

The Transport Economist

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Editor
Peter Gordon

Transport appraisal in a devolved Scotland

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Iain Docherty gave a presentation entitled "*Building Better Transport? A critical overview of Scottish Transport Policy*" and circulated copies of a paper "*Transport strategy in Scotland since devolution*" written with Jon Shaw and David Gray, to be published in Public Money and Management.

Background

Iain began by indicating that the views he expressed were personal and did not reflect the position of Transport Scotland, of which he is a Non-Executive Director. His presentation represented work in progress with David Gray of the Robert Gordon University, Danny MacKinnon of the University of Aberdeen and Jon Shaw of University of Plymouth, based on research for the circulated paper and for interviews and desk research for a forthcoming book on the impact of devolution in Northern Ireland, Scotland, Wales and London.

The presentation aimed: to construct a narrative of how transport policy has developed since devolution; to identify the "Strategy Gap", with many projects not set in a clear high level policy framework; to set out what might happen next; to describe transport in the pre-election political environment; and to draw conclusions.

The development of Scottish transport policy

Iain began with a quote from the 1997 DETR/Scottish Office/Welsh Office White Paper, made three months after the Blair government was elected:

"The public mood is for change. We cannot carry on as at present. People agree that something needs to be done about traffic congestion and the problems it causes."

Thereafter, there had been a “slippery slope”:

- Policy had become one of “integration” and “choice”, respectively “meaningless” and “ephemeral” in Iain’s view
- Traffic reduction had mutated into an inconsistent mix of “congestion relief” for road and “predict and provide” for rail and air
- Potentially consistent Multi Modal Studies had been cherry-picked, with most of the selected projects being road-based, and the largest trunk road programme – albeit with few wholly new roads – since the 1980s

Iain then contrasted the 1998 statement, in his view excellent and clear, of Donald Dewar, as Secretary of State for Scotland

“Much of the recent debate on transport policy is rightly focused on the issues associated with road building and car use. We have made clear our desire to address excessive and inappropriate car use. We want to see new roads built only where it makes sense to do so; that is after a thorough appraisal of the costs and benefits associated with any proposed scheme and any possible alternative modes which might serve the same route.”

with the 2004 “apple pie” statement of Nicol Stephen in “Scotland’s Transport Future”

“An accessible Scotland with safe, integrated and reliable transport that supports economic growth, provides opportunities for all and is easy to use; a transport system that meets everyone’s needs, respects our environment and contributes to health”

Even worse were statement such as Gordon Brown’s “*(Higher fuel tax) had no impact on traffic levels and was not designed to do so*” (The Today Programme, 8 November 2000) and Alistair Darling’s “*Our objective (with road pricing) is not to put people off the roads. It is to enable us to get more out of the network*” (Speech to the Social Market Foundation, 9 June 2005), which explicitly envisages more traffic.

The Strategy Gap

Iain argued that Scotland had failed to define a strategy for the use of its devolved powers, and that no one there could answer the question “*Why is money spend on transport?*”, citing as examples:

- Politicians’ nervousness of revisiting the concept of sustainability

- The near-disappearance of reducing the need to travel as a policy objective
- The scattering of transport objectives and targets around various non-transport documents, such as the Comprehensive Spending Review in Scotland

The *de facto* transport policy appeared to be a “new optimism” that everyone can be a winner:

- Infrastructure development will deliver economic growth (although this was not the conclusion of earlier reports)
- Large-scale projects are the best way to do this (why?)
- Better social inclusion and environmental performance can be achieved at the same time

Iain argued that it was not possible for everyone to be a winner.

The Scottish Executive had developed STAG (Scottish Transport Appraisal Guidelines), an innovative methodology with sound principles but which allowed qualitative statements of requirements which could be abused to justify anything. The result was that priorities are unclear, ephemeral and politically-inspired, and there has been a lack of transparency about the links between policy and spending decisions:

- The M74 public enquiry had found against the road, but it is being built anyway. Not only that, the cost rises during the resulting delays exceeded the overruns on the Scottish Parliament building.
- Glasgow Airport Rail Link (GARL) had been committed with a cost-benefit ratio of 0.69.
- Edinburgh Airport Rail Link (EARL) had never been tested or prioritised against alternatives, and appraisal had excluded the cost of the new fleet of trains needed to accelerate up the steep gradients on either side of the airport station.
- A £1 billion commitment to replace the Forth Road Bridge had been made before any technical studies had been done.
- Emotive lobbying was getting highland trunk roads upgraded despite weak or non-existent economic cases.

More widely, there had been “retro-fitting” of appraisals to justify pet projects. Pork-barrelling elsewhere could be more honest, as in Denmark, where an Act of Parliament requires that each provincial capital is motorway-connected.

The appraisal of the Waverley Line from Edinburgh to Galashiels and Tweedbank had dropped the discount rate from 6% to 3.5%, extended the evaluation period from 30 to 60 years, and assumed 10,000 new homes, compared to the 200 per year normally built in the corridor. The benefit-cost ratio had crept from 0.73 to 1.01 to 1.21, which would still be considered poor value in England, where cost-benefit ratios of at least 2 were required. Even if the money was available, what was the opportunity cost?

In summary, Iain felt that the Scottish Executive should be congratulated on at least doubling the resources available for transport, and that devolution of rail powers facilitated a more level playing field between modes, but that the large increase in cash was being misspent on large projects with marginal cases. He feared that misspending the plentiful money currently available would damage the credibility of applications for more as the funding cycle begins to tighten.

What next?

Going forward, Scotland had much going for it. Edinburgh and Glasgow already have housing densities 2½-3 times above the targets for England, and for each extra 1% of GDP England generates 1% more traffic but Scotland only generates 0.7% more traffic, though no-one yet knows why.

However, Iain felt that there could not be more of the same. The strategy gap would need closing but it remained to be seen whether the National Transport Strategy (NTS) and the Strategic Transport Projects Review (STPR) would do this. NTS may fix the biggest problem, the weakness and woolliness of the overall vision, but producer interest remains a barrier to concessionary fares, an integrated national public transport timetable and through ticketing. Regulation of buses would require the political will to take on Stagecoach and First Group. (Contrast this with London, where the Mayor has got things done.)

Scotland needs to learn from SACTRA and other research, to make robust appraisals, and to think about the economic geography of network development. This would mean reducing the need to travel and applying the “polluter pays” principle consistently (by increasing fuel tax, rather than caving in to protests over it and then increasing vehicle tax, a poor second best), but accepting that climate change is not the only policy issue: it would sometimes be appropriate to increase road capacity.

The pre-election environment

In the run up to local and parliamentary elections on 3 May 2007, political opportunism is rife, with the parties' positions on transport schemes overtly related to their immediate electoral interests. The NTS and STPR should prevent future pork-barrelling but will need political support to be effective.

Conclusions

Iain concluded that overtly political decision-making is now a real issues and that transport investments are easy sweeteners when money is cheap. However, the NTS and STPR and the discipline of STAG form a framework for a break with the past, if the political will is there. Finally, he reminded us

"There are two definitions of policy: [] what you put in your policy documents, or what you actually spend your money on."

Questions and Discussion

Robert Cochrane asked why Scotland has so much cheap money when England has a (top-down) fixed pot. Iain explained that this originated in the 1978 Barnett Formula which allocated a fixed proportion of funds to Scotland: one consequence was that health spending is not an issue in Scotland.

Stephen Bennett felt that Iain had been "too nice" to his colleagues in Scotland, citing Aberdeen Crossrail, airline Route Development Funds (RDFs) and the Rosyth-Zeebrugge ferry as further examples of waste. He had three times given evidence that there was no case for the Waverley Line to the Scottish Parliament. Why would the future be any better? Iain thought that the new institutions would make a difference, with Transport Scotland apolitical and at arm's length, although it would be limited by the decisions it had inherited.

Peter Gordon (DeltaRail) agreed that Aberdeen Crossrail was a bad scheme but noted the similar problems of the Channel Tunnel. Iain was concerned that Aberdeen was losing 2½% of its population every year, and decentralising rapidly on the model of cities in the US, making it too dispersed even for light rail.

Robin Whittaker (University of East London) pointed out that Roman roads and German autobahns were networks with built-in redundancy.

