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Risk and return in the air traffic control sector

Capturing Europe-wide and national trends

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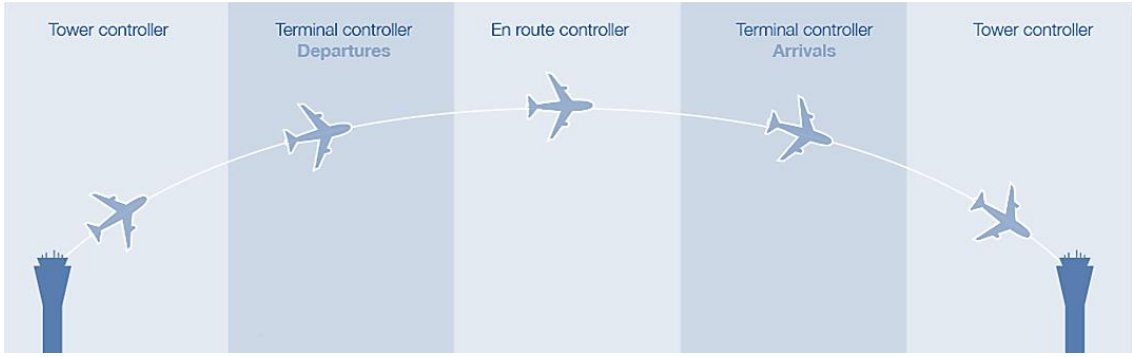
Insight in Economics™

Air Traffic Control – a sector under pressure

- The flashpoints
  - "Aviation Strategy" adopted by the European Commission (EC) in December 2015 envisages
    - Reduction of ATC charges by approx. 50% by 2035
    - Transformative investments envisaged
  - *"Single European Sky (SES) failed to defragment airspace management"* (EU Court of Auditors, 2017)
  - U.S. ATC services are significantly cheaper per unit compared to their European counterparts at the same service level – but are they comparable?

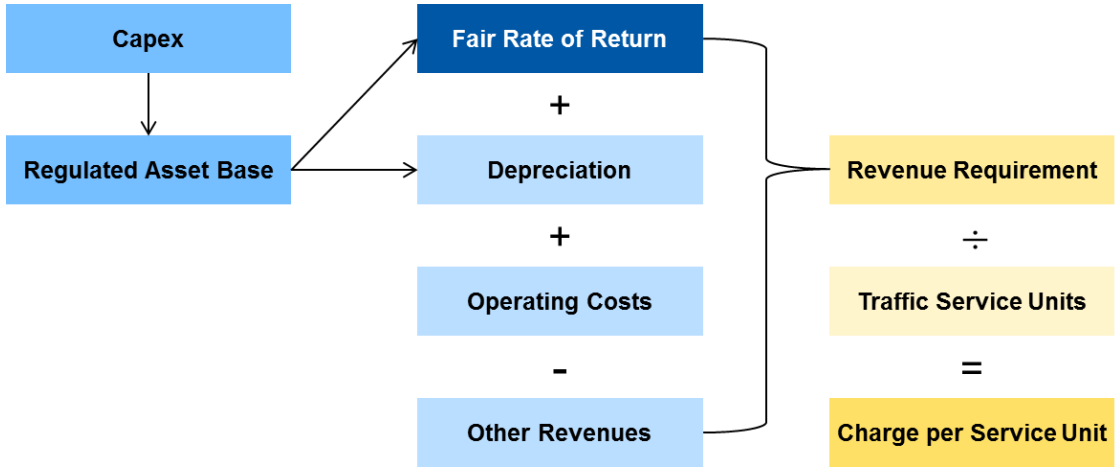
- Regulation
  - National monopolies for en-route; nascent competition for terminal operations
  - Regulation under dual oversight structure: EC sets top-down targets while national regulators have oversight of company's performance plans
  - Key regulations (Performance & Charging Scheme) currently under review while work on new regulatory period is under way



