

# The Transport Economist

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**THE TRANSPORT ECONOMIST**



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The Transport Economists’ Group

TEG Committee 2008-2009

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# **The Transport Economist**

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Editor  
Peter Gordon

# Competition, regulation and investment in airport capacity – issues for the UK

David Thompson

Chief Economist, UK Department for Transport

Arup

27 February 2008

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## INTRODUCTION

David opened his presentation by saying that this is a particularly interesting and challenging time for aviation policy and that economics has much to contribute finding ways forward. That said, there remain significant gaps.

He went on to set out a series of key public policy issues that he would be addressing in his presentation:

- Airport capacity and investment
  - Productivity and growth
- Environmental impacts
  - Climate change emissions
  - Noise
  - Air quality
- Ownership of London's major airports
- Price regulation

David commented in passing that there were some inherent conflicts between the first group of topics and the second, that Heathrow is already a very busy airport, and that the evidence suggested that airport congestion would harm “productivity and growth”. On air quality in particular, he cited European legislation which is placing constraints on the UK (and which require a degree of mitigation reflected in elements of cost-benefit analysis explained below). He also noted that the Competition Commission is currently carrying out a market inquiry concerning airports run by BAA, a subject to which he would return.

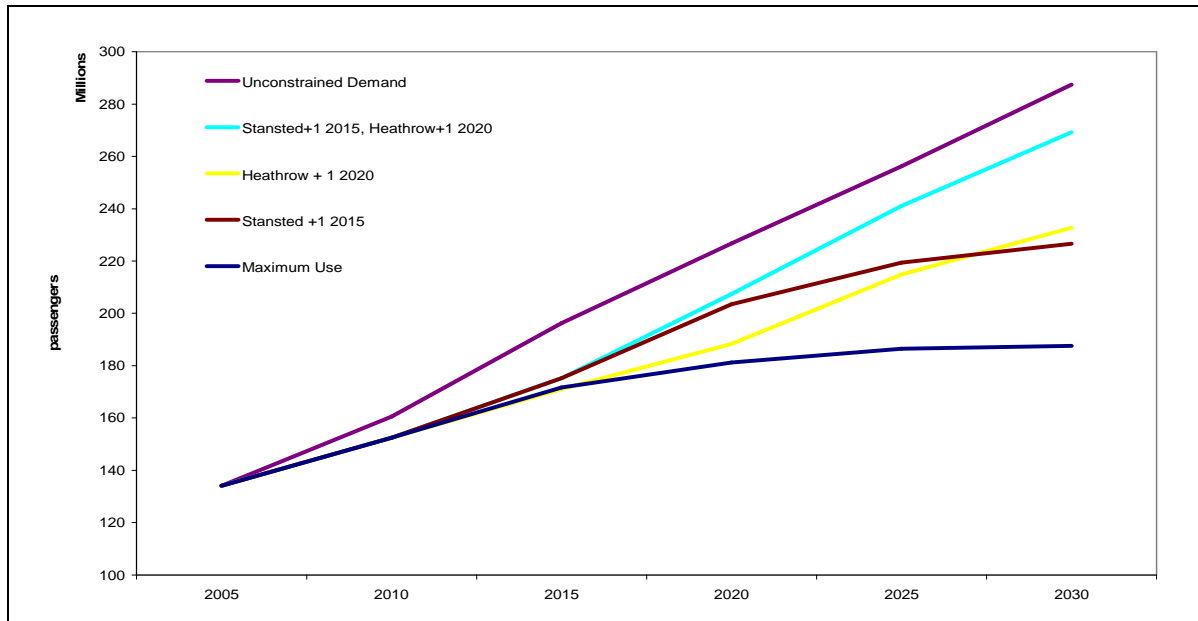
## **CURRENT AND FUTURE DEMAND**

David presented a table of demand at UK airports in 2006, pointing out that many of them are privately owned, while others in the public sector are run on quasi-commercial lines. At present, Heathrow, Gatwick, Stansted and Manchester are subject to utility price cap regulation and the question is whether that number should reduce to two.

David presented graphs projecting demand under a range of scenarios, which had been produced as part of the consultation on Heathrow's third runway and resulted from extensive analysis. The principal message was that demand for air travel would grow (albeit at a lower rate than it has in recent decades), the growth being driven by high income elasticities, falling prices and technical advances. The central scenario assumed a price for carbon in line with the conclusions of the Stern report. Numerous sensitivity analyses had been conducted by the Department, with the conclusion that the projection of growth was "pretty robust".

David showed another graph (see below) presenting modelled demand growth under a range of scenarios, including "maximum use" (where, without adding to the numbers of runways, work would be done to squeeze as much capacity as possible out of the current infrastructure). The graph showed that a combination of a new runway at Stansted in 2015 and one at Heathrow in 2020 came closest of the practical scenarios to the hypothetical scenario of unconstrained demand.

Figure: constrained terminal passenger demand forecasts at main South East airports, by capacity scenario



## INVESTMENT OPTIONS

Before setting out the results of the cost-benefit analysis, David mentioned the interaction of private and public sector interests in the decision-making process: the decision to invest is typically a commercial one (perhaps taken against a background of price-capping) but it can only occur if planning permission has been granted by the public sector.

David presented a table of headline results from cost-benefit analysis of three scenarios (see below).

*Table: net benefits of South East airport development scenarios, £billion, net present value, 2006 prices*

Scenario	Base case	Benefit	Infrastructure Costs	Net benefit	Benefit Cost Ratio (BCR)
Maximum Use	Planning case	£3.9	£1.6	£2.3	2.4
Stansted R2 (480k in 2015)	Maximum Use	£18.3	£4.3	£14.0	4.3
Stansted R2 (480k in 2015) Heathrow R3 (605k in 2020, rising to 702k in 2030)	Stansted R2 2015	£12.0	£6.8 - £7.6	£4.4 to £5.2	1.6 to 1.8

David pointed out that the “maximum use” scenario has a very respectable BCR compared with the reference, planning case. A second runway at Stansted could be seen to do very well against maximum use (note that the table presents incremental BCRs), whilst a third runway at Heathrow makes a less pronounced difference in relative terms on top of Stansted’s second.