Mohammad Atta was a highway engineer, and the 7/7 attacks appeared to be at junctions on the tube: could Iain comment on Scotland's exposure to failure in, or attacks on, critical single links? Iain noted the criticality of the Kingston Bridge, which carried a high proportion of Scotland's exports, and the West Coast Main Line, with no north-facing electrified links out of Liverpool and Manchester.

John Cartledge (*London Transport Users Committee*) wondered who had engineered the fuel tax protest, citing various theories, but noted that in Japan the transport portfolio was the best job, rather than the eighth or ninth as in Britain, because of the ability to pork-barrel projects such as Shinkansen links. Iain noted that Scotland's coalition politics had, to date, meant that Transport was the second Liberal Democrat portfolio after economic policy, held by the Deputy First Minister. He conceded that pork-barrelling occurred elsewhere, but argued that Scottish politicians pork-barrel bad schemes rather than good ones: deals are done.

Dick Dunmore (*Steer Davies Gleave*) noted that Edinburgh and Glasgow were potentially relatively sustainable cities, but wondered what transport policy should be in remoter communities including the islands? Iain said that even in parts of Scotland which appeared empty, research showed that most people lived in small towns and had walking, cycle and public transport alternatives for many journeys. Revenue support for demand-responsive transport or local taxis was likely to be more appropriate than expanding road infrastructure in the name of a presumed car dependence.

Report by Dick Dunmore

RAILFREIGHT IN EUROPE: LIBERALISATION OR DIRIGISME?

By ALAN BENNETT and FRANCESCO DIONORI
Steer Davies Gleave

(Presented by Francesco Dionori)

Arup Head Office
25 April 2007

Subsequent to preparing the talk Alan Bennett had been appointed Director General of the Rail Freight Group, an appointment he took up in June 2007.

Disclaimer & Introduction

Mr. Dionori began by emphasising that this was a personal view of the key factors influencing the development of rail freight services in European Union (EU) Member States and did not necessarily reflect the views of either Steer Davies Gleave or the Rail Freight Group. The presentation did, however, draw on a series of rail transport research projects undertaken by Steer Davies Gleave (SDG) for EU institutions and took account of research and policy submissions by bodies representing railway undertakings, rail infrastructure managers and rail freight stakeholders in Europe. Any errors, omissions and contentious interpretations were strictly the responsibility of the authors!

The presentation focused on the mature social market economies in Western Europe (i.e. the so-called EU-15 states, excluding the former socialist “accession” countries). It was intended to provide an overview of the economic and political environments in which European rail freight clients operate and in which rail freight services are provided, together with a more detailed look at the impact of national political and institutional frameworks on the business activities of state rail freight operators, and the implications for current performance of the EU-15 rail freight sector in terms of traffic volumes and rail market share, and financial performance and business economics.

The presentation also considered the progress achieved to date in liberalising rail freight services in institutional and legal terms from the perspective of both rail freight users and new market entrants. It sought to identify areas where further action is required to liberalise market access and outlined some future scenarios for rail freight – including significant business opportunities and economic or institutional constraints. The authors posed the question whether we really have a liberalised market for rail freight in Europe.

Economic Environment of EU Rail Freight Clients

The overall goal of the European commission has been to set up a single market in all economic sectors. Thus, whilst there has been market growth within the EU, markets in many goods and services have been affected by strong international competition and price deflation. This has arisen from:

- international trade liberalisation widening the range of producers and service providers in EU markets;
- rapid diffusion of productivity improvements and product/service innovations to maintain competitive advantage;
- liberalised international capital markets enabling businesses to consolidate to reduce production and input costs and improve margins; and
- convergence in product/service quality and prices through standardised management/production systems; electronic data exchange; use of global currencies such as the dollar and euro.

EU economic regulators (or possibly “de-regulators”) have gradually moved to address barriers in other product and service markets with less competition in order to secure similar price/quality improvements.

Competitive pressures on European freight users have meant continuing demands from them for improved freight services at lower cost.

In ‘commoditised’ freight markets (e.g. maritime containers) clients simply specify outputs and prices and will readily switch operators or modes to avoid the costs involved in:

- renegotiating (or challenging) price/service agreements;
- intervening to correct persistent problems in service performance; or
- committing resources to assist in (re-)designing operational systems.

This approach has substantial implications for rail freight operators attempting to serve this market.

However, where rail transport is vertically integrated into a supply chain and/or offers significant cost/inventory benefits, freight clients are, by comparison, willing to:

- engage in detailed negotiations on service specifications/prices.
- seek intervention by economic regulators/competition bodies.
- intervene with service providers to analyse and resolve operational problems.
- invest CAPEX in terminals, rolling stock and train operating units.

This approach tends to benefit national rail operators, who in many cases lack the financial resources for major capital investments.

Political Environment for European Rail Freight Services

Tension inevitably exists between :

- (a) the continuing price reductions and improvements in service quality demanded by major freight users operating in internationally competitive markets, and
- (b) the service/price offers made by rail freight service providers operating within the long-established political, institutional and economic frameworks specific to each National Polity and railway administration, plus the evolving EU policy and legal framework that is transposed by some Member States in very different ways or timescales and is influenced by Single Market initiatives in other EU network industries such as air transport, communications and energy supply.

In addition a number of industry factors specific to rail also inhibit responsiveness by operators in Europe. For example, price and service offers of incumbent and new rail freight operators in the EU-15 are still limited by economic and technical constraints such as:

- limited functionality on key sections of rail infrastructure networks;
- limited capacity on key sections of rail infrastructure (especially where routes are shared with regional/suburban passenger services);
- limited availability of and capacity at modern freight terminals;
- restrictive international operating and telematic regimes and prescriptive technical standards; and
- a fragmented rail supply industry.

Contrast this with the USA, where the rail infrastructure exists primarily for freight operations and there are fewer planning constraints on provision of terminals.

European rail freight is also inhibited by the immature processes often adopted for allocating and charging for rail infrastructure capacity, with wide variations in the level and structure of access charges. A study by Steer Davies Gleave for the European Commission concluded that it was not possible to benchmark infrastructure access charges because of the very wide differences in the historic approaches to pricing.

Institutional and Legal Frameworks within Countries

Frank Dobbin has posited one Dirigiste and two Liberal models of national political and institutional frameworks for the development of nineteenth century rail systems. Their continuing relevance for the twenty first century EU-15 is clear, not least because of the nineteenth century focus on rail freight.

The 'Market Model' (USA)

Here the role of the State was limited to essential safety and economic regulation (other than promoting continental integration in the case of the USA). There was no Federal responsibility for network scale and capability, nor for imposing common technical standards, and no public responsibility for defining strategic service outputs. A case-by-case approach was adopted to providing funding support for rail projects. This Market Model was not adopted in nineteenth century Europe and is not seen as appropriate for EU Member States now, particularly given international networks.

The 'Entrepreneurial Model' (GB)

In this model the state undertook economic and safety regulation with **some** responsibility for network/service outputs. The focus was on establishing a stable industrial framework to safeguard the rights of privately-owned rail transport companies. The current version has been expressed as:

"We wish to see freight travelling by rail wherever this makes most sense. This can be delivered most effectively by a competitive and dynamic private sector rail freight industry...with real on-rail competition."

“We will not dictate to the industry how it should run its business, or become involved in operational issues...But Government has a role to play and a relationship with the rail freight industry. Freight companies run on the same tracks as the publicly-specified passenger railway, therefore, Government has to be mindful of their needs.

“We will ensure that our policies and regulations do not put unnecessary obstacles in the way of future growth; we will continue to provide financial support where it is affordable and offers greatest benefits.”

(Adapted from Statement by UK Secretary of State for Transport on 19th July 2005.)

The ‘Statist Model’

(France is often cited as a paradigm, but the model was applied equally in many 19th century Nation States and applies today in most EU Member States.)

This Statist Model involves the State in some (or all) of the following elements:

- providing economic and safety regulation;
- determining structure of rail industry; and/or
- specifying network capability and strategic service outputs.

Whilst in principle States act at arms-length as ‘Market Investors’ in their role as owners of national railway systems (operating companies and infrastructure management bodies), in practice they intervene more directly in the management strategy and business operations of national railway systems for a number of reasons.

