

# **Study on the economic effects of the current VAT rules for passenger transport Second Interim Report - Revised**

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### List of Acronyms and Abbreviations

AEA	Association of European Airlines
ALSA	Automóviles Luarca, S.A
CAPA	Center for Aviation
CES	Constant Elasticities of Substitution
CGE	Computable General Equilibrium Model
DG CLIMA	Directorate-General for Climate Action
DG ENTR	Directorate-General for Enterprise and Industry
DG ENV	Directorate-General for the Environment
DG MOVE	Directorate-General for Mobility and Transport
DG TAXUD	Directorate-General for Taxation and Customs Union.
EDIP	Economic Model for Distribution and Inequality Effects of Economic Policies
ELTIS	European Local Transport Information Service
ETIS	European Transport policy Information System
EUROSTAT	Statistical Office of the European Communities
EU13	“New” Member States of the EU (after 2004)
EU15	“Old” Member States of the EU (prior to 2004)
FP6	Sixth Framework Programme
GDP	Gross Domestic Product
HGV	Heavy Good Vehicle
HHI	The Herfindahl–Hirschman Index
HMRC	Her Majesty's Revenue and Customs
HSR	High Speed Rail
IEA	International Energy Agency
IMF	International Monetary Fund
LRT	Light Rapid Transit
MS	Member State of the European Union
NETP	Non-established taxable persons
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organization for Economic Cooperation and Development
pkm	passenger kilometres
SAM	Social Accounting Matrix
SMR	Single Market Regulation
tkm	tonne kilometres
TREMOVE	Transport and Emissions Simulation Model
UIC	International Union of Railways
UITP	International Union of Public Transport

VAT	Value Added Tax
VATA	VAT Act
VATD	VAT Directive
vkm	vehicle kilometres
WIOD	World Input Output Database

## Chapter 1. Introduction

This is the Revised Second Interim Report for the “Study on the economic effects of the current VAT rules for passenger transport”, under FWC No. TAXUD/2010/CC/104. The study is being carried out by CASE (Center for Social and Economic Studies, Warsaw), IHS (Institute for Higher Studies, Vienna) and TML (Transport and Mobility, Leuven).

### Objective

The objective of the study is to provide an economic assessment of the impact of the current VAT regimes and the likely effects of alternative VAT regimes in order to assist the Commission in making policy choices.

### Background

In December 2011 the Commission published its “Communication on the Future of VAT” ((COM2011) 851 Final). In it, the Commission sets out the fundamental features of a future VAT system and the priority areas for further work. One of the key priorities is a more efficient VAT system. For this, broadening the tax base and limiting the use of reduced rates would promote tax neutrality and improve economic governance either by generating new revenue streams or by facilitating a reduction in standard rates without adverse revenue consequences. For passenger transport activities, the public consultation confirmed that the current situation (where these services are exempt or subject to reduced rates in many Member States, varying with the means of transport involved) creates distortions of competition. Even where exemption or reduced rates do not apply, the complexity of the current place-of-supply rules increases the compliance costs (in particular for activities which extend across two or more Member States) and probably causes voluntary or involuntary non-compliance. The consultation responses highlighted two possible but conflicting approaches – either maintaining the status quo with some fine-tuning in order to apply exemptions in a more uniform way or abolishing the exemptions. The latter option would be more in line with the objective of increasing the neutrality and the efficiency of the tax. The Commission's preference is for a more neutral, consistent and more simple VAT framework for passenger transport activities.

Passenger transport activities are always in principle subject to VAT. Nevertheless, the VAT Directive has a range of provisions allowing for either exemptions or reduced rates. Some flow from derogations accorded to Member States on the basis of exemptions already in place on 1 January 1978 or at the time of accession. These exemptions are in Articles 371 to 390 and Articles 390a and 390b<sup>1</sup>.

Businesses supplying international passenger transport services across several Member States must be familiar with the specific VAT rules in each one. That these rules can vary depending on the means of transport used not only adds to the complexity but is at odds with neutrality (*e.g.*, VAT may be due on coach services but not on airline services).

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<sup>1</sup> All legislative references are to Council Directive 2006/112, the VAT Directive.

These, however, are not the only exemptions impacting passenger transport. Other provisions allow certain service providers (international sea and air transport) to make purchases free of VAT. This means that there are 2 types of exemption:

- Exemption of passenger transport provided by transport providers to their customers, subject to certain conditions (output exemption);
- Exemption of some supplies to transport providers, subject to certain conditions (input exemption).

These create an additional level of complexity and cause administrative burdens for both economic operators and tax administrations. The input exemption gives a cash flow advantage to the sector concerned, as they do not have to pre-finance the VAT on their purchases (notably investment goods like the means of transport itself).

Finally, passenger transport is taxed according to where the transport effectively takes place, proportionate to the distances covered (Article 48) and may be subject to reduced rates as provided for in point (5) of Annex III, leading to further complexity in cross-border operations.

### **Passenger transport services**

All passenger transport services are potentially liable to VAT. In practice some member states have chosen to exempt some services, based on the size of the vehicle used or the geographic region to which the service is operated. For reasons that were originally related to not inhibiting international trade, international passenger travel by air and sea is also exempt from output VAT.

For the purposes of the analyses made here, we chose to define passenger transport as all those passenger trips that would be subject to VAT if there were no exemptions. This includes passenger travel by public transport vehicles in urban areas (urban passengers), on inter-urban travel within the country in which the trip starts (other domestic passengers), intra-EU travel (that is, between the territory of one Member State and another and extra-EU travel (that is between the territory of a Member State and a country that is not a Member State).

Travel by all modes of transport is included in the assessment, but in the quantitative analysis using the three models we are constrained by the data that is available. This data excludes passenger travel where making the trip is an essential part of the reason for travelling (mostly travel by tourist coaches and ships). The data also excludes travel by hired cars, with or without a driver<sup>2</sup>. Some data is available outside of the models on the number of passengers on maritime cruises, so the impact of different VAT regimes on these trips can be quantified but outside of the models used for the other passenger travel.

