Transport Infrastructure Funding Systems – a Review of European Experience

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Abstract

Transport infrastructure funding in Europe currently takes place against the background of a variety of national institutional arrangements as well as planning and procurement procedures. This paper provides a review of different European national transport infrastructure funding systems in terms of the institutional frameworks in which they operate, the fund raising methods employed, types of projects funded and project selection methodologies. It also explores the issues relating to the performance of these funding systems. The paper deals more particularly with experiences with infrastructure financing agencies such as those which have been established in Austria, France and Germany. From these experiences in different European countries, success factors will be identified for stable and efficient systems of infrastructure procurement. This review is based on work that has been undertaken as part of the European research project FUNDING, which is investigating optimal mechanisms for the funding of major transport infrastructure investments at the European Union level.

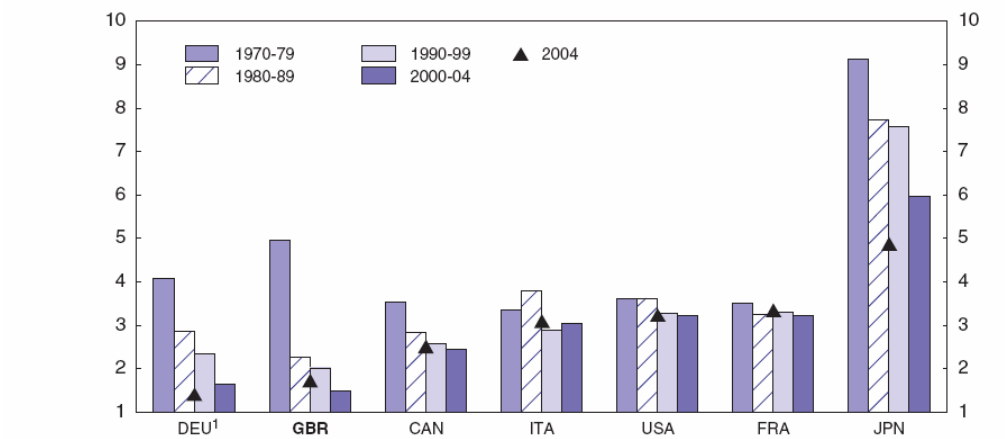
Keywords: infrastructure, financing, procurement, transport, investments

JEL-Code : H57

1 INTRODUCTION

Against a background of fiscal consolidation, most OECD countries have been forced to reduce their government investments in recent years (see Figure 1). This has not only led to a decline in national transport infrastructure investments but has also affected investments into the Trans-European transport networks - despite growing transport demand. This has led to an interest in developing new mechanisms for the funding of large transport infrastructure investments in the European Union. To this end, the project FUNDING started in 2005 with the aim to develop a scientifically sound approach for such funding mechanisms. As an input into the development and formulation of appropriate scenarios for funding European transport infrastructure in the future, a number of different existing systems of transport infrastructure procurement in the Member States have been reviewed.

This paper summarizes the results in terms of the institutional frameworks within which national transport infrastructure funding systems operate, the fund raising methods employed, types of projects funded, and project selection methodologies. Finally, lessons learnt for the development of a European system are summarized. In view of the relevance for the European Union level, the emphasis of our review lies on experiences with infrastructure funding in federal systems, with infrastructure funding agencies (funds), and private sector involvement in financing of transport infrastructure.



1. 1991-99 instead of 1990-99 and West Germany only prior to 1990.

Source: OECD Economic Outlook 77 database.

Figure 1: General government gross fixed investment
(Period averages, in per cent of GDP), Source OECD, 2005b

2 INSTITUTIONAL FRAMEWORKS

2.1 Principal considerations

Transport infrastructure ranges from the provision of international ports, airports and cross-border land transport to local roads and public transport. Due to considerations of efficiency and democratic accountability, a range of levels of Government from local to European assume primary responsibility. A crucial question is how the different levels of Government interact with each other and how the funding arrangements support this interaction. We can broadly distinguish between two models: legal separation of powers and competition between levels.

Legal separation of powers model – here the federal government or national government has legal responsibility for federal/national infrastructure while local government has responsibility for local infrastructure. In addition, central government may make grants towards local infrastructure provision which may incentivise local government in particular ways. The advantages of this system are clarity and accountability; its disadvantages can be disputes between levels of government, difficulties of transferring responsibilities between levels, and difficulty in treating the network as a single entity (road user charging, quality of provision etc.).

Competition between levels model – This recognises that transport infrastructure has a range of externalities and network effects (see Laird et al., 2003) which means that the value of the project to any one level in the hierarchy is not equal to the total system value of the project. Therefore some form of co-operative model is needed with suitable grant arrangements which incentivise the delivery of such projects. This has the advantage of realism, but requires the designation of a lead level in the hierarchy. The biggest problem is the power of veto of one institution over the whole project. It is difficult to incentivise agencies who do not wish to do anything.

Depending on the political systems in the Member States as well as on historical developments, transport infrastructure financing and planning in Europe takes place within a multitude of different institutional setups which have evolved from these two basic models. Farrell (1999) distinguishes four basic organisation models of sharing transport infrastructure responsibilities between central government and regional or local authorities in Euope: the Scandinavian (strong agencies and consensus),

German (federal and co-operative), Mediterranean (centralised power and legislative decision making) and Anglo-Saxon (central funding and executive government) models. In the following, the German and UK systems as examples of federally and centrally organized systems are examined in more detail.