State Interventions in Network Industries

Government interventions in the rail sector often follow from their generic approach to network industries. These industries are often seen by States as having strategic significance in political and/or economic terms, for example in:

- Defending national sovereignty
- Generating economic activity and employment (directly and indirectly)
- Procuring equipment and services from domestic industrial suppliers
- Offering opportunities for Governments to exert patronage and/or influence.

There is a presumption by States that such key industrial processes/systems are natural monopolies. Hence, they have an obligation to provide a network of universal services or act as common carriers. These benefits are considered sufficiently important to justify exclusive operating rights and protection from competitive market entry, together with funding either through cross-subsidy between service offers and/or through public subvention. The European commission has tried very hard to minimise this overt or covert funding, but without notable success.

Specifically, EU-15 Governments have intervened in national railways to:

- ensure the territorial integrity of the Nation State.
- ensure the political, economic and social cohesion of the Nation State.
- facilitate national/international trade (particularly through publicly-owned ports).
- demonstrate economic patriotism in procuring rail equipment and services.

Although interventions for these purposes are reducing, they do still exist.

Governments have also intervened to maximise:

- employment (particularly in politically and socially sensitive areas).
- network size (including routes to politically and socially sensitive areas).
- passenger and freight service levels.
- passenger and freight traffic volumes.

And to minimise:

- passenger fares and freight charges.
- subsidy (and achieve break-even if possible, subject to other objectives).
- labour union disruptions.

For example, rail operators have been encouraged to adopt policies of appeasement towards trade unions and to recruit additional staff during periods of high national unemployment

The consequences of this intervention have been that from 1970 to 1998 the rail share of the goods market in Europe fell from 21.1% to 8.4 %, and rail freight volumes fell by 15% from 283 billion tonne-km to 241 billion tonne-km. The European commission is on record as saying : *'If nothing is done, rail's share of the freight market, which has already*

fallen from 11 % in 1990 to 8 % in 1998, can be expected to slip to 7 % by 2010'.

(Note: Above data and comment sourced from EU WHITE PAPER COM 2001(0370) "European transport policy for 2010: Time to Decide". Data in subsequent paragraphs is regrettably not directly comparable.)

Drivers of Structural Reform in the EU Rail Freight Sector

Political theories are challenging state ownership and/or intervention in rail freight and advocating market-based solutions. There is concern over the effects on the market and customers caused by producer sovereignty and strong labour unions in public enterprises. Persistent financial problems in the EU-15 rail sector, combined with tighter public expenditure constraints on Member States as the EU economy integrates are also driving the need for reform.

There is also concern over the persistently uncompetitive offers in price/quality terms. This is particularly so where the outputs of network industries (e.g. energy and rail freight) are essential inputs to major industrial and commercial enterprises operating in global competitive markets.

Change is further being driven by the successful reform of other publicly-owned network industries across the EU-15; not only in transport but also in communications and energy supply. This reform has come about through technological and microeconomic challenges to the concept of a 'Natural Monopoly', and through the opening of markets by the 'unbundling' of service production/provision and of distribution network control.

EU Rail Restructuring Initiatives

The following is a summary of the main EU initiatives to date or proposed.

| Date in force | Legislation |
|----------------------|---|
| 1993, January | <i>Directive 91/440/EEC</i> Development of the Community's railways. |
| 1996, July | <i>Directive 96/48/EC</i> Interoperability of the trans-European high-speed rail system. |
| 1997, June | <i>Directive 95/18/EC</i> Licensing of railway undertakings. |
| 1997, June | <i>Directive 95/19/EC</i> Allocation of railway infrastructure capacity and the charging of infrastructure fees. |

| | |
|-------------|--|
| 2003, March | <i>Directives 2001/12/EC, 2001/13/EC and 2001/14/EC</i> Collectively known as the “First Package”. (International cabotage) |
| 2004, March | <i>Regulation 881/2004/EC and Directives 2004/49/EC, 2004/50/EC and 2004/51/EC</i> Collectively known as the “Second Package”. (Domestic cabotage) |
| 2004+ | “Third Rail Package” Train drivers’ licences, international passenger liberalisation, passenger compensation procedures. (Note: freight compensation proposal withdrawn) |
| 2008? | “Fourth Rail Package” Addressing the outstanding problems from earlier legislation, particularly to allow any operator to provide services in any country. |

All EU-15 Member States without derogations have implemented some form of separation between their national railway undertaking (train operator) and the body allocating train paths on the national rail infrastructure network. However, the degree of separation is not very great in many countries and in Hungary train operations and network management are still part of the same company, although in different divisions. Where the national rail infrastructure manager and national Railway Undertaking are still organisationally linked, the allocation body must be fully independent of both.

Rail Infrastructure Managers in the EU-15 have each published a “Network Statement” which provides information on network attributes. It also defines rail access charges/tariffs, capacity allocation rules and conditions of network use.

All EU-15 Member States have implemented legislation providing network access for operators of international freight services, but implementation of national legislation giving access to cabotage markets is not yet complete in all Member States. The EU is now taking legal action to try to speed up this process.

All EU-15 Member States have also introduced separate accounts for freight and passenger activities as required in the “First Package” and divested national Railway Undertakings of the role of issuing rail operator licences. Although the actual arrangements for obtaining licences can remain a barrier to entry in some national markets.

Recent Trends in EU-15 Rail Freight

(The graphs and tables as part of this report have been omitted for brevity. They were included in the slides previously circulated by email to members and available to members from the TEG Secretary at teg.secretary@btinternet.com.)

Using slightly different data sets and country definitions, a number of organisations concur that the 30 year secular decline in the EU-15 rail freight market share has now ceased. There is also broad agreement that rail freight traffic across the EU-15 should grow at about 2% pa CAGR to 2015 in line with total market growth.

So the EU's rail restructuring initiatives do appear to have achieved some success. Disaggregating data for the EU-15 countries appears to confirm that the fastest growth has occurred in States where market opening has been most effective. However, it must be remembered that this growth has been much less than that in road freight traffic.

Rail freight modal share in 2003 was 14% (242bn tonne km) in the EU-15 countries and 38% (122bn tkm) in the 10 'accession states'. In 2003 rail freight turnover was around €10bn in the EU -15 plus some €3bn in the 'accession states'. For comparison, EU road haulage turnover was ca. €200bn across all 25 EU states in 2001.

Across all 25 EU states, the rail freight sector employs over 200,000 people. Its major market segments are:

- Heavy industry transports: e.g. coal ~70%; steel ~35%.
- Port hinterland traffic: e.g. maritime containers from Hamburg ~40%.
- Selected 'difficult' corridors: e.g. Transalpine Fréjus-Brenner arc ~65%.

(Data for 2003. Source: DG TREN presentation to the International Rail Freight Conference in November 2005, citing McKinsey & Company/Community of European Railways (CER) Study of 2005.)

The McKinsey/CER analysis indicates that the decline in rail freight volumes has stabilised, but financial losses in EU-15 rail freight activities were estimated at ~€ 800 million for 2003. This equates to a return on sales of -9% compared to a sustainable target of +3% to +5%. Major rail freight operators are continuing to experience a revenue/cost squeeze, with revenue/tonne-km declining at around 3% p.a., whilst costs per

tonne-km are declining at only some 2% per annum, a non-sustainable situation.

Meanwhile road transport is estimated to have a short-term capability to deliver cost reductions of ~10-20% over the next 1-2 years, savings which can easily be secured by freight users in reduced prices.

Although rail freight has the medium-term **potential** for cost reductions of ~20-30% over the next 2 to 3 years, this requires significant business and operational restructuring, service re-specification and negotiation with labour unions. Hence, major rail freight operators are still struggling to compete with road transport in contestable general/non-bulk freight markets.

Future Challenges for Rail Freight in the EU-15

The economic sustainability of the current business mix is not assured. The McKinsey/CER study estimates that achieving a viable return on sales of 3%-5% through service rationalisation alone would lead to volume losses of over 50%, including a requirement to abandon most less-than-trainload service networks and to focus on core point-to-point offers in bulk and international containerised freight markets. Such a strategy incorporating substantial restructuring has been pursued by DB.

However, these markets will be targeted by incumbents and new entrants alike. Also, initial margins in the international containerised freight markets are relatively small compared to bulk transport flows, because of limitations in rail capability and continuing road, maritime or river/canal competition. This outlook leads to a future scenario of aggressive competition for a concentrated range of sources/flows of traffic, low margins and limited commercial sustainability, and further marginalisation of rail freight across much of the EU-15.