  - Feb 2018 external report for EC recommended more devolution of traffic risk and incentive mechanisms to national supervisory authorities

Economic regulation in the ATC sector

- Allowed charges include expectation of cost recovery including cost of capital (if targets are met)



- Estimation of allowed returns using the Capital Asset Pricing Model

$$Allowed\ Return = Risk - free\ Rate + Equity\ Beta * Market\ Risk\ Premium$$

- Alternatives / extensions: DGM, Fama-French, APT, CCAPM, …

Allowed returns need to reflect the level of risk faced

Main risks faced by ATC providers

Traffic Risk

- Key systematic risk faced by the aviation sector: ATCs currently face cap and collar price cap (higher risk than revenue cap, lower than pure price cap) but there may be variation going forward
- Traffic risk has asymmetric component (strikes, volcanos) to be reflected in base forecast

Cost risk

- Cost structure differs substantially from other utilities: substantially higher proportion of fixed (labour) costs leads to higher operating leverage
- Pension costs can be a source of significant systematic risk in some cases

Other risks

- Exchange rate risks, bad debt risks (insolvencies)
- Current proposals may introduce additional regulatory risks around e.g. penalty only schemes, de-linking of inflation

Does the most recent EC guidance (2014) remain fit for purpose?

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Risk-free rate and country risk

- EC argues for the use of a "truly" risk-free rate with any default risk represented in the MRP / DP
- EC rejects the use of sovereign bonds for some countries where these are not risk-free
- EC WACC calculator proposes a real risk-free rate of 2%

→ Consistency between the MRP/DP and risk-free rate is key

Market Risk Premium (MRP)

- EC recommends taking an approach that mixes historic, forward-looking, and survey evidence incl.:
  - Dimson-Marsh-Staunton (historic)
  - Damodoran (forward-looking)
  - Fernandez-IESE (survey)
- EC's consultants estimate MRPs in the range of 6% for most countries → local conditions matter

Asset Beta

- EC recommends a range from 0.3 to 0.5 using gas, water and electricity utilities as comparable companies.
- EC WACC calculator recommends 0.3 as the efficient level

→ Proposed level appears to be below recent evidence even for (lower risk) regulated networks

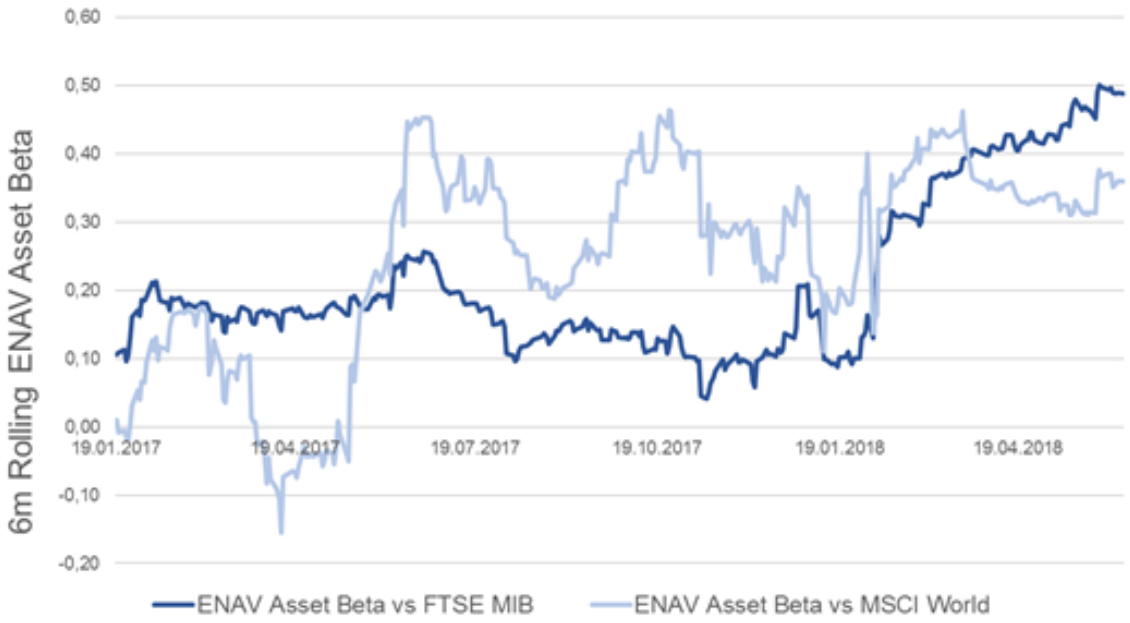
Debt Premium (DP)

