



# Air transport economics

**Tianjin, 2016**



# Chapter 1



**How to understand the Air transport economics ?**

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**Characteristics and trends in Air transportation**

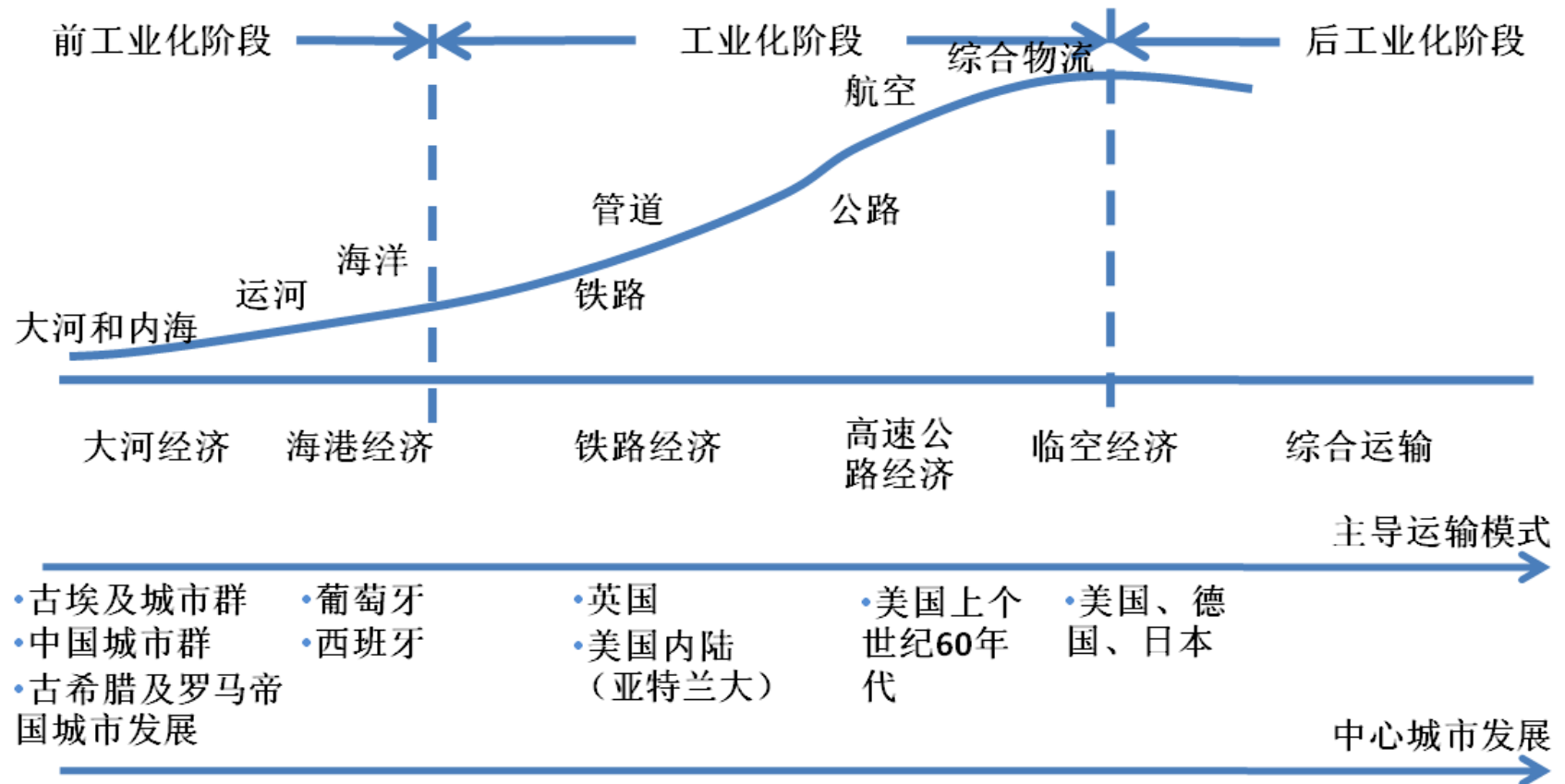
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**Markets General Characteristics**



# 1、Different stages of national economic and social development have different modes of transportation





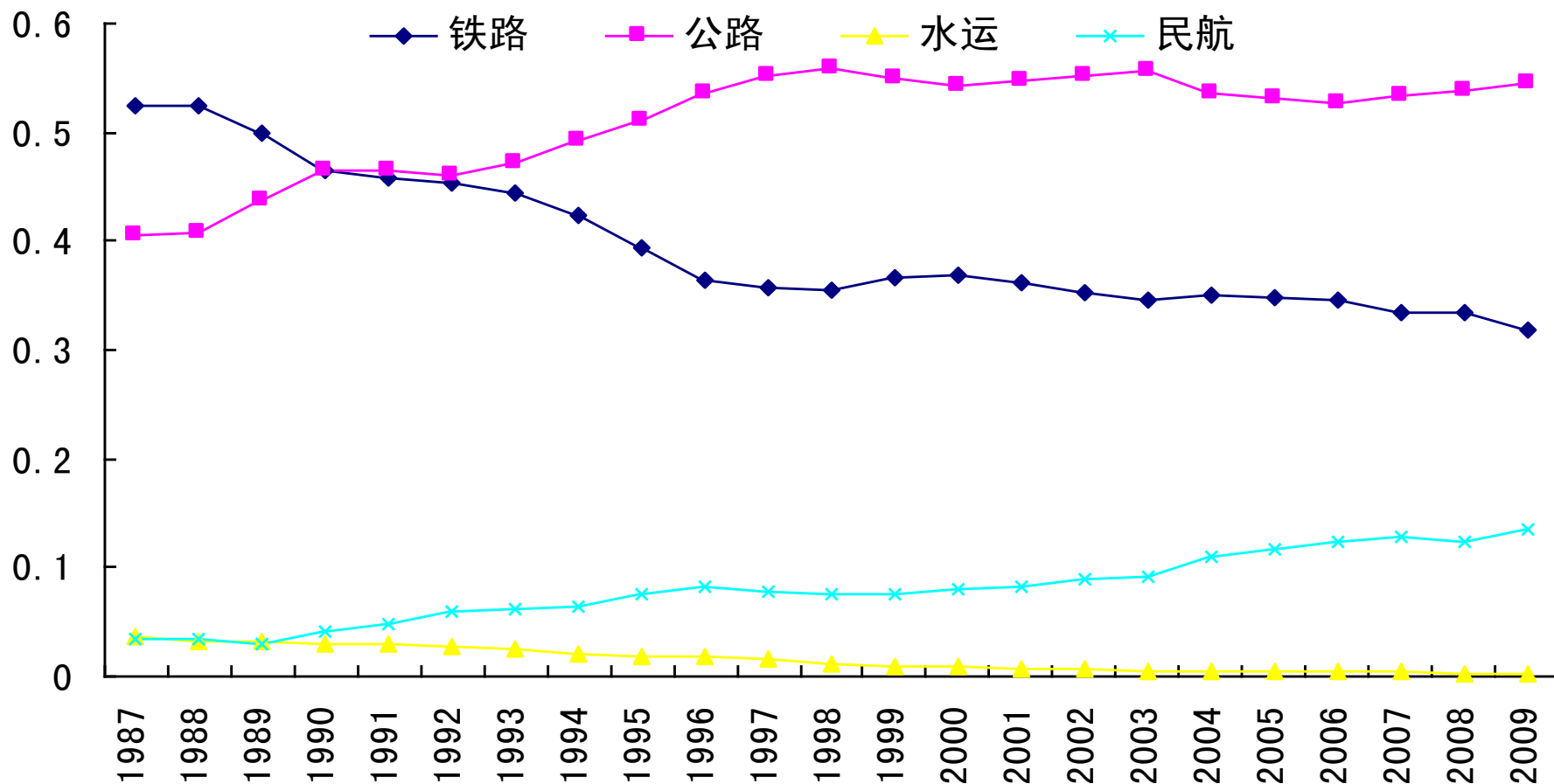
## 2、Industrial property

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- Tertiary industry
- Basic Industry
- Strategic Industry