If the pessimistic scenario described above is to be avoided, the actions needed to address the current financial problems of rail freight in Western Europe could include:

Deliberately fixing the inter-modal competitive framework?

(For example reducing rail access charges, increasing road user charges.)

Opportunities might arise from initiatives to attribute environmental disbenefits to specific transport modes, but this will not automatically bridge the efficiency/responsiveness gap between the road and rail freight sectors. Also, such action is likely to prove extremely unpopular with customers since it does not address the basic economic inefficiencies of the rail networks.

Higher subsidies?

These are unlikely to be available to fill the funding gap alone, given the drivers of structural reform and the macroeconomic context described earlier. But there does remain some potential scope for carefully targeted, output-based subventions (e.g. REPS2).

New business models?

Examples include those adopted by DB Cargo (rail + logistics on a global scale); CFL/Arcelor (upstream integration with key customer to offer specialist services); NS Cargo & DSB Gods (divestment); Green Cargo (business turnaround); and from new entrants. Such new models may be necessary but are unlikely to be sufficient.

A vital element in these, or any other options, is fixing the industrial structure and core processes of the EU rail freight sector. Despite some good progress plus the achievements of the EU, the current framework appears to be:

- Too complex, imposing significant delays and transaction costs on sponsors/operators of new services;
- Too focused on the protection of incumbent operators to allow competitive distortions; and
- Too amenable to allowing the continued existence of significant entry barriers.

There remain industrial structures and key processes that still:

- are too complex;
- involve significant state interventions;
- appear to protect incumbent operators; and
- permit the continued existence of barriers to entry and competitive distortions.

In many countries there is not a level playing field. The incumbent operator can block access to facilities and can tie-in existing customers to using its services. Although some challenges have been taken to the EU competition authorities, it is very difficult to identify and dismantle the more subtle barriers.

Through consultations as part of the SDG “Railimplement” and “Servrail” projects for the European Commission the following barriers to entry to the market and distortions within it were identified:

Access to rolling stock

In particular incumbent national operators are not releasing second hand stock to the market. Homologation of new stock takes a substantial amount of time and represents a significant investment for new entrants as it has to be applied for separately for each rail network. (How long does it take to homologate a truck in each country?)

Bureaucracy

New entrant (and incumbent) operators are finding it difficult to obtain the necessary documentation (safety certificate, licence, etc.) from the various national authorities as many regulators and/or ministries have only recently become active and as such are not sure how to process requests.

Access to rail related services

Arrangements for access to crucial facilities such as freight terminals, maintenance depots and other facilities off the main network are unclear on the majority of Member State networks. There is little published information on costs or access requirements and in many cases the incumbent operator that manages these facilities (which is often not the independent rail infrastructure manager) is incentivised to charge itself less than it charges new entrants. The only network in Europe that seems to provide detailed information in this respect is Norway (which is not an EU Member State).

View of the Future

Observation of developments in other EU network industries (commercial aviation, energy supply, communications) suggests that the EU may present an eclectic model of rail freight scenarios. The ‘Statist Model’ will still be influential in the politics of EU-15 Member States.

The future may well see further market-opening, with services provided by a mix of:

- Internationally successful wholly/part state-owned rail operators.
- Unsuccessful wholly/part state-owned operators.

- Successful international private operators (multi-client or own-account).
- Specialist private operators (by traffic type, activity and/or geographical area).

Such a scenario will not fully meet the EU's vision for the "*Creation of an integrated European railway area to allow cross border services under a single responsibility in order to guarantee the quality of services to the customer*". And it is still likely to involve more fragmentation, lower market-shares and higher cost-base/subsidy requirements than are consistent with long-run viability. But this may be an accurate reflection of the prevailing attitude of many Governments of EU-15 Member States to rail freight policy.

Questions & comments

(Alan Bennett joined Francesco Dionori on the platform for the discussion.)

Stephen Bennett (BR/SSRA retired) felt that the presentation had been somewhat depressing and pointed to a continuing story of decline for rail freight in Europe. He contrasted this with recent experience of railways in Russia, China and India where freight was an expanding and profitable business; and noted that Warren Buffet was currently investing in railways.

Alan Bennett suggested that the main reasons for the differences were the traffic mix on European rail networks (with freight having to compete with passenger services for capacity) and the nature of the infrastructure (which limited train lengths).

Jeremy Drew (Independent consultant) noted that for socio-economic and geographical reasons the length of haul in Europe was very much less than in the USA, Russia or China. In his view national frontiers have tended to limit the development of very long distance international traffics in Europe.

Alan agreed, pointing out that the 'accession states' on the periphery of Europe were creating only a very, very small proportion of new rail freight business.

Peter Burgess (Arup) agreed that the major problems facing the European rail freight business seemed to be the mix of traffics and the length of hauls. The presentation appeared to reinforce his view that

European rail freight operators behaved as a bunch of squabbling children who were not prepared to work together to put forward a comprehensive market offer. This seemed to be the challenge facing the EU. When asked by Alan why he felt this challenge had not been addressed, Peter suggested that vested interests always tended to get in the way of such co-operation.

Alan did not feel that this view entirely explained the long history of sub-optimisation in European rail freight. One needed to account for why a group of highly intelligent and experienced railway managers had not delivered a set of desirable outcomes. This could only be due to the constraints placed upon them by national governments.

Mary Acland-Hood wanted to know why the EU placed so much emphasis on competition within the rail freight industry and not the industry co-operating to compete with road transport. Politicians tended to view spending on rail infrastructure as subsidy, whereas that on road infrastructure was presented as a social good.

Alan pointed out that economic theory suggested that if the existing price-quality mix of rail freight did not meet customers' requirements then on-rail competition was a necessary, although perhaps not entirely sufficient, way of improving that price-quality mix.

Francesco added that some countries were applying rail access regimes which recognized the externalities of road and rail costs and attempted to redress any imbalances which resulted.

Martin Brennan (DeltaRail) agreed with Alan. In his experience trying to redress any externalities would have only a very limited effect on the overall economics of rail freight. Rail freight operators had to address their internal problems. He felt, however, that too little had been made in the presentation on the importance of traffic density on the economics of rail freight operations.

Francesco pointed out that existing operators concentrating operations around fewer higher density services can lead to a situation whereby facilities which might be run profitably by other operators are closed down.

Alan noted that McKinsey's work led one to conclude that concentrating only on the highest density services was tantamount to an admission of failure by established rail freight operators. One simply did not know whether new operators could run a more diffuse network since no one had seriously tried to do so.

Peter Gordon (DeltaRail), taking up this point, wanted to know whether the speakers thought that competition within the wagonload business was possible.

Alan reported that there was some talk of various consortia putting together new wagonload networks. There remained, however, the question of whether marshalling yards represented 'natural monopolies' or not.

Another member asked what the "prize" might be for achieving an efficient market in rail freight throughout Europe.

Alan confessed that no one seemed to know. He recalled previous studies suggesting that efficiency might account for half the difference in market share between railways in Europe and the USA.

Graham Zeitlin (BR retired) questioned why one should automatically regard increased rail freight volume as beneficial. In response *Alan* felt that the objective was essentially a political priority, in which circumstance *Graham* felt there would not be any real incentive for rail freight managers to go out and get business.

Tom Worsley (DfT) wanted to know whether adopting short run marginal cost pricing for infrastructure access within a vertically separated railway could lead to longer term problems, particularly due to the disincentives to invest in additional infrastructure capacity. Should we in the UK be looking to a different framework for promoting longer term investment?

Alan, in response, queried whether road taxation took account of long run marginal costs for the infrastructure provision needed for HGVs. Rail capacity was determined by two components - the track infrastructure itself and the operational systems such as signalling. These had very different investment profiles.

At this point *Dick Dunmore*, the meeting convener, drew the discussion to a close and thanked *Alan* and *Francesco* for a most comprehensive and thought provoking, if somewhat sobering, presentation.

