

European Commission DG TREN

In association with EC DG TAXUD and EC DG ENV

**FAIR AND EFFICIENT PRICING IN TRANSPORT – THE
ROLE OF CHARGES AND TAXES**

**An EU-Wide Review of Transport Charges and Taxes
(National) in Commuter and Business Travel**

plus

**A World-Wide Review of the Use of Charges and Taxes
(Local and Regional) to Fund Public Transport**

Final Report

April 2000

**Oscar Faber
Open University
Amsterdam Free University**

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Prepared by:
Tone Vanden Branden
Consultant

Approved by:
Howard Blessington
Director

Reviewed by:
(OFT only) Paul Knight
Regional Director

Job No: 17296TBM
Reference:
Date: 07 February 2000

Telephone: +44 (0) 121 262 1900
Fax: +44 (0) 121 262 1999
Website: <http://www.oscarfaber.co.uk>

Beaufort House
94/96 Newhall Street
Birmingham B3 1PB

Acknowledgements

This report was written by:

Paul Knight	Oscar Faber, UK
Tone Vanden Branden	Oscar Faber, UK
Stephen Potter	Open University, UK
Marcus Enoch	Open University, UK
Barry Ubbels	Amsterdam Free University, the Netherlands

The authors were supported by a panel of five external experts:

Susan Scott	Economic and Social Research Institute, Ireland
Veli Himanen	VTT Technical Research Centre, Finland
Sebastian Belz	Econex Verkehrsconsult, Germany
Jeroen Groenendijk	UITP, Belgium
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1 Introduction

1.1 Study Background

Recent European Commission communications have highlighted the need to change the current structure of transport pricing in the European Union with the broad objectives of removing pricing distortions such that users pay a fair price for infrastructure use, taking into account both infrastructure costs and external costs.

Pricing distortions occur in both private and public transport and concerns have been expressed regarding the generally 'blunt' nature of the public transport subsidies and the lack of clear targeting towards sustainable transport objectives. However, there is a general consensus that sustainable transport policies require the development of better quality and improved capacity public transport systems. Conventional economic instruments, namely operator fare revenues and public subsidies are limited in their ability to send the correct pricing signals to users and, further, tend not to provide sufficient funds to enable enhancements to public transport systems.

Consequently, the European Commission is investigating the potential for unconventional forms of charging and taxation to support public transport operations and investments.

In addition to raising revenue a key objective of fiscal policy is to bring about a shift in user behaviour that supports the goals of efficiency in transport, equity and sustainability. In this context, the existing transport taxation systems of EU Member States, in particular, the taxation of personal income and fringe benefits and company taxation contain a mixture of contradictory signals that provide both incentives and disincentives for the use of sustainable modes of travel for commuter and business transport. There is, therefore, a need to consider the inter-relationships between general and unconventional taxation systems and how the two types of instruments might be most efficiently employed to support sustainable mobility objectives.

1.2 Study Objectives

The more specific objectives of the study were as follows:

- Part 1
 - to provide a detailed world-wide overview of unconventional forms of charging and taxation at local/regional levels where receipts are totally or partly earmarked to support public transport;
 - to develop an understanding of the circumstances in which such unconventional charges/taxes can be made to work successfully;
 - to develop recommendations, based on detailed case studies, on the broad applicability of unconventional charging/taxation measures giving specific attention to possible distributional impacts (winners and losers).

- Part 2
- to undertake an analysis and comparison of the incentives and disincentives within European Union Member States' taxation systems for using public transport, other sustainable modes and the car.
 - to prepare a review of relevant aspects of Member States' taxation systems.

1.3 Policy Background

Before proceeding to discuss the findings of the detailed review it is helpful to outline both the theoretical and policy background that underpins the central EU policy of 'fair and efficient' pricing in transport.

Fair and Efficient Pricing

The Commission's views on the development of a new pricing framework was described in its Green Paper 'Towards Fair and Efficient Pricing' (COM (95) 691). This was followed by a White Paper on 'Fair Payment for Infrastructure Use' which advocated that transport infrastructure charges should normally reflect marginal social costs at the point of use. The marginal social costs should include external costs of transport (congestion, pollution, safety, etc.) as well as marginal infrastructure wear and tear costs. These external costs should be 'internalised' through the appropriate application of charges or taxes. Although it recognised that other instruments, such as standards, regulations, traffic management and information, play an important role, fiscal instruments were seen as the best mechanisms for encouraging efficient and sustainable transport systems in the longer term.

Theoretical Basis for Marginal Cost Pricing

In considering the role of both national transport charges and taxes and local/regional 'unconventional' charges and taxes it is important to reflect on the theoretical basis for marginal cost pricing in transport, otherwise described as 'the polluter pays'. The need to adjust transport prices arises from the externalities associated with transport use, such as air pollution. Without adjustment the polluter has no reason to take external costs into account and hence transport choices will be made simply according to the private costs associated with an individual journey. In the case of car journeys these private costs are often perceived by the user as being simply fuel costs.

In setting out the economic case for marginal cost pricing it is helpful to consider the case of a motorist using a congested urban network.

The economic justification for marginal cost pricing rests on fact that motorists impose costs on other travellers, which are not considered in making a decision to travel. The individual motorist incurs journey time and money costs, when undertaking a journey. The money costs are the fuel and other vehicle operating costs associated with the journey.

In urban transport networks the external costs (congestion, pollution) that each additional vehicle imposes can be very high. If the value to the motorist of the trip is less than the sum of his own journey cost and the external costs imposed on others, then road users as a whole are made worse off.

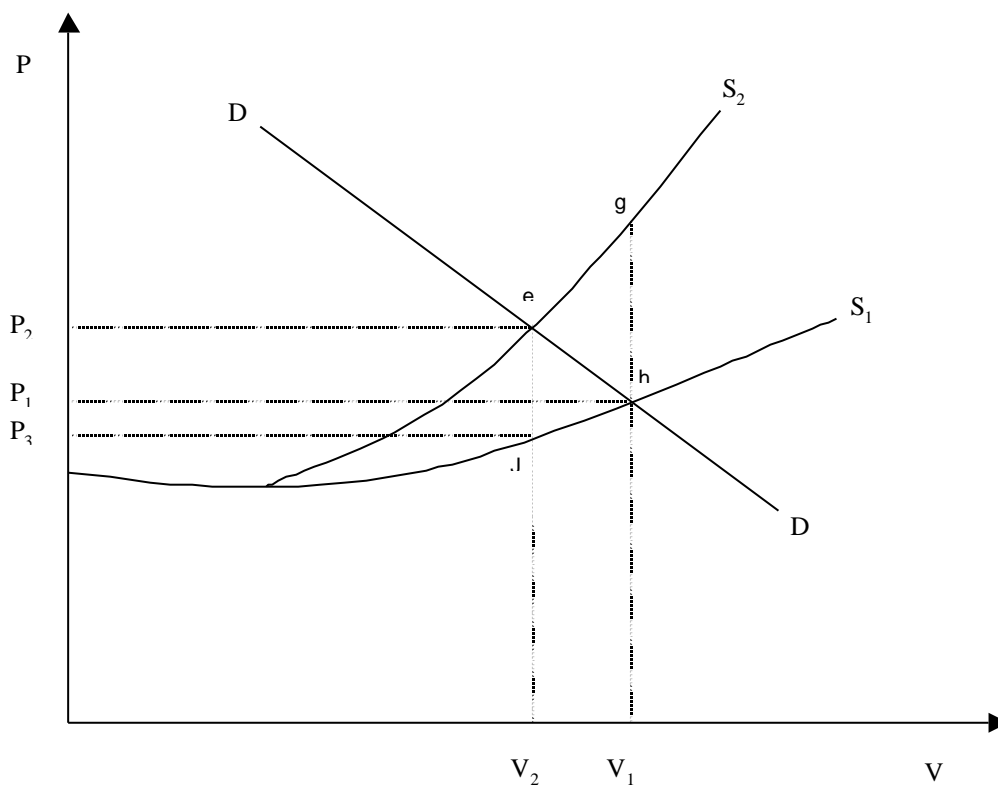
If a price were charged to use a congested or polluted system, equal to the overall costs imposed on others, the motorist would only use the road if the value of the trip exceeded the sum of the additional charge and his other trip costs. In this manner, additional trip-making for which the

costs to society as a whole exceeded the benefits would be deterred.

Figure 1.1 illustrates these points. Traffic volumes are depicted on the horizontal axis, and the cost of travel, time and money costs combined, are plotted on the vertical axis. The demand for travel is represented by the curve DD. This indicates that as journey costs rise, demand for travel falls. The marginal social cost curve S_2 shows the additional costs imposed on *all* road users, as traffic volumes rise. The marginal private cost curve S_1 , on the other hand, shows the costs incurred by each additional trip-maker.

The individual trip-maker makes a decision to travel based on his marginal private costs and the value of the trip to him. In the figure, an equilibrium is reached at price P_1 and traffic volume V_1 at h. However, the optimum traffic volume is at V_2 , where the marginal social cost and demand curves meet at e. The additional traffic volume ($V_1 - V_2$) imposes costs of V_2egV_1 , but yields benefits of V_2ehV_1 only. The net loss arising from the additional traffic is therefore eg. In order to restrain traffic to the socially optimal level V_2 , an additional charge of $(P_2 - P_3)$ is needed.

Figure 1.1 The Economic Case for Marginal Cost Pricing



Interestingly, the transport sector provides considerable opportunities for the adjustment of prices to better reflect external costs. In the EU road transport is already relatively heavily taxed through the use of taxes on vehicle purchase, vehicle registration and fuel but existing taxes do not adequately reflect marginal costs at the point of use.

It is important, therefore, to consider whether current charges should be increased and/or redirected so that a greater element of the current cost to the motorist are derived from charges applied at the point of use. In some cases it may be appropriate to consider reductions in the overall level of charges, for specific sub-areas or modes, where it can be shown that revenues from transport exceed social costs.

Figure 1.2 illustrates a typical make up of travel cost for a car commuter in the EU and illustrates, in particular, how different taxes and charges impact on the various elements of cost (acquisition, periodic, fixed, variable). This illustrates the current mix of fixed and variable charges. Fixed charges can provide important incentives for sustainable transport choices, such as the use of

differential vehicle ownership taxation in accordance with pollution characteristics such as engine size, but variable charges have far more potential in setting prices that are effective in internalising external costs at the point of use.

These points are discussed in greater detail in The ECMT/OECD report 'Internalising the Social Costs of Transport' (1997). The report advocated a synergistic mix of instruments, including a number of unconventional mechanisms. Generally this report takes the view that a carefully designed mix of various economic instruments (see Table 1.1) and regulations is needed to achieve political acceptance and practicality.

	DIRECT	INDIRECT
Vehicle	Emission Fees	Tradable permits Differential vehicle taxation Tax allowance for new vehicle
Fuel		Differential fuel taxation
Traffic		High fuel taxes Congestion charges Parking charges Subsidies for less polluting mode

Source: OECD, 1997 p.20.

The unconventional mechanisms are shaded and the report notes that the charges can provide valuable flows of revenue. It should be noted that they are seen as the main measures to affect traffic volumes rather than the type of vehicle or type of fuel used (where national taxation measures are involved). This is significant. It suggests that local unconventional mechanisms are a key fiscal instrument in transport demand management, whereas other fiscal instruments are more suited to affecting vehicle and fuel type.

Internalisation of External Costs

As noted above any discussion concerning the resetting or redirecting of transport charges and taxes must be informed by an analysis of the degree to which revenues from transport currently cover infrastructure and external costs. In a perfectly internalised system:

Revenues from Transport (per journey) = Infrastructure Costs (wear and tear) + Marginal External Costs

Clearly, if revenues for any given mode or sub-area fail to meet overall infrastructure plus external costs then there is a case for increasing charges, but not necessarily in the transport sector. If overall revenues exceed costs there may still be scope for adjustments to the fiscal system to:

- provide a better balance of revenue: cost coverage across modes;
- redress imbalances between different types of area e.g. urban and rural areas; and
- target revenues more specifically to costs incurred at the point of use.

The ECMT report produced an estimate of the average fuel charges that would be required in EU countries to fully internalise the infrastructure and external costs of transport. This indicated that average fuel duties in 1996 would need to be increased by 73% for petrol cars, 225% for diesel cars and 131% for diesel trucks. A more disaggregate analysis of the Irish transport market is contained in the report 'The Environmental Implications of Irish Transport Growth' (Oscar Faber, 1999). This report illustrated significant differences in degree of internalisation of costs for different modes and different vehicle types within modes.

The study concluded that:

- revenues from cars and light goods vehicles exceed marginal costs (excluding congestion costs) by a wide margin;
- HGV's fail to cover marginal costs due to the relatively high (in proportion to distance travelled) infrastructure costs and environmental costs; and
- Motorcycles incur exceptionally high accident costs relative to distance travelled and consequently revenues fail to cover costs by a wide margin.

These results illustrate that in a predominantly rural transport market, where congestion and environmental costs are relatively low in comparison with more urbanised locations, revenues from private vehicle can significantly outweigh social costs. Nevertheless there could still be a strong case for redirecting charges to target the important variations in cost between modes, different parts of the transport network, different time periods and so on.

What the above illustrates is that the formulation of efficient fiscal policies in transport is not straightforward, due to the range of different social cost involved and because of the complex structure of the transport market; made up of a variety of modes, vehicle types, engine types and fuels. The market is further complicated by the spatial structure of the land use/transportation system. Generally, urban areas contain high concentrations of pollutants and recipients as well as the greater levels of congestion. In rural areas the reverse is true and the potential to impose additional charges can be more problematic because of the dispersal of population and the greater dependency on private, rather than public, means of travel.

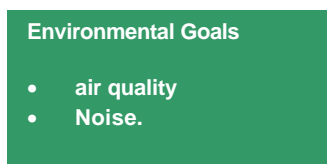
All of the issues noted above strongly suggest that local, unconventional charging mechanisms could greatly assist in the redirection and targeting of charges towards external costs at the point of use. Road use charges, as discussed in Chapter 4 of this report, represent a classic application of this principle. Charges can be geographically targeted towards areas of highest cost and differential prices can be charged by vehicle type, time of day and other journey characteristics.

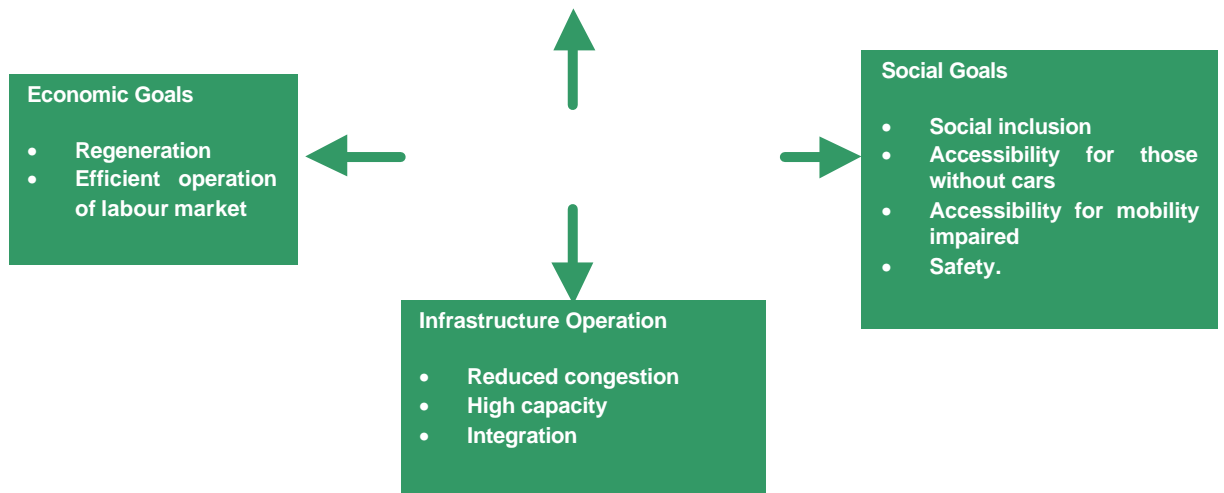
The Citizens Network

In addition to the micro-economic arguments outlined above, supporting the application of marginal cost pricing in transport, due consideration should also be given to the potential of local charges to inject additional funding into public transport in support of wider policy objectives.

The study brief makes reference to increasing pressures on public spending and the need to identify unconventional means of raising funds to cover the operating and investment costs of public transport systems. It is worthwhile first reflecting on why additional funding should be channelled into public transport.

The Commissions Communication 'Developing the Citizens Network' (COM (1998) 431) highlights the importance of good local and regional public transport systems in Europe. The graphic below helps to illustrate the contribution that good public transport systems can make in achieving EU transport objectives.





In urban areas public transport has a particularly vital role in helping to achieve environmental objectives by providing a more sustainable alternatives to the use of the private car and in supporting policies to reduce congestion in urban centres.

Public transport also has an important complementary role in supporting non-transport specific EU policies for regeneration and social exclusion. Access by public transport can be an important factor in supporting the economic development of an area in terms of providing access to both markets and labour force.

It is also important to recognise that approximately 40% of households in the EU do not have access to private cars and, therefore, depend to a large degree upon public transport to gain access to services and employment opportunities.

1.4 Report Structure

The report is organised into six main sections as follows:

- Section 1** - Introduction
- Section 2** - provides a summary of the review of transport taxation systems of EU Member States, with specific reference to four broad areas of fiscal policy; vehicle and fuel duties, personal income and business taxation and the fiscal treatment of public transport services.
- Section 3** - presents comparative assessment across Member States, drawing out 'good' and 'bad' practise and identifying the opportunities for fiscal reforms to support the drive towards sustainable mobility.
- Section 4** - provides a summary at a world-wide level, of unconventional forms of charges and taxes.
- Section 5** - presents an assessment of the performance of existing unconventional charging and taxation schemes with the aim of drawing conclusions regarding the potential for the wider application of such instruments as part of sustainable transport strategies.
- Section 6** - draws together the results of the general and unconventional reviews with the aim of identifying the role of both general and unconventional taxation

measures within the context of sustainable mobility policies. This section also presents the main conclusions of the study.

2 Transport Charges and Taxes in the European Union

2.1 Introduction

As noted in Section 1 the move towards improved sustainability in transport depends to a large extent on setting appropriate prices that reflect the full social cost of transport use.

The adoption of the principles of fair and efficient pricing requires the European Union (EU) Member States to review the structure of existing tax and charging systems, to remove anomalies in the tax structure that are injurious to the environment, and that unfairly penalise public transport, and to ensure that sub-groups within the transport sector pay their fair share.

This section of the report provides a review of the transport taxation systems of all fifteen EU Member States. In particular, it examines the taxation of personal income and fringe benefits and company taxation and provides an analysis of the incentives and disincentives they include for using public transport, other sustainable land transport and the car in commuting and business travel. The analysis highlights mechanisms through which different modes of transport are treated unequally by tax systems and therefore provide either incentives or disincentives for sustainable travel behaviour.

2.2 Methodology

The study of the Member States transport taxation systems has involved undertaking the following main tasks:

Task 1: Scoping

The first stage of the research was to improve our understanding of the research area, and through this, to define the key issues for the main study. This involved an extensive review of existing literature and consultations with experts in the field of transport and taxation and with the European Commission.

Based on evidence highlighted by the literature and on the experience of the consultees, four elements of the taxation systems were selected as focus areas for the research because of their potential to influence the choice of mode of transport for commuting and business travel:

Company car taxation:

- Personal income taxation rules applying to the private benefit of company cars.
- Corporate taxation/VAT treatment of company car related expenses.

Taxation concessions for commuting expenses;

- Personal income taxation

Tax treatment of employer provided commuting benefits;

- Personal taxation
- Corporate taxation/VAT treatment

Tax treatment of the reimbursement of business travel expenses;

- Personal taxation
- Corporate taxation/VAT treatment.

Although the research issues are listed above as separate elements, an important aspect of the research has involved obtaining an understanding of the relationships and degree of consistency between the elements of the taxation systems.

In addition to the above, the study also provides a summary of previous research into vehicle taxation, taxation of vehicle running costs and the tax treatment of public transport services.

Task 2: Information Gathering

The categorisation outlined above helped to facilitate effective assimilation and comparisons between all Member States. The information gathering exercise involved a mixture of literature review and consultations.

Literature Review

An initial overview of transport taxes and charges of each Member State was obtained from existing literature and from reference material provided by accountants. The World Wide Web was also used as a tool to obtain information about the taxation systems. Certain elements were well documented in the literature, but in some cases the level of detail that was required for this review was not readily available. Further information was, therefore, obtained by consulting relevant government authorities in each Member State.

Consultations

Over 300 emails and letters were sent out to organisations or individuals throughout Europe. Consultees were asked to provide information on the relevant elements of their country's taxation system and to highlight anomalies in the taxation system that give rise to incentives and disincentives for particular modes of transport. For more detailed information on thresholds, applicability, loopholes etc., and to verify the accuracy of the information obtained, formal requests for information were sent to representatives in the relevant Government Ministries, e.g., Finance and Taxation. The responses varied considerably from Member States, with the result that the reviews do not necessarily contain a consistent level of detail.

Task 3: Analysis

The analysis of incentives and disincentives within the tax system was carried out in two stages:

Stage 1: Introductory Analysis

Section 2.3 provides an overview of how each element of taxation identified above may influence the choice of mode of transport in commuting and business travel, without reference to a particular Member State. This is intended to inform the reader about issues of greatest significance before the information on each Member State's taxation system is examined in Section 2.4.

Stage 2: Comparative Analysis

Based on the discussion in the introductory analysis, the second stage of the analysis compares the information gained on each Member State and evaluates the fiscal incentives/disincentives the various fiscal measures identified may contain for the use of sustainable transport modes in commuting and business travel.

The tax systems have also been analysed at a strategic level by examining whether the individual elements within the system are working together i.e., do they provide transport users with consistent and clear signals.

To investigate the consistency of the system, the incentive effect of the taxation rules relating to commuting expenses were assessed using a scoring exercise. A score of +1 was awarded if the tax measure was believed to promote sustainable transport behaviour and -1 if the measure operates against sustainable transport behaviour. A score of zero was given to elements that were considered to be neutral.

2.3 Overview of Existing Instruments

2.3.1 Introduction

This section discusses the areas of transport taxation identified through the scoping process and examines how various fiscal measures may act as barriers or incentives to sustainable transport behaviour and the nature and significance of these. While there are important linkages between these measures, **Vehicle** (including fuel), **Personal** and **Business** taxation and, **Tax Treatment of Public Transport Services** are examined individually in the first instance.

2.3.2 Vehicle Taxation

The various tax instruments affecting vehicles and motoring can be divided into three broad categories:

- taxes associated with the acquisition, purchase or registration of a vehicle, for example VAT and registration taxes;
- taxes payable in connection with possession or ownership of a vehicle, such as circulation taxes; and
- taxes directly or indirectly related to the use of vehicles, including fuel taxes and road tolls.

The taxes levied on the purchase, registration and ownership of vehicles have their primary effect on the decision of whether or not to purchase a car. Whilst these taxes are, in general, small in relation to the total costs of annual car ownership (depreciation, insurance, maintenance and running costs), they have an influence on car ownership decisions at the margin and thus on aggregate car use. Once a household has taken the decision to own a car, however, the marginal cost of journeys is low and the car will tend to be used, even if the aggregate net benefit the household derives from the car ownership is little greater than from non-ownership (Smith, 1995).

Fuel duties, mainly through Excise duties and VAT, are currently the main mechanisms for taxing vehicle use. Other measures would be toll roads and road user charges, but these are only applied at local levels in the Member States and are, therefore, considered in the second part of this study.

Duties on fuel influence various choices from the acquisition of the car, via the decision of making a trip to the driving behaviour. Fuel taxes would directly affect the marginal cost of car journeys, and therefore the level of car use and fuel efficiency. Tax differentials may be used to promote the use of certain fuels, justified for example on environmental grounds or for competitive reasons. Fuel taxes may also be differentiated on an urban/rural basis, to target those trips that are of greatest concern. However, although theoretically attractive, political and administrative problems may present obstacles to such differentiation being implemented in practice.

2.3.3 Personal income taxation

The main areas of personal taxation that influence travel behaviour are the treatment of commuting and business travel expenses and the tax treatment of company cars.

Commuting expenses

In some taxation systems, the cost of travelling between home and work is an allowable deduction for income tax purposes. There has recently been growing awareness that tax deductibility for commuting costs not only stimulate travelling but may also encourage greater dispersion of homes from the workplace and thus excessive commuting distances, or commuting using certain modes of transport – especially private cars – rather than other, less environmentally damaging modes. The fiscal system may influence the length of commuter trips by disallowing or reducing the allowed rate of deduction of expenses for journeys below or above certain distance thresholds, or indeed by not differentiating according to distance. Modal choice may be affected if, due to the specific fiscal rules, it becomes financially advantageous to use a particular mode of transport. Thus, when assessing the particular rules for deduction of commuting costs from taxable income it is important to consider both the potential influences on mode of transport used for the journey to work and on commuting distance.

Employer provided commuting benefits

Commuting benefits provided by employers may take numerous forms, such as financial assistance for car expenses, company cars, public transport tickets, free car parking, contract bus services, provision of bicycles and bicycle equipment etc. The tax treatment of company-provided commuting benefits can be an important influence on travel behaviour due to the impact of the personal taxation. If sustainable transport measures such as public transport tickets were fully liable to taxation whereas car commuting received more favourable treatment there would be a bias within the fiscal system against sustainable commuting. Such anomalies may affect the success of sustainable transport measures initiated by employers, or indeed the measures may not be implemented at all due to their tax impacts.

Business travel

The most important issue in the context of business travel is the tax treatment of reimbursed travel expenses and the relationship to the actual costs incurred. Tax authorities in many countries apply a set of standard rates per kilometre up to which payments to reimburse business travel by car is tax-free. Any payment above these rates is treated as income, and taxed accordingly. The setting of these rates is crucial and there is debate in several European countries as to whether these rates are excessive i.e., exceeding the actual cost paid by the motorists, with a proportion effectively representing a tax-free income. Such a mis-match between tax-free reimbursements and actual costs incurred may create significant pricing distortions and encourage business car use.

Company car taxation

Company cars that are available for private use is generally considered a personal benefit and are therefore subject to taxation. The key issues to consider in terms of the potential distortion to behaviour arising from the tax treatment of the private benefits of company cars are:

- the relationship between the amount of tax incurred and the level of private (including commuting) and business use; and
- the relationship between the amount of tax incurred and the type of car at the employee's

disposal.

The first point refers to the fact that the reasoning behind subjecting the private use of company cars to taxation that it represents a *private* benefit and the tax burden should therefore be related to private (including commuting) mileage. The personal 'perk' value of the company car would then be directly reflected in the amount an individual pays. Employees would then have an incentive to reduce their commuting and domestic mileage. Studies in the UK have shown that company car owners (in particular those with low business mileage) commute greater distances than private cars owners of similar socio-economic groups (The Ashden Trust, 1997, Hopkin, 1986).

The second point above alludes to the existence of fiscal measures to encourage the purchase of fuel-efficient cars. However, this study is mainly concerned with modal change rather than policies to encourage the "greening" of individual modes.

2.3.4 Corporate taxation

Employers play an important role in the management of employee travel patterns and modal choice by offering commuting and business travel benefits. In turn, the way in which expenses incurred by employers in providing such benefits is treated by the corporate tax system (and, as illustrated above, by the personal taxation system) is likely to influence the types of benefits that employers will provide. Adverse tax and VAT impacts would in general discourage employers from implementing sustainable transport measures. Thus if employers are to play a role in effecting modal change in commuting and business travel, there need to be appropriate incentives available for firms to provide employees with support for sustainable transport behaviour.

2.3.5 Tax treatment of public transport services

There are several ways in which the tax system may provide incentives for the provision of public transport. This may occur in the field of vehicle taxation, for example by making buses exempt from registration tax or by giving a rebate on excise duty paid on fuel in running the services. Another common way of fiscally encouraging public transport is by subjecting these services to lower rates of value added tax.

Thus the review of the fiscal treatment of public transport services will focus on the VAT treatment of such services and the possible differential treatment they may receive through the system of vehicle taxation. Although perhaps well intended, the manner in which subsidies to public transport are applied in the Member States may not always have the desired effect. This issue will be discussed further in the comparative analysis.

2.4 Country Reviews

2.4.1 Austria

Company Car Taxation

The benefits of a company car available for private use are taxable. The taxable amount is calculated as follows: the monthly charge is 1.5% of the cars acquisition costs (including VAT) or catalogue price (for used cars). The amount is increased by 3.65 ATS per kilometre for travelling between home and place of work, up to a maximum of ATS 7,000.

Only half of the charge is due if it can be proven, with the help of a journal, that the average private use, on an annual basis, of the company car, including commuting kilometres, does not exceed 500 kilometres per month. The monthly charge can also be reduced if the employee pays part of the acquisition costs and the recurring costs to the employer.

Commuting Expenses

Employees may not deduct actual commuting expenses from their taxable income. Instead the costs are regarded as a lump sum. All employees are granted a “transportation tax credit” of ATS 4 000 as a flat refund of expenses incurred in travelling between the permanent private residence and the employment site. Additional standard amounts (“Werbungskosten” – income related expenses) can be authorised by the employer if the commuting distance exceeds a certain limit, if the employee travels at least 10 days per month, and if the place of work is not within the boundaries of a “Verkehrsverbund”, where all public transport is expected to be well organised. The additional deductions permitted are given below in Table 2.1:

Public transport main mode of transport	Other mode than public transport
	> 2km; ATS 2 880
> 20 km; ATS 5 280	> 20 km; ATS 11 520
>40 km; ATS 10 560	> 40 km; ATS 20 160
> 60km; ATS 15 840	> 60 km ATS 28 800

The lump sum deductions illustrated in the second column of Table 2.1 can only be applied in the following situations:

- use of public transport can not be expected due to the time of travel (e.g. working at night);
- use of public transport can not be expected due to the travelling time (if more than 1,5 hours for 25 km, 2 hours for 40 km, 2.5 hours for more than 40 km total travel time from residence to place of work); and
- public transport is not used due to disabilities.

Employer Provided Commuting Benefits

Travel subsidies or reimbursements paid by the employer are in general regarded as fringe benefits and are therefore fully liable to taxation. However, as Table 2.2 illustrates, there are exceptions to this rule.

Table 2.2 Tax treatment of employer provided commuting benefits in Austria

Commuting benefit	Subject to income tax	Exempt from income tax	Deductible against corporation tax	VAT deductible
Company cars	4		4	4
Public transport tickets	4			4
Car parking		4 ¹		
Car pooling			4 ²	4
Contract bus services		4		4
Bicycles/bicycle equipment				4

¹ If an employer provides the employee with a car parking space free of charge in an area where the surrounding public parking is not free, this is considered a taxable benefit. Such areas can be found in the central parts of all major Austrian cities and are listed by the Austrian Ministry of Finance. In this case the taxable amount is 200 ATS per month for both private and company cars.

² Although subject to taxation it is taxed at a lower rate than company cars.

Business Travel

Employers may reimburse their employees for the costs incurred in using private car and bicycle for business purposes. The rules for reimbursement are summarised in Table 2.3.

Table 2.3 Rules for reimbursement of business travel expenses

Transport mode	Rules for reimbursement	Comments
Private car	Up to ATS 4,90/km can be reimbursed tax-free	For any other person travelling together with him/her in business issues, the car holder gets another 0.59 ATS per kilometre
Bicycle	Up to 1,56/km can be reimbursed tax-free	Higher rates for motorbikes larger than 250cc
Public transport	Actual costs of ticket can be reimbursed tax-free	

Tax Treatment of Public Transport Services

A reduced VAT rate of 10% applies to public passenger transport.