The data source being used does include travel between the EU-28 Member States and third countries, so the impact of different output VAT regimes on these passenger trips can be estimated in the same way as urban, other domestic and intra-EU passenger trips.

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<sup>2</sup> Hired cars without drivers are generally considered as hiring of means of transport and not passenger services.



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## Terms of Reference and Changes to Scope of Project

The scope of work covered in the First and now the Second Interim Reports is in response to the terms of reference. An additional task was requested after the presentation of the draft of the First Interim Report, and a large part of this Second Interim Report is in response to that request.

The Terms of Reference required the following:

1. Profile of demand and supply of the EU transport market, and of the competition between modes, addressing sensitivity to price changes, including tax-induced ones;
2. Description of the VAT regimes currently applied by all 27 Member States for the supply of passenger transport services and other taxes applied to such services, differentiating between the different means of transport (means of road, rail, air and water transport).
3. Estimates of the impact of exemption or reduced rates granted to some sectors (input/output side) for Member States (revenue) and economic operators:
  - How is competition between different modes of transport (road, rail, water or air) distorted, either by public policy (e.g. infrastructure financing/charging, tax or other regulatory policies) or by the presence of powerful incumbents or alliances?
  - How is competition distorted if operators are established or supply services in different Member States?
4. Estimates of the economic and fiscal impact (for economic operators and Member State) of the application of standard rate/reduced rate/exemption on all passenger transport modes within the EU and competition effects with regard to third country operators. Where applicable the effect of the non-deductibility of input VAT and state measures which compensate for this should also be analysed.

The quantitative estimations should be delivered in a structured way differentiating on a Member State - by- Member State basis and for each means of transport (means of road, rail, air and water transport). The collection of information should be limited to economic operators supplying regularly passenger transport services in the EU.

The quantitative and qualitative estimation should address any competitive distortion from the current VAT treatment of these services, either by different VAT applied by Member States to similar means of transport or by different VAT rules applying for other competing means. This should be delivered in a structured way, differentiated by Member State and by means of transport (road, rail, air and water). The collection of information should be limited to economic operators regularly supplying passenger transport services in the EU.

Further to the presentation of the draft First Interim Report we were asked to provide an assessment of the potential distortions of the current VAT regime. A matrix that provided our understanding of the potential distortions was presented in the revised version of the First Interim Report and a revised list and expanded description and preliminary assessment of these distortions is provided in this Second Interim Report, together with our proposed methods of addressing each of the distortions.

## Structure of the Report

This Second Interim Report discusses the progress in the implementation of the Study as of April 15, 2014. The structure of this Report follows the proposed outline of the Final Report.

- Chapter 2 offers a discussion of the demand and supply in the Passenger Transport market in the European Union, and reviews several issues concerning the competitiveness of the market, according to relevant dimensions.
- Chapter 3 offers an analysis of the VAT regime as applied by Member States across the EU to the Passenger Transport sector, and a brief discussion of other taxes affecting passenger travel.
- Chapter 4 discusses the competitive distortions that are at the centre of the analysis of alternative VAT regimes.

The input and output VAT exemptions can lead to distortions from an ideal or preferred market context. In this Second Interim Report fourteen potential distortions have been identified, in four groups. The first group of six distortions are those deriving from different output VATs within or between modes of transport or based on geography or between markets. The second group of two distortions relate to the definition of passenger transport services and associated supplies, while the third group of three distortions are those deriving from exemptions of VAT on inputs to operators of particular modes of transport or the time taken to process VAT rebates. The fourth group are related to the place of supply and the administration costs of VAT on passenger transport, mostly VAT on inputs, and derive from the system of determining VAT based on the distance travelled in each country, on the differences between transport modes and the treatment of VAT on travel outside the EU.

- Chapter 5 discusses the proposed VAT reform policy options to address the chosen distortions.

Many measures have been considered in the past on how the distortions could be addressed, and some have been implemented. But these have mostly been measures that address VAT distortions in general and not those that are specific to the transport sector. In Chapter 5 we first discuss the methodology for the quantification of those distortions identified in Chapter 4 that are amenable to numerical evaluation (which will be compared against a no-VAT benchmark). We then propose nine different VAT reform Scenarios that have the potential to address the distortions. The scenarios consist of changes to rates (with the aim to harmonize them better than in the present regime) and changes to other administrative rules of the passenger transport VAT. Each proposed scenario is to be evaluated by a baseline run for the year 2010 (2013 for the City-pairs model) and at two points in time (2020 and 2030), to capture impact and long-term effects of reforms. We also discuss the general economic assumptions to be used for these exercises.

There are several VAT distortions derived from the VAT rules that apply to all economic activities which have a greater impact on transport operators than on other producers of goods or services. The potential remedies to these distortions will not be covered in the analyses of this study, as their remedies lay in measures not specific to the transport sector.

Such distortion include the high administrative costs of having to provide documentation in a language that is not widely used.

Other distortions that will not be addressed are those that have already been the subject of recent and detailed studies. An example is that of the place of taxation for the supply of goods and services consumed aboard means of transport (PWC 2012).

- Finally, Chapter 6 reviews the analytical tools that will be used in the quantification of the policy scenarios.

In addition, Annex 1 provides a complete analysis of the VAT legislation at the EU level, reproducing the partial discussion included in the First Interim Report, and complementing it with a discussion of the Input VAT. Annex 2 contains a methodological note on data sources. Annex 3 provides the list of city pairs used in the modelling work.

The report is complemented by Volume 2, which contains a detailed series of Country Fiches on the VAT regime with regard to passenger transport in each of the EU Member States, and Country Fiches containing detailed information on passenger transport statistics.