Table 1: Organisation models for infrastructure procurement in European Countries

Model	Mediterranean	Anglo-Saxon	Scandinavian	German
Characteristics	centralised power and legislative decision making	central funding and executive government	strong agencies and consensus	federal and co-operative, co-financing
Example countries	France, Spain, Italy	UK, Ireland, The Netherlands	Sweden, Denmark, Finland	Germany, Austria, Switzerland,

based on Farrell (1999)

2.2 Infrastructure procurement responsibilities in a federal system (Germany)

As a federally organised nation Germany has a vertically tiered system of responsibilities. The legislative, executive and jurisdictional powers are separated between the federal level (Bund), the federal states (Bundesländer), and communities (Gemeinden), following two principles. The first is the principle of subsidiarity: decisions are generally taken on a decentralised basis, with federal competences defined in the constitution. The second important principle is that of a cooperative federalism or division of power, which means that a major part of legislation is decided on the federal level, while the states are responsible for the implementation. The reduced self-determination of states in the cooperative system is compensated by strong participatory rights in federal decision-making (Börzel, 2002).

According to this structure, the federal government in Germany is responsible for providing federal motorways and trunk roads (Bundesfernstraßen: Autobahnen and Bundesstraßen), federal railways (Deutsche Bahn Netz AG), and inland waterways. Airports and sea ports fall under the responsibility of the states (Bundesländer). The main instrument of federal infrastructure planning is the federal infrastructure master plan. This contains a list of priority projects for investments, ranked according to the results of a project appraisal. A quota system is then applied for the distribution of investments

between the states. The states among other bodies issue lists of potential projects as an input to the transport master planning process, and they are consulted in the planning process after a first list of priority projects for transport infrastructure investments has been developed by the federal Ministry of Transport (see Rothengatter, 2005b).

The states administer the federal *roads*, i.e. they carry out the project planning, construction, and operation on behalf of the federal level through their administrative bodies (see Figure 2).

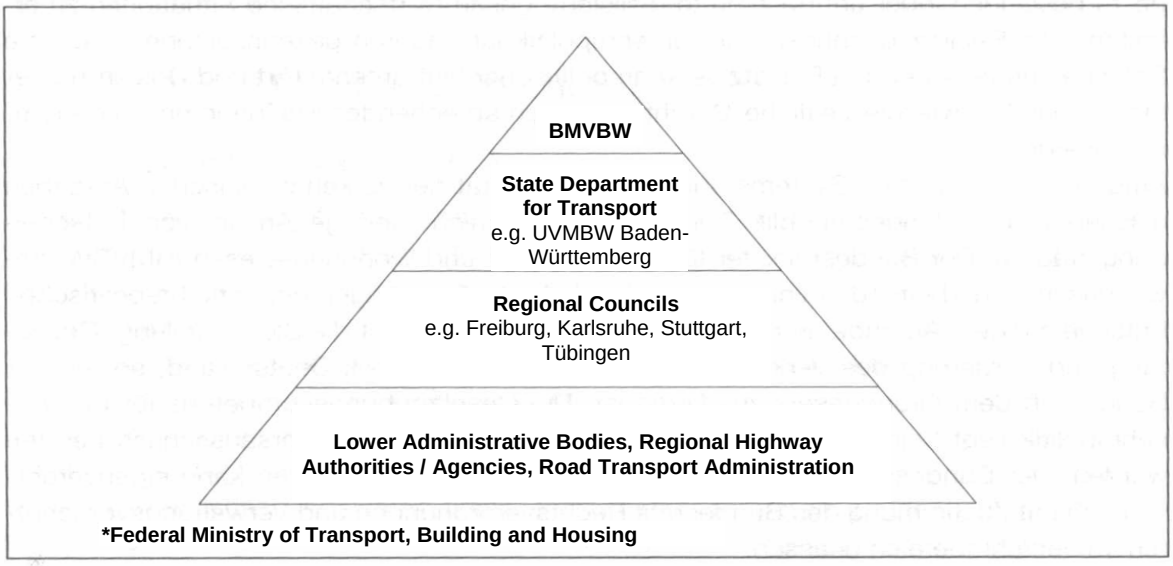


Figure 2: The "Pyramid of Authorities" -
General division of responsibilities between authorities for road planning and construction in Germany (Source: Grandjot, 2002, translated)

The division of powers between federal and state level in the road sector has raised several issues of criticism, including delayed planning processes, inefficiencies in the planning, and an excessive number of projects that have to be decided and financed at the federal level (see e.g. Beckers et al., 2005). Additional issues are the lack of synchronisation of infrastructure investments between the states and problems in cross-national planning (see e.g. Fabian, 2005). Potential solutions are to limit the responsibility of the federal level to the motorways with a parallel strengthening of federal administrative capabilities (Engels, 2004) and to establish a strategic planning approach at the federal level focussing on the federal planning objectives (see e.g. Wissenchaftlicher Beirat, 2000; Gühnemann et al., 1999).