The local transport systems in Austria are in the domain of the communities, but they do not carry the whole financial burden. The Federal State supports local public transport with ATS 1.75 billion a year. A part of this federal subsidy derives from an earmarked share (4.9%) of the Mineral Oil tax.

2.4.2 Belgium

Company Car Taxation

The benefits of a company car available for private use are taxable. In the calculation of the tax liability, the actual private use of the car is taken into account. Private use includes commuting. The amount of tax depends on the horsepower classification of the car. Private kilometres are then multiplied by a fixed factor per kilometre.

An employee who drives less than 5,000 private kilometres per year is not taxed. It should be

noted that in practice most people only report this minimum number of kilometres in order to avoid taxation.

Commuting Expenses

The costs of travelling between home and place of work can be deducted from taxable income. The maximum deduction allowed for the use of private car is 6 BEF per kilometre. In 1997, amendments were made to the taxation rules to fiscally encourage the use of bicycles in the way to and from work, by allowing a deduction of 6 BEF per kilometre.

Employer Provided Commuting Benefits

Travelling benefits provided by employers are subject to varying tax treatment as Table 2.4 illustrates.

Commuting benefit	Subject to income tax	Exempt from income tax	Deductible against corporation tax	VAT deductible
Car (own) expenses	4 ²			
Company cars	4		4	4 ¹
Public transport tickets		4		4
Car parking		4	4	
Contract bus services		4		4
Bicycles/bicycle equipment		4 ²		4

¹ 100% of VAT on acquisition of a company car and 50% of the total input VAT related to company cars and company car related supplies and services incurred can be deducted.

² Tax-free reimbursement of up to 6 BEF per kilometre for cycling commuters and car commuters.

There are ongoing discussions in the Belgian government to provide fiscal incentives for car pooling, but so far no formal agreement has been reached.

Business Travel Expenses

Professional expenses, related to the use of cars (other than for commuting) with the exception of fuels, are in principle only deductible up to 75%. This limitation is intended to discourage the use of cars for professional purposes. Fuel used for professional purposes is totally deductible.

Business travel with bicycle is in principle deductible. However, this provision is rarely applied in practice.

Tax Treatment of Public Transport Services

Public transport is taxed at a reduced VAT rate of 6% compared to the standard rate of 21%.

2.4.3 Denmark

Company Cars

Private use of a company car is treated as a benefit-in-kind and is rated at 25% of the value of the car. The resulting amount is added to personal taxable income. Private use (and commuting) and business use are not taxed separately, so there is no direct relationship between private use

and amount of tax due.

Commuting Expenses

All commuters receive a standard tax rebate regardless of the mode of transport used. The standard rate for deduction of commuting expenses is 1,39 DKr per kilometre (in 1999).

If employees travel together in one car, all are entitled to deduct the commuting expenses according to the above rules. Employees who travel by company car are not entitled to deduct commuting costs from taxable income.

A differentiation is made according to distance: the costs for journeys of less than 24 km per day are not considered, and extreme distances of over 100km are compensated only half the standard rate.

Employer Provided Commuting Expenses

When the employer provides commuting benefits commuting costs are can not be deducted. The tax treatment of such benefits is illustrated in Table 2.5.

Commuting benefit	Subject to income tax	Exempt from income tax	Deductible against corporation tax	VAT deductible
Car (own) expenses	4		4	
Company cars		4	4	7 ¹
Public transport tickets		4	4	Exempt
Car parking		4		
Contract bus services		4	4	7
Bicycles/bicycle equipment	4		4	7

¹ VAT deduction on the purchase of company cars is not allowed. Employers who provide their personnel with leased cars can, if the leasing arrangement lasts for more than 6 months, deduct the VAT on rent (subject to limits – see Appendix A).

Business Travel Expenses

An employee using a private car or motorbike for business travel can be reimbursed a lump sum of up to 2.48 DKr per kilometre for the first 12 000 km per year and up to 1,39 DKr for the rest without incurring tax. A *lump sum* paid for the use of any other mode is taxable. However, expenses related to other modes of transport (public transport, bicycle) can be reimbursed without taxation.

The employer cannot deduct VAT on business travel expenses.

Tax Treatment of Public Transport Services

Public transport in Denmark is VAT exempt. A refund may be obtained on mineral oil products used in railway and ferry transportation. Excise duty is refunded for diesel with a low sulphur content or gas consumed by buses in the bus service.

2.4.4 Finland

Company Cars

Around 35-40% of all new cars in Finland is purchased by companies or other societies like government organisations, municipalities etc. About 60% of these cars are used as company cars by employees. Company cars are typically used from 2 to 6 years and thereafter transferred to privately owned cars (Kallberg, 1997).

The private benefit of company cars are considered as extra salary and taxed as other incomes. The taxation authorities publish a list of benefits annually. There are two principally different benefits, i.e., 'free use', which means that the companies pay all costs and employees can freely use company cars for their own purposes. 'Own cost use' means that employees can use company cars for their own purposes, but they are obliged to pay at least fuels costs. The current taxable benefit is dependent on age and price/size of the cars.

Commuting Expenses

Travelling expenses from place of residence to place of employment, using the cheapest means of transportation, are deductible in personal income taxation in the excess of FM 3 000 up to the maximum allowance of FM 23 000. The cost is determined according to public transport monthly tickets.

Only in the cases where public transport is not available for commuting:

- no public transport is available within a radius of 3 kilometres from home to work, or;
- no public transport is available because commuting takes place at night, or;
- waiting for public transport accumulate to more than 2 hours per day,

is the use of a private car deductible, at the rate of FIM 1.05 per kilometre. The use of company car ('own cost use') is deductible at the rate of FIM 0.88 per kilometre, whereas the use of a bicycle for commuting qualifies for an annual FIM 320 of tax relief.

Employer Provided Commuting Benefits

Employer provided commuting benefits are not very common in Finland. If provided, they are generally taxed. However, there are exemptions to this rule as table 2.6 illustrates:

Commuting benefit	Subject to income tax	Exempt from income tax	Deductible against corporation tax	VAT deductible
Company cars		4	4	4 ¹
Public transport tickets	4		4	7
Car pooling		4 ²	4	7
Car parking		4	4	
Contract bus services	4		4	7
Bicycles/bicycle equipment		4	4	7

¹ VAT on company cars may only be deducted if the car is exclusively used for business purposes.

² Car-pooling is not taxed if the pool is between drivers who do not make payments to each other. If the driver received payment from the pool the driver ought to declare the income for taxation purposes.

Business Travel

If a private car is used for business trips, tax-free compensation is available up to a maximum of FIM 1.97 per kilometre, or FIM 0.50 per kilometre when using 'own cost use' company car.

The costs of business journeys made by public transport are reimbursed according to the cost of the ticket and the maximum tax-free rate for bicycles is FIM 1.15 Euro cents per kilometre.

Tax Treatment of Public Transport Services

Passenger transport services have to charge 8% VAT for their services and then they can deduct VAT paid on their inputs. This rate applies to all kinds of public transport.

Price of diesel fuel – 67 Euro cents (spring 1999) per litre – is about two thirds that of gasoline because of the higher tax on the latter. The tax on petrol has risen over time but because of consideration for commercial transport and public transport that has not happened for diesel fuel.

Company Cars

The private use of a company car is considered a benefit-in-kind. This benefit equals maintenance, insurance and depreciation costs incurred by the company. These costs are added to the employee's income. In general, the taxable value of the company car is based on categories determined by the French tax authorities. These tables quote costs per kilometre, taking into consideration maintenance, insurance, tax, fuel and depreciation expenses (Moret Ernst and Young, 1997).

Generally, employers may deduct all costs incurred with respect to company cars. Depreciation and lease terms are limited, however, to FF 100,000 per year. Employers have to pay an annual company car tax of FF 5,880 for small cars and FF 12,900 for larger cars. This company car tax is not deductible for corporate taxation. VAT on company cars and related costs is non-deductible (Moret Ernst and Young, 1997).

Commuting Expenses

Commuting expenses are tax deductible. Expenses related to any mode are deductible, provided the choice of mode is 'logical' (taking into account costs, travelling time, the quality and frequency of public transport services). Evidence of these costs must be produced. No justification is required up to 40 km commuting distance. For distances exceeding 40 km the actual costs are adjusted to what it would cost the employee to travel 40 km, unless justification could be produced that the employee could not live any closer to the place of work.

These deductions are rarely used in practice, because the taxpayer has got the choice between this and a basic deduction of 10% for professional costs. The only employees who do not choose this option are those with commuting costs exceed 10%.

Commuting by company car is considered a benefit-in-kind and must be declared. In practice this is not always done.

Unfortunately, the study team has been unable to obtain any information on the tax treatment of other employer provided benefits and of business travel expenses.

Public Transport

Public transport is taxed at a reduced VAT rate. Unfortunately, the study team has been unable to obtain the actual rate.

2.4.5 Germany

Company Cars

Private use of a company car is treated as a benefit-in-kind and is subject to taxation. Taxation is based on 1% of the catalogue value per month plus an additional amount of DM 0.52 per kilometre for commuting from home to work.

Commuting Expenses

The German tax system provides a tax relief for expenditures incurred by travelling to and from work.

The system allows a basic lump-sum deduction in respect of commuting costs to be claimed, regardless of actual commuting costs or distances; alternatively, taxpayers can opt for a deduction based on actual commuting. Deductibility of commuting expenses is based on a standard allowance per kilometre. This ranges from DM 0.14 per kilometre if a bicycle is used, to DM 0.70 per kilometre if a car is used. In between the allowance for motorbikes is DM 0.33 (greater than 80cc) and for light motorbikes (less than 80 cc) DM 0.28. Mobility impaired employees receive a special allowance of DM 1.04 per kilometre. Actual costs of public transport can be deducted. When taking part in car pooling, only the actual driver can deduct the full costs. The other car pool participants can only deduct the part of the journey driven in their own car, e.g. from home to the meeting point for the car pool.

If an accident happens during the trip to or from work, the costs of the accident are deductible as well, independent of whom caused the accident. Reparations carried out on the car (e.g. new motor etc.) are deductible as well.

Employer Provided Commuting Benefits

Table 2.7 illustrates the tax treatment of employer provided commuting benefits.

Commuting benefit	Subject to income tax	Exempt from income tax	Deductible against corporation tax	VAT deductible
Company cars	4		4 ¹	4 ²
Public transport tickets		4 ³	4	
Car parking		4 ⁴		
Contract bus services		4 ⁵		7
Bicycles/bicycle equipment		4		7

¹ All types of costs generally qualify for cost deduction, such as depreciation allowances, current expenses for oil, fuel, maintenance and repair, car insurance and car tax. In this context, the standard depreciation period for passenger cars held as business assets is limited to a 5 year period, although the actual economic life of the car will mostly exceed this period. The total expenses incurred for a vehicle are allocated in accordance with its business or private purposes. The deductible proportion is determined on this allocation.

² Employers may deduct all VAT incurred on the purchase of company cars and related expenses for maintenance, fuel and repair. A VAT adjustment incurred by private use of company cars is affected by a separate VAT payment by employer. The VAT due is calculated on the basis of the value of private use applicable for income tax purposes.

³ As Table 2.6 shows, the value of employer provided public transport tickets for commuting is not subject to taxation. Furthermore, employers may deduct the full costs of such tickets. In 1994, when Germany introduced this tax facility, the market share of these so-called 'job tickets' increased to 16% from 8% in 1992, and this upward trend is continuing (Moret Ernst & Young, 1996). It should be noted that such 'job tickets' are not available throughout the whole country. Only certain areas, where the so-called 'Verkehrsverbunde' are in operation, i.e., all public transport companies of one area sell the same ticket and this common ticket is valid on all the participating transport systems, offer 'job tickets'. The

number of such areas is increasing. A company that wants to take part in 'job-ticketing' has to buy a certain amount of tickets (e.g. 100) and therefore gets a reduced tariff (e.g. – 25%). Student tickets work in a similar way: all students in universities within the boundary of a 'Verkehrsverbund' are obliged to buy a regional-net ticket for each semester. The discount rate is around 8—90% to the regular tariffs.

⁴ In Germany a company is obliged to provide sufficient parking space for all employees. If a company wishes to reduce the number of spaces it must supply evidence that the employees are not actually commuting by car, but by bus, train, etc. In some areas, e.g. Dortmund and Northrhine-Westphalia, employers are entitled to reduce the number of car parking spaces more if they provide public transport tickets to the employees.

⁵ Contract buses are now rather uncommon in Germany. Some of the few remaining examples are ITT in Freiburg and Leuna Chemicals near Leipzig. In these cases the travel is usually not free of charge, but the employee can deduct the costs from taxable income in the same way as 'job tickets'. The employer has got no direct advantages. He/she can charge as much money from the employees as necessary in order to run the service. However, the employer can save money by e.g. not building as many parking spaces. Therefore, the employer may have an incentive to support contract buses as well as 'job ticketing'.

There are many examples throughout the country of companies subsidising public transport systems in order to get better and more frequent connections, free advertising space on vehicles, modernised vehicles etc. One such example of such subsidies is from Bochum (Northrhine-Westphalia), where the company NOKIA financed a second diesel motor coach train. This train now runs every half-hour as opposed to every hour before, and is advertising for NOKIA. The corresponding station's name was also changed to Bochum-NOKIA. Another example is from Wuppertal (Northrhine-Westphalia), where a local hospital and some other companies in one part of the city financed a midi bus-service in that part of the town. The regular busses did not reach that area very well, and the Transport Company argued that the costs involved in creating a new service were too high. The basic financial guarantee supplied by the hospital and the other companies enabled the Transport Company to start the line. Such subsidies, even if intended to improve the travelling situation for employees, are not regarded as taxable benefits. Moreover, such donations are deductible against corporation tax.

Business Travel

Employees who use their private car in business travel can have up to DM 0.52 per kilometre reimbursed without incurring tax. An additional DM 0.03 per km can be reimbursed tax-free when travelling together with colleagues. The equivalent rate for the use of bicycles in business travel is DM 0.07 per kilometre, for motorbikes larger than 80 cc this rate is DM 0.23 and for lighter motorbikes the rate is DM 0.14.

Tax Treatment of Public Transport Services

Germany levies a reduced rate of VAT on public transport services. The actual VAT rate is 7% instead of the standard rate of 16%.

2.4.6 Greece

Company Cars

Employees are not subject to any income tax on their use of a company car, provided that the car is used for company purposes.

Commuting Expenses

Commuting expenses are not tax-deductible in Greece.

Employer provided commuting benefits

Employer provided monthly/annual bus passes and the use of employer provided contract bus services are not subject to income taxation.

No VAT deduction is allowed for the acquisition of passenger cars with less than 9 seats, motorcycles and mopeds, expenses for fuel, repair, maintenance, insurance etc. This measure is

meant to encourage use of larger vehicles for the transportation of personnel to and from the place of work.

Business travel

Expenses incurred by maintenance, operation, service etc., of private cars which are used for business purposes are deductible up to 25% of the total costs, provided they do not exceed 3% of the taxpayer's total business income. Input VAT on travelling expenses cannot be deducted.

Travel expenses, including employee transportation are generally considered deductible. The general criteria for allowing an expense as deductible is whether it qualifies as productive, i.e. the tax authorities consider whether it contributes positively to the financial results of a company and whether it benefits its operations.

Non-deductible items include a portion of private automobile expenses - at least 40 percent (75 for automobiles with engine capacity in excess of 1,400 cc) of expenses incurred, including depreciation and rentals in connection with company owned and leased passenger automobiles. The long-term lease of automobiles for company use is fully deductible.

Tax Treatment of Public Transport Services

Public transport is taxed at the standard VAT rate.

2.4.7 Ireland

Company Cars

The private benefit of a company car is subject to taxation under the Irish taxation system. Employees who are provided with a company car have their taxable income increased by 30% of the car's original value. This percentage is reduced where the employer does not meet the entire car running expenses. A reduction is also granted on a pound by pound basis for any general contribution made by the employee for the use of the car for private purposes. Furthermore, where the employee has business mileage in excess of 15 000 miles a year, tapering relief applies. This relief applies in the form of a reduction in the annual cash benefit as calculated above.

Capital expenditure on motor vehicles is allowable as a capital allowance against taxable profits, at 20 % per year (40% for taxis and cars for hire) on a reducing basis. There are restrictions on capital allowances relating to cars costing more than £16,500 (£10,000 if second-hand). VAT on diesel, though not on petrol is refundable for businesses that are registered for VAT. VAT on the purchase of cars is not deductible, and VAT on short-term car hire is chargeable at 12.5%.

Commuting Expenses

An employee is not allowed to claim the cost of getting to and from work, only expenses, which are incurred wholly, exclusively and necessarily in the performance of the employee's occupation, are deductible against income tax.

Employer Provided Commuting Benefits

In general, employer provided commuting benefits are taxable. Exemptions include

Travel passes

Until recently, an employer-paid bus pass was subject to tax as a benefit-in-kind. With effect from April 1999 however, the provision by employer of monthly or annual bus/train has been exempt

from income tax.

Car pooling

There is no benefit-in-kind on the use of a car as part of a car pool, as long as all of the following conditions are met:

- it is made available to and is used by more than one employee;
- it is not ordinarily used by any one employee to the exclusion of others;
- it is not kept overnight at or in the vicinity of any of the employees' homes; and
- private use is incidental to business use.

Car Parking

Employee parking at place of work provided free of charge by employers or third parties is not treated as a benefit-in-kind.

Expenses relating to the provision of commuting benefits for employees can be allowed in calculating the profits of trade.

Business Travel

Use of employee's own car

For expenses to be allowable for tax purposes they must be incurred wholly, exclusively and necessarily for the purpose of performing the duties of the taxpayers employment. For motor and travelling expenses a mileage allowance is agreed between the employer and employee for the use of the employee's own car for business purposes. This is not taxable if the rate does not exceed the civil service mileage rate. These rates are set out in Table 2.8.

Annual Mileage	Engine Capacity		
	Under 1138cc	1138 to 1387cc	1388cc and over
Rates per Mile in pence			
Up to 2000	49.87	57.70	68.20
2001 to 4000	54.98	62.98	75.79
4001 to 6000	29.44	33.38	37.84
6001 to 8000	27.74	31.35	35.31
8001 to 12000	24.33	27.30	30.26
12001 and upwards	20.92	23.25	26.27

Use of employees own bicycle

Where an employee uses a private bicycle for business purposes in the course of his/her duties, a flat-rate mileage allowance can be paid without deduction of tax. Such payment by an employer is regarded as being no more than a reimbursement of allowable expenses. The civil service mileage rate for bicycle travel is five pence per mile.

Travel by public transport

As from the sixth of April 1999, certain Monthly/Annual Bus/Rail travel passes provided by employers to their employees are exempt from tax.

Transport expenses of businesses are generally allowable against taxable profits, though there are restrictions on tax-allowable running expenses for cars.

Tax Treatment of Public Transport Services

Domestic passenger transport services are exempt from VAT thus they do not charge VAT on their services and, consequently, cannot deduct VAT paid on their inputs. However, VAT on the purchase of buses can be reclaimed, a concession granted in the recognition of the importance of bus transport to the tourist sector.

In accordance with the terms of an EU Directive, Ireland has been granted derogation from the payment of excise duty on fuel used in the provision of public transport. This derogation applies to the three CIE companies and to private bus operators when they provide a service, under contract to CIE. The current rate of excise on diesel is £256.14 per 1,000 litres. Because of the derogation, the rate which public transport operators actually pay is £17.90 per 1,000 litres.

2.4.8 Italy

The study team have been able to obtain only limited information about transport taxes and charges in Italy.

Company Cars

Private use of company cars is regarded as a benefit-in-kind. Commuting is regarded as private use. There are not any specific rules, however, regarding private use of company cars. For taxation purposes an estimation of private kilometres must be made.

Companies may deduct purchase costs of company cars in full for corporate income tax. VAT incurred on the purchase of cars cannot be deducted as input tax.

Commuting Expenses

Under Italian tax law, deduction of commuting expenses is not allowed.

Employer Provided Commuting Benefits

Commuting benefits are in general subject to income taxation.

Tax Treatment of Public Transport Services

The standard VAT rate applies to public transport.

2.4.9 Luxembourg

Company cars

A company car is taxed as a benefit in kind if the employee is entitled to use it for private purposes. The employee has two options for payment of tax of company cars:

- A fixed fee - taxation calculated on the basis of 1.5% per month of the value of the car when it was new (including VAT). If the employee contributes, the taxable amount is

reduced accordingly.

- Taxation based on private mileage by keeping a logbook of private mileage.

If the employer charges the employee for private mileage incurred, these charges can be deducted from the taxable amount, if the employee has opted for the second method of paying the tax.

VAT on a company car is only deductible for an employer insofar as it is related to the use of the company car for business purposes. The proportion of expenses related to the private use (including commuting) is taxed.

Commuting Expenses

A standard allowance of 15 600 LUF is granted for travelling expenses between the taxpayers domicile and his/her workplace if the distance between both places is lower than four distance-units. A supplementary deduction of 3 900 LUF is conceded for each additional distance-unit. The number of distance-units is limited to thirty, so that the total deduction for commuting expenses can never exceed 117 000 LUF. The distance taken into account represents the air distance, expressed in kilometres, between the town halls of the above mentioned places. The tax system gives persons using public transport, cycling and walking an allowance that always exceeds the effective costs.

This above regulation was introduced only a few years ago, up until that time the conventional means of compensation advantageous to the of the private car for commuter journeys was used.

VAT on transportation expenses paid by the employer for the employees is not deductible.

Business Travel

The reimbursement of proven incurred travel expenses is always exempt from taxes.

If expenses are reimbursed by the payment of a lump sum, one must distinguish between the following cases:

A monthly lump sum is paid in order to cover costs incurred on behalf of employer, without any obligation to present a precise statement of travelling expenses. In this case the lump sum is treated as ordinary wages and is taxed at normal rates.

Travel expenses are refunded by a lump sum on the basis of a statement, and the granted amount does not exceed the comparable indemnification paid back to a public functionary. In this case the entire amount is exempt from taxes.

Companies may deduct from corporate income all travelling expenses incurred by the employees and directors provided that the expenses are business related and within reason. No distinction is made with regard to the means of transport used.

Tax Treatment of Public Transport Services

Public passenger transport services are subject to a super-reduced VAT rate. Unfortunately, the study team has not been able to obtain the actual rate.

2.4.10 The Netherlands

Company Cars

The private use of a company car is treated as a taxable benefit in the Dutch taxation system. The value of this is 20% of the catalogue price per year, which is added to the employees' taxable income. The amount added to an employee's income is increased to 24% of the catalogue price if commuting distance (one-way) is more than 30 kilometre. The amount is decreased if the employee pays an amount for the private use of the car to the employer, or the employee pays an amount for commuting which is more than 70% of the 'reiskostenvergoeding' (see below) which he/she can get. Furthermore, the company car is not subject to income tax if the employee can prove that the car is not used for more than 1 000 kilometres per year for private purposes.

With the exception of a lump sum correction, VAT registered employers are entitled to deduct all VAT on the expenses incurred by the use of company cars for business purposes. VAT on the expenses incurred by private use is non-deductible. For company taxation purposes, the rate for private use is calculated the same way as for the income tax (20% or 24% of the catalogue value). The annual VAT in this case is calculated as 12% (VAT deemed included in the costs) x 20% (or 24%) x the catalogue value)

The taxation of travel to and from work in the Netherlands is centred around two crucial benefits: the reiskostenvergoeding (reimbursement from the employer of an employee's commuting costs, normally paid only to those who travel more than 10 km one way); and reiskostenforfait, the allowance for travel costs paid by the employee which he/she can offset against tax. The degree to which the reiskostenvergoeding is taxable and the size of the reiskostenforfait, both vary depending on the mode used.

Commuting Expenses

If the employee does not receive reimbursement of commuting expenses from their employers, they are allowed to deduct these costs from their taxable income.

In general, tax deduction is disallowed if the employee lives within a radius of 10km from work, and limited to a maximum distance from home to work of 30 km. The maximum rates for deduction vary according to mode of transport:

Private Car

The employee can write off between 860 and 2050 Guilders depending on distance travelled.

Public transport

If public transport is used for commuting, the rates of maximum deductions are increased. The rates are > 10km: - 1150 Guilders increasing till > 80km – 5430 Guilders. For public transport there is no distance limitation between home and work.

Employer Provided Commuting Benefits

In general commuting cost may be reimbursed tax-free by the employer if the distance between home and work is greater than 10 km and less than 30 km. Again, the rules for reimbursement depends on the mode of transport used for commuting.

Private car

The employee can receive tax-free reimbursement from the employer of between 1,910 and 3,240 Guilders depending on distance travelled.

Public Transport

A season ticket specific to the employee's trip from home to work provided by the employer is tax-

free for the employee even if he/she commutes only infrequently by public transport.

If a non-specific ticket (e.g. a Travelcard) is provided, tax is payable on the private use value of the ticket. This value is 120 Guilders per year for second class and 180 for first class for people who commute at least half the time by public transport. Infrequent users incur a higher tax liability.

The employer may give a tax-free compensation for chain mobility: for example bicycle/taxi before or after use of public transport.

Bicycle

If an employee receives a bicycle worth less than 1,500 Guilders from the employer, the employee is liable to tax on only a fixed amount of 150 Guilders. The employer may also provide the employee with accessories such as insurance, clothing, lighting etc, up to a maximum of 550 Guilders tax-free once every three years.

If an employee borrows a bike from the employer there is no tax on the private use of the bicycle provided it is used for commuting at least half the time.

An employee may receive tax-free reimbursements from the employer for the use of his own bicycle for commuting for distances of more than 10 km, but not for shorter distances. Those employees that cycle more than 10 km and who cycle for more than half the year can also receive a tax-free reimbursement from the employer for using public transport on bad weather days.

There is a favourable tax regime for so-called "bicycle projects", where the employer buys a bicycle for an employee and then recoups the cost through salary reductions.

Company Cars

There is no tax-free reiskostenvergoeding and no reiskostenforfait when using a company car in commuting.

Work buses

If these are provided free of charge there are no tax implications for the employee. If the employee contributes to the cost of the work bus, this contribution is not deductible until it reaches 70% of the amount of travel costs that employee is allowed to offset against tax (the reiskostenforfait).

Car Pooling

A tax incentive exists for car-pooling. To qualify for fiscal benefits for car pooling all participating employees must sign up to a car pool contract with each other and the employer, and must car pool more than half the time. They are then entitled to a higher tax-free reimbursement (between 500 and 1000 Guilder per employee per year), though again the minimum distance applies.

Car parking

Car parking provided free of charge by the employer is not regarded as a taxable benefit.

For company taxation purposes, all costs incurred with respect to reimbursement of commuting costs are considered tax deductible. This includes the running costs of works busses and the costs of providing bicycles and bicycle safety equipment for employees.

The VAT on works buses is deductible. However, the VAT on public passenger transport and on

bicycles and bicycle equipment is non-deductible for employers.

Business Travel

Reimbursements for the use of private cars for business are tax exempt up to an amount of NLG 0.57 per kilometre. Reimbursement for use of bicycles in business travel is tax exempt up to 12 cents/km. Actual costs of public transport incurred in business travel may be reimbursed free of tax.

Tax Treatment of Public Transport Services

Public passenger transport is subject to a reduced VAT rate of 6%.

2.4.11 Portugal

Company Cars

In theory the private use a company car is regarded as a benefit in kind is subject to taxation. However, the Portuguese tax authorities do not enforce the rules on taxation of company cars, so that the benefit of a company car remains untaxed in practice. For the employer, the depreciation on company cars is reduced by 50% and is allowed up to a maximum purchase price of approximately 20,300 Euro. The deduction of VAT on costs of purchase or lease of cars is disallowed in total.

Commuting Expenses

Under Portuguese tax rules commuting costs are not deductible for tax purposes.

Employer Provided Commuting Benefits

Table 2.9 illustrates the tax treatment of employer provided commuting benefits in Portugal.

Commuting benefit	Subject to income tax	Exempt from income tax	Deductible against corporation tax	VAT deductible
Company cars		4	4	7
Public transport tickets		4	4	7
Car parking		4		
Contract bus services		4	4	7
Bicycles/bicycle equipment		4	4	7

Business Travel

Private car

Employees using their private car in business travel can be reimbursed up to 59 Escudos per kilometre without incurring tax. Above this level the employees are taxed on the difference between the legal value above and the actual value they are reimbursed.

Public transport

Employees who travel by public transport can be reimbursed the actual costs of the journey free of tax.

Bicycle

Employees travelling on business by bike can be reimbursed approximately 20 Escudos per kilometre without incurring tax. Above this rate the employees are taxed on the difference between the legal value and the actual value they are reimbursed.

Employers can deduct all cost relating to the reimbursement of business travel expenses against corporation tax. VAT on public transport tickets, car travelling expenses and bicycle /bicycle equipment is not recoverable.

Tax Treatment of Public Transport Services

A reduced VAT rate of applies to public passenger transport within Portugal. The actual rate has not been possible to obtain.

2.4.12 Spain

The study team has been able to obtain only limited information about Spanish transport related charges and taxes.

Company Cars

The use of company cars for private purposes is considered a benefit-in-kind. The value of this benefit is calculated as 15% of the acquisition value of the car, or the rental fees paid by the company to the car rental company. Actual private use and the use for commuting purposes are not taken into account separately.

VAT paid with respect to the acquisition or lease of company cars is - in general not deductible.

Commuting Expenses

Employees are not allowed to deduct commuting costs from taxable income.

Employer Provided Commuting Benefits

If the employer reimburses commuting expenses this remuneration is in general regarded as a benefit-in-kind.

Tax Treatment of Public Transport Services

For VAT purposes, public transport is taxed at a reduced rate.

2.4.13 Sweden

Company Cars

A company car or van, which may be used for private purposes, is regarded as a benefit in kind which is subject to taxation. The value of the taxable benefit is intended to be neutral in comparison to having a private car. Therefore, the benefit value is based on a mileage of 16,000 kilometres a year. If the company car is used for business purposes for more than 30,000 kilometres per year, the benefit is adjusted to 75% of the full value of the benefit. The taxable amount is reduced further if the company car is used mainly for business purposes. How much the taxable amount is reduced is not regulated but is decided with regards to the individual circumstance. The benefit of free fuel is taxed separately from the company car benefit. The value of this benefit is obtained by multiplying the market value of the fuel by 1.2.

The private benefit of company cars is taxed principally according to their value. Environmental cars are normally more expensive than cars with a poorer eco-performance. This has led to a punitive taxation of environmental cars, even though their comfort and scope are limited compared to other cars. Electric cars for example have a limited range and gas driven cars tend to have space consuming tanks. In addition, petrol stations offering alternative fuels are still new and far between. The Government wants to lower taxation on electric cars, hybrid cars and cars run on fuels other than petrol and diesel oil. The new taxation should be equivalent to the benefit value of comparable petrol and diesel driven cars. The Swedish Riksdag is expected to make a decision in the next few months.

The cost of acquiring and running a company car can be offset against corporation tax. Only a taxable person who perform, on a commercial basis, passenger transportation, sell or lease passenger cars, or has a driving school is entitled to deduct the full VAT incurred on the purchase of a car or a motorcycle. For other taxable persons the right to deduct VAT or leasing costs is limited to 50%. On operating expenses there are no limitations in the right to deduct VAT and no division with respect to the private use of the vehicle is required.