Report prepared by Gregory Marchant

Supply and demand in the deep-sea container industry and its impact on the transport infrastructure of Great Britain

Mike Garratt
MDS Transmodal
www.mdst.co.uk

Arup, Fitzroy Square
26 September 2007

Overview

World container volumes are currently growing by 10-12% per annum as a consequence of falling trade barriers, the transfer of manufacturing to low cost/high efficiency economies, notably China, and GDP growth – in that order. Services are being concentrated into fewer, larger ports.

Mike said that, in order to develop suitable policies for the future, Britain had to forecast the behaviour by the shipping lines who control these flow, as well as traffic by port – particularly container terminals – and assess the impact on inland networks, given parallel land use strategies. His paper would concentrate on examining supply and demand in container trades, describing the port forecasting exercise contained in DfT's July 2007 "Interim Report on the Ports Policy Review", and describing the specific impact and opportunities for rail freight, taking into account DfT's July 2007 White Paper "The Future of Rail".

The container industry has been growing remarkably fast. It is estimated that there was a 175% growth in "Twenty-foot Equivalent Unit" (TEU) containers passing through ports between 1996 and 2006. At the same time there was a 134% increase in liner service capacity and, to serve longer supply chains, a 220% increase in ship capacity. There has been concentration in the industry with a 217% growth of the three largest lines.

800 container terminals currently offer 584 kilometres of quay served by 2,900 cranes, but it is hard to build new ports in many locations so future demand is expected to be tight. One port had recently changed hands for 20 times its annual profit.

Vessel supply and port capacity to 2009 is already determined, so Mike attempted to address requirements to 2014. The rapidly expanding market requires huge investment in:

- Ships, which cost around \$12-15,000 per TEU of capacity
- Terminals, at around \$500 per TEU of capacity at Western European costs
- Inland networks, which requires investment by railways and road hauliers.

The private sector has shown a willingness to invest despite a considerable scope for error with highly erratic charter rates and asset lives of 30 years for ships and 50 for ports, far longer than their planning horizons. There is a need to integrate port and shipping capacity within a competitive environment, but port capacity is currently the principal constraint.

There are three principal drivers for growth and change:

- Globalisation: the world economy is growing rapidly and expanding international trade is substituting for domestic production. The mix of cargo is changing with a shift from bulk to containerised traffic, and even some ferrous scrap is now containerised. The average length of journey is also increasing, with longer routes expanding faster than shorter ones.
- Regulation: the conference system, essentially a cartel, will be illegal in the EU from next year, which Mike described as “a real shock” to the system. At the same time global providers of shipping and stevedoring are emerging.
- Economies of scale: these are very significant, and the paramount need to be cost effective requires larger ships and deeper berths, but only 60-70 ports offer this.

Continuing global economic development is heavily dependent upon an efficient shipping industry with adequate capacity, which requires a liberal economic environment. However the dismantling of the conference system will affect the transfer of information required for investment decisions. Lars Jensen, Director of global intelligence at the Maersk line, has said that unless something is done regarding information in the post conference regime in 2008, the industry could be in danger of getting worse information than it is now. Data is around but it is not always used.

Mike summarised MDS's approach to modelling the shipping system.

Figure 1: key elements of demand and supply

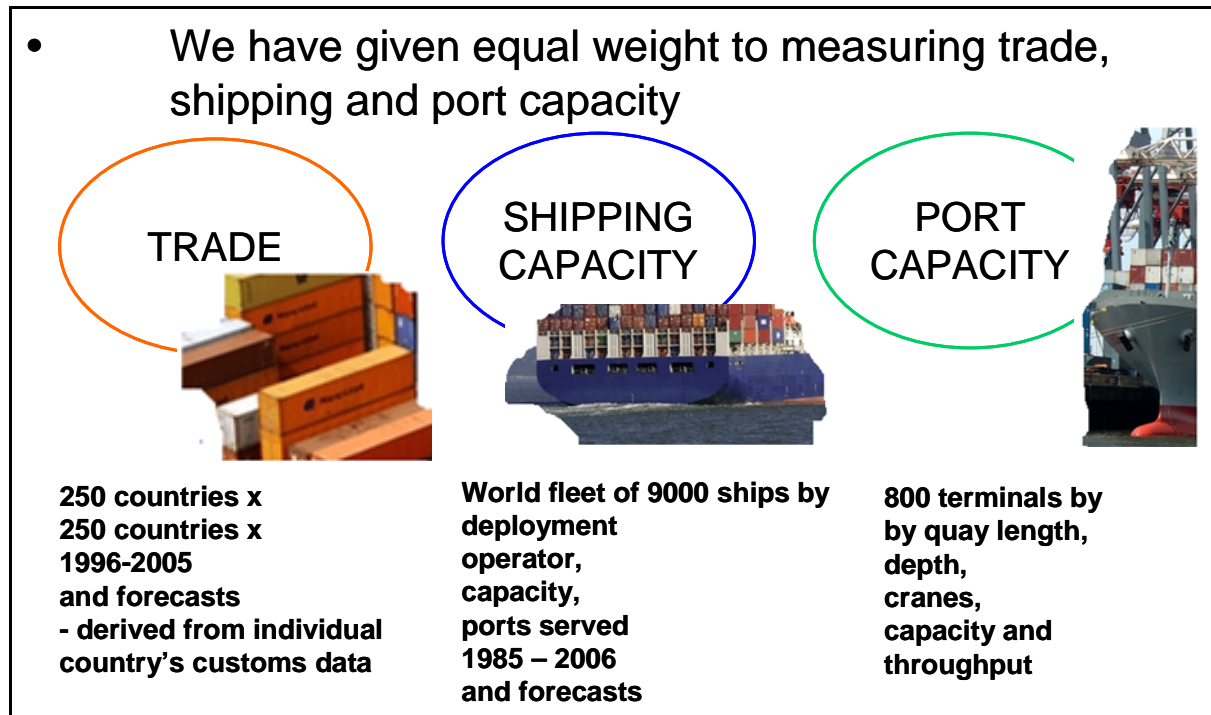
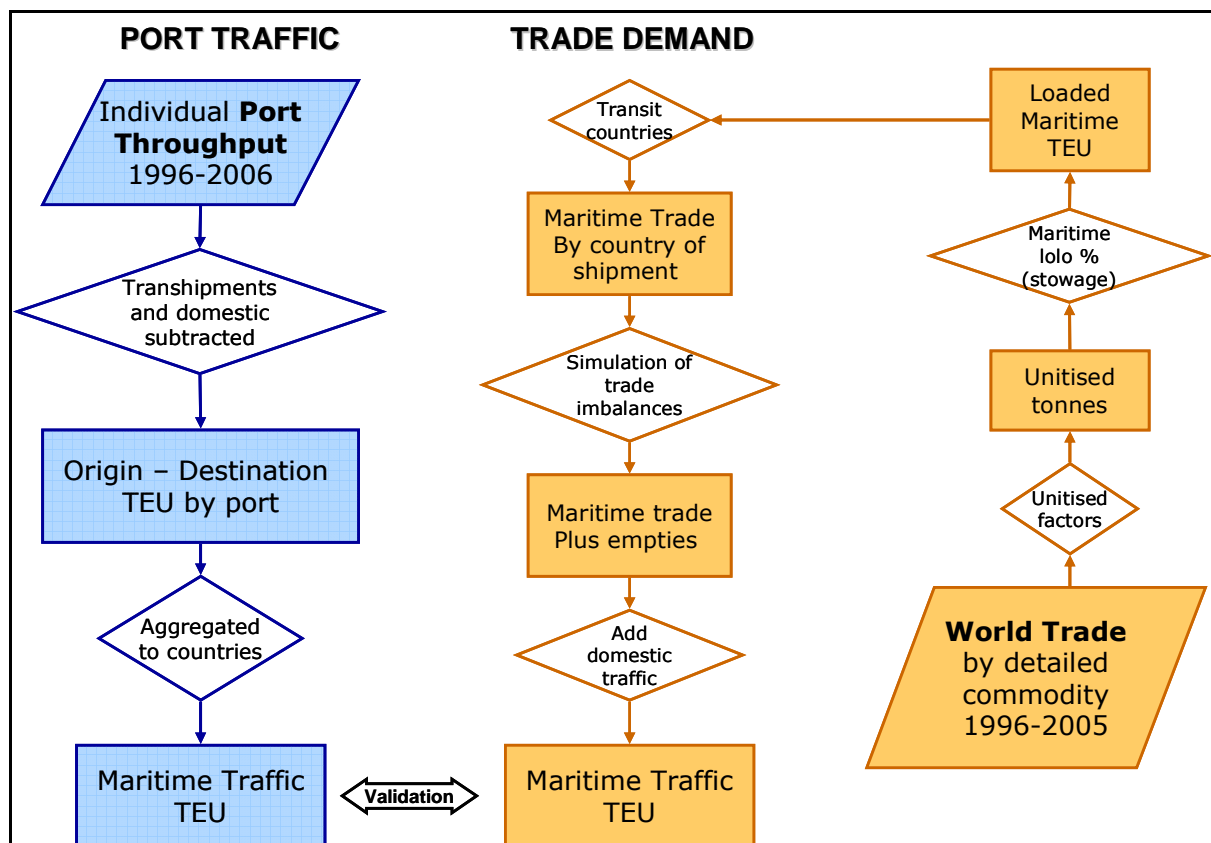