David then presented a table setting out the costs and benefits of Heathrow’s third runway disaggregating the analysis summarised above. The largest benefits accrued to passengers (£8.7 billion NPV net of air passenger duty), followed by “producers” (airlines and airports - £5.2 billion), with Government receiving £3.1 billion benefit. Against this were arrayed the costs, the largest of which is infrastructure (£6.8-7.6 billion), followed by climate change (which, at £4.8 billion, David described as very significant). The relatively modest sum for noise (£0.3 billion) reflected existing limitations on noise which had been complied with in designing the scenario. No figure was presented for air quality; again existing regulatory limits have been complied with in designing the scenarios, proving that there is no net disbenefit.

## **ENVIRONMENTAL IMPACTS**

CO2 emissions were expected to rise broadly in line with demand until 2030 or so, when technical advance was expected to reduce emissions per passenger-km. That said, this would still constitute a very large carbon output and one that was only compatible with Stern's conclusions concerning the need for very large reductions in the emission of carbon if offsetting took place elsewhere. David said his own view was that additional runways would only go ahead in the South East if an appropriate set of countervailing policies/actions were put in place; the application of emissions trading to the aviation field would help, he felt.

On noise, David showed how there appeared to have been a gradual increase in people's valuation of the annoyance caused by noise, probably attributable to income growth. There were constraints on the extent of Heathrow's "noise contour" which meant that a third runway would not be used to capacity in its early years.

## **GROWTH AND PRODUCTIVITY**

There is an accepted set of links between the direct impacts brought by transport interventions (in terms of users' travel cost – in its widest sense) and wider impacts seen in the business world. But, though there is an increasing body of evidence to support the estimation of the relationship where urban measures are concerned, no reliable source of microeconomic evidence exists to support claims for international transport interventions. David presented several examples from the literature that support the assertion that falling transport costs in general, and falling costs of international movement in particular, lead to economic growth. He said that, were evidence available, this would serve to strengthen the BCRs presented earlier.

## **REGULATION**

David presented the three-point test that is used to determine whether price cap regulation of an airport is justified:

- There is a market failure which needs to be addressed; in its absence competitive pressures are weak
- Competition law (UK and EU) is not sufficient to deal with any market failures such as the potential abuse of market power



- The costs of regulation do not outweigh the benefits

He then summarised the role of the CAA as the UK's independent economic regulator, in "designating" airports for price-capping (as with the four mentioned above). The Competition Commission inquiry mentioned above was launched in March 2007 and will report formally in March 2009, having provided some interim findings in both April and August of this year. The Commission has the power to force BAA to disinvest (if it concludes that one company owning all of Heathrow, Gatwick and Stansted is a sufficient problem) but will otherwise advise Government concerning regulatory remedies.

With respect to Stansted and Manchester in particular, strength of competition and costs and benefits of price cap regulation are the two key economic issues. Stansted's catchment is very large, i.e. many users are using it rather than nearer airports. The extent to which it is truly competing with other UK airports (evidenced by their shares in various parts of the country) will inform the decision concerning how healthy the competition actually is. David presented a table in which the decision whether or not to introduce price caps is assessed against two scenarios – one in which the market is broadly competitive and one in which there is substantial market power. In summary, there is more to be gained in taking action if the market is not competitive than there is to be lost if the market is competitive. But the benefits and costs are difficult to quantify robustly and it is not possible to attach robust probabilities to the scenarios, making any decision uncertain. That said, the Department concluded recently that it was more likely than not that Stansted was operating in uncompetitive conditions and that, therefore, its price cap should remain. The process for setting the price cap requires the CAA to seek the views of the Competition Commission.

## **CONCLUSION**

David concluded with three points:

- This is the most interesting period in UK aviation policy since 1987 when BAA was privatised.
- Economists are contributing a great deal to the debate, be that in positive or normative terms.
- There are significant knowledge gaps, particularly with respect to wider economic benefits, the valuation and mitigation of environmental impacts and the use of incentives in regulation.

## DISCUSSION

**Chris Mole** (MVA) asked David about the case of Manchester airport. He referred Chris to the decision of 15<sup>th</sup> January to de-designate the airport, largely because the difference of opinion between the CAA and airport users had been less pronounced in this case than with respect to Stansted and since relatively little compelling new evidence had arisen during the inquiry.

**Chris Nash** (University of Leeds) asked how surface access had been treated in DfT's analysis. David referred him to the full reports on airport capacity. Surface access had featured in the analysis, but decisions concerning airport infrastructure and surface transport infrastructure were not made jointly.

**David Metz** (UCL) argued that business travel is a small proportion of the whole and that therefore the wider economic benefits argument is weak and projections of carbon emissions were flawed, given the set of other necessary actions to offset aviation's contribution. David responded that Heathrow's share of business users was considerably greater than average, thereby undermining the first point. As for carbon, the analysis had assumed a cost for it (included in ticket price) and this has some downward influence on demand. If the cost proved an underestimate, the demand effect would be more pronounced.

**David Starkie** asked why, if aviation is predominantly a private-sector industry, the Government conducts forecasts of its activity. It does not produce such forecast for the financial services sector. Was this in effect interference that would inhibit the expansion of the industry? David Thompson responded that social and environmental impacts were the driver of the Government's interests. One could speculate about whether decentralisation would help the industry to grow more smoothly but the underlying task in any case is to help the planning process to arrive at the right answers. But, retorted David Starkie, why no advice to the planning inspector concerning emissions resulting from a new Toyota car plant in Derbyshire? David Thompson answered that this lay in the location of consumption: the emissions arising from cars built in Derbyshire could be located anywhere.

**Peter Gordon** (Delta Rail) had read a report which had argued against additional runways because the apparent need was driven by excessive duplication across carriers. He asked to what extent the Department "worked with politics", and whether more could be done to nudge the market towards the use of larger aircraft. David responded that politics is important, referring to views he had expressed earlier.

