



Does Privatisation Improve the Efficiency of Airports ?

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- **Research Rationale**
- **Aims & Scope / Subjects & Data**
- **Research Design & Procedures**
- **Indicators of Partial Factor Productivity and Financial Ratios**
- **Results of Independent t-Tests:**
 - **Operating Efficiency**
 - **Asset Utilisation**
 - **Capital Structure**
- **Balance Sheet Structures of Sample Airports**
- **The Airport Value Tree**
- **Results of Paired-Samples t-Tests**
- **Overall Efficiency of Sample Airports**
- **Performance Profiles of Sample Airports**
- **Conclusion and Outlook**



Deregulation, Liberalisation



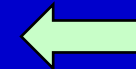
Airports as Commercial Entities

- **traffic growth, congestion**
- **capacity constraints**
- **investment cycle**
- **funding requirements**
- **commercialisation**
- **privatisation**
- **diversification**
- **globalisation**

**Intra-EU
Tax & Duty Free
Abolition**



**Environmental
and Noise
Restrictions**



Regulation of Aeronautical Charges, EU-Directive on Ground Handling



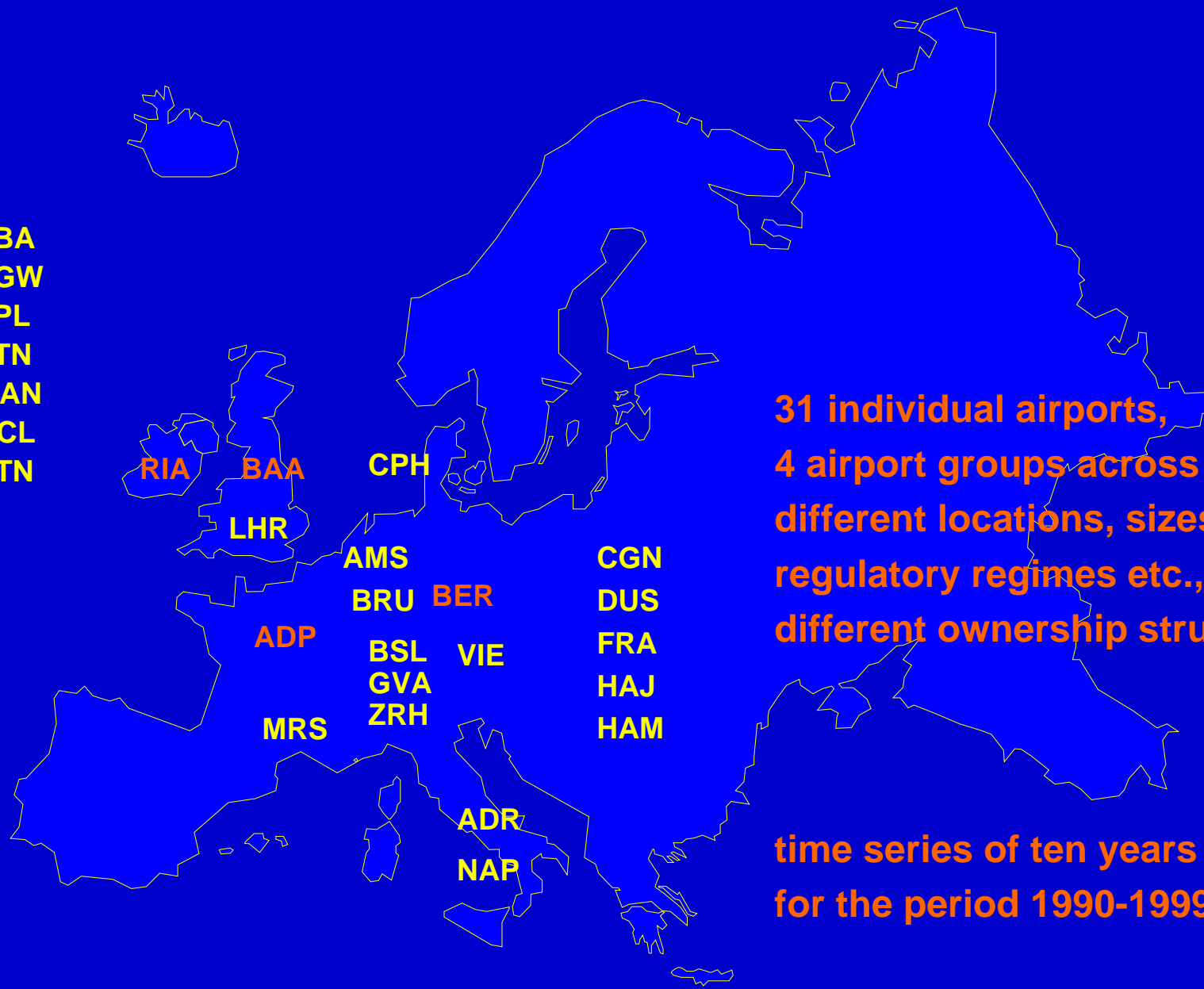


- **Analysis of the financial performance of European commercial airports to identify distinctive features. Sample airports subject to partial or full privatisation are compared to those still in public ownership in order to investigate differences attributable to the degree of privatisation.**
