



Handbook on Tourism Forecasting Methodologies

Maximising Marketing Effectiveness



ETC / UNWTO Handbook on Tourism Forecasting

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Strategic Planning
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*Prediction is very difficult,
especially if it's about the future*

Niels Bohr, Nobel Prize winning physicist

Structure of Handbook

- Section 1: What is tourism forecasting and how is it done?
- Section 2: Basic descriptions of forecasting methods
- Section 3: Choosing a forecasting methodology
- Section 4: Case Studies
- Excel file with examples



Project Objectives

- To produce a ‘hands on’ easily assimilated user-friendly handbook including:
 - Explanations of purposes of tourism forecasting
 - Identification and analysis of methodologies
 - Practical advice based on explicit examples
 - Identification of NTO case studies
 - Advice on coping with technical and resource constraints
 - Practical guidelines on choosing a methodology

Forecasting in Tourism

- Generally aimed to forecast demand (arrivals, nights, occupancy, receipts, etc.)
- Considerations:
 - Quantitative and / or qualitative
 - Availability of consistent data series
 - To be used for planning, i.e. operational purposes or defining strategy
 - Time frame
 - Level of aggregation or disaggregation

aim of forecasting is not to come up with a perfect prediction of tourism demand (which is impossible) but, instead, to predict the most probable level of demand

Forecasting Methodologies

- Quantitative Methods
 - Extrapolative methods (trend in series against time)
 - Causal methods (using independent variable(s))
- Qualitative Methods
 - Expert's assessment
 - Scenario building
- combinations

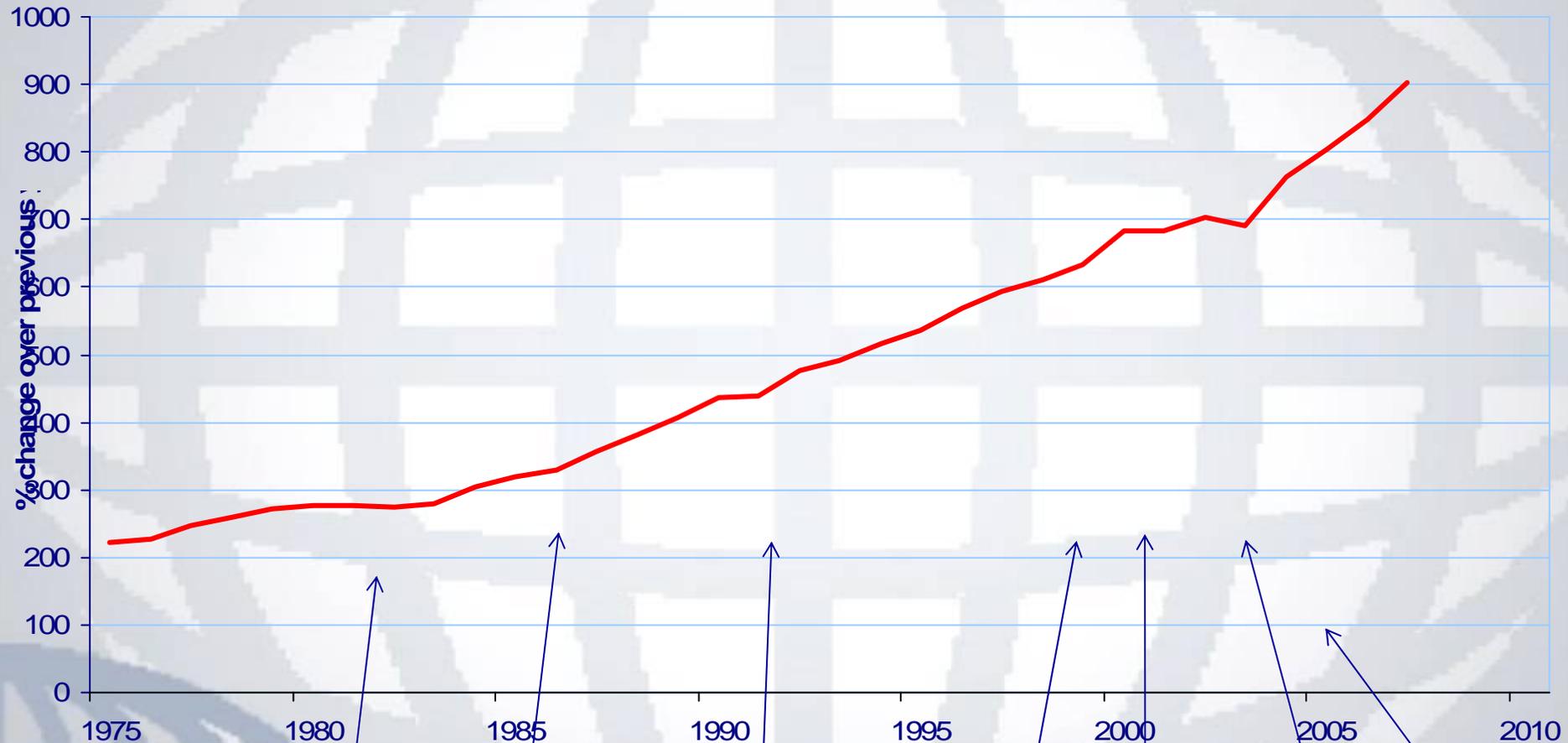
Quantitative Forecasting Methodologies

- Simple extrapolative methods
 - no change (control), same value / same change
 - moving average
 - exponential smoothing
 - decomposition
- Advanced extrapolative methods
 - ARMA (autoregressive moving average)
- Simple regression against time



Tourism trend 1975-2007

World, International Tourist Arrivals



echo of the second oil crisis / martial law in Poland / Falklands conflict / conflict Israel-Lebanon