For example, extensive road shows had been carried out to accompany work done on capacity options. The easiest of these involved owners of the 700 or so properties that would need to be destroyed to enable a further runway at Heathrow. For them the question is simple – would they receive adequate compensation. Just beyond that core area, the interaction was more difficult because people would be staying. But economics helps us to think clearly about the level of compensation. On the second point about larger aircraft, the answer is to price slots appropriately.

**Tom Cohen** (Steer Davies Gleave) referred to Friends of the Earth's document criticising the DfT's publication, asking in particular whether it was right to put a unit price on carbon when the impacts of climate change were expected to be absolute. David responded that the approach of the Stern report had been to examine the balance of risks and to price carbon accordingly.

**Tony Lucking** referred to Gwyneth Dunwoody's observation that it was typical in the US to pay people five times the value of their homes in compensation. Should not the UK adopt a similar approach? David responded that many economists are fond of the concept of actually rather than potentially compensating, so the question should be what the barriers are to higher levels of compensation.

**Gregory Marchant** asked whether, given the distances people are prepared to travel for a cheap flight, the policy should be to price demand off at Heathrow. David replied that this was the very policy contained in the counterfactual against which runway-building scenarios had been tested.

**David Starkie** asked whether a third runway at Heathrow had been tested in the absence of a second at Stansted. David Thompson replied that a great many permutations had been examined (and reported on in the document); a third runway for Heathrow in isolation would have a very large BCR.

**Dick Dunmore** (Steer Davies Gleave, convenor) asked if BAA was free to do as David Starkie had described: expand Heathrow and not Stansted. David Thompson responded that only the price cap would stand in its way, noting that the level of Stansted's price cap is being recalculated.

Report by Tom Cohen

# **The new thinking on investment appraisal – the case of Crossrail**

Rana Roy

Board Member, Transport for London

Arup

26 March 2008

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## **THE SPEAKER**

Jeremy Drew introduced Rana and summarised his career including his experience as Senior Policy Adviser at the Australian Department of the Prime Minister and Cabinet, Economic Adviser at the UK Department of Trade and Industry and subsequently Chief Economist at the European Centre for Infrastructure Studies. As an independent consultant, he had worked for ECMT and the European Commission and written a series of papers for the Railway Forum. He is currently a member of the Board of Transport for London.

## **HISTORICAL OVERVIEW**

Rana began by stating that the OECD world had faced multiple crises in policy and decision-making in the 1980s and 1990s especially, but not only, in the transport sector.

While the UK was not alone in its problems, it had done badly on international comparisons. Public sector investment had bottomed out at around 0.5% of GDP in 2000/1, and despite subsequent growth remained stuck at just below 2% of GDP. This reflected a growing crisis of confidence in the methodologies of investment appraisal.

On the one hand there had been criticism of the failure to recognise the full range of non-financial benefits (however named) generated by infrastructure investments, resulting in insufficient overall investment, a problem common across the OECD. On the other there had been a failure to recognise external costs, which had resulted in “over-valuation” of the road investments, although the roads programme had been abandoned under pressure. Rana argued that these weaknesses are two sides of the same coin, a common flaw.

SACTRA had identified in 1999 that conventional cost-benefit analysis (CBA) will only be correct under the restrictive condition that transport and transport-using sectors apply marginal cost pricing. DfT work has since suggested that prices are around 36-50% of marginal costs for road transport (although the rail White Paper suggested that it may be as low as 15-30%), around equal to marginal costs for rail (and higher in London), and around 120% of marginal costs in other sectors. SACTRA was “loathe to draw conclusions”, but this implies that road investment is overvalued and others are undervalued. Further, the omission of agglomeration benefits in traditional analysis results in investments in urban centres being undervalued in absolute and hence relative terms.

He concluded that the new thinking on investment appraisal suggests the likelihood of a revaluation of major rail and metro projects in major centres and pre-eminently London.

The debate has been resolved at the over-arching level, with Government no longer defending NATA, the “old” approach, and the current “NATA Refresh” exercise should incorporate valuation of external costs and wider economic benefits (WEBs). Coupled with a positive decision on Crossrail, this suggested at first sight that the argument is over, but Rana questioned this “happy conclusion” and argued that further analysis shows that a significant handicap is still in force.

## **INVESTING IN THE NEW CENTURY**

Rana’s 2006 paper “Investing in the new century” (Published by the Railway Forum at <http://www.railwayforum.com/getfile.php?id=219>) synthesised his interventions in this debate and argued that the journey to an undistorted appraisal process is far from finished. There remained a need to correct several specific biases.

The first bias was underestimation of the scope for long-term growth. The Treasury view, prior to Budget 2008, was long term growth of 2% per annum, with 1¾% used for fiscal planning as a precautionary measure, whereas actual growth over the last decade had been 2.8% in the UK, 3% in the advanced economies and 4% globally. This is not to claim that the economic cycle is dead, but if the last decade is not an aberration, then GDP, transport demand, values of time and hence the value of infrastructure investments are all being underestimated. Rana argued that the last decade is not an aberration but the beginning of a re-balancing of the world economy on a higher material

plane, powered by the drive of China and India to re-establish their historic parity with the economies of the west.

In the Long Term Public Finance Report accompanying Budget 2008, Government had revised long-term growth forecasts upwards to 2¼% to 2037 rising to 2½% for the decade to 2047 and then back to 2¼%, below the targets for which the speaker had argued in “Investing in the new century” but at least recognising that previous forecasts are out of date. Rana commented that he was not sure that the transport community had taken this on board, as it had not focused on the growth patterns of the next 50 years.

Further biases were:

- Rationing through excessive discounting
- Failure to incorporate the value of WEBs
- Failure to address the impact of distorted relative prices

Discount rates had been a “big bugbear” in Australia, where the rate had been pushed up until investment in water had all but ceased, with the “crunch” now appearing around 20 years later. High discount rates and shortened evaluation periods across the OECD world have penalised the projects with the longest benefit streams and lowest future costs. (A unit of value, discounted over 30 years, becomes 0.35 at 3.5%, 0.17 at 6% and 0.057 at 10%.) The most significant reform is probably the 2003 Green Book’s new discounting regime, suggesting a sliding scale beginning at 3.5% (rather than 6%, 8% or 10% as in the past) to be applied over the economic life of the project (rather than capped at 30 years). However it had not yet been consistently applied: only the day before the meeting Rana had seen a Transport for London draft appraisal which had capped benefits.

