

## UK-Ireland FAB NSAs Symposium on Total Economic Value – 16 July 2012

### Conclusions

1. The concept would be better named as Total Economic Costs (TEC). It relates to the direct ANS costs imposed on users (user charges) and to the *indirect* costs ANS cause for users. These indirect costs may include costs associated with delay, inefficient flight routings, and lack of resilience. They do not include costs for on-board ANS-related equipment and costs to the society, such as cost of delays for passengers and environmental externalities, which would need to be included in a Total Economic Value.
2. This concept is a potential powerful tool, but it is important to be clear what TEC should be used for and what it should not be used for. It is not envisaged that TEC should be used to set a single performance target, covering three Key Performance Areas (Cost-Efficiency, Capacity, Environment). Rather it would have most value if deployed as a tool used by NSAs and the PRB in developing and assessing performance targets and plans:
  - a. to identify and minimise the ANS-related costs borne by users and caused by ANSPs;
  - b. to evaluate genuine inter-dependencies and trade-offs between different KPAs excluding safety (e.g. cost-efficiency and capacity).
  - c. to evaluate the business case for investments in terms of their contribution to reducing TEC components.
  - d. to help guide the setting of financial incentives.
3. There is a role for the NSAs and PRB to independently validate and safeguard the assumptions used for the TEC analyses.
4. It is important for the initial deployment of the TEC concept to be kept simple, pragmatic and transparent. It should cover three KPAs: cost efficiency, capacity and environment. Safety should not be included within the TEC concept but seen as a binding external constraint. It should also be cast in terms of language that has resonance with a wide range of stakeholders, especially the airline community which tends to view ANS in terms of price and service.
5. The community should work to further develop the concept and in particular to overcome some methodological challenges to give the application of the concept greater rigour. These challenges include, but are not limited to, how to monetise the indirect costs, how to account for capacity (which is not tradeable in space or time), and how to account for exogenous factors.
6. It is a prerequisite for the TEC concept that the airspace users have trust in the behaviour of the ANSPs, NSA's and PRB in using the TEC.

## Note of discussion

(The following notes are intended to capture the nature of the discussion following the presentations.)

### Opening observations by Professor Martin Cave

- Natural monopoly may be justified for cost or other reasons, so it's useful to think in terms of how monopoly activities can be regulated versus a situation where there is significant competition.
- How to overcome the information barrier presented by a natural monopoly?
  - Incentivise the provider – price targets to drive efficiency
  - Benchmarking – challenge the provider to match performance to comparators.
- Who is the end user? What are their requirements? Differing quality variables produce different outcomes/behaviours.
- With a number of differing characteristics, it is the regulator's role to try to enable the optimum combination.
- To determine trade-offs requires:
  - proper auditing of quality.
  - careful incentives – to ensure no perverse behaviours; incentives to take into account the cost of quality and valuation of customers' view of quality.
- Monetising different aspects can be helpful in making comparisons.

### SES Context

- Stakeholder buy-in to and trust of the concept, the complexity of some KPAs – such as capacity – and a lack of maturity/agreed methodology would need to be addressed before a TEV Key Performance Indicator (KPI) could be considered.
- A fully harmonised TEV framework could help mitigate risks associated with these issues, and help allay concerns that TEV could be used as a 'get out of jail free' card if not properly applied.
- In the mean time, TEV could be used to assess the proper balance between performance targets besides safety *a priori*, and to measure success in improving performance *ex post*.
- Consideration could be given to including an incentive for the ANSP to minimise the TEV in performance plans. This incentive would exceed the associated marginal costs, but represent only a fraction of TEV improvements.

### What does TEV comprise?

- The TEV concept is not *essential* to improve ATM performance, but provides a pragmatic tool to evaluate trade-offs and help avoid sub-optimal outcomes.
- ATM is a particularly complex area that would be difficult to mathematically model to derive an optimal set of variables; nonetheless experience from other applications, for example multi-commodity flow networks, could be considered.
- In rail, despite the existence of advanced mathematical modelling, it is still considered too complicated and optimisation is an iterative process through modification of the previous timetable.
- Work on dynamic performance modelling was conducted in the 1990s when delay was a particular concern, but this was found not to be applicable in practice.
- A number of players behaviours would probably need to change in order to engender trust in the TEV concept, along with a change to the operational environment in order to achieve any optimal solution from modelling, i.e. a central management function to allocate capacity. Advancements in technology and procedures in the future may deliver economic optimal solutions as the planning function moves from ground to air.

## Airline perspective

- A key issue for airlines is to understand the terminology being used to discuss TEV and to understand the relationship between direct and indirect costs within their own organisations.
- In the short term, airlines might be willing to accept independently set targets to achieve lower direct costs, but recognise this may have an opportunity cost; *i.e.* a sub-optimal combination of direct and indirect costs.
- Any development of TEV would need to be able to account for capacity issues not caused by structural constraints, but due service provider operational inefficiencies.
- TEV and the performance scheme in general would benefit from greater discussion with users about their priorities – for example, measuring delay in terms of averages, as opposed to extremes, could hide the significance of operational impacts on users.
- Greater availability of information would enable users to make better informed decisions in relation to trade-offs, which in the future could support a TEV KPI approach, but presently this is considered too ambitious and unlikely to generate stakeholder buy-in.
- Some users did not accept that there was a need to trade-off price with service quality and that they thought Total Economic Value would be used as a smokescreen to avoid making a meaningful contribution to future performance; citing the example of the impact of NATS' charges on users, their overall contribution to EU targets and recent profits statement.