A more complex procedure applies to national *railway* infrastructure projects, where investments are negotiated between the Federal government and the infrastructure company of the German railways,

DB Netz AG, a subsidiary of the German railway company, DB AG. The participation of the deregulated company has led to an improvement in efficiency of investments due to the profitability interest of DB AG (KCW et al., 2005), though part of investment costs is still paid for by the government at present as a result of heavy cost overruns on some projects (Rothengatter, 2005b). A further point of criticism is the vertical integration, introducing the potential danger of discrimination in favour of investment decisions which would primarily benefit DB AG transport services. The government is consulting on a potential stock market flotation of the DB AG with or without vertical integration. In recent studies, the impacts on competitiveness of the company and on the federal budget are considered to be not significantly different between those two alternatives (Booz Allen Hamilton, 2006). While an integrated stock listed company is regarded critical with regard to its impact on network maintenance and competition as well as distributional effects (see e.g. KCW et. al, 2005), an integration model is superior in terms of incentives to invest in railways (Ehrmann et al., 2006).

Regional rail services have been transferred along with corresponding funds into the responsibility of the states and are tendered, which has led to a considerable increase in competition and transport volume in that market. However, DB Netz AG requested “infrastructure securing contracts” with the federal states, securing the provision of services and funding of reinvestments (see Booz Allen Hamilton, 2006).

Investments into inland waterways are entirely the responsibility of the federal level, which is also in charge of their administration. Because *airports* in Germany are mainly owned and regulated by the federal states and local communities and partly privatised, a general coherent investment strategy is lacking.

2.3 Infrastructure procurement responsibilities in a centralised system (UK/England)

The overall responsibility for the transport infrastructure planning and financing in the United Kingdom is divided between four separate legislative areas (Home Countries) which means that the responsibility for transport issues in Scotland, Wales and Northern Ireland is transferred to their legislative and executive bodies (Scottish Executive Enterprise, Transport and Lifelong Learning

Department and Transport Scotland, Welsh Assembly Transport Directorate, Northern Ireland Executive – Department for Regional Development). In the following, we will describe the institutional framework for transport funding in England as an example of a system with central funding. The overall responsibility for transport policy lies with the Department for Transport (DfT), supported by executive agencies such as the Highways Agency and non-departmental public bodies. Since tax revenues are almost completely generated through central government taxes, the allocation of funding for the majority of transport infrastructure projects is decided by the DfT. The general framework for investments has been laid out in the Ten Year Plan for Transport 2000 (DETR, 2000).

In recent years, however, the government has initiated a process of devolution, transferring some authority for decisions on infrastructure investments to quasi-autonomous units of local government. On the regional level, a consultation process is currently on the way enabling regional assemblies and their local authority partners to submit regional preferences to the central government on indicative regional funding allocations including major transport projects, in particular for the strategic road network. The institutional framework for local transport infrastructure planning and funding differs between the regions. The responsibility for decisions on transport investments in London lies with the Mayor of London through Transport for London (TfL). In other regions, five year local transport plans are developed either by Passenger Transport Authorities (PTA) and Passenger Transport Executives (PTE) in metropolitan areas, and by the unitary (or two-tier) authorities in the counties and shires. These local transport plans are submitted to the DfT for approval and as a basis for the allocation of local funding for minor road schemes and local public transport investments.

The organisation of the railway sector has changed several times in the UK in the last decade. In 1994, the formerly state owned British Rail was vertically separated and divided into about 80 different companies. Among these the network company Railtrack was set up and the privatised by flotation in 1996. In 2001, Railtrack collapsed into bankruptcy and was taken into administration. Its successor is Network Rail, a public interest company limited by guarantee who took over responsibility for Britain's rail network. Following a government White Paper on the future of railways (DfT, 2004) summarising the state of the privatised railway as "An inefficient and dysfunctional organisation coupled with a failure to control costs", the former Strategic Rail Authority has been dissolved in 2005

and the responsibility for strategic decisions in the rail sector since lies again with the Department for Transport. Figure 3 shows the current institutional framework for the railway sector.