- Debt premium approach with a number of possible sources mentioned: i) own bonds at optimal gearing, ii) bonds of similar entities in same country; iii) bonds with similar fin metrics, iv) similar entity in another country adjusted for country risk
- EC WACC calculator assumes 1.5%

→ Treatment of embedded debt and possible changes in state support to be considered

Limits to direct estimation of sector-specific risk for ATC providers in light of data availability / reliability

- There is only one listed air traffic control operator – ENAV from Italy
- ENAV was only listed in July 2016 and its beta has shown significant variation since
- In its annual report, ENAV notes that its share price was affected by a number of temporary factors in the post-listing period, including the exercise of a greenshoe option and the Italian elections.
- ENAV may be a good comparator for ATCs in the coming years but interpreting the current data requires significant caution

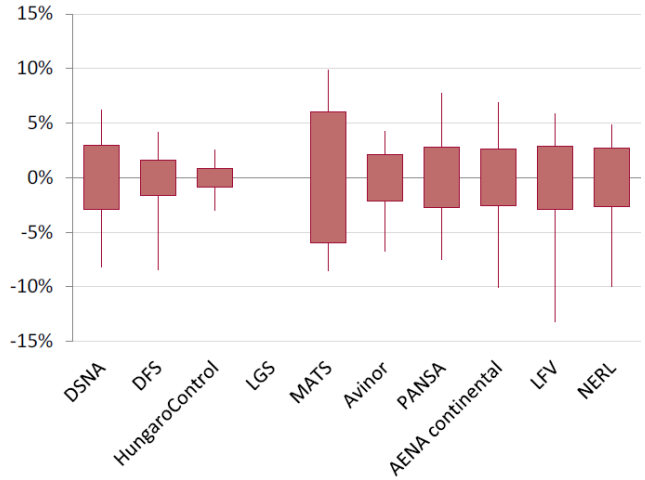


Source: NERA analysis of Bloomberg data

“Importing” beta estimates from other sector requires consideration of sector-specific factors

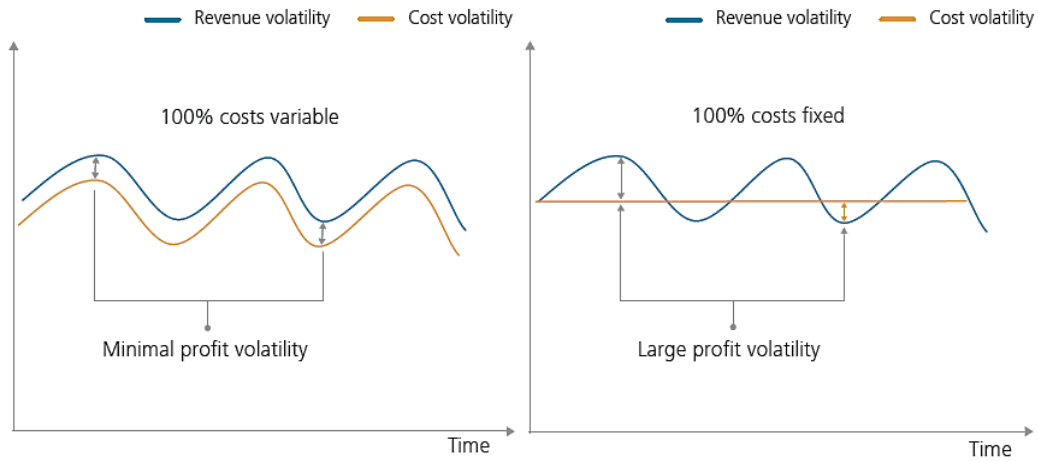
- Impact of Traffic Risk
  - Under “Single European Sky” rules ATCs bear the risk of small variations while they are allowed to (partially) pass on larger variations if certain revenue thresholds are exceeded
  - Design of risk sharing may be devolved to local level for RP3 leading to a range of different risk sharing mechanisms
  - Impact of traffic risk shows substantial variation across countries
  - Regulated networks normally bear no demand risk (revenue cap) while risk sharing mechanisms at airports vary