## Chapter 2. Passenger Transport Demand and Supply in the EU

In this chapter we (i) review the features of the demand and supply of passenger transport services in the European Union; and (ii) using a number of different concepts of competition, we discuss the degree of competitiveness of the individual markets for passenger transport.

### A. Demand for transport in the European Union

There are two widely used measures of demand for transport, the number of passengers and the number of passenger kms. We provide data on both measures. Using two large datasets (each based on EUROSTAT official statistics, see Box 2.1) containing information on transport volumes, expressed in passenger kilometres and number of trips, we explore the importance of the main modes for purchased transport: bus, rail, metro and air. For the purpose of this study, the transport market was split into a number of submarkets dealing with what are in essence different products: the markets for urban transport, other domestic/intercity transport, international intra-EU and international extra-EU transport are separate from each other and suppliers are faced with very different conditions.

No data were collected for water based transport or taxis; this is due to a lack of consistent, readily available datasets. While these modes are often subject to special treatment from legislators, their market share is not projected to be very significant. This is confirmed by the EC statistical pocketbook<sup>3</sup> which gives passenger sea transport a 2011 market share of 0.6% based on pkm, with most of this concentrated in 3 regions: the Aegean Sea, the North Sea Channel and the Baltic Sea.

Starting from a set of tables with aggregated figures for all EU28 countries, the most important information for each of the markets is discussed. For each market we show the modal volumes and shares for the applicable modes. Not all modes are present in all Member States (and for one Member State, one market is not identified in the data source)

- Metros or trams are not available in all urban areas.
- Two countries (Malta and Cyprus) have no rail network.
- Two countries (Luxemburg and Cyprus) have no “predominantly urban” zones according to DG REGIO’s classification (Box 2.1).

### Urban transport

Purchased transport in cities can use three modes: metro/tram, standard rail, and bus.

The total amount of urban trips in the EU28 in 2010 was around 35.6 billion, equivalent to 385 billion pkm. The largest market is Germany for both parameters (6.4 billion trips, 80.4 billion pkm). The UK is second for both (5.4 billion trips, 48.8 billion pkm), but the gap is notably smaller for trips than for pkm, which implies that urban trips made in the UK are markedly shorter than in Germany.

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<sup>3</sup> See [http://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2013\\_en.htm](http://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2013_en.htm)

### Box 2.1 – Datasets for Demand Analysis

Two datasets served as the sources for the analysis of transport demand in the EU: the TREMOVE model (for pkm) and ETISplus (for number of trips). Both are based on EUROSTAT, with some post-processing to fit the needs for the application of the data in their respective contexts.

TREMOVE is a policy assessment model used to study the effects of different transport and environment policies on the emissions of the transport sector. The model estimates the transport demand, modal shifts, vehicle stock renewal and scrappage decisions as well as the emissions of air pollutants and the welfare level, for policies as road pricing, public transport pricing, emission standards, subsidies for cleaner cars etc. The model covers passenger and freight transport in 31 countries and covers the 1995-2030 period. It has been applied in projects for DG MOVE, DG CLIMA, DG ENV and DG ENTR.

The transport volumes included in the current version of the model (3.5c) were provided by the EC's JRC-IPTS in the context of the assessment of the 2011 Transport White Paper. They contain aggregated statistical data (EUROSTAT) up to 2009, and projections thereafter. For this project, the first projection year, 2010, was used, the data of which match well with EUROSTAT/ETiF (European Transport in Figures) aggregated totals.

The data extracted from TREMOVE are pkm (passenger kilometres), equivalent to the number of trips multiplied by the average trip length, split over a number of relevant parameters, including region, distance and motive.

TREMOVE has a built in distinction between urban, non-urban short distance and non-urban long distance transport (among others). There is however no way to establish the amount of cross-border transport included in these totals. An additional data source was needed for that.

This additional data source used is ETISplus (date of access: April 2013), a recently-completed EC Seventh Framework Programme (FP7) project (managed by DG MOVE), which delivered (among other things) an online database containing detailed transport volumes in and between Nomenclature of Territorial Units for Statistics Level 3 (NUTS3) zones, split by transport mode, for the years 2005 and 2010. The unit in which the volumes were delivered is passenger trips. These data are also based on EUROSTAT, but on different tables, with substantial additional reviews and validation. From the volumes between zones, it is easy to identify international transport. With some processing, this allows for the distinction of international transport volumes within TREMOVE data.

What ETISplus does not have is a proper identification of urban transport. To solve this, we consulted a list published by DG REGIO (See [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Urban-rural\\_typology\\_update](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Urban-rural_typology_update)) that classifies all NUTS3 zones as one of three types: “predominantly urban”, “predominantly rural”, or “intermediate”. All intra-zonal trips within a zone classified as “predominantly urban” were marked to be urban. This may in some cases lead to unexpected results, like countries with no urban transport (if none of its zones are marked as predominantly urban) or countries with excess intercity transport (when a single urban area consists of several NUTS3 zones). (See Annex 1 about dataset compatibility).

The largest markets for metro transport are Germany (3.7 billion trips) and France (2.9 billion). In the UK, the dominant urban mode is bus transport (3.7 billion trips), and it is the largest market for urban bus trips in the EU. When it comes to bus pkm, Germany is again the largest, followed first by Italy and only then by the UK. This confirms the trend of longer urban trips in Germany.

Almost half the urban trips in the EU are done by metro (48%), yet they only represent 24% of distance. On the other hand, only 7% of trips are made by rail, but they cover 38% of the pkm. For urban buses, the numbers are 44% and 38%.

The rest of the figures are presented in the tables below.