Wider economic benefits had not been included, penalising projects with agglomeration benefits, particularly rail and metro projects, such as Jubilee Line Extension and Crossrail, in major urban centres with high-density employment. A correct ranking of projects with these benefits included, if taken seriously, would almost certainly entail an alteration in the balance of funding.

It had now been recognised that prices excluding external costs had often overvalued road investments, and Government has scaled back road-building accordingly. However, future correction of the price of road use would result in an increase in the demand for rail, and should be reflected in the valuation of rail investments now being considered.

## **THE CASE OF CROSSRAIL**

Crossrail illustrates not only the progress achieved and the limits to that progress. It will be built, but the official appraisal continues to undervalue it significantly. The CBA accepted by Government and presented to Parliament uses the new 3.5% discount rate and obtains a BCR of 2.09:1, although Government accepts that including WEBs increases this to 3.28:1.

However, work by Colin Buchanan tabled at the TfL Finance Committee, and soon to be made available, suggested that full application of the thinking in “Investing in the new century” would result in a BCR of around 9:1:

- Full application of the Green Book Guidance would require evaluation over 100 years, not the 60 actually used, raising the BCR from 2.09:1 to 3.62:1.
- Including WEBs on the “extra low” scenario, resulting in a BCR of 3.28:1 (the medium scenario would give a BCR of 5.04:1).
- Application of higher long term growth rates, 3% to 2031 and 2.5% per year thereafter, delivering a BCR of 3:1.
- Including extension of the congestion charge beyond central London, which has already happened, and projected changes in road vehicle operating costs would also be logical, although the effects of these changes has not yet been quantified.

Taken together, the first three factors would raise Crossrail’s BCR from 2.09:1 to 8.71:1, with a Net Present Value (NPV) of £38 billion compared to the official estimate of £8 billion. This £30 billion gap is an indication of the scope for improvement in investment appraisal, and the resulting project under-valuation and under-investment.

## **THE NEXT STEPS**

Rana argued that the next step needed to be completion of the NATA Refresh and incorporation of the corrections consequent on what the Government has already agreed. This would entail, inter alia, formal guidance on a full and consistent application of:

- The 2003 Green Book

- The subsequent recognition of WEBs: there may be uncertainties in their quantification, but “even an ultra-low value is better than no value”
- The 2008 revision of long-term GDP projections

More widely, he felt that there should be a re-opened debate, most importantly on correction of the price of road use in the appraisal of rail projects: “effectively we are assuming no road pricing until after the economic life of projects being appraised today”. Meanwhile, it is safe to predict that current appraisals, embodying many of the errors identified, are almost inevitably wrong.

## **A RESPONSE**

The convenor, Jeremy Drew, invited Tom Worsley of DfT an opportunity to respond to these points.

Tom congratulated the speaker on his role on the TfL Board, noting that TfL was doing exciting things and must be a “great place to work” and recognised that the presentation was stimulating and thought-provoking. However, he thought it would be hard to persuade Ministers to spend in affluent areas, noting that it was important that the City, as a beneficiary, was being seen to contribute to Crossrail. On other points:

- Guidance is “pretty clear” that the discount rate should be 3.5% for 30 years and then 3%.
- The new economic growth forecasts will be in the standard appraisal, although these included elements of both productivity and population: forecasting the latter is difficult, and is not part of ONS’s job.
- Advice on WEBs was “flakier” and could be risky to present at, for example, a Public Inquiry without better understanding.
- Marginal cost pricing was an established principle, but the determination of marginal costs remained controversial or difficult, especially for rail, with the answer depending on whether occupation of a seat, operation of a train, maintenance of the historic infrastructure or provision of new capacity was included. Where capital investment was required, costs could be very high. In addition, it is not used in other infrastructure or network industries, which normally recover their total costs.



- Economic lives of 100 years beg many further questions, such as likely levels of future crowding.

## **A REBUTTAL**

Rana accepted that diplomatic language would need to be found to explain a change in the balance of funding but that the balance does need to change. On the problem of projecting over a project's economic life, the re-evaluation of Crossrail had at least ratcheted up maintenance in the later years. He agreed that there was a difficulty over WEBs but felt that this was not with their quantification but in explaining how they actually work to a lay audience: as yet, MPs "don't understand". On pricing in other sectors, the fact that they have got it wrong does not justify having transport wrong, too.

What worried him especially is the massive under-pricing of roads, and the need to get a sense of the orders of magnitude involved.

## **QUESTIONS**

**John Dodgson** (retired) noted that we can't even forecast 10 years ahead and wondered whether it was right to attempt to do so for 60-100 years, especially where the effective issue is the margin between discount rate and GDP growth. Rana argued that there has to be some approach to long term investments, and a default value of zero for the value of the future is not good enough.

**Stephen Plowden** ("member of the public") wondered what the comparator to Crossrail was, and on what else the £15 billion could have been spent. He felt that road pricing alone would not assure optimal capacity allocation or use, citing the example of bicycles. Finally, was the speaker a climate change sceptic? Rana said that the Crossrail base case was not a "do-nothing" and had been accepted by all parties, and that any distortion of the costs and benefits of cycling was unlikely to be material to the case for Crossrail. He was not a climate change sceptic: TfL takes climate change more seriously than many organisations.

**Paul Withrington** (Transport Watch) wondered whether agglomeration benefits would imply gradual migration to a single large building, with the North "a desert", but challenged the inclusion of fares revenue as a benefit rather than a transfer payment. On the first point, Rana felt that we probably have the urban/rural balance wrong, and that economics, equity and justice all require a shift of resources

from rural to urban areas. Julian Ware, who responded on the second point, was confident that fares had been correctly accounted in the Crossrail appraisal.