Figure 2: overall modelling structure



Their analysis suggest that the projected average annual growth in containerisation, 10.1% per annum over the next 10 years, comprised:

- 6.8% from underlying growth in a constant basket of goods
- 1.4% from increased levels of containerisation
- 1.0% from a switch to 40 foot high-cube containers
- 0.9% from a rising proportion of empties

The forecast is sensitive to the interaction between these factors and how they are likely to mature. The estimated growth in loaded TEU from 1996 to 2005 was fastest in Asia.

Table 1: 1996-2005 growth in loaded TEUs from 45 million to 98 million

| Principal routes | | Growth | Proportion of TEU growth |
|------------------------|------------------------|-------------|--------------------------|
| Far East | Americas | 181% | 22% |
| | Europe & Mediterranean | 208% | 19% |
| South East Asia | Americas | 144% | 1% |
| | Europe & Med | 131% | 3% |
| Europe & Mediterranean | Americas | 76% | 7% |
| | Sub Saharan Africa | 77% | 2% |
| Australasia | | 109% | 4% |
| Intra-regional | | 143% | 35% |
| Other | | 121% | 6% |
| Overall | | 142% | 100% |

The forecast growth was also split between commodity as shown below.

Table 2: growth by Standard International Trade Classification (SITC)

| 1-digit SITC classification | | % of growth in TEUs |
|------------------------------------|-------------------------------------|----------------------------|
| 0 | Foodstuffs | 7% |
| 1 | Beverages & tobacco | 1% |
| 2 | Basic materials | 6% |
| 3 | Fuels | 1% |
| 4 | Edible oils & fats | 1% |
| 5 | Chemicals & plastics | 7% |
| 6 | Manufactures classified by material | 14% |
| 7 | Machinery & transport equipment | 14% |
| 8 | Miscellaneous manufactures | 14% |
| 9 | Unclassified | 0% |
| | Total extra TEUs | 65% |

This gave rise to some surprises, with the fastest growing commodity at 2 digit SITC level being furniture, apparently owing to the low production cost in places such as China, as shown below.

Table 3: 15 fastest-growing commodities at 2-digit SITC level

| Commodity | 2-digit SITC | 2006 | Growth | % rise |
|--|---------------------|-------------|---------------|---------------|
| Furniture, bedding, cushions | 82 | 10,858 | 8,665 | 80% |
| Travel goods | 83 | 1,803 | 1,338 | 74% |
| Prefabricated buildings, plumbing | 81 | 2,177 | 1,573 | 72% |
| Professional & scientific apparatus | 87 | 1,337 | 952 | 71% |
| Office machinery & computers | 85 | 4,472 | 3,175 | 71% |
| Other electrical machinery | 77 | 13,191 | 9,149 | 69% |
| Pulp & waste paper | 25 | 6,080 | 4,130 | 68% |
| Clothes | 84 | 8,958 | 6,051 | 68% |
| Road vehicles including parts | 78 | 9,194 | 6,180 | 67% |
| Metal manufactures NES (not elsewhere specified) | 69 | 7,417 | 4,956 | 67% |
| Primary plastics | 57 | 6,986 | 4,643 | 66% |
| Footwear | 85 | 2,112 | 1,384 | 66% |
| Miscellaneous manufactures | 89 | 13,167 | 8,625 | 66% |
| Telecoms & audio machinery | 76 | 3,885 | 2,543 | 65% |
| Organic chemicals | 51 | 4,386 | 2,869 | 65% |

Mike went on to consider shipping capacity in terms of fleet and services. He used a comprehensive database which had been maintained from 1985 to the present day, with each ship identified by operator and capacity and associated with route/service/ports.

The output was by route and service capacity with the output for 2009 determined on the basis of new building deployment and the mix of vessels for 2014 on the basis of:

- The relationship between demand and vessel size
- The impact of the Panama Canal upgrade
- Port deepenings

Table 4: changes in container ship deployment 1996-2006 in million TEU

| Two way deployment | 1996 | 2001 | 2006 | Growth 1996-2006 | |
|----------------------|-----------|-----------|------------|------------------|-----------|
| | | | | Supply | Demand |
| Asia | - | | | | |
| Europe/Mediterranean | 11 | 15 | 33 | 22 | 18 |
| Asia - Americas | 15 | 24 | 43 | 29 | 27 |
| Transatlantic | 8 | 12 | 19 | 10 | 5 |
| - Africa | 5 | 7 | 12 | 7 | 4 |
| - Australasia | 3 | 5 | 7 | 4 | 3 |
| Total | 42 | 62 | 114 | 72 | 57 |
| Intracontinental | 74 | 105 | 156 | 82 | 30 |

Table 5: growth by size, for fully cellular vessels

| Number of vessels | 1996 | 2001 | 2006 |
|--------------------------------|--------------|--------------|--------------|
| 1-3000 TEU | 968 | 1,323 | 1,745 |
| 3-5000 TEU | 256 | 403 | 627 |
| 5-8000 TEU | 13 | 153 | 372 |
| > 8000 TEU | | | 115 |
| Total number of vessels | 1,237 | 1,879 | 2,859 |
| Mean TEU/ship | 2,230 | 2,548 | 3,092 |
| Total strings (routes served) | 246 | 299 | 400 |
| % chartered | 32% | 46% | 52% |

Table 6: global fleet capacity by operator

| Capacity (millions of TEU) | 1996 | 2001 | 2006 |
|-----------------------------------|--------------|--------------|--------------|
| Total (millions of TEUs) | 3.163 | 5.291 | 9.142 |
| Of which % | | | |
| Maersk (Maersk Sealand in 2001) | 6.1% | 11.9% | 17.7% |
| MSC | 2.7% | 4.7% | 10.0% |
| CMS - CGM | 2.0% | 3.0% | 6.4% |
| Evergreen | 6.1% | 6.6% | 5.9% |
| Hapag-Lloyd | 2.4% | 2.4% | 4.8% |
| Cosco | 5.0% | 3.9% | 4.0% |
| China Shipping | 0.0% | 1.7% | 3.8% |
| Hanjin | 3.4% | 5.6% | 3.8% |
| Total % of the above | 27.7% | 39.8% | 56.6% |
| Total % of the top 8 | 36.8% | 46.5% | 56.6% |

In 1992 14% of the world container fleet was chartered (rented from financial institutions). By 2006 this had risen to 52%, providing the flexibility for leading carriers to grow share, and providing the means to concentrate funding on the largest of new ships, takeovers and terminals.

Forecasts

Mike said that forecasts gave an underlying growth of 7-8%, concentrated on the Far East routes.

Table 7: projected growth in demand

| Demand (millions of TEU) | 2006 | 2009 | 2014 |
|-------------------------------------|-------------|-------------|-------------|
| Asia - Europe/Med | 53 | 69 | 90 |
| Asia - Americas | 74 | 95 | 123 |
| Transatlantic | 23 | 27 | 32 |
| To/from Africa | 16 | 20 | 25 |
| To/from Australasia | 12 | 15 | 18 |
| Intracontinental | 105 | 135 | 174 |
| Total long haul port to port | 283 | 360 | 463 |
| Transshipment | 103 | 134 | 174 |
| Domestic | 57 | 73 | 94 |

It is already known what ships will be built in the near future and on what routes they are likely to be deployed. Mike suggested that continuing high bunker costs may encourage chartering additional vessels so that

journey times can be increased to allow operating at a slower, more fuel efficient speed. This could add 10% to fleet sizes.