**Table 2.1 - Transport Volumes Urban Transport**

	10 <sup>3</sup> trips				10 <sup>6</sup> pkm			
	Metro	Bus	Rail	Total	Metro	Bus	Rail	Total
<b>AT</b>	891,731	157,647	81,639	1,131,017	4,199	2,603	4,791	11,593
<b>BE</b>	343,192	426,810	70,237	840,239	1,226	5,144	5,914	12,284
<b>BG</b>	183,298	75,836	8,199	267,333	504	1,622	888	3,013
<b>CY</b>	0	0	0	0	0	248	0	248
<b>CZ</b>	1,252,300	323,110	16,957	1,592,367	8,308	2,224	2,623	13,155
<b>DE</b>	3,727,375	1,832,791	854,662	6,414,828	16,759	26,339	37,279	80,377
<b>DK</b>	52,000	42,269	24,517	118,786	193	2,049	1,838	4,080
<b>EE</b>	30,276	57,729	1,273	89,277	86	493	88	667
<b>ES</b>	1,242,814	1,536,670	242,052	3,021,536	7,130	12,910	8,536	28,576
<b>FI</b>	113,023	79,486	25,067	217,575	525	2,521	0	3,046
<b>FR</b>	2,914,714	1,766,299	290,800	4,971,812	14,061	19,326	13,503	46,890
<b>GR</b>	219,479	456,855	2,484	678,818	1,797	6,428	0	8,225
<b>HR</b>	183,000	36,744	17,488	237,232	708	272	488	1,468
<b>HU</b>	677,629	407,167	12,975	1,097,771	2,444	2,421	3,096	7,961
<b>IE</b>	32,375	94,427	10,904	137,706	204	1,786	116	2,105
<b>IT</b>	1,055,804	2,085,398	213,134	3,354,336	6,377	20,874	20,614	47,866
<b>LT</b>	0	158,954	552	159,506	0	665	133	798
<b>LU</b>	0	0	0	0	0	414	0	414
<b>LV</b>	41,007	67,177	6,748	114,932	300	470	294	1,064
<b>MT</b>	0	35,604	0	35,604	0	104	0	104
<b>NL</b>	410,665	615,645	88,865	1,115,175	1,934	2,958	8,653	13,544
<b>PL</b>	1,165,859	838,456	29,474	2,033,789	4,770	5,224	6,549	16,543
<b>PT</b>	235,511	310,450	68,106	614,068	1,079	1,069	1,795	3,943
<b>RO</b>	803,670	399,796	3,674	1,207,140	7,397	1,790	2,675	11,862
<b>SE</b>	435,212	142,740	39,366	617,318	2,414	3,666	7,457	13,538
<b>SI</b>	0	26,544	4,597	31,141	0	413	366	779
<b>SK</b>	89,630	76,109	2,200	167,939	418	1,014	790	2,223
<b>UK</b>	1,266,242	3,653,842	452,107	5,372,192	9,409	20,289	19,113	48,811
<b>EU28</b>	17,366,807	15,704,555	2,568,076	35,639,438	92,241	145,336	147,600	385,177

Table 2.2 - Market shares urban transport

	pkm			#trips		
	Metro	Bus	Rail	Metro	Bus	Rail
<b>AT</b>	36.2%	22.5%	41.3%	78.8%	13.9%	7.2%
<b>BE</b>	10.0%	41.9%	48.1%	40.8%	50.8%	8.4%
<b>BG</b>	16.7%	53.8%	29.5%	68.6%	28.4%	3.1%
<b>CY</b>	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
<b>CZ</b>	63.2%	16.9%	19.9%	78.6%	20.3%	1.1%
<b>DE</b>	20.9%	32.8%	46.4%	58.1%	28.6%	13.3%
<b>DK</b>	4.7%	50.2%	45.1%	43.8%	35.6%	20.6%
<b>EE</b>	12.9%	73.9%	13.2%	33.9%	64.7%	1.4%
<b>ES</b>	25.0%	45.2%	29.9%	41.1%	50.9%	8.0%
<b>FI</b>	17.2%	82.8%	0.0%	51.9%	36.5%	11.5%
<b>FR</b>	30.0%	41.2%	28.8%	58.6%	35.5%	5.8%
<b>GR</b>	21.8%	78.2%	0.0%	32.3%	67.3%	0.4%
<b>HR</b>	48.2%	18.6%	33.2%	77.1%	15.5%	7.4%
<b>HU</b>	30.7%	30.4%	38.9%	61.7%	37.1%	1.2%
<b>IE</b>	9.7%	84.8%	5.5%	23.5%	68.6%	7.9%
<b>IT</b>	13.3%	43.6%	43.1%	31.5%	62.2%	6.4%
<b>LT</b>	0.0%	83.3%	16.7%	0.0%	99.7%	0.3%
<b>LU</b>	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
<b>LV</b>	28.2%	44.2%	27.6%	35.7%	58.4%	5.9%
<b>MT</b>	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%
<b>NL</b>	14.3%	21.8%	63.9%	36.8%	55.2%	8.0%
<b>PL</b>	28.8%	31.6%	39.6%	57.3%	41.2%	1.4%
<b>PT</b>	27.4%	27.1%	45.5%	38.4%	50.6%	11.1%
<b>RO</b>	62.4%	15.1%	22.6%	66.6%	33.1%	0.3%
<b>SE</b>	17.8%	27.1%	55.1%	70.5%	23.1%	6.4%
<b>SI</b>	0.0%	53.0%	47.0%	0.0%	85.2%	14.8%
<b>SK</b>	18.8%	45.6%	35.6%	53.4%	45.3%	1.3%
<b>UK</b>	19.3%	41.6%	39.2%	23.6%	68.0%	8.4%
<b>EU28</b>	48.7%	44.1%	7.2%	23.9%	37.7%	38.3%

**Other domestic/intercity transport**

“Other domestic transport” are all domestic trips not taking place within urban areas, while intercity transport (only trip data from ETISplus available) is between NUTS3 zones that are “predominantly urban” within a country. In cases where only one such zone exists, there will be no intercity transport in the data.

