



Metrans National Urban Freight Conference

Long Beach, October 21 2009

Assessing the features, key drivers and current trends in the air freight industry and their impact on the regional supply chain.

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Presentation's content

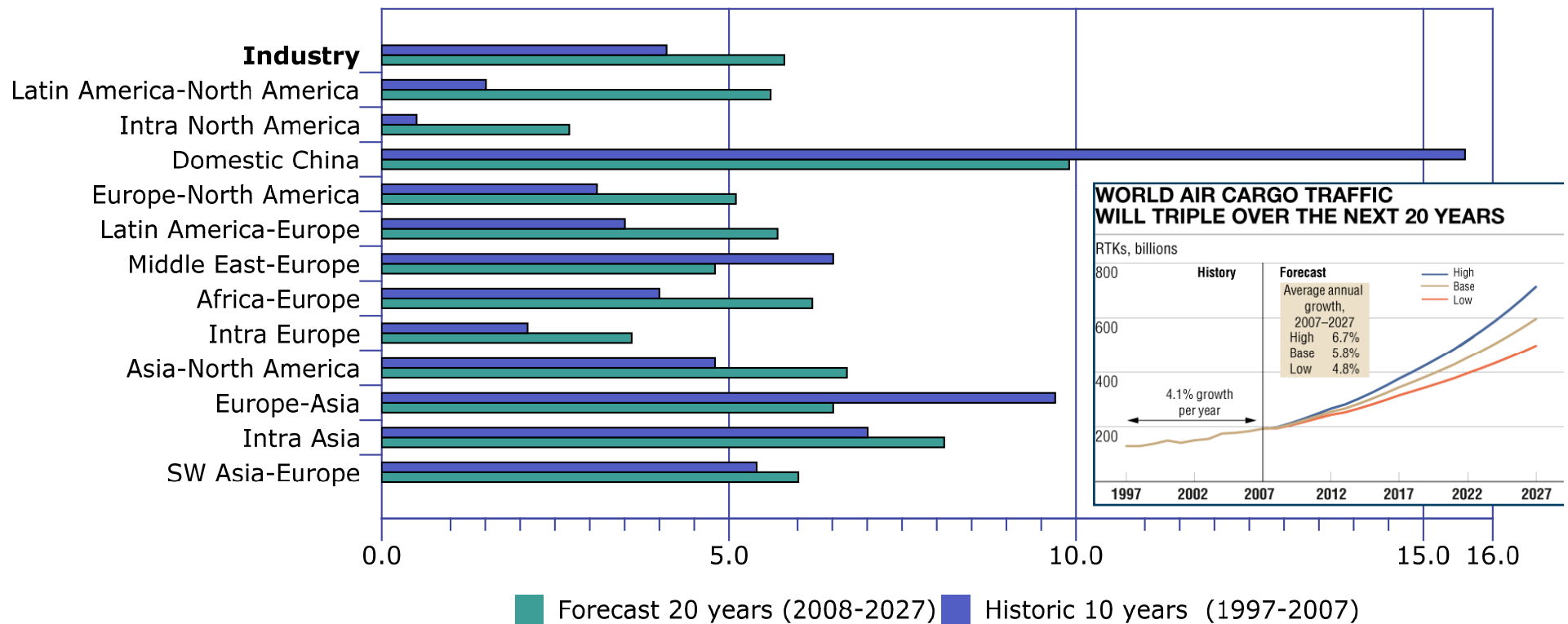


- **The global air freight industry**
- **Air Cargo Industry key-drivers**
- **Trends in the Air Cargo Industry**
- **Impact on regional supply chain**
- **Suggestions for future research**
- **Conclusion**