Chernobyl disaster

Gulf War / disintegration of Yugoslavia

Asian Financial Crisis

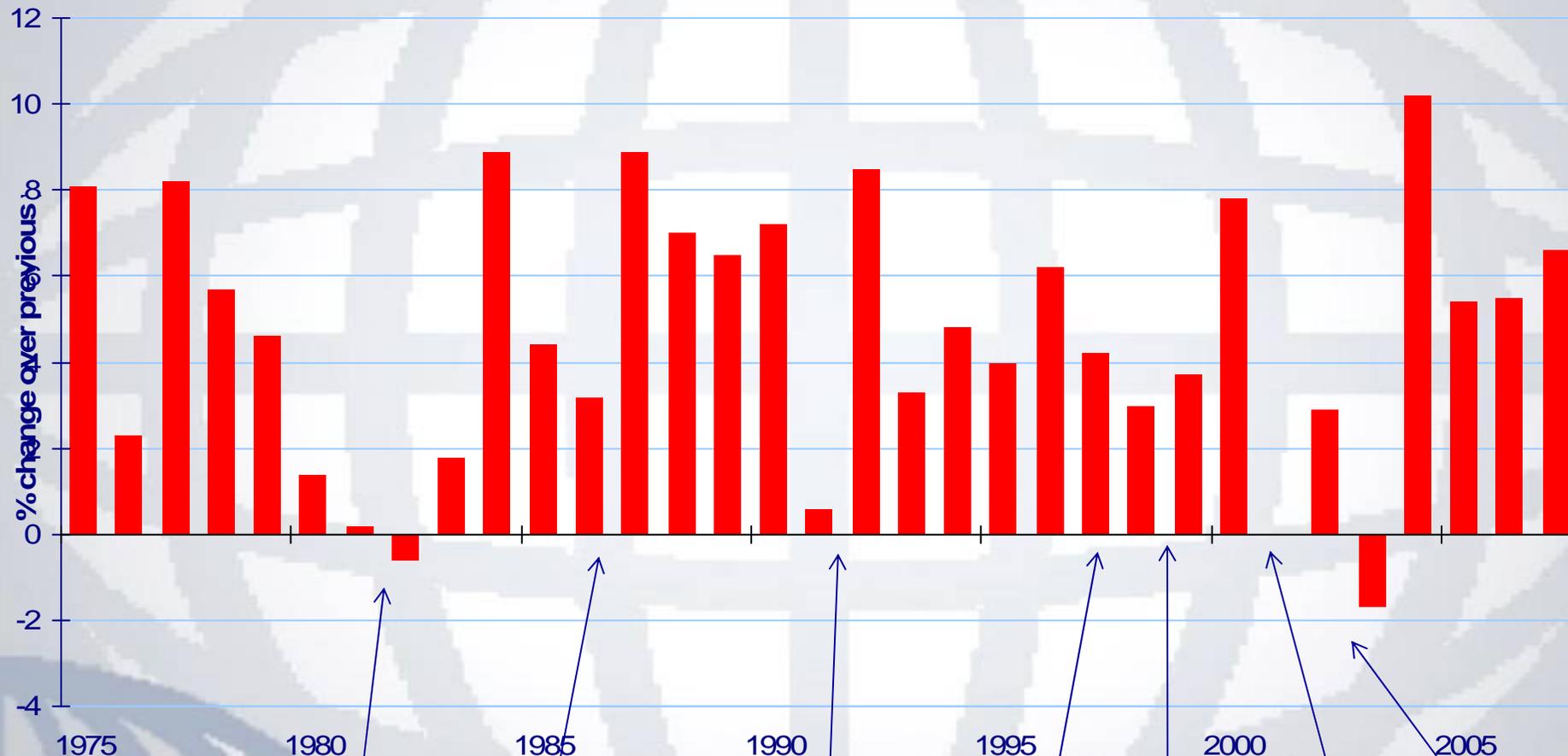
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Iraq, SARS