Variation in Traffic



- Capital Light Operations & High Fixed Costs
  - ATCs face a largely fixed / opex-heavy cost structure (labour cost)
  - Lack of significant asset base (in most cases) limits “return cushion” available to borrow against during cash shortfalls
  - UK and French regulators have allowed for increased WACC allowances in response to high OL

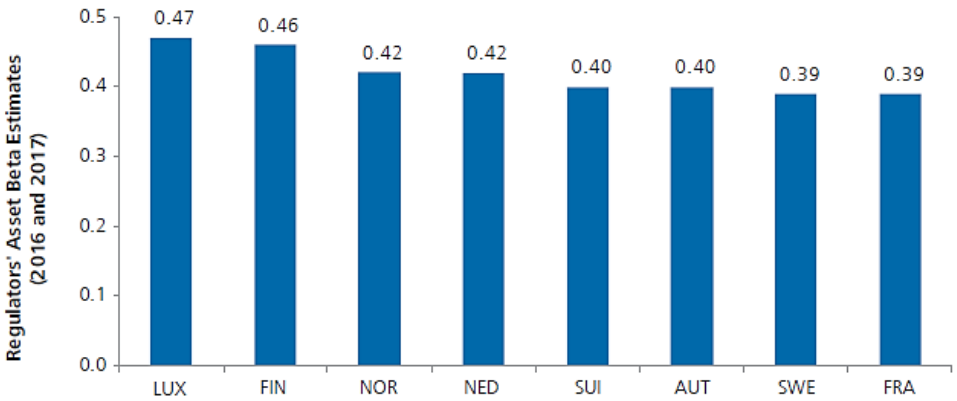
Profit variation under low (left) & high (right) OL



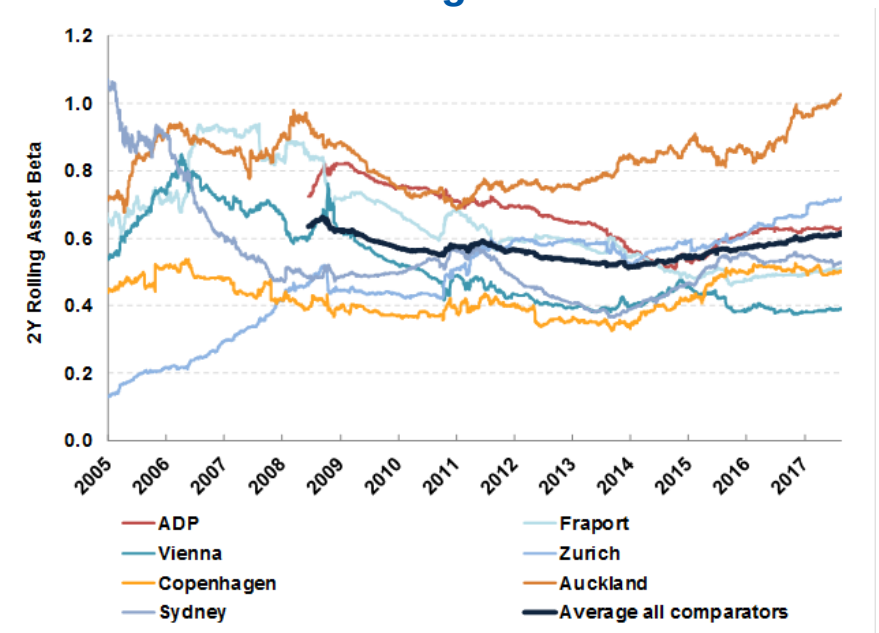
Source: Steer Davies Gleave (2014): Analysis of growth in yoy traffic (lines) and standard deviation of growth (boxes) [upper panel]. NERA illustration [lower panel]