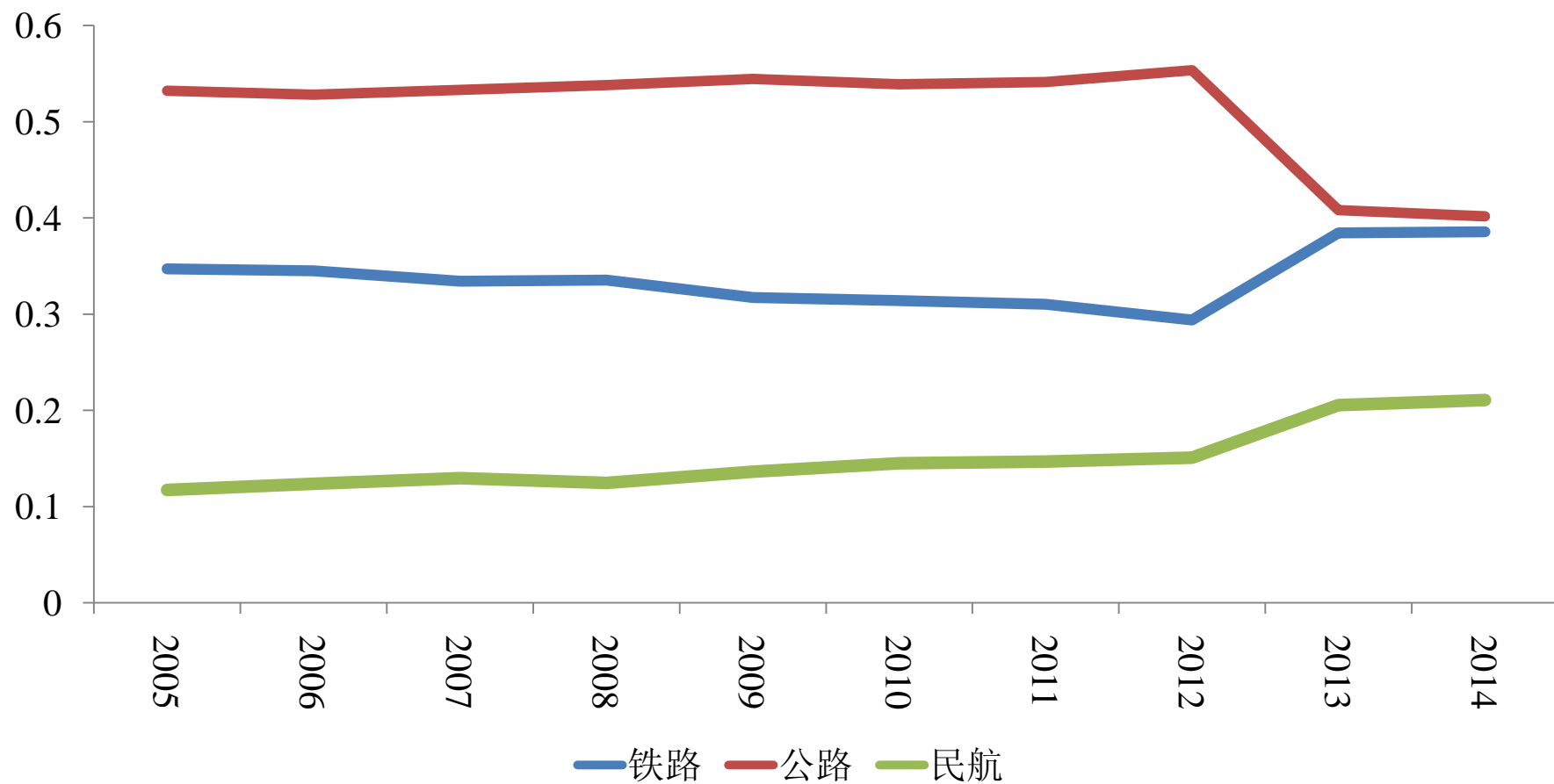


# passenger turnover of various modes of transport (1987-2009)





# passenger turnover of various modes of transport (2005-2014)





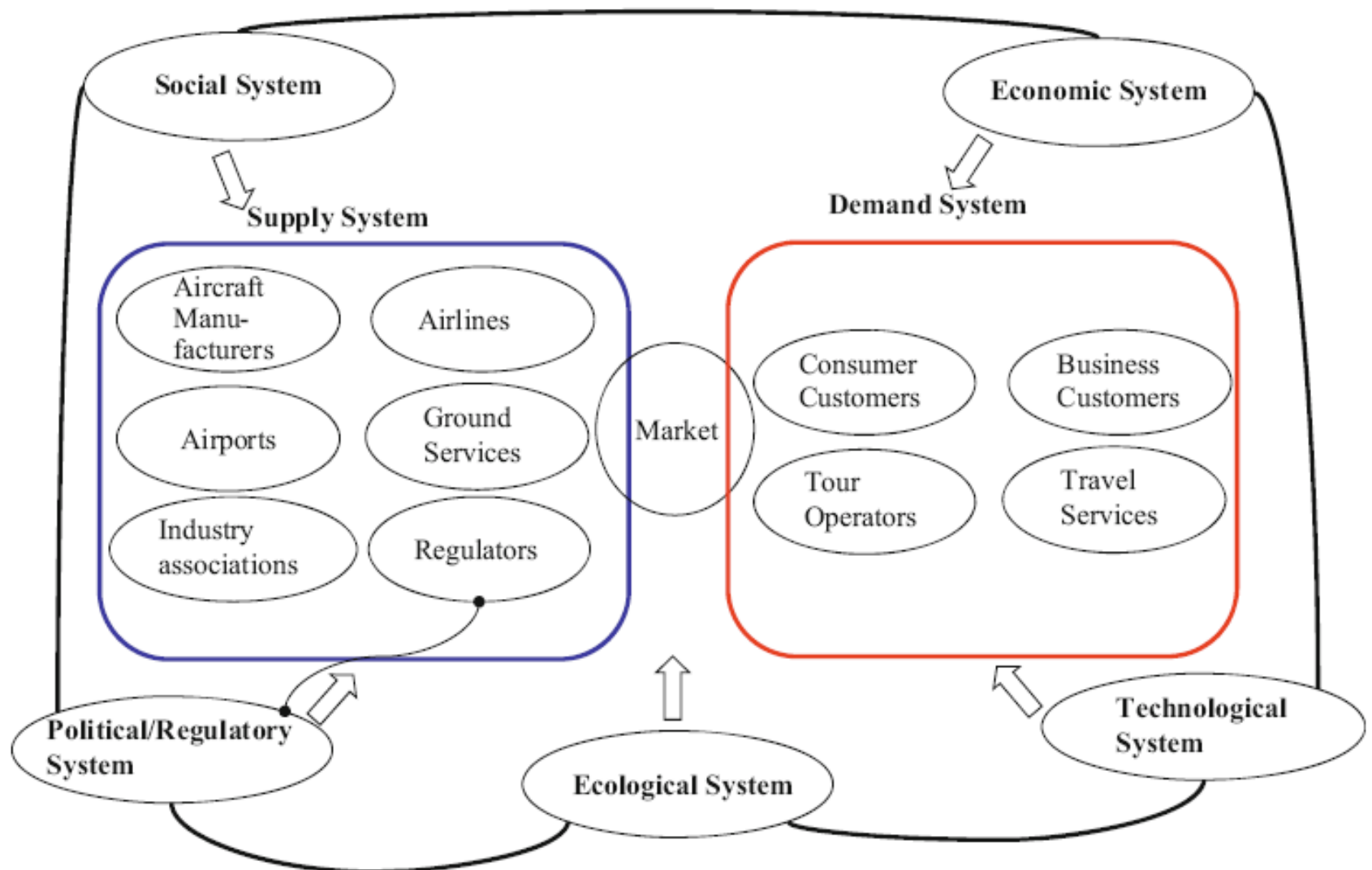
### 3、 Historical Development of Air Transport

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- Technical development 1783–1929
- Political development 1929–1944
- Development of quality and cost 1945–1973
- Networks, alliances and low-cost operations 1974–1990
- New perspectives – customer value 1991–now



## 4、The aviation system

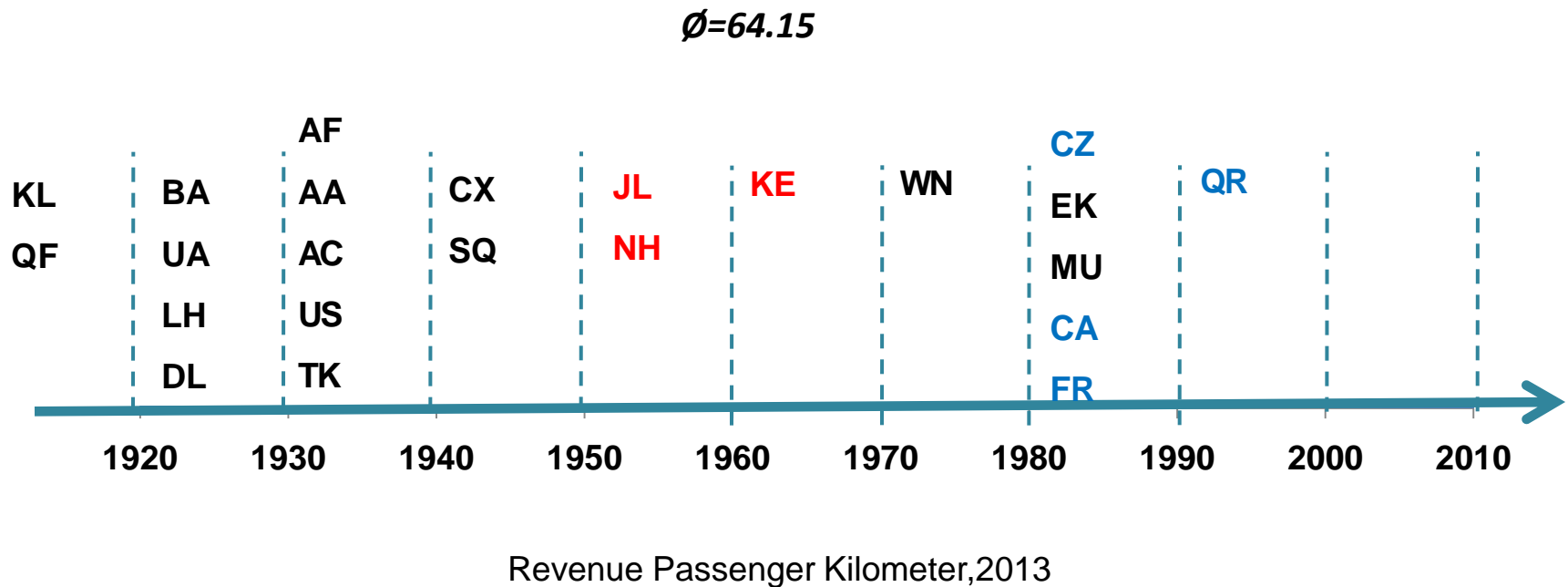






## 5、Top 20 airlines

- The airline industry was always in crisis. Numerous airlines had collapsed in the past year.





# Chapter 1



How to understand the airline industry?



**Characteristics and trends in airline operations**



CASE STUDY



# 1、 A **perishable** product: any unsold seat is lost...



... which explains some “price wars” when crisis and overcapacity.