- **The period under consideration is the ten years from 1990 to 99/00. This longitudinal study presupposes continuity in order to identify differences caused by the ownership structure rather than by external changes (intra-EU duty free, low-cost carriers, September 11, war on Iraq, SARS).**
- **Geographically, the scope has been restricted to Europe, since all sample airports enjoy similar market as well as operational conditions and are subject to the same kind of overall economic and traffic development.**

→ Subjects and Data



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**



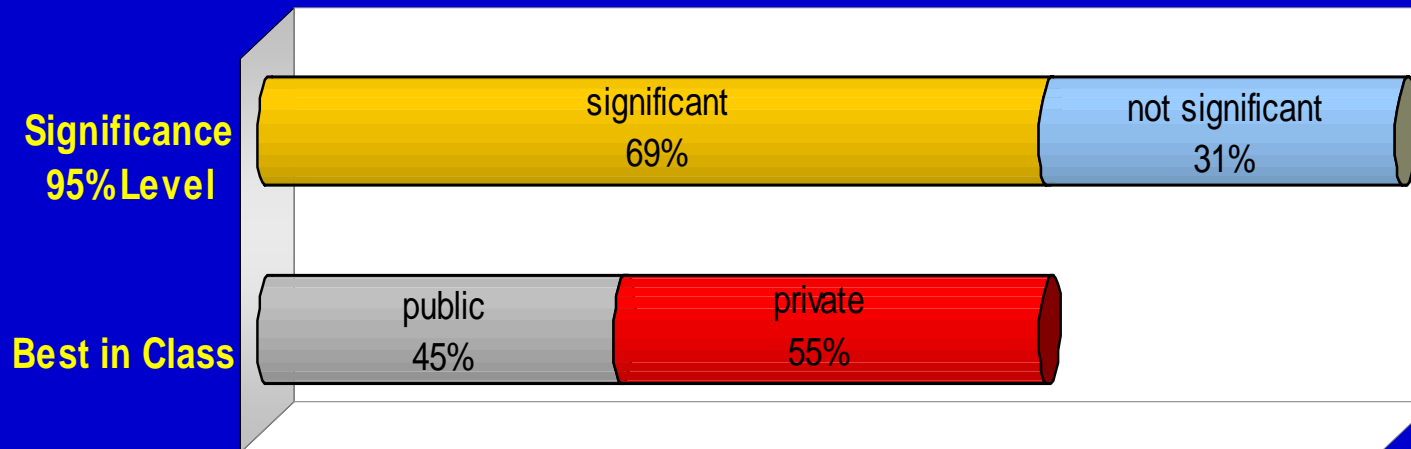
- **Based on the concept of performance indicators and financial ratio analysis comparisons are made by working out indicators and ratios for the individual sample airports as well as the sub groupings of publicly owned and privatised airports.**
- **Partial factor productivity indicator and financial ratio analysis outcomes are evaluated and tested in order to investigate for statistically significant differences which may be attributable to the degree of privatisation.**
- **The independent samples t-test is designed to test hypotheses about two independent means. This statistical technique tests the null hypothesis that the population mean of a variable is the same for two groups of cases.**