The global Air Cargo Industry

- High and steady growth industry



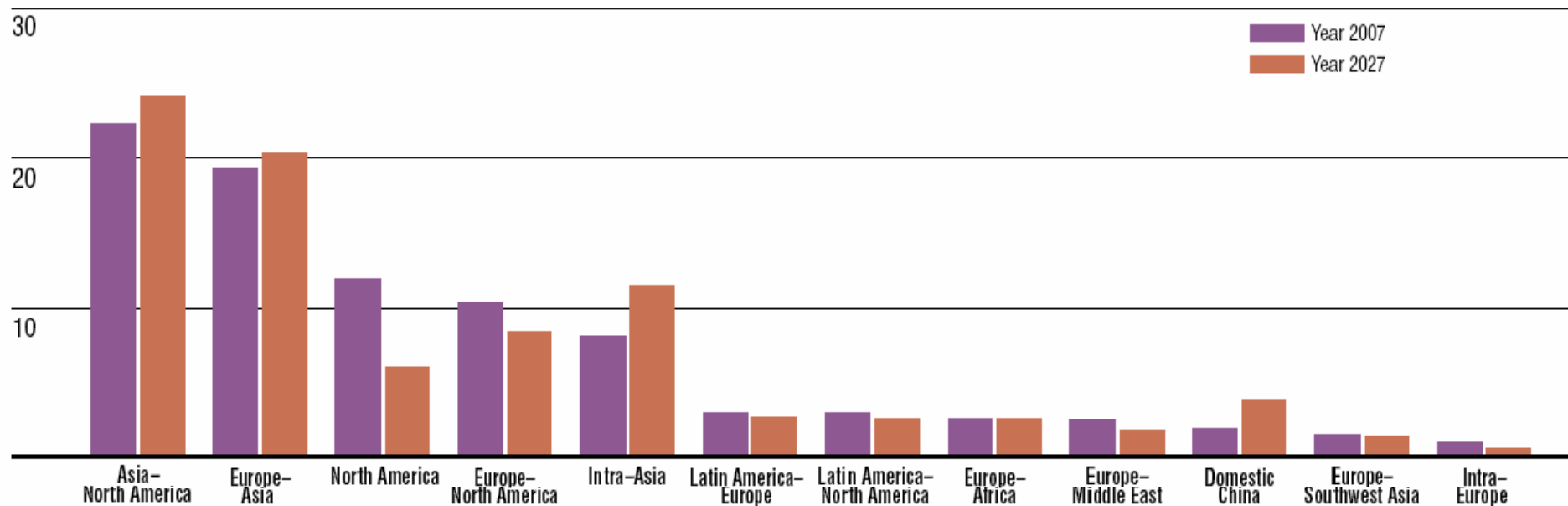
Source : Own graph based on Boeing, World Air Cargo forecast 2008-2009, p. 8



The global Air Cargo Industry (2)

- Global industry

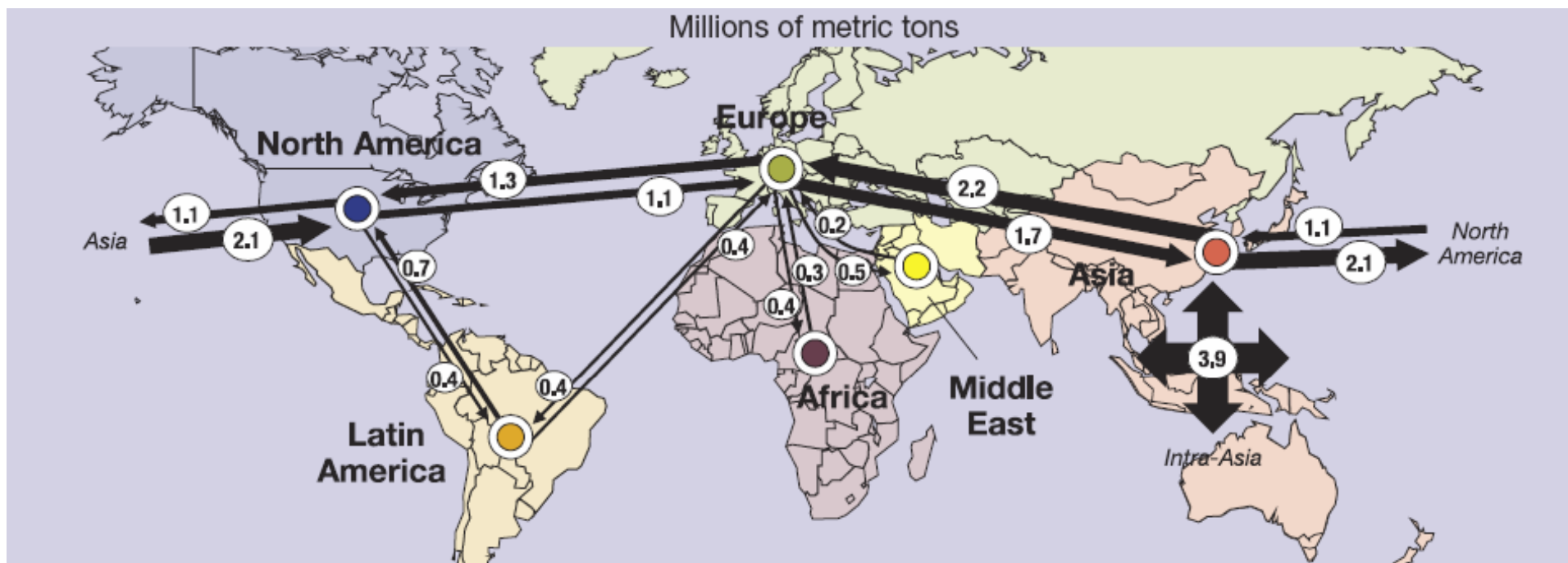
Share of world total market, RTKs percentage



