

# Benchmarking Airports: A Case Study on Alternative Valuation Approaches

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- **Traditional Valuation Measures I & II**
- **An Airport Business Model**
- **The Roots of Key Value Drivers**
- **Frame of Reference: The Airport Value Tree**
- **The three Drivers of Return**
- **A Driver-Based Valuation Approach: Framework for Return Profiles**
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- **The Driver-Based Valuation Approach: Framework & Drivers Revisited**
- **Positioning of Sample Airports per Ownership Criteria**
- **Return Profiles of Sample Airports I - III**
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- **Managing the Value of Airports**
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- **Analysis of Partial Factor Productivity, PFP**
- **Financial Ratio Analysis, FRA**
- **Assessment of Total Factor Productivity, TFP**
- **Data Envelopment Analysis, DEA**

## → The Principles of Company Value

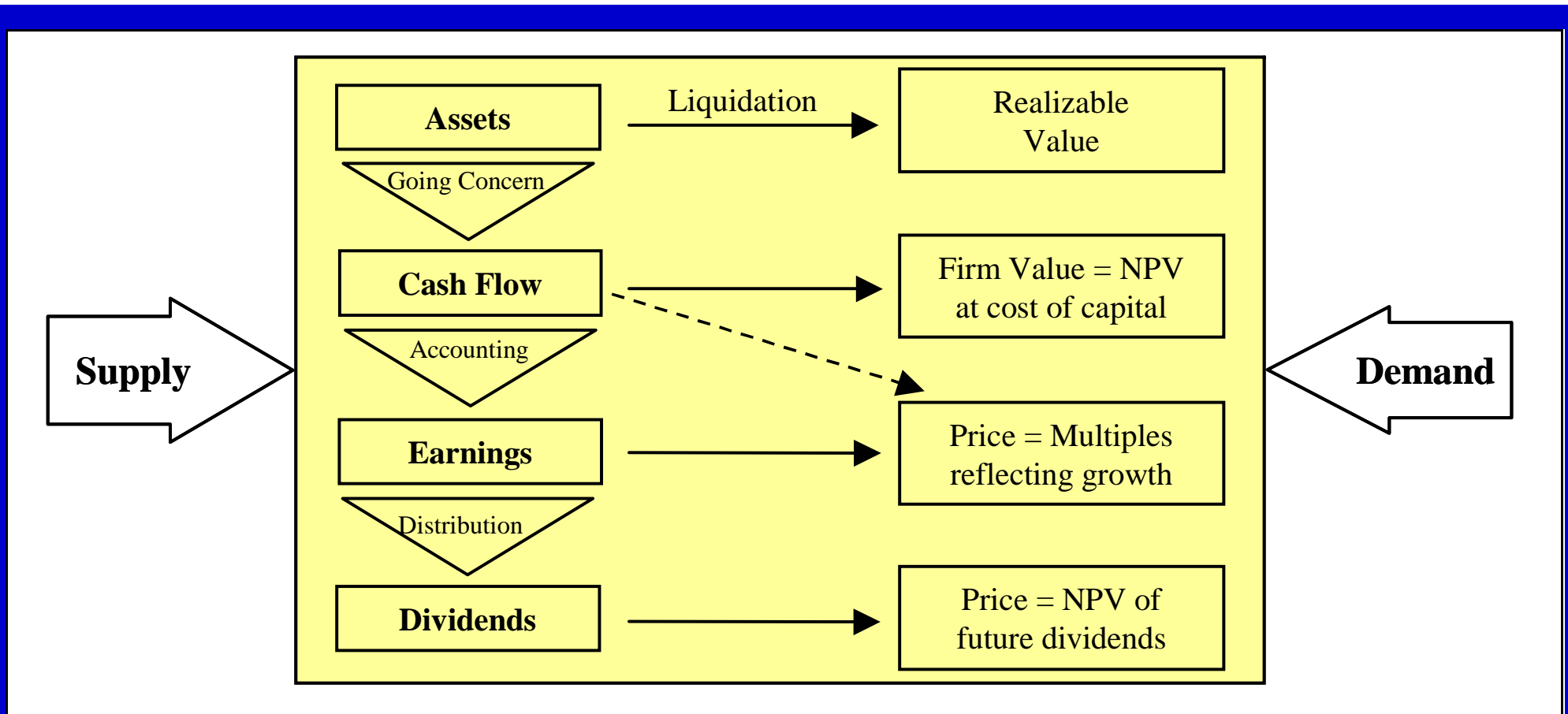


Illustration derived from Elton & Gruber, 1995; Pike & Neale, 1996

- As with any other business, an airport is valued on the basis of its current and expected revenues, earnings and cash flow.



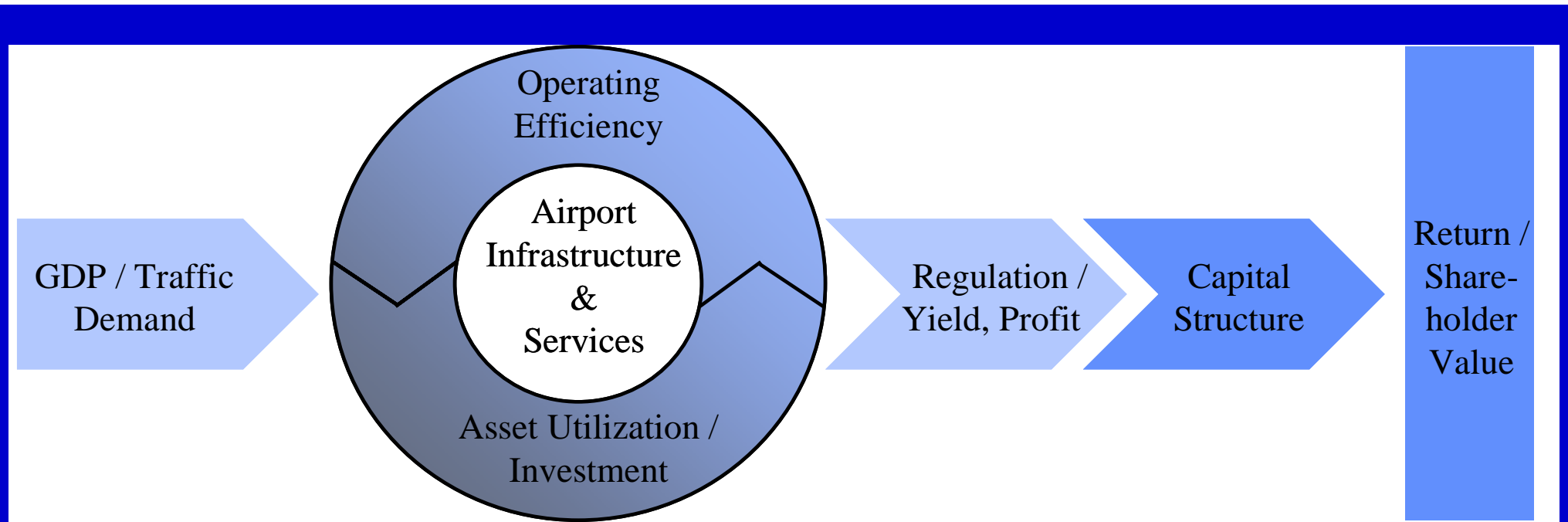
- **Share price performance, relative to local market**
- **Price / earnings (P/E) ratio**
- **Earnings per share (EPS)**
- **Price / cash flow ratio (P/CF)**
- **Price / cash earnings (P/CEPS)**