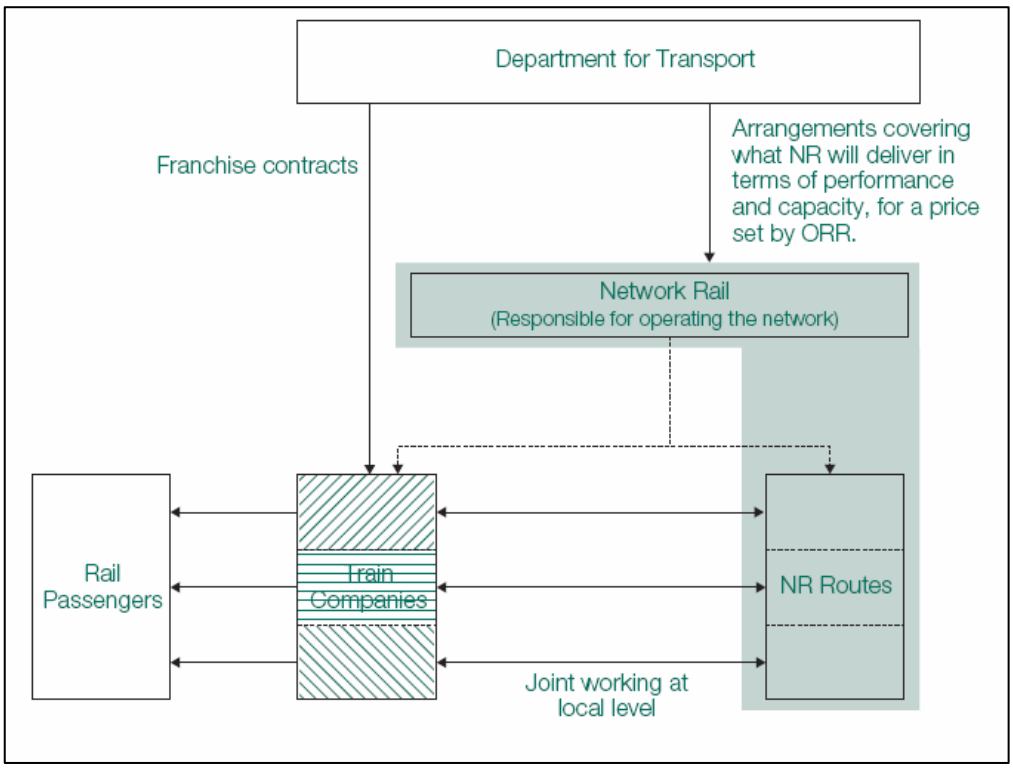


Figure 3: Organisation of the railway sector in the UK
General division of responsibilities between authorities for the operation of railways
(Source: DfT, 2004)

The Department for Transport also has the general responsibility for airports, inland waterways and sea ports. After the privatisation of airports and seaports, though, the role of the DfT is restricted to setting strategic guidelines and requirements for planning applications in these sectors.

Although decisions on transport infrastructure funding in the UK and England are generally characterised by a higher degree of centralization than in federal systems, the process of 'devolution' has led to a higher involvement of regional and local administrations. Furthermore, the process of privatisation has led to less state control and more liberalised transport markets than in many continental European countries. This initially drastically reduced the influence of the national government on infrastructure investment decisions in the public transport sector markets though in the case of railways this has now been taken back into the responsibility of the DfT.

2.4 Comparison of Centralised and Decentralised Systems

Drawing on the experiences from the comparison of the more centralised system of infrastructure funding in England and the more decentralised system in Germany, similar conclusions can be observed in both systems (see also Farrell, 1999):

- concentration of national decision making on the strategic networks and
- higher responsibilities of federal, regional and local levels for lower level networks.

In the TIPP project (Peter at al., 2005), hypotheses about the strengths of decision making in transport policy in a decentralised versus a centralised system have been tested in a survey of case studies. For infrastructure funding, the most relevant advantages that could be confirmed for the decentralised system are a stronger identification of local and regional preferences and higher levels of information generation. In contrast, the strengths of the centralised system are the co-ordination between diverging local/regional interests, the consolidation of information, and (partly confirmed) the professionalism of public decision makers.

3 FUNDING METHODS

Broadly speaking, infrastructure projects can be *funded* by users or taxpayers. They can be *financed* by some mixture of grants and loans, the latter to be repaid by some mixture of user revenues and Government debt. The intended funding mix is very likely to affect the way in which the governance of projects is organised.

- *Strong grant schemes* give a high weight to Government (EU or national) in the organisation and delivery of projects. This is the case with investment in UK national highways where the Highways Agency is used as the planning and delivery agency, but the UK Department for Transport has strong control of the programme and prioritisation.
- *Loan schemes* are likely to be organised through intermediary organisations such as the European Investment Bank. Such organisations can also be useful as co-ordinators of national and supranational sources of funding, i.e. putting a package together. World Bank, ADB etc. perform this role elsewhere in the world.

- *User-pays schemes* are more likely to be organised through semi-autonomous bodies such as COFIROUTE in France or through project-specific franchises such as the M6 Toll in the UK.

However, in practice, any organisation is likely to contain elements of all three, such as grant contributions from Government, a funding package organised by a Bank, and a franchise or concession to a company with responsibility for delivering the project. The clear assignment of the powers and responsibilities of the parties within the model is crucial to efficient delivery. In the following, examples of national funding mechanisms through national public budgets and experiences with private sector involvement are reviewed in more detail.

3.1 Public Sector Funding of Infrastructure

Germany

Infrastructure funding in Germany mainly occurs in the form of public budget funding and user charges. An initial earmarking of part of fuel taxes for road transport purposes has been broadened since 1973 to wider transport system uses. Motorways and federal trunk *roads* are completely funded from the federal budgets, while the states and communes receive tax transfers and can apply for special funds for transport infrastructure investments. Laaser and Rosenschoon (2001) analysed income from and expenditure in the transport sector. Overall, (excluding external costs) revenues from the transport sector exceed expenditure. However, even after transfer of funds between federal levels, there is a negative balance between revenues and expenditure on the state and community level. Furthermore, Germany, together with many other European countries, has been experiencing tight restraints to its general fiscal budget. Therefore, new instruments, specifically the heavy goods vehicles motorway toll and two PPP models for federal road projects, were introduced in the late 1990s in order to sustain transport investments into the long term. The revenues of the distance based HGV motorway toll (net approximately 2.4 billion Euro in 2005) contribute to the total federal budget for transport infrastructure investments (about 12.2 billion Euro in 2005). They are not earmarked for investments in the motorways but will be used for general transport infrastructure investments. An issue of concern for local communities and states is the partial diversion of heavy traffic onto the

minor road networks. The inclusion of these roads in the charging regime would require negotiations on the division of revenues between the political tiers.

Refunding of *rail* infrastructure investments is achieved through track charges, which are supposed to allow DB Netz AG to recover the annual depreciation of infrastructure investments. However, there is still strong public sector involvement in the rail sector through financial grants towards construction costs and to cover the losses of DB Netz AG. Furthermore, the federal states receive a transfer of funds from the federal general budget for the subsidisation of regional rail services (2002: 6.745 billion Euros; increased by 1.5% p.a. from 2003 on) which include track charges. The Scientific Advisory Board to the Ministry of Transport cites an estimated gap in the cost recovery of 2.5 billion Euro which DB AG demands as state contribution (45%) (Wissenschaftlicher Beirat, 2005).

