

>>A systematic approach to the comparison of Management and Financing models in the European toll road sector<<

by

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0. Abstract

The share of privately managed road infrastructure throughout Western Europe is relatively high; the progress among these countries is unequally developed. While private concessionaires have been established in England, France, Spain, Finland, France, Italy and Portugal since the late 1950s, Germany is far behind these developments, which are based on different circumstances. A systematic approach towards notoriously intermingled spheres and concerns is examined, covering privatisation-, organisational- and contractual models in Europe. Furthermore, some models are put in the light of the convergence criteria within the Maastricht contract, as they are described and explained as well as solutions to this problem based on case studies. It is tried to assign the different actual European models and approaches to a consistent model that distinguishes between privatisation-, organisational- and contractual models. Public Private Partnerships are also inserted into this approach, as Public Private Partnerships represent a three-fold model combining privatisation-, organisational- and contractual models into one.

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1. Introduction

The consistent approach for the analysis of the European road sector confirms that the stake of privately financed and managed road infrastructure has grown remarkably in many countries, except for Germany. A Comparison on the length of the European highway networks¹ reveals that the length of 12.000 km in Germany is the biggest network on the European continent, closely followed by the French and Spanish networks. In respect to privatisation and private sector participation in the road sector, Germany is behind common European developments. In total, almost 40 % of the road networks Europe² are under concession. 50% thereof are managed by private concessionaires and 50% by public concessionaires. While the entire Austrian and Greek networks are under concession, shares in Norway (87%), Italy (82%), Portugal (78%), France (75%) and Spain (25%) are still far ahead of Germany.

However, the approaches with regard to political and economical objectives as well as legal and institutional framework and even to applied terminology in each country are quite different. In order to compare them, it first has to be analysed which aspects are of major importance and relevant for a systematic comparison.³

¹ The network of the highest road category in each country

² Fayard, A.: Analysis of Highway Concession in Europe; 2005; includes, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

³ Alfen, H.W./ Jungbecker, A.: Öffentliche versus private (Straßen-) Verkehrsinfrastrukturfinanzierung – Wie machen es die Anderen? – Lecture at the ifmo-expert's workshop; Berlin, May 29th 2006; page 2

2. Comparison criteria

If the different international approaches shall be compared it first has to be clarified what exactly shall be the subject of the comparison. Different possibilities for that could be e.g.:

- How the management of the whole sector is organised (e.g. responsibility within the government and the administration, i.e. ministry, agency or special company model),
- How the financing of the sector and the financing of single projects are organised both, with respect to origin and use of funds,
- What kind of procurement models as well as corresponding contract models and payment mechanisms are applied (single contract and service contracts, concessions, etc.),
- What kind of sector specific revenues are introduced and how they are collected (taxes, user charges, revenues from licenses or concessions etc.),
- If and how user tariffs are regulated,
- How tasks are distributed between the public and the private sector
- How public indebtedness is managed, etc....

The following table tries to systematise the aspects of major importance, which are explained later in the same part of this document.

Sphere	Options	
Public financing models (on road sector level)	General budget financing Specific budget financing (road fund) Subsidies (grants)	Government bonds Private loans Formally privatised company
Contractual models	Principal/ agent Functional contract Concession	Corporation model Public Private Partnership
Private financing models (on project level)	Forfeiting models Leasing models Infrastructure fund financing	Project finance Bond financing Financing by finance and/or strategic investors
Payment mechanisms (traffic risk)	With budget financing: Availability payments Shadow toll	With user financing: HGV-Toll (e.g. German A-Model) BOT (e.g. German F-Model) Traffic quality Congestion charging Environment matters
Privatisation	Formal Functional	Material (full and/or partial)
Project	Single construction Single stretch	Partial network Entire network
Task	Design Construction Rehabilitation Widening	Maintenance Operation Electronic toll collection

Table 1: Spheres of model determination⁴

⁴ Alfen, H.W./ Jungbecker, A.: Öffentliche versus private (Straßen-) Verkehrsinfrastrukturfinanzierung – Wie machen es die Anderen? – Lecture at the ifmo-expert's workshop; Berlin, May 29th 2006; pages 3-4

The use of terms and ideas, such as the ones in table 1, is inconsistent. Especially financing models and organisational models in conjunction with privatisation, contractual models and corresponding payment mechanisms are often intermingled or not consequently applied. On the one hand, financing solely covers the raising of capital for the investments planned and on the other hand revenues designated to debt service and operation and maintenance. In addition, it must be distinguished between the (re)financing of the national road sector and single projects; both privately or publicly managed.

Contrarily, the term organisational model is obsessed with efficiency (savings), which are achieved by tailor-made solutions in each specific case. The specific risk allocation is determined by the model applied, with focus on the partner having the higher risk management competence. In some respect, models can be distinguished after the type of project; whether it covers a single construction or stretch or a partial or whole road network, and whether the project is built, widened or rehabilitated.

3. Relevant options for privatisation

When speaking of privatisation - or an increasing extent of employment in private management - 'alternative' and 'traditional' models for the organisation and management of infrastructure, including financing can be distinguished. The latter are those that are financed directly out of the government's budget, using tax revenues and general borrowing. In alternative models, independent entities assume responsibility for the operational tasks associated with infrastructure provision, including financing. In most countries, the majority of infrastructure financing is derived directly from government budgets. The various alternative models may be categorised in terms of the degree to which they are independent from direct government control, and direct budget financing.⁵

There are three possible options for privatisation of road infrastructure, with an increasing degree of private involvement; from formal privatisation to functional privatisation to material privatisation. The degree of privatisation is determined by the choice of the privatisation model. Formal privatisation, sometimes also referred to as 'privatisation of organisations' means that public entities appear with private corporate forms. Public tasks are bundled and traded off to a special purpose company under private law (Ltd. or SA). Even if the special purpose company is formally privatised and sometimes in competition to real private companies it is still 100% state-owned.