Source : Boeing, World Air Cargo forecast 2008-2009-, p. 21



- Physical air trade flows are unbalanced



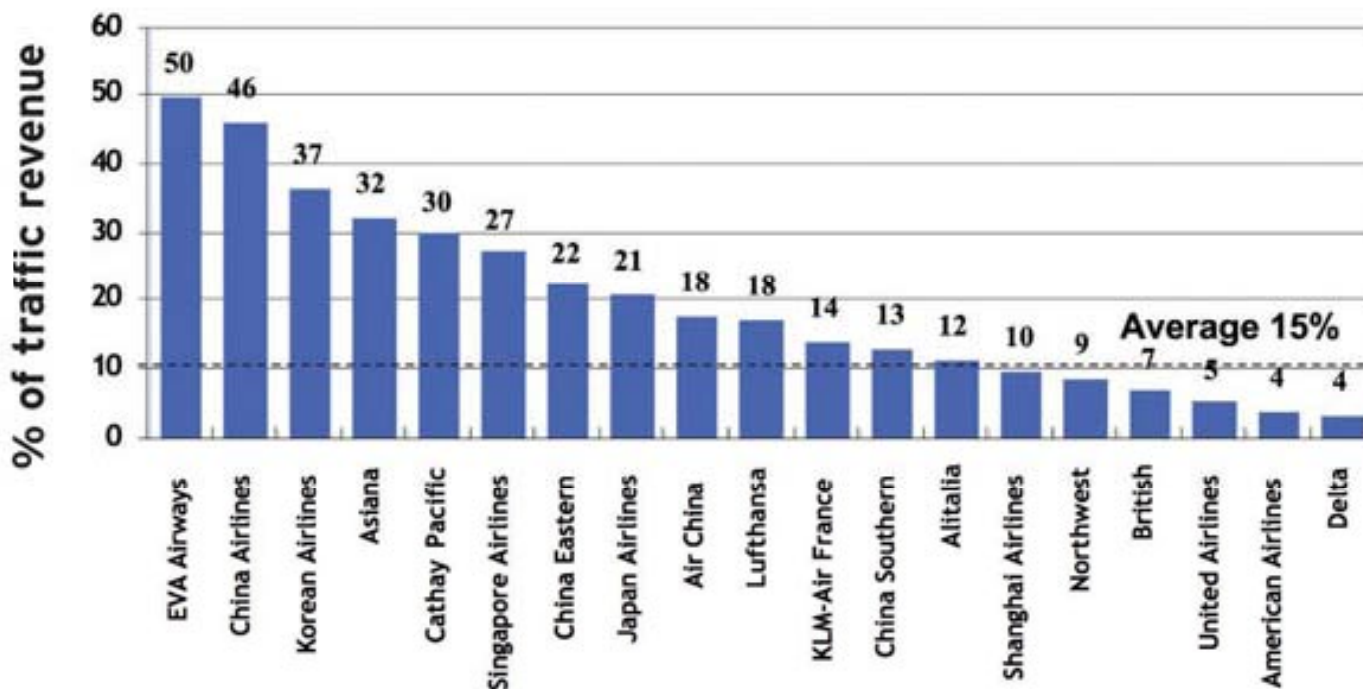
Source : Brian Clancy and David Hoppen, 'Steady climb', *American Shipper*, August 2006, p. 66.