**Chris Foster** (retired) felt that it was “scandalous” that there was no DfT-approved appraisal of Crossrail and was concerned at the wider imprecision with which policy was formulated and decisions justified. However, there was a problem with assuming an imminent switch to marginal cost pricing which would not in practice take place. Would not the marginal cost of rail use also shoot up if road use was re-priced? Even if the appraisal was wrong, the resulting shift might be small. Rana agreed on the fundamental point, that an immediate switch to marginal cost pricing was not possible, but it needs to be incorporated in assumptions about the future. Julian Ware pointed out that Crossrail in central London was a very atypical project, where the average national modal share was not relevant and rail demand was, by national standards, relatively insensitive to road pricing.

**Michael Schabas** noted that we had built the Jubilee Line Extension and Channel Tunnel Rail Link but abandoned Uxbridge Road tram, and Cross River Tram (CRT) was looking “iffy”. He was worried that models of Crossrail’s benefits could embody “operational impossibilities”, such as passengers on an overcrowded train disembarking at Whitechapel to switch to the empty one behind. Maybe we just prepare bad schemes? He queried whether, in the initial comments on levels of capital investment, it was right to ignore the private sector contribution? Rana stated that the increase from 0.5% to (nearly) 2% was a like-on-like increase in the investment by the public sector.

**Gradimir Stefanovic** said that colleagues overseas never understood optimism bias, which seemed to say that “we trust you, but we only trust you x%”. Rana said that optimism bias was a poor solution to a genuine problem, and a better one was needed, but TfL could not disregard guidance: “we respect the rules”.

**Eileen Hammond** (retired) noted that Germany had lower discount rates 20-30 years ago in the Bundesverkehrswegeplan (BVWP). Rana agreed. Finally, he noted, the effect of pessimistic valuation was a “windfall” return of benefits to some or all of taxpayers, users or any private sector operators.

Report by Dick Dunmore

# **NATA Refresh Update, Progress, Stakeholder Investment and Congestion TIF**

Gavin Gaunt & Paul O'Sullivan

Department for Transport

Arup

28 May 2008

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## **THE SPEAKERS**

Tom Worsley introduced the speakers. Gavin Gaunt is an expert on the National Transport Model (NTM) and Paul O'Sullivan has been working at the Treasury, Cabinet Office and No 10 before returning to the Department for Transport.

## **THE NATA REFRESH**

Gavin Gaunt opened with a presentation on the NATA Refresh and in particular the current consultation.

NATA ("New Approach to Appraisal") was introduced in July 1998 alongside the Integrated Transport White Paper "A New Deal for Transport". After 10 years experience, and following:

- The Eddington Transport Study, which recommended extending the appraisal framework to include some missing benefits such as agglomeration and labour market effects
- The Stern Review of the Economics of Climate Change underlining the importance of the consequences of carbon emissions

there had been a decision to review NATA, and a consultation was launched in October 2007.

## **CONSULTATION**

The consultation had five main themes:

- The impacts of productivity and competitiveness (Eddington)

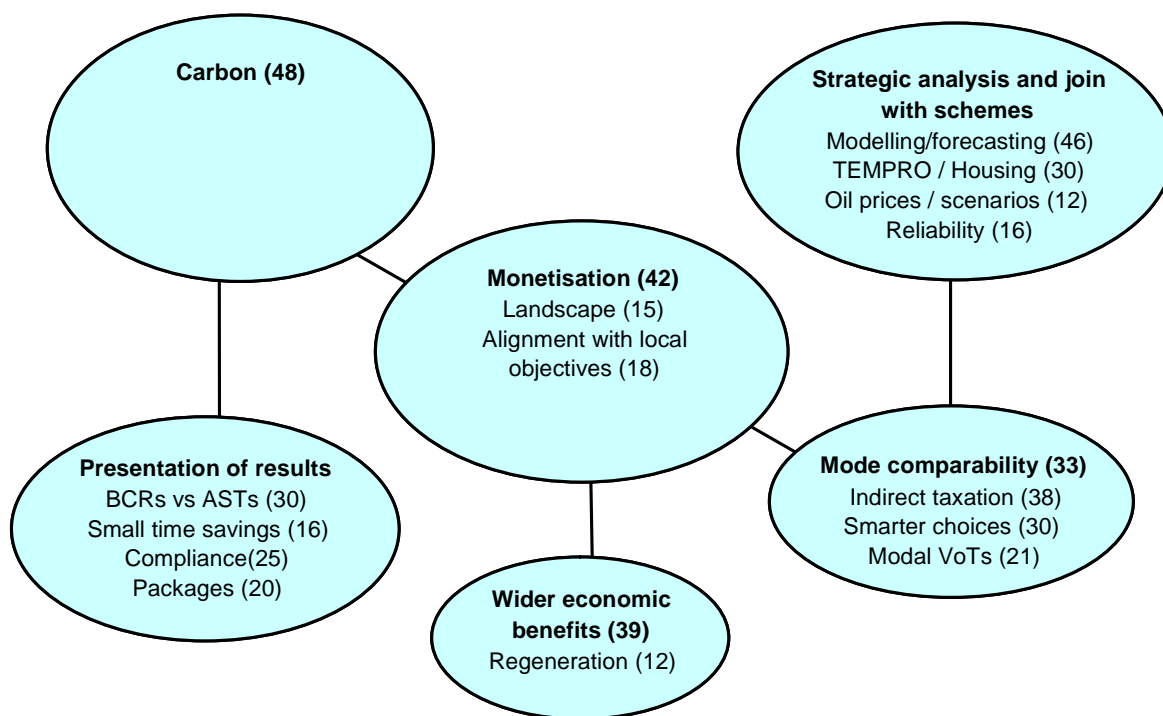
- Environmental benefits (Stern)
- Quality issues such as social inclusion, regeneration and housing
- Comparability across modes and between types of intervention
- Presentation of uncertainty to aid robust decision-making

The consultation document outlined proposals and posted 13 specific questions. 101 responses were received, many in the last few hours before the 31 March 2008 deadline, from a range of scheme promoters, statutory bodies, campaign groups, transport planning consultants and individuals. However, only 35 responded directly to the consultation questions, with the remainder submitting letters, essays or research reports, which presented a challenge for analysis within the 3 months required by the Cabinet Office code of conduct for the publication of a summary.