→ Indicators of Partial Factor Productivity and Financial Ratios



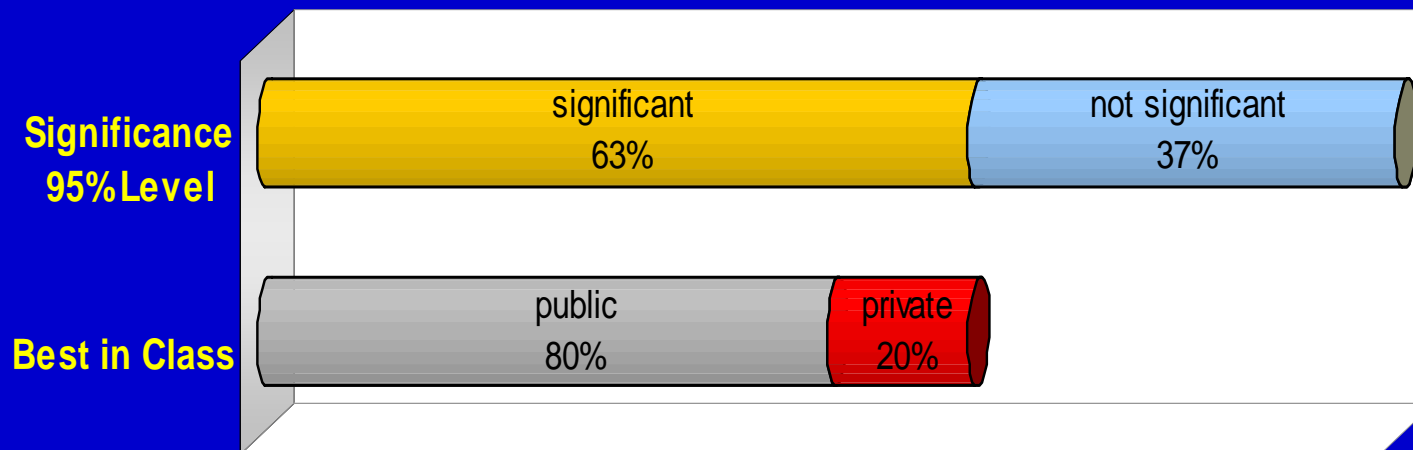
- **Operating Efficiency:**
Total Cost/WLU, Operating Cost/WLU, Total Revenue/WLU (all in real terms), Operating Margin, EBITDA Margin, Revenue/Expenditure Ratio, Return on Assets, Return on Sales, Return on Revenue, Cash Flow in % of Total Revenue.
- **Asset Utilisation:**
WLU/Total Assets, Total Assets Turnover, Fixed Assets Turnover, Capital Expenditure/PAX, Capital Expenditure in % of Total Revenue, Capital Expenditure/Depreciation Ratio.
- **Capital Structure:**
Net Assets in % of Total Assets, Debt Ratio, Gearing (Debt/Equity Ratio), Financial Leverage.

→ Results of Independent t-Tests: Operating Efficiency



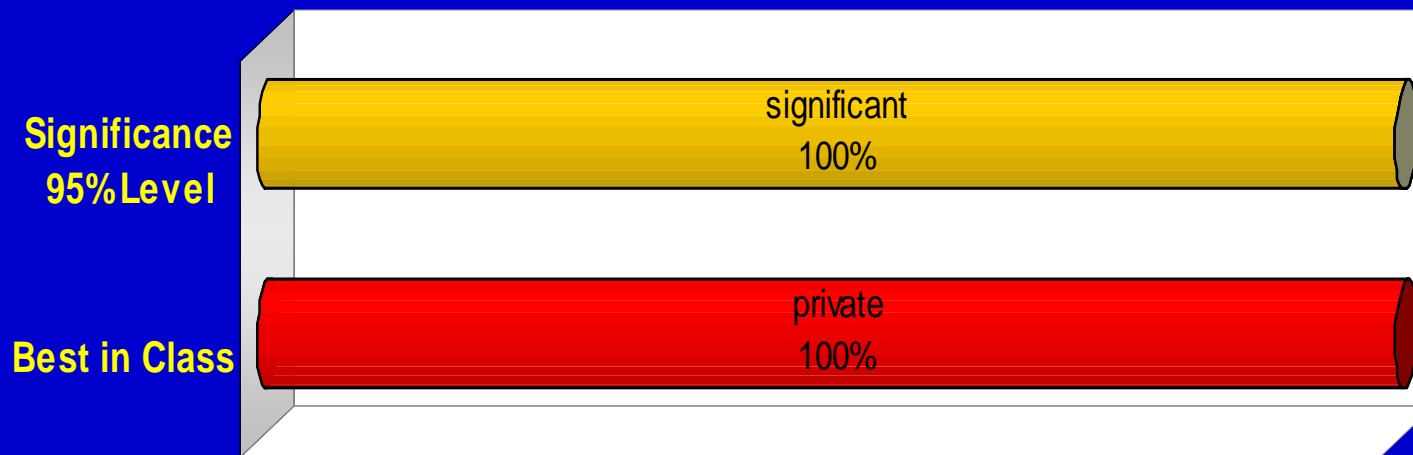
- The independent t-test reveals statistically significant or even highly significant differences between publicly owned and privatised airports for 69% of the indicators and ratios measuring operating efficiency.
- In 55% thereof privatised sample airports achieve a higher performance in terms of operating efficiency versus 45% regarding publicly owned ones.