Table 8: cost per round voyage Europe ↔ Far East, Panamax ships

| Bunkers \$/tonne | \$150 (2003) | | \$300 (2006) | |
|----------------------------|---------------------|------|---------------------|------|
| Vessels/string | 8 | 9 | 8 | 9 |
| Charter \$million | 1.51 | 1.70 | 1.51 | 1.70 |
| Bunkers \$million | 0.88 | 0.73 | 1.76 | 1.46 |
| Total \$million | 2.39 | 2.43 | 3.27 | 3.16 |
| Saving from slower sailing | | -2% | | 3% |

He forecast that supply would continue to match demand.

Table 9: forecast demand and service capacity

| (millions of TEU) | 2006 | | 2009 | | 2014 | |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Demand | Supply | Demand | Supply | Demand | Supply |
| Asia - Europe/Med | 27 | 33 | 35 | 43 | 45 | 55 |
| Asia - Americas | 37 | 43 | 48 | 56 | 62 | 72 |
| Transatlantic | 11 | 19 | 14 | 24 | 16 | 28 |
| To/from Africa | 8 | 12 | 10 | 15 | 13 | 19 |
| To/from Australasia | 6 | 7 | 8 | 9 | 9 | 11 |
| Total | 89 | 114 | 113 | 147 | 144 | 185 |
| Load factor | 78% | | 78% | | 78% | |

By assessing each group of routes separately, Mike concluded that the following fleet could address the projected demand.

Table 10: projected growth in loaded and empty demand

| (millions of TEU) | 2006 | 2009 | 2014 |
|----------------------------------|-------------|-------------|------------------|
| Intercontinental | 89 | 114 | 144 |
| Intracontinental | 52 | 67 | 87 |
| Forecast long-haul demand | 142 | 180 | 231 |
| To be served by a fleet of: | Present | + Ordered | + Extra required |
| 1000 - 3000 TEU | 1,745 | 2,161 | 2,400 |
| 3000 - 5000 TEU | 627 | 873 | 1,000 |
| >3000 TEU | 487 | 786 | 1,100 |
| Mean vessel capacity (TEU) | 3,092 | 3,362 | 3,670 |

If it is assumed that load factors remain constant from 2009 to 2014 (a key year because of the planned inauguration of new locks in the Panama Canal), the forecast increase could be catered for by an 18% increase in vessel numbers including 40% more ships over 5000 TEU capacity. The implication is that 700 more deep sea vehicles with a capacity of 1,000 TEU or greater will be needed, of which 300 will be “Post Panamax” or over 5000 TEU.

The supply of ports is crucial. Ports compete through offering a competitive location, connectivity, capacity and capability to accommodate larger vehicles. The location of a port is specific and will not be discussed here. Connectivity is a key feature given that 23% of container movements are transshipments (connections between ships).

The principal challenge will be ports capacity, which can be expanded by increasing terminal productivity in TEU handled per metre of quay. Mike said that the study had established a benchmark, based on performance of the most efficient container ports, of 3300 TEU/quay-metre per annum for transhipped cargo and 1100 TEU/quay-metre per annum for terminating cargo, which must often be held on the quay awaiting collection. Only 12 major ports, representing 4% of world throughput, currently beat this benchmark, in part because ports are often used a short term warehouses.

Many ports cannot achieve these productivity levels, as their hinterlands do not generate sufficient traffic, and the theoretical capacity of 800 million TEU through all 800 terminals analysed cannot therefore be achieved. The study only included 64 major ports, with a minimum draft of 13 metres and handling over 1 million TEU, which handle 69% of global throughput. It assumed no change in market share between ports and no account is taken of the application of “new technology”.

Table 11: implied shortfall in port capacity

| Region | Major ports 2006 | | Major ports 2014 | | |
|--------------|--------------------|-------------|--------------------|-------------|------------|
| | Benchmark capacity | Through-put | Benchmark capacity | Through-put | Short-fall |
| Asia | 225 | 199 | 225 | 330 | 132 |
| Europe/Med | 95 | 61 | 95 | 98 | 26 |
| Americas | 70 | 43 | 70 | 68 | 8 |
| Africa | 0 | 0 | 0 | 0 | 0 |
| Australasia | 7 | 4 | 7 | 6 | 0 |
| Total | 397 | 307 | 397 | 502 | 167 |

The implications for the global container industry are that the overall market will continue to grow with the underlying growth in goods moved in the head-haul direction, but that there will continue to be imbalances. It is important to recognise the trade-offs between vessel capacity, sailing speeds and transshipment strategies. Short term over-supply can be absorbed by ships sailing at slower, more fuel efficient speeds at charter rates that still cover replacement costs. 2.5 million more ship TEU, or around more 700 vessels, will be required. There is an apparent need for more port capacity, and a substantial expansion will be required in the major ports even if they all achieve benchmark productivity.

The implications in Great Britain

Looking at Great Britain, the total goods lifted per annum by road and rail is expected to be approximately 1.8 billion tonnes. This falls to 1.3 billion tonnes if multiple lifts are excluded, of which non-bulk consumer goods account for 300–400 million tonnes.

However, there was about 160 million tonnes of international freight by container and trailer in 2005, so around 40% of non-bulk/unitised goods are already foreign.

Until 1989, the UK Government's ports policy was "hands off", with the private sector operating at little public cost. This approach worked fine as long as extra capacity was created from efficiencies from the abolition of the Dock Labour Scheme. However, the need for more capacity as trade grew forced a rethink.

Developing new ports is politically difficult. New developments in sensitive estuarial areas trigger the Habitats Directive. The Dibden Terminal failed to gain consent. A "needs" case has to be established to justify new container port capacity. The Government commissioned a forecasting study, with the final results published in July 2007.

This said that overall port capacity was only forecast to grow by 1% per annum to 2030. Historically it had been growing at 1.4% per annum but had been declining primarily among bulks such as iron ore. However growth of 115% is forecast in roll-on roll-off traffic and 180% in deep sea container traffic. In comparison, coal imports are expected to fall, with a 40% cut in electricity from coal forecast by 2015, although it is not clear what would replace it. Applications have been made and consents given for Felixstowe South, Bathside Bay, London Gateway and the Liverpool River Terminal. There is also scope for expansion with the existing Southampton port.

25% of deep-sea containers already move by rail, so the growth has serious implications for rail capacity.

MDS Transmodal have developed a GB Freight Model. This is a calibrated model based on evidence of actual road, rail and port market shares, initially created to assess the impact of the Channel Tunnel) and developed into a domestic and international model for the 2000 “10 year plan”. It is now being used by the DfT for port forecasting, rail forecasts and wider cross modal forecasts.

Mike noted that the July 2007 Interim Ports White Paper included rail forecasts to 2030. Half of all rail freight is port related, but the Rail White paper of the same date only forecast to 2014/15, replicating the mid-2005 Freight Route Utilisation Strategy (RUS) projections of a 26% tonnage growth in the ten years to 2014/15 (similar to the bottom down forecast of a 28% increase). The latter are based on the GB Freight Model, as are DfT port forecasts and anticipated road forecasts (WebTag).

The rail White Paper states (paragraph 9.21) that “As with passenger growth, it is not possible to forecast with confidence the amount of freight moved by rail over 30 years”. However, investments in other modes were based on a much longer time frame: for example public sector investment in highways and the GBFM expected the DfT to forecast to 2030. Mike felt that scenarios for long-term decisions were needed, and that the Freight RUS did not take into account:

- The energy White Paper, which foresaw a switch away from the coal, which currently accounts for a high proportion of rail freight.
- The active plans to develop 9 million m² of warehouses on rail linked distribution parks, which will carry large amounts of domestic inland freight. These represent 30% of likely warehouse construction to 2030, which is cautious given emerging policies stressing rail connectivity.

The net effect is a significant switch in mode away from bulk coal to utilised traffic.