## 2、An activity **highly sensitive** to geopolitical and geophysical events

**"Arab Spring" 2011**



**Alberta 2016**



**MERS Virus 2015**



**Within 2 years !!!!**



### 3、 Changing Environmental impact Airlines decision

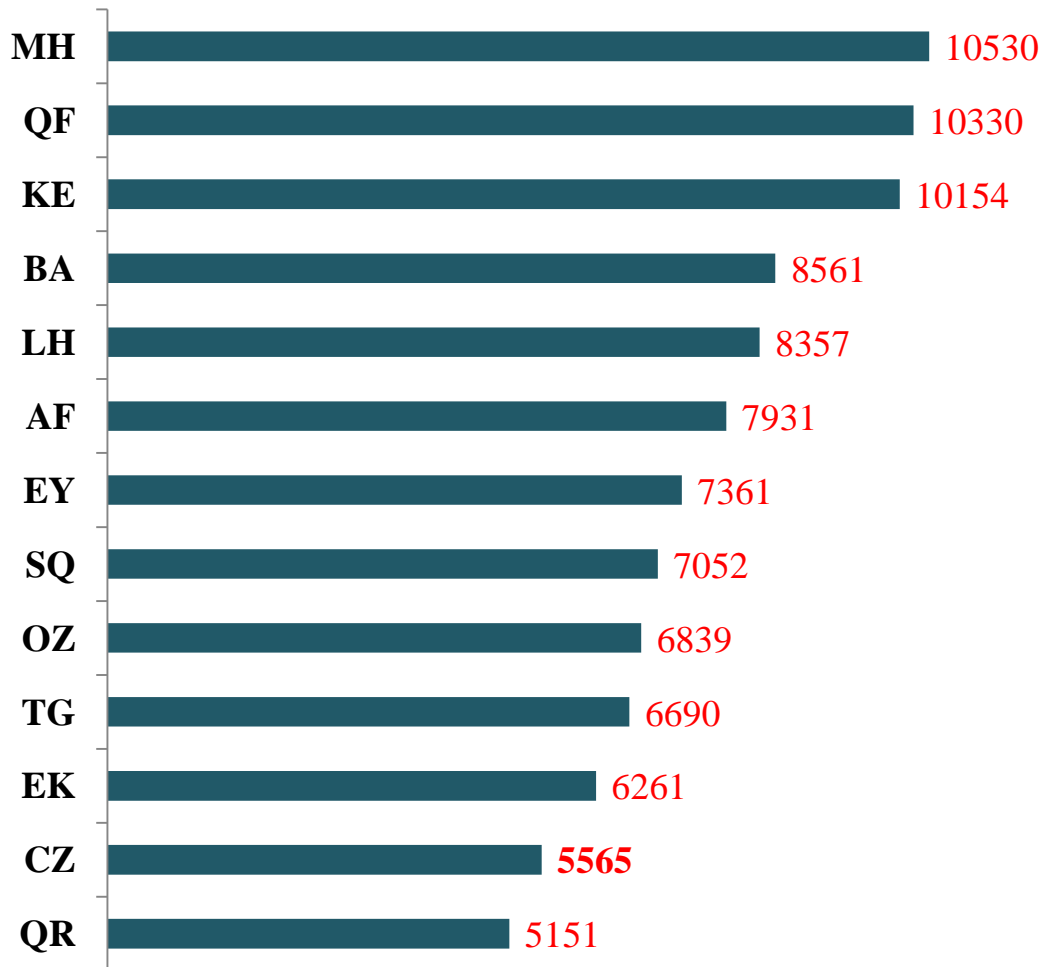
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- The management will have to balance between short - and long period
- Seasonal
- Case:A380-CZ



# A380 in service

## 2015年全球航空公司A380使用情况



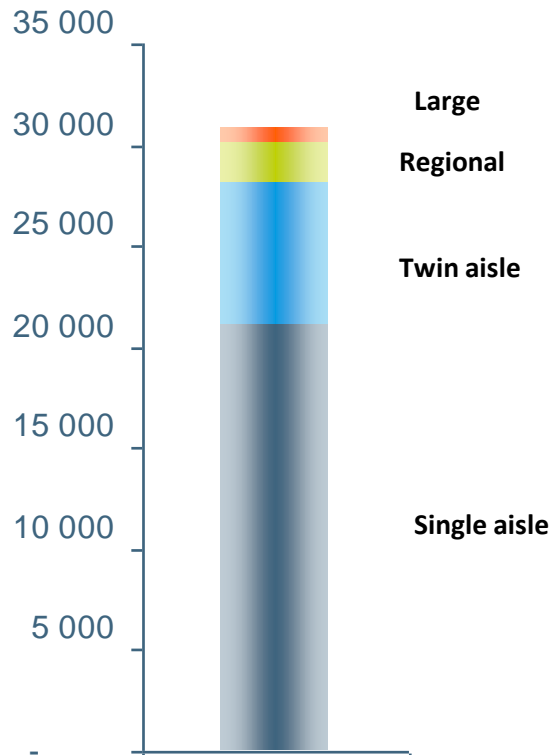
## 全球航空公司A380拥有情况

IATA	In service	On order	On option
EK	77	63	0
SQ	19	5	0
LH	14	0	0
QF	12	8	4
BA	11	1	7
AF	10	2	1
KE	10	0	0
EY	7	3	5
MH	6	0	0
QR	6	4	3
TG	6	0	0
CZ	5	0	0
OZ	4	2	0
NH	0	3	0
VS	0	6	6



## 4、A fragmented industry, capital-intensive ...

New aircraft deliveries in the next 20 years



**30 900** deliveries by 2029, for an estimated total value of **\$ 3 590 billions**

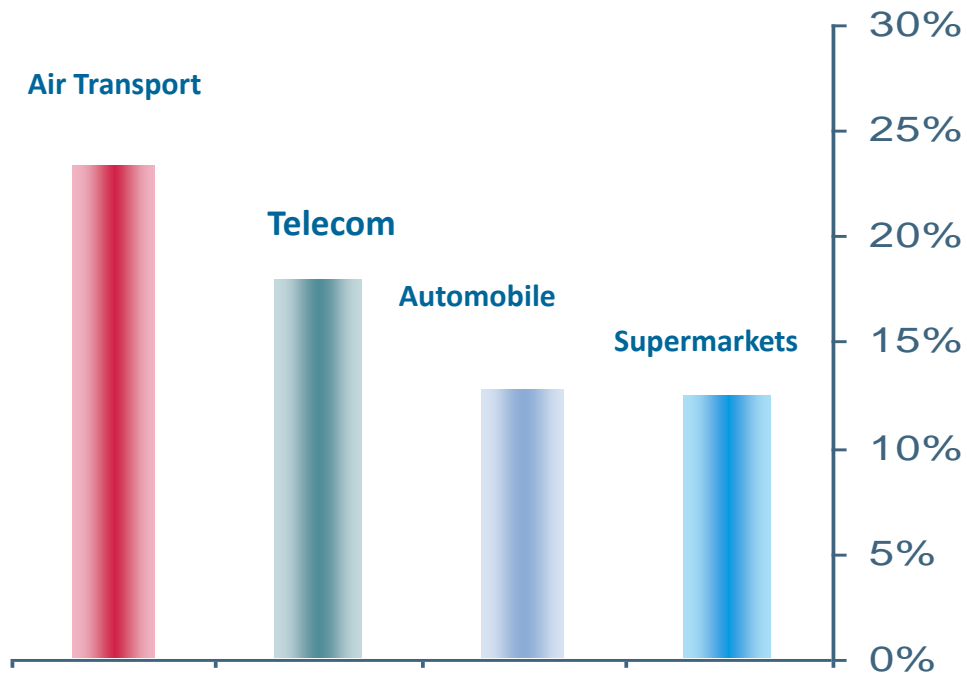
(based on catalog price, source Current Market Outlook 2010-29 Boeing)

**Airbus A320 \$ 80 millions**  
**Airbus A380 \$ 350 millions**



... and labour-intensive as well.

### Weight of staff costs in total costs







## 5、Regulation, government-influenced

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- “Freedoms of the Air”: The X-th Freedom
- Market access
- Capacity limits: the frequency of flights and the number of seats that can be offered on each city pair
- Airfares (“tariffs”)



# “FREEDOMS” OF THE AIR

- *First Freedom of the Air* - The right or privilege, in respect of scheduled international air services, granted by one State to another State or States to fly across its territory without landing.
- *Second Freedom of the Air* - The right or privilege, in respect of scheduled international air services, granted by one State to another State or States to land in its territory for non-traffic purposes.
- *Third Freedom of The Air* - The right or privilege, in respect of scheduled international air services, granted by one State to another State to put down, in the territory of the first State, traffic coming from the home State of the carrier.
- *Fourth Freedom of The Air* - The right or privilege, in respect of scheduled international air services, granted by one State to another State to take on, in the territory of the first State, traffic destined for the home State of the carrier.
- ***Fifth Freedom of The Air* - The right or privilege, in respect of scheduled international air services, granted by one State to another State to put down and to take on, in the territory of the first State, traffic coming from or destined to a third State.**