Functional privatisation is a kind of outsourcing of tasks to the private sector which beforehand have been executed by the public sector in a sort of force account regime. Hence, the private sector becomes involved in partial service delivery for the public sector in a principal and agent relation. The contractual obligations may concern only single tasks like design, construction, maintenance or even parts of it or comprise a comprehensive life cycle covering service package including financing and operation. However, it is important in any case to consider that only the real non-sovereign functions can be transferred to the private sector. The transfer is always limited in time and does not include the transfer of the property on the infrastructure. Therefore, a functional privatisation is also often called 'privatisation of tasks'. Among these, which are counted to the models of this kind of privatisation, are the lot and phase based award of services with a general contractor, functional contract or the pre-financing schemes but also a comprehensive BOT-model (Build, Operate, Transfer) including financing and the transfer of traffic

⁵ Alfen, H.W.: Framework for Infrastructure Financing; p. 1-3; 2006; unpublished draft version

revenue risks. The latter is counted among the so called Public Private Partnership (PPP) models, in which not just single components of the value chain of the project are transferred to the private partner, but also the responsibility for the life-cycle spanning and extensively integrated components of the value chain. The project company may be either solely private or private-public, where the public sector usually keeps a blocking minority within the SPV. The public sector limits itself to delegation, regulation and control of sovereign tasks.

The most extensive type of privatisation is called material privatisation, which is characterised by a transfer of public tasks or companies as partial⁶ or full privatisation to the private sector. In this case, private sector stands for strategic or financial investors. The privatisation can either be applied through sale of shares or listing on the stock market. The transfer is not limited in time and includes the property on the road infrastructure. Internationally, in the transport sector material privatisations can be found e.g. in airports, harbours and railways. Until today, there has been no material privatisation in road infrastructure on European level or international.

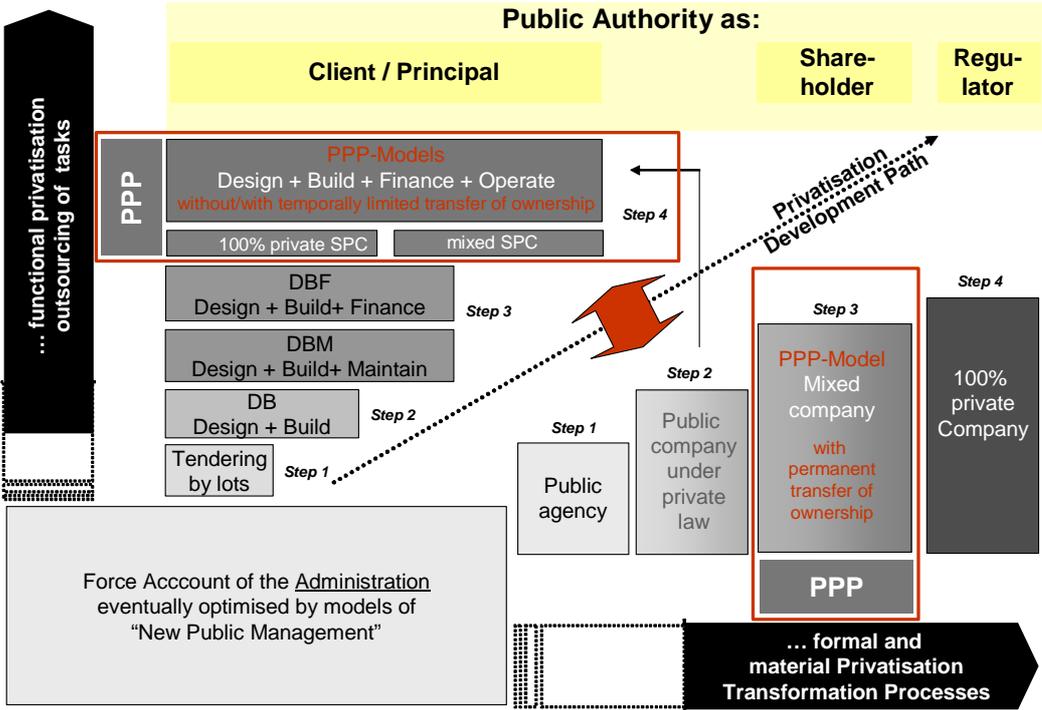


Figure: Privatisation Development Path (Germany)⁷

The figure above provides a scale of degrees of independence under different corporate structures, moving to the right along in horizontal alignment. Each new corporate form involves an increased movement of management and organisational responsibilities away from the highest level of direct control, which is

⁶ A partial material privatisation is also a public private partnership
⁷ H.W. Alfen: PPP lecture chapter 2; Bauhaus-Universität Weimar, winter term 2005/06

represented in the form of a government ministry. The figure also provides the degree of transfer of responsibility involved, from the point at which the private partner takes on significant responsibility and risk – beyond simple tendering by lots – to the top along in vertical alignment.⁸ These are referred to as Public Private Partnerships, whereby both the public and private partners take on significant responsibility and risk related to the final provision of infrastructure. In conclusion, the figure supports the categorisation of different contractual and organisational models and assigns them to the different types of privatisation described above. In addition, it explains the role of the public sector in the different types of privatisation either as principal, shareholder or regulator.

Both axes are starting from the force account status of the responsible administration which is quite theoretical today, except of a few developing countries where – due to the lack of a competent local construction industry – even construction works are executed by public work forces. The extent of tasks transferred from the public to the private sector increases in vertical alignment from steps 1 to 4, until the whole value chain is covered by the private sector except the sovereign tasks.

Taking full public control as a reference point, cash-based financing and accounting, based on annual budgets, prevent the life-cycle management of assets. Also, there is limited use of competitive pressures to stimulate efficiencies in the provision of the services.

Step 1 in the horizontal alignment, represents a public agency, to which certain specific tasks were sourced out from the administration. Typical international examples are the so called Highways Agencies or Authorities as they can be found in particular in Anglophone countries. According to the German law, numerous corporate forms and organisational structures are possible.