Tourism trend 1975-2007

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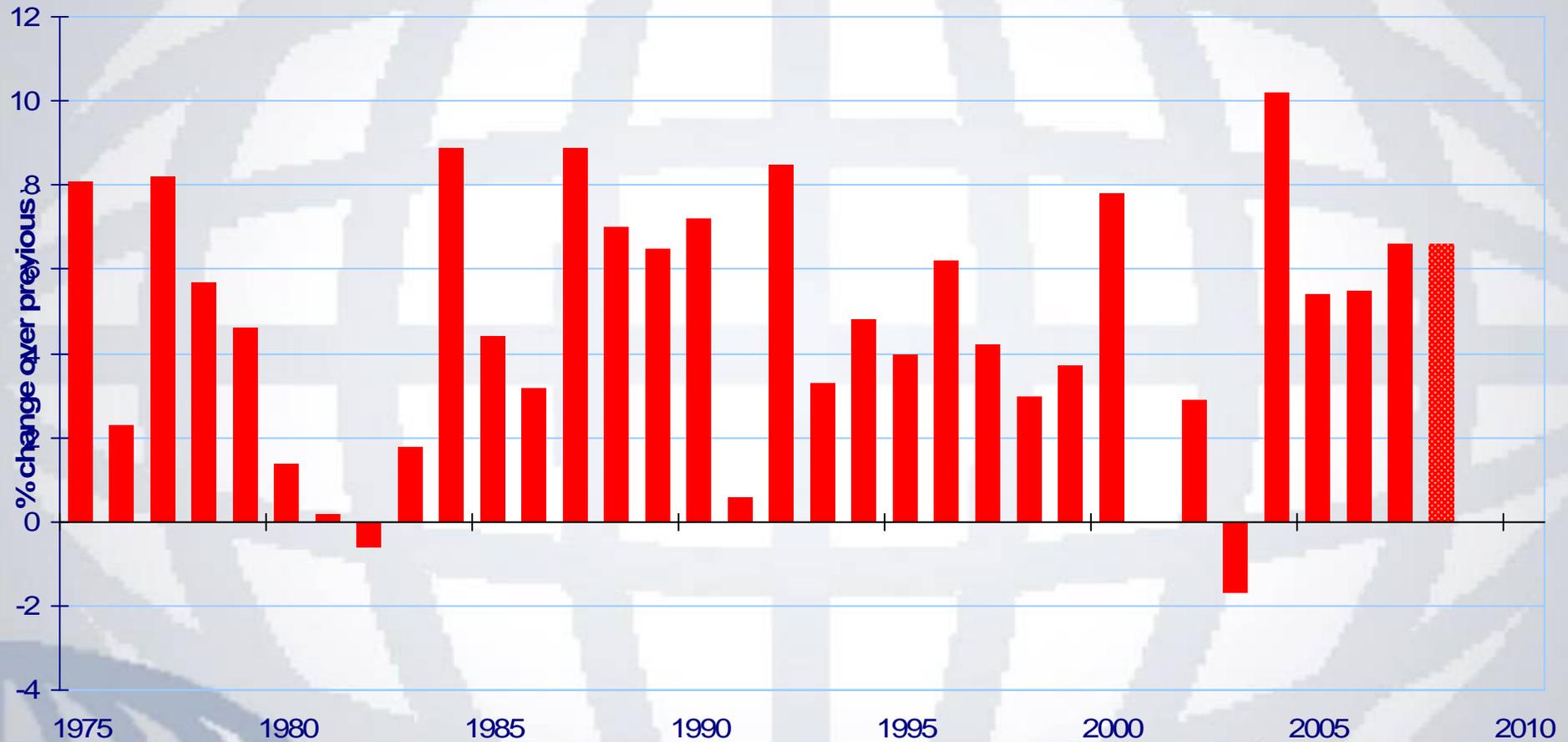
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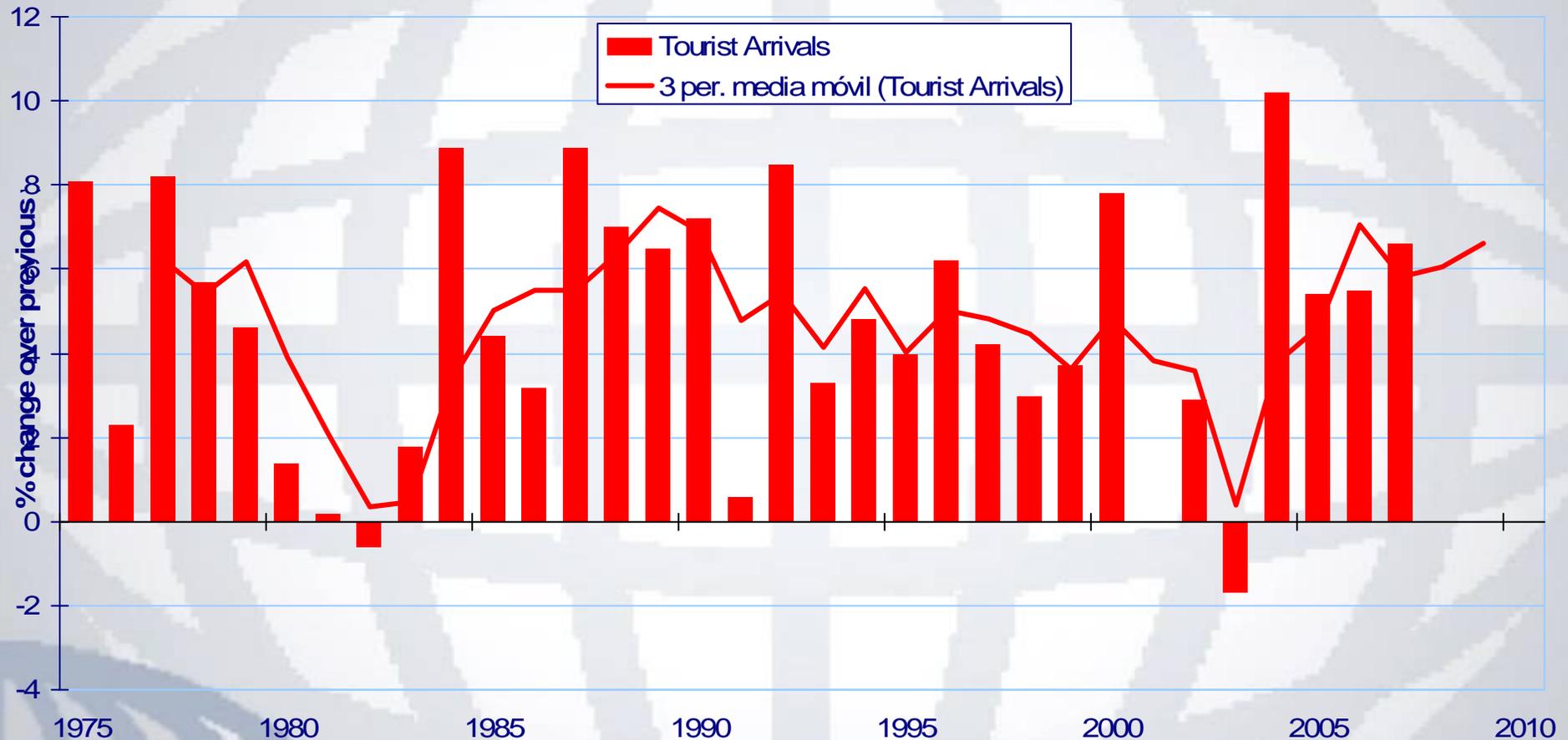
No change