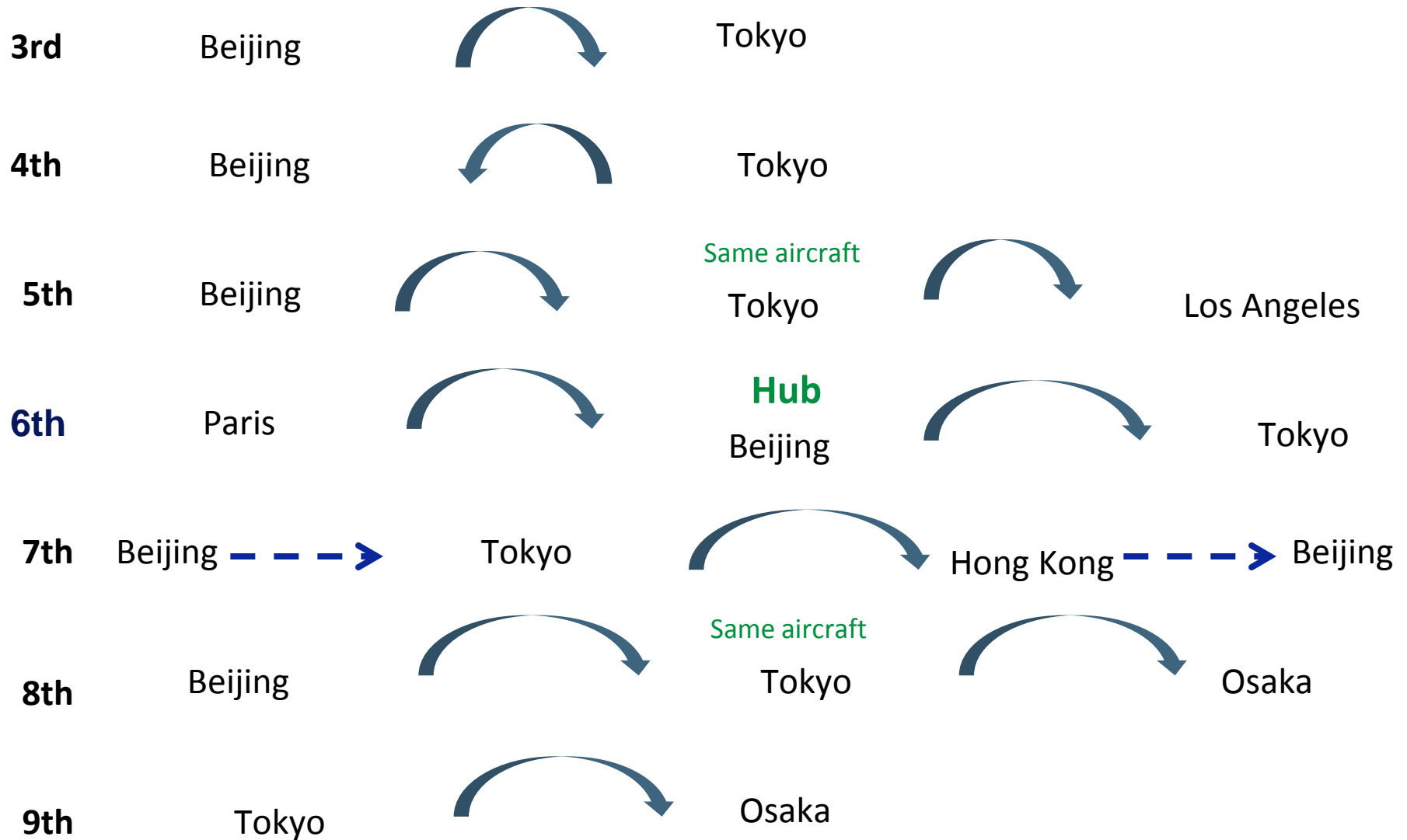


# “FREEDOMS” OF THE AIR

- ***Sixth Freedom of The Air - The right or privilege, in respect of scheduled international air services, of transporting, via the home State of the carrier, traffic moving between two other States.***
- *Seventh Freedom of The Air - The right or privilege, in respect of scheduled international air services, granted by one State to another State, of transporting traffic between the territory of the granting State and any third State with no requirement to include on such operation any point in the territory of the recipient State.*
- *Eighth Freedom of The Air - The right or privilege, in respect of scheduled international air services, of transporting cabotage traffic between two points in the territory of the granting State on a service which originates or terminates in the home country of the foreign carrier or outside the territory of the granting State.*
- *Ninth Freedom of The Air - The right or privilege of transporting cabotage traffic of the granting State on a service performed entirely within the territory of the granting State.*