Commuting Expenses

Commuting expenses are deductible against income tax provided they exceed SEK 7000. In that case the following rules for deduction applies:

Private car and motorcycle

The use of a private car for commuting is only deductible under certain circumstances:

- the distance from house to work has to exceed 5 kilometres, and
- the time saved compared to using public transport must exceed two hours per day.

The maximum amount deductible is SEK 1.5 per kilometre, for the use of cars. The amount deductible for the use of motor cycles is 0.75 Kr per kilometre.

Public transport

The use of public transport for commuting purposes is deductible provided the distance between home and place of work is at least 2 kilometres. In general, only the cost of one journey to and from work per day can be deducted, for the cheapest mode available. The costs of commuting between summer cottages and place of work may not be deducted.

Bicycles

SEK 250 per year can be deducted for the use of bicycles in commuting.

Company cars

Employees who use company cars for commuting have the right to deduct commuting expenses under the same conditions as journeys with private cars. For these journeys SEK 0.5 per kilometre driven can be deducted for diesel, and SEK 0.8 can be deducted for other fuels per kilometre driven.

Employer Provided Commuting Benefits

If the employer pays for the employee's journey to and from work, the value of this is generally considered taxable income, see Table 2.10. The rules for tax deductions are in this case the

same as if the employee herself had borne the costs. These rules apply to all modes of transport.

Table 2.10 Tax treatment of employer provided commuting benefits in Sweden

Commuting benefit	Subject to income tax	Exempt from income tax	Deductible against corporation tax	VAT deductible
Company cars		4	4	see above
Public transport tickets	4		4	7
Car parking		4		
Contract bus services	4		4	7
Bicycles/bicycle equipment	4		4	7

There are no incentives for car pooling in the Swedish taxation systems. If the driver of the pool receives payments from the other pool participants, these payments should in principle be declared as taxable income.

Business Travel

A car allowance paid by the employer to the employee for business use of a private car is tax-free. The tax-free allowance may amount to a maximum of SEK 1.5 per kilometre. Allowances exceeding this amount are considered a fringe benefit and will be taxed. The reimbursement of business travel expenses incurred by the use of public transport, hire car or taxi is not subject to taxation provided the reimbursement is equal to the actual costs incurred. No specific rules apply to the reimbursement for the use of bicycles in business travel.

Expenses related to the transportation of employees (for commuting and business) can be offset against corporation tax. The VAT on public passenger transport is deductible for employers who provide employees with public transport tickets provided these costs are strictly necessary for the operation of the business.

Tax Treatment of Public Transport Services

Public passenger transport is subject to a reduced VAT rate of 12%.

2.4.14 United Kingdom

Company Cars

Around two-thirds of all new cars in the UK are purchased by companies and not individuals. These cars purchased initially as company cars thus largely determine the composition of the nation's car fleet.

The taxable benefit of a company car is assessed as a direct proportion of the purchase price of the car. A taxpayer's taxable income is increased by 35 per cent of the manufacturer's list price for a company car less than four years old. A discount of one-third applies to company cars that are more than four years old. The resulting amount may be reduced by one-third for those who drive over 2,500 miles a year on business and there is a discount of two-thirds for those whose annual business mileage exceeds 18,000.

The 1999 Budget announced that, from 2002, the tax on company cars would be related to emissions of carbon dioxide, and possibly other gasses. It is unclear whether the current business mileage thresholds will be retained.

For income tax purposes the provision of fuel by the employer to the employee is also regarded

as a benefit in kind. The employee pays a lump that is not affected by minimising private kilometres.

VAT on company cars is non-recoverable. These costs are, however, deductible against corporation tax.

Commuting Expenses

Under the British taxation system, the cost of travelling between home and work is not an allowed deduction for income tax and National Insurance purposes.

Employer Provided Commuting Benefits

Employer provided commuting benefits are taxable. If a benefit is provided in the form of cash, this amount is added to a person's taxable income. For non-cash travel benefits, these have to be declared if employees are earning more than £8,500 per annum (a general income threshold for all types of benefit-in-kind). Personal tax liability is based on the cost to the employer of providing the benefit.

The statutory exclusions in calculating National Insurance Contributions (NICs) sometimes differ compared to those for income tax. For National Insurance purposes, if a benefit fulfils the definition of "Payment of Kind" (rather than cash or cashable benefit), then NICs are not charged. However, there is a general move to make the treatment of non-cash benefits more consistent between the two and the trends for an alignment on the income tax system. This paper thus concentrates on the rules governing income tax.

A number of specific commuter benefits have been excluded from liability to income tax and NICs:

Car Parking

Employee parking at place of work provided free of charge by an employer or a third party is exempt from liability to income tax and NICs. Until 1999, this exception related only to car parking, the value of free parking for bicycles, motorcycles or any other vehicles were technically taxable. In practice, they were never taxed. In the 1999 Budget, bicycle parking was also made exempt.

Car Pooling

Where an employer provides free transport for an employee's journey from a permanent workplace to the home of an employee the employee will not be taxed on the benefit of free travel home, provided the vehicle is a pooled vehicle for tax purposes. A vehicle is a pooled vehicle for tax purposes if all of the following conditions are met in a tax year:

- it is available to and is actually used by more than one employee;
- it is not ordinarily used by any one employee to the exclusion of the others;
- it is not normally kept overnight at or in the vicinity of the home of any of the employees (unless it is being kept at premises occupied by the person providing the vehicle); and
- any private use of the vehicle by any of the employees is merely incidental to its business use.

Employer provided contract bus services

The 1999 Budget excluded taxation on the value to the individual of using employer-provided contract bus services. This is important for Green Travel Plans. It is applied to private contract buses of 17 seats or more, run by employers. It does not apply to subsidised fares on public bus services, which continue to be taxed. The differing treatment of the commuter benefit for employees using private contract buses and to those using public bus services could produce some equity problems and could also result in employers shifting Green Transport Plans away from supporting public bus services to setting up their own private commuting services.

Company subsidies to public transport services

An area of uncertainty prior to 1999 was subsidies paid by companies to bus operators to improve public bus services for staff. Such subsidies were paid to operators and did not involve subsidising the fares to individuals, yet some local tax inspectors viewed this as a non-statutory exemption.

Cycle Safety Equipment

The employer provided provision of cycle safety equipment (e.g. helmets) was also excluded from taxation in 1999.

Snape (1997) notes that, with care, capital expenditure can qualify as capital allowances. Examples of capital expenditure include providing pool cycles, cycle parking, shower facilities and equipment needed for a computerised car-sharing scheme. Revenue expenditures that can be set against Corporation Tax would cover a wide range of possible Green Transport Plan measures, including payment to public transport providers for season tickets, free or subsidised breakfasts, payments for employees to use their own bicycles, interest free payments to a bank for the provision of a free loan and rental for bicycle parking from a third party. Such expenditure would also be deducted from income tax for SMEs (Small and Medium Enterprises) that are sole traders and partners.

As well as allowances for expenditures on Green Transport measures, any income flow (e.g. from parking charges) will be taxable as the income of the employer.

Snape (1997) notes that VAT payments may be affected if an employer provided support to sustainable transport measures result in the employer making or receiving taxable supplies for VAT purposes. This will even apply to organisations that are VAT exempt on their sales (e.g. Universities), which will end up paying VAT on sustainable transport measures.

Potter et al. (1998) noted that one area in which the VAT system acts against employer incentives to 'green' the travel of their staff. VAT would be levied should an employer charge its staff for parking.

Business Travel

The Inland Revenue has a set of 'mileage rates' for cars of different engine sizes. Up to these rates, payments to reimburse business travel by car are tax free, and any payment above the rate is treated as income and taxed accordingly.

The costs of business journeys made by public transport are reimbursed according to the cost of the ticket.

Until 1999, the Inland Revenue rate for bicycle use was 6.2p a mile. This was raised in the 1999 budget to 12p a mile in an attempt to encourage bicycle use for business travel.

Tax Treatment of Public Transport Services

Passenger transport services are zero rated for VAT. Furthermore, as a means of maintaining the competitiveness of the bus industry, local bus services that are available to the general public and registered with the Traffic Commissioner under the Transport Act 1985, receive a rebate on the excise duty paid on fuel in running the services. The Department of the Environment, Transport and the Regions pays this Bus Fuel Duty Rebate (FDR) to operators of local bus services.

3 Comparative Assessment of Transport Related Charges and Taxes in the European Union

3.1 Introduction

Using the information presented in sections 2.4.1 to 2.4.15, this chapter presents a comparative analysis drawing out the main similarities and differences between the transport taxation systems of EU Member States highlighting, in particular, the impacts on sustainable mobility.

The assessment aims to:

- examine the consistency of pricing signals within each Member State;
- highlight current 'good' and 'bad' practise; and
- identify the scope for reforming transport taxes to provide better support for the principles of 'fair and efficient pricing' and wider sustainable mobility objectives.

3.2 Vehicle taxation

3.2.1 Overview

A detailed review of vehicle taxation in the European Union has recently been undertaken elsewhere (EC, Vehicle Taxation in the European Union, 1997). The information presented here draws on the above study and on responses from representatives of Member States.

Table 3.1 provides an overview of the current use of motor vehicle taxes in the EU.

Table 3.1 Summary of vehicle related taxes in EU Member States

Member State	Taxes on acquisition			Taxes on ownership	Taxes on motoring		
	VAT on purchase of cars	Registration Tax	Registration Fee	Circulation Tax	Excise Duty on motor fuels + VAT	Tolls on roads or bridges	Euro-vignette system
Austria	4	4		4	4	4	4
Belgium	4	4	4	4	4		4
Denmark	4	4	4	4	4		4
Finland	4	4		4	4		
France	4	4	4	4	4	4	
Germany	4		4	4	4	4*	
Greece	4	4		4	4	4	
Ireland	4	4		4	4		
Italy	4	4	4	4	4	4	
Luxembourg	4		4	4	4		4
Netherlands	4	4		4	4		
Portugal	4	4	4	4	4	4	
Spain	4	4		4	4	4	
Sweden	4	4	4	4	4		
United Kingdom	4			4	4		

*Applies to trucks only

3.2.2 Comparative Analysis

Taxes on acquisitions

All Member States levy VAT on acquisition of vehicles under the general Community VAT regime. The rates are shown in Table 3.2.

As Table 3.2 shows, the current rates of VAT vary between 16 and 26%. The highest rates are applied in Denmark, Sweden and Finland.

Table 3.2 VAT Rates on Acquisitions of Motor vehicles

Member State	VAT rate
Austria	20.0
Belgium	21.0
Denmark	25.0
Finland	22.0
France	20.6
Germany	16.0
Greece	18.0
Ireland	21.0
Italy	19.0
Luxembourg	15.0
Netherlands	17.5
Portugal	17.0
Spain	16.0
Sweden	25.0
United Kingdom	17.5

In addition to VAT most Member States apply some form of tax payable at the time of registration of a vehicle into the national vehicle register. Table 3.3 summarises the current use of registration taxes. Registration taxes with a revenue raising function are levied in twelve Member States. Registration taxes are not levied in the United Kingdom, Germany and Luxembourg. As Table 3.3 shows, registration taxes tend to be focused on passenger cars, and Member States that levy such taxes tend to apply reduced rates or exemptions for commercial vehicles such as buses and vehicles for goods transport. Though in the case of Sweden registration tax is levied on all vehicles except passenger cars. In addition to registration taxes, some Member States also levy a registration fee payable on registration with the national car register.

Table 3.3 Registration taxes In EU Member States, types of vehicles taxed

Member States	Passenger cars	Motor cycles	Buses > 9 passengers	Heavy goods vehicles > 12 tonne
Austria	yes	yes	no	no
Belgium	yes	Yes	no	no
Denmark	yes	yes	yes	no
Finland	yes	yes	no	no
France	Yes	yes	yes	yes
Greece	yes	yes	yes	yes
Italy	yes	yes	yes	yes
Ireland	yes	yes	yes	yes
Netherlands	yes	yes	no	no
Portugal	yes	yes	yes	yes
Spain	yes	yes	no	no
Sweden	no	yes	yes	yes

The review has identified a variety of methods of application of the registration and similar taxes, as is illustrated by Table 3.4.

Table 3.4 Registration and similar taxes applied to passenger cars by Member States

Member State	Type of tax	Basis of charge	Notes
--------------	-------------	-----------------	-------

Austria	Fuel consumption tax	Value and fuel consumption	
Belgium	Registration tax "tax de mise en circulation"	Fiscal horsepower	Payable on change of ownership of a vehicle
Denmark	Registration tax	Retail price: 105% of first DKr 50 800, 180% of balance	For second hand cars the threshold 50 800 is reduced with age
Finland	Registration tax	Value of vehicle: 100% of value minus FM 4 600	Minimum tax of 50% of value Vehicles with low emissions get a reduction of 4 500 FM
France	Registration tax	Fiscal horsepower: FF 95-195 per fiscal horsepower	Levied by provinces
Greece	Special consumption tax Registration tax	Combination of value and cylinder capacity Taxable value	
Italy	Registration tax	Fiscal horsepower	Applied on each change of ownership
Ireland	Registration tax	Retail value and cylinder capacity	
Netherlands	Registration tax	Net list price	
Portugal	Vehicle tax	Cylinder capacity	Tax is collected by the state but distributed to the municipalities
Spain	Registration tax	Market price	
Sweden	Sales tax	Environmental classification of vehicle	

The tax may be charged in relation to the value of the vehicle, weight, the engine power, fuel consumption, emissions standards or a combination of factors. The schemes vary from those based strictly on vehicle value, as in Denmark and Spain, to more sophisticated taxes that aim to take account of the environmental implications of vehicles. For example, in Austria the amount of tax is dependent on the value and average fuel consumption of the vehicle and in Finland the purchasers of vehicles with low emissions benefit from a reduction in the registration tax. The majority of the Member States differentiate registration tax levels by engine size, with lower rates applying to cars with smaller engine sizes. Registration taxes are normally only charged at the time of first registration in the national vehicle register. In Belgium and Italy, however, the registration tax is levied on each change of ownership.

The levels of taxation vary considerably between Member States. The highest level of taxation can again be found in Denmark and Finland, and in Greece (European Commission, 1997a). It is notable that Member States with a large car production industry tend to have lower registration taxes or no taxes at all. It is also notable that in those countries with the highest taxes on new cars, Denmark, Finland and Greece there are relatively (EU comparison) low levels of car ownership. The negative effects of high registration taxes are discussed in Section 3.2.3.

It is also relevant to note the wide spread in the consumer prices of passenger cars across Europe. In a price comparison made by the European Commission in 1997 (European Commission, 1997b), it was shown that for 43 of the total 75 models examined, tax-exclusive price differ within the Community by more than 20%. It should be noted that the three highest taxing Member States, Denmark, Finland and Greece were not included in the study. Although some of the differences can be explained by factors such as market structure and consumer preferences, the potential impact of the differing tax regimes on tax exclusive prices should not be ignored.

Taxes on Ownership

An annual circulation tax is levied in all Member States, both on passenger cars and commercial vehicles. An overview of the circulation taxes and the basis for the tax is given in Table 3.5. On passenger cars they may take the form of a flat rate tax like the British Vehicle Excise Duty but,

as Table 3.5 shows, normally they are related to factors such as engine power, vehicle weight and age, energy consumption and fuel type and district of registration, amongst others. In some Member States diesel driven cars face a higher circulation tax than petrol driven cars, often to compensate for the fact that diesel generally face a lower excise duty than petrol, as discussed below. Some countries, for example France, place an extra burden on company cars. In Germany the circulation tax has been structured to provide incentives for “clean cars” (cars that meet EU emissions standards). The highest level of circulation taxes is found in Denmark, the Netherlands and Ireland.

Taxes on vehicle use

The primary methods of taxing vehicle use are through VAT and excise duty on fuel, although some countries also charge through the use of road toll systems.

All Member States levy the standard rate of VAT to motor fuels and all levy a higher level of excise on leaded petrol than on unleaded petrol, as required under EU law. Table 3.6 shows the levels of excise duty on unleaded petrol in all Member States. As the table shows, the highest levels of excise duty on unleaded petrol are found in the UK, France and Finland. The lowest levels are applied in Luxembourg, Greece, Spain and Portugal.

Table 3.5 Circulation taxes applied on passenger applied in Member States

Member State	Type of tax	Basis of charge	Notes
Austria	Circulation tax	Horsepower	Buses exempt
Belgium	Circulation tax	Horsepower	Reduced rates apply to cars registered more than 25 years ago.
	Compensatory excise tax	Cubic capacity – progressive rate	Only levied on diesel driven cars
Denmark	Circulation tax	Energy consumption of vehicle	
Finland	Circulation tax	Total weight of vehicle	Only levied on diesel driven vehicles
France	Circulation tax	Fiscal horsepower, age, and district of registration. Progressive	Diesel cars receive preferential treatment. An extra tax is levied on cars belonging to companies.
Germany	Circulation tax	Engine capacity	Increased rates for cars not fulfilling EU emission criteria
Greece	Circulation tax	Cubic capacity - progressive	Not imposed for the first five years on “clean” cars, provided they are accompanied by documentary proof of the scrapping of an old vehicle.
Ireland	Circulation tax	Cubic capacity – progressive rate	
Italy	Circulation tax	Fiscal horsepower and district of registration - progressive	A part of the tax is decided locally.
Luxembourg	Circulation tax	Cubic capacity	
Netherlands	Circulation tax	Dead weight of vehicle and type of fuel used.	
Portugal	Municipal tax on motor vehicles	Fuel used, cylinder capacity, voltage (for electric cars) and age.	The vehicles of greatest cylinder capacity and the lowest age
Spain	Motor vehicle tax	Horsepower, geographic area	The purpose of this tax is to raise revenue for local authorities, which can raise this tax by a factor of 1.6 to 2.0, depending on geographic area.
	Tax on economic activity		One part of the tax is a levy on automobiles.
Sweden	Circulation tax	Kerb weight	Passenger cars with a tax weight not exceeding 3 500kg, belonging to environmental class 1, are exempt from the tax for the first five years. The tax is lower on cars registered in sparsely populated areas. Vehicles 30 years or older are exempt from the tax.
United Kingdom	Circulation tax	Flat tax of £155	

**Table 3.6 Unleaded Petrol Prices and Excise Duties in EU Member States
(Euro/litre in 1999)**

Member State	Fuel Price	Excise Duty
Austria	0.78	0.54
Belgium	0.88	0.66
Denmark	0.82	0.61
Finland	0.93	0.73
France	0.92	0.75
Germany	0.82	0.63
Greece	0.66	0.44
Ireland	0.71	0.51
Italy	0.92	0.68
Luxembourg	0.65	0.42
Netherlands	0.96	0.71
Portugal	0.77	0.58
Spain	0.67	0.46
Sweden	0.94	0.70
United Kingdom	1.00	0.81

Figure 3.1 shows the price of unleaded petrol (Euro/litre in 1999) and illustrate the share of the fuel price that is the tax. As the figure indicates, the duty forms a significant proportion of price in all Member States, sometimes as high as 81 per cent in France and the United Kingdom.

Diesel receives substantial tax benefit vis-à-vis petrol in most Member States both in terms of lower excise duties and the fact that commercial operators can very often reclaim VAT. The United Kingdom is a notable exemption where rates of excise on diesel are marginally greater than the unleaded petrol duties.

Table 3.7 and Figure 3.2 illustrate the diesel prices and rates of excise duties in all the Member States.

**Table 3.7 Diesel Prices and Excise Duties in EU Member States
(Euro/litre in 1999)**

Member State	Fuel Price	Excise Duty
Austria	0.60	0.38
Belgium	0.61	0.39
Denmark	0.64	0.44
Finland	0.64	0.42
France	0.65	0.47
Germany	0.60	0.40
Greece	0.50	0.32
Ireland	0.67	0.45
Italy	0.72	0.50
Luxembourg	0.53	0.32
Netherlands	0.67	0.44
Portugal	0.54	0.36
Spain	0.56	0.34
Sweden	0.73	0.45
United Kingdom	1.01	0.83

The justification for the favourable fiscal treatment of diesel in comparison with petrol has traditionally been equated with the heavy use of diesel for commercial operations. It has also been justified on environmental grounds due in part to the higher fuel efficiency of diesel. It is only relatively recently that the full extent of diesel fuel contribution to pollution has been

revealed. Diesel powered engines are an important source of particulate emissions, a large source of pollution, particularly in urban areas. Furthermore, the higher carbon content of diesel emissions offsets the favourable fuel efficiency of diesel. Additionally, the increased use of catalytic converters in petrol engines has reduced the environmental credentials of diesel fuel. These factors raise important concerns about the sustainability of the favourable tax treatment of diesel. The commercial justification is also weakened by the growing market for diesel-powered passenger cars, due largely the favourable fiscal treatment of diesel fuels.

3.2.3 The Impact of Existing Vehicle Taxation in EU Member States

It is evident from the above that although environmental and resource use is featuring in the current system of vehicle taxation in EU Member States, it is still largely revenue driven and much remains to be done to bring vehicle taxation in line with the principle of fair and efficient pricing and to encourage a shift to more sustainable modes of transport.

Car Ownership and Public Transport

Many studies have shown that car ownership is a major factor in public transport use. A study by the Bureau of Transport Economics (1977) reports that public transport demand has a cross-price elasticity with respect to car ownership between -0.4 and -0.82 . Thus, if the level of car ownership rise by 10%, public transport demand will be reduced by between 4% and 8.2%. Hence, adjustments of vehicle taxes have considerable potential to encourage the use of sustainable modes of transport. However, high vehicle taxes on cars, while discouraging car ownership, also discourage car replacement, which can lead to an older, more polluting and less energy efficient car fleet. Of course, taxes can be differentiated according to type and age of vehicle in order to encourage the purchase of more energy efficient and less polluting vehicles, but this type of fiscal policy may undermine the modal switch potential of the instrument. Higher taxes on car ownership will also have relatively severe consequences for lower income households. This argument may again be addressed by applying lower taxation for energy efficient cars and a much higher taxation on less efficient cars.

The registration tax and ownership taxes also have the potential to influence modal choice in areas of particular concern. For example, taxes may be differentiated on an urban/rural basis, with higher taxes on cars registered and kept in urban areas where the problems of congestion and local air pollution are of greatest concern. Such differentiation would also avoid unfairly penalising motorists in sparsely populated rural areas who are more dependent on the car as public transport systems are generally less developed.

Use-Related Charges

Overall, there is considerable potential in the EU to develop taxes and charges that relate to transport use rather than ownership. Many commentators have argued that, from an environmental point of view, it would be better to concentrate the burden of motoring taxes on taxes relating to the amount of car use (such as fuel taxes and road user charges) rather than on the costs of car ownership, since it is vehicle use rather than ownership that gives rise to most of the environmental problems of private motoring. A large proportion of existing taxation is non-use related and, therefore, has little influence on the marginal cost of car use. In other words, motorists can reduce their tax liability only by limited amounts if they reduce the use of the car.

Levies on motor fuels are currently the most common use-related pricing instrument in the EU. The main advantage of higher levies on motor fuels is that it reduces both car use and the energy use per kilometre. The effect of higher fuel prices on energy efficiency is higher than the effect on kilometres driven (Goodwin, 1992; NEI, 1991). Drawing on two review studies mentioned by Kageson (1993) it can be concluded that long term elasticities of energy use for fuel prices range between -0.65 and -1.0 . Long term elasticities of car kilometres range between -0.1 and -0.3 . So, an increase in fuel prices of 10 percent results in a reduction in car kilometres of 1 to 3

percent and of energy use of 6.5 to 10 percent. Review work undertaken by the OECD (1995) reports more elastic responses in car kilometres. Short term elasticities of car-km with respect to fuel price range from -0.1 to -0.3 i.e., if fuel prices rise by 10%, car km will be reduced by between 1 and 3% over the short term (OECD, 1995). In the longer term, as people adjust to higher fuel prices in their choice of place of work and place of residence, the elasticity becomes -0.3 to -0.5 (and possibly higher).

It is important to note that increased fuel levies alone may not be the most effective way of stimulating sustainable mobility. As car ownership levels grow the vehicle use by “new” car owners could outweigh any reduction in car use by existing vehicle owners in response to the higher fuel taxes. Furthermore, a major disadvantage of higher levies on fuel is that there is no differentiation between time and place. This makes higher levies on fuels more attractive for environmental goals (e.g. a reduction in CO₂) than for reducing congestion.

3.3 Fiscal Treatment of Commuting

Commuting costs

Nine of the 15 Member States offer some form of rebate for commuting costs. Greece, Ireland, Italy, Portugal, Spain and the United Kingdom do not provide a tax deduction for commuting expenses.

Making commuting costs an allowable deduction reflects a principle that employees should be able to deduct the ‘necessary costs to obtain, assure and maintain work’ in computing their income tax liability. Such provisions could be very important in some areas as a stimulus to the labour market particularly if travel distances are long and accessibility constraints are significant. It is important to be aware, however, that any concessions for commuting expenses could encourage travelling and the choice of more dispersed homes, simply because travelling is made less costly. A fiscal system that dealt with externalities properly would not encourage this side effect. The debate as to whether commuting expenses should be an allowable deduction is beyond the scope of this paper. The discussion here will focus on the exact rules for the deductions and to what extent they encourage sustainable mobility.

Several systems for tax rebate of commuting expenses have been identified in this report, including systems that encourage the use of unsustainable modes, neutral systems and systems that aim to stimulate the use of public transport and bicycles in the journey to and from work.

There is growing acceptance that the personal tax concessions on commuting costs in Germany stimulate work journeys by car rather than public transport. This is partly due to car users perceiving the costs of driving as fuel costs alone. Thus they feel that they can ‘make money’ on the tax concessions over and above their expenditure if they drive to work, whereas they cannot if they use public transport. Fuel cost is the over-riding cost of which most people are aware but there are others, often not taken into account when embarking on a trip. O’Farrell and Markham (1975) found that over 60 per cent of the drivers interviewed in a Dublin-based survey considered only the fuel cost of a trip. Metcalf (1982) concluded that other car-running costs are not considered in the choice of travel mode and that car users are probably unaware of the costs of driving both in absolute and relative terms.

The tax relief on commuting costs in Germany is long established and costs the German Government between DM1.8 and 4 billion in lost revenue (Potter et al. 1998). The new Schroeder Government planned to change the system by creating a mode-independent fixed rate on a per-distance basis. However, these plans have yet to be realised.

A standard rate of tax rebate per kilometre, regardless of mode of transport, applies in Denmark and lump sum deductions, independent of mode, apply in Luxembourg and Austria. The advantage of such systems is that employees have an incentive to minimise journey costs in

order to receive a tax rebate for a larger proportion of their actual costs. Thus employees will tend to travel by the cheapest mode of transport which would be efficient from an economic point of view, providing all costs of transport are internalised so that decisions are made on the basis of total economic cost. If the aim is to have equitable treatment of modes, such systems seem far more preferable to the current German system.

The Danish, Austrian and Luxembourg rules for tax relief on commuting costs fail to overcome the problem that mode-independent tax concessions are perceived to have greater value for car commuting, due to users undervaluing of true costs. Arguably, if the fiscal system is to deal adequately with transport externalities, car-commuting expenses should not be an allowable deduction for income tax purposes.

The Finnish and Swedish system is in principle similar to the Danish system. However there is one important difference in that the use of private car is only deductible under particular conditions referred to in section 2.4.4 for Finland and section 2.4.14 for Sweden. In remote areas of Finland and Sweden public transport does not exist and only in that case can car expenses be deducted.

In the Netherlands and Belgium the general tax concessions have been modified to provide incentives for public transport, by offering greater amounts of tax-free reimbursement or tax deduction for using this mode.

As well as the influence on modal choice, taxes also have the potential to influence the length of journeys. For example, there is growing acceptance that the tax concessions in Germany, which do not differentiate between journeys of different lengths, encourage the choice of more dispersed homes and thus longer distance commuting. The Danish system which disallows deduction for trips shorter than 24 km, also has potential negative effects of encouraging long distance commuting and metropolitan decentralisation trends. The Finnish system does not contain any specific regulations on distance, but imposes an upper limit on the total amount that can be deducted annually. This is also the situation in Luxembourg.

Given that trip lengthening is a crucial element contributing to the transport problems (Potter, 1997), systems that encourage long distance commuting are unfavourable in the current policy climate. A system that reduces the rate of deductions or disallows the deduction of commuting costs above a certain distance would avoid the trip-lengthening problem. Such a system is in place in the Netherlands where tax deduction for commuting by car is disallowed if the employees live within a radius of 10km from work, and limited to a maximum distance from work of 30 km. If public transport is used for commuting however, there are no such distance limitations. It should also be noted again, that a fiscal system that deals with externalities properly should not encourage the undesirable side effect of trip lengthening.

It is important also to recognise that the land use/transportation structures and population densities of the Member States vary considerably. For example in countries like Finland and Sweden the dispersal of population implies longer travel distances and the availability of public transport in the rural areas can be very limited. This illustrates the difficulty of making general recommendations regarding fiscal reform that are suitable for all Member States.

Employer provided commuting expenses

A company car that is available for private use is considered a personal benefit in most Member States and is therefore subject to taxation. The notable exceptions are Greece, where no tax applies, and Portugal, where the tax authorities do not enforce the rules on taxation of company cars, so that the benefit remains untaxed in practice.

The study has identified the tax treatment of company cars as an important influence on the take up of public transport. A key principle of taxation is that the receipt of 'benefit in kind' should be

treated the same as income received in money. In the case of the taxation of company cars, the taxation system of most Member States fails to apply this core principle, in that the value of the taxable benefit is not based upon the amount of use of the car for private purposes.

In the majority of Member States taxation of company cars is based on the value of the car. One exception is Belgium. In the calculation of the tax liability of a company car in Belgium the actual private use of the car is taken into account and private use includes commuting. However, an employee who drives less than 5,000 private kilometres per year is not taxed and in practice most people only report this minimum number of kilometres in order to avoid taxation. This means that the system, which is best in theory, is one of the worst in practice. This issue is related to the difficulties in acquiring reliable information about private use of company cars.

In terms of modal choice impacts, an important question is whether or not the use of the company car for commuting is assessed when calculating the tax due. As was illustrated above, the treatment of commuting as a tax-deductible activity varies between Member States. Given this base position the follow-on concern is the degree of equity in the treatment of different modes.

In the UK, the use of company cars for commuting is not subject to taxation whereas employer provided public transport passes were. This was also the case in Ireland until recently. Employer provided public transport passes were made exempt from income taxation in Ireland in 1999 as an attempt to encourage sustainable commuting.

In the UK system the value to the individual of using employer-provided contract bus services has recently been made exempt from taxation. The rule applies to private contract buses of 17 seats or more, run by employers. It does not apply to subsidised fares on public bus services and public transport season tickets, which continue to be taxed. The same inconsistency exists in the Austrian system where employer provided public transport tickets are subject to taxation whereas the value to the employee of using contract bus services is exempt from income tax. The differing treatment of the commuter benefit for employees using private contract buses and to those using public bus services could produce some equity problems and could also result in employers shifting sustainable transport initiatives away from supporting public bus services to setting up their own private commuting services. This is an example of how inefficient distortions can arise when albeit well-intentioned measures depart from the fundamental principles of fair and efficient pricing.