World, International Tourist Arrivals



Simple moving average

World, International Tourist Arrivals

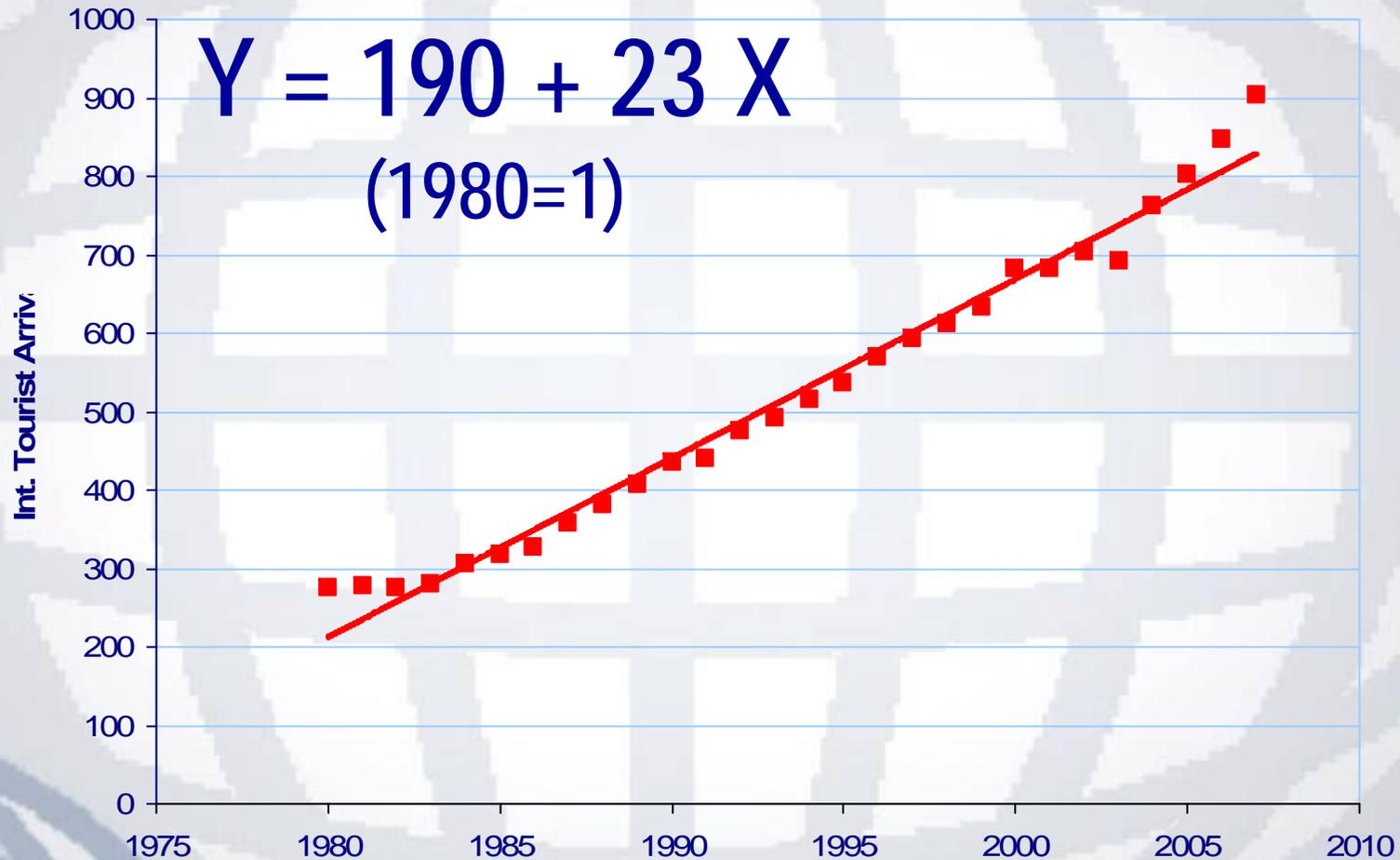




Decomposition

Simple regression against time

World, Growth of Real GDP & International Tourist Arrivals



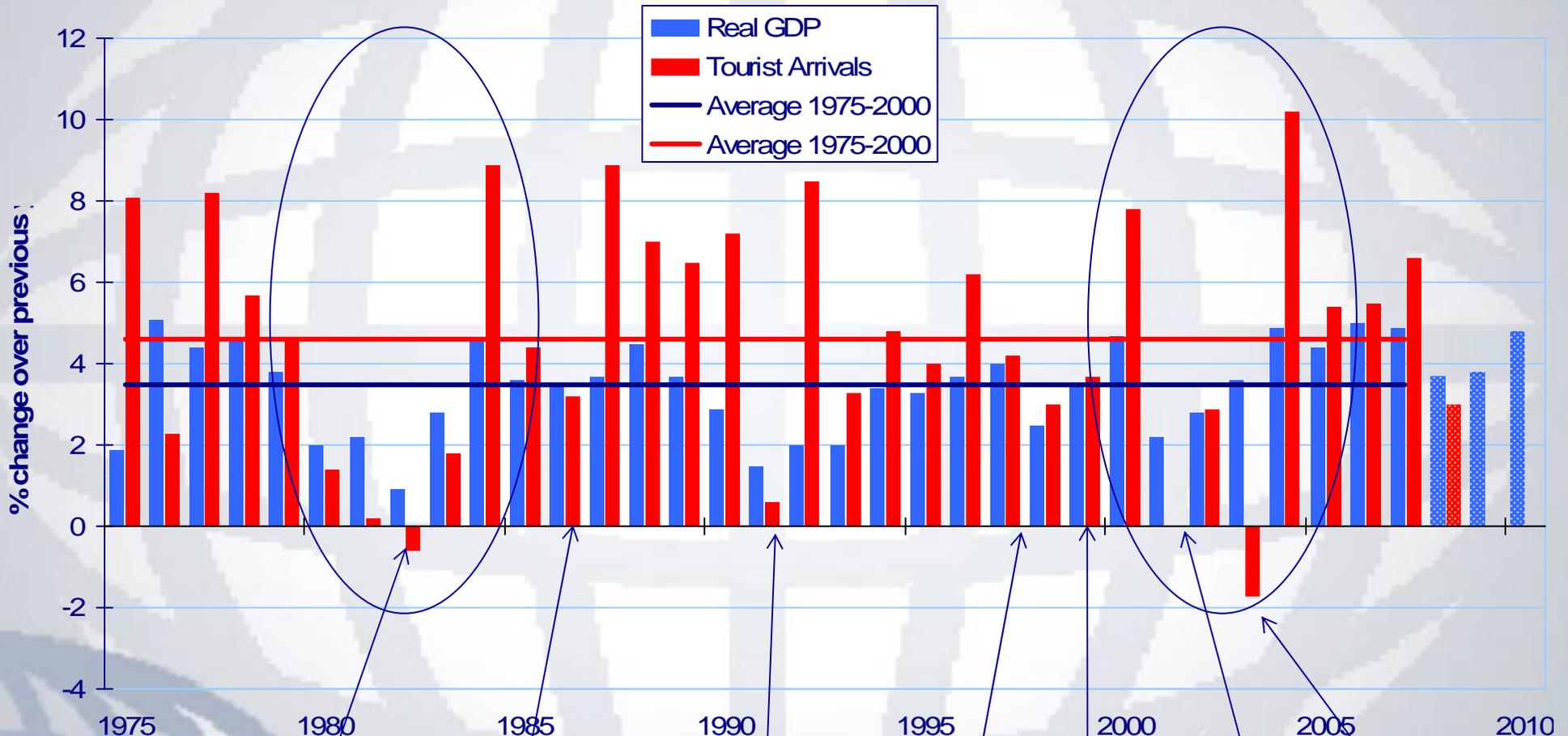


Quantitative Forecasting Methodologies

- Causal methods (one or more independent variable(s))
 - Linear regression
 - Multiple regression
 - Structural econometric