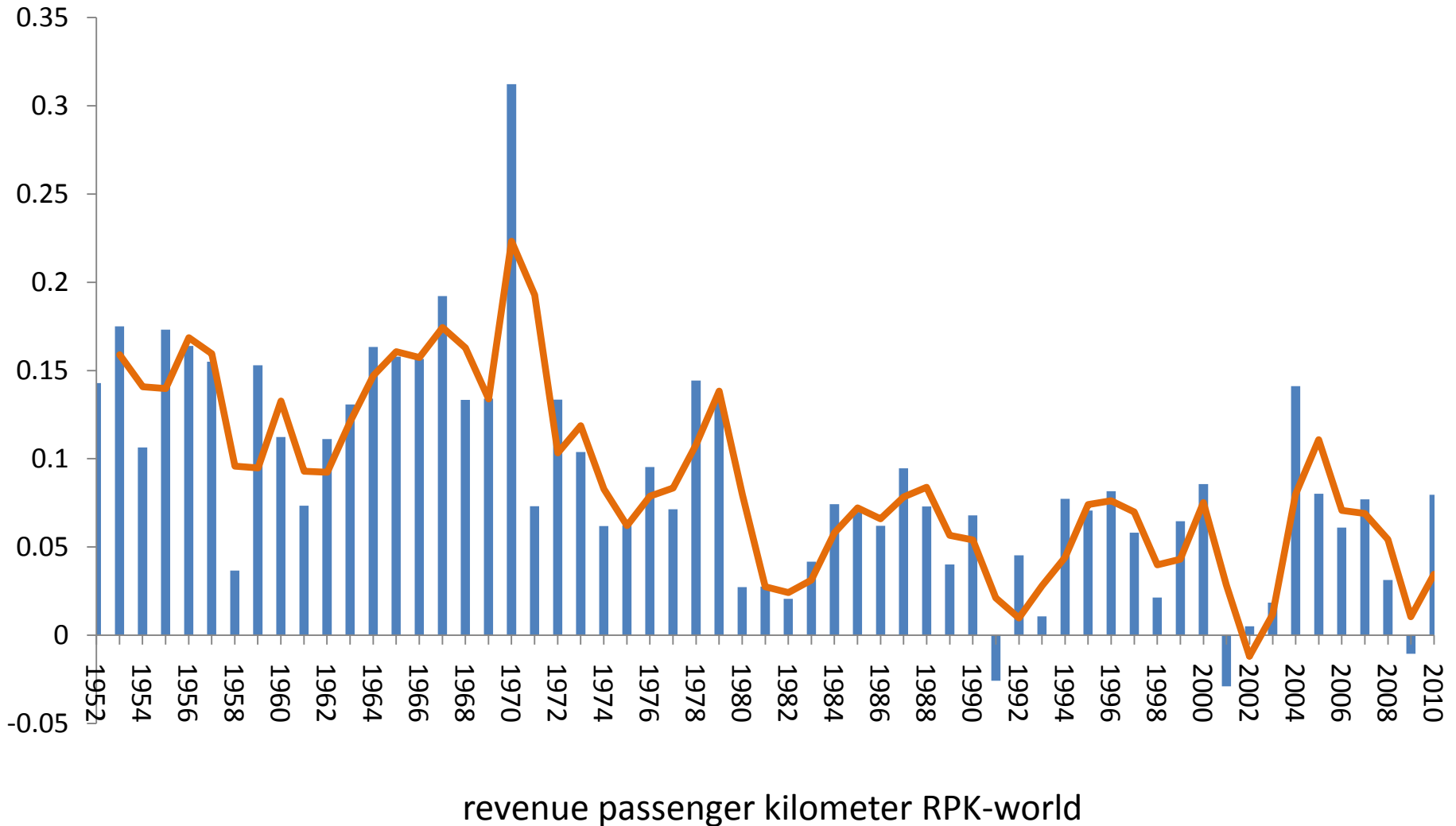


# “Freedoms” for a China Airline



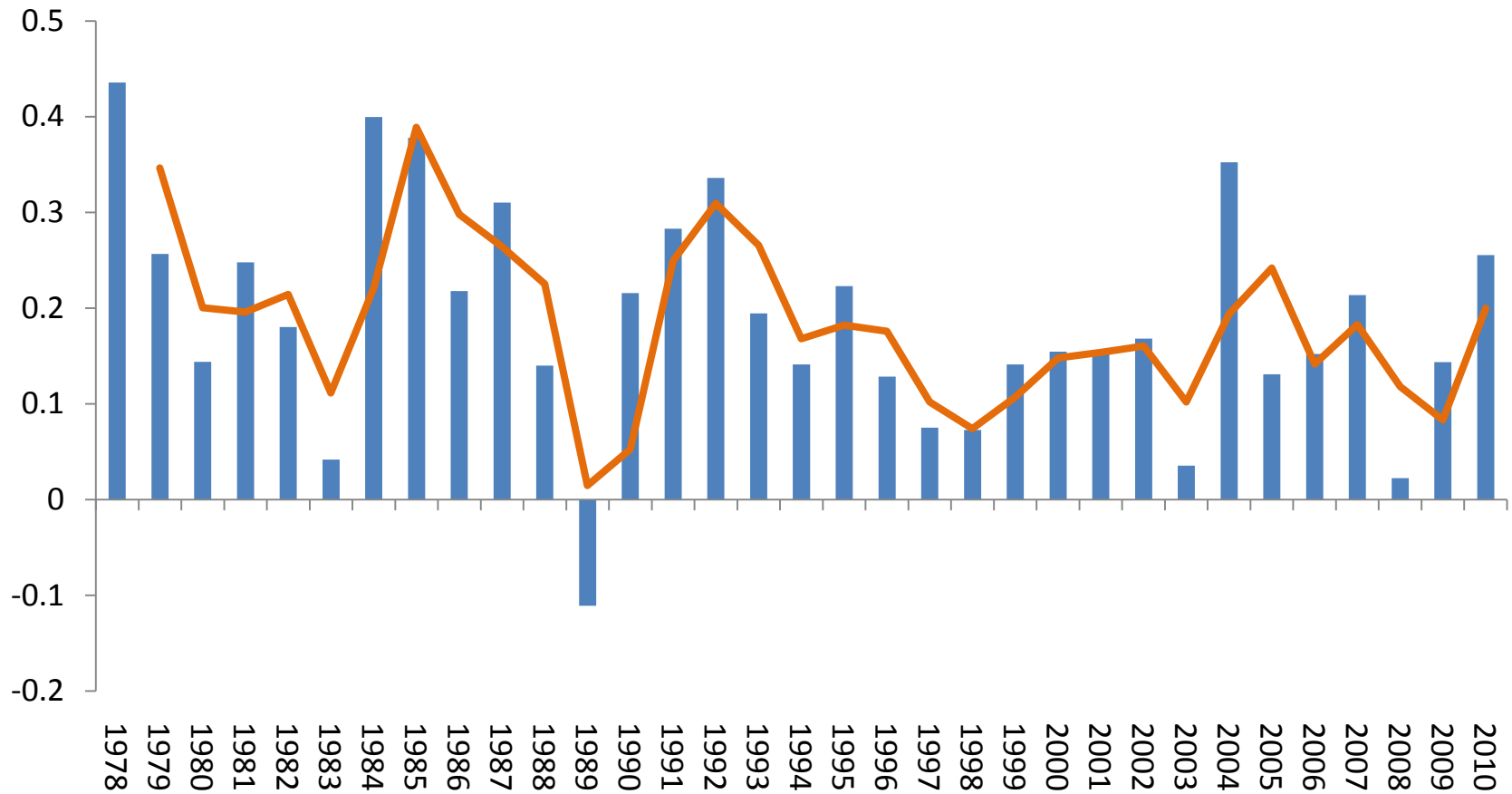


## 6、Cyclicalty of the industry development





# Cyclicalty of the industry development



RPK-CHINA



## 7、 Strong growth coupled with low profit margins

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- The airline industry has always been characterized by strong growth numbers. In the past 50 years, global aviation has grown at an average rate of about 5 % per annum (Boeing 2009).
- Doganis describes the latter as the “paradoxon” of aviation.
- Historically, returns in the airline business have been low, and can be compared to those in commodity industries .



The forecasted growth seems very positive for the industry but,

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- the market is cyclical because of the challenging economic basis,
- the profitability during the past 20 years was very low and “volatile”,
- the position of the airlines in the chain value is not favourable,
- long-term trend: decreasing unit revenue.
- very high and growing sensitivity on price.