→ Results of Independent t-Tests: Asset Utilisation



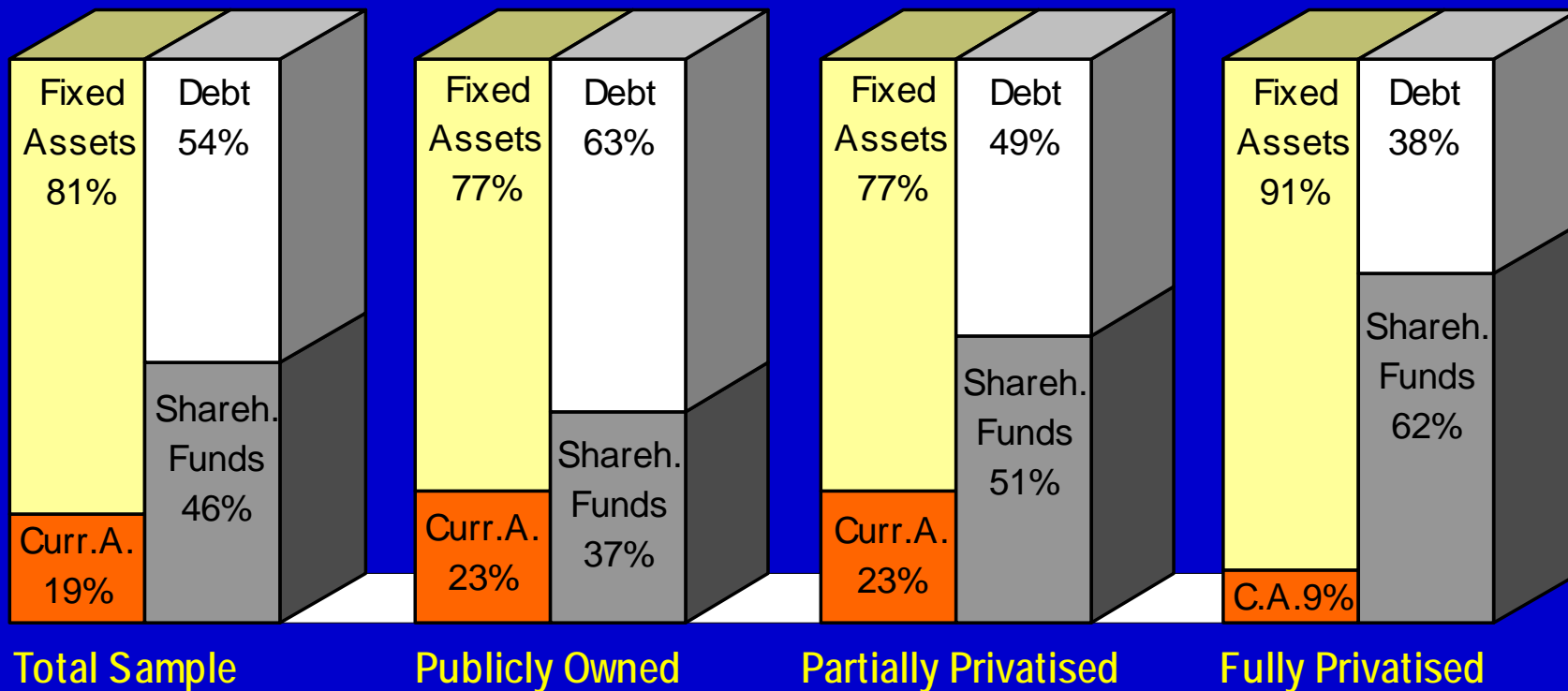
- **63% of the indicators and ratios measuring asset utilisation tested significant or even highly significant for a difference between publicly owned and privatised sample airports.**
- **In 80% thereof publicly owned airports utilise their assets more intensely than privatised ones.**