Refunding of investments in *inland waterways* is partly through tolls and fees (e.g. for using locks), but mainly from the general federal budget. The refunding of *airport* investments is mainly through user costs (landing charges etc.) and airport services (rents from retail etc.). Hopf et al. (2003) estimate for the 17 international airports in Germany that for the year 2001 the infrastructure related costs of air traffic was recovered in total from user costs.

These experiences from federal infrastructure planning and financing in Germany reveal the challenges that lie in the co-ordination of investment decisions between different tiers of political decision making and state institutions plus private actors such as the rail network companies and private investors. Therefore, clear rules are necessary in the selection of projects for investments and there is also a need for a clear division of responsibilities. Co-ordination between different organisations is essential. Following the subsidiarity principle, as many decisions as possible should be taken at the regional level, with the federal level restricting itself to more strategic goals leading to coherent investment frameworks and a selection of projects of strategic interest for financing. In the road sector in particular, this principle needs to be re-established, including a revised division of funding sources. A second major challenge is the shift from general public procurement to a user charging oriented system. First steps have been taken with the introduction of the HGV motorway toll and the separation of railway network management and train operation, but there is still a heavy involvement of funding from public budgets.

UK

Transport infrastructure financing in the UK has traditionally been through the general public budget with the main sources of taxation from the transport sector being fuel duty and vehicle excise duty. Until the 1920s, taxes had been earmarked for use on roads. Since then however there has only been a loose principle that each category of road users should in aggregate cover the cost of their road use. A study by Sansom et al. (2002) showed that if considering only infrastructure costs, all user classes more than cover their costs, but this comparison between costs and revenues looks very different if environmental and congestion costs are included.

Until the end of the 1980s private finance occurred only exceptionally with some large road schemes franchised to private sector consortia and developer contributions to local road improvements. In 1992, the government introduced the Private Finance Initiative (PFI) in order to promote investments into new transport infrastructure. In parallel, due to heavy constraints on public funds, public investment in transport infrastructure fell during the 1990s. For example in the road sector, the roads programme had been significantly reduced from over 500 schemes at a cost of £17 billion in the early 1990s to 147 schemes at a capital cost of £6 billion in 1997 (Marsden, 2002). In 2000, the New Labour Government introduced its Ten Year Plan for Transport (DETR, 2000) which among other goals aimed at overcoming the underinvestment in the transport infrastructure. Figure 4 shows the development of investments according to this plan with a high focus on rail investments. However, a large proportion of the planned investments were intended to come from the private sector making it doubtful whether all these investments could be realized (see e.g. Glaister, 2002). Furthermore, the use of private finance became unfavourable after 2001, and so the UK has reverted to a binary model with few toll roads and public finance for the majority of the strategic and local transport networks.

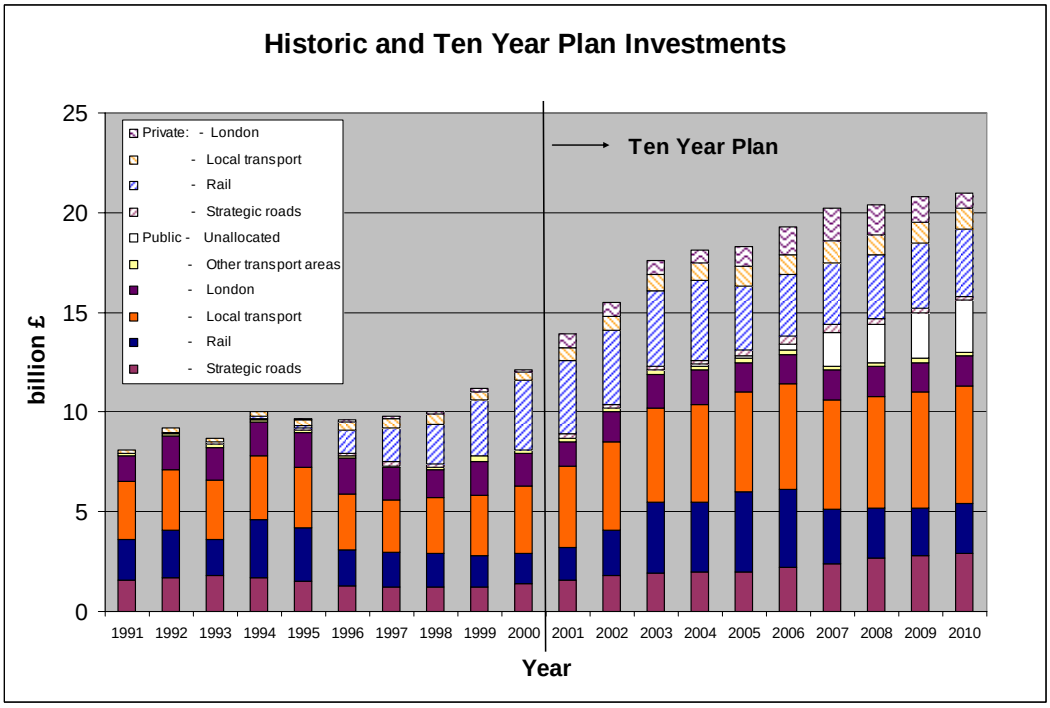


Figure 4: Historic and Ten Year Plan Investments
Data Source: DETR (2000)

Although all transport investments have to undergo an appraisal before investment decisions are taken, there have been no explicit criteria for the inclusion of projects into the Ten Year Plan, leaving uncertainties whether an economically efficient mix of rail and road investments was established (Glaister, 2002).