Table 12: projected growth in coal and container traffic

| | 2000 | 2005 | 2015 | 2020 | 2030 |
|-----------------------------------|------|------|------|------|------|
| 2007 energy White Paper | | | | | |
| Power from coal (Terawatt hours) | 112 | 125 | 75 | 71 | |
| Index (2005 = 100) | 90 | 100 | 60 | 57 | |
| 2007 interim ports policy | | | | | |
| Deep sea containers (million TEU) | 4.2 | 5.7 | 9.6 | | 16.0 |
| Index (2005 = 100) | 74 | 100 | 168 | | 281 |

Mike suggested that there was planning pressure for the many sheds being built for domestic distribution to be rail-connected, creating a further growth opportunity for domestic rail freight.

Table 13: projections for rail freight

| | 2006 | 2015 | 2030 |
|--|-------|-------|-------|
| Excluding growth in domestic traffic from new sheds | | | |
| Tonnes (million, including for Network Rail) | 123.7 | 123.6 | 168.1 |
| Tonne-kilometres (billion) | 23.5 | 26.6 | 36.6 |
| Trains (000) | 409 | 407 | 526 |
| Including growth in domestic traffic from new sheds | | | |
| Tonnes (million, including for Network Rail) | 123.7 | 126.9 | 188.7 |
| Tonne-kilometres (billion) | 23.5 | 29.1 | 45.9 |
| Trains (000) | 409 | 423 | 604 |

MDS forecast that by 2030 there will be over 72 freight trains per day over key routes, on most of which supply would be far short of demand:

- East Coast Main Line
- West Coast Main Line
- Southampton to Birmingham
- London to the Channel Tunnel and Felixstowe.

There is a clear north-south orientation, even with the assumed growth in rail traffic to Scotland such as transshipment traffic from Rotterdam. There would be a definite need for a London bypass.

The message for the rail industry is that planning for more capacity is urgently required, if the confidence of the industrial and distribution sectors is to be maintained, and if rail is to fulfil its potential and not be

limited by capacity. It is therefore fortunate that the rail White Paper directs the industry to plan for a network with double its current capacity.

Mike concluded by noting that liberalisation of world trade, energy policies to address climate change, and land use policies to promote sustainable transport, would all affect the need for infrastructure. These changes can be modelled to inform the public and private sectors and to help policy makers and investors to take a holistic view.

Questions

Derek Done (independent consultant) asked what the effect would be of any opening of the Northwest Passage resulting from global warming. Mike replied that it would shorten distances and change port geography, for instance being good for Vancouver. However, it would require icebreakers, as vessels were not designed to operate in those kinds of conditions, and it was not going to happen tomorrow. He did not see it having much effect on demand as shipping costs, which were a relatively small proportion of total costs.

Derek also expressed surprise that the transport of furniture was so important. Mike said that there was a mix of traffic, and in some cases heavier and lighter commodities shared containers to maximise use of both space and weight limits.

Finally, Derek asked about sea to air transshipment. Mike thought that this was unlikely, although a member of the audience suggested that it might happen in places such as Russia where the road network was very poor. Mike said that air freight was actually growing slower than sea trade, probably due to a number of factors:

- A change in the type of good transported, with more of a lower value for which inventory costs were too small to justify the cost of air freight.
- Increased fuel prices, making air freight more expensive.
- Increased sailing frequency, reducing overall journey times by ship. Once there are three sailings a week, shippers were happy to entrust more shipments to sea.
- Manufacturers might have to pay for airfreight themselves if they missed a delivery deadline.

Chris Whittle (Mott McDonald) asked about the distinction between deep sea and short sea routes. Mike replied that the former referred to Europe and the Mediterranean and the latter to anything more distant.

David Starkie (Economics Plus) noted that ships had a life of 20-30 years but that many private companies worked to a 2-3 year timeframe. Despite this the industry was successful in dealing with growth. Did governments need to be more hands on, and can they forecast that far ahead? NPV calculations are typically over 30 years, with the public sector using lower discount rates than the private sector. Mike saw government planning as scenario building and as such being able to cope with different scenarios.

Dick Dunmore (Steer Davies Gleave) asked if the big three had grown organically or through acquisition. Mike said that it was mainly the latter, and that lines such as P&O had effectively disappeared from the scene.

Peter Burgess (Arup) said that rail was not specifically recognised in the recent transport White Paper. The freight sheds mentioned would need to be built in suitable locations and this might be a reason for prescriptive planning.

Robert Cochrane (independent consultant) commented that, following the Eddington report, there had been increased cross-modal planning. Planning permission had been given for enough port capacity to at least 2015 and probably 2020, so the problem was surface infrastructure to and from the ports. He asked about cabotage: could countries be missing something by requiring all domestic and coastal shipping to be by local lines as, for example, stipulated by the Jones Act in the US?

Mike contrasted the US situation with the now relatively open access in the EU, creating more competition and likely lower prices. However, ports account for a high proportion of costs and are still expensive places.

Stephen Knox (Transport for London) noted that the freight RUS forecast a growth for rail of 60% between 2004 and 2014 and overall freight growth of 68%, but rail freight capacity was already constrained. For example, Felixstowe could only manage 25 trains per day, and less profitable routes had been removed to make way for more profitable ones. Southampton has a new terminal, which will increase demand.

Stephen Burke asked about the minimum economic distance for moving rail freight. Mike noted that rail is successful between Southampton and

Birmingham, where it generally requires onward road transport. It cost around £35-40 to transfer a container to rail at Southampton, but this would be cheaper at a freight warehouse, so he felt that rail could be competitive at a distance of less than 200 kilometres.

Ian James (WSP) asked about capacity to the Channel Tunnel, where 35 paths per day in each direction are protected but few are used. Mike believed that this number would actually be exceeded by 2030.

Review by Peter Gordon

Air and Rail Competition and Complementarity

Report by Steer Davies Gleave for European Commission DG TREN.
Published August 2006.

The report was commissioned by DG TREN to examine four issues –

- factors determining air and rail market share
- operating costs for each mode
- likely trends in market share and operating costs for the next 5 to 10 years
- whether the introduction of through baggage handling and e-ticketing poses any security risks.

In order to do this the report began by examining the drivers of market share such as journey time and scheduling factors. Air has a high “fixed element” of journey time (and operating cost) due to check in, taxiing and unloading, after which times (and costs) do not increase much, whereas rail times are largely related to length of journey. It is not surprising therefore that rail share declines as journey length increases. However, “punctuality” and price are also identified as critical factors.

It then goes on to look at the operating costs of the two modes. This makes for rather sobering reading for rail operators as not only do low cost carriers tend to have very competitive costs, the report predicts that legacy carriers are likely to be able to reduce their costs to nearer those of their low cost brethren, whereas the scope for reducing rail costs is more limited.

The report then goes on to develop a market share model and applies this to eight routes where air and rail compete, ranging from London to Edinburgh where air is dominant, to Frankfurt to Cologne where the only airline has recently withdrawn from the route. It predicts that the rail market share between London and Paris will rise slightly from 69% to 71-72% as a decrease in journey time from the opening of the second stage of High Speed 1 is partially offset by stronger price competition from the airlines, which will be able to reduce their costs somewhat.

Seven scenarios are then evaluated, considering factors such as limits on airport slots, higher rail speeds, changes in operating costs and different taxation regimes. In many cases quite large changes in these factors are required to have more than a small effect on market shares.

The last part of the report considers security issues for rail-air travel. Presumably this has been included as the EC considers that rail may have a significant role in substituting for air on short feeder routes. It is notable that there are very few places in Europe where the passenger can still check in and hand over their bags prior to the airport in Europe, indeed it was withdrawn at Paddington and Victoria stations a few years ago, although the service is still available in Switzerland - for a fee - and in almost every case customs must be cleared at the airport of arrival. This issue may decline in importance as more countries join the Schengen area. It could also be argued that if convenient check in facilities are offered at airport stations, as Frankfurt and Zurich, and there are adequate trolleys at stations, it may not matter so much if advance check in is not available.

In the opinion of the reviewer this is one of the best reports he has seen on the topic. There are areas where further analysis may have been interesting. For example, very little mention is made of motoring, which has a significant share of even longer journeys, but this was not included in the remit. However a very wide range of factors have been considered. The report is highly recommended and should be read by anyone with a professional or general interest in the area.

The report can be downloaded for free from:

http://ec.europa.eu/transport/rail/studies/doc/2006_08_study_air_rail_competition_en.pdf

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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

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.

Alternatively, an application form can be downloaded from the Group's website: www.transecongroup.org.uk.

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Details of meetings are on our website at

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