Public transport season tickets are also exempt from income taxation in Belgium, Denmark, Germany, Greece, the Netherlands and Portugal, as is the provision of bicycles and bicycle safety equipment (apart from in Denmark). Such fiscal incentives can play an important role in the management of employee travel patterns and modal choice. However, the exact fiscal rules must be carefully designed to avoid undesirable side effects. A blanket concession on public transport expenses, as applies in Denmark, Germany, Greece, the Netherlands and Portugal, might have the adverse effect of encouraging greater travel distances. The system used in Belgium and Ireland, that provides a preferential treatment of public transport up to a certain amount (de minimis ceiling on the tax concession) means that any trip lengthening effects are likely to be insignificant) and this represents a more sustainable application of public transport benefit exemptions.

Workplace Parking

In Finland and Sweden all the sustainable mobility initiatives are subject to income taxation, as are most “unsustainable” commuting benefits. Thus, at the first glance, there appears to be no bias against sustainable mobility in the way that employer provided commuting benefits are taxed. However, there is one very important benefit that remains untaxed, namely free workplace parking. Several studies have shown that the availability of free car parking is a critical factor in car use for commuting. In France for example, modal split for commuting has been found to be

highly dependent on parking availability at the place of work, i.e. the greater the number of spaces available the greater the share of car travel. A study of Los Angeles commuters found that employer-paid parking significantly increases the probability that an employee will drive to work and, furthermore, will drive alone (Wilson, 1992). The study predicts that between 25 and 34 per cent fewer cars are driven to work, when workers have to pay to park, compared to when car parking is free.

The value of car parking space provided by employers can be substantial. In 1984, the value of free car parking was estimated at around £500 (TEST, 1984) per car commuter. With the increasing pressure on land that has been occurring in most cities in the last decades one would assume that the value of free parking is today considerably higher than £500. Indeed, in cities the value of the parking space may exceed the cost of the commuting journey and the cost of providing parking in cities is often greater than the expenditure on roads. Yet, the value of free car parking, which constitutes a major commuting benefit for employees who travel to work by car, is not subject to taxation in most Member States. Indeed, in Germany, a company is obliged to provide sufficient parking for all employees. The notable exception is Austria where workplace parking is taxable in areas where the surrounding publicly available parking is not free. The taxable amount is 200 ATS per month for both private and company cars. The taxable amount applies when there is the “possibility” of employer paid parking, even though the employee may not actually use it. To be exempted from the tax, the employee has to prove that he is not using the employer’s car park. It is important to note that if parking taxes are paid periodically (say, once a month or once a year) they could operate as a perverse incentive to increase the use of the space. There would be no daily incentive to use public transport, indeed, the reverse could be the case.

The issue of free workplace parking is also being addressed in the UK by the introduction in London from the year 2000 (and proposed elsewhere in the UK) of legislation to allow local authorities to levy a workplace parking charge on employers. This is levied on employers because it is viewed as too administratively complex to tax employees. Levied in this way, the charge is unlikely to influence travel behaviour directly. However, over time employers would be expected to reduce numbers of parking spaces or even introduce measures to pass the charge on to their employees. Ideally, such charges should be levied on a daily basis (by such means as electronic swipe cards, which automatically deduct the charge from pay). In this way drivers would not pay on the days when they did not bring their cars and flexibility and individual choice are preserved. The charges themselves should reflect the cost of parking infrastructure generally and, in the absence of adequate user charges such as road use charging, should cover the external costs imposed by peak time driving (Scott and Feeney, 1998). As noted by Scott and Feeney (op cit), if employees reduced their car commuting by two days per week only, there would be a 40% reduction in private car commuting to work.

3.4 Business travel

As noted above the authorities in many Member States apply standard mileage rates per kilometre up to which payments to reimburse business travel by car are tax-free. Any payment above these standard rates is treated as income and taxed accordingly.

It is difficult to assess accurately whether the ‘mileage rates’ set by tax authorities are excessive relative to true motoring costs and thus encourage car use for business travel. This would require detailed knowledge of the actual cost of motoring in each Member State. The collection of this information for all 15 EU Member States and the assessment of the “appropriateness” of the ‘mileage rates’ is beyond the scope of the current study.

There is, however, evidence that the tax treatment of employer-paid or reimbursed car expenses incurred in business travel can be a very important factor in influencing modal choice.

Data from Ireland and the United Kingdom indicate that the mileage allowance constitute a

distortion to behaviour by usually being too generous. In Britain, payments by employers for the use of employees' private cars are free of income tax and National Insurance Contributions up to the amounts given in Table 3.8.

Table 3.8 Business Mileage Rates in the UK

Size of car engine	On first 4 000 miles in the tax year	On each mile over 4 000 miles in the tax year
Up to 1 000cc	28p	17p
1 001-1500cc	35p	20p
1 501-2 000 cc	45p	25p
Over 2 000cc	63p	36p

Source: A. Hanton (1999)

The rates are the same for petrol and diesel cars. Although they have not been increased since April 1997, they are still regarded as generous by many employers and by the Inland Revenue. This view is supported by the Automobile Associations (AA) estimate of costs of petrol cars as shown in Table 3.9.

Table 3.9 Costs of petrol cars in the UK

	Engine Size				
	Up to 1100 cc	1101 –1400cc	1401-2000cc	2001-3001cc	3001-4500cc
Standing charges (£)	1 520	2 174	2 899	4 935	6 450
Running costs per mile (p)	12.9	14.7	16.5	23.9	26.9

Source: A. Hanton (1999)

Table 3.10 provides a comparison of the authorised rates with the AA's estimate car costs for petrol cars.

Table 3.10 Comparison of authorised rates with car costs

	Costs per mile for over 4 000 miles per annum (p)			
	17	20	25	36
Authorised rates	17	20	25	36
AA estimates ¹	13	15	16.5	24
Difference	4	5	8.5	12
Standing charges: contribution made by the uplift in the authorised rates for the first 4000 per miles pa (£)	440	600	800	1080
Total standing charges as estimated by the AA (£)	1520	2170	2900	4940

Source A. Hanton (1999)

¹Slightly different cc break points; rounded figures

This analysis shows that the authorised rates for over 4,000 miles are between 4p and 12p per mile higher than the AA's estimate of running costs; and the uplift for the first 4,000 miles can contribute around a quarter of total standing charges. As diesel cars have larger engine capacities and lower running costs, the authorised rates are even more generous. In contrast, travel by public transport is normally reimbursed according to actual costs incurred.

The authorised 'mileage rates' in Ireland are given in Table 3.11. These rates also appear overly generous, even when the higher running costs in Ireland are taken into account. In addition to encouraging business mileage in private cars, the high mileage rates in Ireland are also believed to constitute an incentive to commute by car in order to be in a position to reap the benefits of the allowance for any subsequent business trips.

Table 3.11 Business Mileage Rates in Ireland (1999)

Annual Mileage	Engine Capacity		
	Under 1138cc	1138 to 1387cc	1388cc and over
	Rates per Mile in pence		
Up to 2000	49.87	57.70	68.20
2001 to 4000	54.98	62.98	75.79
4001 to 6000	29.44	33.38	37.84
6001 to 8000	27.74	31.35	35.31
8001 to 12000	24.33	27.30	30.26
12001 and upwards	20.92	23.25	26.27

The tax treatment of employer-paid or reimbursed car expenses incurred in business travel is also a cause of concern in other Member States. One way to address this distortion would be to bring the 'mileage rates' in line with actual running costs, along with measures to ensure that car use is adequately priced. Another possible mechanism to address this distortion would be to introduce a single rate that approximates to public transport fares (or slightly less) without variation by engine size.

Another important issue that has arisen in the context of business travel is the tax treatment of company cars. Tax systems where the tax on the private benefit of a company car is inversely related to business mileage, as in the UK, could encourage excessive use of cars in business travel as a way of reducing tax liability.

3.5 Corporate Taxation

From the evidence found so far, the corporate taxation system of most Member States does not show any significant disincentives or incentives for the provision of sustainable transport measures. A significant number of organisations do not pay Corporation Tax, such as local authorities, health bodies, charities and universities. Thus expenditure on both 'green' and 'non-green' transport measures cannot benefit from the allowances.

VAT payments for the provision of sustainable transport measures could, however, have an adverse impact on the adoption of sustainable mobility policies.

3.6 Tax treatment of Public Transport Services

Only Greece and Italy apply a standard rate of VAT to public transport services. Austria, Belgium, Finland, France, Germany, the Netherlands, Luxembourg, Portugal, Spain and Sweden levy a reduced VAT rate. In the United Kingdom public transport services are zero-rated for VAT, whereas Denmark and Ireland have exempted public transport from VAT. The United Kingdom, Ireland and Denmark also give an explicit rebate on the excise duty paid on fuel used in running the services. Public transport services are also indirectly subsidised in many other Member States through the low price paid on diesel, due to the relatively low excise duty on diesel (compared to petrol).

The reduced rates of VAT are intended to stimulate the use of public transport, by reducing costs and hence increasing competitiveness relative to other modes. The rebate of fuel is a subsidy to the operators to aid the provision of public transport services. Although well intended, it is important to highlight the possible consequences of such measures if they are not properly

targeted. One such example is the fiscal treatment of public transport services in Ireland. Public transport services are exempt from VAT, but new equipment and buses are subject to full non-deductible VAT at 21 per cent. Meanwhile, there is a large rebate on diesel. The effect is to raise the costs of all other inputs (other than diesel) relative to the price of the service. There is evidence that this has led to the retention of an old and inefficient diesel-powered bus fleet.

Rebates and subsidies tend to encourage extra use. It is not fuel use that should be encouraged and furthermore, diesel may not be the fuel one wants to encourage. In Denmark for example, there is a rebate of excise duty only for diesel with a low sulphur content or gas consumed by buses. For public transport in Ireland the rate of excise on LPG is over three times the rate on diesel. As noted by Scott and Feeney (1998), the argument that the technology and infrastructure for LPG are not sufficiently advanced is possibly well-founded, but such fiscal treatment will help to prolong just that. Scott and Feeney (op cit) argue that the rebate on diesel should be replaced by explicit subsidies on passenger kilometres and VAT should be imposed at a low rate.

3.7 Strategic issues

If the transport taxation system is to be efficient in steering transport behaviour in the direction of sustainability, it is important that the system is consistent in terms of the direction of signals it contains. The previous sections demonstrate that the existing transport taxation in EU Member States present a complete mix of incentives and disincentives to the transport user.

To illustrate the structure of incentives and disincentives a scoring system was developed which enables a figurative representation of the degree to which existing taxation systems support sustainable mobility. In this system the provisions of the tax system relating to commuting expenses and employer provided commuting benefits were given a score between -1 and +1. A score of (+1) is awarded for measures that are supportive of, and (-1) for measures that detract from the principles of sustainable mobility. A score of zero was given to elements that were believed to be neutral.

It should be noted that there are two possible methods of approaching this. The one used here is to see whether a measure promotes sustainable behaviour or unsustainable behaviour. Another approach is to classify measures as to whether they charge for external damage or not, that is, do they confront the traveller with the correct prices. The latter approach was not taken because that would require a large amount of extra information regarding the total economic costs of individual journey in each Member States.

The scoring exercise is intended to be illustrative rather than quantitative. As was noted in the introductory sections and as became evident in section 2.4 the information on some Member States vary in comprehensiveness, which implies that the scoring exercise is more complete for some Member States than for others.

The results of this exercise are illustrated in Figures 3.3 – 3.17. The key message that emerges from Figures 3.3 - 3.17 is that the tax systems in most of the EU Member States send contradictory signals to transport users, with some measures favouring car travel, some cycling, some public transport and others being neutral. Such contradictory fiscal signals may lead to inefficiencies, with incentive effects being counterbalanced by disincentive effects and an overall position that sends confusing and/or obscure signals to users.

One reason why the fiscal systems are so complicated and opaque is that as the transport problems have become more acute over time and have acquired a place on the political agenda, 'correcting' sustainable fiscal measures have been introduced that aim to overcome existing unsustainable measures. Equity is an important consideration in the design of charges and taxes, and may also be a reason for the inconsistency of the tax systems.

Inconsistencies in the tax systems help explain why some individual 'green' transport taxes have

had little effect. The development of sustainable mobility requires more consistent treatment by the charging and taxation system. This could be brought about by more fundamental reforms of transport charges and taxes which aim to remove distortions that are unfavourable to the use of public transport and incompatible with the principles of 'fair and efficient' pricing.

3.8 Concluding comments

The above sections have illustrated that there are large differences in transport taxation across EU Member States. The present diverse tax treatment of transport distorts economic and social competition between Member States and limits the incentives to cut environmental costs.

Some of the fiscal provisions relating to commuting and business travel are of major concern from the point of view of 'fair and efficient' pricing and the encouragement of public transport use:

- The tax treatment of commuting expenses in many Member States encourages car use and long distance commuting. A notable exception is the Dutch fiscal system, which aims to encourage public transport use and to limit long distance commuting for all other modes than public transport.
- With the exception of Austria, free workplace parking remains untaxed in all Member States. This represents a large subsidy to car commuters, which is not compatible with the principles of 'fair and efficient pricing'. The availability and cost of parking is a critical factor in car use for commuting, thus the potential effect of taxing workplace parking is clearly very significant.
- The current tax treatment of company car use is identified as a major disincentive to sustainable mobility. Furthermore, evidence from the UK and Ireland indicates that the current system of company assistance with private cars used for business travel (the mileage rates) represent an encouragement to use the private car for commuting and business travel. At present, 80% of all cars entering Central London during the day receive some form of assistance. 44% are company cars. Essential business use of a private or company car should continue to be free of tax. But there is no reason for the taxpayer to subsidise company assistance with private motoring, including commuting.

A reformation of transport charges and taxes to remove distortions unfavourable to the use of public transport and incompatible with the principles of fair and efficient pricing requires gradual and progressive harmonisation across Member States and across modes, starting by careful targeting on the particular exemptions and concessions mentioned above. The sharing of good practices between Member States is crucial to this process.

The analysis presented above focuses on individual elements of transport taxation but it is important to also consider the overall working of the tax system in supporting sustainable mobility. For example in countries like Denmark, Finland and the Netherlands where the purchase and the use of cars is expensive there is a natural incentive to use public transport. The fact that travellers are accustomed to the high expense of private travel helps to support higher fares on public transport, which in turn makes management of public transport much easier.

A final, fundamental, issue concerns the degree to which general transport taxation can be expected to deliver universally fair and efficient prices given the infinite variability of costs across the transport system. It is generally accepted that it is impossible to implement an ideal "pigovian" tax, based directly upon environmental damage and its closest approximation (an undifferentiated emissions tax) would involve prohibitive costs and several operational impracticalities.

The discussion presented above has illustrated, however, that there is scope to improve the efficiency of current transport charges and taxes in the EU, but only up to a point.

The more comprehensive delivery of fair and efficient pricing in transport may well depend on the application of more specifically targeted, local (unconventional) charges. The current experience and future potential of such charges is discussed in the subsequent chapters of this report.

4 Review of Local/Regional Unconventional Charging and Taxation Measures

4.1 Introduction

4.1.1 Overview

In this report the term 'Unconventional' Taxes or Charge (UTC) is used to refer to a wide number of local taxes and charges, from which some or all of the revenue is directly earmarked to support public transport. Although, in recent years, the use of UTCs for local transport demand management has attracted growing attention, in general the more established UTCs were developed simply as a source of income to support public transport services or to fund their expansion. This is linked to two trends in public transport finance and provision.

The first relates to difficulties with the traditional forms of financing public transport investment, i.e. grants to municipalities from national government. There is a great deal of competition for public money, and transport often falls behind spending demands for other key areas such as education and health. This has led to a search for new sources of funding, which have included the private sector (via privatisation or contracting agreements) and earmarked UTCs.

The second factor is that there has been a trend in a number of EU Member States, and elsewhere, to devolve the responsibility for local and regional public transport away from national government. This has led to the desire to devolve funding mechanisms too, which in some cases has involved the development of UTCs. This could be viewed as an example of subsidiarity in action.

In countries with a federal system, the local state or region usually has some form of local taxation within their control. In such cases, the introduction of UTCs need not involve any new funding legislation, but can be accommodated within existing structures. As is noted later in this report, the United States is a good example of this. In response to a reduction in Federal support for public transport, individual states and cities used their powers to raise a whole variety of local taxes in order to support and develop public transport systems.

These two pressures, on their own or combined, have resulted in a gradual development of UTCs as a source of public transport funding. In general this development has not been linked to any particular theory or concept of public finance, although in Europe, the principle of subsidiarity has played some role.

More recently, UTCs have been advocated from a different perspective and by a different set of actors. Transport and environment ministries have seen UTCs as a tool of transport demand management. This has particularly applied to measures such as road user charging, area pricing, congestion charging, parking charges and development levies. Although fund raising is far from ignored, the basis of such developments has been entirely separate from existing UTCs. Furthermore the traffic control and charging element has resulted in such 'new' UTCs being subject to political controversy.

In this report we have therefore sought a more unified approach to understanding the role of UTCs. This has involved developing a typology of UTCs and a review of how they relate to principles and theory of public finance.

The Typology was arrived at after an extensive world-wide review of UTCs and in discussion with the project's expert panel and other authorities in this field. This typology is:

- (1) Employer/employee taxes

- (2) Property-related taxes
- (3) Development levies
- (4) Parking charges and fines
- (5) Charges for the use of road space
- (6) Local motor taxes
- (7) Consumption taxes
- (8) Cross-utility financing
- (9) Other miscellaneous UTCs

This typology was the subject of considerable discussion in the project team, with the project's experts and others. One important consideration in these discussions was that UTCs are frequently used in combination with each other and with 'traditional' funding sources (such as national government grants or non-earmarked local taxation). An alternative approach would have been to analyse city or area case studies that featured one or more UTCs.

It was decided that a focus on the UTCs themselves was desired, rather than the additional task of analysing the entire structure and rationale of projects that they partly financed. However, it was agreed that the context in which UTCs came to be used was important. Thus we have provided detailed case studies of how UTCs are used in conjunction with other funding sources, and how they are integrated (or not) into transport and environmental policies. These important issues are taken up in the conclusions to this section of the report.

4.1.2 'Unconventional' Taxes and Charges and Principles of Taxation

The evolution of 'Unconventional' Taxes or Charges means that they bear a variable relationship to principles of public finance and the growing issue that the taxation system should be used to not only raise revenue, but steer the economy in the direction of sustainability and ecological efficiency.

In terms of existing public finance principles, two issues appear to be of most relevance. These are, firstly, subsidiarity and, secondly, hypothecation (i.e. the earmarking of the revenue from a tax or charge for a particular purpose). These two issues are, to some extent related, in that the devolving of responsibilities to the most appropriate level of governance requires a consummate devolution of funding. If particular responsibilities, such as public transport are devolved, then there is some logic in also devolving funding mechanisms for those purposes.

However, earmarking of revenue streams is something that finance ministries have long disliked and there is considerable institutional opposition to it. Deran (1965), in a classic text on the issue of earmarking revenue streams, summarised the criticisms and justifications for earmarking as follows:

Criticisms

- (i) Earmarking hampers effective budgetary control;
- (ii) Earmarking leads to a misallocation of funds, giving excess revenues to some functions while others are under supported;

- (iii) Earmarking impacts inflexibility to the revenue structure, with the result that legislatures are hard put to make suitable adjustments when conditions change;
- (iv) Earmarking provisions often remain in force long after the need for which they have been established has vanished;
- (v) By removing a portion of fiscal action from periodic review and control, earmarking infringes on the policy-making powers of state executives and legislatures.

Justifications

- (i) Earmarking can apply the benefit theory of taxation;
- (ii) Earmarking assures a minimum level of expenditure for desirable governmental functions, avoiding the need for wasteful repeated pressures on the legislature;
- (iii) Earmarking, by assuring continuity for specific projects, can reduce the cost of these projects through lowered bond interest rates and advantages of long term planning;
- (iv) Earmarking can help overcome resistance to new taxes or increased rates.
- (v) Earmarking is a proven way to influence citizens' acceptance of measures.

The justifications clearly strike a chord in relation to the funding needs of public transport, particularly when capital projects are involved. In a more recent commentary on the public finance principles of earmarking, Bracewell-Milnes (Teja and Bracewell-Milnes, 1991) concludes that “the traditional objections to earmarking are weak and invalid because they assume a Utopian system of public finance and democratic decision-taking that bears little or no relation to reality. Earmarking is an exercise in the second-best or least bad; in an imperfect world, it can provide better decisions and do less damage to the creation of wealth than conventional pooled financing of government expenditures.”

He continues “earmarking creates wealth in two separate ways: by improving the allocation of resources and by giving scope to the voluntary principle. In each of these ways wealth is created through the replacement of compulsion by choice”.

4.1.3 ‘Unconventional’ Taxes and Charges and Transport/Environmental Policy

The group of UTCs that have emerged from a transport/environmental policy perspective relates to a different set of public finance issues. This centres upon the issue of using the tax system to address environmental externalities. This is the concept behind the European Commission’s principle of ‘Fair and Efficient Pricing’ for transport. The idea that taxation can be varied according to environmental impact has been used for a number of individual measures in a number of states to, for example, favour lead-free petrol, more fuel-efficient vehicles, and encourage commuting by ‘greener’ travel modes.

The EU green paper on Fair and Efficient Pricing, notes a variety of substantial external costs not directly born by users (congestion, pollution, health etc.). Rather than the traditional approach of addressing these issues by regulation, the paper explores ways of making transport-pricing systems fairer and more efficient.

An important principle of the EU paper is the need for more differentiation, as the external costs vary across space, time and modes. “The proposed pricing strategy ... should fully take account of local circumstances. This is important for reasons of efficiency and equity.” In this respect local UTCs seem to have the potential to address geographically specific issues (which is difficult if applied at the national level) and many can be targeted by time and mode. Others, such as

congestion charges, have very specific targeting built into their design.

The EU also identified *transparency* as an important issue, saying that “accounts should be published identifying the relation between charges and costs. The principal aim of such a policy would not be to raise tax revenues, but to use price signals to curb congestion, accidents and pollution. If this policy were successful, revenues from charges would fall.”

The EU paper emphasised the economic gains that Fair and Efficient Pricing would produce if it successfully reduced the cost of air pollution, accidents and congestion. It was also necessary if the internal EU market in transport were to be achieved. However, it was also recognised that, by their nature, many measures to implement Fair and Efficient Pricing would need to be done by member states.

The concept that a taxation system should be used to take full account of the external environmental costs of economic and consumption activities reaches its logical consequence in the principle of Ecological Taxation Reform.

Ecological Taxation Reform has some clearly defined characteristics:

- its objectives are to steer the whole economy in the direction of greater environmental and ecological efficiency;
- there is no increase in overall tax take;
- ecological taxes replace taxes on labour and VAT;
- new taxes are imposed on materials, waste, pollution, water and energy; and
- taxes are adjusted to favour re-use of land and discourage use of Greenfield sites.

It must be noted that this is considerably more comprehensive and radical than the EU's Fair and Efficient Pricing proposals, although these could be viewed as an example of Ecological Tax Reform in one sector. However, the whole concept of Ecological Taxation Reform is a change in the basis of taxation, rather than superimposing some new criteria on certain selective parts of the existing tax system. An important consideration is that an isolated charge or tax, however well designed, cannot successfully influence travel behaviour if the rest of the fiscal and regulatory system is operating contrary to it.

The dangers of contradictory, self-defeating and self-cancelling policies are very real indeed and great care is required in the design of new measures if these are to be grafted onto an existing system that is not intended to provide an environmentally-beneficial 'steer'.

An integrated approach would simultaneously tackle the land use issues, the car parking issues, the relative costs of using cars and buses and would bring about the new "ecological steer" envisaged by Weizsaecker and his colleagues. The level of tax on car journeys (carbon emissions, pollution tax etc) in addition to the tax on land allocated to car parking would tip the balance of advantage heavily in favour of walk, cycle and public transport.

The danger with simply implementing a local UTC (e.g. on employers or use of highway capacity) on the existing taxation system is that, although it would generate revenue which could be spent on public transport, it would not alter the land use patterns underlying car dependency and would not influence the supply and cost of car parking. It would not, more importantly, bring about a clear advantage in price terms to non-car transport. It is also possible that businesses would relocate beyond the road pricing boundary adding to transport problems in rural areas (and damaging the essence of a sustainable city) and likely that substantial sums of money could be spent on buses/park and ride with no reduction in vehicle kilometres. Unconventional taxes and

charges would not necessarily deliver the hoped for steer towards sustainability and sustainable transport.

4.1.4 Assessing Unconventional Charges and Taxes

Overall, this introduction indicates that there are a number of practical and strategic issues against which UTCs need to be evaluated. The data gathered in this research was therefore designed not only to provide information on the practicability of revenue gathering using individual UTCs, but on how they related in a strategic sense to transport and environmental policies and the extent to which they could form part of the CEC's policy on Fair and Efficient Pricing. The policy context in which UTCs are used thus formed an important part of the information gathering in this project.

4.2 Unconventional Charging and Taxation Cases

4.2.1 Employer/Employee/Local Income Taxes

Overview

Despite the almost universal use of income tax to collect general revenues at a national level (and in many countries at a regional or state level as well), examples of instances where employer/employee or income taxes are earmarked to fund public transport systems are comparatively rare.

While perhaps the best known example of an employer tax is the so-called 'Versement Transport' in France, this was preceded by the 'Dienstgeberabgabe' in Vienna. In 1970 the Austrian Parliament authorised the City of Vienna to raise money through an employer tax on all businesses employing at least ten people, in order to finance the construction of its subway/underground railway. Interestingly, such a charge has not been levied in other Austrian cities. Le Versement followed in Paris in 1971 and has since spread to many other French cities and towns. A similar employee tax was introduced in Portland and Eugene, Oregon in the USA from 1970.

Examples of Employer/Employee Taxes

Dienstgeberabgabe, Vienna, Austria

Since 1970, an employer tax has been collected from all employers in the City of Vienna who employ ten or more people at a rate of AS10 per week per employee. Some groups are exempt. This is hypothecated to pay for the construction or extending of the Vienna underground metro.

The Dienstgeberabgabe raises about AS295 million a year, to an overall construction budget of AS3000 million a year. No major problems have been reported in implementing the levy.

Le Versement Transport, France

By the late 1960s local politicians across France began to realise that traffic congestion was becoming a serious problem, and that the financial needs of public transport had been neglected for too long. As a result, Finance Law No. 71-559 of 12 July 1971 was enacted to establish a new fund to address this, by raising money from additional revenues from parking and traffic fines, and from employers with local transport authorities empowered to charge 'le Versement Transport'.

The VT contribution was introduced in Paris in 1971 and in other cities with populations of more than 300,000 in 1973, 100,000 in 1974, 30,000 in 1982 and more than 20,000 in 1992.

VT can not only be used to pay for public transport investment, but can also contribute to covering operational costs. The tax is levied on employers with ten or more employees. Contributions are reimbursed to employers who can demonstrate that they provide housing for their work force at the workplace or provide free transport by “collective” means for all or some of their employees.

Three-quarters of the authorities set VT at its maximum allowable rate. These rates are (as a percentage of the wages bill): Ile-de-France: central areas 2.2%, inner ring 1.6%, outer ring 1.3%. Provincial cities >100,000 population: with fixed track system 1.75%, other 1.0%. Provincial cities <100,000 population 0.55%.

The VT enabled the construction of metros in Lille, Lyon and Marseille, along with several new tram systems. In 1980, the major cities in France invested almost as much in public transport as in roads, whereas in 1970, the sum was only one-third as much. In Paris in 1988, VT raised Fr6.2bn, covering 20% of the RATP and SNCF operational budget

While the Versement Transport stimulated local authority investment in modernisation and expansion, it is possible that this development was carried out in a state of euphoria created by the availability of ‘easy’ finance, without proper evaluation of its medium term consequences. In addition, the Versement Transport has been affected by the growth of by the growth in unemployment, which has slowed down the rate of increase in its revenues (Coindet, 1994). The progressive reduction in the proportion of expenditure covered by income is disturbing, and there is a risk that relaxation of the rules will divert all tax revenue to cover operating costs, with no margin for investment. It now appears that VT has played out its role as the driver of development, and that it will not finance further major construction work unless ways are found to increase its revenue yield.

Employer tax in Portland and Eugene, Oregon

In the US, dedicated payroll taxes are currently collected only in Portland and Eugene, Oregon, but that here they generate over half of each transport system’s operating budget. The payroll tax is imposed by the Tri-County Metropolitan Transportation Authority (Tri-Met). The State legislature permits the district to adjust the tax rate providing it does not exceed the statutory ceiling of 0.6%. All revenues, after handling costs incurred by the State are deducted, are forwarded to the transit district.

In Eugene, Lane County Mass Transit District imposes a 0.50% tax on the total payroll of local businesses. The State of Oregon legislature the option for Tri-Met to impose a payroll tax of up to 0.6% from 1970. After the tax became law, it was challenged in court, but was found to be legal.

In the 1986 financial year, the payroll tax generated a net of \$44 million or 65% of Tri-Met’s operating budget. During the financial year 1985-86, Eugene received \$4.84 million, or 62% of its general fund revenues from this source.

Other employer tax experience

Louisville, Kentucky and Cincinnati, Ohio, use municipal income taxes to finance public transport subsidies (Black, 1995). Income taxes are also authorised in ten states, but are only widely used in Pennsylvania, Ohio and Maryland (Cervero, 1983).

4.2.2 Property Taxes

Overview

As with the employer tax, part of the logic behind the property tax centres around the concept that by providing a public transport service, the inhabitant of the properties served benefit – in this

case by an increase in the value of the property – as a result. Thus, the tax is a form of recapturing value. This process of ‘value recapturing’ or ‘realising betterment’, can be divided into taxes – defined here as where properties pay regular and continuous amounts to the local or regional government, which then earmarks a specified amount to subsidise public transport – and the usually ‘one-off’ or irregular developer levies. Developer levies will be examined in the following section.

Several examples of earmarked property taxes occur in the United States, including Anchorage, Minneapolis/St Paul, New York, Denver, Detroit, Milwaukee and Miami. In addition a mortgage tax, effectively a form of property tax, is used to fund public transport in several parts of New York State, including Albany and Buffalo.

Examples of earmarked property taxes

In Minneapolis/St Paul, Minnesota most transit is provided by Metro Transit – an operating division of the Minneapolis/St Paul Metropolitan Council. One of the largest public transport systems in the United States, Metro Transit carries around 200,000 passengers each weekday on average, and operates 109 routes.

The tax was introduced in 1971, when the Metro Transit Commission was formed to operate public transport, in the wake of the private operator Twin City Lines going bust. The local property tax applies to the 970,000 or so residential properties in the Metropolitan Council area. The tax is a flat rate in each county, but is ‘feathered’ so that residents of the counties better served by transit – such as the downtown areas – pay more than suburban householders.

In 1999, the dedicated property tax raised \$62.5m, covering just over 40% of Metro-Transit’s \$156.2m operating budget, while fares contributed \$50.8m, the State of Minnesota \$29.5m, and Federal funds \$4.6m. Contract revenue and ‘other’ provided \$4.6m and \$2.8m respectively.

There are several problems with the property tax as it stands. Firstly, the property tax is capped so that revenue can only grow when property values rise. This means that for several years not enough money has been raised. Secondly, property prices, and thus the levels of service have risen in the ‘cash rich’ suburban counties, but not in the city area – where 90% of services are provided. Primarily as a result of these factors, it may well be that in the future a dedicated local sales tax is introduced to replace the transit element of the property tax.