Tourism, economy and external shocks

World, Growth of Real GDP (ppp weighted) & International Tourist Arrivals



echo of the second oil crisis / martial law in Poland / Falklands conflict / conflict Israel-Lebanon

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Kosovo

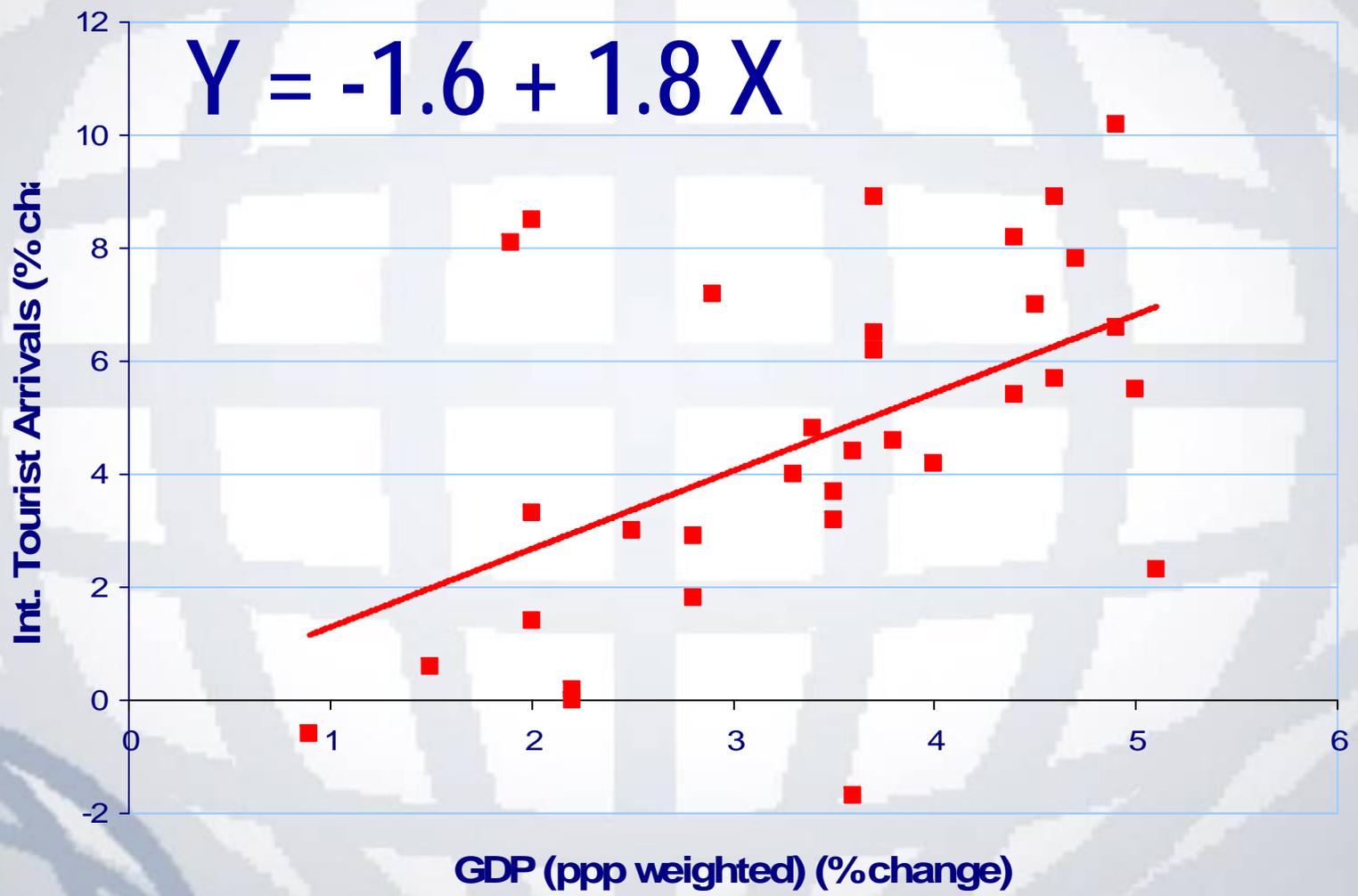
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Tourism, economy and external shocks