Some evidence to take into account for beta estimation

Regulatory consensus for (lower risk) regulated networks around 0.4 since 2016



(More comparable risk) airport betas average c. 0.6



- Final determination will need to take account of local specifics
  - Local financing conditions differ significantly across Europe
  - Operating leverage depends on accounting policies, local labour laws
  - Share of (higher volatility) transit vs. (lower volatility) terminating traffic varies significantly by country
  - Local income elasticity of demand (Eastern Europe likely to face higher risk)

Source: NERA analysis of recent regulatory decisions (left panel) and Bloomberg data (right panel)

German 2018 court decision on the allowed return on equity sets out criteria that EC (2014) would not pass

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Regulators need to give **explicit weight to local conditions**

Under current circumstances the **market risk premium** needs to be set **towards the top of 3% to 7% range**

All parameters (including the market risk premium) need to **explicitly consider forward-looking evidence**

Regulators need to **explicitly consider more than one model before concluding** on an estimate

Note: Right hand side indicators assess to what extent the EC (2014) approach would pass the criteria set out by the recent OLG Düsseldorf decision on the appropriate rate of return for energy networks

Conclusions - Risk and return in the ATC sector

ATC is different from other utilities but no need to re-invent the wheel

- Some differences to other utilities: i) high fixed opex / low asset business → high operating leverage, ii) pension cost can be significant systematic risk, iii) traffic risk depends on (future) framework
- There is a body of precedent that has developed methods to address these

Don‘t rely on one single approach

- Increasing divergence of financing / market and poss. regulatory conditions at the national level
- Limited data availability on beta and unprecedented low government bond yield environment require the use of a number of proxy groups / comparator analyses / different models

The headline return allowance is only one factor

- Also need to consider traffic forecasting, labour cost benchmarking / efficiency challenges, strength and design of incentive schemes, … within the current schemes
- Pros and cons of alternatives (yardstick regulation, auctions, constructive engagement, …) need to be considered

About Us

Your speaker – Dominik Huebler

- Principal in NERA's Berlin office; co-ordinator for NERA's European transport economics work
- 10 years of experience in consulting for transport companies, investors, law firms and public institutions, e.g.,:
    - Regulatory support including for NERL, Fraport, Heathrow Airport, … on issues including cost of capital, risk sharing / incentives, efficiency benchmarking, regulatory framework design, traffic forecasting, tariff design
    - Due diligence for airport acquisitions (e.g. Düsseldorf, Hamburg, Gatwick, …) including regulatory framework review, risk modelling, investment appraisal.
    - Economic advice in litigation/ arbitration proceedings
    - Publications in transport economics, e.g., on European Commission's Aviation Strategy (reduction of ATC control), evaluation of allowed rate of return, etc.
- Economist with a double master's degree from the Universities of Oxford and Cambridge

NERA Economic Consulting

- International consulting firm with a focus on economic consulting
- Part of Marsh & McLennan Companies and Oliver Wyman Group
- 500 economists worldwide, c. 30 economists in Germany (Berlin & Frankfurt)
- Main practice areas:
    - Transport (and other infrastructure) economics
    - Competition and regulatory economics
    - Transfer pricing
- Core business in transport economics: access charging, incentive evaluation, regulatory due diligence, arbitration / litigation support, transport policy and evaluation.
- Our experts have extensive experience in the rail, aviation, urban transport, and maritime industries and regularly address sector-wide issues.

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Thank you for your attention

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