In step 2, the vehicle from step 1 is transferred to a private corporate form (usually Ltd. or SA, i.e. GmbH or AG), but the entity still remains 100% state-owned. Although Public Agencies might have an own management board and separate accounts from their department, agencies remain agents of the government. In this way they are ultimately accountable to the government in power. This is the case of the formal privatisation with increased transparency as its main target.

In step 3 such a company is opened for the private sector either by selling shares to private strategic and/or financial investors or at the stock market by “going public”. This is the case of a partial material privatisation in case the transaction includes the permanent transfer of ownership of the land and the as-

⁸ Alfen, H.W.: Framework for Infrastructure Financing; p. 1-3; 2006; unpublished draft version

sets belonging to the SPV. Both, public and private sector own and leading this mixed investment company together, regulating their individual rights and responsibilities in a shareholder agreement.

Finally, in step 4 the privatisation process is completed, resulting in a 100% private company, after the remaining public shares are transferred to the private sector which only seems to be justified, if not a public monopoly is replaced by a usually even worse private one.

As can be seen from the figure, so called PPP models generally come in to different shapes and many sub-forms. Models inside the sphere of functional privatisation (transfer of life-cycle tasks) and inside the sphere of material privatisation (partially or completely), are possible. In the first case, the term 'vertical partnership' is legitimate, because tasks and risks are shared between the public and the private sector, according to the contract (principal/ agent). In the second case, the term 'horizontal partnership' is legitimate, because tasks and risks are shared according to the company agreement. However, as it already has been mentioned, material privatisation does not exist in the roads & highways sector mainly because of the special status of the corresponding infrastructure as a public or club good and the resulting market deficiencies. Hence, only PPP-models of the type functional privatisation without or only with temporal transfer of ownership are applicable in this sub-sector even if the SPV may well be 100% private (normal case) or of a mixed structure as it sometimes is applied in particular in municipal or urban development projects.

All the explanations about the development path of privatisation should not be misunderstood in such a manner that the figure shows certain stages of privatisation, which necessarily should be aspired. It just concentrates all the different and complex international organisational models in the road sector, in order to distinguish between and to be able to compare them in a consistent way.⁹

⁹ Alfen, H.W./ Jungbecker, A.: Öffentliche versus private (Straßen-)Verkehrsinfrastrukturfinanzierung – Wie machen es die Anderen? – Lecture at the ifmo-expert's workshop; Berlin, May 29th 2006

4. On- vs. Off-Balance Accounting for Public Private Partnership Projects

The establishment of a common currency in the European Union forced the member states aiming at joining the euro zone to fulfil strict macroeconomic convergence criteria. Among those criteria, the public deficit became both the most important and the most difficult one to meet, because it implies necessary reductions in the annual public expenditure. The European member states stipulate the following rules for public budgets:^{10,11}

- The deficit has to remain under 60% of GDP (according to the definitions of ESA95).
- The annual new deficit has to remain under 3% of GDP.
- Member states have to achieve a mid-term balanced budget.
- The EU will refer to the commitment if a state is likely to fail the targets.
- The EU has the right to claim penalties up to 0.5% of GDP.
- There is a “no bail out clause” in the contract. The EU will not be accountable for any liabilities accrued by membership country.

The commitment towards the European System of Accounts¹² (ESA 95) rules that excessive public debt must be avoided. The ESA rules non-financial transactions and financial calculations (balance sheets), sectors and sub-sectors as well as accruals accounting. There are no principles of statistic analysis on PPP models, as there is no direct reference within the ESA manual¹³. Principles can only be derived from contracts of comparable nature. For instance, contracts of comparable nature are long-term contracts ruling the procurement of services (PFI), shares in companies, guaranties, concessions and leasing contracts. A derivation from financial leasing, as contained in annex II of ESA95, demands that it must be distinguished between the economical and the legal owner and the transfer of risks and revenues must be clearly stated.

The starting points of statistical analysis are whether there is a considerable capital spending, whether the state is the predominant purchaser of the services and whether the assets are clearly defined within the contract. The leading problem arising in conjunction with the Maastricht criteria is that expenditures for the procurement of services are relevant in respect to public deficit. Furthermore, expenditures for gross fixed investments are relevant, if they are ‘on balance sheet’, while the risk distribution is of major inter-

¹⁰ EU-Verfassung mit EU-Vertrag und EG-Vertrag in der Fassung von Nizza; 6. Auflage 2005; Beck-Texte im DTV

¹¹ Europäischer Unionsvertrag mit EG-Vertrag in den Fassungen von Amsterdam und Nizza, Protokollen, Schlussakten und Erklärungen, 5. Auflage 2001; Beck-Texte im DTV

¹² Internet Portal of the EU: <http://forum.europa.eu.int/irc/dsis/nfaccount/info/data/esa95/en/titelen.htm>

¹³ Office for Official Publications of the European Communities: ESA95 manual on government deficit and debt; 2002 Edition

est, too. The risk distribution focuses on construction risks, availability risks and demand risks. The basic principle in accordance to the risk distribution says that in order to book the fixed investment ‘off balance sheet’, the construction risk and either the availability risk or the demand risk must be transferred to the private partner. Indicators for the three types of risk investigated by Eurostat are contained in table 2.

Indicators for the transfer of the construction risk	Indicators for the transfer of the availability risk	Indicators for the transfer of the demand risk
<ul style="list-style-type: none"> • Payments depending on the construction progress • No systematic acceptance of additional unforeseen costs • But: acceptance of potential political risks by the state 	<ul style="list-style-type: none"> • Payments depending on the availability of the fixed investment in terms of scope, quality, maintenance, ... • Considerable contract penalties 	<ul style="list-style-type: none"> • Reimbursements in the case of demand shortfall • Alternative utilisation of the fixed investment in the case of demand fall or shortfall

Table 2: Indicators for risk transfer according to Maastricht criteria^{14,15}

In terms of financial risk, it is indisputable that partial financing through the state must comply with the ESA rules, while full financing by the state will be referred to inefficiency of the public sector. Furthermore, contractual agreements addressing the debt service to the state are problematic as well.