## → Traditional Valuation Measures II



<b>ADP (EUR)</b>	<b>as of 11/08/06</b>	<b>shares outst. (m)</b>	<b>Mkt cap (in €m)</b>	<b>Net Debt/ EBITDA</b>	<b>EV/Sales (x)</b>	<b>EBITDA Margin</b>	<b>EV/ EBITDA</b>	<b>P/E (x)</b>	<b>Dividend Yield</b>
47.18	Dec 05A	99	4,671	-	3.6	30%	11.8	25.9	1.4%
<b>Mkt cap</b> 4,671(m)	Dec 06E	99	4,671	3.0	3.4	33%	11.2	26.8	1.9%
	Dec 07E	99	4,671	-	3.2	33%	10.4	24.8	2.0%
<b>BAA * (GBP/p)</b>	<b>as of 08/06</b>	<b>shares outst. (m)</b>	<b>Mkt cap (€m)</b>	<b>Net Debt/ EBITDA</b>	<b>EV/Sales (x)</b>	<b>EBITDA Margin</b>	<b>EV/ EBITDA</b>	<b>P/E (x)</b>	<b>Dividend Yield</b>
933	Mar 06A	1,076	14,682	-	6.8	46%	12.9	19.7	2.4
<b>Mkt cap</b> 10,038(m)	Mar 07E	1,076	14,682	5.5	7.1	45%	15.7	21.0	2.6
	Mar 08E	1,076	14,682	-	6.7	46%	14.5	18.8	2.6
<b>CPH (DKK)</b>	<b>as of 11/08/06</b>	<b>shares outst. (m)</b>	<b>Mkt cap (€m)</b>	<b>Net Debt/ EBITDA</b>	<b>EV/Sales (x)</b>	<b>EBITDA Margin</b>	<b>EV/ EBITDA</b>	<b>P/E (x)</b>	<b>Dividend Yield</b>
1,830	Dec 05A	8	1,962	-	6.7	53%	13.7	22.3	4.7%
<b>Mkt cap</b> 14,640(m)	Dec 06E	8	1,962	2.5	6.5	52%	12.6	20.4	3.6%
	Dec 07E	8	1,962	-	6.4	55%	12.1	18.8	2.7%
<b>FRA (EUR)</b>	<b>as of 11/08/06</b>	<b>shares outst. (m)</b>	<b>Mkt cap (€m)</b>	<b>Net Debt/ EBITDA</b>	<b>EV/Sales (x)</b>	<b>EBITDA Margin</b>	<b>EV/ EBITDA</b>	<b>P/E (x)</b>	<b>Dividend Yield</b>
57.10	Dec 05A	91	5,196	-	2.5	25%	9.9	31.4	1.6%
<b>Mkt cap</b> 5,196(m)	Dec 06E	91	5,196	0.8	2.4	26%	9.3	26.9	1.9%
	Dec 07E	91	5,196	-	2.3	26%	8.7	24.0	2.1%
<b>VIE (EUR)</b>	<b>as of 11/08/06</b>	<b>shares outst. (m)</b>	<b>Mkt cap (€m)</b>	<b>Net Debt/ EBITDA</b>	<b>EV/Sales (x)</b>	<b>EBITDA Margin</b>	<b>EV/ EBITDA</b>	<b>P/E (x)</b>	<b>Dividend Yield</b>
61.38	Dec 05A	21	1,289	-	3.2	36%	8.7	17.3	3.3%
<b>Mkt cap</b> 1,289(m)	Dec 06E	21	1,289	0.5	3.1	38%	7.9	17.2	3.3%
	Dec 07E	21	1,289	-	2.9	39%	7.5	17.1	3.4%
<b>ZRH (CHF)</b>	<b>as of 11/08/06</b>	<b>shares outst. (m)</b>	<b>Mkt cap (€m)</b>	<b>Net Debt/ EBITDA</b>	<b>EV/Sales (x)</b>	<b>EBITDA Margin</b>	<b>EV/ EBITDA</b>	<b>P/E (x)</b>	<b>Dividend Yield</b>
280	Dec 05A	6	1,055	-	5.0	52%	9.6	23.3	0.4%
<b>Mkt cap</b> 1,680(m)	Dec 06E	6	1,055	3.7	4.8	52%	9.2	19.7	1.1%
	Dec 07E	6	1,055	-	4.8	53%	9.8	15.2	1.1%

## → An Airport Business Model



- **A business model is essentially the method of doing business by which a company can sustain itself – that is, generate revenue.**
- **Selling the provision of infrastructure (massive capex) and support services (opex) in the (regulated) marketplace.**

## → The Roots of Key Value Drivers



- **Operating Efficiency, i.e.:** → **ROS**

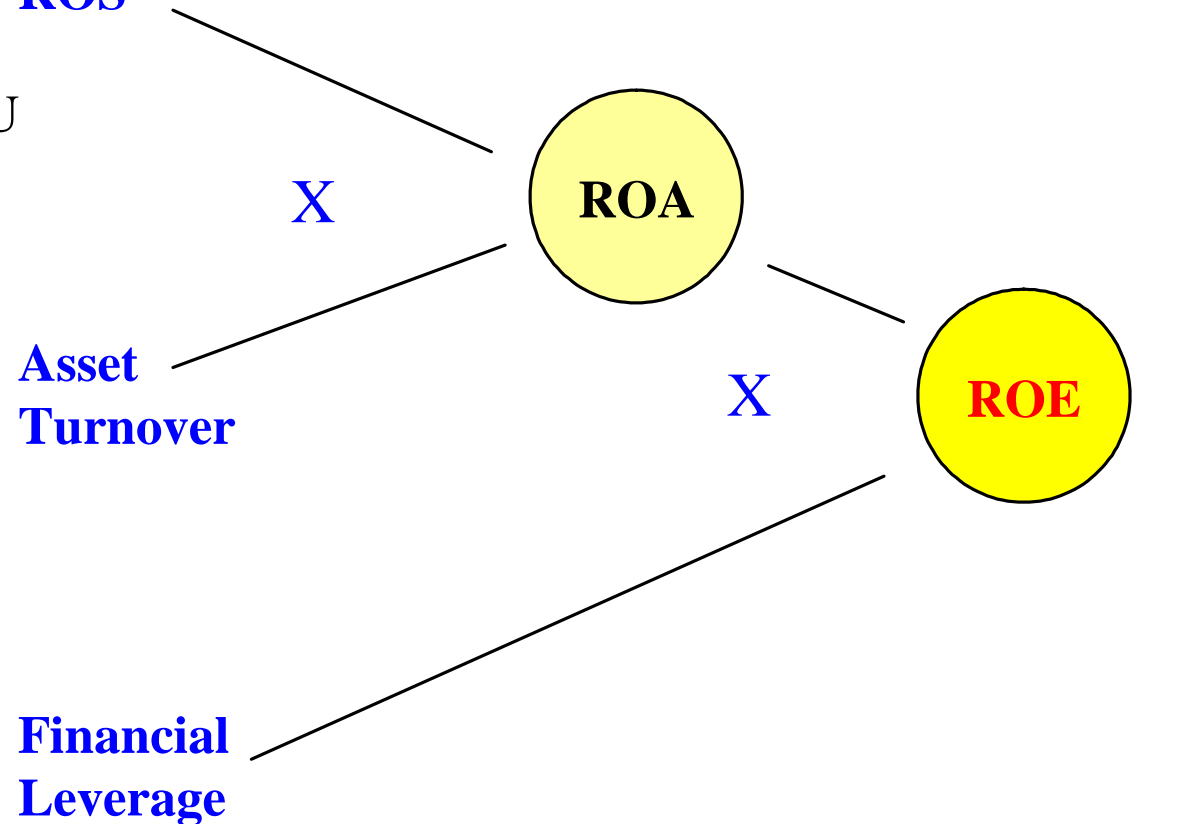
- Infl.-Adj. Total Revenue/WLU
- EBITDA Margin
- Cash Flow/Total Revenue