The relevant modes are rail, bus/coach and air transport. Bus is generally used for the shorter trips ( $\pm 20$ km) in rural areas, while rail is by far the predominant mode transport for longer travel between cities. However, the intercity market is only a small part of the total “other domestic” market, making bus the overall largest mode for non-urban domestic transport. Rail gets its highest market shares in the UK and the Netherlands (35% and 37% based on number of trips). In France, rail has a 20% share based on trips, but over 60% based on pkm.

The market share of domestic air transport is negligible in most member states, except in very large countries and/or countries with a less extensive long distance rail network, like Spain and Italy.

In terms of number of trips, the “other domestic” market is 40% smaller than the urban market, but 70% larger in terms of pkm.



**Table 2.3 - Transport volumes "Other domestic transport"**

	10 <sup>3</sup> trips				10 <sup>6</sup> pkm			
	Air	Bus	Rail	Total	Air	Bus	Rail	
<b>AT</b>	393	341,607	51,908	393,908	24	6,773	3,276	10,073
<b>BE</b>	29	220,385	53,442	273,856	1	12,095	1,823	13,918
<b>BG</b>	138	408,405	11,350	419,892	189	9,139	1,403	10,730
<b>CY</b>	0	39,860	0	39,860	0	1,092	0	1,092
<b>CZ</b>	71	916,857	62,087	979,015	19	13,624	3,335	16,977
<b>DE</b>	16,506	2,923,405	444,330	3,384,241	1,443	41,067	35,929	78,440
<b>DK</b>	943	243,335	74,131	318,409	4	5,291	4,013	9,308
<b>EE</b>	0	94,617	1,547	96,164	0	2,081	164	2,246
<b>ES</b>	26,981	631,728	51,189	709,897	15,755	46,388	11,311	73,454
<b>FI</b>	1,312	228,566	14,055	243,934	367	4,840	3,159	8,366
<b>FR</b>	20,061	1,387,600	345,944	1,753,606	12,739	26,925	60,361	100,026
<b>GR</b>	4,502	535,516	6,987	547,005	2,916	15,610	1,886	20,412
<b>HR</b>	254	196,971	17,222	214,446	512	1,822	536	2,870
<b>HU</b>	1	584,621	63,249	647,872	2	13,658	3,992	17,652
<b>IE</b>	227	169,767	12,703	182,697	19	5,122	1,713	6,854
<b>IT</b>	24,185	3,553,349	265,719	3,843,252	7,754	82,575	26,010	116,340
<b>LT</b>	0	219,518	2,676	222,193	0	2,786	228	3,014
<b>LU</b>	0	38,052	8,537	46,589	0	437	136	573
<b>LV</b>	0	87,828	4,563	92,391	0	1,952	555	2,507
<b>MT</b>	0	0	0	0	0	414	0	414
<b>NL</b>	6	256,028	151,033	407,067	0	9,110	6,286	15,396
<b>PL</b>	671	2,375,112	136,880	2,512,663	160	22,210	13,289	35,658
<b>PT</b>	1,526	343,161	12,732	357,419	960	9,597	1,907	12,464
<b>RO</b>	729	707,632	40,017	748,378	382	10,075	4,377	14,834
<b>SE</b>	3,967	529,486	56,435	589,888	860	4,791	2,421	8,072
<b>SI</b>	1	77,099	4,275	81,375	2	2,783	342	3,127
<b>SK</b>	58	601,745	25,957	627,760	10	7,586	1,172	8,767
<b>UK</b>	12,552	698,864	383,722	1,095,138	2,258	29,850	29,910	62,018
<b>EU28</b>	115,112	18,411,113	2,302,689	20,828,914	46,374	389,695	219,533	655,602

	# trips			Pkm		
	Air	Bus	Rail	Air	Bus	Rail
<b>AT</b>	0.1%	86.7%	13.2%	0.2%	67.2%	32.5%
<b>BE</b>	0.0%	80.5%	19.5%	0.0%	86.9%	13.1%
<b>BG</b>	0.0%	97.3%	2.7%	1.8%	85.2%	13.1%
<b>CY</b>	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%
<b>CZ</b>	0.0%	93.7%	6.3%	0.1%	80.3%	19.6%
<b>DE</b>	0.5%	86.4%	13.1%	1.8%	52.4%	45.8%
<b>DK</b>	0.3%	76.4%	23.3%	0.0%	56.8%	43.1%
<b>EE</b>	0.0%	98.4%	1.6%	0.0%	92.7%	7.3%
<b>ES</b>	3.8%	89.0%	7.2%	21.5%	63.2%	15.4%
<b>FI</b>	0.5%	93.7%	5.8%	4.4%	57.9%	37.8%
<b>FR</b>	1.1%	79.1%	19.7%	12.7%	26.9%	60.4%
<b>GR</b>	0.8%	97.9%	1.3%	14.3%	76.5%	9.2%
<b>HR</b>	0.1%	91.9%	8.0%	17.8%	63.5%	18.7%
<b>HU</b>	0.0%	90.2%	9.8%	0.0%	77.4%	22.6%
<b>IE</b>	0.1%	92.9%	7.0%	0.3%	74.7%	25.0%
<b>IT</b>	0.6%	92.5%	6.9%	6.7%	71.0%	22.4%
<b>LT</b>	0.0%	98.8%	1.2%	0.0%	92.4%	7.6%
<b>LU</b>	0.0%	81.7%	18.3%	0.0%	76.2%	23.8%
<b>LV</b>	0.0%	95.1%	4.9%	0.0%	77.9%	22.1%
<b>MT</b>				0.0%	100.0%	0.0%
<b>NL</b>	0.0%	62.9%	37.1%	0.0%	59.2%	40.8%
<b>PL</b>	0.0%	94.5%	5.5%	0.5%	62.3%	37.3%
<b>PT</b>	0.4%	96.0%	3.6%	7.7%	77.0%	15.3%
<b>RO</b>	0.1%	94.6%	5.4%	2.6%	67.9%	29.5%
<b>SE</b>	0.7%	89.8%	9.6%	10.7%	59.4%	30.0%
<b>SI</b>	0.0%	94.8%	5.3%	0.1%	89.0%	10.9%
<b>SK</b>	0.0%	95.9%	4.1%	0.1%	86.5%	13.4%
<b>UK</b>	1.2%	63.8%	35.0%	3.6%	48.1%	48.2%
<b>EU28</b>	0.6%	88.4%	11.1%	7.1%	59.4%	33.5%