Funding of transport projects on the regional and local level is divided into major schemes (exceeding an investment volume of £ 5 million) to be decided individually by the DfT and smaller schemes which need to be included in multi-modal Local Transport Plans (LTPs). Currently, the second round of LTPs has been submitted by the local authorities and is under consideration for funding by the DfT. Besides the national grants, local authorities have little scope to finance transport investments and maintenance from council taxes.

3.2 Funding with private sector involvement

PPP models

After initial enthusiasm a slowdown of private funding of new transport infrastructure can be observed internationally since the late 1990s (Molnar, 2003). Among the reasons for this development have

been cost overruns, unfavourable risk sharing arrangements, lower willingness to pay for infrastructure use than expected and traffic developments falling short of expectations. Some lessons to be learnt from European experience (see e.g. Ragazzi and Rothengatter, 2005; Debande, 2002, Molnar, 2003) are

- The private sector requires an appropriate return on the capital it invests and borrows to invest.
- The main question is therefore whether the efficiency/cost gains outweigh the private capital risk premium which has to be paid.
- Private financing should not be used to overcome a public funding constraint.

Despite this, there is scope for private involvement in financing and in the procurement of transport infrastructure. Empirical experience from Great Britain, where PPP models for road procurement have been experienced more widely, suggests that private sector involvement is of greatest benefit for the management rather than the financing of road procurement (Mackie and Smith, 2005).

Presently, the involvement of private sector capital in financing cross-border transport infrastructures is constrained by organisational and legal problems that result from the application of many and varied pieces of national legislation. Some of these restrictions could be overcome by the recent possibility to establish a European Public Limited Company or 'Societas Europaea' (SE).[1] This offers the advantage of a uniform accounting system and legislative structure, reduces administrative and legal costs and the necessity to establish subsidiary companies in the countries concerned (Fabian, 2005).

Full private financing

There are few examples of transport infrastructure investments in Europe which have been fully financed by the private sector. One of these examples is the M1/M15 project in Hungary, which was the first privately financed toll motorway project in Central and Eastern Europe and motivated by a lack of public money available for financing transport infrastructure in 1989 in Hungary. The awarding process was carried out in two phases: a prequalification and a tendering phase and was completed within two years. A concession company named SPV Elmka was created shortly after. The participation of EBRD was crucial in the finalisation of the concession contract to securing the foreign

[1] Statutory Instrument No. 2326/2004, Council Regulation (EC) No 2157/2001, Council Directive 2001/86/EC

financed debt. Notwithstanding economic difficulties during this transition period, the construction then progressed and was finished according to programme and budget. At that time the M1/M15 project was considered a major success in achieving the goal of financing and building this motorway section in such a short time with virtually no cost overruns. However, during its operation, the development of traffic on the motorway section fell significantly short of previous expectations, partly due to over-optimistic forecasts of border traffic. Furthermore, in setting the toll rate, the SPV Elmka applied a revenue maximisation policy with a view towards revenue from the richer West European drivers. After a court judgement on a case initiated by the Hungarian Automobile Club, Elmka was obliged to pay back about one third of the toll, and the lenders reacted by declaring an event of default. Negotiations on restructuring the company finances were unsuccessful, and after three years of operation Elmka was superseded by a fully state owned company, leading to substantial financial losses to the shareholders of Elmka without compensation.

The fact that traffic is substantially below expectations does not mean that the project has become a "white elephant" – in fact it continues to form an integral element of the Hungarian motorway system. Indeed it is hard to see how this project might have been delivered if private finance had not been used. It is interesting to speculate whether the fact that the project had been 100% financed with private funds without any recourse to the State allowed the Client to take a slightly ambivalent attitude towards the project. Although it is natural to focus on the differences between the traffic consultants' forecasts and the over optimistic projections prepared by the macro economists, neither of these discrepancies would invalidate the viability of the concession. As it was the financial structure put up by the lenders and promoters proved to be relatively robust. It would even have allowed sufficient time to put a financial rescue package in place in the form of new cash from the shareholders and reductions in margins and increases in grace and maturity periods by the lenders. This case demonstrates that the most important success factor is the commitment and full and sustained support of the Client/Principal.

Privatisation is an increasing source of financing of investments in airports. Fully privately owned airports are mainly found in the UK. Generally, the chances for success of privatisation are regarded as greatest for larger airports. However, there is felt to be some danger because larger airports can

exercise their market power against the interests of their customers (airlines) (von Hirschhausen, 2004) and hence some form of price regulation seems necessary. Infrastructure developments at airports are still subsidised, however. This is in particular critical in the development and expansion of smaller regional airports competing for low-cost airlines. Heymann and Vollenkemper (2005) suggest that most regional airports lack the critical mass to become profitable and will therefore swallow up subsidies in competition to attract airlines.

4 TRANSPORT INFRASTRUCTURE FUNDS

Several member states of the European Union have established transport infrastructure funds via financing agencies as a means of managing and providing infrastructure financing independent of public budgets and to provide for investment continuity. Prominent examples for such agencies have been established in Germany, Austria and France.