→ Results of Independent t-Tests: Capital Structure



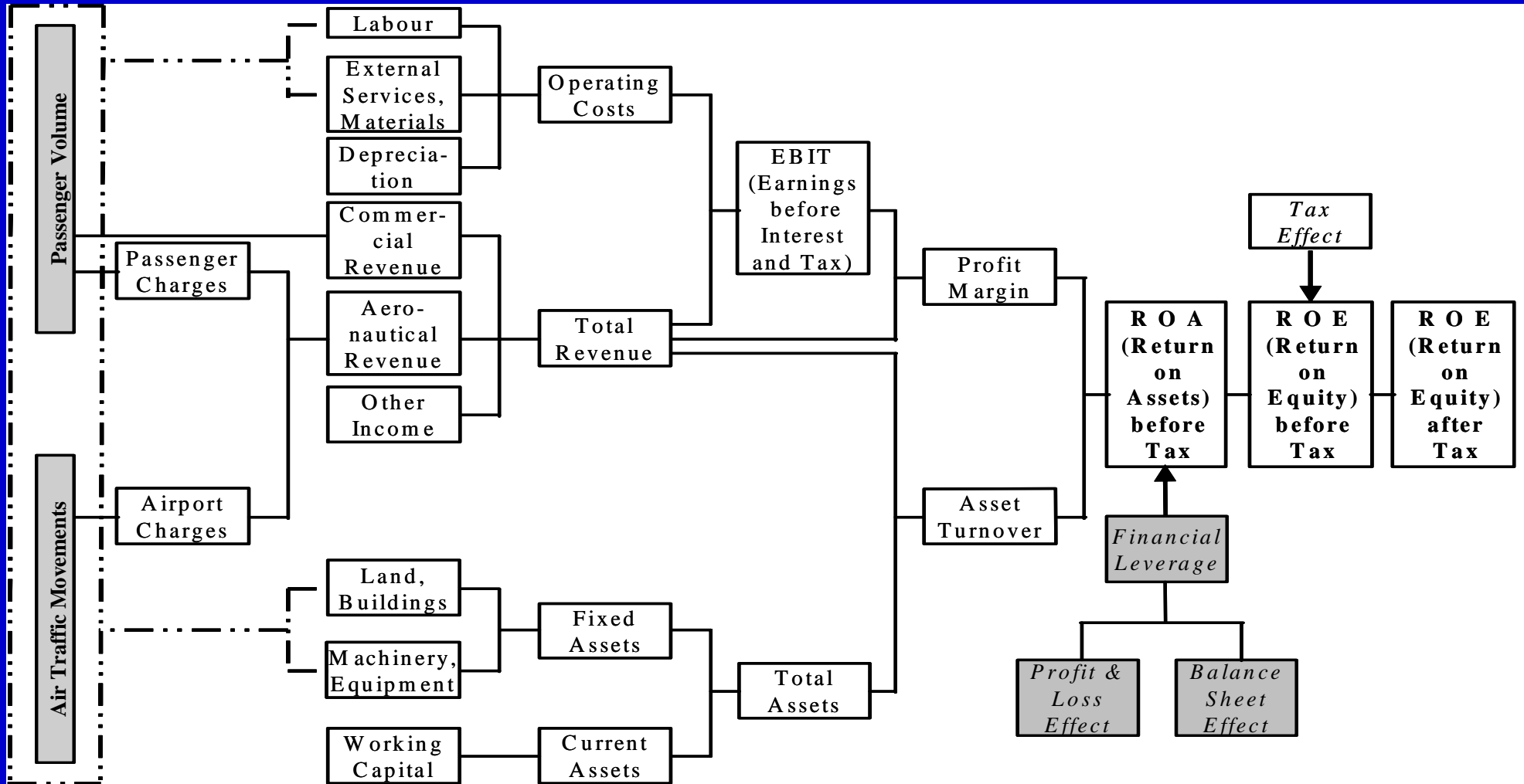
- The t-tests on differences in the capital structure of publicly owned and privatised airports reveal 100% highly significant results.
- In all cases privatised airports record an „improved“ capital structure in terms of a higher equity share or lower financial leverage than publicly owned sample airports.