The global Air Cargo Industry (4)

- Importance of cargo revenue in total revenue for passenger airlines

Cargo as a revenue source for passenger airlines





The global Air Cargo Industry (5)

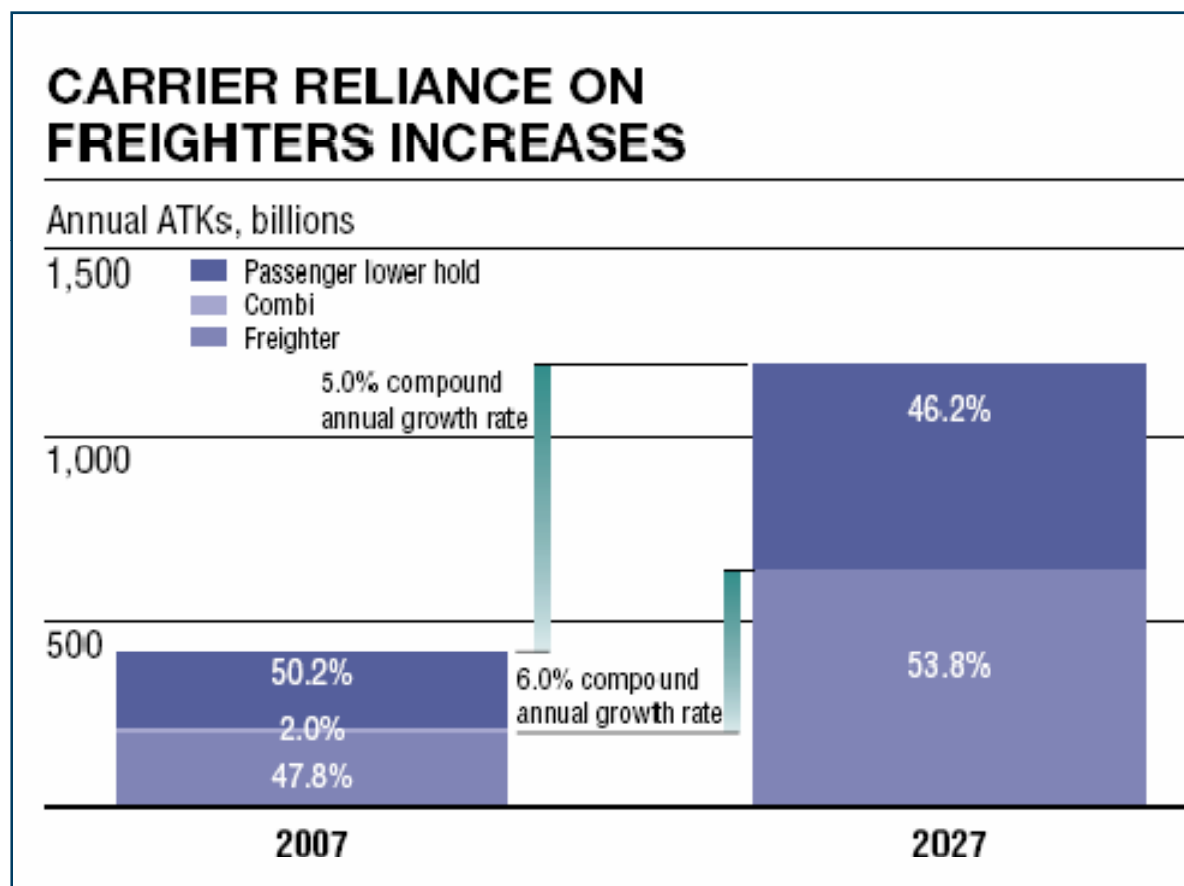
- TOP 10 of FTK performed in international and domestic markets

Rank	Airline	Millions
1	Federal Express	15,122
2	UPS Airlines	10,977
3	Korean Air	8,890
4	Cathay Pacific Airways	8,245
5	Lufthansa	8,206
6	Singapore Airlines	7,486
7	Emirates	6,013
8	Air France	5,820
9	Cargolux	5,334
10	China Airlines	5,261



The global Air Cargo Industry (6)

- Carriers' reliance on usage of freighters will increase :





Industry key drivers

- **Merchandise trade and share of manufactured goods** directly influence demand for air cargo (*Kupfer, Van de Voorde et al.*)
- The **globalisation of trade** and subsequent need for increasingly complex **supply chains** are key drivers for the growth of air cargo
- **Low fuel prices** boost air cargo supply
- Continued and high **GDP growth of Asian countries**