Additional indicators on accounting are, when a property transfer is planned at the end of the contract’s term¹⁶ or when both parties agreed upon a purchase option or purchase commitment or when price and economical value of the fixed investment at the end of the contract’s term are fixed. Nevertheless, as long as financial investments are made on market-based conditions, they have no influence on the national public deficit. Loans are considered ‘market-based’, if its cost is in line with the risk taken by the loan holder.

¹⁴ Glatzel, D.; Presentation on Private Public Partnerships im Rahmen der Maastricht Kriterien; without date; without place.

¹⁵ Eurostat news release: treatment of Public Private Partnerships; 18/2004; February 11th 2004; page 2.

¹⁶ Office for Official Publications of the European Communities: Long term contracts between government units and non-government partners (Public Private Partnerships); 2005 Edition; page 5

5. Countries

Although the stake of privately managed road infrastructure throughout Western Europe¹⁷ is relatively high, the progress among these countries is unequally developed. In average, 38% of the European highways are under concession as of January 1st 2004. For instance, in Germany 4 out of 12.000 km were under concession at the same time. Private concessionaires had been established in England, France, Spain, Finland, France, Italy and Portugal since the late 1950s, while countries like Germany and Austria solely relied on public financed, operated and managed road infrastructure until the late 1990s. Even though a new wave of road infrastructure privatisation is coming over Europe since the early 2000s, the developments in each country are based on different circumstances. PPP models are unique designs just like the projects they represent. The differences inherent to the models named above have not been the target of a comparison so far, which includes an investigation of financing and the raising of capital, as well as the revenues, which are related to the projects. Different models require different approaches, depending on the organisation of the public sector, respectively the road sector in each country and the procurement models applied. But, the viability of projects in the life cycle phases design, build and operation does not solely depend on the kind and amount of revenues or the design of the payment model. Toll tariff regulation and risk distribution play an important role as well, such as the Maastricht criteria in respect to subsidies.

A comparison of the different approaches and knowledge of the experiences made throughout Europe, may give important lessons for new models to be designed or existing models to be updated. Because of the importance of the life-cycle phases financing and operation, a transparent comparison includes experiences made in the countries named above. Based on chapters 1 to 4, a more detailed description of country-specific approaches to privatisation in the road sector is examined in the following part of this document. Practical privatisation experiences in European countries with a special focus on financing of the road sector, contractual models and organisational models are examined.

¹⁷ Fayard, A.: Analysis of Highway Concession in Europe; 2005

5.1 Austria

In Austria, the ASFiNAG, a 100% state-owned private company acts on the behalf of the Austrian Ministry for Transport. Hence, the Austrian ASFiNAG model is a case of formal privatisation. After foundation in 1982 and reformation in 1992, the ASFiNAG is the only public road infrastructure provider after private law that is responsible for the design, finance, building and maintenance of the Austrian motorway network.¹⁸ In order to concentrate forces within ASFiNAG, the company overtook all former highway companies from the states. Since 1997 ASFiNAG owns usufruct on the property of national plots of land and facilities of the national motor- and highway network. Furthermore, the company is entitled to levy toll on these roads by the means of a 50-year concession granted from the government.^{19,20} ASFiNAG receives revenues from three different types of road toll: the vignette for vehicles below 3.5 tons of total weight on the motorway network, special tolls on specific roads, such as the Brennerpass and the heavy vehicle toll for vehicles exceeding 3.5 tons of total weight.²¹ Vehicles liable to pay the distance and time dependant heavy vehicle toll are exempted from the vignette and special tolls. Besides, road toll, mineral oil tax on gasoline and motor vehicle tax are charged, too. While the heavy vehicle toll was designed to cover the costs of construction, operation and maintenance of roads, ASFiNAG earmarks all revenues for finance, construction and maintenance of roads of national importance, while the responsibility for subordinated roads is addressed to the states. Future projects are laid down in the central document for transport sector planning is the "Transport master plan Austria 2002".²² The master plan contains general principles and an infrastructure investment program for road, railway and waterways. The efficient extension of the transport networks according to mid-term needs and ensuring finance for transport infrastructure are key objectives of the master plan. The projects in the investment program are determined in cooperation with the states and major public transport companies.

In September 2004, ASFiNAG has launched the first public-private-partnership in the road sector in Austria. The project 'Ostregion' was procured in several stages²³, whereas the ASFiNAG acted as the princi-

¹⁸ Hobmayer, B.: Internationale Betreibermodelle – PPP-Modelle für Autobahnen in Österreich; presentation at the 5. Betriebswirtschaftlichen Symposium-Bau in Weimar, Germany. March 8th 2005

¹⁹ Internet portal of the ASFiNAG, <http://www.asfinag.at>, July 09th 2006

²⁰ Alfen, H.W./ Tegner, H.: Privatisierung des deutschen Autobahnnetzes, Nov. 2005, p.21

²¹ ASFiNAG-Ermächtigungsgesetz 1997.

²² Bundesministerium für Verkehr, Innovation und Technologie (BMVIT); Generalverkehrsplan Österreich 2002 - Verkehrspolitische Grundsätze und Infrastrukturprogramm; Bericht Januar 2002.