Benefit Assessment Districts

The so-called Benefit Assessment District was developed to overcome some of the problems associated with the general property tax, by only charging local businesses and/or homes within walking distance of a transit facility. This is usually done through a surcharge on real property taxes, which is often variable with distance from the facility. The revenues are dedicated to the transit system (Marx, 1999).

One of the few longer running examples of BAD, is in San Francisco, where the tax system has been used to raise money to build and operate the Bay Area Rapid Transit (BART) system. The mechanism was ‘enabled’ by the BART Act, which was approved by the State legislature in 1962.

The General Obligation property tax bill amounted to 2-3% of an individual’s annual property tax bill. About half of BART’s original construction was financed by the property tax. About 5% of BART’s annual operating expenses are financed by another property tax. The construction property tax was imposed recently at 2.25 cents per \$100 of assessed value.

The main advantages of the mechanism are that it provides a stable revenue stream, which yields a high bond rating and hence low interest costs. It is also somewhat progressive, and is

simple to operate.

A similar benefit assessment scheme has been used to pay towards starting the construction of a 150-mile Rapid Transit system to serve the Los Angeles conurbation. An annual levy is applied to all commercial properties within half a mile of each of the stations in the CBD, and one third of a mile around Wiltshire/Alvaredo stations. The levy was initially set at 17 cents per square foot in 1993-1997, and will gradually increase to 37 cents per square foot in 2003-2007.

Japan

In Japan, the legal system is used to empower government agencies to collect taxes from land developers, residents and businesses directly or indirectly benefiting from a railway project. These tax revenues are then to be used to establish a special railway development fund. This approach has been successfully applied by local governments in Japan to provide direct subsidies for railway construction or operating costs, or low interest loans to railway enterprises.

Some local governments – such as Sapporo, Sendai, Fukoka and Kitakyushu – have introduced a Special Railway Fund, financed principally by earmarking revenue from increases in existing local taxes. When the Sendai municipal government, for example, established the Sendai Municipal Rapid Mass Transit Construction Fund in 1980 this was funded by a 14.5% increase in local corporation and business establishment taxes. The revenues were then used to subsidise part of the Y 240 bn (US\$ 1.7 bn) construction and interest expenses required to develop new railways lines in the city.

In another case, the Osaka municipal government increased the existing local real property taxes, and earmarked the revenues to fund an urban rail system

Seventh rail corridor, Mumbai, India

A location benefit has also been proposed for part-funding the seventh rail corridor in Mumbai (Bombay), India. Employers and residences in the vicinity of the new metro stations are to contribute, as they are expected to gain from the increase in land values. However, because the low rateable value base of property rates in Mumbai, this source is not likely to raise more than RS0.1 billion (Dalvi and Pantakar, 1999).

There are other examples of earmarked property taxes from Vancouver, Milan, Barcelona and Lisbon.

Summary

Commenting on property taxes, Farrell (1999b) found that:

- few projects produced good results;
- the crisis in the property market has reduced enthusiasm for this type of funding;
- the speed of urban restructuring is much slower than in the nineteenth century, reducing the ability to generate substantial funding for infrastructure;
- property development is seen by banks as too risky to be used as security for infrastructure loans;
- property developers lack the skills and enthusiasm to develop transport infrastructure

themselves;

- It may be that existing fiscal incentives to the private car impede their success, public transport will not be patronised.

4.2.3 Development Levies

Perhaps the most widespread form of unconventional financing arrangements, is the developer levy. This tends to operate within planning rules, and is consequently often more flexible and individually tailored to suit each particular.

Development levies can take a number of forms including:

- development charges, whereby part of the cost of transport would be recovered by special charges on different land uses, usually levied at the time of new development of properties in the benefiting areas;
- benefit sharing, which is similar but which is tied specially to the increase in property values resulting from public investment;
- density bonusing, in the vicinity of public transport stations whereby participation in programme is voluntary. The developer receives extra density or extra permission to build but pays for it. A similar type of scheme is tendering an auction of density, where a fixed amount of density is put up for auction.

Other, non tax methods that have been used include:

- payment by the property owner for all or part of a line extension or station that is integrated into his development;
- sale of surplus land or air rights by the transit authority to developers to recover some of the authorities' costs. In fact, in some cases the authority has purchased extra land for subsequent sale or development;
- connection fees, whereby a property owner pays a specific fee to be connected directly to the transit system.

Examples of Development Levies

Development Charges – Hamburg Parking Place Directive

The scheme provides both disincentives for car use and incentives for public transport use, by releasing developers from being required to provide parking spaces for residential and commercial developments. Instead, the developer pays a special fee to the city administration, which decides how to spend it on improving public transport and other sustainable transport modes. Since 1992, in the city centre (c. 8-10 square kilometres) instead of each car parking space, the developer has to pay DM32, 300. Instead of each bicycle parking space, the developer pays DM3, 230. For people who live in the city centre, the amounts are halved. Previously, developers were required to ensure that new property was served by a minimum number of parking spaces

In the last five years the fund has raised DM100m. Generally, it functions without problems, and could be transferred to city centres elsewhere relatively easily. Compensation for parking provision is part of the legislation of most German cities. In many cases it is the builder's decision whether he will build parking spaces or pay the compensation. In Hamburg the difference is that

the developer is obliged to pay the compensation and cannot build the parking spaces.

Development Impact Fees

Development impact fees are imposed on private sector developers to mitigate the impacts of new projects on local services. Since new developments increase congestion, private developers should help pay for solutions which mitigate the congestion. As a condition for obtaining site plan approval or building permits, fees of various amounts can be imposed in the form of an annual tax. Both forms are usually based on the square footage of the new development. The actual size of the impact fee will vary depending on the percentage of costs for which the private developers are to be held responsible. Examples where impact fees are imposed are Portland, Oregon, and Sacramento and San Francisco, California (Centre for Applied Research, 1987).

The Montgomery County Transportation Development Fund, Philadelphia, Pennsylvania

One case illustrating the difficulties which may be encountered in implementing a development fund is that of Montgomery County, which, in 1986, attempted to part finance its contribution to the Philadelphia transport undertaking – the South Eastern Pennsylvania Transportation Authority (SEPTA) – through a developer levy.

The source of the money was to be a levy on new construction projects taking place within the County, the levy being assessed on the basis of the increase in the number of motor vehicle trips forecast to and from the location of the development. The levy amounted to 10 cents for each trip generated over a twelve-month period.

The main technical shortcomings of the system was that, of the finance raised, only that received from developments in close proximity to a station or a bus service operated by SEPTA could be used to fund SEPTA services. More important still, there was serious political resistance from developers, builders and estate agents and also township officials within the County, who felt the fund would discourage economic growth within the township. In the event, only some \$40,000 in assessments had been collected when the Pennsylvania State Legislature intervened to effectively scupper the system.

The experience of Montgomery County shows that certain factors must be included in any transit revenue sharing programme if the programme is to be viable. Strong political support must exist for such a programme and there must be co-operation between townships, municipalities and the County.

Joint development schemes in Japan

To address the problem of development occurring without reference to the existing or planned rail network, the Japanese Ministries of Finance, Transport and Construction in 1972 promulgated a scheme of *administrative guidance*. This applies to railways constructed by the public or third sector to provide transport to a planned new town. Under the scheme, the developer bears half of the construction cost for ground-level infrastructure; if the land is located within the new town area, the developer transfers the rail right-of-way to the railway operator at its original price; if the land is located outside of the new town area, land acquisition becomes the responsibility of the railway operator, but with the developer paying for any difference between the original price of the land and its actual purchase price; and central and local government both subsidise up to 18% of construction costs each. The subsidies are paid in annual instalments over six years once operations have begun.

The Kobe Mass Transit System (serving a population of 1.4 million) was partly built using this cost-sharing scheme. Similar schemes have been applied in other new town developments, including Chiba New Town and Senpoku New Town.

Density Bonusing

Density bonusing schemes have been developed by public bodies keen to encourage private developers to locate near to transit stations. Essentially, developers gain from improved public transport access and/or relaxed land use regulations, while the public authority gains from developer contributions towards building the infrastructure, and theoretically from higher public transport use. For example, in Portland, Oregon the Transit Investment Corporation was created to encourage private sector development around light rail stations, while the new light rail connection to the airport will be largely funded by the private sector in return for receiving the rights to develop a hotel and office complex there.

Development rights are sold above or below public transport infrastructure in Washington DC and Denver, while there have also been relaxation's in land use or density zonings in return for contributions towards public transport. An urban railway at the Gallery Centre in Philadelphia was partially funded by the developer (Simpson, 1994).

Voluntary cost sharing schemes between community organisations and rail operators to build railway stations are also common in Japan. The community organisations include municipalities, housing authorities, private developers and land readjustment co-operatives - groups of landowners who voluntarily improve their properties through a re-arrangement of the land use and construction of public facilities such as roads, parking and drainage. The schemes are normally financed through the sale of "reserved" land contributed by the landowners in return for the increase in land value.

Sale of surplus land or air rights - capturing betterment to fund the Ørestadsbanen, Copenhagen, Denmark

One example of how a local authority aims to capture benefits arising from infrastructure improvements is the Ørestadsbanen automated light rail system project in Denmark. Here, various plots of land situated in the Ørestad area, a new town near central Copenhagen, are being developed and provided with a light rail system. This will be financed by realising the actual increase in the value of land that the system will generate, with the Danish state and the City of Copenhagen providing a guarantee until the money can be realised (Copenhagen Transport et al, 1995; Ahm, 1998). Initially the metro will be funded through loans, which will be redeemed with the income from land sales (around two thirds) and the proceeds from running the metro (approximately a third).

There are similar examples in France, where public authorities have often bought up large areas of land around transport projects at pre-investment prices

Parking levy within Section 106 Agreement, Bracknell, Berkshire

As part of a town centre regeneration package, the developer of a shopping centre in the town centre has agreed to implement a car park levy, which will be used to fund public transport infrastructure. This will include bus priority round the town, a new bus station, two new bus ports, and real time passenger information and better services in order to mitigate the traffic generation effects of the new development.

Elsewhere in Britain, similar schemes are fairly common. At Chafford Hundred to the east of London, a railway station was built as part of the development of a large housing estate. In some cases the developer may actually run a bus service as a condition for planning permission, to an out-of-town shopping development for a three-year period of example. More frequently they provide money to the local authority for them to finance an improvement in public transport. Developer Olympia and York contributed towards extending the Jubilee Line from Green Park to Stratford in east London. The City of Edinburgh Council has informed developers for the Port of

Leith that they must promise to get 35% of visitors to the site by public transport. This has resulted in a proposal for car parking charges to be hypothecated to pay for bus service enhancements.

CityNet, Milton Keynes, UK

This is a developer-led project proposal whereby planning gain from a large development on the eastern flank of Milton Keynes would pay for the introduction of a radically better bus service. The existing new town area of Milton Keynes is 8,900 ha and currently has a population of about 200,000. The eastern flank is about 405ha. The first phase of CityNet, costing £20m over 5 years, would be paid for by mechanisms linked to the development of the site, including planning gain payments and parking charges on employment areas. After 15 years the routes would be financially self-supporting.

The proposal is that the first phase of CityNet, costing £20m over 5 years would be paid for by mechanisms linked to the development. This would pay for three core routes to be set up, two of which would serve the east flank itself. The source of funds would be made up of farebox revenue, section 106 revenue contributions, and parking charges on employment areas in Fen Farm.

This case study illustrates some problems of a developer-led mechanism, but raises a number of issues applying to the planning gain mechanism as a whole.

The assumption behind the CityNet proposal is that other developments in Milton Keynes would apply the same principle to provide funds to complete the CityNet system. There also needs to be agreement, either locally or nationally, that public transport is prioritised in development gain. If very large contributions to road improvements were demanded under a Section 106 (Planning Gain) requirement, then funding CityLink as well would not be possible. Also there are other areas where planning gain agreements are used, for example funds to build schools or other social facilities. The 'unconventional mechanism' of planning gain is often used for these as well as transport. The Council needs to agree within itself that public transport would be the planning gain priority contributions to other areas would depend on the amount of cash required, alternative sources of income and priorities.

This case highlights a number of problems of voluntary agreements stemming from a planning gain requirement. To work, a mechanism needs to be applied across the whole of the Milton Keynes area, otherwise the developer is at a commercial disadvantage. Equally, the wider application of the mechanism is needed to complete the CityNet scheme.

This suggests a role for the planning authority in setting up, and policing via the planning system, an area-wide agreement through established local plan policies. The alternative would be for locally implemented legislation to require all housing and commercial development to make a contribution to public transport development funds (as in the Hamburg case study).

This case raises a number of key points about lifting unconventional mechanisms to the strategic level. To do this, unconventional funding mechanisms require co-ordination to shared objectives by a partnership of stakeholders, including the planning authorities. In the Fen Farm case this has not yet emerged; in the case of the Central Milton Keynes case (considered in the Parking Charges section), this has been managed, but involves a less ambitious transport project. To actually make the improvement in public transport services needed in Milton Keynes would require something as radical as CityNet, but this is a harder task as it requires more co-ordination.

Conclusions - Value capture mechanisms - conditions for success

According to Tsukada and Kuranami (1994), the conditions necessary for value capture mechanisms to succeed, are:

- the creation of passenger demand - through the establishing of commercial development near stations; and of traffic generation to equalise the flow of passengers in both directions and during the peak and off-peak periods;
- the provision of a competitive rail service;
- a favourable economic environment; and
- and positive government involvement, with close co-ordination of policy-making.

The paper also notes that Governments have an important role to play in establishing the legal framework for a smooth transfer of development benefits to the railway operator. Social, economic and political environments vary significantly by country, so that the methods of financing urban rail in one country may not be directly transferable to another without careful re-interpretation.

The key features identified in Farrell (1999b) regarding the planning gain mechanism, were that such projects tend to:

- be highly localised and have an easily identifiable impact;
- have a small number of players; and
- only provide a small part of the infrastructure cost in the total budget for area redevelopment.

Development gain can be a clumsy mechanism. Often where the transport investment is needed is not where the planning gain occurs. For example, it may be necessary to invest in public transport in a city centre, but new developments are on the urban fringe, making available planning gain to address the adverse transport impacts there, but not to help the city centre. The Milton Keynes, City Net, example illustrates how a more strategic approach may be adopted that overcomes such difficulties. This suggests that, rather than funding from an isolated mechanism, development levies can be useful as part of a package of funding sources.

4.2.4 Parking Levies

Parking charges are a normal fact of life and are used throughout the world by local authorities as an income flow to fund their activities. As such they could not be viewed in themselves as an unconventional mechanism. However, such charges are only rarely hypothecated to support local public transport or as part of a planned transport funding package. One example combines, in an innovative institutional manner, a number of unconventional and conventional funding mechanisms. This is also in Milton Keynes in the UK, but is separate from the City net example above. Again it uses several sources of funds but parking charges are the main source. However it is more the institutional arrangement and the way in which this is integrated with transport policymaking that makes this example of note. It also shows how to overcome some of the disadvantages of unconventional funding and link it closely to the transport/environmental planning process.

Until recently, Central Milton Keynes had free parking provided for all employees and customers of the businesses locating there. The parking spaces are owned by the local authority (Milton Keynes Council) who started to introduce charges to a small proportion of spaces. However, local businesses were unhappy about these charges. Under the Milton Keynes Economic Partnership (MKEP) the parties involved came to an agreement to maintain the competitive edge of Central

Milton Keynes while meeting the overall transport strategy for Milton Keynes. From this has evolved a mechanism with several sources of income and which is linked into the transport planning process for Milton Keynes as a whole. The sources of funds are:

- planning gain revenue;
- MK Council Section 106 revenue;
- parking Agreement revenue;
- bids for government money under package bids; and
- bus operator contributions under quality partnerships.

The Central Milton Keynes Transport and Parking Strategy is a plan for the period up to 2011, and includes modal shift goals, which include cutting car-driver-only trips from 70% now to 50% and raising bus use from 9% to 20%. The Strategy involves a mixture of incentives and disincentives to achieve this, including the latter paying for the former. An innovative feature is that the finances for this Strategy are to be channelled through a charitable Partnership Company, which was due to be established by September 1999. This will receive donations from the above sources and then make grants to organisations to put the elements of the Strategy into place. The scheme thus requires no new legislation.

Expenditure plans are for £25m over 5 years. Provisional income flows are estimated at £1.6m for 1999/2000 rising to £11.9m in 2006. This mechanism overcomes many of the problems of unconventional schemes. It creates a general fund linked into the transport planning objectives of an area in a process that is inclusive of major stakeholders. The problems of planning gain agreements being ad hoc and limited to the transport impacts of a particular site are overcome by de-linking the development from its specific transport impacts and so funding is available for general transport enhancement. Overall, this structure allows for a hypothecated fund to be established and for several sources of income to be used (both unconventional and conventional).

The Heathrow, Gatwick and Stansted Airports' Parking Levy, UK

An interesting example of a private sector funding mechanism is the car park levy in place at BAA-run Heathrow, Gatwick and Stansted Airports to pay for improvements to public transport. Passengers contribute an average 25p for every parking transaction, which is credited to a BAA budget that goes towards improving public transport within and around each specific airport. In addition, £10 of the annual staff car parking pass at Heathrow and Gatwick and from September at Stansted is earmarked to improve public transport access.

The estimated revenue for 1999 at Heathrow is ~£2m, out of total public transport expenditure of ~£650m (including the capital costs of building Heathrow Express, Piccadilly Line Extension to Terminal 5, M4 bus lane, and refitting Heathrow Central Bus Station). Revenue raised at Gatwick is in the order of £1m per annum, and that at Stansted is expected to be around £350,000 in its first full year of operation.

Parking levy in Aspen, Colorado

The case of Aspen, Colorado shows that even in the car-centric USA, parking levies are seen as acceptable ways of raising money, although initially at least a great deal of opposition did need to be overcome. Parking revenues are paid into an Enterprise Fund, from which funds are earmarked to pay for transport alternatives. Specifically, the fund pays for the marketing of transport alternatives, for free buses, and provides money to pay for an \$85m 44 mile light rail.

Parking revenues now generate \$1.6m a year, of which \$600,000 is put aside for the proposed light rail system.

In the town centre, motorists may only stay for a maximum of two hours, and must pay \$1 an hour to park. Outside in the residential district, non-permit holders must pay \$5 a day. Since the introduction of the Transportation Plan, and the provision of a free bus system, bus ridership has increased by 35% and 4.5m trips are now made on the system each year.

Amsterdam, the Netherlands

One transport policy measure in Amsterdam is parking fees to reduce the amount of cars in the city. A "Mobilityfund" was created with these parking revenues, which finances a number of transport projects. The yearly total revenue of collecting the parking fees amounts to around 63.6 million Euro (1998).

This is an uncommon example in the Netherlands of funding a new infrastructure project. Normally, the (local) authorities take care of the financing of public transport by taking money out of the public budget. This is the only example of a direct hypothecation between a charging mechanism and the funding of public transport that could be found in the Netherlands

Other parking levy schemes

Revenues from city-centre parking and suburban park-and-ride schemes are also used to fund rail infrastructure in Milan, while public transport benefits financially from parking revenues in Jacksonville, Florida, and San Francisco. In Germany, amendments were made to the German Road Traffic Act in August 1994, which made it possible for local authorities to use the earnings from parking spaces to finance public transport infrastructure. Previously, charges had to be used to improve only parking facilities.

In Germany, income from parking charges are hypothecated to fund park-and-ride schemes, through the Strassenverkehrsgesetz (Urban Traffic Act). Parking charges are set by the municipality, but within limits set by the Lander.

Hypothecated revenue from parking fines

A related source to parking levies is that of parking fines. In France, additional revenues from parking fines and driving offences have been earmarked to paying for public transport infrastructure since 1973. In the UK too, any excess money resulting from fines collected in areas designated as either a Special Parking Area (SPA) or a Permitted Parking Area (PPA) - whereby parking offences are decriminalised and become the responsibility of local authorities - are retained by the highway authority. Meanwhile, In Athens, Greece, under Law 2669 passed in December 1998, part of the charges imposed on private cars that violate bus lanes will be passed to OASA –the public transport authority for the Athens Metropolitan Area. Further details are not yet worked out (Patrikalakis, 1999).

4.2.5 Charging for the use of roadspace

Overview

The idea of charging the use of roads is an old one. In the late 17th and early 18th centuries many roads in the United States were built as private toll roads. Recently road use charging has been attracting increasing interest within the EU, due to the potential to both generate revenue and form part of strategies to manage traffic congestion and air pollution.

There are a number of different forms of charging for the use of roads. The terms road pricing and congestion pricing are often confused. Road pricing is commonly used when particular road trips are subjected to well defined charges, like road tolls (for a bridge or tunnel). While

congestion pricing is a particular form of road pricing that imposes higher charges on motorists who travel at times and places where the road is congested. From a theoretical point of view these are very efficient tools which aim to ensure that the polluter pays an appropriate price for external congestion costs.

Both types of road pricing impact on the use of private vehicles and potentially generate large revenues. When these revenues are earmarked to fund public transportation, sustainable mobility objectives receive a double benefit in increasing prices of private vehicle travel toward true costs and generating funds to support improved public transport operations.

This chapter will deal with cases where road pricing is or would be implemented to deal with congestion and/or environmental problems. This can take several forms. Road tolls can be levied to enter a specific (urban) area, to use a bridge or tunnel or to use a specific, congested free highway. In all of these cases part of the revenues are earmarked to public transport or is public transport exempted from charging.

Examples of charging for the use of roadspace

We have identified several cases where road users are charged to fund public transport (for the full review – see Appendix B):

- Cordon charging
- Congestion pricing
- Failed schemes
- Toll lane
- Toll bridge
- Norwegian cases (Bergen Oslo, Trondheim)
- Singapore
- Hong Kong, Stockholm, Cambridge
- San Diego
- San Francisco

Norway

In Norway toll rings have been introduced in Bergen (1986), Oslo (1990) and Trondheim (1991). Tolling is based here on a cordon system, in which vehicles must pay for entry to the city centre, and the revenues are intended to fund a mixture of road and public transport investments, including safety and environmental improvements. Bergen has been successful in achieving a small reduction of car traffic, but failed to provide substantial funding for public transport. In Oslo around 20% of toll receipts have been used to fund public transport improvements. The Trondheim tolling scheme has been the least successful in raising revenue because of under-estimation of traffic diversion effects. In the end, the contribution to the development of public transport has been very small.

Singapore

The first city to implement a congestion pricing system in practice was Singapore in 1975. Automobiles entering the city's central area during congested hours must purchase and display a special paper license (nowadays electronically) in their windshields. This system is called the Area License Scheme (ALS) and is still in operation. The increase in ALS fees and improvements to public transport helped to hold down the growth of traffic entering the restraint zone in the morning despite large increases in total commuting to the Central Area and in auto ownership.

San Diego

In San Diego a high occupancy toll lane (HOT-lane) is in operation when motorists can choose

between the use of the congestion free toll road and the normal, but often congested, highway. When there is congestion on the highway next to the freeway, an extra (congestion based) charge is levied in addition to the toll. This extra charge is based on the intensity of congestion on the other lanes (freeway). Revenues are partly earmarked to an express bus service.

San Francisco

In San Francisco, bridge tolls are used to subsidise inter-county traffic services, including bus and ferry. The main aims of this scheme were to subsidise the operating costs of the bus and ferry system and to keep traffic levels manageable. The scheme cannot be seen as congestion pricing because tolls are collected 24 hours a day and every day of the week. A wide variety of case studies exist in the United States where toll revenues from bridges or tunnels are used to finance public transport (e.g. New York). This Golden Gate Bridge example gives a good overview of the structure and mechanisms used also in other states.

Planned Schemes

There are also numerous schemes that failed to reach implementation due to lack of political support. Between 1983 and 1985, Hong Kong conducted an extensive evaluation of cordon congestion pricing schemes (called Electronic Road Pricing, ERP) including the first large-scale field test of equipment to collect congestion tolls electronically. The proposal was ultimately abandoned mainly because of popular political opposition. An important lesson from this is the need to anticipate and resolve likely objections early in the planning process. Furthermore, it is important to have a tangible and credible plan for redistributing the revenue to the public.

The Dennis package in Stockholm, Sweden included plans to implement a toll ring somewhat like those in Norway, but with higher tolls and explicit goals of reducing traffic in the city centre. Revenues were to finance a broad package of investments but were not specifically earmarked to public transport, although improvements of public transport formed part of the package. In the end the package proved to be too complex and failed to reach implementation stage. The Dennis package is now viewed as a missed opportunity for the development of an integrated urban transport plan.

The Cambridge congestion-metering scheme involved charging by the actual degree of congestion encountered. Although the scheme from a theoretical point of view is very attractive (drivers are charged for congestion they cause), the scheme was not implemented, mainly due to political factors and the complexity of the scheme from the users point of view.

Charging for the use of road space – Commentary

All the schemes noted above indirectly favour of public transportation by charging private motor vehicles while public transport is exempted. Although congestion and infrastructure improvements form the major reasons to implement these schemes, most of the cases dedicate a part of the revenues to public transportation. It is evident that implementation of road use charging schemes is often compromised by a lack of public support. The failed schemes show us that strong political support is necessary, as well as a well defined and structured plan to show the public that a scheme is needed. Otherwise the public will remain sceptical and never accept the need for implementation.

The Norwegian cases illustrate that charging car users does not necessarily lead to substantial reductions in car usage. This is primarily related to the level of toll. The schemes in Norway were implemented with the primary aim of generating revenues for the financing of infrastructure. From this point of view, the scheme succeeded and led to improvements in infrastructure, although only in a modest way for public transport. (Oslo might be an exception where 20% of the revenues were dedicated to public transport). Transferability to other cities might be a problem because of the suitability of the geographical situation.

Singapore's experience offers both encouraging and cautionary lessons about the potential for congestion pricing. The scheme demonstrates the potential of reducing vehicle use. It also suggests that traffic reductions can be sustained over time. The increase in ALS fees and improvements to public transport helped to hold down the growth of traffic entering the restraint zone in the morning despite large increases in total commuting to the Central Area.

The failed schemes highlight the need to achieve public support in advance of implementation. It is probably necessary to anticipate and resolve likely objections early in the planning process. It is also important to have a tangible and credible plan for redistributing the revenues to the public. It is important to show the public that their money is spent in ways that provide a tangible improvement in the transport system (e.g. improved public transport facilities). In this way they will be less critical towards the implementation of proposed schemes. There should also be a climate for change, congestion should be perceived as a major problem.

A clear advantage of the San Diego scheme is the freedom of choice, travellers can choose between a congested highway and a congestion free lane that is tolled. Transferability may be an issue in the context of the EU. Most of the roads in Europe could not be extended with two or more (carpool) lanes to implement this scheme, mainly due to a lack of space. One could think of the possibility of dividing existing highways in one carpool- or charged-lane and two normal lanes.

This Golden Gate case study forms just one example of a wide variety of case studies in the United States concerning the use of toll revenues from bridges or tunnels to finance (public) transit. Other well-known examples are from New York, New Jersey (Delaware Rivers) and San Francisco. In New York, for example, surplus operating revenues from nine toll facilities (bridges and tunnels) are channelled to the local New York City Transit Authority, which operated regional commuter-rail service around New York City. In California there are various examples. In the San Francisco-Oakland Bay Bridge (SFOBB) scheme revenues were used to finance the construction of a new regional rail system (BART).

Although regional subsidising of mass transit and transportation tends to be more common in urban areas, as exemplified by the legislation governing operations of several toll agencies, it tends to work quite well. It is accepted and it raises, when operating surplus is available, substantial funding for public transit.

4.2.6 Local motoring taxes

Overview

A local motor tax is a tax levied by local jurisdictions for local purposes and is collected in addition to state and federal motor fuel taxes. This tax can take different forms and is relatively common in the United States, especially the fuel tax and excise tax. The taxes can generate significant revenue of which a part is earmarked for public transport objectives. There are many examples of these hypothecated taxes in the United States, for example, Nevada, Albuquerque, Oregon and New Mexico. Here, the fuel tax levied in Florida will be described followed by the excise tax in the State of Washington. Outside the United States motoring taxes are not that much hypothecated, except Canada (e.g. Vancouver, Montreal). Other examples can be found in New Zealand and Lisbon where fuel taxes are earmarked for public transportation objectives.

In the United States State-enabling legislation is required for local jurisdictions to levy local motor taxes. Restrictions are often imposed on the localities as to the use of the revenues, the rates that may be imposed, and the procedure for local approval of the tax. In Texas, it is possible that revenues collected would have to be distributed in the same fashion as state motor fuel tax revenue, with approximately three-fourths to transportation and one-fourth to education.

Examples of local motoring taxes

The review has examined two different local motoring fuel tax schemes:

- Local motor fuel tax - State of Florida
- Local motor vehicle excise tax - State of Washington

Local motor fuel tax

Florida has two types of local motor fuel taxes for transportation; a voted gas tax and local option gas tax, which will be described both here.

A local option motor fuel tax is a tax levied by local jurisdictions for local purposes and is collected in addition to state and federal motor fuel taxes. First example is the voted gas tax. This tax allows a one percent per gallon tax to be levied subject to voter approval in a county-wide referendum. Of the 67 counties in Florida in 1986, twelve counties had exercised the voted gas tax by 1986. This voted gas tax has been more difficult to impose, as it requires electoral approval. This means that a well-funded and highly publicised campaign could be necessary to get it implemented. Most of the counties, which have adopted this tax successfully, are geographically concentrated along a major interstate highway. Therefore the tax has been largely passed on to tourists.

The second tax, the local option fuel tax, is limited to not more than 6 percent per gallon (in whole pennies). This, most widely used, tax may be implemented by a vote of the county's governing body and does not require a voter referendum. The tax may be in addition to the Voted Gas Tax (therefore allowing up to a total of 7¢) or may be levied separately. In total 48 counties has implemented this scheme in 1986, this number will probably change annually, as counties can implement the Local Option Gas Tax every September 1. All proceeds of the local option gas tax may be used for both highway and transit-related items. Categories that are specifically eligible include public transportation operation and maintenance next to other expenses concerning transportation. In general, the Local Option Gas Tax is unrestricted for transportation use.

Motor vehicle excise tax

The State of Washington on the other hand, provides a dedicated source of funding for transit, which emphasises local commitment to support public transport: a Motor Vehicle Excise Tax (MVET). The MVET is an annual State excise tax on the fair market value of motor vehicles. The excise tax rate is 2,354 percent. Cities and counties are permitted by the State to direct nearly half (1 percent) of the MVET for local public transportation needs. The remainder goes to the State ferry system (0,2 percent) and to the State general fund (1,154 percent). Any entity or municipality is eligible to collect the MVET levy except for city systems with a sales tax dedicated to transit where the system provides service to an area greater than the units of the municipality. Only funds generated within a transit system's service may be used. The MVET funds must also be matched 1:1 (see also the local sales tax study of Washington) using a local tax source from within a transit system's service area, or local general service fund revenues. Local tax sources may be a sales tax, or household or business tax.

Local motoring taxes – Commentary

State-enabling legislation is required for local jurisdictions to levy local option motor fuel taxes. Restrictions are often imposed on the localities as to the use of the revenues, the rates that may be imposed, and the procedure for local approval of the tax. It is always difficult to implement a new tax. The community must understand the need for revenue and the existing tax structure must not be too high. To this extent, any potential local tax must be considered along with existing state and federal taxes. The local option tax should be popular in localities that have significant traffic from non-residents to whom the tax may be passed. Economically seen it is a

fairly good tax in that it is a user fee, although it is not a 100 percent benefit charge.