→ 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 Airport Value Tree



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

→ Results of Paired-Samples t-Tests:

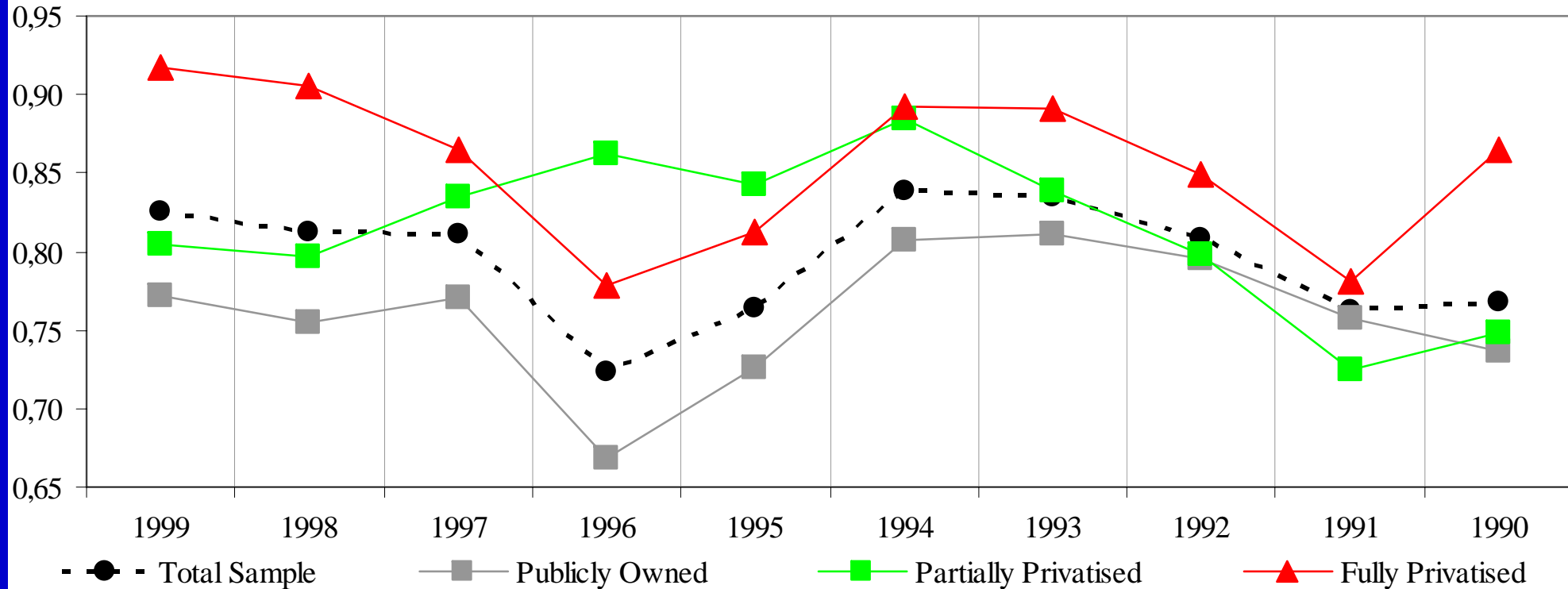


- Changes in performance before and after partial or full privatisation were assessed by a matched-samples t-test of those nine airports which experienced a change in ownership structure: ADR, BRS, CPH, HAJ, NAP, VIE / BFS, CWL, EMA.
- This repeated measures design tests the null hypothesis that the difference in means of two related variables (i.e. the outcomes of PFP and FRA prior to/after privatisation) is zero.
- The results of the dependent t-tests generally confirm the findings of the independent t-tests and reveal statistically significant differences for 12 ratios; wherever no statistically valid relationship was found, the direction of change is consistent.