- **Asset Utilization, i.e.:** →

- WLU/Total Assets
- Capex/Total Revenue
- Capex/Depreciation

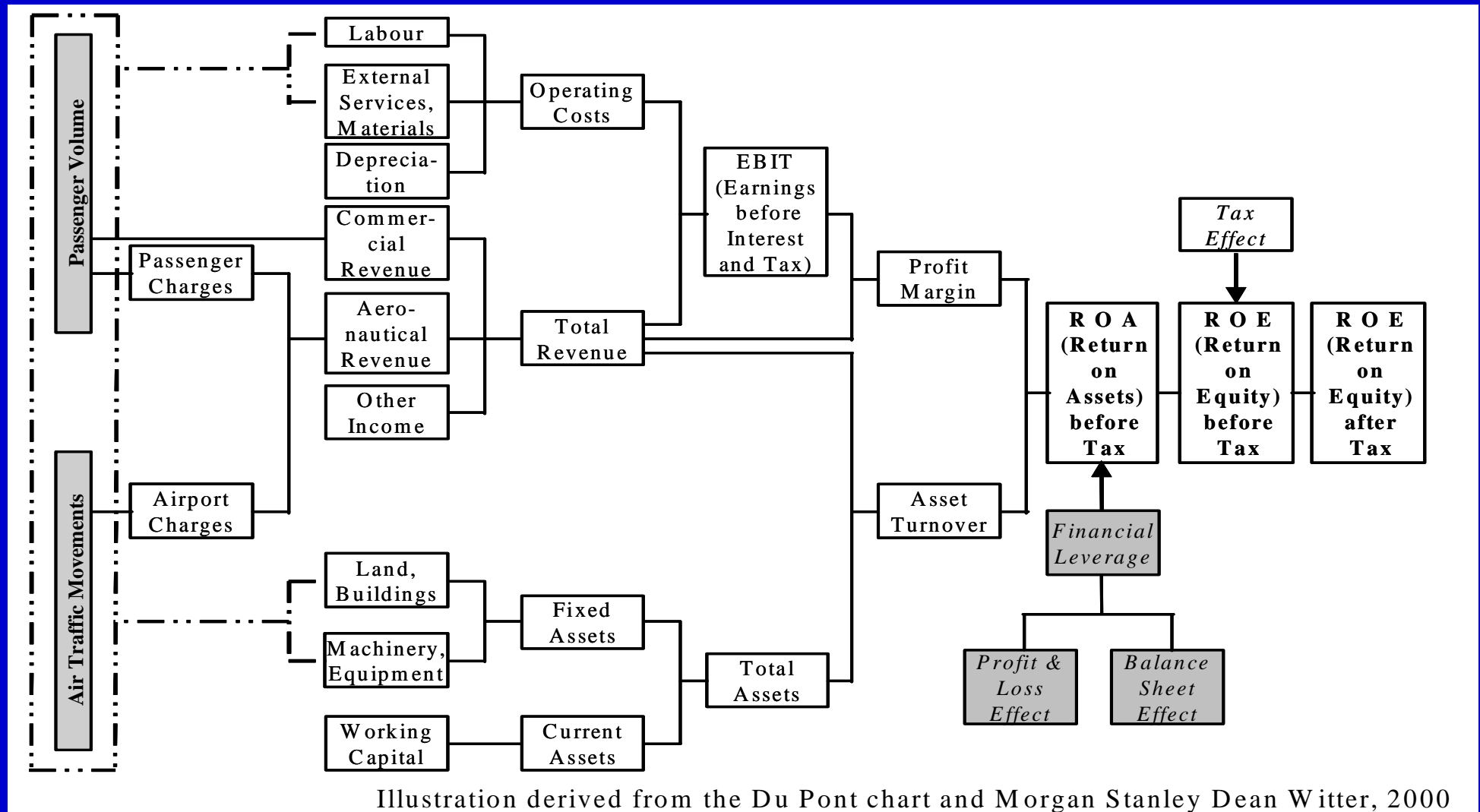
- **Capital Structure, i.e.:** →

- Net Assets/Total Assets
- Gearing (Debt/Equity Ratio)
- Debt Ratio



(Post-Tax)

## → Frame of Reference: The Airport Value Tree



- The airport value tree is rooted in traffic. It summarizes the relationships between investment, asset turnover, profit margin and financial leverage.

## → The three Drivers of Return



- Du Pont formula:  $ROA = \text{Profit Margin} \times \text{Total Asset Turnover}$
- ROI (ROE) can be split into three components / drivers, turnover of total assets, return on sales, financial leverage:

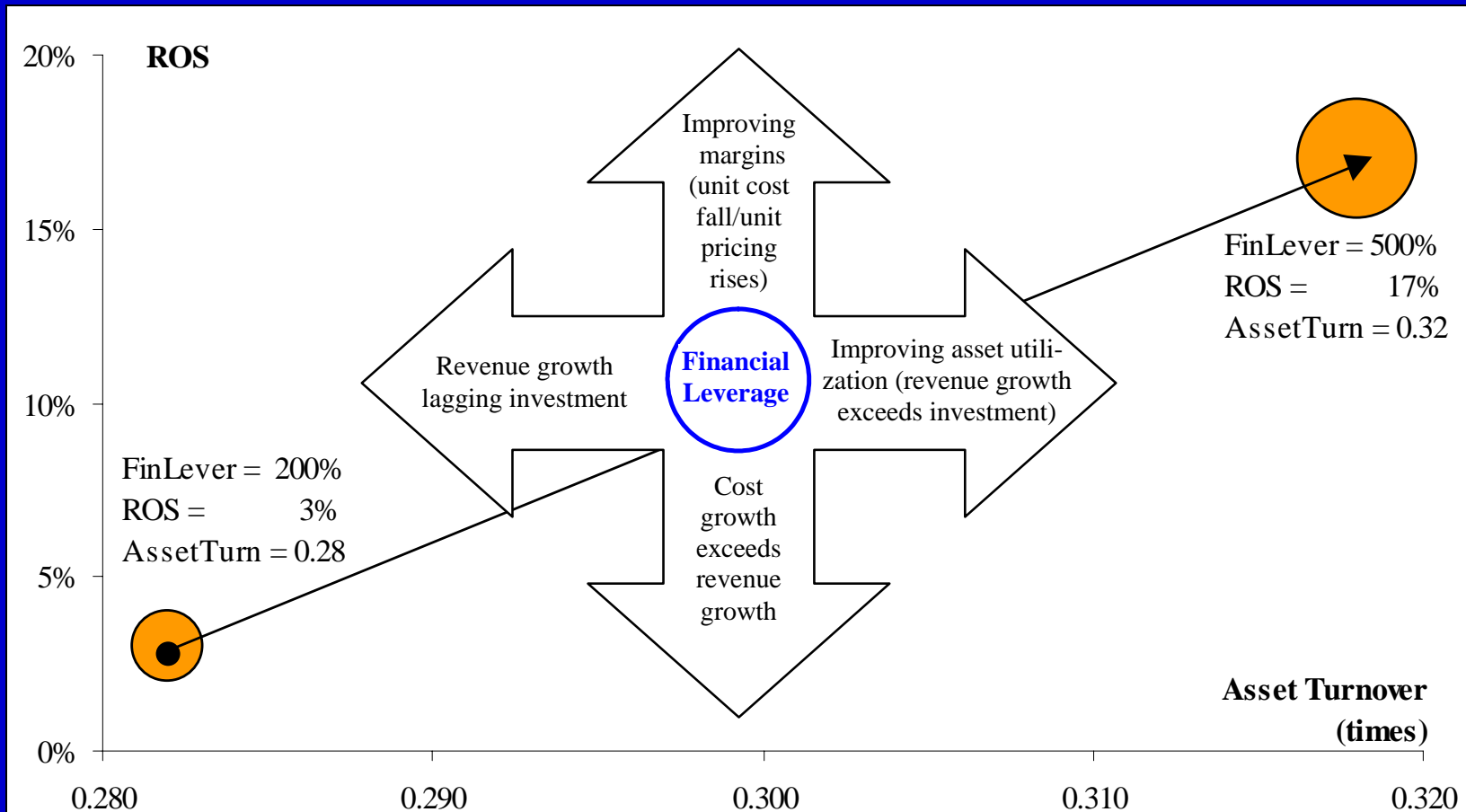
$$\frac{\text{Net Income}}{\text{Shareh. Funds}} = \frac{\text{Total Revenue}}{\text{Total Assets}} \times \frac{\text{Net Income}}{\text{Total Revenue}} \times \frac{\text{Total Assets}}{\text{Shareh. Funds}}$$