In Germany, a state owned multi-modal transport infrastructure financing agency **VFIG** (Verkehrsinfrastrukturfinanzierungsgesellschaft) was established in 2003. The major motivation for founding the VFIG was to create institutional structures that support transport infrastructure investments independent of the public accounting system. Its tasks are the financing and financial management of those aspects of transport infrastructure procurement that are the responsibility of the federal level, and the preparation and carrying out of PPP projects. VFIG receives the user charges from the HGV toll on motorways and inland waterway tolls which are collected by federal institutions. Three major issues are the subjects of current debate (e.g. BDI, 2005):

- the multi-modal character of the agency, allowing for transfers between modes according to political willpower, reducing public acceptance of user charging;
- whether the agency should be able to make recourse to the capital market to raise funds; this issue is to be examined according to the coalition contract of the current government (CDU et al., 2005)
- whether the agency should have direct access to earmarked transport user charges.

However, there is little empirical evidence to date to assess the performance of the agency. More experiences exist with the established Austrian agency, **ASFINAG** (Autobahnen- und Schnellstraßen-Finanzierungs-AG), a privately organised but state owned company with the right to collect tolls and

the obligation to invest into the maintenance and enhancement of the Austrian motorway system. Investment decisions are taken via a consensus process between the federal government, the federal states and the company. ASFINAG obtains capital from the capital market, with the loans being guaranteed by the Austrian state. The refunding of the investments is done via user charges (a distance dependent HGV toll and a time dependent vignette for cars). In general the organisational structure of the Austrian fund and the earmarking of user charges for the road sector are regarded as the basis of an efficient and reliable system. An open issue is whether to grant ASFINAG the right to determine the rates of user charges, which are currently determined by the federal government (Beckers et al., 2006).

In France, the transport infrastructure financing agency **AFITF** (L'Agence de financement des infrastructure de transport de France) was established based on a decision by decree of the council of ministers in 2004 and has been in operation since January 2005. The main motivation for its implementation was to foster the completion of a plan for 50 large infrastructure projects determined in 2003. The agency is multimodal and covers (large) road, (high-speed) rail, coastal and inland waterway shipping, seaport, combined transport and local transport infrastructure projects. It is not involved in either the selection or planning process of projects to be financed, these are determined by three major initiatives:

1. a list of 50 large projects by the Comité interministériel d'aménagement et de développement du territoire (CIADT) (Inter-ministerial committee for regional development) as of Dec 2003. The selection of projects has been based on a strategic development vision;
2. regional infrastructure projects according to the Contrat de Plan État-Région (CPER) and the special investment programme for Corsica; these are agreements negotiated between the Government and each regional authority setting out a multi-annual (currently 2000-2006) spending programme to be financed on a 50:50 basis;
3. local transport infrastructures projects according to the decision of the Comité Interministériel d'Aménagement et de Compétitivité des Territoires (CIACT).

The agency receives the revenues from state owned motorway tolls, regional planning tax, 40% of revenues from radar controls, and subsidies from public budgets. In 2005, the CIACT decided to accelerate the realisation of projects by providing an exceptional infusion in capital of € 4 billion from the privatisation of motorway companies.

Table 2 on the following page summarises the main characteristics of the three models for infrastructure funds in European countries. Various critical issues relating to the construction and operation of infrastructure funding agencies can already be identified, despite the fact that the French and German agencies have only been in existence for a short time:

- *political autonomy*: a high degree of political influence may lead to an inefficient management of the fund; on the other hand, some political control mechanisms are necessary to avoid a monopoly situation and socially inadequate procurement of infrastructure (see Beckers et al. 2006); to increase social acceptance, Heggie (1999) suggests including representatives of road users and the business community in managing boards;
- *monitoring and control*: an effective control system has to be established to avoid mismanagement of the fund and the risk of future writing off of debts at public expense (see also Molnar, 2003); usually, funds are subject to regular audits;
- *multi-modal or uni-modal character*: the multi-modal character of the German agency has been heavily criticised by industrial organisations due to its lack of user transparency and acceptability. In the Austrian example, a clear relation is established between user charges and investments in the sense of a collective club good (Beckers et al, 2006); cross-subsidisation of other modes for social benefits is still established via fuel taxation and public budgets;
- the possibility to borrow *external capital*, which offers the funds greater financial independence and multi-annual predictability, but requires financial sovereignty and efficient management, monitoring and control of the fund;
- *involvement in the project selection*: since commercial viability plays an increasingly important role in infrastructure procurement, the involvement of expertise from the infrastructure financing agency in the project selection process is essential. Beckers et al. (2006), however, point out two factors that could lead to the agency proposing too many projects: (monopoly) access to toll revenues and the risk of pressure on the agency by lobby groups, e.g. construction industry;
- the right to *propose toll levels*: in order to achieve commercial sustainability of the fund, charges might need to be adjusted regularly to repay debts and meet expenditure targets. However, this needs to be controlled by a regulating institution to comply with given charging rules (Heggie, 1999, Beckers et al., 2006).
- their *financial autonomy*: on the one hand, the off-budget status of the funds might lead to a loss of government interest to provide for transport infrastructure as public goods (Molnar, 2003), on the other hand financial autonomy and direct accessibility of user charges for the fund are crucial if external funds are borrowed and for multi-annual predictability and planning.