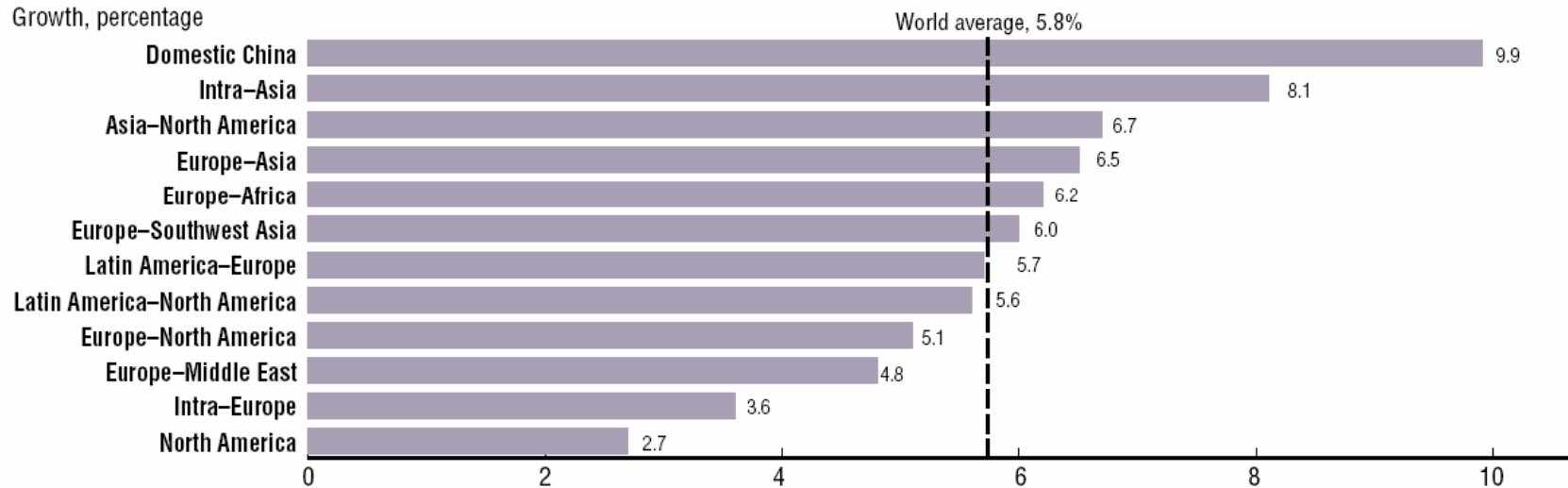


Industry key drivers (2)

- Continued and high **GDP growth of Asian countries** will be a main driver for intra-Asia and Asia export trades.

ASIA CARGO MARKETS WILL CONTINUE TO LEAD INDUSTRY GROWTH...

Growth, percentage



Source : Boeing, World Air Cargo forecast 2008-2009-, p. 20



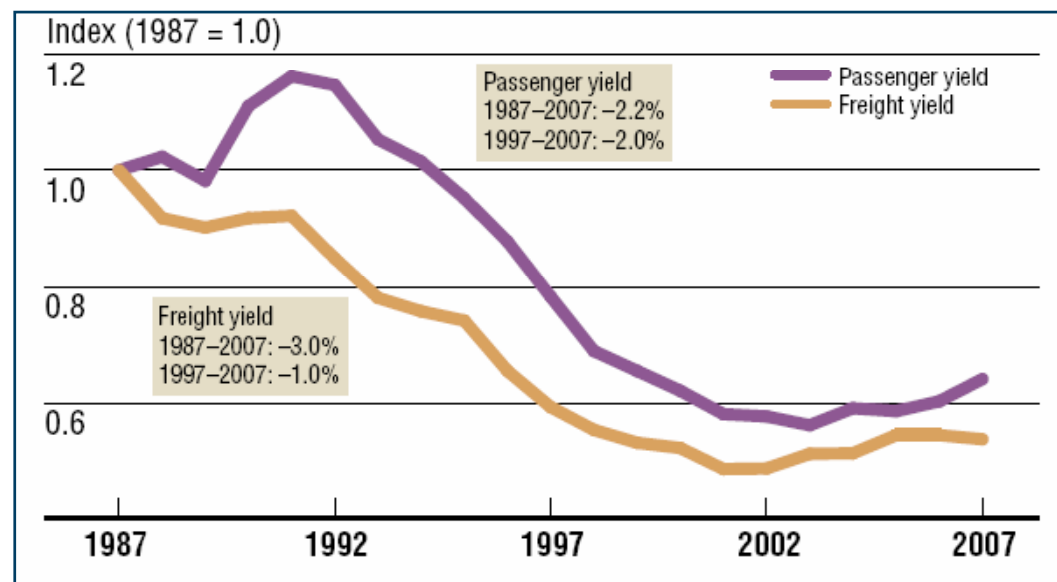
Industry key drivers (3)