Gavin explained how a software package was being used to analyse responses, enabling key segments of text to be flagged by theme to ease the production of a summary. The approach generally works well, enabling points to be seen together or examined in isolation, although there remains a need sometimes to refer back to the original text.

## EMERGING THEMES

Gavin presented some information on the emerging themes, which he described in the diagram shown below.



On a narrow definition, NATA is about presentation (bottom left), on which the principal comments related to the balance between Benefit-Cost Ratios (BCRs) and the Appraisal Summary Table (AST), the treatment of small time savings, the quality of compliance with guidance, and the treatment of packages of schemes.

Carbon (top left) had become a "rather large issue" mentioned by 48 respondents, with some lobbying for changes to the shadow price and others raising the issue of appraisal in a carbon-capped economy.

Monetisation (centre) was commonly raised, and in particular the potential tension between appraisal values and local objectives. There was a risk that schemes meeting local objectives well would fail NATA.

Wider economic benefits (WEBs, bottom centre) were often raised, with a concern that measurement and valuation techniques are still not mature.

Also linked to monetisation was mode comparability (centre right) and in particular the need for neutrality across interventions. Many had raised the issue of the treatment of indirect taxation, and in particular that fuel duty receipts are a transfer.

Finally, there had been responses on strategic analysis (top right) on a range of subjects including the inclusion of scenarios to examine shocks.

## **NEXT STEPS**

Looking forward, production of the response report was well under way with publication due at the end of June 2008, in a report which will contain an initial plan for delivering changes to the appraisal system. Changes will be delivered against three milestones:

- Quick wins, which will be included in the document itself
- Autumn 2008
- Spring 2009

Gavin assured the meeting that users will be given time to use the new techniques before they become part of definitive guidance.

There were three over-arching principles to the programme:

- Reflecting the goals and challenges faced by the system and the wider concerns of government defined in "Towards a Sustainable Transport System"
- Better discriminating between good and poor schemes and hence better targeting of spending
- Reducing the effort associated with appraisal

## **QUESTIONS**

Gavin paused to take questions on his presentation.

**Robert Cochrane** was not surprised that consultees had responded with essays, which he thought might reflect the issues raised, but was worried about the separation of fuel taxation from other issues, with some arguing that fuel should face both a carbon tax and a fiscal tax. How was tax taken out and then put back in? Paul O'Sullivan replied that while some argue that the tax in fuel is a proxy for a carbon tax, the DfT view is that the carbon impacts should be tackled through the shadow cost of carbon. Robert Cochrane asked if the latter was duplication.

There were separate issues about how indirect tax featured in the appraisal covering:

- The inclusion of indirect tax in the costs, where it was noted that there was also a corresponding tax impact on the benefits which many did not appreciate.
- The use of the net cost to the public sector as the denominator in the BCR, where the DfT was considering other options.

This led to a discussion of whether benefits should be valued at resource or market value.

**Jeremy Drew** asked what issues had been raised regarding packages. Paul O'Sullivan indicated that this related to the treatment and analysis of a set of schemes, and that this would be covered in his presentation.

**Roger Allport** wondered how closely forecasts and appraisal agreed with evaluation results: are we getting 8 out of 10 or 5 out of 10? Gavin Gaunt agreed that there was a need for better feedback, but Roger asked whether this was an admission that we didn't know. Tom Worsley said that some post-implementation work had been done, but models and circumstances change, with values being updated every 5-10 years. Roger suggested that this meant that risk analysis needed to be more central to appraisal. Dick Dunmore suggested that good forecasts and evaluation parameters were important, but that a key objective was ensuring that the right decisions had been made. He doubted whether, for example, the quality of decisions on airport expansion was related to the accuracy in the forecasts.

**David Metz** noted that induced traffic at Newbury, predicted to be under 10%, was seen to grow to over 100% in 5 years. Paul O'Sullivan countered that a study by Bent Flyvbjerg on the outturn of Highways Agency schemes had found a wide range, generally relating to unforeseen land use, but no systematic bias.

**Michael Spackman** had a long-standing concern that we had lost sight of the optimisation of social welfare. Gavin Gaunt suggested that a more "technocratic" framework might be preferred by practitioners, but the principal output had to be the "political" outputs required by elected decision-makers. Tom Worsley felt that aligning social welfare with targets was tricky: targets could result in sub-optimal social welfare, but it was at least possible to show that they had been

achieved. Gavin Gaunt agreed that there was a need to avoid perverse incentives.

**Roger Allport** was concerned that urban transport policy can be intricate, particularly with “soft” interventions. Can we model all these items? For example, France automatically uses wider urban design as a justification for light rail: they know what urban features work, and do not over-analyse at the incremental level. This approach is “not all bad”.

## **CONGESTION TIF**

Tom Worsley called time on the first round of questions and introduced Paul O’Sullivan’s presentation on congestion TIF.

Paul summarised what was being looked for in TIF:

- Effectively addressing a local congestion problem
- Potential for early implementation
- Benefits over a wide area
- High value for money
- Investment on a scale proportionate to the impacts of the demand management scheme

TIF centred on demand management. Manchester and Cambridge were “very keen” and Bristol, Reading and others were working on business cases. It was not yet clear whether in practice road pricing would happen outside London, but Manchester inside the M60 was an interesting possibility.

The bid (<http://www.gmfuturetransport.co.uk/home.php>) is for charges at two successive cordons in one direction (inward for AM peak and outward for PM peak), with a total round trip charge of £5, but also included bus reform through Quality Partnerships (QPs) and a supporting package of public transport measures of over £2.5 billion.

Modelling for TIF had proved to be a challenge. Some models can take up to two weeks to run, and in one case need shortcuts in spreadsheet tools to interpolate results. New issues are arising, such as the need to segment on income, not only for model accuracy but also to understand distribution effects, and the right fuel cost elasticity for congested conditions. There is also a need to model “micro



switching”: most models now use a “tour” approach, which handles a journey to work and back as a linked trip, rather than treating them as two single trips. However we can't readily model micro-shifting where a trip is retimed to just outside of a charging period. The evidence from London suggests that this effect is not too big, but it remains to be seen how people will behave faced with a more complex peak hour scheme.