Table 2: Infrastructure financing agencies

	Germany	Austria	France
In operation since	2004	1982; 1997 in current form;	2005
Legal basis and termination rules	financing law VIFGG; parliament decision; no specific termination rules	contractual arrangement between company and federal government based on federal law (parliament decision)	decree by council of ministers
Organisational form	state owned, privately organised as limited liability company by capital (GmbH);	state owned, privately organised as private limited company by shares (AG)	public administration institution
Level of autonomy	legal entity; supervisory board with members from ministry of transport; one managing director from ministry	legal entity, independent board of directors and managing directors; state is shareholder	legal entity, financial autonomy; under supervision of transport ministry, administered by council with one half state representatives
Monitoring and Control	annual report to parliament	annual business report	through administrative council
Modes covered	Multimodal; federal projects;	federal roads	multimodal; federal and regional / local
Tasks	financing and financial management of con-struction, maintenance and operation of federal transport infrastructure; preparation and carrying out of PPP projects	planning, financing, construction and operation of the federal road network	financing of transport projects of national and international importance, in particular in public private partnership arrangements
Project selection process	federal transport infrastructure master plan, formal appraisal and ranking method; state quota; parliament decision	consensus system between federal government, states, ASFINAG and other institutions; no formal consistent appraisal method	CIADT list of 50 grand projects; CPER arrangements; CIACT decision on inclusion of projects
Criteria for project selection	social cost benefit analysis plus additional criteria on environment, regional development, European interconnec-tivity, and intermodal integration	transport demand, project realisation costs, intermodal integration, regional development	strategic development goals
Agency involved in project selection	no	yes	no
Sources of finance	HGV tolls, inland waterway charges; funds are cleared though public budget	HGV tolls; car vignette, direct from operating companies; external capital	tolls, pubic budget, privatisation funds
External capital	no	yes	yes
Right to propose toll levels	no	no	no
Annual Budget	2005: € 2.4 billion planned, (net revenue from HGV tolls);	2004: maintenance and operation € 480 mill., investments € 650 mill., interest € 300 mill.	2006: € 2 billion

5 CONCLUSIONS

The main objective of this review has been to identify success factors and potential barriers for stable and efficient systems of infrastructure procurement.

In terms of the institutional framework, there needs to be a clear diversion of powers between the decision making hierarchy levels with strategic investments to be decided at the central level, but under consultation of regional authorities. On the other hand, the devolution of powers for investment into the subordinate networks and for income generation to regional and local authorities could lead to shorter planning processes and more efficient resource allocation according to regional necessities.

In the countries studied in detail, there is only limited earmarking of taxation for use in the transport sector. With the prospect of user charging, however, a new discussion of the use of revenues has emerged. From a fiscal point of view, hypothecation of taxation for the transport sector could lead to a sub-optimal allocation of public funds. On the other hand, e.g. Farrell (1999) points out some advantages: a higher stability in investment budgets, avoidance of political interference, and increased acceptability, transparency and accountability. One alternative way to establish these principles is the creation of an infrastructure funding agency with a certain degree of political autonomy. As in the French and German case, such a fund can be used to manage investment budgets fed from public funding as well as user charging. It could also gain access to finances from the capital markets as in the Austrian case. If carefully implemented, such a fund could also be promising for securing funding for major transport infrastructures of European interest.

The optimism regarding the generation of funds for transport infrastructure investments through private sector involvement has been replaced by a more realistic view on the benefits and risks of private financing. With it, the role of the public sector changes from owner and provider to that of a purchaser of services and legal partner in long-term contractual arrangements (Debande, 2002). This not only requires different knowledge of the public administration, but also changes the accounting for infrastructure provision in the public budgets and might shift the burden to future generations. This can be particularly critical in countries where a decline in population is expected.

One of the aims of our review was to consider transferability of procurement systems, in particular investment funding agencies, to the European level. The experience with infrastructure funding in the Member States has revealed salient issues that will need to be tackled when introducing new schemes for funding the Trans-European Transport Infrastructures:

- Clear rules are necessary to determine whether transport infrastructure is eligible for funding, and the involvement should be restricted to projects that clearly fulfil trans-boundary transport functions benefiting European Union objectives in order to avoid over-subsidisation and excessive involvement in regional transport infrastructure investments.
- There needs to be a clear division of responsibilities between the European and the Member State level with control mechanisms installed over the whole procurement process to protect the interests of the financing actors.
- An infrastructure fund promises more flexibility and higher stability of the investment budget than funding from general budgets. Currently there is no autonomous funding mechanism for cross-border infrastructures of European interest.
- A future funding organisation is likely to contain elements of grant contributions from Government as well as funding from user charges and private sector involvement in financing and project delivery. The clear assignment of the powers and responsibilities of the parties within the model is crucial to efficient delivery.
- There is a need not only for financial but also for organisational co-ordination of cross-border infrastructure procurement. First steps towards this have been taken by the introduction of European co-ordinators for the TEN priority axes.
- The setup of an infrastructure fund needs to consider carefully whether a multi-modal approach is taken, revenues from user charges are earmarked and directly transferred to the fund, and whether the fund can borrow money from the capital market.
- In the case of the private participation, rules are necessary to determine who bears the risk of cost overruns; experience shows that privately owned companies (and in particular railway

network companies) need planning security and this issue must be considered in the financing rules of a fund.

- Private involvement in infrastructure provision requires support in the form of long-term commitment of the public partner.

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