Significant revenues can be obtained, varying according to tax rates and travel patterns. This last point may be one of the weak aspects of the scheme fuel tax revenues depend on travel patterns, which may fluctuate over time. Also external factors will have an impact on these, think for example of a recession.

4.2.7 Cross-Utility Financing

Overview

Cross-utility financing may not actually strictly be an 'unconventional' mechanism, given its widespread application in parts of Europe, North America, and elsewhere. However, it is adopted on a localised basis, and is earmarked to fund public transport.

The study team has identified two methods of how cross-utility financing operates in practice. The first is via a levy on utility users, which operates in a similar way as sales and employer taxes, while the second is where a loss-making public transport department is cross-subsidised by a profitable utility department, usually to generate tax benefits.

Examples of Cross-Utility Financing

The review has identified the following cases:

- Cross-subsidy - Wuppertal, Germany
- Utility levy - Pullman, Washington, USA
- Land development - Japan

Other examples, which we will not discuss here but are aware of, include:

- A levy on electric power sales used to fund public transport is implemented in several other cities in North America (e.g. Springfield, Missouri, New Orleans).
- Similar arrangements are in place in some Italian and Austrian cities
- Bus services in Mumbai (India) are subsidised by an electric levy.

Cross-subsidy

In Germany, public transport systems are still often part of municipally-owned holding companies, and as such are often subsidised by revenue from other companies belonging to the same holding, such as water, gas and electricity, that generated a revenue surplus. This effectively allows the municipality to offset any profits against the losses of the transport undertaking meaning that these profits are not subject to corporation tax. But, the previously profit-yielding companies are no longer as lucrative, and in the longer term the liberalisation of the EU energy market will render such models impossible (Felz, 1992; Copenhagen Transport et al, 1995).

The Wuppertaler Stadtwerke (WSW) is a public utility company, responsible for public transport, gas, water and energy supply in the municipality of Wuppertal. Cross-utility financing is practised for two major reasons. First, the WSW's tax rates can be reduced. The profits out of gas, water and energy supply would be taxable, unless they were compensated by the losses out of public transport. As a result, by cross-financing the taxable amount of the company decreases. Second, public transport is regarded as deficit by definition. Tariffs cannot cover the costs of production. Financing public transport needs additional money from the municipality. By cross financing

WSW is able to take over this obligation and internalise it as a company issue. So WSW manages to keep more independence and continuity in the services with less regard to temporary public financing problems. Actually, the municipality has to pay nothing for the public transport. Cross-utility financing was generally not regarded as illegal in German law, although these principles of tolerance are changing at the moment according to EU directives issued in 1993.

Utility Levy

Although in a strict sense a utility tax can be regarded as a sales tax, it is discussed here. The State of Washington allows local taxes to be levied as dedicated revenue sources for transit support. Normally, transit systems in the State of Washington levy a two-tenths to three-tenths percent sales tax. However, transit in Pullman is paid for by a 2% levy on telephone, water and sewer (owned by the city), electric, gas and garbage utilities, although no tax has yet been levied on cable TV despite it being recently classed as a utility. The levy is collected by utility companies, and transferred to City of Pullman, which then transfers to the transit department of the city. It is based on collections of previous month, and on money actually paid (rather than on money actually billed). The levy pays 40% of operating costs of city's 14-vehicle, fixed-route and para-transit service. Initially, the Transit Department borrowed \$150,000 from the City Street Department to buy equipment and pay wages, and the utility tax and other revenues were then used to pay back loan. The utility levy is matched 1:1 with money from Washington State's Motor Vehicle Excise Tax. The levy was initiated by, and is operated by, the City of Pullman.

Land development

If land development and railway operations are performed by a single organisation, the profits from the former can be used to cross-subsidise the latter. In Japan there are several examples of private railway companies cross-subsidising their operations through land development.

From the beginning of their involvement in transport, private railway companies were land developers as well as transport operators. The Tokyo Corporation, for example(5), has developed 2,872 ha of land in the southwest of Tokyo for a population of 440,000 people. Real estate accounts for 18% of the private companies' revenues, rail operations for 54%, and other business for 28%.

The proportion of revenue attributable to real estate becomes even greater if the activities of affiliated companies are taken into account. Most Japanese railway companies have subsidiaries specialising in real estate. The Hankyu Corporation, for example, one of the leading railway companies, has a separate real estate company - Hankyu Realty - whose revenues are one fifth those of its parent company.

Although the business activities of each group are diversified, there is a striking similarity between them. Their business activities are generally grouped into four main fields: transportation (including buses, taxis, car rentals, trucking, aviation, shipping, freight forwarding and the manufacture of rolling stock); retailing (including department stores, supermarket chains, restaurants and catering services); real estate (including housing, offices, hotels, construction, architectural services and landscaping); and leisure and recreation (including resort development, travel agencies, amusement parks, cinemas, fitness clubs and golf courses). The major supporting business of each group is normally real estate, whose profits in effect cross-subsidise transport operations.

Cross-Utility Financing – Commentary

When implementing utility taxes one should realise the influence of external factors such as economic conditions and social trends on tax receipts. First of all, the utility rates themselves determine the revenue received. Second, because the use of utilities is fairly constant, if the rates are not raised to keep pace with inflation, tax revenue will stagnate. Another factor is energy

conservation: utilities such as gas, electricity and water are used less under more aggressive conservation programs and, thus, generate less revenue (TRB, 1999).

Cross-utility financing in Germany worked well, WSW kept up the high level of quality in its public transport system until today. The company 's main problem is their inattentiveness for the costs as a relevant issue so far.

In the near future the possibility of cross-financing public transport will be reduced rapidly, due in no small part to the liberalisation of the electricity market from 1999 is expected to lead to a constant fall in profit levels. Gas and water supply are likely to take the same development. As a result, the surplus out of these sectors is falling, and the budget for cross-financing public transport shrinks. On the other hand WSW is working hard to restructure its public transport sector and save money.

In the future the main parts of the deficit will have to be taken over by the community, with the municipality finance department being forced to pay for public transport. This will cut WSW 's independence. Furthermore, the treasurer 's interest in saving money forces him to call for tenders for the transport sector. Though according to EU directives this is going to be an existential question for WSW. Strong, multinational companies (such as the French Vivendi) might appear on the German market and displace the traditional structures with competitive prices. Although there will still remain some surplus from energy, gas and water, it would not be enough for WSW to face this concurrency.

4.2.8 Consumption Taxes

Overview

In general a consumption tax can be defined as a tax imposed on consumption goods like general merchandise, specific services and luxury items (sales) or utilities (gas) by most states and many local governments. Consumption taxes can provide a dedicated funding source for a transit agency, and through their implementation, agencies can collect a substantial amount of revenue for system operating and capital costs. Transit agencies often use these taxes to replace decreasing federal funding, build significant capital projects, or supplement operating revenue. These kind of taxes seem to be common in the United States where many counties or States have implemented these kind of schemes.

We have recognised several forms of consumption taxes including:

- local sales tax;
- general taxes;
- specific (beer); and
- gambling taxes.

A sales tax is the most common locally dedicated revenue source for transit systems in the United States. Sales taxes are applied to goods and services sold in a specific area. In many locations a small tax of one-half percent, can generate a substantial portion of the funds needed for the agency's operation. While taxes of any sort are unpopular, sales taxes tend to be more acceptable than most other forms of taxation. Sales taxes tend to be regressive and the services

they finance do not generally benefit those who pay the taxes. They do provide a stable source of revenue and respond quickly to changes in overall income levels. It is important to account for the total level of sales taxation as well as the local portion since it is the total amount that will affect consumption expenditures.

Example of Local Consumption Taxes

The review has examined the following local consumption tax codes:

- Local sales tax - Reno, Nevada, USA;
- Local sales tax - Fort Worth, Texas, USA;
- Local sales tax - Atlanta, Georgia, USA;
- Local sales tax - Austin, Texas, USA;
- Beer Tax - Birmingham, Alabama, USA;
- Gambling Tax - State of Pennsylvania, USA; and
- Gambling tax - Maricopa County, Arizona, USA.

Given that there are many types of transit agencies with different modes, locations and circumstances (Denver, New Orleans etc.), we discuss three examples of general sales taxes in detail (see Appendix B). A small system in Reno, Nevada; a system in Fort Worth, Texas, a large multi-modal system in Atlanta, Georgia and a scheme in Austin, Texas. Next to this we briefly analyse one specific example of a sales tax, namely the beer tax, implemented in Birmingham, Alabama. At the end of this section some other examples (outside the US) will be briefly mentioned.

As for gambling taxes, two states in the United States (Arizona and Pennsylvania) dedicate a portion of lottery receipts to public transportation. These are the two examples we will outline here, although we are aware of similar schemes in other States. In 1994 in Portland for example, the Oregon Department of Transportation issued \$97m worth of bonds to finance a light rail extension, which are backed by the proceeds of the State lottery (Vacarre, 1996). And, in Atlantic City, New Jersey, a general tax on gambling is levied to fund public transport services in the city.

Local Sales Taxes

In Reno a sales tax is used to fund transit in the area. A one-quarter percent sales tax was implemented in 1982 for general transit and for transportation of passengers who are elderly or have disabilities. The local sales tax in Reno is structured as follows. Sales taxes in Reno, Sparks and Washoe County are applied to goods and services sold in this specific area. Merchants send the sales tax collections to the State of Nevada. The State then sends the proceeds to Washoe County. The county places the money in an account for RTC, and RTC gives the county treasurer permission to invest it (the same as with unused county funds). When RTC wants to use the sales tax revenue, it draws the money from its account, with the county and deposits it into its own transit account.

The MARTA Act (as approved in 1971) allows the state of Georgia to collect a one- percent sales tax from items sold in MARTA's service area. The tax is collected by merchants and sent to Georgia's State Revenue Commissioner monthly. This Commissioner withholds MARTA's monthly debt service payments and turns over the remaining money to MARTA. The State of Georgia charges MARTA a handling fee of one-half percent of its total sales tax receipts to cover

the collection costs. Merchants also keep a portion of the tax revenues earned by MARTA, this decreases the total potential receipts for the transit organisation. Half of this revenue can be spend on the operation of the system, the other half is to be spend on the constructing of the transit system.

Capital Metropolitan Transportation Authority ("Capital Metro") currently receives sales tax. The transit sales tax, which is 1 cent on the dollar (1%) is collected from member cities in the service area. The scheme is operating ongoing. The State of Texas collects the tax and distributes it to Capital Metro.

The sales tax finances operating and capital expenditures necessary to provide transportation services. Approximately \$7 million per year (\$70 million over a 10 year period) funds the Build Greater Austin Program (this program builds sidewalks, paves streets). The remaining balance is set aside for future transportation programs. Capital Metro receives the sales tax each year regardless of the operating budget.

Beer Tax, Alabama

In April 1982, a statewide beer tax was established in Alabama. Prior to the bill, each county had set its own beer tax; under the bill, the tax was levied at 1.625 cents for each four fluid ounces of beer. The assessing authority of the county or municipality collects it. Each county divides its portion of revenues from this tax differently, according to the recommendations of the county delegation to the State house and senate. In Jefferson County, three funds were established to receive different portions of the revenues. The third fund (Fund C), which represents 3/9ths of the tax received (after 2 percent is removed for county administrative costs), is distributed in part to the Birmingham-Jefferson County Transit Authority. The Authority receives 50 percent of Fund C or \$2 million dollars annually, whichever is greater. Subsequent to the bill's passage, several counties with beer taxes that had been higher than 1.625 cents brought a lawsuit in State Supreme Court. Other cities have challenged the beer tax as unconstitutional but it has withstood this challenge in court.

Gambling Taxes

The lottery law in Pennsylvania stipulates that 50-percent of the proceeds be returned to the players in the form of prizes. The remaining funds are to be appropriated annually to two transit and two non-transit programs, all for senior citizens. Funding which goes actually to transit represents normally 8 to 12 percent of net proceeds from the lottery. One of the examples of supporting the mobility of senior citizens via this subsidisation is a 75% discount to senior citizens participating in a shared ride.

A portion of the revenues of the lottery in Arizona is allocated to each incorporated city and town in Maricopa County on the basis of population. The legislature has committed itself to appropriate sufficient funds out of other revenues if necessary, to meet target distribution but this has not been necessary. The State Treasurer distributes the lottery proceeds, no budget or request is required. It finances any eligible transit expenditure, so it is primarily seen as a way for cities in Maricopa county to extend their transit dollars. Till 1986, cities with more than 300.000 citizens (Tucson and Phoenix in 1986) must spend the revenues on mass transit, as capital or operating assistance. Other cities may use their funds for any transportation purpose, including road maintenance. At that time each city or town was guaranteed to receive a minimum of \$10.000. It is unknown if these prerequisites still hold.

Consumption Taxes – Commentary

Sales Taxes

Local sales tax can provide a dedicated funding source for a transit agency, and through their implementation, agencies can collect a substantial amount of revenue for system operating and capital costs, this also becomes clear from this example. The advantage of this example is that revenues are stable and can be counted on from year to year, unlike an annually appropriated source. This system is transferable, sales taxes are the most common locally dedicated revenue source for transit systems in the United States. Sales taxes require a strong local retail base to be an effective funding source. The same lessons can be drawn from this example as from the foregoing. Voters' approval can be difficult to obtain, one should carefully pay attention to this aspect in getting much voters. Next to this the revenues often depend on external factors (e.g. economic growth).

Also in this context a local sales tax provided a dedicated funding source for a transit agency. Concerning the influence of external factors Atlanta experienced similar circumstances as the Reno example. Between 1989 and 1992, MARTA's sales tax receipts grew more slowly than expected due to the recession. This not only influenced the operating revenues, also the capital budget was devastated. Originally, the entire rail system had to be opened in 1996, but the slow growth in sales tax receipts cut a significant portion of MARTA's anticipated funding and delayed rail station openings.

Despite the influence of external factors, one can say in general that revenues are stable and can be counted on from year to year. This system is transferable, sales taxes are the most common locally dedicated revenue source for transit systems in the United States. Sales taxes require a strong local retail base to be an effective funding source. The same lessons can be drawn from this example as from the foregoing. Voters' approval can be difficult to obtain, one should carefully pay attention to this aspect in getting enough votes. This example shows that a clear and straightforward campaign is needed to get votes from the people.

In Austin, Texas the tax is based on consumption and is economically proportional (also dealing with economic factors). The tax does not target a certain geographic area of the city, unlike property taxes. If the transit company is performing correctly, all who pay the tax enjoy the benefits of transit -cleaner air, less congestion on roadways, a transportation alternative for those who cannot drive cars.

The disadvantages are for those communities that pay much more in taxes than the service that they receive. It is difficult to find a balance between servicing all areas of the service area and servicing only a few areas effectively. A possible lesson may be that the governing body over the authority, in this case it is the Board of Directors, should have terms for longer than two years. A revolving Board can create instability, and direction can be lost.

Beer Tax

Revenues from the beer tax represents 17,8 percent of the Authority budget in each of the years since the tax was dedicated to transit. Funds have been used mainly for capital expenditures.

Gambling Tax

A disadvantage of a lottery system is the complexity of operation. It includes marketing; security, printing packaging and distributing tickets; sales; and developing rules and regulations to conduct each game; and payment of prizes. Two functions are considered to be essential to the success of a lottery; extensive security procedures to guarantee the integrity of the game and marketing efforts to increase tickets sales. This makes operating a lottery a very costly business.

In general lotteries are seen as a very controversial source of revenue. The Pennsylvania example teaches us that a long period of debate can precede the implementation of the law. Critics of the lottery pointed to the sins of gambling, the opportunities for corruption and the high

rate of participation by the poor. The compromise was to use lottery proceeds to subsidise senior citizens programs.

This example also shows the fact that people has to vote before a tax can be Implemented. So again significant community outreach has to be completed to raise support for the lottery tax, maybe even more than for a sales tax or a utility tax due to existing criticism.

4.2.9 Other Unconventional Charges

Student surcharge, University of California, Berkeley, California, US

This involved a mixture of measures, including:

Local operator AC Transit sought an improved universal pass program for UC Berkeley students that would cost less money and provide more funding for the program. In collaboration with the University the District decided to receive a subsidy for the class pass through a surcharge on student registration fees. The surcharge, introduced in 1999, costs students less than a monthly adult pass.

AC Transit will receive roughly \$6000,000 per year for operating dollars (based on \$30,000 students). In addition, AC Transit receives a payment (to be determined) from UC Berkeley for each class pass holding student using TransBay service.

Passenger Facility Charges, JFK Airport, New York

Area characteristics

JFK International Airport lies 15 miles from New York City, and in 1998 handled 31m passengers, while 37,000 people are employed there. For many years, the airport was seen to suffer from poor access, and this finally led to construction of the so-called 'Airtrain light rail link' to JFK from Manhattan beginning in 1998. Due to be completed in 2003, the 8.4 mile \$1.5billion project is have ten stations, and is to be financed entirely by system users, Port Authority of New York and New Jersey funds, and revenue from an existing \$3 surcharge on departing passengers under the Passenger Facility Charge (PFC) programme.

Description of the mechanism

Under a law passed several years ago, airports are allowed to charge Passenger Facility Charges (PFCs). The maximum amount is \$3.00 per passenger per flight. The fee is collected by the airlines in the same way as other air-related taxes at the time the ticket is sold. Projects to be funded by the PFCs must be approved in advance of collection of the fee by the Federal Aviation Administration. By law, landing fees paid by the airlines - as opposed to passenger-paid PFCs - cannot be used for off airport purposes.

Performance of the mechanism

There are several hundred airports that collect PFCs for various projects. While most of these schemes fund airport improvements, a small number involve improving access to the airports, of which the most notable is the new Airtrain light rail link linking JFK airport with New York City.

As a mechanism, the PFC is simple to collect, easy to understand, and can be said to benefit from both the 'beneficiary pays' and 'polluter pays' theory. It is unpopular with the airlines, but is generally accepted by the public, who in most cases are used to paying consumption-based taxes. Use of the tax has allowed the Port Authority to claim that "no tax dollars will fund the project" – possibly one barrier to building the light rail line in the past.

4.2.10 Combined Schemes

CityNet, Milton Keynes, UK

Scheme Description

This is a developer-led project proposal whereby planning gain from a large development on the eastern flank of Milton Keynes would pay for the introduction of a radically better bus service. The mechanism to fund this is strikingly similar to that currently being implemented in Central Milton Keynes, but it is entirely separate from the CMK scheme.

The first phase of CityNet, costing £20m over 5 years, would be paid for by mechanisms linked to the development of the Fen Farm site, including planning gain payments and parking charges on employment areas. After 15 years the routes would be financially self-supporting.

Scheme History

This scheme is still only a proposal from the property development company Gazeley Properties.

The Fen Farm development site is on the eastern edge of Milton Keynes. The existing new town area of Milton Keynes is 8,900 ha and currently has a population of about 200,000. The eastern flank is about 1,000 acres (405ha), with packages of land assembled by Gazeley and Land Securities (300 acres/121ha), Wilcon Homes (c.200 acres/81ha) and two other major landowners. They prepared a plan for the entire 405ha site, but had little response from Milton Keynes Council.

The CityNet concept was chosen, after examining a series of alternatives, to exploit the advantages of Milton Keynes' fast grid road network. If express buses operated at a high frequency along each of these grid roads, any trip could be completed with only one change, but the current roundabouts at the grid road intersections make interchange clumsy (the bus stops on the arms of the roundabouts can be 200+ metres apart). The CityNet idea is to rebuild the middle of the roundabouts and locate the interchanges there (See brochure for illustrations and details) Such interchanges have been used in Adelaide and Toronto and work well.

The buses would be state of the art, low floor and low pollution vehicles (powered by compressed natural gas). The interchanges in the middle of roundabouts would require computer controlled traffic lights and there would also be some segregated guided busways in congested areas (principally Central Milton Keynes).

Financial Proposals

The proposal is that the first phase of CityNet, costing £20m over 5 years, would be paid for by mechanisms linked to the development. This would pay for three core routes to be set up, two of which would serve Fen Farm itself (see map in brochure). The source of funds would be made up of farebox revenue, section 106 revenue contributions, and parking charges on employment areas in Fen Farm. The housing developer (Wilcon) found it hard to devise a mechanism to generate income to support the CityNet development. They could not work out a viable charging mechanism, whereas charging for employee car parking in the employment areas was accepted. The only thing that they could suggest was providing new residents with points on bus smart cards in their 'welcome pack'.

Comments and Issues

This case study illustrates some problems of a developer-led mechanism, but raises a number of issues applying to the planning gain mechanism as a whole.

The assumption behind the CityNet proposal is that other developments in Milton Keynes would apply the same principle to provide funds to complete the CityNet system. Thus this proposal has major implications not only for Milton Keynes Council, but also for English Partnerships, who own considerable amounts of development land in the Milton Keynes new town area.

There also needs to be agreement, either locally or nationally, that public transport is prioritised in development gain. If very large contributions to road improvements were demanded under a Section 106 (Planning Gain) requirement, then funding CityLink as well would not be possible. Also there are other areas where planning gain agreements are used, for example funds to build schools or other social facilities. The 'unconventional mechanism' of planning gain is often used for these as well as transport. The Council needs to agree within itself that public transport would be the planning gain priority contributions to other areas would depend on the amount of cash required, alternative sources of income and priorities.

Another question was that if workplace parking charges were introduced, some agreement would have to be reached on the status of the mechanisms in Fen Farm, otherwise people here would end up being double charged. Legislation is not in place yet for workplace charging, but an allowance for where charges exist as part of a voluntary agreement would be needed.

Overall, to move this mechanism to a strategic level requires the voluntary agreement of a number of crucial players who share the project and its outcomes together. This includes other developers, landowners, employer associations and the council. A simple local 106 agreement is one thing; developing an area voluntary agreement needs all key stakeholders to buy into it.

Outcomes

At the moment whether this project will be implemented is yet to be decided.

Discussion

The question has been raised as to how such a mechanism could be better organised. The view was that there needs to be a link between the role of development in generating finance to development planning. At the moment, Section 106 agreements are seen as 'one offs'; their requirements are ad hoc and there is no strategic way of thinking about them. There is also no framework, which has resulted in cases of a slug of money being paid to the council or an agreement to run a bus service for a few years that is then dropped. These are pretty ineffective. However, some councils have managed to fund large infrastructure projects through contributions from a number of developers over time.

What is needed is a structure in which a common vision can be developed among a partnership of stakeholders and a binding commitment by planning authorities that any funding formula would be applied equally to all developments so as not to disadvantage the progressive developer.

Lessons

This case study is notable as it involves a developer initiative. The approach is far more strategic than a usual Section 106 and is attempting to move developer contributions up to the strategic transport planning level.

This case, however, highlights a number of problems of voluntary agreements stemming from a planning gain requirement. To work, a mechanism needs to be applied across the whole of the Milton Keynes area, otherwise the developer is at a commercial disadvantage. Equally, the wider application of the mechanism is needed to complete the CityNet scheme.

Also, the housing developer could not find a charging mechanism that would not put them at a

disadvantage. A supplementary charge added to the price of the house, for example, would have put them at a commercial disadvantage compared to other developers. This is actually another example of the principle that if such funding mechanisms are used they have to be used consistently across a whole area so as not to commercially disadvantage the responsible developer.

This suggests a role for the planning authority in setting up, and policing via the planning system, an area-wide agreement through established local plan policies. The alternative would be for locally implemented legislation to require all housing and commercial development to make a contribution to public transport development funds (as in the Hamburg case study). This could be implemented via a consistent use of Section 106 powers, but is rather clumsy at the moment as the Section 106 agreement is not linked into such a policy perspective.

This case raises a number of key points about lifting unconventional mechanisms to the strategic level. To do this, unconventional funding mechanisms require co-ordination to shared objectives by a partnership of stakeholders, including the planning authorities. In the Fen Farm case this has not yet emerged; in the case of the Central Milton Keynes case (considered in the Parking Charges section), this has been managed, but involves a less ambitious transport project. To actually make the improvement in public transport services needed in Milton Keynes would require something as radical as CityNet, but this is a harder task as it requires more co-ordination.

5 Assessment of Local/Regional Unconventional Charging and Taxation Cases

5.1 Assessment Criteria

This chapter examines the variety of unconventional charging cases in a structured way by developing, an assessment framework with the aim of identifying the major lessons and conclusions at the individual mechanism level. This framework can be seen as a general guide in order to give a qualitative score based on different criteria. It is recognised that emphasis on specific assessment criteria will depend on the case studies; some issues will be more important in some cases than others. The following criteria are identified:

Revenue (fund) Raising:

Three characteristics are distinguished:

Criteria	Assessment
Potential	Expressed as large, medium or low: major, one or subsidiary source of non-fare box funding.
Correction of distortion	Does it correct and if so what?
Targeting	Is the targeting very good, good or poor?

Revenue Allocation:

Three measures are looked at:

Criteria	Assessment
Efficiency	Most of the time public transit improved but it is unclear whether this also holds for the efficiency.
Winners	Users of public transport.
Losers	Employers, employment, indirectly.

Practicality:

Various characteristics were identified, and each was scored on a five-point scale ranging from – 2 (complex, inflexible, difficult), -1,0 (neutral), +1, +2 (simple, flexible, easy):

Criteria	Assessment
Administrative complexity	Does it use existing structures, or are new structures required ?
Users complexity	Complexity to users.
Flexibility	Does the mechanism allow for fine tuning or cancellation ?
Enforceability	How easy is the scheme to enforce ?
Transparency	Is it clear who pays for what and when ?
Costs	Costs of operation.

Transferability:

The transferability of the scheme to other areas was assessed in terms

Criteria	Assessment
Local circumstances	Can the scheme be introduced anywhere else?
Legality	Is there a need for legislation?
Institutional	Is a change in institutional structures required and if so to what extent?

Acceptability:

How acceptable is the scheme to the following groups (-2 very unpopular, +2 widely accepted).

Criteria	Assessment
Public	
Business	
Political	
Equity	

Linkage to transport and environmental policy

A general qualitative assessment of the strength of the linkage to transport and environmental policy (aims only linked to support public transport or wider) was made.

Effectiveness

A qualitative assessment was made of how closely the mechanism met its initial objectives.

General comments

Overall the intention is not to give a value judgement of the categories, as the relative weight appended to the various criteria may clearly vary over location and time. Instead, the aim is to draw out common themes, lessons and experiences. These results should give a good insight into the advantages and disadvantages of the various financing mechanisms.

5.2 Performance Assessment

5.2.1 Overview

This section provides a summary of the assessment of each of the nine categories of taxes, starting with the employer taxes and ending with 'other' taxes. The assessment of each mechanism starts with a short introduction of the category followed by the assessment tables. The section concludes with an overview of the main lessons learnt.

5.2.2 Employer taxes

While employer, employee and local income taxes are collected by national and local governments world-wide, only in a very few cities are they hypothecated to pay for public transport systems. (see for further information the examples of the Dienstgeberabgabe in Vienna, the Versement Transport across France, and the Portland and Eugene payroll taxes in Oregon).

Revenue (fund) Raising:

Criteria	Assessment
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Potential	Fairly large (+), although revenues in France have begun declining recently, as firms seek ways to avoid paying the payroll tax.
Correction of distortion	No impact.
Targeting	Good in that employers effectively pay for improved public transport provision for their staff (i.e. the beneficiary pays), but poor as pressure on employers to locate in non-transit served areas.

Revenue Allocation:

Criteria	Assessment
Efficiency	Most of the time public transit services improved but it is unclear whether this also holds for the efficiency.
Winners	Public transport users.
Losers:	Employers, employment, indirectly.

Practicality:

Criteria	Assessment
Administrative complexity	+1, Very simple – standard practice.
Users Complexity	+1, Very simple – standard practise.
Flexibility	-1, Requires political decision to increase or decrease amount raised.
Enforcement	Strong + 2
Transparency	+1, It is clear who pays, when and for what (although often not directly).
Costs	Fairly minimal, most local areas already collect employer and/or income taxes.

Transferability:

Implementation is simple once boundary issues and legal barriers are overcome.

Criteria	Assessment
Local circumstances	Implementation is simple once boundary issues and legal barriers are overcome.
Legality	Would mostly require new registration to allow localities to establish special public transport fund.
Institutional	Only the creation of a separate fund required.

Acceptability:

Criteria	Assessment
Public	Fairly high
Business	Unhappy, but grudgingly accepted
Political	High
Equity	Adverse within group of road users (value of time increases with income) perhaps positive overall: lowest incomes benefit more from (better) public transport.

-1; acceptability initially problematic, but where the transport system is seen as a mess (e.g. London), businesses keen to help address the problem.

Linkage to transport/environmental policy

Possible negative effect of forcing companies to locate outside of public transport accessible areas.

Effectiveness

Initially high. But, in France some commentators feel the easy availability of money has led to some less useful schemes being introduced.

5.2.3 Property taxes

Paying for the provision of public services through the collection of property (or land) taxes, is a fairly common method world-wide, being evident throughout Europe, Australasia and North America. However, for the most part such monies are collected by local authorities and allocated to each economic sector (e.g. education, health, social services etc.) according to the prevailing political objectives. Interestingly, while this procedure is followed in Britain, the level at which business rates are set is related in part to the level of public transport provision (Simpson, 1994).

Revenue (fund) Raising:

Criteria	Assessment
Potential	Large (+).
Correction of distortion	None
Targeting	Very poor, as areas badly served by public transport pay the same as areas well served. However, the benefit assessment district-style scheme does at least try and charge only those served by the public transport system.

Revenue Allocation:

Criteria	Assessment
Efficiency	Most of the time public transit services improved but it is unclear whether this also holds for the efficiency.
Winners	Public transport users.
Losers	Property owners or property renters.

Practicality:

Criteria	Assessment
Administrative complexity	+1, Very simple – standard practise.
User Complexity	+1, Very simple – standard practise.
Flexibility	-1, Requires political decision to increase or decrease amount raised.
Enforceability	Strong, +2.
Transparency	+1, it is clear who pays, when and for what (although often not directly).
Costs	Fairly minimal, most local areas already collect local property taxes.

Transferability:

Very easily transferred once legal obstacles of establishing fund are overcome.

Acceptability:

Criteria	Assessment
Public	Very low,
Business	Low
Political	Suffering decline in popularity
Equity	Seen as a regressive tax when applied only to residential property and slight progressive when applied to commercial and industrial properties too.

-1; acceptability seems to be problematic, mainly because collected as a lump sum.

Linkage to transport/environment policy

None

Effectiveness

It does raise money, but use of mechanism on the wane because of its unpopularity among those charged.

5.2.4 Developer levies

Development gain can take a number of forms, including development charges, benefit sharing, density bonusing, payment to the property owner for all of part of a line extension or station that is integrated into his development, sale of surplus land or air rights by the transit authority, and connection fees.

Revenue (fund) Raising:

Criteria	Assessment
Potential	Usually small scale – Hong Kong being the best known exception.
Correction of distortion	Usually none
Targeting	Poor – although the levies do at least charge only those developments to be served by the public transport system.

Revenue Allocation:

Criteria	Assessment
Efficiency	Dependent on how the money is spent by the public transport operators. Public transport users
Winners	Developers – although they too often benefit from higher real estate values caused by the public transport provision, especially where rail-based or exclusive busway system are provided.
Losers	

Practicality:

Criteria	Assessment
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Administrative Complexity:	Ranges from very complex, (e.g. San Francisco TIDF) to extremely simple (where a developer agrees to provide a bus stop on the site in return for planning permission). +2 – (-2)
User Complexity	Ranges from very complex, to extremely simple. +2 – (-2).
Flexibility	Range from being very rigid (with change requiring legislative action) to extremely flexible – many schemes are tailored to meet specific circumstance. +2 – (-2).
Enforcement	May be difficult, In cases where there is a formal levy, developers have challenged such regulations in court, while in ad hoc examples there is always a risk that a developer will decide to locate elsewhere, rather than comply. +2-(-2).
Transparency	+2 – (-2)
Costs	range from fairly expensive (San Francisco TIDF) to virtually nothing (bus stop example). +2 - (-2).