²³ Hobmayer, B.: Internationale Betreibermodelle – PPP-Modelle für Autobahnen in Österreich; presentation at the 5. Betriebswirtschaftlichen Symposium-Bau in Weimar, Germany. March 8th 2005

pal. Transferred tasks covered finance, construction, operation and maintenance of three highways within the project 'Ostregion'. The payment model covers a combination of 30% shadow toll and 70% availability payments, which obliges the concessionaire to bear a certain amount of traffic risk.²⁴

As recently announced by a representative of the ASFiNAG²⁵, the next step of ASFiNAG will be to sell major parts or all of their shares to private investors. Details of the transaction are not yet known. The Austrian off-budget funding system is based on the establishment of a public enterprise, the Austrian motorway company ASFiNAG. When ASFiNAG was introduced to the stock market in 1997, the company had to take over its debts of approximately €5.7bn. The long-term funding used to be based on loans granted by the Austrian Federal Financing Agency. That agency acted on behalf of the government and issued bonds and forwarded its proceeds in the form of loans. The Austrian government intended to deduct these loans from the public deficit, but Eurostat did not give way for this method, so it was abandoned. ASFiNAG returned to the capital market under an improved construction in 2003 and issued bonds in its own name since then. Furthermore, a medium term notes program was installed and the state guarantees the repayment of ASFiNAG's debts. This improved construction has been reviewed by Eurostat and accepted. ASFiNAG is not considered as being part of the public sector, so ASFiNAG's debts do not affect the Maastricht-Criteria. From the point of operation, more than 50% of the operation costs are covered by revenues, keeping ASFiNAG's debts from consolidation with the state deficit.²⁶

5.2 France

The French road directorate represents the first level of road administration and is responsible for the national highway network, with concessioned and non-concessioned motorways. The responsibility for the subordinated road network is addressed to the third level of road administration (lower territorial authorities), while municipal roads are managed by the local municipalities. The higher territorial authorities of the second level of road administration contribute financially to the national motorway network, but do not manage any network.

The road sector in France is financed through motorway tolls, which aim for recovery of costs for construction, improvement of the network quality, maintenance and debt service. Besides, the road sector is

²⁴ REVENUE - Revenue Use from Transport Pricing; Deliverable 3: Case Studies Specification; Version 2.0 March 9th 2005; <http://www.revenue-eu.org/>; pages 142-144

²⁵ At the ifmo-expert's workshop in Berlin, May 29th 2006.

²⁶ Czerny, M./ Deusch, M.: Austrian Systems for off-budget financing; 2005; unpublished draft version.

also charged by mineral oil tax and parking fees. The tariffs are proposed by the concessionaires to the state that regulates the tariffs. The road concessions are operated by 11 companies²⁷, which can be distributed into four major, three minor motorway network operators, three tunnel operators and one bridge operator. The role of the concessionaire is defined on a case-by-case basis in the specific concession contract. One of the four major motorway networks in the north-west of France is managed by the private company COFIROUTE. The other three motorway operators were mixed investment companies until the end of 2004. Then the French government decided to sell their shares on the stock market to private strategic and financial investors. Until the public offering, the French state held between 50% and 70% of the shares. In March 2002, the shares of ASF were sold on the stock market. ASF managed a motorway network of 3.124 km at that time. The French building contractor Vinci was successful at the end of 2005 to buy the remaining 54% from the French government for about €4bn. Then, in November 2004, the shares of the motorway operator APRR were sold on the stock market for €4.8bn to Macquarie/ Eiffage. The shares represented 70% of APRR, who manages a network of 2.260 km. Finally, in March 2005 Abertis bought the remaining 76% shares of SANEF from the French government for €6bn. SANEF manages 1.743 km of tolled motorways. The story shows a very similar development of the three described concession companies from a former formally privatised to a functional privatised status, first in form of a mixed investment company and finally in form of a 100% private SPC. Even in this case it can not be spoken of material privatisation because the property is not transferred, not even for the limited time of the concession period.

Intermodal transportation projects in France are financed through a fund in that is in operation since the beginning of 2005. The AFITF²⁸ is funded from dividends and land use fees from toll-motorway operators. The French road directorate aims to support mainly railway projects, such as the Public Private Partnership project, the Perpignan - Figueras high speed line with the fund. Also other earmarked funds previously existed in France, but only for a short time.²⁹

²⁷ AREA (Autoroutes Rhône-Alpes), ASF (Autoroutes du Sud de la France), ESCOTA (Société des Autoroutes Estérel Côte d'Azur Provence Alpes), SANEF (Société des Autoroutes du Nord et de l'Est de la France), SAPN (Société des Autoroutes Paris Normandie), SAPRR (Autoroutes Paris-Rhin-Rhône), ATMB (Autoroutes et Tunnel du Mont Blanc), SFTRF (Société Française du Tunnel Routier du Fréjus), COFIROUTE (Compagnie Industrielle et Financière des Autoroutes), SMTPC (Société Marseillaise du Tunnel Prado Carénage). In addition, the bridges of Normandy are tolled by the Chamber of Commerce and Industry of Le Havre.

²⁸ French Agency for Transport Infrastructure

²⁹ REVENUE - Revenue Use from Transport Pricing; Deliverable 3: Case Studies Specification; Version 2.0 March 9th 2005; <http://www.revenue-eu.org/>; pages 150-155

5.3 Italy

The Italian road sector is funded through toll for motorways and tunnels. Besides, the road sector is also charged with registration tax, vehicle tax and mineral oil tax. Concessions for tolled motorway management in Italy were introduced in 1929. The criteria to calculate the tolls for the Italian motorway network are established by a detailed set of rules bundled in the conventions between the concessionaires and the granting (and regulating) authority ANAS.³⁰ The convention defines the terms of the concession, such as its purpose, validity, financial plan and the obligations and rights of the concessionaire and of the ANAS. One of the aspects regulated by the convention is the annual revision of toll charges, based on a complex price-cap mechanism that considers the planned inflation, the scope of services assigned to the concessionaries and the changes in the quality of the service. While the concessionaire companies were private, public and mixed investment in the beginning, most concessionaires today belong to the private sector. Autostrada Torino-Milano, Autostrade and Autostrade Meridionali, are listed on the stock market. In 1995 ANAS was transformed from a public entity into a public company under private law. The core tasks of the company became the granting of concessions and the operation of non-tolled stretches and monitoring of the 24 road concessionaires³¹, who manage the tolled part of the Italian motorway network. Also the Italian case of ANAS is no material privatisation hence the property on the infrastructure remains with the public sector.