while asset turnover x return on sales (ROS) = return on assets (ROA),

hence

- Enhanced Du Pont equation:  $ROE = ROA \times \text{Financial Leverage}$

# → A Driver-Based Valuation Approach: Framework for Return Profiles




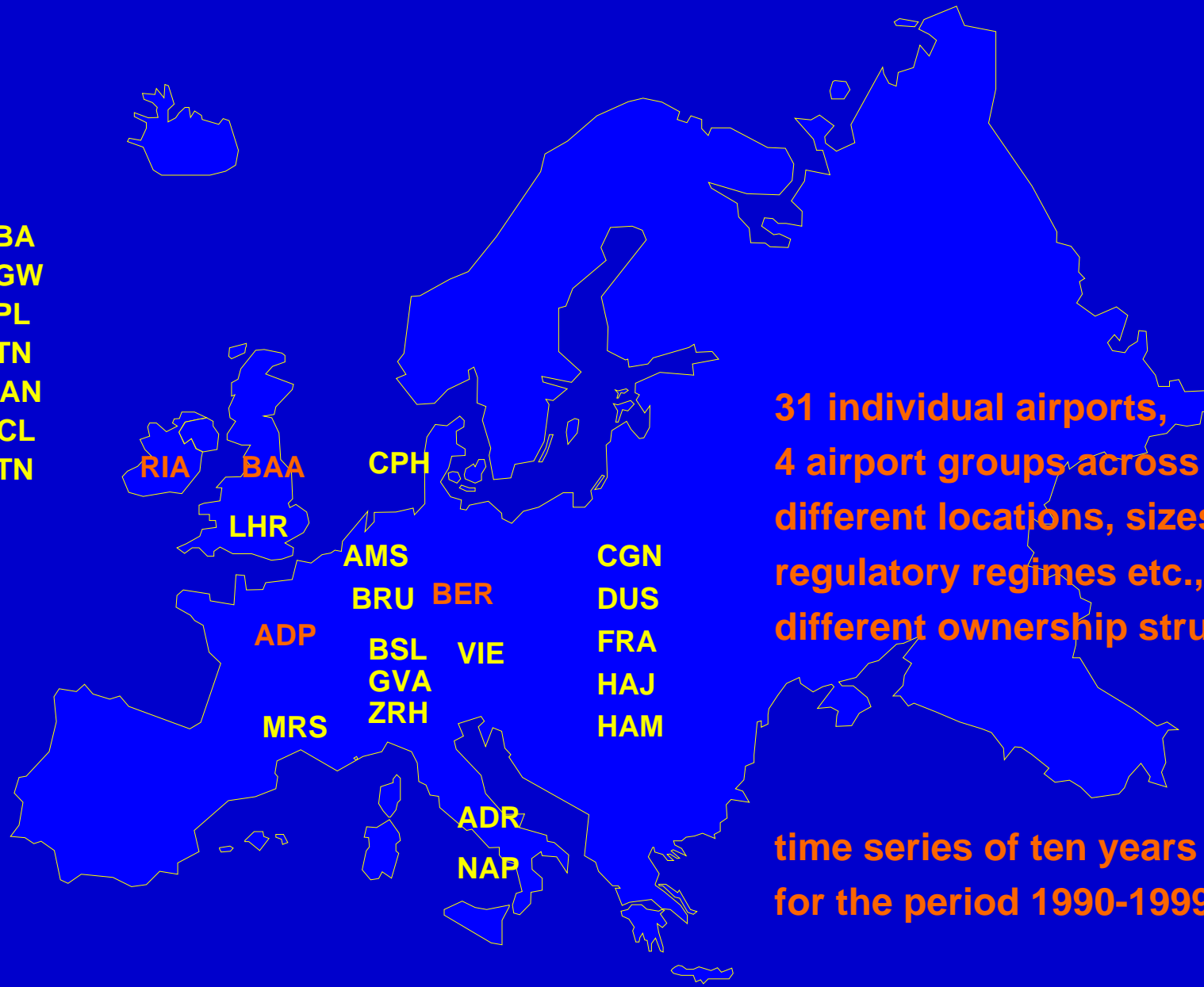
ROS (Return on Sales)	Net Income over Total Revenue
Total Asset Turnover	Total Revenue over Total Assets
Financial Leverage	Total Assets over Shareholders' Funds
	<ul style="list-style-type: none"> <li>• The <b>size</b> of the bubble is determined by financial leverage.</li> <li>• The <b>position</b> of the bubble is determined by ROS and asset turnover.</li> </ul>

Illustration derived from MSDW, 2000

## → Case Study: Sample Airports



ABZ  
BFS  
BHX  
BRS  
CWL  
EDI  
EMA  
GLA  
LBA  
LGW  
LPL  
LTN  
MAN  
NCL  
STN



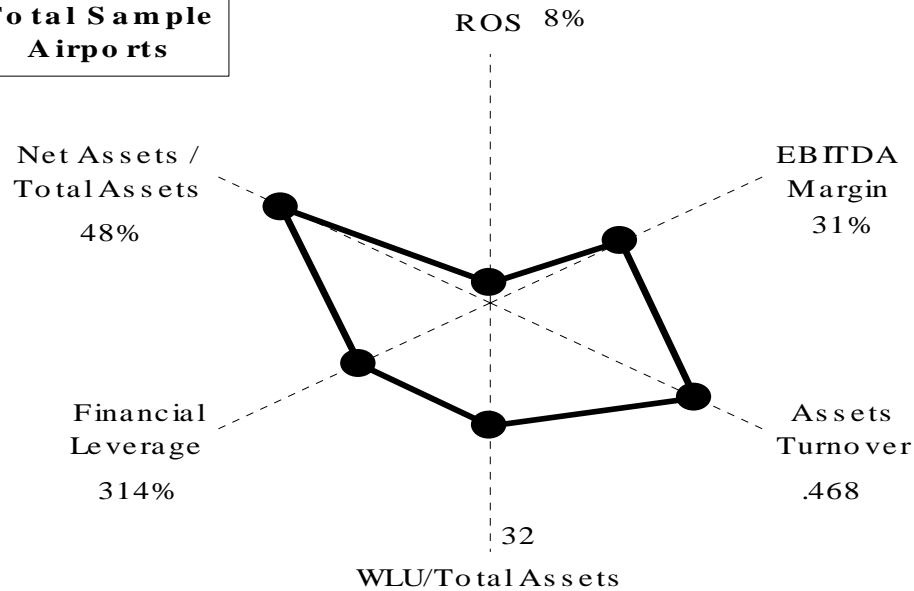
**31 individual airports,  
4 airport groups across Europe;  
different locations, sizes,  
regulatory regimes etc., and  
different ownership structures**

**time series of ten years  
for the period 1990-1999/'00**

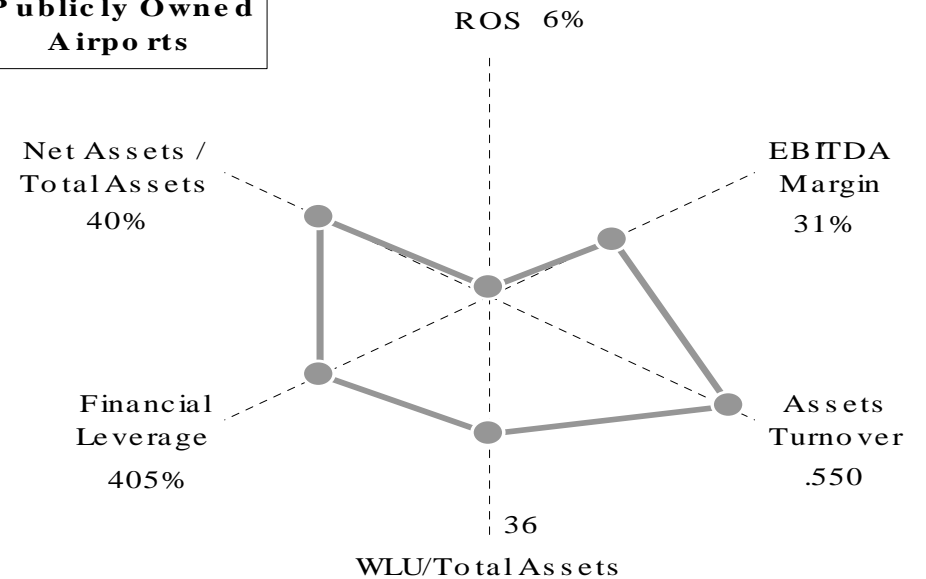
# → Performance Profiles of Sample Airports