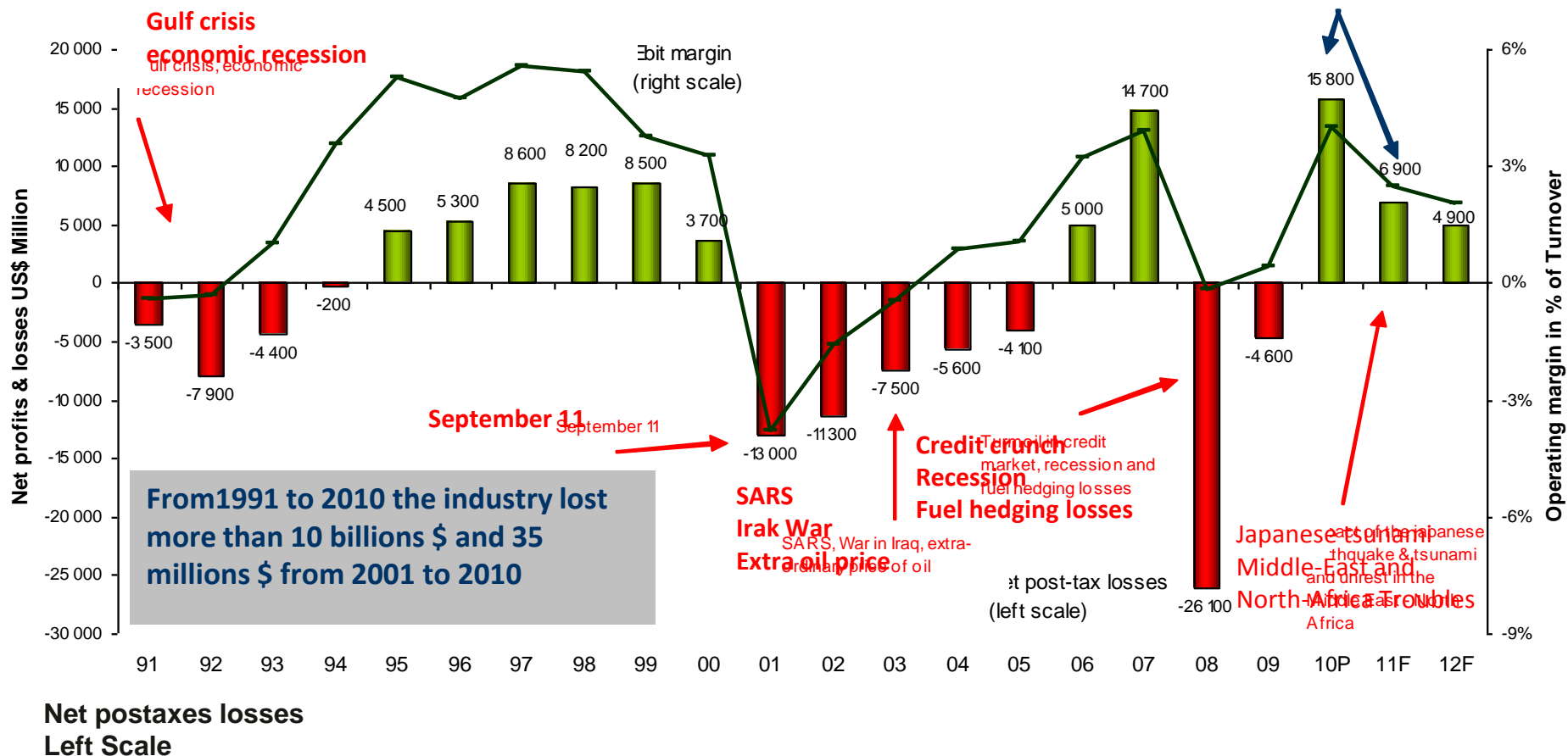




## Industry Net profits (Billions \$)

EBIT margin  
Right scale

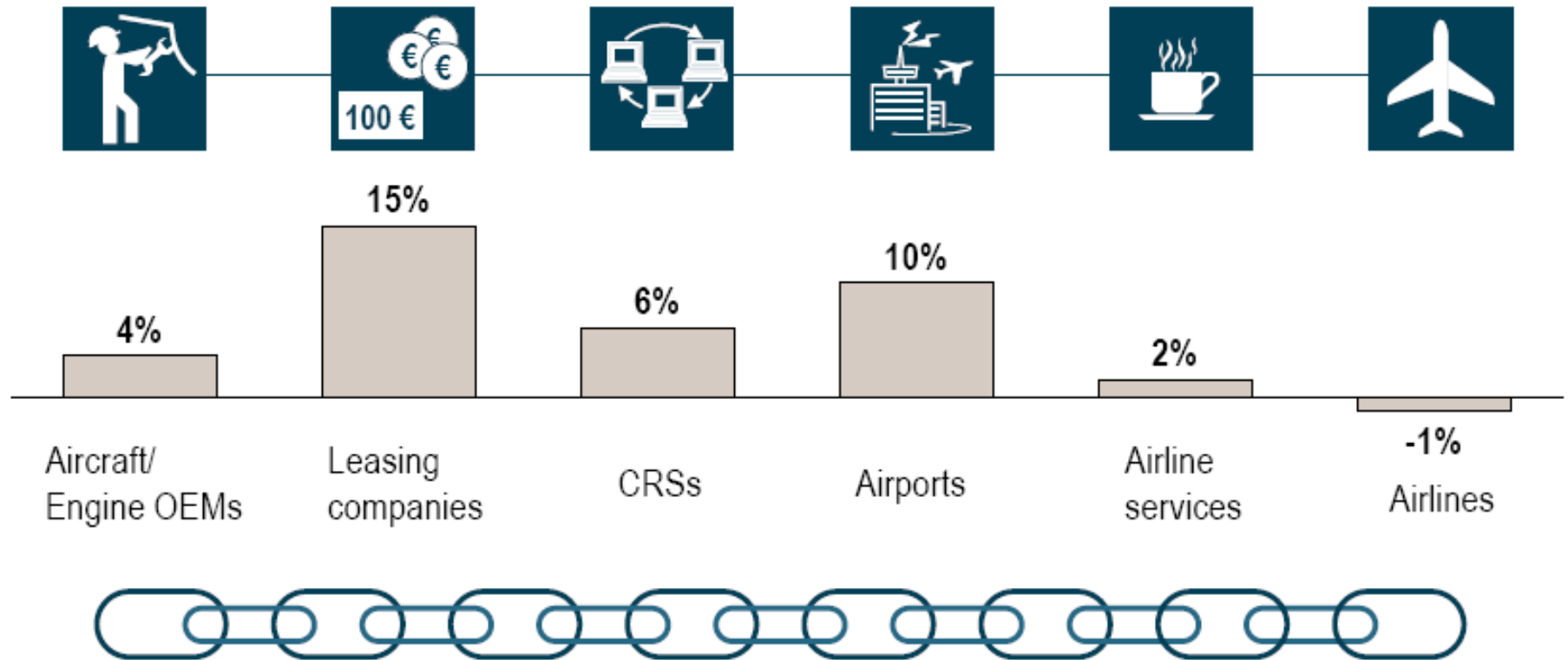
IATA Financial Forecast : Sept 2011





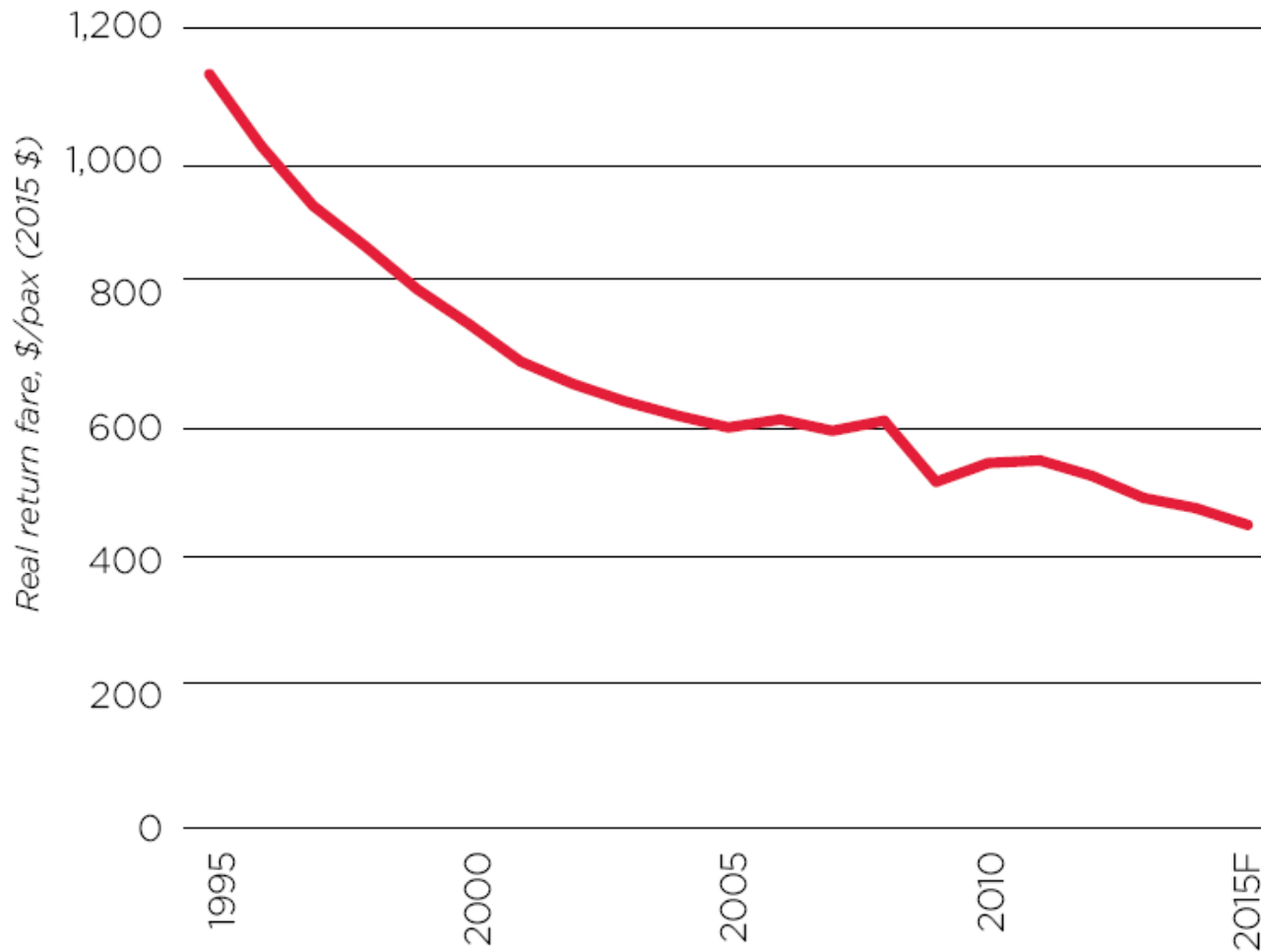
Compared to other players in the aviation value chain, airlines need to strengthen their profit earning capability

### Operating margins average





# LONG-TERM TREND: DROPPING UNIT REVENUE



**Global average return fare**



## 8、 High fixed cost structure vs variable costs

- When compared to other industries, air transportation is characterized by a high fixed cost structure and rather low variable costs.
- Air transportation is an extremely capital-intensive industry with very specific investments in long-term assets that create high exit barriers
- *“In economics, fixed costs, indirect costs or overheads are business expenses that are not dependent on the level of goods or services produced by the business. They tend to be time-related, such as salaries or rents being paid per month, and are often referred to as overhead costs. This is in contrast to variable costs, which are volume-related (and are paid per quantity produced). ”*



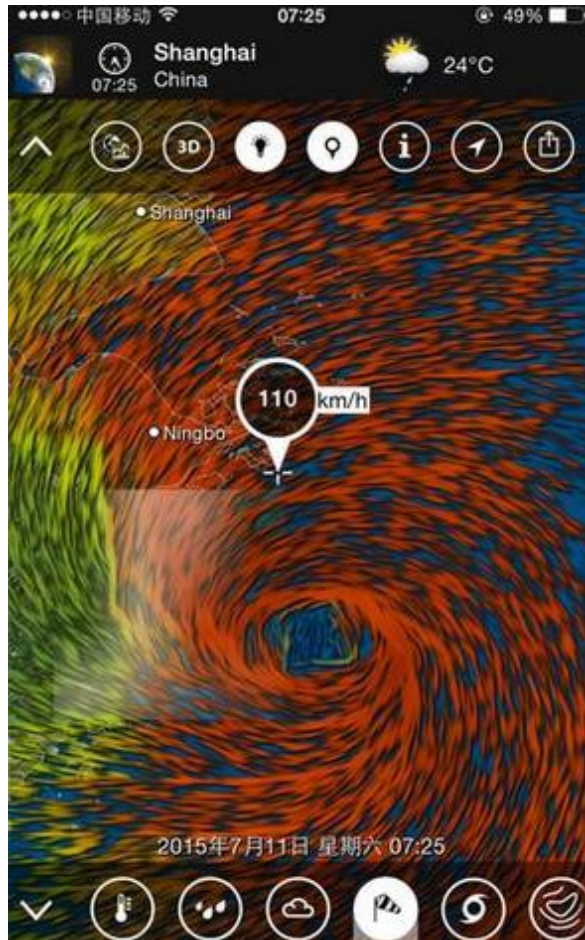
## 9、The characteristics of network structure has brought the business complexity

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- Flight network is one of the world ' s most complex networks.
- Case:URC-PEK



## 10、Subject to the infrastructure and natural conditions



上海浦东						
进港 出港						
航班	始发	计划到达	实际到达	计划出发	实际出发	状态
SU3900	莫斯科	09:00	08:56	19:05	20:26	到达
MU592	莫斯科	09:00	08:56	19:05	20:26	到达
HO1718	大连	09:10		07:25		延误
MU5660	大连	09:10		07:25		延误
CA8953	大连	09:10		07:20		取消
CZ9534	济南	09:15		07:40		取消
MU5534	济南	09:15		07:40		取消
JL5626	武汉	09:15		07:45		取消
MU517	武汉	09:15		07:45		取消
MF3102	福州	09:20		07:55		取消
HO1738	福州	09:20		07:55		取消
MU5506	福州	09:20		07:55		取消
MU9328	郑州	09:40		08:05		取消



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**Markets General Characteristics**



# FROM WEST TO EAST....

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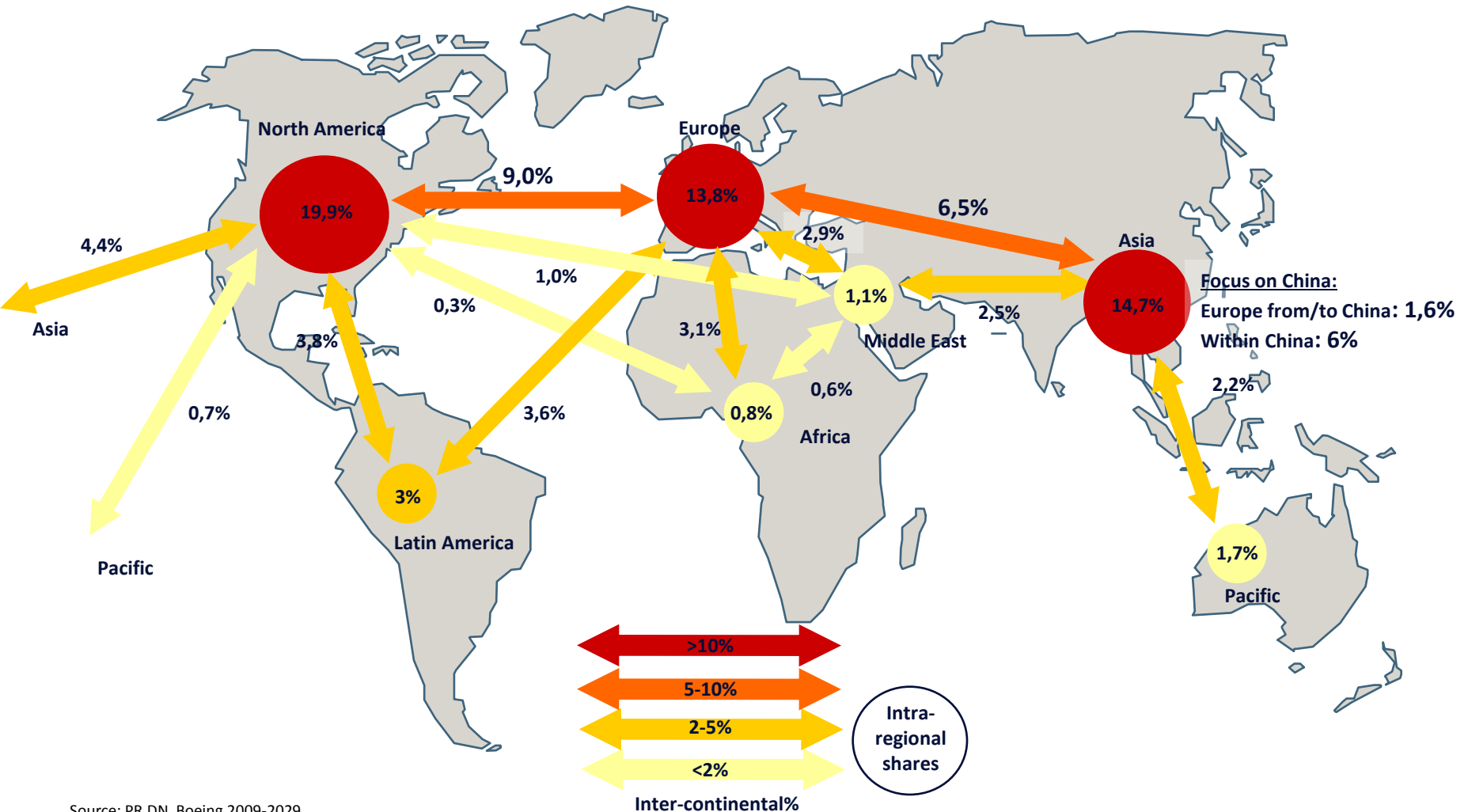
- PRESENTLY THE MAIN FLOWS OF TRAFFIC ARE STILL:
  - ORIENTED TO NORTH-AMERICA AND EUROPE,
  - INTRA NORTH-AMERICA AND EUROPE AREAS,
  