→ Overall Efficiency of Sample Airports



DEA Scores

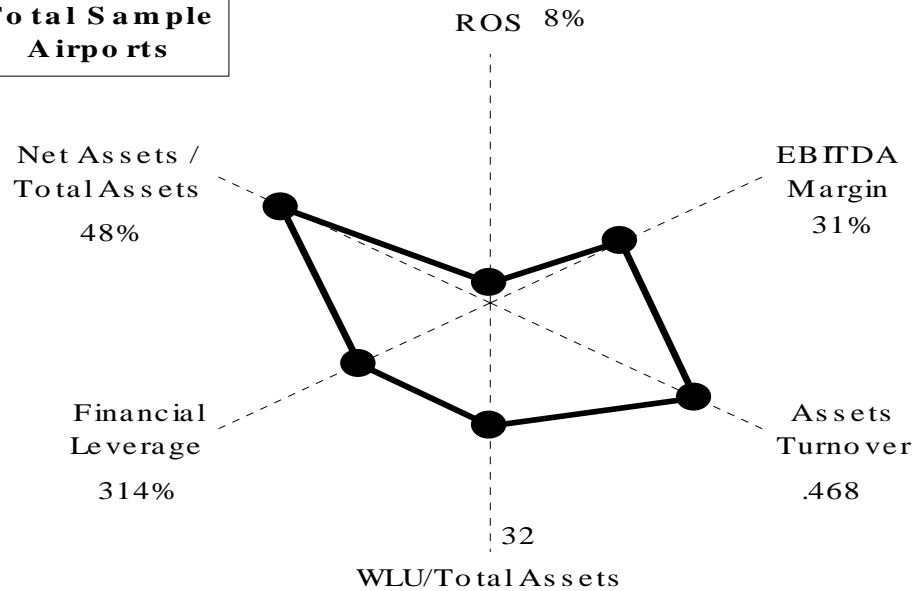


- **Data envelopment analysis (DEA) is a non-parametric method of measuring performance, quantifying a single unitless index of overall efficiency (total output in relation to combined factor inputs).**
- **Partially and fully privatised airports achieve higher efficiency scores.**

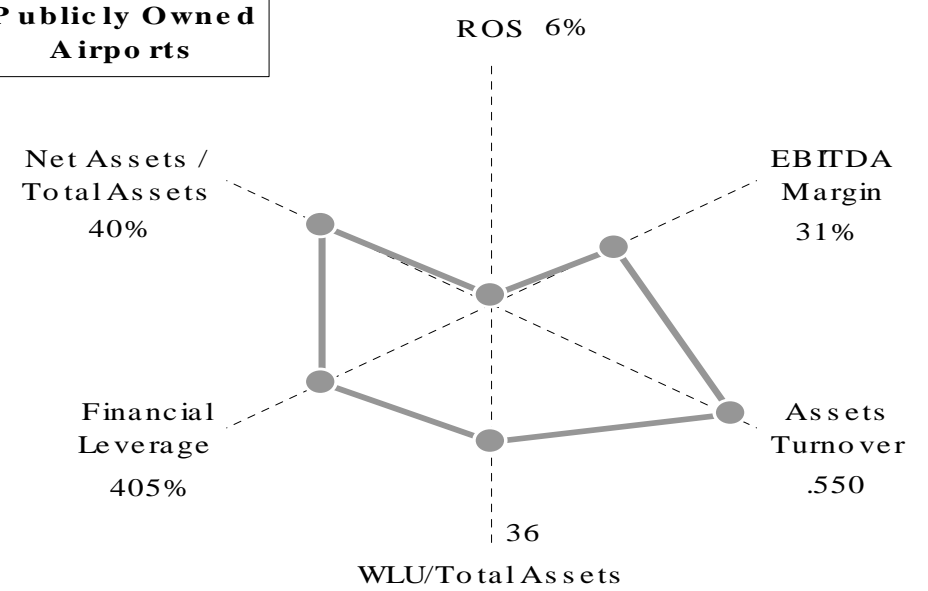
→ Performance Profiles of Sample Airports