On the other hand, land use modelling is not always needed for TIF, as it may not be a major response to road pricing.

## **ROAD PRICING DESIGN ISSUES**

Paul raised a number of issues for the design of road pricing schemes, on which their performance was hugely dependent. One finding was that more complex schemes often perform better: not many links in an area are actually congested.

## **TIF PACKAGES**

On packages, raised earlier by Jeremy Drew, TIF guidance suggests examining schemes over £20 million (higher than the normal £5 million threshold for major schemes), but on this criterion it could still be possible to examine 9 million combinations of schemes in Manchester. In practice, the proposals had been treated as 24 key elements, with a particular interest in the incremental change such as  $\pm 10\%$  relative to the main scheme.

However, even this approach raised issues, particularly when key elements, such as bus, tram or rail are partly or largely substitutes. The table below illustrates the issues, where the BCRs are very different for elements on a standalone and a decremental basis. There can be real problems when the standalone benefits of each package are significantly larger than the decremental ones and appraisals are not handled on a consistent basis.

	Standalone			Decremental: package - scheme	
	Cost	Benefits	BCR	Benefits	BCR
Tram	100	300	3.0	250	2.5
BRT	80	225	2.8	200	2.5
Bus	50	120	2.4	100	2.0
Smart choices	20	80	4.0	80	4.0
Total	250	725	2.9	630	2.5
Package total	260?	630	2.5		

There can also be problems with the allocation of costs such as tram depots, or increments to the fleet, which cannot unambiguously be linked to a particular line or link.

In addition, and despite the “strong preference” that the package is modelled in a single model or suite, there was often a need to do a lot of analysis “off-model”.

## CONCLUSIONS

Paul summarised his conclusions, and in particular that:

- Distributional issues are critical, as road pricing normally creates lots of losers among those who continue to travel by car.
- Analysis is only practicable if a core “big idea” particularly the design of the road pricing scheme, is fine-tuned by a package of supporting and balancing measures which are tested as increments, but if the wrong “big idea” is selected in the first place the scheme will never work and a lot of time, credibility and momentum will be lost.
- Discounts and exemptions add clutter and erode benefits, but may be important for public acceptability.

## QUESTIONS

Tom Worsley invited questions.

**Peter Gordon** wanted to know why values of time differed between users of different modes. Gavin Gaunt replied that modelled values of

time only varied between business users to capture differences in the average productivity of users of different modes. Average modal values are used in order to avoid the extensive surveying required to identify the income of each user.

**Stuart Carter** was worried whether TIF would be acceptable, noting that there was already talk that the £5 Manchester charge would become £7.50. Paul O'Sullivan noted the problem that authorities could not confirm the nominal value of a charge before defining an introduction date. Manchester's scheme (see link above) had, however, been sold to the public as a means of funding an expansion of the Metrolink tram system, and care appeared to have been taken to consult business, identify key requirements, and ensure that the scheme was designed to keep them on board.

**Roger Allport** thought that TIF was interesting but was a "big bang" and a lot would hang on Manchester. What if it didn't go ahead?

**David Metz** asked whether induced traffic had been modelled, and Paul O'Sullivan confirmed that it had. Road pricing attracts some high value of time users back to the network, reducing the decongestion benefits, but the models were getting very much better at representing this effect.

**Robert Cochrane** suggested that road pricing typically prices off many poor people but benefits fewer rich ones: would that explain why people wanted hypothecation? Paul O'Sullivan thought that it was true that there would be many losers unless money was spent locally, although hypothecation may be necessary but not sufficient to make a scheme acceptable.

**Gregory Marchant** asked if road pricing alone would be economically efficient. Paul O'Sullivan said if properly designed it should be, and it was a requirement for any TIF scheme that the road pricing per se was good value for money, but it still makes the "average" motorist worse off, with most benefits going to the richer or higher value of time motorists, unless the scheme revenues are recycled into better alternatives.

Another questioner was concerned that delivery vans paying once per day were largely unaffected by the London Congestion Charge. Is there a risk that a more use-related charging structure would drive retail activity out of urban centres? Paul O'Sullivan noted that the evidence from London was that this was a small effect, although there were no "green field" sites, or competing and charge-free cities, just

outside the charging zone. The questioner asked if charging revenues would be lost if economic activity was pushed out of the zone. Paul O'Sullivan noted that the gains to public transport from road pricing might offset or negate this effect: the package was designed to reduce overall travel costs.

**David Thompson** asked whether it was necessary to upgrade public transport before introducing charging, and Dick Dunmore asked how this could be achieved in an environment of deregulated buses. In practice, Manchester was committed to putting 80% of the additional public transport capacity enhancement in place in before charging begins. Part of this would be through expanded bus services and bus Quality Partnerships (QPs), though if this was not possible there would be the option of Quality Contracts (QCs).

Report by Dick Dunmore

[Note that, following the meeting, a £2.8 billion package for Manchester was announced on 11 June 2008]

## REVIEWS

The views expressed are those of the reviewer and should not be attributed to the Transport Economists' Group

### **Aviation Markets – Studies in Competition & Regulatory Reform by David Starkie. Published by the Institute of Economic Affairs, 2008**

The book is a collection of seventeen essays written by Davis Starkie with some co-authored by David Thompson, some dating back to the mid eighties.

The first two chapters consider airline competition in Australia and Europe and were written before it was introduced. As such they are rather dated but do provide a very interesting historical perspective, whilst a third examines predatory practises in the U.S. of existing airlines adding capacity in response to the entry of new players, with the author arguing for a lighter regulatory touch saying that it was only necessary to identify excessive additional capacity.

The next three sections are on airport privatisation. Eleven essays consider a range of issues such as airport deregulation, cross-subsidy, whether the three BAA London airports should remain in common ownership, how the regulator should deal with airport investment, a critique of single till (that is whether regulation should be confined to aeronautical charges or also consider ancillary revenues such as duty free), competition and market power and the economics of smaller airports.