- BUT THE EMERGING MARKETS ARE CHANGING THE PICTURE
  
- AND THE MARKET IS BALANCING FROM WEST TO EAST.





# The dominant share of traffic flows today is still oriented to North America and Europe

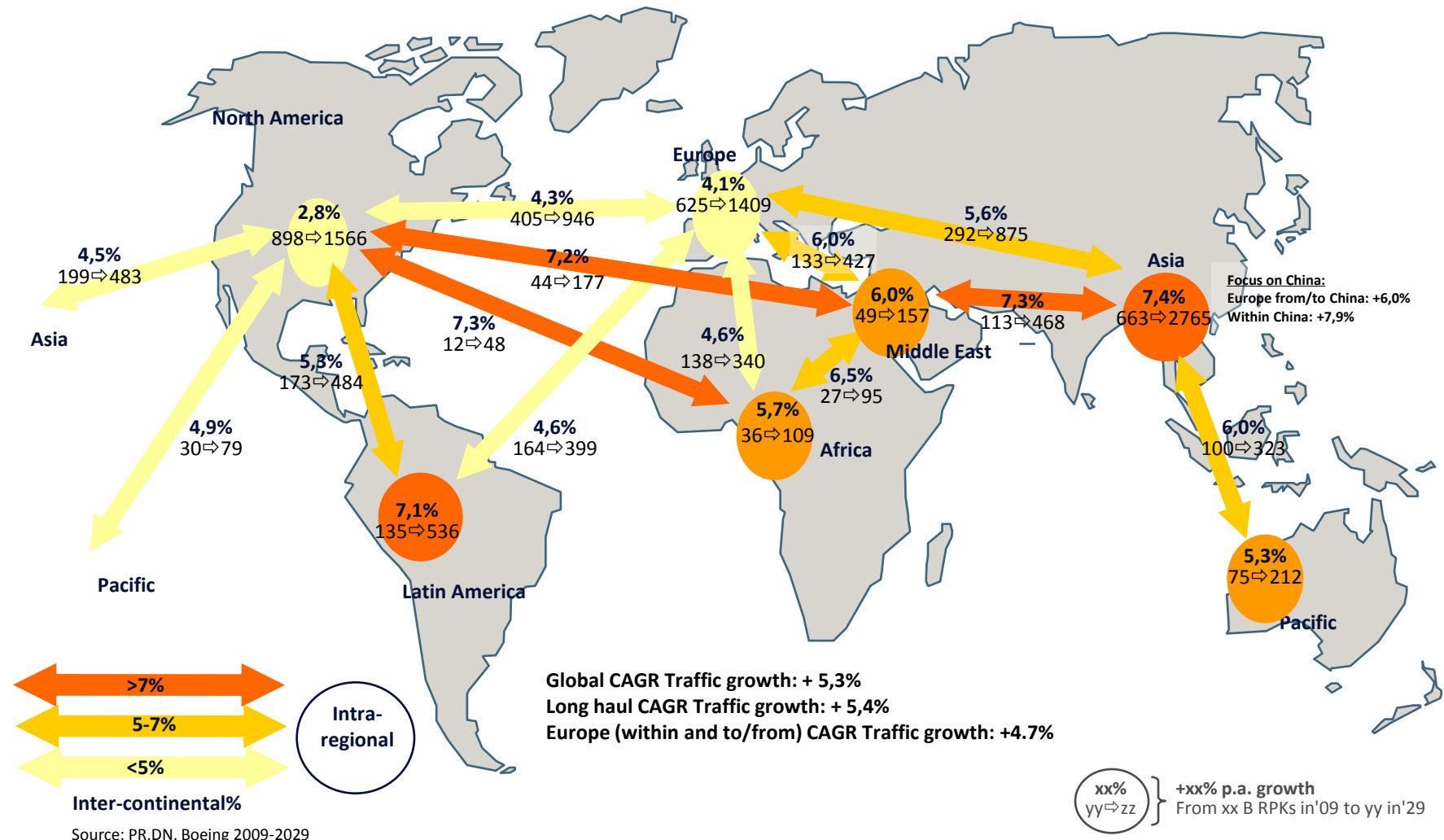
Share of main routes worldwide in 2009 (% of RPKs)





# The strongest growth is likely to be in emerging markets, both on intercontinental and intra-area routes

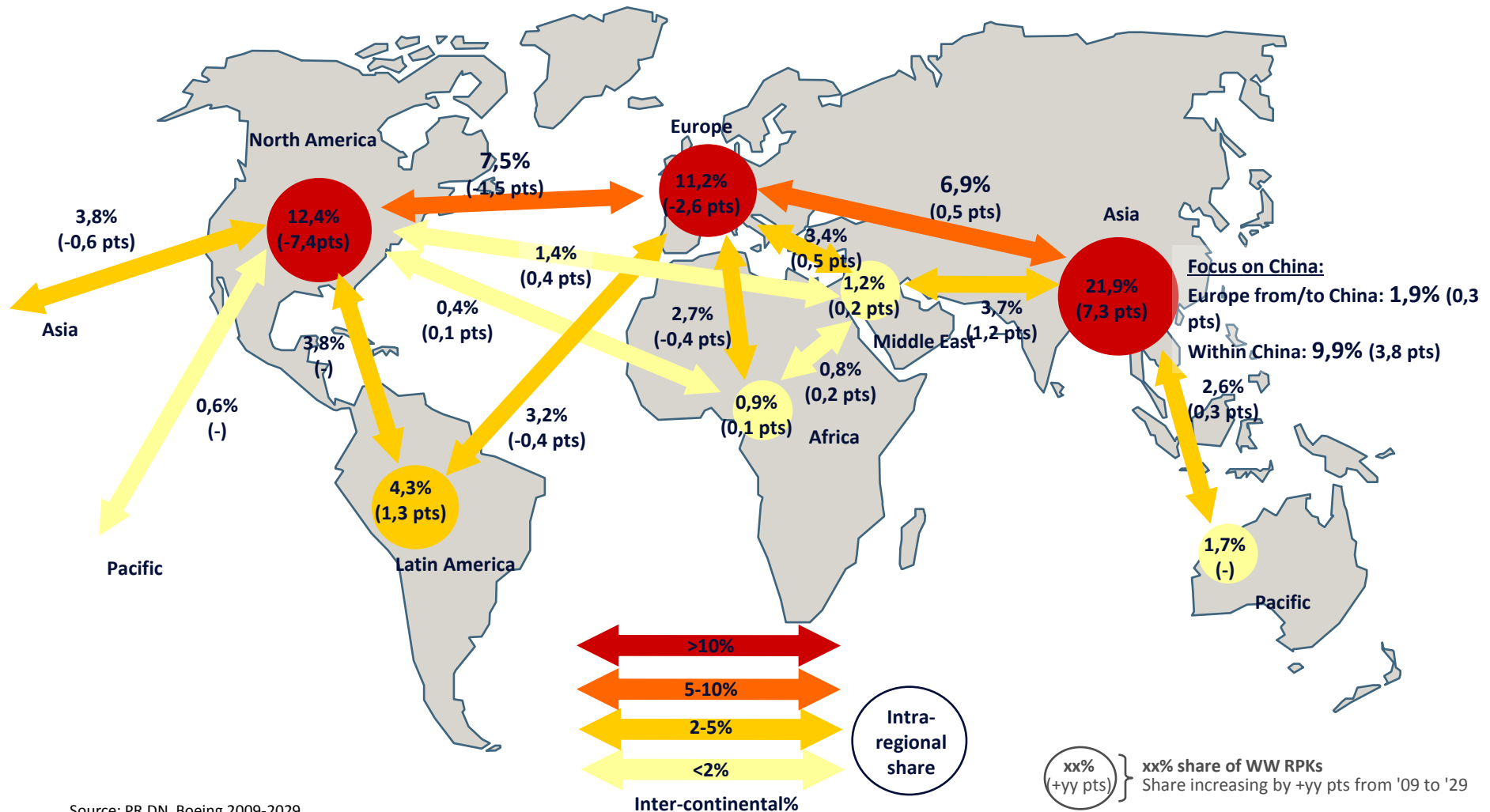
CAGR Traffic growth (RPK) 2009-2029





# Growth in Asia will progressively tilt balance to the East

Share of main routes worldwide in 2029 (% of RPKs)