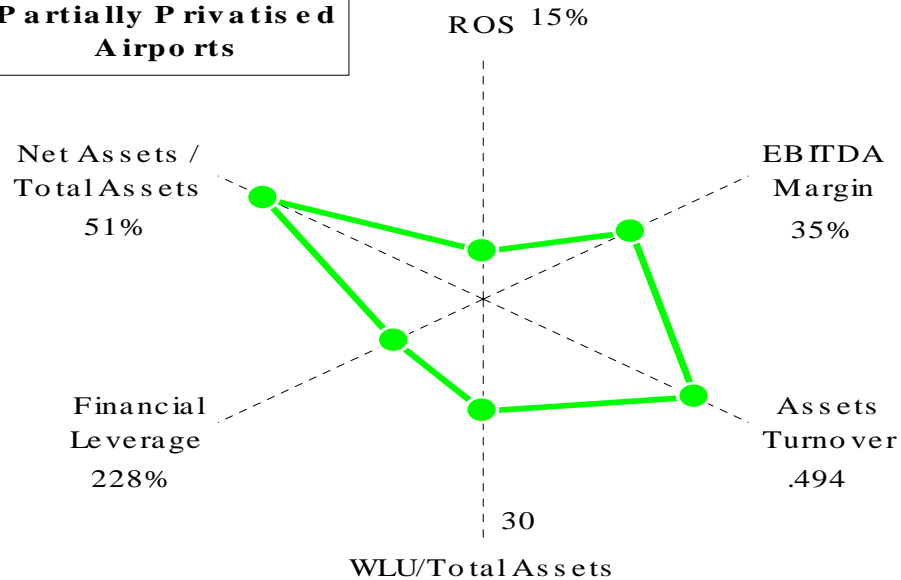
## Total Sample Airports



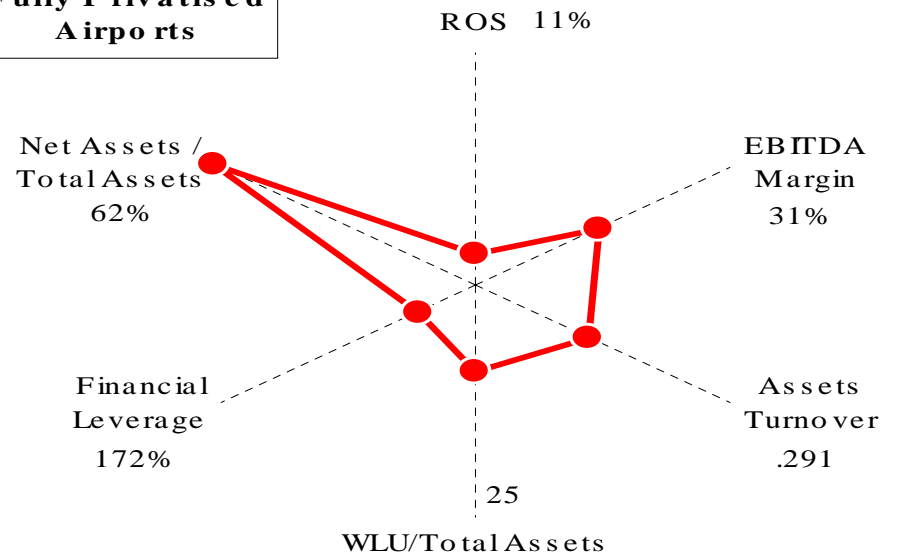
## Publicly Owned Airports



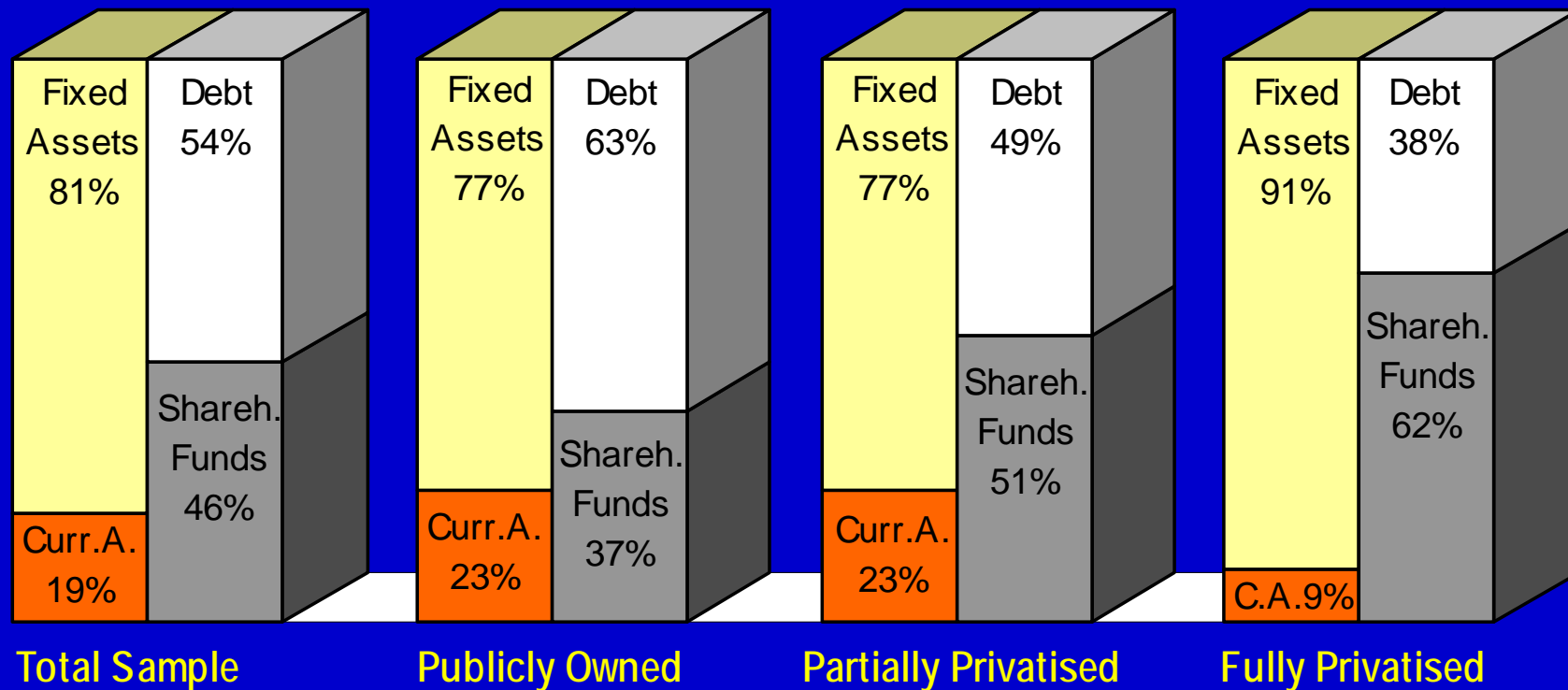
## Partially Privatised Airports



## Fully Privatised Airports

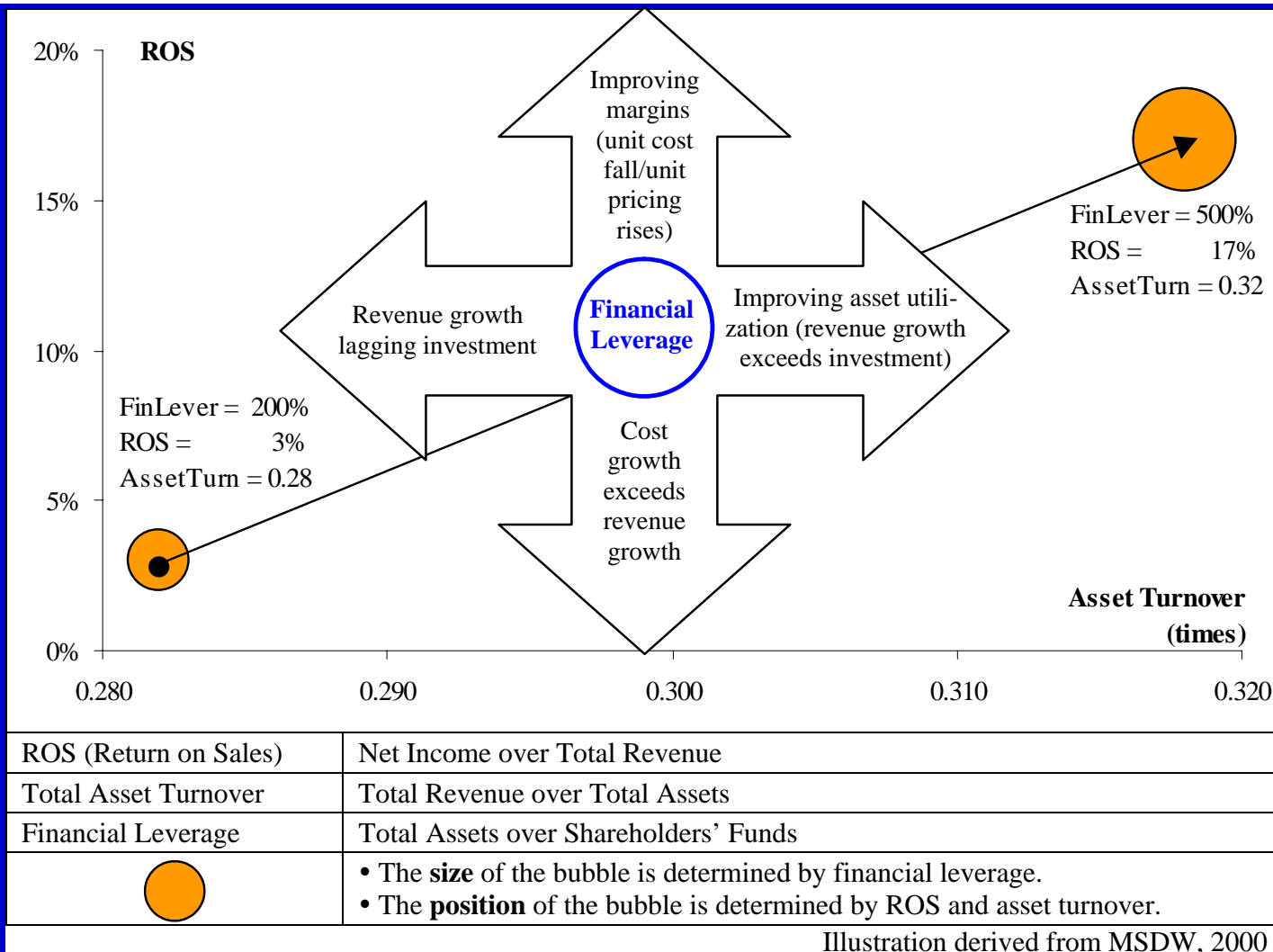


## → Balance Sheet Structures of Sample Airports



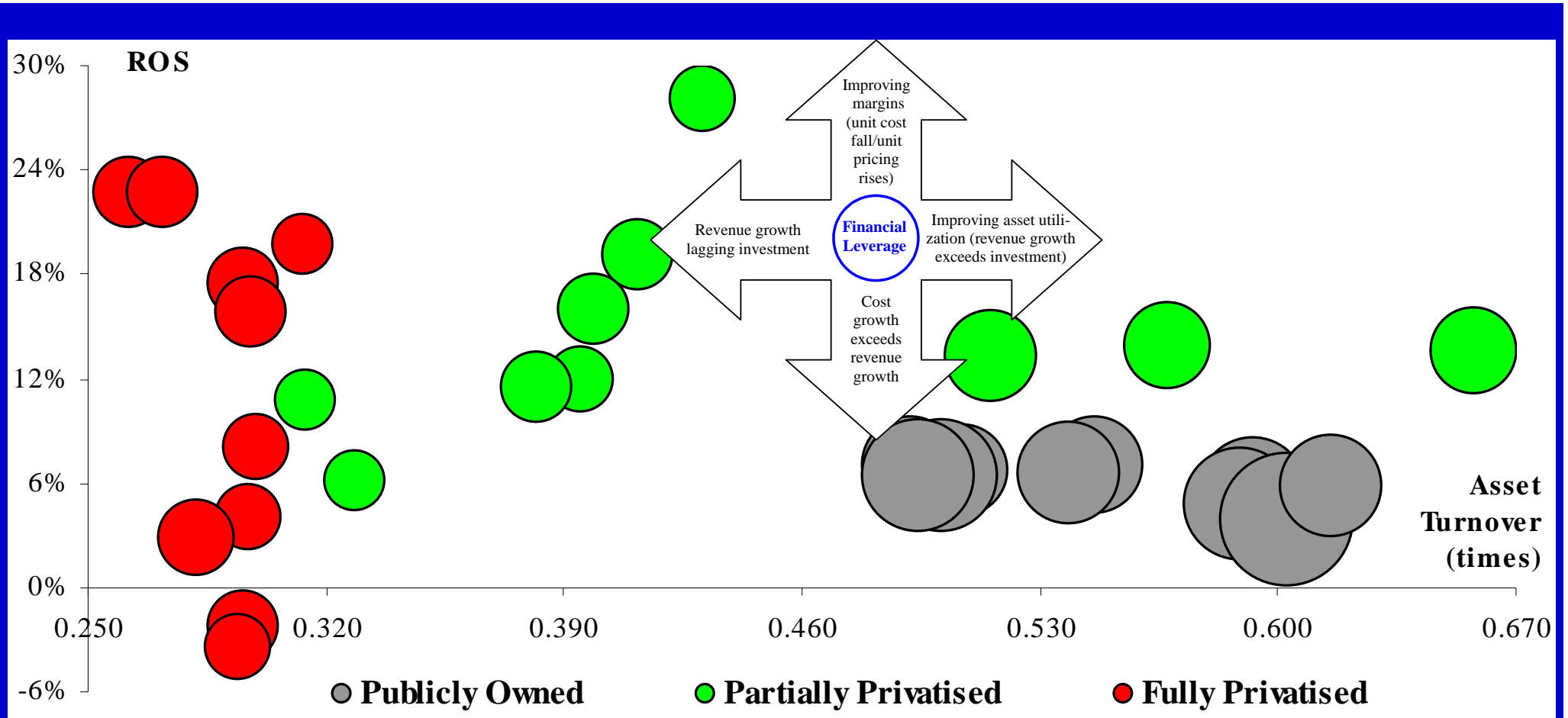
- Publicly owned airports assume more debt relative to their shareholders' funds, resulting in higher gearing and financial leverage, compensating for the comparatively low ROA generated by the business.
- Financial leverage is the use of fixed financing costs; it is acquired by choice, used to increase the return to common shareholders.