## ANSP perspective

- A TEV approach should not diminish ANSPs' focus on making continual improvements in cost efficiency. Additionally, TEV recognises that indirect costs (fuel, delay) represent a material proportion of the users' cost base, and that ANSP actions can significantly reduce these indirect costs; focussing on the former at the expense of the latter would not maximise benefit to users of the ATM system as a whole.
- Robust TEV methodologies have the potential to inform target setting in RP2 and be implemented as a shadow system to validate the technique and refine it for future use.
- Noting NATS's recent profit statement, and that customer requirements were a key tenet of NATS' business model, users asked whether shareholder returns could be reduced as a means of reducing user charges. NATS highlighted that providing adequate returns to shareholders was also a key tenet of their business model and it was the Regulator's role to ensure the appropriate balance.
- A formal framework for understanding TEV would enable better-informed conversations between users and service providers, taking account of local context, requirements and priorities.
- Rather than consider flight efficiency in terms of ANSP enabled savings to users, an alternative perspective offered was that current ANSPs' inefficiencies prevent users from operating their preferred routes and that a focus on individual KPIs provides pressure to improve performance in those areas – NATS explained that optimising flight profiles requires investment in airspace change and new processes and technologies, for which its customers had been prepared to pay.
- Users are concerned that currently, with the a large number of ANSPs and control centres, the introduction of TEV might dilute the focus on cost-efficiency targets and that it would perhaps be a more suitable tool once there had been some consolidation and direct cost efficiencies had already been delivered. The performance scheme also already provides for driving performance in flight efficiency and capacity and so there appeared to be little requirement to trade-off between them, until those performance improvements have been made. NATS responded by saying the risk of this approach could be to pre-judge that marginal reductions in direct cost are more valuable than marginal reductions in indirect cost, which might not be the case and that a TEV approach, allowing more informed decisions, might be preferable.

## NSA perspective

- Any application of TEV needs to be simple to ensure quick returns – *aim for the low hanging fruit first.*
- There is a danger that in aiming for a perfectly modelled approach, we might not achieve nirvana – *we should be careful not let the best be the enemy of the good.*
- There is a role for TEV concept to be applied to assessment of investments, when engaging with customers to ensure service providers are delivering what users want.

## Panel discussion

See conclusions above.

Additional areas discussed:

- The European Commission:
  - has an interest in how the concept of TEC could be developed, but does not currently believe it is sufficiently mature to be considered for setting targets. With development of the methodology and associated valuation techniques, it could prove a useful tool in informing assessments.
  - Without financial incentives in capacity and the environment (flight efficiency), it will be difficult to ensure a balance that does not drive perverse behaviours when comparing indirect costs. However, in the medium term, price signals may provide better information to enable the best choices possible to improve network performance.
  - One related study on interdependencies will be initiated through the SESAR JU by the end of the year. Another study will be launched on Economic issues.
  - The performance scheme is key to driving and delivering the SES programme.
- Social/sovereignty issues:
  - There is a need to ensure the social dimension is taken into account. Any performance improvements that drive down costs and increase capacity and flight-efficiency are likely to impact on staff both in the numbers required and the technology/procedures they employ. It is therefore important that social partners have a voice in the discussion.
  - There is also the key matter of how to overcome the sovereignty concerns, whilst a number of mechanisms already exist that allow service provision across borders such as delegated airspace – where technology and liability issues have already been addressed – it remains that whilst en route service provision is considered part of the national infrastructure, there may be some political resistance to full consolidation.
  - Notwithstanding, FABs supported by the social pillar of the SES II package are the means to address these issues, provided that the actual economic and safety case for consolidation has been established.
- Terminal ANS:
  - Terminal airspace will be captured by the performance scheme in RP2, as already provided for in existing legislation.
  - In relation to cost-efficiency, the PRB proposes that terminal targets are locally, unless the case for market conditions is proved. The DfT has tasked the CAA to conduct the associated assessment for the UK, for RP2. For further details contact RPG.

## Closing comments by Professor Martin Cave

- TEV is a concept where users and providers are united but divided by a different language.
- A single TEV KPI is not on the agenda.
- In considering the indirect costs associated with fuel/flight-efficiency, using *average* values appears to provide sufficient granularity.
- It is necessary to develop a harmonised methodology to ensure comparability across States.
- The methodology will also require proper auditing of results, to inform decision and reduce the trust deficit.
- There could be some value in reviewing alternative fields of economic regulation, to see how/where a TEV approach is utilised.
- TEV would enable users to evaluate what different prices they would be willing to pay for differing qualities of service.
- Disembodied technological progress can bring about increase productivity (performance) at no additional cost – resulting from appropriate incentives – and no trade-offs are required. However, there reaches a stage where performance can only be improved through investment (cost), whereby trade-offs are required and stakeholders would benefit from a harmonised and well understood framework on which to have the required conversations and make decisions.

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