<b>Table 2.5 - Transport volumes intercity transport</b>							
	<b>Volumes, #trips '000</b>			<b>Total</b>	<b>Market Shares</b>		
	<b>Air</b>	<b>Bus</b>	<b>Rail</b>		<b>Air</b>	<b>Bus</b>	<b>Rail</b>
<b>AT</b>	207	3	4,165	4,375	4.7%	0.1%	95.2%
<b>BE</b>	18	7	29,894	29,918	0.1%	0.0%	99.9%
<b>CZ</b>	0	845	1,373	2,218	0.0%	38.1%	61.9%
<b>DE</b>	6,190	1,800	93,377	101,367	6.1%	1.8%	92.1%
<b>DK</b>	38	0	0	38	100.0%	0.0%	0.0%
<b>ES</b>	11,101	3,152	16,545	30,798	36.0%	10.2%	53.7%
<b>FR</b>	8,222	10	74,317	82,548	10.0%	0.0%	90.0%
<b>GR</b>	810	787	495	2,091	38.7%	37.6%	23.7%
<b>IT</b>	7,422	459	24,869	32,751	22.7%	1.4%	75.9%
<b>LV</b>	0	1,045	1,167	2,212	0.0%	47.2%	52.8%
<b>NL</b>	1	21	89,187	89,209	0.0%	0.0%	100.0%
<b>PL</b>	266	2,482	15,722	18,470	1.4%	13.4%	85.1%
<b>PT</b>	741	962	2,034	3,737	19.8%	25.8%	54.4%
<b>RO</b>	0	39	1,014	1,052	0.0%	3.7%	96.3%
<b>UK</b>	6,344	19,401	220,701	246,446	2.6%	7.9%	89.6%
<b>EU28</b>	41,359	31,012	574,859	647,231	6.4%	4.8%	88.8%

### **International intra-EU transport**

The intra-EU international transport market is heavily dominated by air transport (72% of trips). Still, the market share for rail transport is important as well at 20%. The highest market shares for rail are found in smaller Western (Luxemburg, Belgium) and Central (Austria, Slovenia) European countries. The highest market shares for air transport can be found in countries at the borders of the EU, notably in the East.

The largest markets for intra-EU international transport are the UK, Germany and Spain (amount of trips). Of these three, Germany has the lowest share of air transport and the highest of rail transport. Intra-EU travellers to and from Spain generally fly the farthest, followed by the UK and Greece. With Spain and Greece among the EU's main touristic countries, this is not unexpected. The largest market for intra-EU rail transport is France. Its central location with fast railway connections to all the EU's largest countries is a determining factor.

The relative market size of the intra-EU international market versus the domestic market in terms of trips is about 0.6%, but 24% in terms of distance.

A small note on the methodology of data collection: the pkm values presented are not a direct output from TREMOVE. These were derived as follows:

- TREMOVE has distance classes for trips >500km and <500km.
- For both classes, ETISplus data were consulted to find the international trips starting in a given country. The trips were split into two groups, >500km and <500km, the same distance classes of trips as defined in TREMOVE.
- The ratio of the pkm for international trips and the pkm for all trips (from ETISplus) was then taken as a measure for the share of international trips in TREMOVE as well.
- The pkm from TREMOVE were then split according to these ratios. Logically for many small countries, almost all of the pkm in the distance class >500km were assigned to international transport.

**Table 2.6 - Transport volumes international transport (Intra-EU)**

	<b>10<sup>3</sup> trips</b>				<b>10<sup>6</sup>pkm</b>			
	Air	Bus	Rail	Total	Air	Bus	Rail	Total
<b>AT</b>	4,696	694	4,523	9,912	2,596	365	1,056	4,016
<b>BE</b>	6,341	660	9,949	16,950	2,384	1,414	2,109	5,907
<b>BG</b>	1,787	1,525	88	3,400	2,516	592	86	3,194
<b>CY</b>	2,543	0	0	2,543	6,031	0	0	6,031
<b>CZ</b>	3,355	994	1,990	6,339	5,009	245	439	5,693
<b>DE</b>	32,098	3,595	15,376	51,069	18,800	941	3,019	22,761
<b>DK</b>	5,018	265	1,821	7,104	4,057	61	316	4,434
<b>EE</b>	479	55	25	559	338	57	12	406
<b>ES</b>	44,572	2,345	2,152	49,069	58,136	269	1,251	59,656
<b>FI</b>	3,767	3	46	3,816	4,207	197	344	4,748
<b>FR</b>	22,928	4,189	12,425	39,542	12,272	1,243	5,810	19,325
<b>GR</b>	9,317	530	52	9,899	20,525	91	22	20,638
<b>HR</b>	1,102	358	338	1,798	864	19	84	967
<b>HU</b>	2,916	494	1,694	5,104	2,025	821	1,404	4,250
<b>IE</b>	9,175	17	196	9,388	5,396	260	53	5,708
<b>IT</b>	25,727	4,690	3,942	34,359	13,197	199	2,094	15,490
<b>LT</b>	846	205	239	1,289	689	139	40	868
<b>LU</b>	447	108	878	1,433	237	6	174	417
<b>LV</b>	1,173	62	79	1,314	774	69	35	879
<b>MT</b>	1,233	0	0	1,233	2,109	0	0	2,109
<b>NL</b>	10,716	688	3,432	14,836	3,455	285	1,176	4,916
<b>PL</b>	6,970	2,940	839	10,749	3,579	510	226	4,315
<b>PT</b>	7,311	689	1,076	9,077	9,514	173	236	9,923
<b>RO</b>	3,338	1,546	297	5,181	3,627	603	239	4,468
<b>SE</b>	8,236	225	6,210	14,671	5,928	68	288	6,284
<b>SI</b>	416	73	378	868	244	51	120	415
<b>SK</b>	1,478	757	1,117	3,352	581	126	193	900
<b>UK</b>	48,515	842	4,263	53,619	27,948	1,323	2,018	31,289
<b>EU28</b>	266,498	28,550	73,425	368,473	217,039	10,123	22,845	250,007