But more than 50% of traffic flows will still remain intra-areas traffics



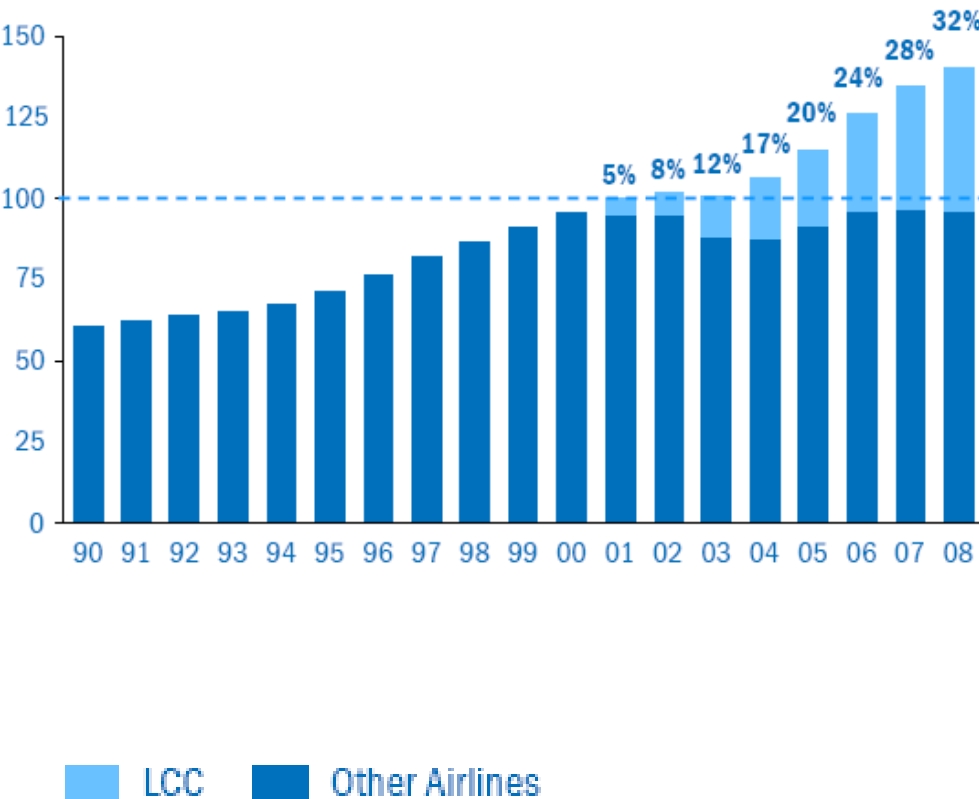
2009 WW traffic flows  
Intra-areas 56%

2029 WW traffic flows  
Intra-areas 53%

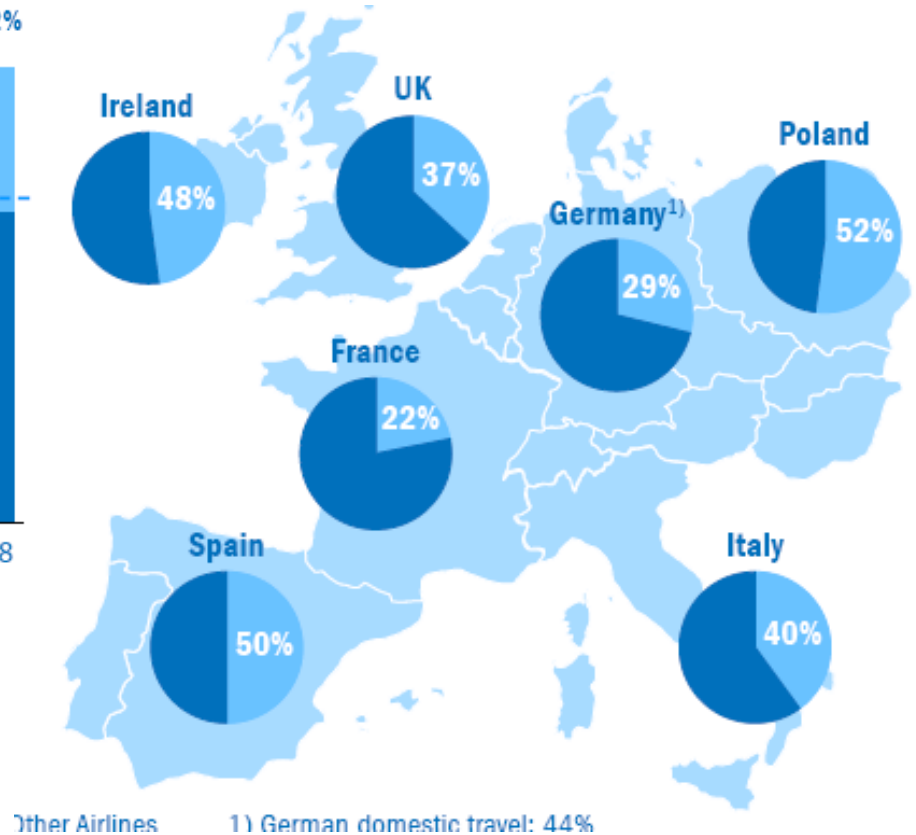


# LCC—leading the drive for innovation for the past

**Development of demand for Air Travel in Europe**

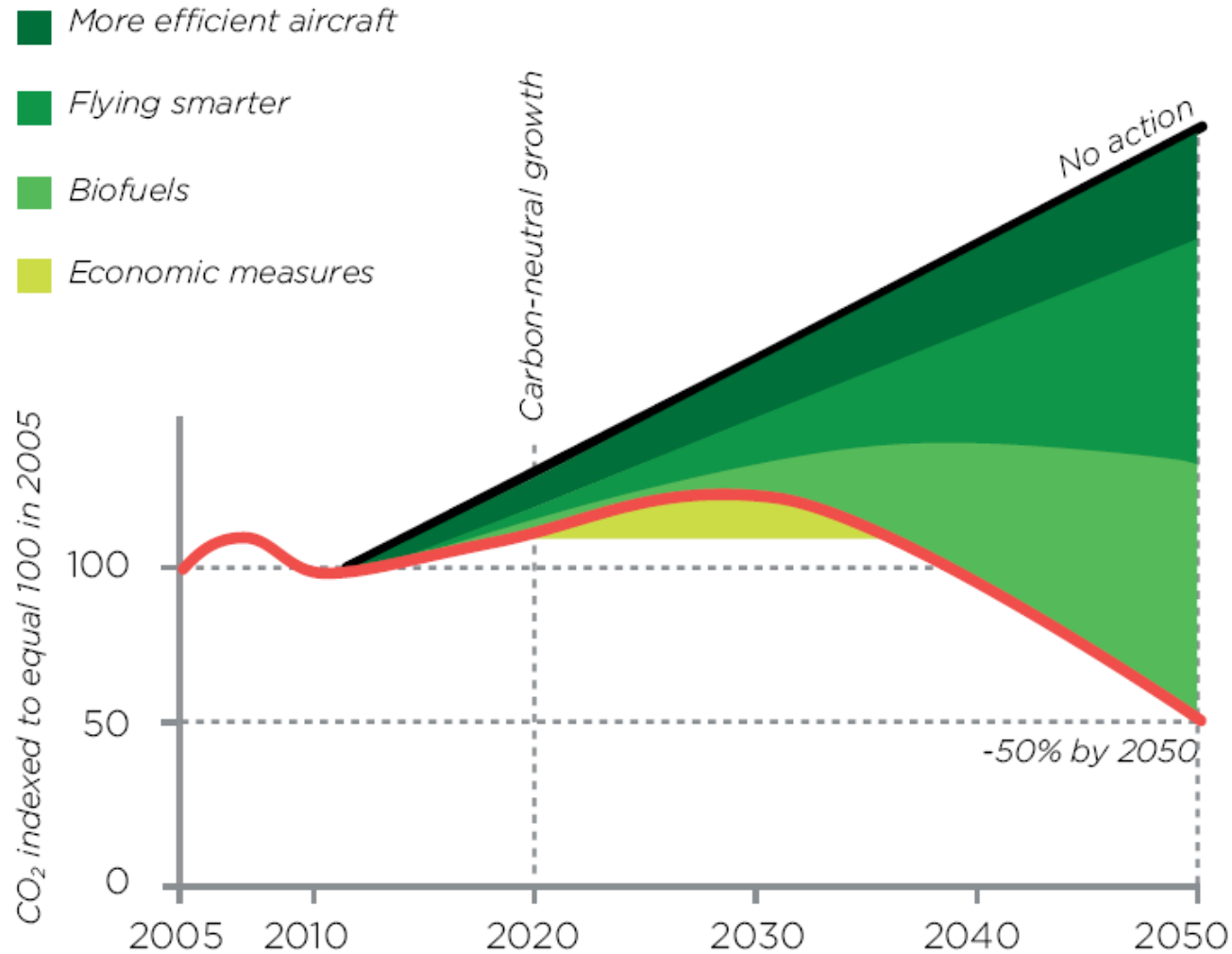


**European market share of low-cost carriers**





# The aviation industry is united in its commitment to manage and reduce its environmental impact



**Emissions reduction roadmap**