The tolls represent the costs of construction, management and maintenance of the motorways. The concessionaires are liable to pay VAT (20%) on the toll revenues and obliged to earmark them for investments on the same motorway that generated the revenues besides a profit margin. The concessionaires are not required to adjust the infrastructure according to changed traffic volume needs, while infrastructure adjustments can be included in the concession contract, after acceptance through ANAS. All investments are usually financed by the concessionaire itself, while public funding is possible on a case-by-case basis. The Italian government favours public offering for the formerly state-owned toll motorway operator

³⁰ Azienda Nazionale Autonoma delle Strade S.p.A. owns the Italian motorways network with national relevance, the company is 100% state-owned.

³¹ Autostrade per l'Italia, Autostrade Meridionali, Autostrada Torino-Milano, Società delle Autostrade di Venezia e Padova, Milano Mare – Milano Tangenziali S.p.A., Autostrada Torino-Savona, Autostrada Torino-Ivrea-Valle d'Aosta, Autocamionale della Cisa, Autovie Venete, Autostrada Brescia-Verona-Vicenza-Padova, Autostrada del Brennero, Soc. Aut. Torino-Alessandria-Piacenza, Autostrade Centro Padane, Società Autostrade Valdostane, Società Autostrada Ligure Toscana, Autostrada dei Fiori, Società Autostrada Tirrenica, Tangenziale di Napoli, Consorzio per le Autostrade Siciliane, Società Italiana per il Traforo del Monte Bianco, Società Italiana Traforo Autostradale del Frejus, Raccordo Autostradale Valle d'Aosta, Società Italiana Traforo Gran San Bernardo, Strada dei Parchi.

Autostrade This toll motorway operator, for instance, was founded in 1950 and manages now 3.408 km of the Italian highway network and is listed on the stock market since 1999. The anticipated merger between Abertis from Spain and Autostrade would produce the biggest operator of highways worldwide with a total of 6.713 km under concession. The transaction was expected to be finalised by the end of 2006³², but in the respective contracts for the privatisation of Autostrade in 1999, it was laid down that no construction company is allowed to become shareholder of Autostrade. Since the Spanish construction company ACS holds a 25.0% stake in Abertis, the planned merger would result in a 12.5% stake in the merged company. The Italian Minister of Economy definitely refused the plans of both companies with reference to the privatisation contract of Autostrade, which contains a rule against a conflict of interest in the case a construction company becomes shareholder of a toll road operator. Nevertheless, both companies keep on planning towards the merger, an approval is expected in October 2006, while the EU commission is monitoring the merger, too.^{33,34}

The Italian privatisation progress of Autostrade is comparable to the Portuguese case of BRISA or the French cases of ASF, APRR and SANEF. All of them are functionally privatised and came at least the way from mixed investment company to fully privatised company. The merger between Autostrade and Abertis would elevate this model to a multi-national level.

5.4 Portugal

Tolled motorways were introduced in Portugal in the 1960's. Even though there are directly and indirectly tolled motorways, concessions covering the construction and operation with a contract term of 30 years are awarded in both cases. Besides, the road sector in Portugal is charged with registration tax, mineral oil tax, municipal circulation tax for light vehicles and motorcycles, road haulage tax for light and heavy trucks (professional use) and circulation tax for light and heavy trucks (private use).

Furthermore, Portugal has a vital record of progresses on the level of functional privatisation the road sector. The formerly state-owned highway monopoly operator BRISA³⁵ was founded in 1972 and introduced to the stock market in 1997 and completely privatised by 2001 in four stages. Based on the 30-year con-

³² Internet portal of the Frankfurter Allgemeine Zeitung. <http://www.faz.net.de> April 24th 2006, checked on July 18th 2006

³³ Internet portal of the Bundesagentur für Außenwirtschaft; <http://www.bfai.de>, July 7th 2006; checked on August 27th 2006

³⁴ REVENUE - Revenue Use from Transport Pricing; Deliverable 3: Case Studies Specification; Version 2.0 March 9th 2005; <http://www.revenue-eu.org/>; pages 165-168

³⁵ Auto-estradas de Portugal S.A.

cession contracts, BRISA's core tasks are the construction, operation and maintenance of the highways besides the right to levy tolls until 2032. The company manages 11 highways with a total of 1.050 km³⁶; it is the biggest operator of tolled highways in Portugal. Because of the gradual privatisation in four steps, the shares are distributed among international financial investors.³⁷ Even though the case of BRISA represents a complete privatisation, it is still no material privatisation, because the concession is limited in time and no property (infrastructure) was transferred to the private sector.

Hence, the development of Brisa is very similar to that of ASF, APRR and SANEF in France as well as of the intended one of ASFINAG. Eight other private companies operate minor parts of the Portuguese toll motorway network besides BRISA. They were selected through public tendering; the tasks cover construction and operation of toll motorways in the Portuguese network³⁸. Some of these motorways are operated without a direct toll levying scheme, these are the so called 'SCUT'³⁹ or 'DBFO Road' projects and two bridges⁴⁰ in the Lisbon area. The bridges represent a stand-alone solution, which can not be assigned to the other present models in Portugal. Tolls regarding the use of 'SCUT' motorways are subject to a shadow toll scheme, which means that the government pays toll instead of the users. In the case of the project NORSCUT, a concession for seven stretches in the north-east of Portugal with a total length of 155 km was awarded to a special purpose vehicle founded by Eiffage (45%), Contacto (25%), CDI Ixis (15%), Egis Projects (10%) und SEOP (4%). The lessee is the Portuguese government. In order to minimise the revenue risk in the SCUT projects, special traffic bands are applied. In the case of low traffic volume, the toll paid from the Portuguese government to the operator guarantees to cover basic costs for operation, maintenance and debt service for senior loans. While the debt service for subordinated loans is guaranteed in the second traffic band, profit margin on the sponsors' equity is paid from reaching the third traffic band and on.