**Table 2.7 - Market shares international transport (intra-EU)**

	# trips			pkm		
	Air	Bus	Rail	Air	Bus	Rail
<b>AT</b>	47.4%	7.0%	45.6%	64.6%	9.1%	26.3%
<b>BE</b>	37.4%	3.9%	58.7%	40.4%	23.9%	35.7%
<b>BG</b>	52.6%	44.9%	2.6%	78.8%	18.5%	2.7%
<b>CY</b>	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
<b>CZ</b>	52.9%	15.7%	31.4%	88.0%	4.3%	7.7%
<b>DE</b>	62.9%	7.0%	30.1%	82.6%	4.1%	13.3%
<b>DK</b>	70.6%	3.7%	25.6%	91.5%	1.4%	7.1%
<b>EE</b>	85.7%	9.8%	4.5%	83.2%	13.9%	2.9%
<b>ES</b>	90.8%	4.8%	4.4%	97.5%	0.5%	2.1%
<b>FI</b>	98.7%	0.1%	1.2%	88.6%	4.2%	7.2%
<b>FR</b>	58.0%	10.6%	31.4%	63.5%	6.4%	30.1%
<b>GR</b>	94.1%	5.4%	0.5%	99.5%	0.4%	0.1%
<b>HR</b>	61.3%	19.9%	18.8%	89.3%	2.0%	8.7%
<b>HU</b>	57.1%	9.7%	33.2%	47.6%	19.3%	33.1%
<b>IE</b>	97.7%	0.2%	2.1%	94.5%	4.6%	0.9%
<b>IT</b>	74.9%	13.7%	11.5%	85.2%	1.3%	13.5%
<b>LT</b>	65.6%	15.9%	18.5%	79.4%	16.0%	4.7%
<b>LU</b>	31.2%	7.5%	61.3%	56.9%	1.4%	41.8%
<b>LV</b>	89.3%	4.7%	6.0%	88.1%	7.9%	4.0%
<b>MT</b>	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
<b>NL</b>	72.2%	4.6%	23.1%	70.3%	5.8%	23.9%
<b>PL</b>	64.8%	27.4%	7.8%	83.0%	11.8%	5.2%
<b>PT</b>	80.6%	7.6%	11.9%	95.9%	1.7%	2.4%
<b>RO</b>	64.4%	29.8%	5.7%	81.2%	13.5%	5.3%
<b>SE</b>	56.1%	1.5%	42.3%	94.3%	1.1%	4.6%
<b>SI</b>	48.0%	8.4%	43.6%	58.9%	12.3%	28.9%
<b>SK</b>	44.1%	22.6%	33.3%	64.6%	14.0%	21.4%
<b>UK</b>	90.5%	1.6%	8.0%	89.3%	4.2%	6.5%
<b>EU28</b>	72.3%	7.8%	19.9%	86.8%	4.1%	9.1%

### **International extra-EU transport**

Most trips between EU countries and non-EU countries are made by air (Table 2.8). Only for countries at the edges of the territory, do other land-based modes reach a market share of more than 10%. The average market share of air transport is 91.7%; bus and rail are at 3.6% and 4.7% respectively in terms of number of trips. Land-based modes each represent less than 1% of transport volume in terms of pkm.

Among the “border” countries, we can identify 2 groups: the Central countries (Austria, Germany, Italy), which register a large amount of land-based trips to neighbouring Switzerland, and the Eastern countries (Czech Republic, Croatia, Latvia, Poland, Romania, Slovenia, Slovakia), where trips are mainly going further eastward. Among the first group, most of the land-based trips are made by rail, while bus is the dominant land mode for the second group of countries.

The total amount of extra-EU trips is just under 40% of the amount of intra-EU trips, yet they cover almost 30% more distance. The largest market for extra-EU trips is the UK, with many of them covering very long distances. Germany is the second market, but with a significant part of them going for a relatively short distance—the gap between the UK and Germany is a considerably larger in terms of pkm than in terms of amount of trips.