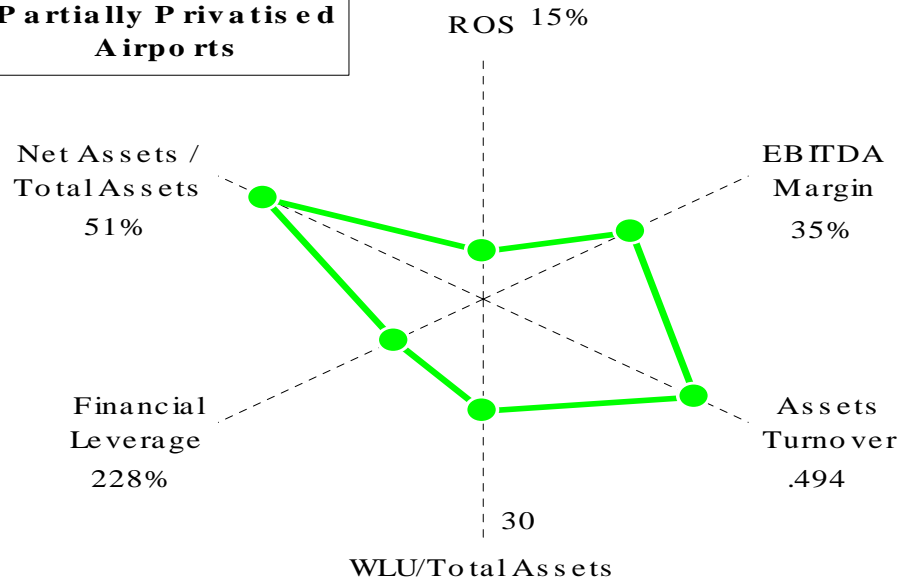
Total Sample Airports



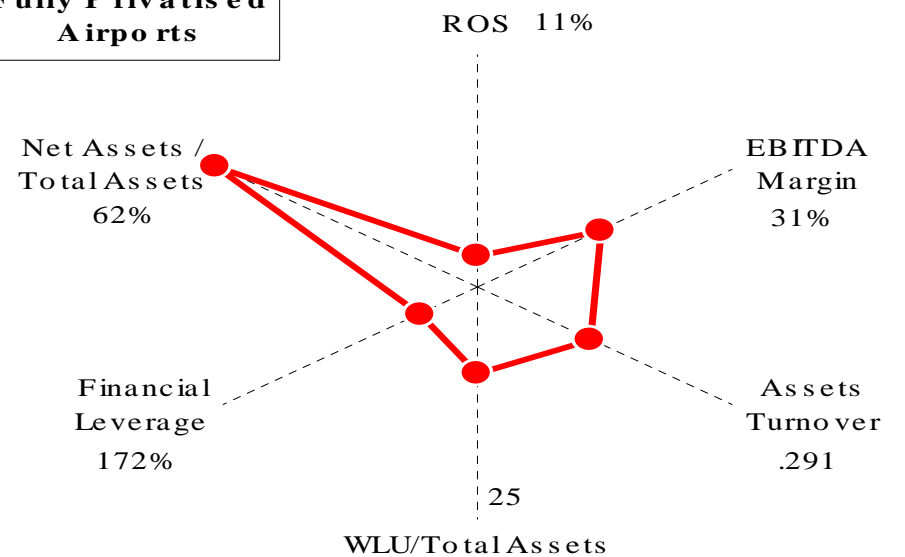
Publicly Owned Airports



Partially Privatised Airports



Fully Privatised Airports





- **This research identifies economically meaningful and statistically significant differences between publicly owned and privatised airports in terms of operating efficiency, asset utilisation and capital structure.**
- **Regarding the financing of productive assets, publicly owned airports appear to be in a position to assume more debt relative to their respective equity - due to their government-backed credit standing.**
- **The increased operating efficiency of fully privatised airports does not result in higher returns on shareholders' funds, whereas airports in mixed ownership appear to deliver competitive return rates on equity as compared to alternative capital investments.**
- **The analysis of overall efficiency in terms of DEA confirms the consistent findings of the analysis of partial factor productivity and financial ratios, incl. the differences between partially and fully privatised airports.**



Does Privatisation Improve the Efficiency of Airports ?

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

The author has compiled this presentation in his personal capacity and views mentioned herein should not be attributed to his position within the Fraport group