Transferability:

Various forms of developer levy can be implemented almost anywhere.

Criteria	Assessment
Local circumstances	Various forms of developer levy can be implemented almost anywhere. Ad hoc agreements can be introduced almost anywhere, although more formal San Francisco TIDF-style levies will require legislation. New institutions can be created but are not necessary.
Legality	
Institutional	

Acceptability:

Criteria	Assessment
Public	Very high.
Business	High, unless a newly locating company.
Political	High – a worry that developers may go elsewhere if rules much tougher than competing centres.
Equity	Only a problem where a company moving one year does not pay, whereas a company moving a year later does pay due to a change in policy.

(+); no real problems usually.

Linkage to transport/environmental policy

Can be, but often not.

Effectiveness

Usually fairly small scale, and results very variable.

5.2.5 Parking charges and fines

Revenues from parking levies shifted towards public transport are becoming increasingly

common world-wide. Examples can be found in countries including the UK, Greece, Italy, and the USA.

Revenue (funding) Raising:

Criteria	Assessment
Potential	Fairly large + 1
Correction of distortion	Road traffic is known to generate considerable external costs, which parking charges can help to discourage.
Targeting	Fairly well – charges can be varied by time and location.

Revenue Allocation:

Criteria	Assessment
Efficiency	Most of the time public transit services improved but it is unclear whether this also holds for the efficiency.
Winners	Categories who are exempted from charging, and users of public transport, and all drivers as congestion decreases.
Losers	Motor vehicle users.

Practicality:

Criteria	Assessment
Administrative Complexity	+ 1, fairly simple.
Users complexity	+2, very simple.
Flexibility	+1, can be adjusted very easily within certain boundaries (level of charge, in time, although approval is needed for adjustments).
Enforceability	+1, it is clear who pays, when and for what (although often not directly).
Transparency	+1: operation and capital costs are not excessive.
Costs	

T

Transferability:

Criteria	Assessment
Local circumstances	Parking levies are in place across the world.
Legality	Possibly national and/or local government legislation required, but by no means for every case.
Institutional	New institution not necessary.

Acceptability:

Criteria	Assessment
Public	Generally accepted
Business	Generally accepted
Political	Generally accepted
Equity	Adverse within group of road users (value of time increases with income) perhaps positive overall: lowest incomes benefit more from (better) public transport.
Acceptability	+1: generally accepted.

+1; generally accepted.

Linkage to transport/environmental policy

Most of the schemes are dealing with transport policy, as the objective is often to reduce car use. Public transport is often funded by revenue from parking while not needing to park and so being exempted from the levy. Parking charges are also dealing with environmental policy, it is seen as a way of internalising the external costs (among which environment costs such as pollution and noise) of road traffic.

Effectiveness

The objectives of the various schemes are generally to raise revenue first, and to reduce car use as a secondary impact. Parking levy schemes are generally more successful in the former aim.

5.2.6 Charging for the use of road space

This category includes cases where road pricing (or tolls) is or would be implemented to deal with congestion and/or environmental problems. In all of these cases part of the revenues are earmarked to public transport and public transport is exempted from charging. Various cases have been identified, three in Norway (Bergen, Oslo and Trondheim), one in Singapore, two in the United States and three which can be characterised as failed because they were never implemented (Stockholm, Hong Kong and Cambridge).

Revenue (fund) Raising:

Criteria	Assessment
Potential	Large (+)
Correction of distortion	Road traffic is known to generate considerable external costs, which in particular in peak hours exceed prevailing taxes to a considerable extent. Cordon charges may be used to internalise such external costs. Although there are considerable differences between the schemes (Singapore corrects very well while San Francisco tolls do not). In general this category corrects well for a distortion.
Targeting	Well, in affecting congestion causing aspects in time and place.

Revenue Allocation:

Criteria	Assessment
Efficiency	Most of the time public transit services improved but it is unclear whether this also holds for the efficiency.
Winners	Categories who are exempted from charging (e.g. car poolers and taxis) and users of public transport.
Losers	Motor vehicle users.

Practicality:

Criteria	Assessment
Local circumstances	The structure of these categories can be implemented elsewhere without large difficulties as implementation uses roads or bridges. In some cases it might be easier than in other cases depending on geographical structures.
Administrative Complexity	-1, some complexity, requires new structures and new administrative services to control the system.
Users complexity	-1, some complexity, user needs to learn new set of structures.
Flexibility	+1, can be adjusted within certain countries (level of charge in time, although approval is needed for adjustments).
Enforceability	At first it may seem difficult (and dedicated enforcement measures seem necessary) but if everything is installed (including electronic equipment) it is rather easy: + 1: requires a few adaptations.
Transparency	+1: it is clear who pays, when and for what (although often not directly)
Costs	operation (especially manual toll booths) and capital costs (toll booths, equipment and engineering) are considerable.

Transferability:

The structure of these categories can be implemented elsewhere without large difficulties as implementation uses roads or bridges. In some cases it might be easier than for others depending on geographical structures (see example Oslo and available space (San Diego HOT lanes)).

Criteria	Assessment
Legality	Necessary (approval from national and local governments).
Institutional	New institutions can be created but are not necessary, operation can be carried out by private companies, these can transfer the revenue to the state.

Acceptability:

Criteria	Assessment
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Public	Mostly low, with one exception (San Diego).
Business	Not obvious but expected to be low.
Political	Low as many proposal failed.
Equity	Adverse within group of road users (value of time increase with income) perhaps positive overall: lowest incomes benefit more from (better) public transport.

-1; acceptability seems to be problematic as can be seen from the failed schemes, however there are exception (see American cases).

Linkage to transport/environmental policy

All the schemes are dealing with transport policy, as the objective in most cases is to reduce congestion. Public transport is often funded by revenues from the tolls and is favoured indirectly while being exempted from charging. Road charging also conforms to environmental policy, it is seen as a very effective way of internalising the external costs (among which environmental costs such as pollution and noise) of road traffic.

Effectiveness

The objectives of the various schemes are not entirely the same. The Norwegian tried to raise funds for new investments in infrastructure while San Francisco has to finance the Golden Gate Bridge, these were clearly not aimed to reduce congestion in the first place. So each scheme has its own objective(s). Concerning the cases that did not fail, one can conclude that in general the aims were realised.

5.2.7 Local motoring taxes

These schemes deal with automobile taxes from which the revenues are partly earmarked to public transport. Two examples have been identified, a local motor fuel tax in Florida and a motor vehicle excise tax in the State of Washington. An important difference between those two types of taxes is that fuel taxes primarily affect the costs of vehicle use, whereas the excise tax affects car ownership.

Revenue (Fund) Raising:

Criteria	Assessment
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Potential	Large, although depending on travel patterns, Revenues are partly influenced by the economic situation, e.g. a recession may lead to declining revenues. So it is not an entirely source if revenues.
Correction of distortion	Road traffic is known to generate considerable external costs, which in particular in peak hours exceed prevailing taxes to a considerable extent. Fuel taxes are known as road taxes which are levied on road users but that are only crudely related to the extent of their road use and are intended to raise money rather than to alter behaviour. It does costs and other external costs are not priced. So it corrects for distortions in a modest way. In particular, insofar as external costs depend on the time and place of driving (congestion, noise, safety) or the driving style (accident, risks) fuel taxes only give a very limited incentive to optimal behavioural changes, and vehicles taxes even less so.
Targeting	Modest, but fuel taxes are generally more efficiently targeted to external costs of road use than vehicle taxes, because the former affects driving behaviour more directly. Well-graded vehicle taxation target external costs.

Revenue Allocation:

Criteria	Assessment
Efficiency	Unknown, although sometimes it is argued that public transport would not be available without this funding source.
Winners	Public transport users, fuel sellers in neighbouring areas.
Losers	Motor vehicle users and fuel sellers in dedicated area.

Practicality:

Criteria	Assessment
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Administrative complexity	+1, uses existing structures as the State department of Revenue is responsible for collection of local fuel taxes from retailers.
Users complexity	+2, very simple, people already paid for their fuel and cars, now they only have to pay more.
Flexibility	0, can be adjusted within certain boundaries (e.g. existing tax structure, tax structure on other counties and approval needed in case of the voted gas tax).
Enforceability	+1: requires a few adaptation, but problematic in the U.S. as the gasoline retailers are on of the most delinquent groups of taxpayers, with many going out of business before paying the tax.
Transparency	+1, it is clear who pays, when and for what.
Costs	Only operational costs in levying the tax, but the administrative part for collecting the tax (State's Department of Revenue) already exists, so costs seem to be low.

Transferability:

This point depends on the existing tax structure in countries and is related to the situation in North America.

Criteria	Assessment
Local circumstances	Depends on the existing tax structure in countries. Very much related to the existing tax structure in North America.
Legality	Necessary, whether or not required via approval (as for the voted gas tax).
Institutional	No new institutions needed in general as fuel and vehicle taxes are levied already in most of the countries.

Acceptability:

Criteria	Assessment
Public	Enough concerning the voted gas tax, but probably lower for others.
Business	Low
Political	Medium (depending on existing tax structures)
Equity	Adverse within group of road users (transport becomes only accessible for higher incomes) perhaps positive overall: lowest incomes benefit more from (better) public transport.

0; some problems of acceptability but as the idea of fuel taxes is already acceptable nowadays it seems to be less problematic in comparison with road charges. The need for revenues must be understood by the community and the existing tax structure must not be too high.

Linkage to transport/environmental policy

These case studies were mainly implemented to fund public transit and thus incorporated in transport policies. Fuel taxes can be seen as a disincentive to road transportation and a stimulus to the efficient use of energy resources. Tax rates can vary depending on kind of petrol as one is more environmentally friendly than another is. So both transport and environmental policy are affected.

Effectiveness

Significant revenues can be obtained varying according to tax rates and travel patterns. Depending on these factors the scheme offers a considerable funding source for public transport companies throughout the United States. In this way the scheme achieves its main aim in being an accepted funding source. This is underlined by the fact that many States use a local fuel tax to fund public transport.

5.2.8 Consumption taxes

This category includes two forms of dedicated funding: sales tax and gambling taxes. A sales tax is the most common locally dedicated revenue source for transit systems in the United States. Sales taxes are applied to goods and services sold in a specific area. A specific example of the kind of sales taxes is the beer tax as has been implemented in Birmingham Alabama. Gambling taxes can be seen as an indirect tax (prize money would be higher), a portion of the lottery receipts is dedicated to public transportation. Various examples can be identified in the United States, whereas elsewhere this hypothecation of money seems not to be used as a funding mechanism for public transport.

Revenue (fund) Raising:

Criteria	Assessment
Potential	Large, a substantial portion can be generate and it provides a stable source of revenue (however this will be influenced by the state of the economy); most of the cases show that more than 50% of the budget comes from the sales tax,. This is lower for the beer tax (17.5%). The potential of gambling taxes is lower; it generates less money compared to sale taxes, it is also unstable as revenues depend on ticket sales.
Correction of distortion	None, unless gambling is regarded as a socially unwarranted activity.
Targeting	The scheme can be targeted at specific goods (e.g. beer), however sales taxes tend to be more general and applied to different goods and services in total and not to one specific group.

Revenue Allocation:

Criteria	Assessment
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Administrative complexity	+1: no new structures are implemented, merchants send the sales tax collectors to the State, which send the proceeds directly to the transit agency or indirectly via the County. Gambling may be more difficult as it includes marketing, printing, security, packaging and distributing tickets and developing rules. Distributing revenue from State Lottery to the transit company is easy.
Users complexity	+1: consumer just buys good and pays direct an extra charge.
Flexibility	-1: can be adjusted within certain boundaries which appears not to be so easy as people need to vote for approval, tax increases have been rejected several times.
Enforceability	0: same as for VAT, while lottery may be more difficult as security is a main issue.
Transparency	+1: clear who pays for what (although lottery might be problematic).
Costs	Low, although higher for gambling.

Transferability:

Criteria	Assessment
General	Very much related to existing tax structure in North America.
Local Circumstances	Existing taxes in sales or beer should not be too high otherwise it would be difficult to implement a new tax, or it will go "underground", also a state (or regional wide) lottery should exist.
Legality	Necessary to have authorisation of the state legislature, voter approval is needed in discussed cases which is often difficult to obtain.
Institutional	Local authorities should have the right to implement (after voter approval most of the times) these schemes, local institutions (as to organise for example the lottery system) may not exist outside U.S.

Acceptability:

Criteria	Assessment
----------	------------

Public	Enough but often difficult, transit agencies must sell the need for dedicated taxes to the community.
Business	See above.
Political	Sufficient (but conservative concerning gambling).
Equity	Since consumption usually increase with income, equity impacts will often be regarded as favourable. However, exceptions are possible: suppose the poor would drink beer while the rich have their whiskeys. Lotteries might be regarded as a controversial source of revenue. Critics of the lottery pointed to the sins of gambling, the opportunities for corruption and the high rate of participation by the poor.

0, some problems still exist but acceptable overall, a (political) campaign is needed to pass a tax proposal.

Linkage to transport/ environmental policy

No link, just a way of funding

Effectiveness

A local sales tax can provide a dedicated funding source for a transit agency, and through implementation agencies can collect a substantial amount of revenue for system operating and capital costs. The objective of the schemes is most of the time to give at least modest support for transportation and transit related improvements throughout the Counties. Given that it appeared to be a relatively stable source of revenue, this category achieves its objective.

5.2.9 Cross utility financing

Cross-utility financing may not actually strictly be an 'unconventional' mechanism, given its widespread application in parts of Europe, North America, and elsewhere. However, it is adopted on a localised basis, and is earmarked to fund public transport. Two methods of how cross-utility financing operates were identified. The first is via a levy on utility companies, which operates in a similar way as sales and employer taxes, while the second is where a loss-making public transport department is cross-subsidised by a profitable utility department, usually to generate tax benefits.

Revenue (fund) Raising:

Criteria	Assessment
Potential	Fairly large (+1)
Correction of distortion	None
Targeting	Very poor

Revenue Allocation:

Criteria	Assessment
Efficiency	Most of the time public transit services improved but it is unclear whether this also holds for the efficiency.
Winners	Users of public transport
Losers	Utility users

Practicality:

Criteria	Assessment
Administrative complexity	-1, some complexity, requires new structures and new administrative services to control the system.
Users complexity	(+1), easy to understand
Flexibility	(-1), fairly rigid, requires political action for levy to be raised or lowered.
Enforceability	(+2), strong – often utility company related to the public transport company.
Transparency	(-1), very poor
Costs	(+1), not excessive

Transferability:

Not really practical to transfer to new centres due to new European Union Competition rules.

Criteria	Assessment
Legality	Difficult to introduce in the European Union due to competition rules.
Institutional	Really requires both utility and public transport operators to be part of the same (usually public) organisation.

Acceptability:

Criteria	Assessment
Public	Not obvious – in many cases the levy is almost invisible, In Pullman, Washington, it was voted in and was thus more popular than a sales tax in that case (because a neighbouring town already had a far lower sales tax).
Business	Not obvious but expected to be moderate.
Political	Fairly high
Equity	As for other consumption taxes

0; acceptability difficult to judge as usually almost invisible to the public.

Linkage to transport/environmental policy

It can be linked to environmental policy to stimulate the use of other (less scarce) energy sources as becoming relative cheaper.

Effectiveness

Decreasing as profitability in other utility sectors becomes less clear (due in no small part to increasing energy efficiency).

5.2.10 Other taxes

One other tax where funding was hypothecated to pay for public transport, was the student surcharge imposed at the Berkeley Campus at the University of California.

Revenue (fund) Raising:

Criteria	Assessment
Potential	Fairly large (+)
Correction of distortion	None
Targeting	Targets students to pay for public transport as part of their fees.

Revenue Allocation:

Criteria	Assessment
Efficiency	Provides specific service for university that may not have run otherwise.
Winners	Regular public transport using students.
Losers	Non and irregular public transport using students.

Practicality:

Criteria	Assessment
Administrative complexity	+1, not very much
Users complexity	+1, fairly simple
Flexibility	+1, fairly flexible – level of charge subject to student referendum.
Enforceability	Strong, although it is a new scheme and may not be open to challenge due to compulsory nature (+2).
Transparency	+1: it is clear who pays, when and for what (although often not directly).
Costs	(+1) should be negligible.

Transferability:

Not so many barriers, although it depends on number of students, it might be problematic to transfer this scheme to areas with a small number of students.

Criteria	Assessment
Legality	No barriers
Institutional	No new institutions needed.

Acceptability:

Criteria	Assessment
Public	High enough to be passed in a referendum.
Business	Not affected.
Political	Fairly high within the university hierarchy.
Equity	Adverse on non-public transport using students, but positive for public transport using students.

+1; acceptability looks OK at the moment.

5.3 Lessons Learnt

From the previous assessment of all the unconventional mechanisms a number of lessons can be drawn.

Revenue Raising

In general the fund raising potential of the identified cases seems to be high, and most of the categories can be regarded as an additional source of income to fund public transport. However, only a small proportion are correcting for a fiscal distortion, as most of the funding sources have been developed simply in order to generate income to support public transport. However, the interest in cases that not only raise funds but also support environmental and transportation objectives is increasing, especially in Europe.

The allocation of revenues is unclear for many cases, and it is very hard to judge the change in efficiency of public transport after implementing new ways of funding. This may be because such mechanisms are necessary to keep public transport services operating at a certain level, especially in the United States, where transit would probably disappear in many areas without such funding techniques. It is also important to recognise that 'losers' (identified as payer of the charge) are usually also 'winners', and improved public transport is also a significant benefit to non-users.

Practicality

Practicality seems not that problematic in implementing these unconventional mechanisms, as most of the identified examples rely on existing structures. This keeps costs and complexity relatively low. Flexibility though, may be restricted due to the processes required in obtaining (political) approval.

Transferability

An interesting point is to see whether local charging mechanisms are transferable to other areas. It appears that it is not that simple to copy successful examples, even though local circumstances and institutional aspects are usually suitable. On the other hand, certain categories (e.g. local motoring taxes and consumption taxes) are very much a product of the conditions and taxation systems prevailing in North America. The existing institutional structures (organising referenda) and tax levels make the implementation of new taxes to fund public transport relatively easy. Implementing these mechanisms in Europe could be more difficult due to the lack of such processes, and existing resistance against already relatively high taxes on fuel.

Acceptability

Acceptability by the public is often low when a new charge or tax is imposed on them, but improves when the objective (to fund public transport) is explained, so transparency is a key issue. It helps when the public understands the need for revenue and when the existing tax structure is regarded as not too onerous. This becomes clear from the American experiences where people can vote on the proposed implementation. These funding examples can count on political support concerning the mechanism, mainly due to the fact that it saves subsidies from general taxes. However, there are also schemes that are not implemented because of the failure in convincing the public of the need for new or better public transport.

Most of the schemes are implemented just as a funding source because of a shortage of public money available, although it could be said that all are indirectly linked to environmental issues as

public transport is generally regarded as being more environmental friendly compared to travel by car. However, there are important cases that can be linked to environmental policy and transport policy more obviously, a clear example being the road user charging schemes that seek to reduce congestion by pricing the use of the car.

In the end the mechanisms can generally be regarded as effective, as obtaining a significant source of funding is very often a fundamental reason for adopting them.

6 Summary and Conclusions

6.1 Introduction

Chapter 2 to 5 of this report have provided detailed reviews of the general transport taxation systems of EU Member states (Chapter 2 and 3) and the world-wide experience of the application of unconventional forms of charging and taxation where revenues are earmarked to support public transport (Chapter 4 and 5). The overall aim of this review work has been to gain a better understanding of:

- the influence of existing general transport taxation systems of EU Member States in supporting sustainable transport objectives; and
- the circumstances in which unconventional charging and taxation measures can be applied to support the drive towards fair and efficient pricing in transport.

This section aims to draw together the main findings of the study review exercises and to highlight key issues including:

- the potential future role of fiscal instruments in both providing appropriate pricing signals to transport users, as well as generating revenues for public transport use;
- the current balance of incentives/disincentives for sustainable travel behaviour within the taxation systems of Member States;
- the current distortions within national taxation systems that operate against the principles of 'fair and efficient' pricing;
- the potential role of unconventional forms of charging and taxation in achieving EU transport objectives; and
- the possible reform of both conventional and unconventional fiscal instruments to provide more effective pricing signals and reliable sources of revenue for public transport.

6.2 National Transport Related Charges and Taxes in the European Union

6.2.1 Overview

The study has examined the general taxation systems of all 15 EU Member States from the specific point of view of the incentives and disincentives that personal taxation, fringe benefits and company taxation provide for the use of public transport or other sustainable modes of travel.

Four broad areas of general transport of taxation were selected as the main focus for the research on the basis of their importance in influencing the choice of travel mode for commuting and business travel. These four elements comprised:

Company car taxation:

- personal income taxation rules applying to the private benefit of company cars
- corporate taxation/VAT treatment of company car related expenses

Taxation concessions for commuting expenses;

- personal income taxation

Tax treatment of employer provided commuting benefits;

- personal taxation
- corporate taxation/VAT treatment

Tax treatment of the reimbursement of business travel expenses;

- personal taxation
- corporate taxation/VAT treatment

In addition to the above it was considered essential to examine the fiscal treatment of vehicles, fuel and public transport services in the EU. This element of the study work has drawn on previous research undertaken by the European Commission (DGXXI).

An important aspect of the research has involved gaining an appreciation of the local context within which taxes are applied and hence the degree to which individual instruments provide appropriate incentives or disincentives for sustainable travel behaviour. This was achieved through the contribution of an external panel of experts, consultations with Government ministries and the assistance of individual specialists.

6.2.2 Existing Transport Charges and Taxes in the European Union

The existing transport taxation systems in EU Member States contain a complex mix of fiscal instruments, some of which provide incentives for sustainable mobility and others that act as disincentives.

Table 6.1 provides a general overview of the impact of fiscal policies, drawing on information from all 15 Member States on how different elements of the transport taxation typically operate in providing incentives or disincentives for sustainable mobility.

Fiscal Instrument	Incentive	Disincentive
--------------------------	------------------	---------------------

Private Vehicle Taxation		
• Purchase/registration	+	
• Ownership	+	
• Fuel duties	++	
Personal Income Taxation		
• Commuting expenses		-
• Company car		--
• Business travel expenses		--
• Car parking		--
Corporate Taxation		
• Corporate taxes		0
• VAT		0/-
Public Transport Services		
• Vehicle taxes	+/-	
• VAT	+/-	

Key Features of Transport Charges and Taxes in the European Union

The generalised analysis presented above needs to be supported by a more detailed examination of how transport charges and taxes combine to influence travel behaviour in individual Member States. It is helpful at this stage to distil the detailed information contained in Chapters 2 and 3, with the aim of highlighting some of the more important, features of the general transport systems in each country.

In order to undertake a comparison in a manageable way the seven elements of the general taxation system that provide the greatest incentives or disincentives for sustainable transport we have been selected for comparison. The seven elements include:

- Individual taxes
 - commuting costs
 - company cars
 - business travel expenses
 - workplace parking
- Vehicle taxes
 - registration tax
 - circulation tax
- Use-related taxes
 - fuel

Table 6.2 provides comparative assessment of the influence of general transport taxes in each EU Member State.

Table 6.2 Assessment of Transport Taxes in the EU

Member State	Individual Taxes				Vehicle Taxes		Use-related Taxes
	Commuting Costs	Company Car	Bonus Travel	Workplace parking	Registration	Circulation	Fuel
Austria	-	0/-	--	0	+	+	+
Belgium	+	--	-	--	+	+	++
Denmark	-	--	-	--	++	++	+
Finland	-	--	-	--	++	+	++
France	0/-	--	-		+	+	++
Germany	--	--	--	--	N/A	+	++
Greece	N/A	--	-		++	+	+
Ireland	N/A	--	--	--	+	++	+
Italy	N/A		-		+	+	++
Luxembourg	+/0	-/--	-		N/A	+	+
Netherlands	++	--	-	--	++	+	++
Portugal	N/A	--	-	--	+	+	+
Spain	N/A		-		+	+	+
Sweden	-	-	-	--	N/A	+	++
United Kingdom	N/A	--	--	--	N/A	+	++

++ strong incentive

+ incentive

0 neutral

- disincentive

-- strong disincentive

The table reveals a number of important contrasts in the fiscal treatment of transport. Particularly noteworthy findings are:

Commuting Expenses

- Nine of the 15 Member States provide some form of rebate for commuting expenses.
- In Germany the rates allowable for deductible car commuting expenses are particularly high, relative to other modes of travel.
- Notable exceptions to the disincentive nature of commuting rebates occur in Belgium, Denmark, Luxembourg and Austria where equal amounts of allowable commuting costs are applied to public transport and non-motorised modes. Although these cases provide equal treatment across modes there is no direct disincentive for commuting by car apart from in Luxembourg, where the allowable deduction always exceeds the cost of public

transport.

- In some cases, for example, Germany and Denmark, commuting costs do not make appropriate distinctions according to length of travel. In Denmark a cut off of 24 km is applied below which commuting costs cannot be claimed. In Germany no distinction is made according to commuting distance, thus creating an incentive for longer distance commuting.

Company Car Costs

- Most Member States tax the benefit-in-kind associated with company car provision. A notable exception is Greece, where no tax is applied. In Portugal the general tax system make provision for the taxation of company cars, but in practice this is not enforced.
- Company car benefits are typically taxed according to the value of the vehicle rather than the degree of use. In the U.K. the thresholds of business mileage tend, in a perverse way, to encourage greater use.

Business Travel

- There is evidence that many Member States apply car travel business mileage rates that are set well above the running costs. In contrast business travel costs by public transport are typically set at the ticket costs. Mileage allowances can therefore act as an important disincentive for sustainable mobility.

Workplace Parking

- Generally, workplace parking taxes are not applied in the European Union. The one exception is Austria, where monthly lump sum payments are made in areas where the surrounding publicly available parking spaces are charged. In the U.K. legislation has been changed to facilitate workplace parking levies. However, the application of these charges is at the discretion of the local authority and thus the instrument will operate as a local (unconventional) charge. It is notable that in Germany regulations exist that require employers to provide sufficient parking for all company employees.

Vehicle Registration Taxes

- All Member States, apart from Germany, Luxembourg and the U.K, apply vehicle registration taxes. In some cases the tax is applied according the value of the vehicle but in other cases, such as Austria, and Finland, they are graduated according to fuel consumption (Austria), emission levels (Finland) or other vehicle characteristics (engine size or horsepower).

Circulation Tax

- Circulation tax is applied in all Member States. The tax is normally associated with vehicle characteristics including, horsepower, capacity, energy consumption, weight of vehicle, age of vehicle and district of registration. One notable exception is the U.K where the tax is applied as a lump sum with graduation according to vehicle characteristics.

Fuel Duties (Excise and VAT)

- Fuel excise duties are applied in all Member States in accordance with EU regulations.

The rates of duty vary considerably across the EU the highest level occurring in the U.K, France and Finland, and the lowest level in Luxembourg, Greece and Spain.

- VAT is levied on fuel and the standard domestic rates, which vary from 16% in Germany to 25% in Denmark and Sweden.

As a general observation it is notable that current general taxation systems concentrate on employment, or income related, taxation rather than the taxation of excessive resource use. This point has been noted by many commentators and there is now an increasing acceptance by policy-makers that the environmental efficiency of transport taxes would be significantly improved if the emphasis was shifted towards the taxation of resource use.

In practice the use of economic instruments for resource taxation has tended to be for isolated purposes such as favouring unleaded fuel and not as part of a more comprehensive restructuring of transport taxation as a whole. This is seen as a fundamental theoretical and practical weakness, which is addressed by the more comprehensive concept of Ecological Taxation Reform.

However, the taxation of resource use through general or nation-wide, fiscal instruments may not always represent the most efficient way of applying new charges in the transport sector. In this respect the UK provides interesting examples of good and bad practice.

Differential Rates of Excise Duty on Road Fuels

The application of differential rates of duty on leaded and unleaded petrol is an example of a well-targeted and effective instrument that has prompted a major switch towards the use of unleaded petrol. A steadily increasing tax differential was introduced to provide an appropriate incentive, but also provide sufficient time for motorists and manufacturers to adjust to the charge. Furthermore the tax integrated with regulatory action, requiring the use of catalytic converters for petrol-engined cars (which must run on unleaded fuel). The tax differential was introduced first which helped to ease the path towards the introduction of the regulatory requirement.

Road Fuel Duty Escalator

The now abandoned UK road fuel duty escalator was justified as a measure to reduce carbon dioxide emissions from transport. However, the impact in reducing road use proved to be very limited. In addition to the lack of impact on use there were considerable concerns regarding equity impacts. Environmental costs of road use are proportionally greater in urban areas. This allied to the greater dependency on car use in rural areas led to an increasingly heavier burden of taxation on those living and working in such areas.

The poor effectiveness of the Fuel Duty Escalator probably arises from its application as an isolated measure, with no other complementary policies to encourage fuel economy or the use of the funds generated to provide viable alternatives to car use. It is significant that its replacement is planned to involve the earmarking of any revenues for transport expenditure.

6.2.3 Transport Charges and Taxes in the EU – Conclusions

Conclusion 1:

National transport taxes and charges in the EU should be reformed to change emphasis towards the taxation of resource use rather than income. Reforming individual taxes is unlikely to be successful; a combination of synergistic reforms across both transport taxation and taxes affecting the generation of transport demand is needed. However, general measures to tax resource use need to be carefully designed, the key criteria being:

- Clear, well understood objectives;
- Effective targeting;
- Availability of viable alternatives; and
- Gradual phasing in of a package of taxation measures

In addition to the broad recognition that fiscal instruments in transport need to be geared more towards resource use, there is also a growing awareness that general transport taxation structures are over-complicated and fail to deliver the appropriate pricing signals to users.

Conclusion 2:

The current transport charging and taxation systems of EU Member States comprise a complex mix of fiscal instruments; some providing incentives for sustainable mobility and others providing disincentives.

Figure 3.3 to 3.17 in Chapter 3 provide examples of the balance of incentives and disincentives in an individual Member State.

Typically, these examples show that car travel expenses, company car tax treatment and car parking benefits act as disincentives sustainable mobility. Other elements of the taxation system, such as tax exemptions for employee provided public transport tickets, act as incentives to sustainable mobility.

These simple summaries provided in Chapter 3 illustrate what must appear to a commuter as a confusing mix of pricing signals that provide very little clear direction in encouraging sustainable travel behaviour.

Conclusion 3:

There is evidence that transport charges and taxes are becoming further complicated by introduction of 'correcting' sustainable instruments that aim to overcome existing adverse taxes. In these circumstances it may be better to consider a more fundamental reform of the system.

This feature of current fiscal systems might be termed 'perk competition'. This situation seems to have evolved over time as additional measures have been introduced to compensate for measures that encourage unsustainable travel behaviour. There is some evidence to suggest that these incremental adjustments can generate 'knock on' distortions that actually reduce the overall efficiency of the transport system.

Conclusion 4:

There is evidence that as new transport policy and priorities evolve the fundamental principles of fair and efficient pricing have been lost or have taken second place to more general non fiscal transport policy goals.