- **International Express traffic** expanded from 4.1% (1992) to 13.2% (2007) share in total international freight market, growing at more than twice the rate of the overall air freight market:
 - Rise of **e-commerce** and increasingly **complex supply chains**
 - Integrators have been the **market innovators**
 - The **distinction** between express and general air cargo **continues to blur**
 - Express carriers, freight airlines, freight forwarders and postal authorities are **consolidating**
 - Average international express **shipment size grew** from 2.7 kg in 1992 to 5.7 kg in 2007



Industry key drivers (4)

- The **declining yield** (-1% annually 1997-2007) pays a positive contribution to the demand for air cargo :
 - Increased **usage of wide body aircraft** for passenger transport
 - **Technological innovation** generates a lower unit cost
 - Increased competitive pricing due to the proliferation of **web based cargo portals**
 - **Additional airlift capacity**, especially in the Middle East, outsizes air cargo traffic growth





- Air cargo is seen as a **mature product**, often **differentiated through innovative marketing**
- **Full-freighter** operations have increased significantly the last decade :
 - Available **freight capacity in passenger aircraft is insufficient** to satisfy the growing demand.
 - On certain air freight route there is a **strong imbalance between incoming and outgoing freight**, which results in partly separate networks for passenger and cargo.
 - Due to the ongoing **consolidation trend**, freight is combined at hubs and transported more competitively with full freighter operations.

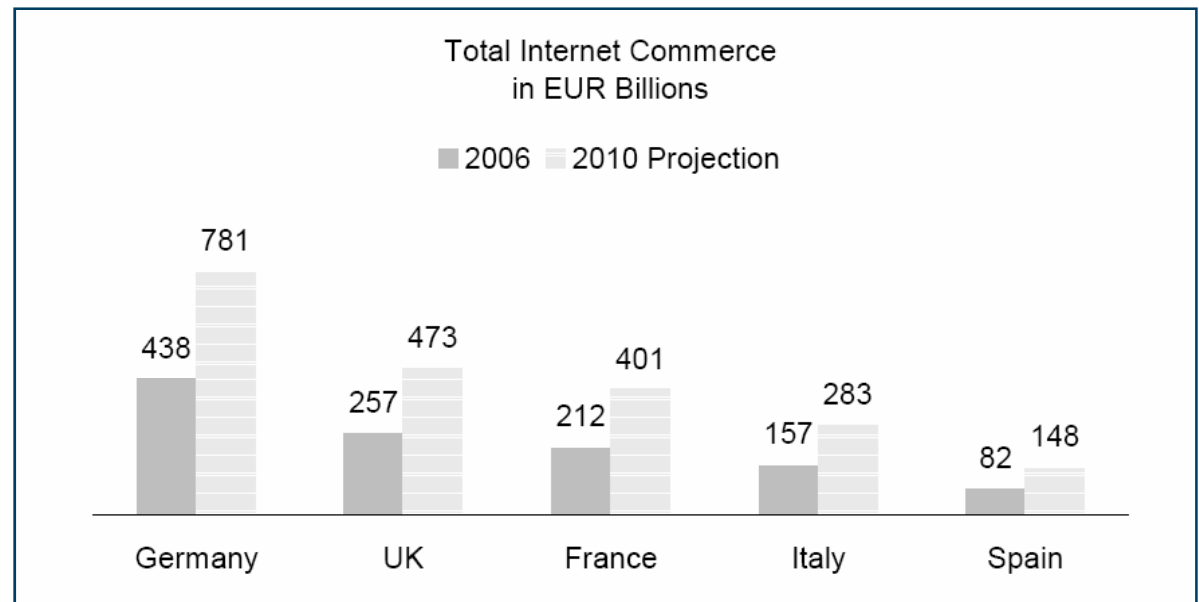


Trends in the Air Cargo Industry (2)

- The increasing **importance of E-commerce**
 - Figure below shows the **projected growth in purchases**, half of which have to be physically delivered.
 - **US, China and Middle-East** show a similar pattern.
 - With the further **internet penetration** among population worldwide, other countries will follow suit.