Other national roads than motorways and the subordinated road networks are not subject to road pricing schemes. The funds for the Portuguese road sector originate from the general state budget. There are also

³⁶ Internet portal of the Brisa S.A., <http://www.brisa.pt>, July 10th 2006

³⁷ Internet portal of the Brisa S.A., <http://www.brisa.pt>, July 10th 2006. The strategic investor Autopista concessionaria Espanhola owns 10.20% of the shares; a group of financial investors own another 52.99 %, consisting of Jose de Mello Investimentos (31.43% alone), Pensoesgere, Cinveste Finance, Deutsche Bank AG, Banco Privado Portugues and Capital Group Companies. The remaining shares of 36.81% are in free float.

³⁸ Auto Estradas Atlantico, AENOR (Auto Estradas do Norte SA), SCUTVIAS (Autoestradas da Beira Interior), EUROSCUT (Soc. Concessionária da Scut do Algarve, S.A), LUSOScut Costa de Prata; NORSCUT (Concessionária de Auto-Estradas, S.A), LUSOScut das Beiras Litoral e Alta, EUROSCUT Norte.

³⁹ Portuguese shadow toll scheme. The abbreviation 'SCUT' stands for „sem combranca ao utilizador”, which stands for „no direct cost for the user”

⁴⁰ The Bridges 25th of April and Vasco da Gama are tolled by LUSOPONTE S.A.

subsidies from public and private bodies, such as the EU and Public Private Partnerships. In general, tolls levied by the concessionaires and EU subsidies are earmarked for usage within each project for maintenance and operation. The payment details are defined in the 30-year concession contracts. For instance, the funds for financing the new Lisbon Bridge mainly originated from the private sector. The concessionaire also operates the old Lisbon Bridge and uses these toll revenues for the construction of the new bridge.⁴¹

The Portuguese Institute of Roads, a body of the Ministry of Transport, is responsible for the execution of the transport policy laid down in the National Road Plan as well as for the conception, construction and maintenance of the roads included in the National Road Plan. Furthermore, the Portuguese Institute of Roads represents the State in road concession processes and supervises the concession contracts. In Portugal, there are maximum tariffs defined in the concession contracts, while the concessionaire may utilise lower tariffs, if necessary.⁴² Roads outside of the responsibility of the National Road Plan are financed through the respective municipalities and EU subsidies.⁴³

5.5 Spain

Spain has extensive experience in financing toll motorways through concession contracts. More than 30 motorway concessions in Spain were competitively awarded and mostly funded by the private sector since the late 1960s. The motorway concessions are operated by numerous concessionaires⁴⁴. The toll is distance and vehicle dependant, collected by the concessionaires and fully earmarked within the concessionaire's projects. In 2004 3.257 km out of 10.500 km of Spanish motorways network were tolled. Besides vehicle tax and mineral oil tax are charged on the road sector in Spain, too.

⁴¹ Financing resources for the construction of the new bridge: Cohesion Fund: 35%, European Investment Bank Loan: 33%, tolls from the bridge 25th of April: 6.0%; other resources including public equity and State subsidies: 26%.

⁴² Bousquet, F./ Fayard, A.: Road Infrastructure Concession Practice in Europe; September 2001; p.29

⁴³ REVENUE - Revenue Use from Transport Pricing; Deliverable 3: Case Studies Specification; Version 2.0 March 9th 2005; <http://www.revenue-eu.org/>; pages 174-177

⁴⁴ Accesos de Madrid, Concesionaria Española S.A.; ACEGA Autopista Central Gallega, Concesionaria Española S.A.; ACESA Autopistas Concesionaria Española, S.A.; AUCALSA Autopista Concesionaria Astur-Leonesa, S.A.; AUCAT Autopistas de Catalunya, S.A.C.G.C.; AUDASA Autopistas del Atlántico, Concesionaria Española S.A.; AUDENASA Autopistas de Navarra, S.A.; AULESA Autopistas de León, S.A.; AUMAR Autopistas Aumar, S.A.; AUSUR Autopista del Sureste, Concesionaria Española de Autopistas S.A.; AUTEMA Autopista C16 Terrassa-Manresa; Autoestradas de Galicia, S.A. Concesionaria de la Xunta de Galicia; Autopista del Sol Concesionaria Española S.A.; Autopista Eje Aeropuerto C.E., S.A.; Autopista Madrid Sur, Concesionaria Española S.A.; AVASA Autopista Vasco-Aragonesa, Concesionaria Española S.A.; Castellana de Autopistas, S.A.; Europistas, Concesionaria Española S.A.; HENARSA Autopista del Henares, S.A.; Iberpistas S.A.; TABASA Túneles i Accesos de Barcelona, S.A.C.; Túnel del Cadí, S.A.C.; Compañía Concesionaria del Túnel de Sóller, S.A.; Túneles de Artxanda. C.D.F.B.S.A.; Autopista Madrid-Toledo Concesionaria Española de Autopistas, S.A.; CIRALSA, S.A. Concesionaria del Estado Circunvalación de Alicante; ABERTIS Abertis Infraestructuras, S.A.; CINTRA Concesiones de Infraestructuras de Transportes S.A.; Itínere Infraestructuras, S.A.; Autopista Madrid-Levante Autopista Radial 4

The Spanish motorway network had to be expanded during the late 1960s to the mid 1970s, because the economic growth was endangered to slow down, if the enormous infrastructure demand would not be able to keep up with the development progress. Private financing was employed in order to give relief to the Spanish budget. Because of this, the Spanish state provided motorway concessions with a whole set of advantages, such as fiscal deductions, loan guarantees and exchange insurances. The Spanish government soon experienced the cost of these advantages and deemed motorway concessions to be inefficient, so very few motorway concessions were awarded until the mid 1990s.