The book is written from a purely economic perspective. It is the view of the reviewer that not enough is written about the aviation from a holistic viewpoint bringing together economic, technological, environmental and other issues. This book does not do much to address this problem. Whilst a lot is written about competition between airports the wider issue of whether the three London airports could really compete for similar airline services is not really discussed. We now see Heathrow developing as the home for full service and long haul carriers, Stansted for low fare carriers and Gatwick rapidly moving the same way. Whilst there is obvious scope for competition between the last two the likelihood of competition between the first two is minimal. Thus Heathrow is effectively a monopoly supplier for full service airlines but this is not covered in much detail.

An interesting issue that was not covered was the desire for different levels of facilities by different carriers ranging from fast track facilities and executive lounges for premium passengers to at the other end of the scale some low cost carriers which would like a cheap shed and eschew loading bridges as it is quicker to use steps at the front and rear of aircraft.

The final three chapters look at slot trading at U.S. airports, the secondary market in airport slots and a defence of slot concentration at major hubs. The reviewer found this the most interesting part of the book as there was plenty of empirical to examine and the issues particularly pertinent at the moment.

There is no doubt that Professor Starkie has sound knowledge of the areas he covers and some strong views which he expresses eloquently and the book will make for a very interesting read for those with a professional interest in the areas he covers, whilst some of the earlier chapters will be of interest to readers with an historical interest in aviation economics and regulation. A strong economic background is required to fully appreciate the book.

Reviewed by Peter Gordon

**Decision-Making on Mega-Projects, edited by Hugo Priemus, Bent Flyvbjerg and Bert van Wee, published by Edward Edgar.**

This book covers cost benefit analysis (CBA), planning and innovation in the decision-making on mega-projects. It covers all sectors but many of the cases reviewed are in the transport sector. It mainly focuses on European and North American experience as this is where there is most evidence. The 15 chapters and 18 authors (all academics, mostly Dutch) provide an international and multi-disciplinary perspective on the subject. UK experience is covered fairly superficially and there is only one British author, Professor. Vickerman. Economists represent less than half the authors and there is much on institutions, project management, systems analysis and system dynamics. Readers are therefore unlikely to come across a lot of what they already know – although some familiar concepts, including that of mega-projects “solutions looking for problems” (highlighted in the Eddington report), do appear.

Economists may find reading this book a rather humbling experience given the excellent chapters covering other disciplines. One chapter makes the point that CBA is far better suited to comparing large numbers of smaller projects than to appraising single mega-projects in isolation. This is because of the network and economy wide impacts of mega-projects. Yet the reliance on wider economic benefits, both in the economy and on the network, is questioned in another chapter, which concludes that considerable data is needed to assess not just the magnitude of these benefits, but whether or not they are likely to be positive.

The complexity, the vested public sector and private interests, the high visibility and political importance of these projects all make it difficult to ensure that mega-projects are optimised. The problem often begins early in the planning process if choices are made without full debate about the objectives and concept of the project. One author suggests that, for projects to be successful, they should be shaped throughout the planning process - options should be kept open as long as possible while views are shared, data collected and analysed and trade-offs made. This should reduce the likelihood of more of “the wrong projects being chosen and implemented”. It will also reduce the need for expensive mitigation measures to buy off the losers once it is too late to change alignment and other aspects of design. Members may find these observations familiar.

In one chapter the author explores the underestimation of costs and the overestimation of traffic and benefits – both of which are general across transport projects in different continents and modes. He also notes the absence of risk analysis in the appraisal of many mega-projects. He argues that misinformation must be dealt with using mechanisms to improve transparency and accountability. The author suggests that “reference class forecasting”, whereby reference is made to similar projects that have already been implemented, is needed for dealing with uncertainty. One solution is to provide incentives to the various actors involved in the process to deliver more accurate information and produce more accurate estimates. Such incentives might include consultants being paid partly according to the accuracy of their cost estimates or traffic projections.

Another chapter focuses on the institutional arrangements and recommends, inter alia, the establishment of a project company, the hiring of a professional project manager and the allocation of a substantial part of the risk to private investors. The aim is to provide

incentives to private stakeholders that work towards increasing public benefits.

My one criticism of the book it is that some of the chapters are really about projects in general and not specifically about mega-projects. However, most of these chapters are also interesting and, of course, are not compulsory reading. Overall this book is highly recommended for anyone interested in mega-projects or the project preparation and approval process.

Reviewed by Jeremy Drew





# The Transport Economists' Group

The Transport Economists' Group, formed in 1973, provides a forum for people involved in transport economics to meet regularly and discuss matters of mutual interest. Membership is open to economists working in transport and others whose work is connected with transport economics.

The aim of the Group is to improve the quality of transport management, planning and decision making by promoting lectures, discussions and publications related to the economics of transport and of the environment within which the industry functions.

Meetings are held every month from September to June (except December) at Arup's Central London HQ at 13 Fitzroy Street. The meetings consist of short papers presented by speakers, drawn from both within the Group's membership and elsewhere, followed by discussion.

The Group's Journal, "The Transport Economist", is published three times a year reporting on meetings and other activities of the Group. It reviews recent publications of interest and contains papers or short articles from members. The Editor welcomes contributions for inclusion in the journal, and can be contacted at [peter.gordon@deltarail.com](mailto:peter.gordon@deltarail.com)

The current membership of over 150 covers a wide range of transport modes and types of organisation. Members are drawn from transport operators, consultants, universities, local and central government and manufacturing industry. All members are provided with a full membership list, updated annually, which serves as a useful source of contacts within the profession. Applications from people in all sectors are welcome.

Applications for membership should be made on a form obtainable from the Membership Secretary at [gregorymarchant.teg@btinternet.com](mailto:gregorymarchant.teg@btinternet.com).

Alternatively, an application form can be downloaded from the Group's website: [www.transecongroup.org.uk](http://www.transecongroup.org.uk).

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The Transport Economists’ Group

TEG Committee 2008-2009

Details of meetings are provided on our website at

<http://www.transecongroup.org.uk/meetings.htm>