Best-selling online goods in Germany in 2006

1. Books
2. Event Tickets
3. Plane & Train Tickets
4. Hotel Bookings
5. Music CDs
6. Fashion & Shoes
7. Computer Hardware
8. Vacations, Trips
9. DVDs
10. Computer Software



- The emergence of **web based Cargo portals** :
 - **Higher transparency** on price and capacity, both for suppliers and customers.
 - As market dominance could be abused, these portals are now **government regulated**.
 - The most important web based Cargo portals :

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Trends in the Air Cargo Industry (4)

- Following the **horizontal alliances**, these also stretch on the **cargo side**.
- **Vertical alliances** are being established due to :
 - Increasing **pressure on the market** due to marginal pricing of substantial volumes of air cargo capacity
 - The power and harsh competition of the **integrators**
- Unprecedented **growth of airlift capacity in the Middle East**



- **Large hubs are strengthening their position** as international hubs for passengers and cargo .
 - Proven by **H. Matsumoto** (2004) based on a basis gravity model composed of GDP, population and distance
 - **Tokyo, Hong Kong** and **Singapore** in Asia, **London, Paris, Frankfurt** and **Amsterdam** in Europe and **New York** and **Miami** in the US are strengthening their positions
 - The reasons are a.o. :
 - The **attractiveness of a hub to certain industries**, that locates its production facility close to the hub
 - The **attractiveness of a large hub to freight forwarders**, attracting on its turn further business
 - The **rise of alliances** strengthening the dominant partner's hub and spoke system
 - The usage of large, more economical **freighters** between these hubs



- **Typology of airport cities can be drawn :**
 - Integrator, Production, Consumption and Transit hubs
 - Impact on regional supply chain of each type is varying
- **Integrator hub** (MEM, SDF, IND) :
 - Mainly used by integrators
 - Geographically centrally located and rather uncongested
 - Easy access by truck to the hinterland
 - Average growth figures
 - Regional supply chain very dependent from integrators (mainly trucking)
 - Very high impact on employment
- **Production hub** (e.g. HKG, ICN, PVG)
 - Close to global production platforms
 - Mainly geographically located in Asia
 - High growth figures
 - Large hubs are strengthening their positions
 - Medium impact on regional distribution high through supply chain activities (handling, warehousing, distribution, ...)



- **Consumption hub** (e.g. CDG, LAX)
 - Close to consumption markets
 - Mainly geographically located in Europe and North America
 - Moderate growth figures
 - Large hubs are strengthening their positions
 - Medium impact on regional distribution through supply chain activities (handling, warehousing, distribution, ...)
- **Transit hub** (e.g. ANC, DXB)
 - Geographically located between continents
 - High growth figures
 - Impact on regional distribution and employment rather limited



- **TOP 25 airports** (metric tons 2007) :

- | | |
|---------------------------|-------------------------------|
| 1. Memphis | 14. Amsterdam Schiphol |
| 2. Hong Kong | 15. Taipei |
| 3. Anchorage | 16. New York JFK |
| 4. Seoul Incheon | 17. Chicago O'Hare |
| 5. Shanghai Pudong | 18. London Heathrow |
| 6. Paris CDG | 19. Bangkok |
| 7. Tokyo Narita | 20. Beijing |
| 8. Frankfurt | 21. Indianapolis |
| 9. Louisville | 22. Newark |
| 10. Miami | 23. Luxembourg |
| 11. Singapore | 24. Tokyo Haneda |
| 12. Los Angeles | 25. Osaka |
| 13. Dubai | |



Impact on the regional supply chain (4)

	Integrator hub	Production hub	Consumption hub	Transit hub
Main geographical location	Central in US	Asia	North America - Europe	Centrally btw continents
Importance of relationship with home carrier	Very high	Medium	Medium	High
Recent growth	Medium	High	Low	High
Impact on employment	Very High	Medium	Medium	Low
Impact on regional supply chain	High	Medium	Medium	Low



Suggestions for future research

- Further empirical research on typology of hubs, beyond TOP25, and more variables taken into account
- Empirical research on the rationale behind the location of these hubs
- Impact of the evolution of these airports on employment in handling, storage and distribution
- Impact of the evolution of these airports on traffic flows to and from the airport induced from the air cargo development



Conclusion



- Air cargo will play an increasingly vital role in the global economy
- Ongoing innovations and the level of consolidation and integration demonstrates stage of maturity and professionalism
- Impressive past and future projected growth path will have a further impact on regional supply chain, depending on hub typology