# → The Driver-Based Valuation Approach: Framework & Drivers Revisited



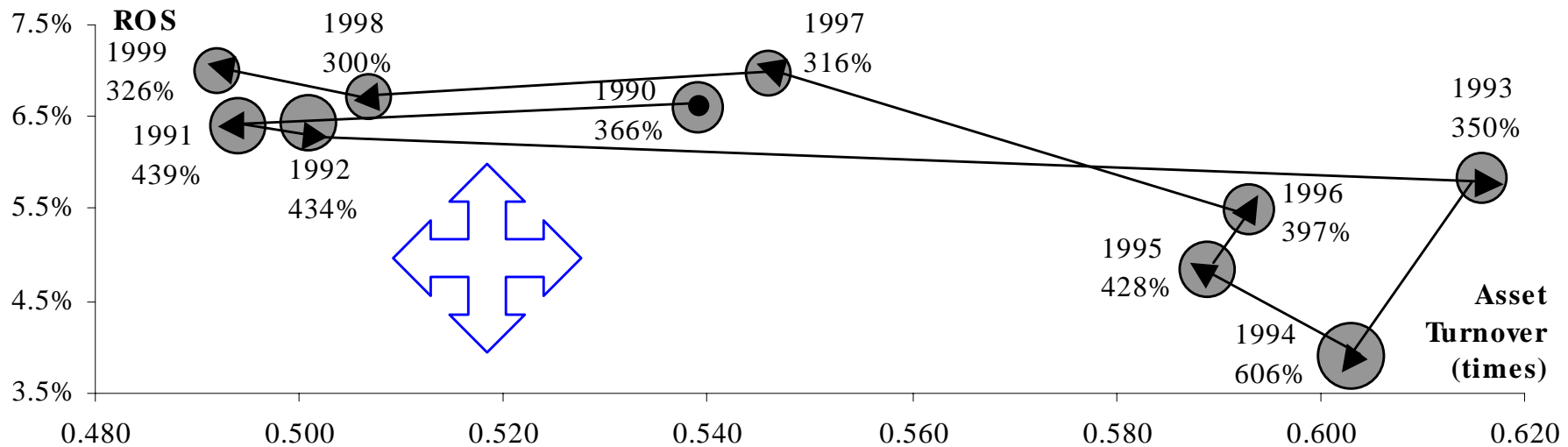
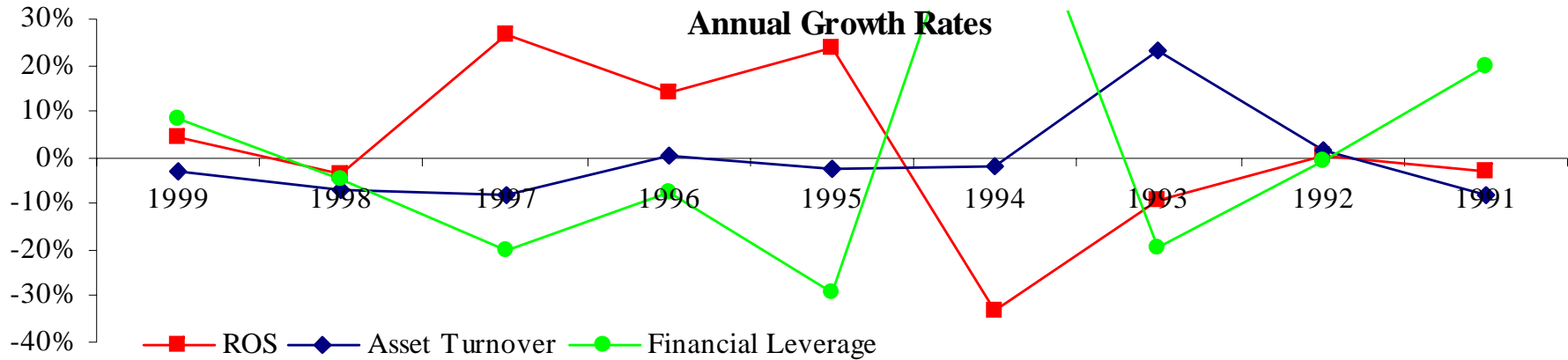
- The three drivers of return are: 1. operating efficiency → ROS, 2. Asset utilization/capital productivity → total asset turnover and 3. capital structure → financial leverage.

## → Positioning of Sample Airports per Ownership Criteria



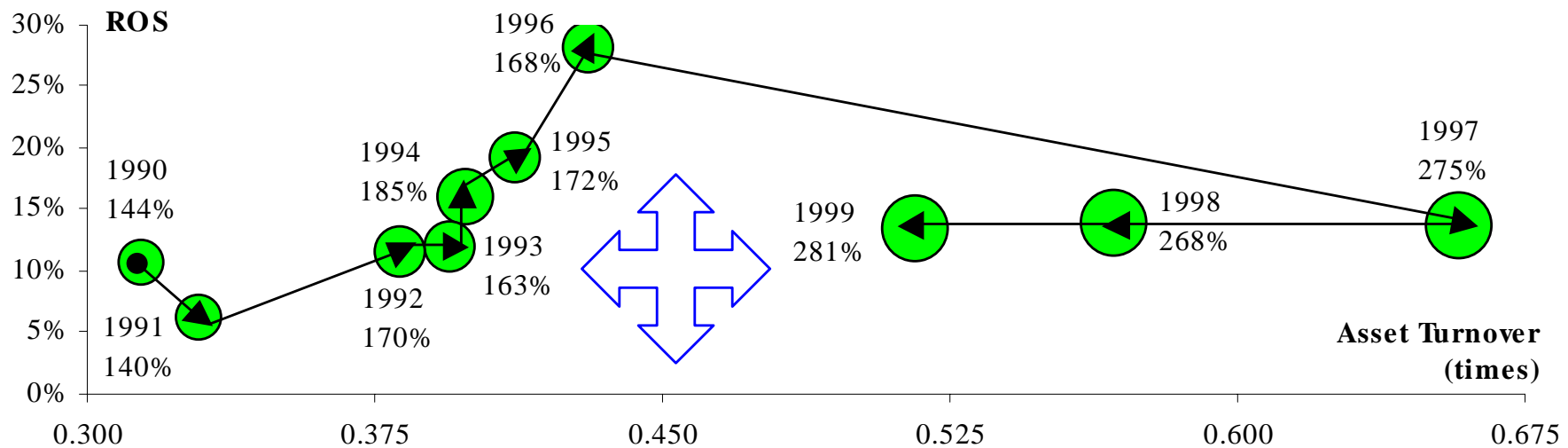
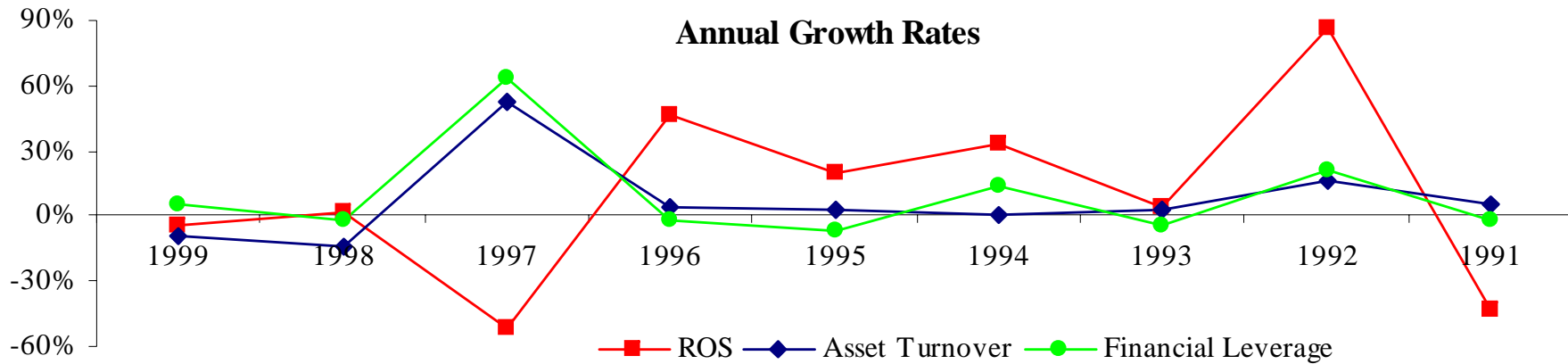
- ROA and ROE of publicly owned, partially and fully privatised airports are based on considerably different intensities of the same key drivers.

