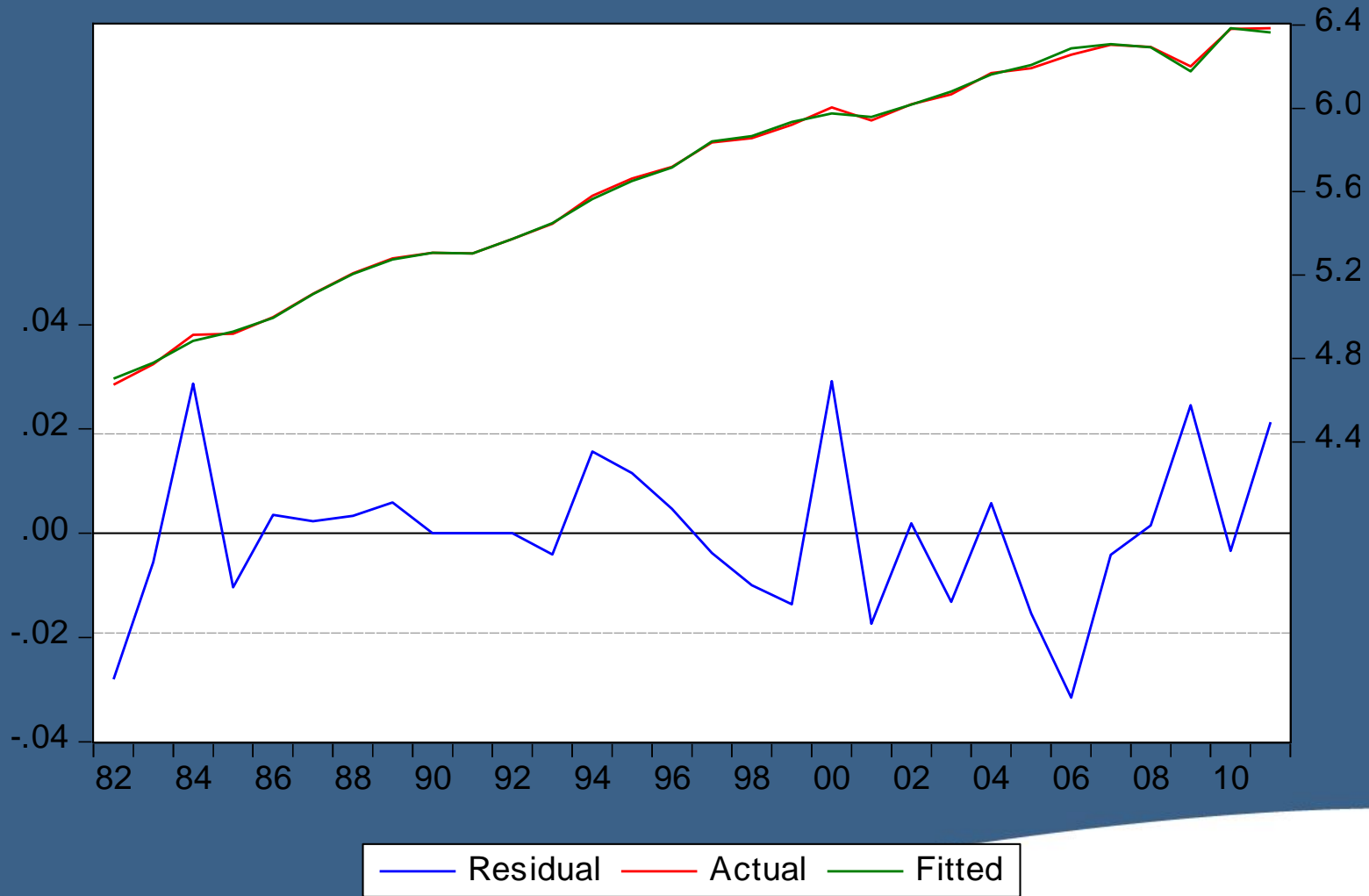
Included observations: 30 after adjustments

Variable		Coefficient	Std. Error	t-Statistic	Prob.
D(LNXMERCH)	β_1	1.060625	0.084338	12.57595	0.0000
D(SHAREMANU)	β_2	0.764833	0.325164	2.352142	0.0265
D(DUM91)	β_3	-0.065368	0.032621	-2.003870	0.0556
RESID(-1)	δ	-0.932846	0.408220	-2.285156	0.0307
R-squared		0.736770	Mean dependent var		0.056600
Adjusted R-squared		0.706397	S.D. dependent var		0.059349
S.E. of regression		0.032158	Akaike info criterion		-3.912738
Sum squared resid		0.026888	Schwarz criterion		-3.725912
Log likelihood		62.69107	Hannan-Quinn criter.		-3.852971
Durbin-Watson stat		1.916901			

with

$$\text{RESID} = \ln\text{TKM} + 0.511 - 0.995 * \ln\text{MERCH} - 1.127 * \text{SHAREMANU} + 0.067 * \text{DUM91}$$

Actual and fitted air freight values¹⁸



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Air freight and innovations

Passenger Transport

- Ticketless travel
- In-flight innovations
- Self- check-in
- Low-cost carriers
- Self-print baggage labels
- Increased long-term cooperation between airlines

Air Freight

- e-freight
- Low-cost freight
- Drones and other alternative air transportation?
- New more environmental friendly aircraft (B747-8F, B777F)
- Barcoding/GPS/RFID



Air freight and innovations

- Many parties involved in air cargo transport
- Intransparencies and agency problems between actors

e.g.



- Information flow as important as physical flows
- Pressure on the margins hampers the capability to invest in innovations
- Strong regulations (e.g. customs, security)

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Conclusions

- Air freight suffered a lot during the crisis
- However: reaction “normal” with regard to trade development
- Crisis especially leads to reduction in full-freight capacity; combi traffic is less affected
- Is there a market for scheduled all-cargo carriers?
- Air freight is the fastest mode, but has to move faster with regard to innovations
- Innovations have to be made at level of global supply chain