World, Growth of Real GDP & International Tourist Arrivals



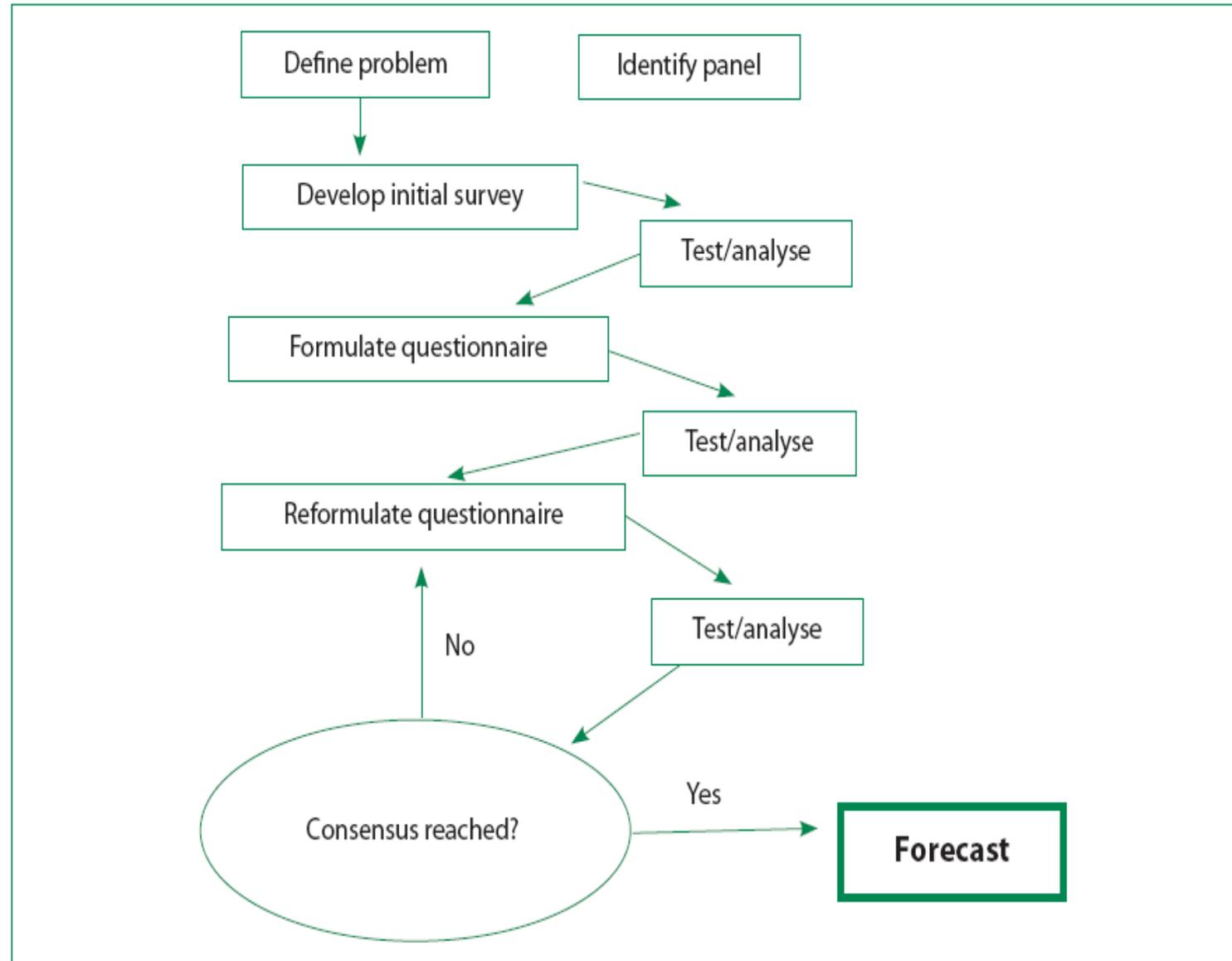


Qualitative Forecasting Methodologies

- Jury of executive opinion
- Delphi method
- Scenario planning

Delphi method

Figure 2.1 Step-by-step guide to the Delphi forecasting process





Scenario planning

2.16.2 Step-by-step Guide

Stage 1: Set timeframe – e.g. 5 years, 10 years, etc..

Stage 2: Identify driving forces that may influence tourism demand.

Stage 3: Construct alternative scenarios.

Stage 4: Present scenarios to key experts within or outside the organization.

Stage 5: Begin process of (continuously) reconstructing scenarios as future events unfold.

Stage 6: Engage forecasters to quantify effects of each scenario – usually through structural econometric models.



Scenario planning

Example

Long Term Scenarios in Aviation CONSAVE 2050

German Aerospace Center (DLR) - Air Transport and Airport Research

www.dlr.de/consave

Focussing on Constraints

Trying to include developments in the world and the societies, which could turn out as limits to growth for aviation, the project foresees explicitly and as it's most important and innovative topic, the development of **constrained** scenarios.

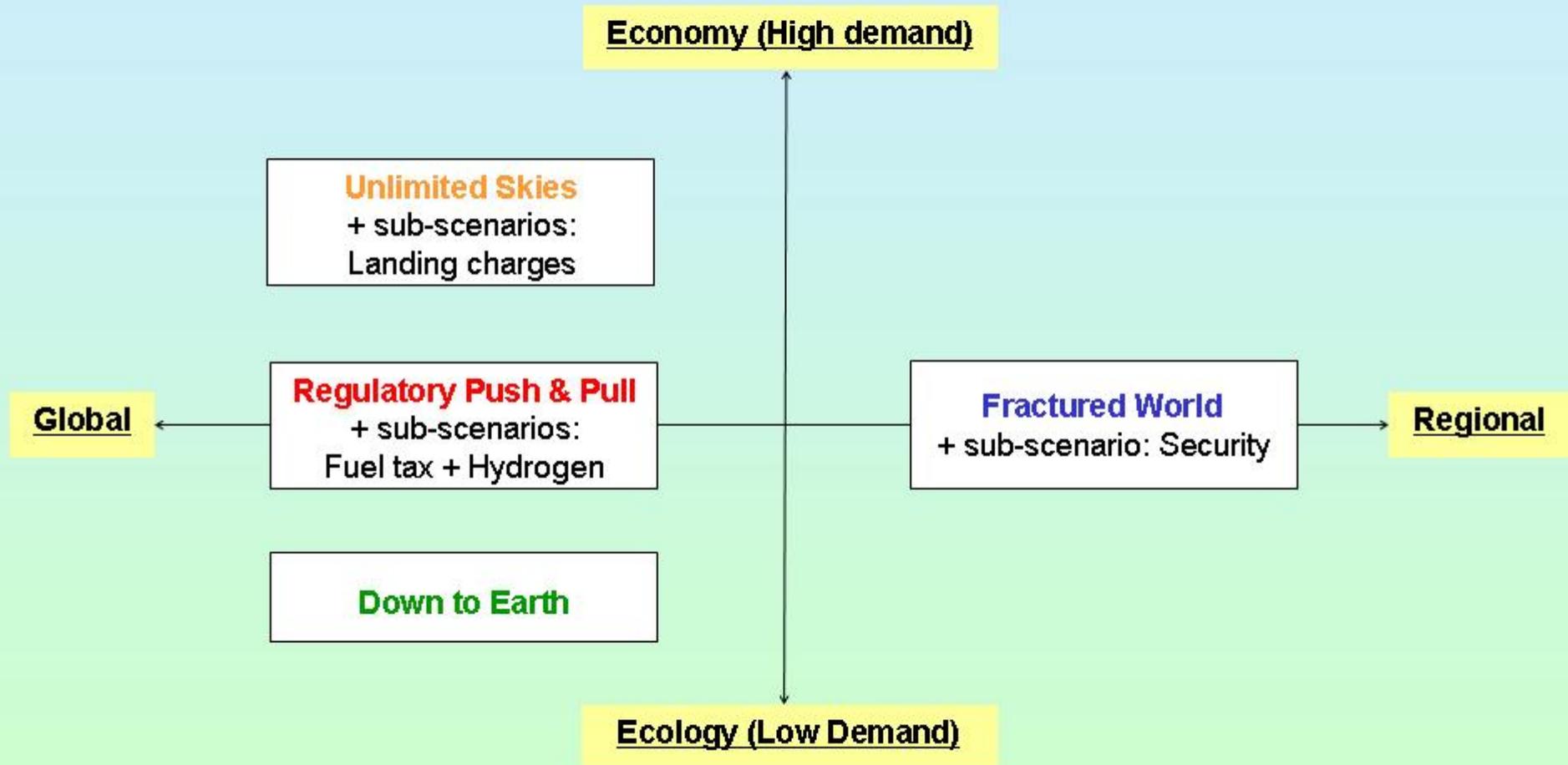
In our four different scenarios we focussed on different challenges:

High growth 1	Unlimited Skies	Infrastructure constraints: Limits to airports and runways
High growth 2	Regulatory Push & Pull	Climate problem: Environmental regulation
Low growth 1	Fractured World	Fragmentation: Block building and autarky
Low growth 2	Down-to-Earth	Value Change: Regional lifestyle + slow mobility

Policy and Society Issues as Drivers for Air Transport Development

	Unlimited Skies	Regulatory Push & Pull	Fractured World	Down to Earth
Political development	market philosophy	emission regulations	regional differences	pollution sources tightly controlled
Citizen preferences	global orientation, pragmatic solutions	regulatory approach in environmental issues	autarky, regional orientation	environmental and safety concerns
Customers values	convenient and flexible service and mobility	cheap and environmentally okay	security concerns	stigmatisation of "fast" and international patterns

Scenario Structure Overview

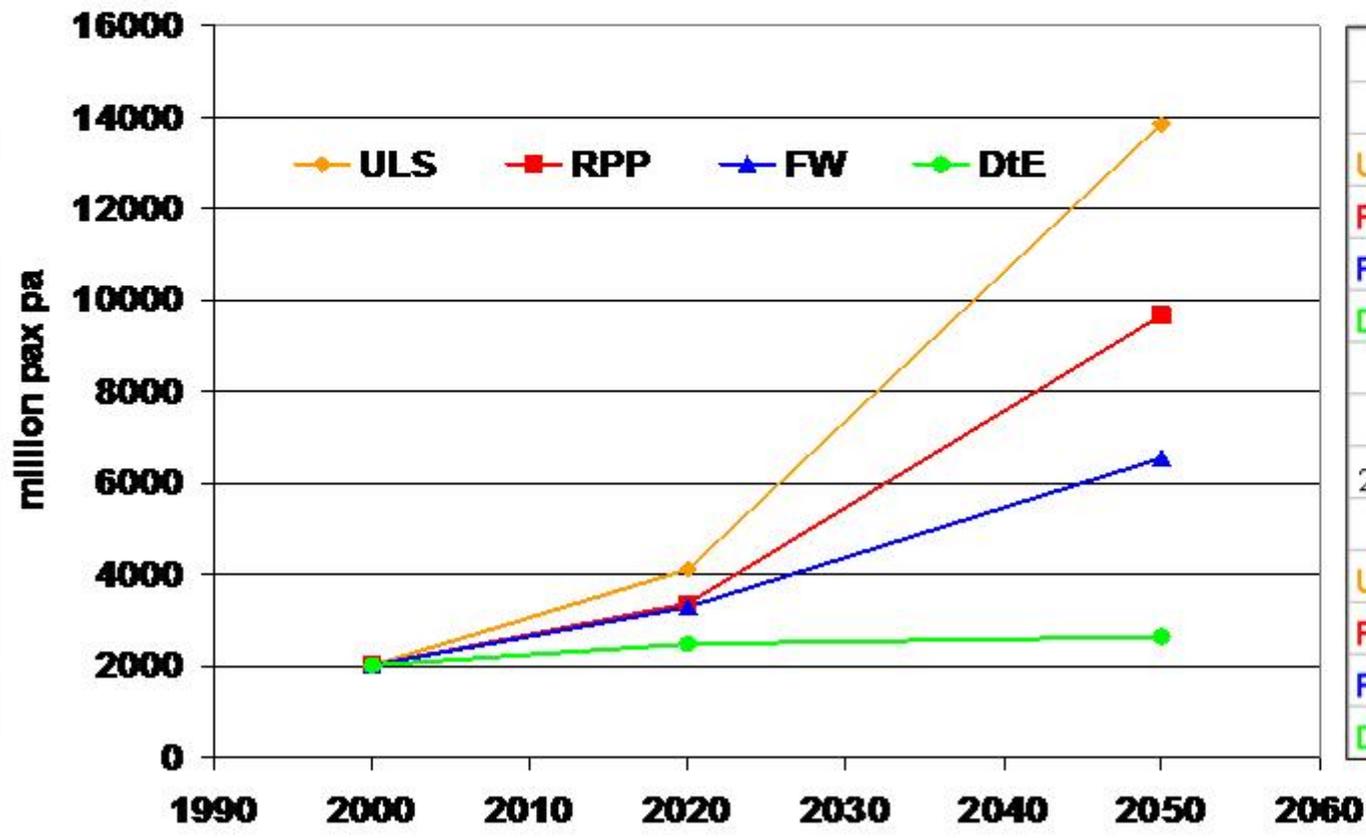


Important Scenario Outcomes

Aspect	Unlimited Skies	Regulatory Push & Pull	Fractured World	Down to Earth
Air transport supply & demand	Very high increase	High increase	Low growth in interregional flights	Decrease
Airport & ATM Capacity	Constraints	Capacity regulated	Depending to regions	No constraints, but low profitability
Aviation Costs	Lower specific costs	Lower specific costs	Higher (security & standards)	Higher specific costs

Global Passenger Demand by Scenario [million pass. carried p.a.]