It is useful to refer to the recent UK case of concerning employer-provided contract bus services.

As part of a policy to encourage the adoption of sustainable commuter travel plans, tax exclusions were granted in the value to individuals of using employer-provided contract bus services. However, employer contributions towards employee public transport costs continue to be taxed as a benefit-in-kind. Clearly this policy favours the provision of private rather than public services and could conflict with the wider social needs of a community in supporting public transport.

Conclusion 5:

The operation of existing transport taxation systems should be reviewed to check that the methods of implementation are effective in securing appropriate payments and minimising systematic avoidance.

The methods of implementing transport taxes and the ability of individuals or companies to avoid payment are important considerations. For example, taxation of the private use of company cars in Belgium should provide a strong incentive for sustainable travel behaviour. However, obtaining reliable information on private use is difficult and consequently the tax can be totally avoided.

6.3 Local/Regional 'Unconventional' Charging and Taxation

6.3.1 Introduction

In general, unconventional mechanisms have evolved because 'traditional' ways of funding public transport have been withdrawn or are viewed as politically problematic. Governments have become sensitive to the levels of general taxation, and funding for public transport is particularly vulnerable to this attitude. This is because consistent expenditure is needed over a period of time and, importantly, the results of such spending are not usually apparent within the lifetime of a single government.

One specific aim of the study has been to examine existing unconventional charging and taxation schemes and to consider how these types of schemes fit in wider transport policies that aim to provide co-ordinated and consistent signals as part of the drive towards sustainable mobility goals.

The discussion, presented above, on the current structure of general transport taxation systems in the EU has highlighted the potentially important role that non conventional fiscal instruments can play in developing an overall fiscal structures that more closely embody the principles of 'fair and efficient' pricing:

The principal features of unconventional charging and taxation schemes, in supporting a more efficient overall structure, are:

- | | |
|---------------------------------------|---|
| Use Related | - provide the ability to apply charges that are more directly targeted towards use-related costs. |
| Acceptability | - if shown to be addressing specific local problems the charges will be more acceptable to users. |
| | - acceptability will be considerably enhanced if revenues are linked to the support of related environmental or community improvements. |
| Setting of Appropriate Charges | - Local charges offer more potential to set prices that are closely related to measurable external costs |

Flexibility

- provide more scope for varying charges in line with changes in transport costs.

Double Dividend

- the better targeting towards resource-use rather than employment can help to deliver extra dividends not only in terms of improved vehicle efficiency but also increased productivity of the economy if the revenues are used in an appropriate way (e.g. reduce taxes on labour)

6.3.2 The Evaluation of Local/Regional Unconventional Charging and Taxation Measures

The review presented in Chapter 4 has examined the world-wide experience of unconventional charging and taxation measures. Two distinctly different sets of literature have been identified. The first set of literature, largely emanating from the USA, is one that adopts the perspective of identifying sources of finance for public transport services. It is unconcerned with transport and environmental policy, but seeks simply to address the advantages and disadvantages of different funding sources. Such pragmatic advice is useful, but needs placing in a strategic environmental and transport policy context.

A second literature is on the issue of internalising the social and environmental costs of transport. This tends to concentrate on the national taxation level, and only recently has consideration of the use of some local mechanisms begun to occur.

As noted in the Table 6.3, below, the measures that have emerged simply to finance public transport are generally unrelated to the principle of fair and efficient pricing. As is explained later in this section, understanding the use of local unconventional mechanisms requires more than simply examining them each in turn. However a first stage is to start at the level of the individual mechanism and then proceed to set them in the context of a policy package, including whether other funding sources are used and how the finance raised is used. Table 6.3 summarises each of the eight groups identified:

Table 6.3 Unconventional Charging and Taxation Measures			
Group	Type of Scheme	Type	Principle Features
1	Employee Taxes	B, CC	<ul style="list-style-type: none"> - Usually a local charge per employee - Sometimes banded with highest payments in areas of best public transport - Sometimes relief for employers who provide public transport support to staff
2	Property Taxes	B, CC	<ul style="list-style-type: none"> - Tax upon property in areas of good public transport - 'User pays' concept: intended to capture some of the rise in property values public transport generates - Usually earmarked business tax - Often used to pay loans/bonds
3	Developer Levies	B or P	<ul style="list-style-type: none"> - Can be applied in a variety of ways, including by private developers - Often linked to planning permission
4	Parking charges and fines	P	<ul style="list-style-type: none"> - Applied by both private and public authorities - A use of existing powers

5	Road Space Charges	P	<ul style="list-style-type: none"> - includes tolls, congestion and road user charges - May require new powers - Can raise very large sums
6	Local Motor Taxes	P	<ul style="list-style-type: none"> - Includes local levy on fuel and excise taxes
7	Consumption Taxes	CC	<ul style="list-style-type: none"> - Local taxes on a variety of consumption goods and services - May be a general goods/services tax or on a particular good or service (e.g. beer or gambling) - Used extensively in the USA
8	Cross-utility financing	N	<ul style="list-style-type: none"> - Where multi-utility companies provide a subsidy to public transport from their other operations

B – beneficiary pays
 P – polluter pays
 CC- collective charge
 N - Neutral

The table makes the distinction between four types of unconventional charging mechanisms that reflect different principles of taxation: 'polluter pays', 'collective charge', 'beneficiary pays' (sometimes linked) and 'neutral' (unrelated to taxation principles).

Polluter Pays

The recent research and commentary in the EU has focussed on the application of the 'polluter pays' principle. This principle aims to ensure that charges are related as closely as possible to the external costs incurred at the point of use. The road charging schemes described in Section 3.4 provide the most direct examples of unconventional schemes that impose charges at the point of use.

Collective, Non-Use Related Charges

The review has identified a number of unconventional charging measures such as, employer taxation, local consumption taxes, cross utility subsidies or planning gain that are non use related. These are unconventional funding mechanisms that, the collection of which, does not involve a positive environmental impact. There is another public finance theory that covers such funding mechanisms. Where collective provision is needed for the benefit of an identifiable group, yet individual charging is difficult or impossible, a collective (sometimes ear-marked) charge is often made. This, for example, was the principle of the UK's original Road Fund Licence introduced early in this century. Motorists were required to pay this to help fund the upgrading of roads to standards needed for motor vehicles. The ear-marking eventually ceased and the fund (later Vehicle Excise Duty) became a general source of taxation revenue.

Beneficiary Pays

A subset of the 'collective' charging mechanisms, can be defined as an application of the 'beneficiary pays' principle. It is important to note, however, that this type of charging forms a wholly different framework to that of fair and efficient pricing. This is the case of the French *Versement* local employer tax. The rate is higher in city centres where the benefit of public transport is highest and lower in the suburbs to reflect a lower standard of public transport. No *Versement* is charged outside the city. This 'beneficiary pays' principle stands in direct contradiction to the more recent principle of 'polluter pays' that is behind the EC's concept of Fair and Efficient Pricing. Using the latter principle, *Versement* for example would not be charged in the areas of good public transport, like city centres, would be charged at a low rate in the suburbs and at the highest rate of rural, car-dependent, areas. Equally, rather than charging a supplement on property taxes near BART stations, the supplement would be charged away from BART stations. Planning gain payments would be expected for isolated rural developments and not urban ones.

6.3.3 The Efficiency of Unconventional Mechanisms

The analysis presented above highlights some key considerations in the design of individual unconventional mechanisms. Overall, at the level of the individual mechanism, it would appear that parking charges, road space charge and local motor taxes relate most closely to the principles of fair and efficient pricing. Additionally, certain developer levy schemes also would appear to reflect the principle that the 'polluter pays'. Other unconventional mechanisms appear to have serious drawbacks.

However, although an analysis at the mechanism level is useful, there is a danger of simply classifying some as compatible with fair and efficient pricing and some as incompatible, and recommending that one group should be used and others not. This is too simplistic, and there are several reasons for such an approach being flawed.

The first reason relates to defining the system boundary of a fiscal measure. For example, as discussed above, the *Versement* employer tax appears to be an unconventional mechanism that

is incompatible with the principles of fair and efficient pricing. Because it is charged at a higher rate in areas with better public transport, it appears to penalising 'greener' travel behaviour rather than the polluter. Particularly as the tax is not charged outside cities, it also seems likely to stimulate relocation of businesses into areas poorly served by public transport and so could be viewed as contributing structurally to higher car use.

However, in Paris, a large amount of the *Versement* proceeds are used to compensate employers who provide free or subsidised travel cards for their employees, which is also tax-free under the national system. This rewards more sustainable travel behaviour by employers and counterbalances any negative relocalational effects.

Thus, this unconventional mechanism, that by a simple classification would appear to be incompatible with the principle of fair and efficient pricing, in practice has compensatory mechanisms built in that makes it a 'polluter pays' mechanism. If an employer does not support staff travel by public transport, they do not receive the compensatory payments, and thus the polluter does pay. This shows that it is the design of the whole policy package around the unconventional mechanism that needs examination, not just the mechanism itself. This is not to say that a more powerful mechanism would be one that combines the polluter pays principle at the mechanism level with reinforcement at the systems level, but it does show that seemingly 'beneficiary pays' mechanisms can be part of an overall 'polluter pays' policy package system.

This leads on to the second point, which is the practical need to phase-in unconventional funding. The initial phase may not necessarily contain corrections to the costs polluters create, but policy packages can be designed to evolve to address that goal. For example, it may be necessary first to invest in new public transport capacity before disincentives to car use are put in place. The public transport system may simply not have the capacity to cope were the car use disincentives put in place immediately. Thus something like an employer levy may be used initially, and then later tax concessions and subsidies for commuting by public transport introduced when the capacity enhancement is in place. This is roughly how the *Versement* mechanism has evolved.

The real danger is, as appears to have occurred in the USA, where unconventional mechanisms are merely used to obtain funds, and/or to avoid the need to tackle hard policy decisions. Thus they are used merely to keep public transport up and running, rather than to implement a serious programme addressing transport and environmental goals. In this case, the reverse of the *Versement* situation has occurred. Initially a number of cities used seemingly 'good' unconventional mechanisms, such as local fuel or vehicle taxation, to fund public transport development. However, they are now shifting to consumption or general property taxes, simply to spread the financial load or to reduce awareness of the taxes at all. In such cases, rather than being the first step towards fair and efficient pricing, the policy package is moving in the opposite direction.

The final key point is that, even if an unconventional mechanism is seemingly incompatible with the principles of fair and efficient pricing, most can be reformed as part of a package of measures. Perhaps the most important lessons from this study are how a variety of unconventional mechanisms can be integrated with conventional funding mechanisms, with complementary national taxation measures and with regulatory action to create synergistic action programmes. This report provides some examples, at varying levels, of the development of such synergistic packages.

6.3.4 Ear-marking (hypothecation) and efficiency

The conclusion that unconventional mechanisms need to be evaluated at the level of a funding/expenditure package links to the issue of earmarking and efficiency. This is an issue that the ECMT/OECD report considers, noting that the distributional implications of all types of economic instruments are issues of concern. As is now widely accepted and documented in the implementation studies, this issue can be fully addressed via the ear-marking of revenues. Thus

the combined system of both the way funds are raised and how they are spent is crucial; consequently, the ear-making (hypothecation) involved in unconventional mechanisms is one of their strengths.

The issue of ear-making (or hypothecation) raises another set of public finance issues. Standard public finance theory argues for revenues to be spent on activities yielding the highest social return rather than for them to be set aside for a particular dedicated purpose. An alternative argument is that the public should be able to choose the charging and expenditure packages they prefer (as happens in the USA with proposals for local levies).

The question of ear-marking leading to inefficiency in the use of public expenditure is raised by our research and discussions on the use of unconventional mechanisms in the USA.

However, research into the cost effectiveness of public transport expenditure in Paris (where the ear-marked Versement is a major part of funding) indicates good cost- effectiveness of expenditure with no efficiency losses (IPPR work). This is in contrast to the USA. So ear-marking does not appear to be the basic problem leading to inefficiency, but other allocation aspects are the source of the USA's inefficiency.

Overall, our review and research indicate that there is a strong case that some degree of hypothecation is important in gaining public acceptance and accountability for economic instruments, and that they do not yield major problems of inflexibility and efficiency. Indeed the ear-making of funds is often a crucial part of ensuring that an unconventional mechanism builds in the polluter pays principle.

6.3.5 Local/Regional Unconventional Charging and Taxation – Conclusions

Conclusion 6:

At the level of the individual unconventional charging and taxation mechanism, it is possible to identify some that relate well to the principles of 'fair and efficient pricing' in that they involve at least some element of charging transport polluters.

However, the majority of existing unconventional charging and taxation measures have evolved without reference to guiding principles of public finance. Most have been developed simply in order to generate funds to support public transport and have no direct relationship to the principles of 'fair and efficient pricing'.

Conclusion 7:

At the level of the individual unconventional charge or tax, several mechanisms follow the principle of the 'beneficiary pays'. Although these can be very effective in raising funding for public transport they do not reflect the principle of 'fair and efficient' pricing in transport. In particular they fail to send appropriate signals to motorists in setting prices that reflect the full costs of transport use.

However, it is possible for the overall scheme, of which these mechanisms are part, to include compensatory factors that result in a 'polluter pays' scheme.

Conclusion 8:

Unconventional forms of charging/taxation have a potentially important role in supporting more general fiscal and regulatory instruments, particularly in offering greater flexibility to target and vary charges in line with external transport costs at the point of use.

Most existing unconventional mechanisms, even if they were not initially intended to be part of an environmental transport policy, could be reformed to play such a role.

Conclusion 9:

New or reformed unconventional charging/taxation schemes need to be carefully designed to ensure they are both acceptable to users and effective in redirecting charges towards transport costs at the point of use. In particular there is a need to:

- Maintain flexibility to adapt to policy needs;
- Phase in charging/tax mechanisms;
- Build upon an initially simple scheme;
- Link the introduction of the charge to a widely accepted need (e.g. funding an important public transport development);
- Building in rewards and incentives for positive behavioural change;
- Reduce other taxes/charges to compensate the biggest 'losers'; and
- Put viable alternatives in place first

Conclusion 10:

There is a need to integrate unconventional charges and taxes with more traditional general fiscal and regulatory instruments to ensure that users are provided with consistent and appropriate prices that reflect the true costs of transport use. Unconventional charges and taxation need to be selected as part of a policy package and financing system, and it is at this level that their use needs to be planned and evaluated.

Conclusion 11

Local unconventional charges can help to improve the overall efficiency of transport if they are effective in:

- Increasing, where necessary, user costs towards full marginal costs;
- better targeting charges towards infrastructure use;
- helping to encourage sustainable travel behaviour as part of a package of demand management policies;
- helping to reduce problems of traffic congestion; and
- reduce the environmental costs of transport use.

Appendix A – Bibliography and References

- AC Transit (1999) UC Berkeley –AC Transit Class Pass, General Manager's News Briefs, 8/5/99.
- Ahm K (1998) Letter to Sheila Farrell, from the Head of Finance, Ørestadsselskabet, Copenhagen.
- Anderstig, C., and L.-G. Mattsson, 1992, *Policy applications of an Integrated Land-Use Transport Model in the Stockholm Region*, presented at the Sixth World Conference on Transport Research, Lyon, France, 24 pp.
- Black, A. (1995) *Urban Mass Transportation Planning*, McGraw-Hill, New York.
- Blaw, L. and I. Crawford (1997) *The Distributional Effects of Taxation on Private Motoring*. The Institute for Fiscal Studies. Commentary 65.
- Buchanan, J.M. (1963) The economics of earmarked taxes, *Journal of Political Economy*, 71, pp457-469.
- Bulman, E (1999) Personal Communication, 16 March.
- Bushell, C. (1994) *Jane's urban transport systems 1993/94*. Jane's Information Group, Coulsdon, Surrey.
- Button, K., and Rietveld, P. (1993) Financing urban transport projects in Europe, *Transportation*, 20, pp251-265.
- Center for Applied Research (1987) Funding transportation needs in the North Central Texas Area, Report for the North Texas Council of Governments Transportation and Energy Department and the UMTA, School of Social Sciences, The University of Texas at Dallas Richardson, Texas, January.
- Cervero, R. (1983) Views on transit financing in the US, *Transportation*, 12(1), pp21-43.
- Coindet J P (1994) Financing Urban Public Transport in France, in Farrell S (ed), *Financing Transport Infrastructure*, PTRC, London, January.
- Commission of the European Communities (1998) *Developing the Citizens Network*.
- Commission of the European Communities (1997) A Study of the VAT Regime and Competition in the Field of Passenger Transport. KPMG.
- Commission of the European Communities (1995) *Towards Fair and Efficient Pricing in Transport. Policy options for internalising the external costs of transport in the European Union*. Green paper. Brussels: CEC, COM (95) 691.
- Congressional Budget Office. (1978) *Transportation finance: Choices in a period of change*. Washington DC.
- Copenhagen Transport, Danish Ministry of Transport, Arhus sporveje. (1995) *The financing of urban public transportation systems*, Draft Report, Copenhagen, May.
- Cudahy, B.J. (1973) Financing transit: The Boston experience'. *Highway Research Record*, 476, pp4-7.



- Dalvi M Q and Patankar P G (1999) Financing a metro rail through private sector initiative: the Mumbai Metro, *Transport Reviews*, Vol. 19, No.2, pp. 141-156.
- Department of Environment, Transport and the Regions (1998) A New Deal for Transport: better for everyone. Cm 3950, The Stationary Office, London, July.
- Deran, E.Y. (1965) Earmarking and expenditures: A survey and national test. *National Tax Journal*, December, pp354-361.
- Eklund, P. (1967) Earmarking of taxes for highways in developing countries. *Economics Department Working Paper 1*, World Bank, Washington DC – restricted.
- European Commission DGXXI, 1997. *Vehicle Taxation in the European Union*, Background Paper, Working Document 1, September 1997.
- Farrell, S. (1999) *Financing European transport infrastructure: Policies and practice in Western Europe*, Macmillan, Basingstoke, Hants.
- Farrell, S (1999b) Personal communication, 27 July.
- Fellows, N. (1999) About Singapore, *Personal Communication*, Oscar Faber, Singapore.
- Felz, H. (1992) Organisation and financing of public transport in West Germany, *UITP Conference*, Budapest, 25 September.
- Flavin, S. (1998) Company Car Taxation. UTSG Conference Paper, Dublin, January 1998.
- Flowerdew, A.D.J. (1993) *Urban traffic congestion in Europe: Road pricing and public transport finance*. Economist Intelligence Unit, London and New York.
- Geddes, M (1999): CMK Transport and Parking: Consultation on Proposed Strategy for Period to 2011, Milton Keynes Economic Partnership. 4th June.
- Glaister, S. (1999) *Past abuses and future uses of the Private Finance Initiative and Public Private Partnerships in Transport*, Department of Civil Engineering, Imperial College, London, 14 February.
- Glaister, S., Scanlon, R., and Travers, T. (1999) *The way out: An alternative approach to the future of the Underground*, London School of Economics, 20 March.
- Gomez J.A. and K.A. Small, 1994, Road Pricing for congestion Management: A survey of International Practice, NCHRP.
- Gomez and Small, 1994, Synthesis of highway practice, NCHRP
- Goodwin, P.B. (1992). A Review of Demand Elasticities with Special Reference to Short and Long Run Effects of Price Changes, *Journal of Transport Economics and Policy*, pp 155-169.
- GVTA (1999) 1999 Operating and Capital Budget, Transport 1999, Greater Vancouver Transportation Authority, Vancouver, British Columbia.
- Hass-Klau, C. and Crampton, G. (1999) How other countries see light rail, *Tramways and Urban Transit*, March, pp100-102.
- Hau, T.D. (1990) Electronic road pricing: developments in Hong Kong 1983-1989, *Journal of Transport and Economic Policy*, 24, pp203-214.



Hau, T.D., 1992, Congestion Charging Mechanisms for roads, an evaluation of current practice, working paper, World Bank, Washington D.C.

Hellewell, D.S., *et al.* (1991) Financing light rail: case studies, UITP 7, *UITP 49th International Conference*, Stockholm.

Hibbs, J., *et al.* (1998) Road pricing, *The Journal of the Institute of Economic Affairs*, 18(4), December.

Hoachlander, E.G. (1976) Bay Area Rapid Transit: Who pays and who benefits?, Berkeley: Institute of Urban and Regional Development, University of California, July.

Hultgren, L. and K. Kawada, June 1999. San Diego's Interstate High-Occupancy Toll Facility using Value Pricing, *ITE Journal*, pp 22-27.

Inland Revenue (1998) Employee Travel: a tax and NICs guide for employers. Inland Revenue Booklet 490, January.

Institute for Public Policy Research, 1996. *Green Taxes in Europe*, Compiled by Forum for the Future, December 1996.

Ison, S. (1996), Pricing road space: Back to the future? The Cambridge experience, *Transport Reviews*, 16, 109-126.

Ison, S. (1998), A concept in the right place at the wrong time: congestion metering in the city of Cambridge, *Transport Policy*, 5, 139-146.

Johansen, F. (1989) Earmarking, road funds and toll roads: A World Bank Symposium. *Infrastructure and Urban Development Department Discussion Paper 45*, World Bank, Washington DC – restricted.

Kain, J. (1994) Impacts of congestion pricing on transit and carpool demand and supply. *Special Report 242: Curbing gridlock: Peak-period fees to relieve traffic congestion*. Transportation Research Board, National Research Council, Washington DC, pp502-553.

Kageson, P. (1993) *Getting the Prices Right. A European Scheme for Making Transport Pay its True Costs*. Katarinatyck AB, Stockholm.

Kallberg, H 1997. Henkiloauto ja yritykset. Tieliikenteen tietokeskuksen muistio 24.3.1997.

Kramholler (1999) Dienstgeberabgabe, Personal communication, Magistrat der Stadt Wien, Vienna, 12 August.

Larsen, O.I. (1988) The toll ring in Bergen, Norway - The first year of operation, *Traffic Engineering and Control*, April.

Oscar Faber. (1999) *Unconventional forms of charging and taxation to support public transport and taxation (dis)-incentives in commuter transport*, Inception Report, Birmingham, January.

Macari, J.A. (1990) Public authority intervention in transport financing, *Public Transport International*, 1, pp15-29.

Mackett, R. (1993) Why are continental cities more civilised than British ones? Universities Transport Study Group Annual Conference, University of Southampton, January.



Marx, P (1999) Personal communication, 10 June.

McCleary, W.A., and Tobon, E.U. (1990) The earmarking of Government revenues in Columbia. *Policy, Research and External Affairs Working Paper 425*, World Bank, Washington DC.

McCleary, W.A. (1991) The earmarking of Government revenue: A review of some World Bank experience, *World Bank Research Observer*, 6(1), pp81-104.

Metcalf, A. (1982) the misperception of car running costs and its impact on the demand for energy in the transport sector. *North Atlantic Treaty Organisation Advanced Science Institute Series C*, pp 297-398.

Metropolitan Council (1999), Public Transit – Metro Transit, Minneapolis/St Paul, Minnesota.

Metropolitan Transportation Commission (1999) Moving costs: A Transportation Funding Guide for the San Francisco Bay Area, MCT, San Francisco, California, January.

Meyer A (1996) *Le Versement Transport*, Report to the Union des Transport Public, Paris.

Ministre del'Aménagement du Territoire, de l'Équipement et des Transports, (1995) *Urban Public Transport in France: Institutional Organisation*, Land Transport Administration, Ministre del'Aménagement du Territoire, de l'Équipement et des Transports, Paris, September.

Minken, H. (1998) *Private sector participation in financing, building and operating transportation networks in Norway*. FATIMA working paper, 29 January.

Mitric, S. (1988) Budapest, Hungary', *Urban Transport Review*, World Bank, EMTIN.

Moret Ernst and Young, 1996. *Tax Provisions with a Potential Impact on Environmental Protection*, Final Report for European Commission DG XI, September 1996.

Nakagawa, D., Matsunaka, R., and Konishi, H. (1998) A method of classification of financial resources for transportation based on the concept of actual payers – theoretical framework, *Transport Policy*, 5(2), April, pp.103-114.

Nash, C.A. (1988) Rail investment: The continental perspective, *Institute for Transport Studies*, University of Leeds, June.

Navai, R. (1998) Transportation financing: A critical review of transportation pricing *Transportation Quarterly*, 52(1), pp71-84.

NEI (1991) Price Elasticity of Energy Use in Road Traffic. Netherlands Economics Institute, Rotterdam, OECD, Paris.

Newbery, D.M., and Santos, G. (1999) Road taxes, road user charges and earmarking, Draft Report to appear in *Fiscal Studies*, Department of Applied Economics, University of Cambridge, Cambridge, 30 March.

Newbery D.M. (1998) *Fair Payment from Road Users. A review of the evidence of social and environmental costs*. For the Automobile Association.

Newbery D.M. (1995) *Reforming Road Taxation*. Commissioned by the Automobile Association.

New Orleans Public Service Middle South Utilities System (1979) Annual Report 1979, New Orleans, Louisiana.



- OECD (1997) *Internalising the Social Costs of Transport*.
- OECD. (1987) *Managing and financing urban services*, OECD, Paris.
- O'Farrell, P. and Markham, J. (1975) The journey to work – a behavioural analysis. *Progress in Planning*, 3(3), pp 187-288.
- Oscar Faber, Ecotec, Goodbody, ESRI (1999) *The Environmental Implications of Irish Transport Growth*. Report for the Technical Assistance Programme Steering Committee with the OP for Transport.
- Parking Review (1999) Special Parking Areas: An update on decriminalised parking enforcement throughout Britain, *Parking Review Special Supplement*, Landor Publishing, London, Summer.
- Patrikalakis, Y (1999) Personal communication, OASA, Athens, Greece, 10 August.
- Port Authority of New York and New Jersey (1999), 'Airtrain Facts' and 'John F. Kennedy International Airport', New York.
- Potter, S. (1996) The Passenger Trip Length 'Surge'. *Transport Planning Systems*, Vol. 3 No 1 pp 7-15.
- Potter S., Rye T., and Smith, M. 1998. *Tax and Green Transport Plans. A study of the impacts of the tax regime upon employer measures to 'Green' Staff Travel*. The Open University.
- Pucher, J. (1980) Transit financing trends in large U.S. metropolitan areas, 1973-1978, *Transportation Research Record*, Report 759, pp6-12.
- Pucher, J. (1981) 'Equity in transit finance: Distribution of transit subsidy benefits and costs among income classes,' *Journal of the American Planning Association*, 47(4), October, pp387-407.
- Pucher, J. (1988) Urban public transport subsidies in Western Europe and North America. *Transportation Quarterly*, 42(3), pp377-402.
- Ramjerdi, F. (1992) *Road pricing in urban areas: A means of financing investment in transport infrastructure or improving resource allocation, the case of Oslo*, Institute of Transport Economics, Norwegian Centre for Transport Research.
- Reno, A.T., and Stowers, J.R. (1995) *Alternatives to motor fuel taxes for financing surface transportation improvements*, NCHRP Report 377, Transportation Research Board, National Research Council, Washington DC.
- Rice Center, (1986), *Alternative Financing for Urban Transportation; The State of the Practice*, Final Report, Houston, United States.
- Ridley T M and Fawkner J (1987) benefit sharing: the funding of urban transport through contributions from external beneficiaries, International Railways Committee, UITP, 47th International Conference, Lausanne.
- Short, J.W. (1989) Earmarking for transportation: A view of the US Experience. World Bank Symposium on Earmarking, road funds and toll roads. *Infrastructure and Urban Development Department*, World Bank, Washington DC – restricted.
- Simpson, B.J. (1990) Urban rail transit: costs and funding. TRRL Contractor Report, CR 160, *Transport Research Laboratory*, Crowthorne, Berks.



- Simpson, B.J. (1994) *Urban public transport today*. E&FN Spon, London.
- Sinding, A.G. (19??) Private sector involvement in European road network financing: Chances and pitfalls of transnational road pricing and road privatisation.
- Skinner, I. And M. Fergusson (1998) *Transport Taxation and Equity*. Institute for Public Policy Research.
- Small, K. (1992) Using the revenues from congestion pricing, *Transportation*, 19, pp359-381.
- Smith, S.1995. "Green" Taxes and Charges: Policy and Practice in Britain and Germany.
- Snape, J (1997) Taxation Aspects of Commuter Plans, Nottingham Commuter Planners Club, Nottingham Trent University. Anderstig, C., and L.-G. Mattsson, 1992, *Policy applications of an Integrated Land-Use Transport Model in the Stockholm Region*, presented at the Sixth World Conference on Transport Research, Lyon, France, 24 pp.
- Steer Davies Gleave. (1992) *Financing public transport: How does Britain compare?* Steer Davies Gleave, London, March.
- Teja, R.S., and Bracewell-Milnes, B. (1991) The case for earmarked taxes: Government spending and public choice, Research Monograph 46, *Institute of Economic Affairs*, London, February.
- The Ashden Trust, London First, University of Westminster (1997) *Company Car Taxation. A Contribution to the Debate*.
- TNO (1992) *EC Policy Measures Aiming at Reducing CO₂ Emissions in the Transport Sector*.
- Transit Cooperative Research Program (1998) *Funding strategies for public transportation*, TRCP Report 31, v1/2, Project H-7 FY 95, Transportation Research Board, National Research Council, Federal Transit Administration, National Academy Press, Washington DC.
- Transport 2000 (1998) *A Taxing Question: How a parking tax might work*.
- Transportation Research Record (1996) *Planning and administration; Transportation finance, economics and strategic management*, Report 1558, November.
- Travers, A. and Glaister, S. (1994) An infrastructure fund for London, Greater London Group, London School of Economics and Political Science, London, December.
- Tsukada S and Kuranami C (1994) Value Capture: the Japanese Experience, in Farrell S (ed), *Financing Transport Infrastructure*, PTRC, London, January.
- Usher, L. (1998) Marketing transportation alternatives to visitors and locals: How the City of Aspen makes a difference in traffic congestion without using tax payers money. *Proceedings of the Association of Commuter Transport*.
- Vaccare M A (1996) An overview of innovative financing: highway and transit, *Transportation Research Record 1527, Transportation Law Issues*, Transportation Research Board, National Academy Press, Washington DC, pp.31-34.
- Van der Vlist, A.J., E.T. Verhoef en P. Rietveld, 1998, De mobiliteitseffecten van congestieheffingen en rekening rijden in de praktijk, Serie Research Memorandum, Amsterdam
- VCO Verkehrsclub Österreich, Leistungsfähiger Verkehr durch Effiziente Preisgestaltung.



Walmsley, D.A., and Perrett, K.E. (1992) *The effects of rapid transit on public transport and urban development*. TRRL State of the Art Review 6, Transport Research Laboratory, Crowthorne, Berks.

Wilson, R.W. (1992) Estimating the Travel and Parking Demand Effects of Employer-paid Parking. *Regional Science and Urban Economics*, Vol. 22, No. 1. North Holland.

World Road Research Association. (1999) *Cost recovery and dedication of road user fees*. Committee on Financing and Economic Evaluation (C9), PIARC.

Wyszomirski, O. (1998) 'Gdynia, Poland:- The model of regulated urban transport system as an example of combined operations of individual and public transport.', *Public Transport International*, 47(6), November, pp40-44.

Yago, G. (1984) *The decline of transit: Urban transportation in German and US cities, 1900-1970*, Cambridge University Press, Cambridge.

Young, A.P., and Cresswell, R.W. (1982) *The urban transport future*, Construction Press, Harlow, Essex.