# → Return Profiles of Sample Airports I



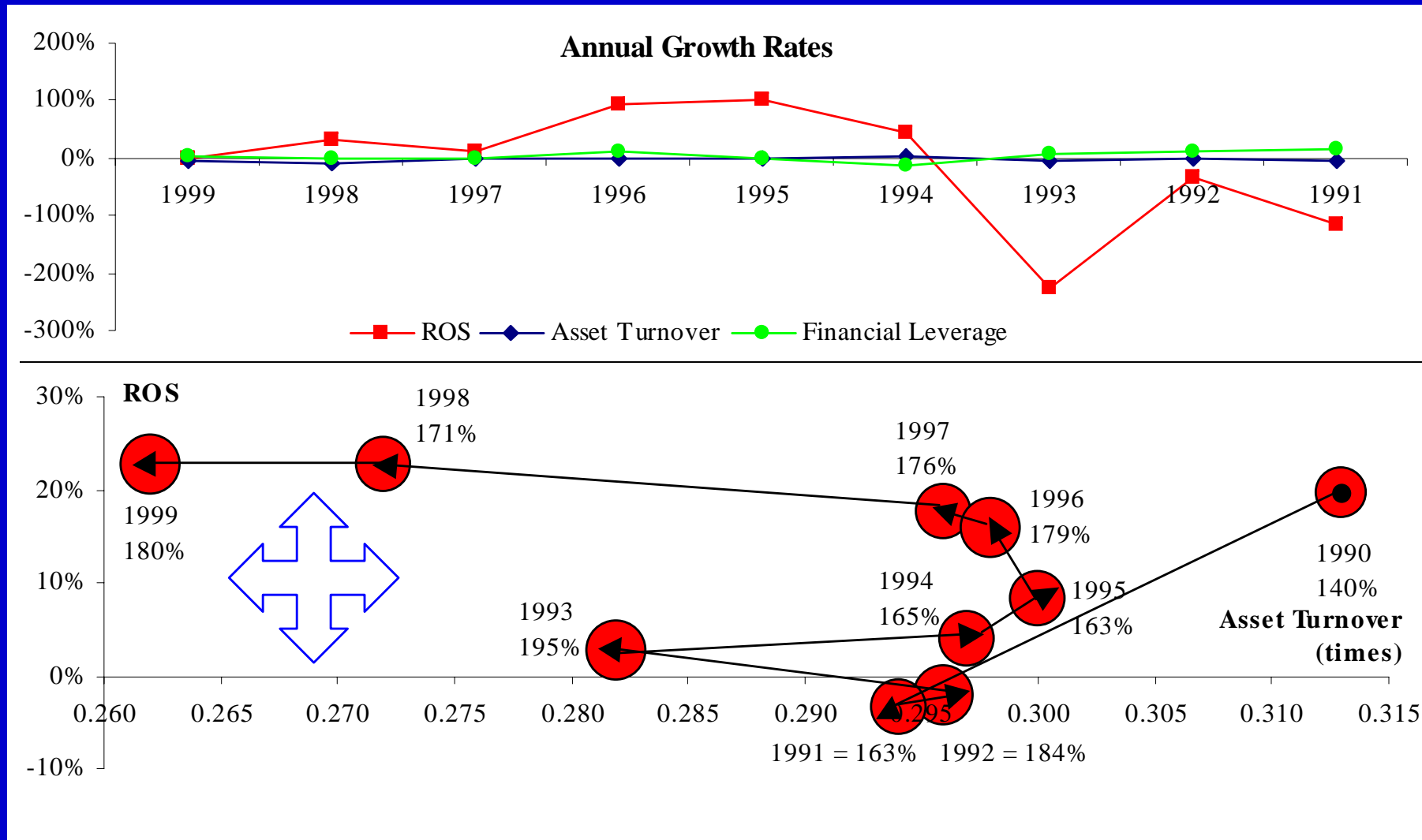
- Publicly owned airports are characterized by comparatively high asset utilization and financial leverage, and low operating efficiency.

## → Return Profiles of Sample Airports II



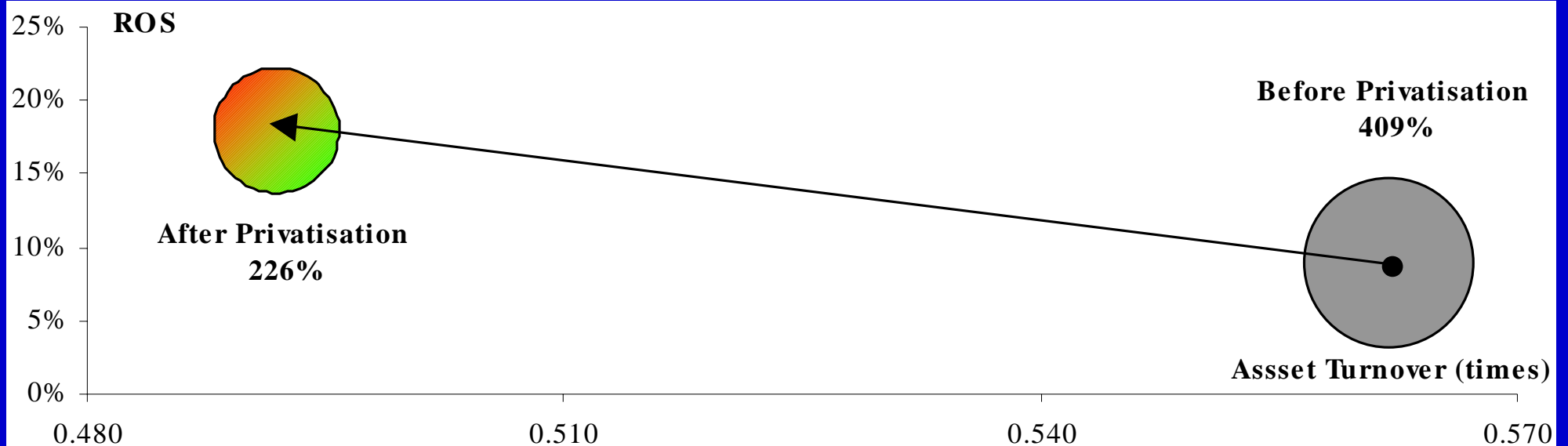
- **Partially privatised airports are characterized by medium high asset utilization and financial leverage, as well as high operating efficiency.**

## → Return Profiles of Sample Airports III



- Fully privatised airports, in contrast, are characterized by comparatively low asset utilization and financial leverage, and high operating efficiency.

## → Positioning of Paired-Sample Airports Before and After Partial or Full Privatisation



- **The positioning of sample airports changes significantly with an increase in the degree of privatisation:**
  - **Capex grows faster than revenue → decreased asset utilization / capital productivity and asset turnover.**
  - **Operating margin and ~ efficiency increase on average → increased return on sales.**
  - **Financial leverage decreases → higher equity commitment !**



- Maximising capacity utilization appears to be the formula for success in the airport business. This requires project management and financial skills for a thorough phasing of capex and optimisation of the use of debt facilities and equity supply.
- ‘Sweating’ the assets includes efficient management of traffic flows and optimal allocation of capital, finally maximizing the effectiveness of investment spending, return rates and shareholder value.
- Criteria for (strategic) investments: growth and commercial potential, potential for margin growth, existing capacity, appropriate regulatory framework and capital finance structure.



- **Airport economics are dominated by the investment cycle; and although footed on the same business model, not all airport earnings are created equal.**
- **Airports should not be valued with a single multiple but with measures recognising the key features of success of their business model and value tree.**
- **It is useful to analyse the intensity and changes of the key drivers: return on sales, asset turnover and financial leverage.**
- **Identifying the distinct differences in terms of operating efficiency, capital productivity and capital structure is the added value of this alternative, driver-based valuation approach.**

# Benchmarking Airports: A Case Study on Alternative Valuation Approaches

Thank you for your attention,  
please feel invited for questions !

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