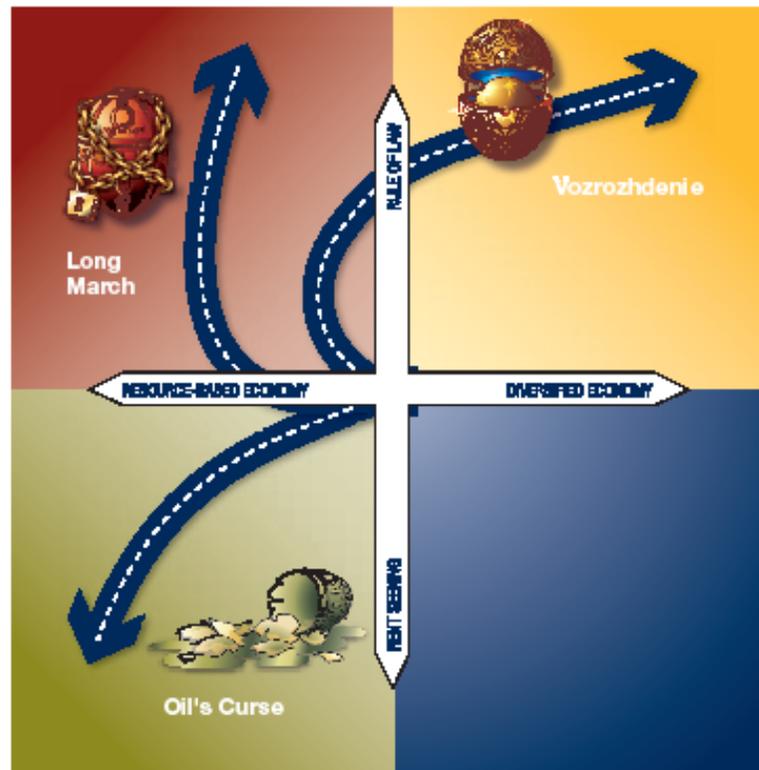
World passenger development



Average annual growth		
	2000-2020	2000-2050
ULS	3.6%	3.9%
RPP	2.6%	3.2%
FW	2.5%	2.4%
DtE	1.0%	0.5%
Growth factor		
2020/2050 as a multiple of 2000		
	2020/2000	2050/2000
ULS	2.0	6.9
RPP	1.7	4.8
FW	1.6	3.2
DtE	1.2	1.3

World Economic Forum (WEF), Russia scenarios

Figure 1: Russia and the World: Scenarios to 2025



The **Long March** scenario covers a situation in which Russia continues to leverage its natural resources, to the detriment of the full development of other sectors. A gradual transition takes place to a system of governance based on the rule of law. In this scenario, Russia is able to achieve relative prosperity, but a far less benign future is also possible.

In **Oil's Curse**, a political class bent on its own enrichment is in charge, resulting in slow growth, poor levels of investment in infrastructure, capital flight, increased corruption

and a decline in the competitiveness of domestic industries.

A radical departure from the past is also possible, in which Russia would gradually achieve real economic and social progress. **Vozrozhdenie** ("Renaissance" in Russian) foresees initially gradual but eventually wide-reaching governance reforms combined with market reforms leading to strong GDP growth, an increase in real income, and general improvement in the quality of life for the population at large.



Forecasting and strategic planning

- Importance of looking ahead
- Marketing should be done with proper strategic planning
- Forecasting can be one important input
- Many organisations/countries in one way or another do it
- Combined with creative thinking can be instrumental for setting of objectives and building of consensus



Choosing a forecasting methodology

- Objective it has to serve
- What do you want to know
- Timeframe
- One time/regular/continuous
- Available expertise
- Availability of consistent time series
- Resources available (time, money)
- Evaluation



Tourism Prospects

Short-term forecast

- ◆ **Focus on current situation and cyclical trends**
 - political and economic climate ('coyuntura')
- ◆ **Use: operational / tactical, i.e.:**
 - marketing and promotion activities
 - capacity management, pricing, etc.

Long-term forecast

- ◆ **Focus on structural, underlying trends**
 - demographic, social, political, economic and technological developments
- ◆ **Use: strategic, i.e.:**
 - planning of infrastructure, product development, legislation, competitive framework
 - master plans, strategic marketing planning, HR



Choosing a forecasting methodology

Table 3.2 Forecast method decision matrix

Methodology	Simple extrapolative	Advanced extrapolative	Causal regression	Causal structural	Qualitative jury/Delphi	Qualitative scenario planning
Features	simplicity of use	accuracy – simulating historical data to future	understanding impacts of variables	policy development based on economic impacts	flexibility	flexibility
Best suited for	time series predictions	strategy development based on forecasts	assessing interrelationships between variables	interdependencies of variables	simple tourism demand	complex and uncertain futures; future proofing
Data requirements	strong time series data	strong time series data	push, pull and resistance factors	push, pull and resistance factors	expertise/experience dependent	expertise and information to develop scenarios



Performance of Methods

- robustness
- simplicity
- accuracy
 - error magnitude accuracy ($e_t = A_t - F_t$)
 - directional change accuracy
 - trend change accuracy (turning point)
- testing of method through ‘backcasting’



Generally, in any kind of forecasting, the simplest model, making the fewest assumptions and giving the best results should be the one that is used.



For short-term forecasts it is often the simplest quantitative methods that give the most accurate results. It is only when trying to achieve medium- and long-term forecasts that simple methods begin to break down and more complex forecasting techniques need to be adopted.



Thank you very much for your attention!

World Tourism Organization

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