The administration of the toll motorway companies and the construction, promotion and operation of other tolled motorways is the task of the state-owned limited company ENA, which is expected to be privatised in the future. Regional and Local Governments are responsible for any planning and management tasks, as they are not state responsibilities. All decisions regarding national roads are taken by the DGC⁴⁵, the road department of the Ministry of Traffic.⁴⁶

In the past decade, the government redesigned the concession model, in order to meet future macroeconomic convergence criteria according to the Maastricht contract. 1.000 km of new motorway concessions were granted and the private sector was encouraged to participate in financing new road infrastructure. The negative experiences made with the public guarantees between the late 1960s and the mid 1970s forced the Spanish government to basically redesign the concession model. A new and improved law was passed in 2003 – with restricted public guarantees – whereby the public sector could eventually contribute to the financial feasibility of concession contracts. Basically, this law contains the improved motorway concession model from 1972, with an improved legal framework with a new risk-sharing approach.⁴⁷ The new law also enabled the implementation of shadow-toll regimes in the Spanish motorway network, while shadow-toll concessions had been already implemented before by some regional governments.⁴⁸

Abertis, the biggest Spanish toll road operator today was also the first company to construct, manage and operate a toll road in Spain.⁴⁹ The company Abertis is a merger between the companies Acesa Infraestructuras and Aurea Concesiones de Infraestructuras in the year 2000. The anticipated merger between Aber-

⁴⁵ Dirección General de Carreteras

⁴⁶ REVENUE - Revenue Use from Transport Pricing; Deliverable 3: Case Studies Specification; Version 2.0 March 9th 2005; <http://www.revenue-eu.org/>; pages 178-180

⁴⁷ Vassallo, J.M./ Gallego, J.: Risk-sharing in the New Public Works Concession Law in Spain; Transportation Research Record: Journal of the Transportation Research Board, No. 1932, National Research Council; Washington, D.C.; 2005; pp. 1-9.

⁴⁸ Vassallo, J.M.: Overview of Spain's model for motorway financing; 2006, without place; pages 1-3

⁴⁹ Internet portal of the Abertis Infraestructuras S.A.; <http://www.abertis.com>; checked on August 27th 2006

tis from Spain and Austostrate would produce the biggest operator of highways worldwide with a total of 6.713 km under concession. For more information on this merger please refer to part 5.3, as it is described there in more detail.^{50,51,52}

Also the Spanish government has found a way to account private road concessions off the national balance. Different from the Austrian approach, the Spanish government relies on Subordinated Public Participation Loans (SPPLs) instead of bond issuing. Lenders receive a variable interest, depending on the financial performance, through the borrowing company. The criteria for measuring the performance are not fixed and can be agreed upon freely, while in the road sector criteria such as traffic volume, traffic quality or availability are likely to be employed. The government is free to design most aspects of a SPPL, but it is responsible for compliance with a set of rules. First of all, a SPPL must be subordinated to senior debt, so that the Spanish government is repaid after the concessionaire has met senior loan obligations. As stated above, the rate of return must be related to the performance of the concession, i.e. the better the performance, the higher the rate of return. As stated in the Eurostat conditions for off balance treatment of road concessions, the rate of return for the SPPL holder must be market based and correlate with the assumed level of risk. Because of this, SPPLs have a strong impact on the traffic risk sharing approach of the concession. Basically, the interest rate from the concessionaire to the government will be higher, if the real traffic turns out to be higher than forecasted. Finally, additional, unpredicted profits are shared between the concessionaire and the government, despite of both parties' incentives falling apart, if the projects' performance is much better than forecasted. In this case, the SPPL interest increases, while the concessionaire's interest is subject to a cap.^{53,54,55,56}

⁵⁰ Izquierdo, R.: Gestión y financiación de infraestructuras de transporte terrestre. Asociación Española de la Carretera, Madrid, 1997.

⁵¹ Vassallo, J.M./ Gallego, J. Risk-sharing in the New Public Works Concession Law in Spain; Transportation Research Record: Journal of the Transportation Research Board, No. 1932, National Research Council, Washington, D.C., 2005, pp. 1-9.

⁵² Izquierdo, J.M./ Vassallo, J.M.: Nuevos sistemas de gestión y financiación de infraestructuras de transporte; Colegio de Ingenieros de Caminos, Canales y Puertos; Madrid; 2004.

⁵³ Vassallo, J.M.: Overview of Spains model for motorway financing; 2006; without place; pages 7-8.

⁵⁴ Izquierdo, R.: Gestión y financiación de infraestructuras de transporte terrestre. Asociación Española de la Carretera; Madrid; 1997.

⁵⁵ Vassallo, J.M./ Gallego, J.: Risk-sharing in the New Public Works Concession Law in Spain; Transportation Research Record: Journal of the Transportation Research Board, No. 1932; National Research Council; Washington, D.C.; 2005; pp. 1-9.

⁵⁶ Izquierdo, J.M./ Vassallo, J.M.: Nuevos sistemas de gestión y financiación de infraestructuras de transporte; Colegio de Ingenieros de Caminos, Canales y Puertos; Madrid; 2004.

6. Conclusion

Since the beginning of road charging by the means of toll in Europe, concessions, privatisations and Public Private Partnerships have experienced many difficulties and even more improvements and success. The Spanish case shows, for instance, that a country with a great record of road concessions in the 1960's returned to this instrument of infrastructure finance after almost 20 years of absence. Even though the Maastricht contract does not prevent the employment of Public Private Partnerships per se, off-budget financing requires more complicated solutions. The Spanish and the Austrian approaches are fundamentally different in nature and based on different circumstances of the road sector in the specific country. While the ASFiNAG approach represents a case of formal privatisation (with the option of material privatisation), the Spanish ENA is still state-owned (with the option of a not further specified form of privatisation). Under the regulations stipulated in the Maastricht contract, the times of boundless and creative contract designs seem to be over. Especially the risk distribution is of major concern and, according to Eurostat, the vital point of concession contracts. The sum of construction risks and either demand or availability risk will leave less room for negotiations and tailor-made solutions inside of the EU. Maybe this is the good news behind it all.