**Table 2.8 - Transport volumes international transport (Extra-EU)**

	10 <sup>3</sup> trips				10 <sup>6</sup> pkm			
	Air	Bus	Rail	Total	Air	Bus	Rail	Total
<b>AT</b>	2,412	83	620	3,115	5,495	116	57	5,668
<b>BE</b>	4,163	44	33	4,240	5,920	268	23	6,211
<b>BG</b>	535	18	126	679	1,795	67	74	1,936
<b>CY</b>	1,617	0	0	1,617	2,886	0	0	2,886
<b>CZ</b>	1,238	280	10	1,528	6,294	165	7	6,466
<b>DE</b>	21,673	1,455	2,599	25,727	46,666	164	432	47,261
<b>DK</b>	2,293	50	7	2,349	5,787	3	4	5,794
<b>EE</b>	289	11	8	308	510	38	7	555
<b>ES</b>	10,208	113	37	10,358	41,175	124	28	41,327
<b>FI</b>	1,360	4	34	1,399	4,562	7	284	4,853
<b>FR</b>	18,502	197	753	19,451	41,914	29	294	42,238
<b>GR</b>	2,632	30	67	2,729	10,707	28	28	10,763
<b>HR</b>	439	170	28	636	959	57	4	1,021
<b>HU</b>	1,114	66	62	1,243	2,153	149	54	2,356
<b>IE</b>	1,768	0	0	1,769	6,444	0	0	6,444
<b>IT</b>	12,151	664	1,694	14,509	27,672	23	605	28,300
<b>LT</b>	237	9	39	285	352	9	6	367
<b>LU</b>	233	2	12	247	437	1	5	442
<b>LV</b>	401	47	27	474	466	54	17	537
<b>MT</b>	133	0	0	133	562	0	0	562
<b>NL</b>	7,329	160	14	7,503	11,608	12	15	11,635
<b>PL</b>	2,741	805	59	3,605	3,893	335	16	4,243
<b>PT</b>	2,058	0	0	2,059	8,775	0	0	8,775
<b>RO</b>	790	529	125	1,444	1,901	136	94	2,131
<b>SE</b>	3,747	10	211	3,968	7,587	53	31	7,671
<b>SI</b>	237	51	5	294	219	45	7	271
<b>SK</b>	583	110	6	698	1,076	32	5	1,113
<b>UK</b>	27,427	89	20	27,536	68,011	136	17	68,163
<b>EU28</b>	128,310	4,995	6,599	139,904	315,826	2,052	2,113	319,992



**Table 2.9 - Market shares international transport (Extra-EU)**

	# Trips			Pkm		
	Air	Bus	Rail	Air	Bus	Rail
<b>AT</b>	86.0%	3.0%	11.1%	97.0%	2.0%	1.0%
<b>BE</b>	98.6%	1.0%	0.4%	95.3%	4.3%	0.4%
<b>BG</b>	86.8%	3.0%	10.3%	92.8%	3.5%	3.7%
<b>CY</b>	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
<b>CZ</b>	81.3%	18.4%	0.3%	97.3%	2.6%	0.1%
<b>DE</b>	88.7%	6.0%	5.3%	98.8%	0.3%	0.8%
<b>DK</b>	97.7%	2.1%	0.1%	99.9%	0.1%	0.1%
<b>EE</b>	95.2%	3.5%	1.3%	92.0%	6.8%	1.1%
<b>ES</b>	98.7%	1.1%	0.2%	99.6%	0.3%	0.1%
<b>FI</b>	98.5%	0.3%	1.2%	94.0%	0.1%	5.9%
<b>FR</b>	97.0%	1.0%	2.0%	99.3%	0.1%	0.6%
<b>GR</b>	97.6%	1.1%	1.2%	99.5%	0.3%	0.3%
<b>HR</b>	70.5%	27.3%	2.3%	94.0%	5.6%	0.4%
<b>HU</b>	92.0%	5.5%	2.6%	91.5%	6.3%	2.2%
<b>IE</b>	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
<b>IT</b>	88.9%	4.9%	6.2%	98.1%	0.1%	1.9%
<b>LT</b>	89.3%	3.3%	7.4%	96.1%	2.4%	1.6%
<b>LU</b>	96.5%	0.9%	2.6%	99.0%	0.2%	0.9%
<b>LV</b>	86.9%	10.2%	2.9%	86.8%	10.1%	3.1%
<b>MT</b>	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
<b>NL</b>	97.8%	2.1%	0.1%	99.8%	0.1%	0.1%
<b>PL</b>	76.7%	22.5%	0.8%	91.8%	7.9%	0.3%
<b>PT</b>	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
<b>RO</b>	57.2%	38.3%	4.5%	89.3%	6.4%	4.3%
<b>SE</b>	97.0%	0.3%	2.7%	98.9%	0.7%	0.4%
<b>SI</b>	81.5%	17.6%	0.9%	80.8%	16.7%	2.5%
<b>SK</b>	83.8%	15.8%	0.4%	96.7%	2.9%	0.5%
<b>UK</b>	99.6%	0.3%	0.0%	99.8%	0.2%	0.0%
<b>EU28</b>	86.0%	3.0%	11.1%	97.0%	2.0%	1.0%

### Business transport

There are many factors affecting the choice of the mode of transportation for passengers travel. One of the more important mode characteristics influencing these choices is the fare, but the effective fare itself depends on the reason the travel is undertaken. Business-trip-related expenses are often recoverable for VAT purposes and in that case those who pay for the tickets will not feel the consequences of any changes in output VAT policy. It is therefore useful to illustrate the importance of this part of the market in relation to the full market (Table 2.10, based on ETISplus dataset). Business travellers typically place more value on time efficiency and comfort and this has an impact on their choice of mode.

In the urban market, the share of business trips is very small (just under 2.4% of all urban trips are business trips), and the largest mode for these trips in most countries is metro/tram. The share of urban business trips is somewhat larger in the EU13 (New Member States), but most of the urban trips are for commuting or other private purposes.

The dominant mode in business intercity transport is rail. The share of business trips in intercity transport is around 17.5%, with some big countries at more than 25% (France, Italy) – notably countries with well-established high speed intercity connections. In countries with low shares of business trips, private transport (cars) likely account for most of the volume. This becomes evident in the difference between the EU15 and the EU13 countries. In the EU15, with generally denser infrastructure and higher service frequencies, the share of business trips in purchased transport is 6% higher than in the EU13.

The share of international business trips is higher in the market for intra-EU trips (29.2%) than for extra-EU trips (27.7%), which is probably explained by the fact that business relations are mainly established in countries with similar circumstances, and thus occur more between neighbouring countries. Without exception, air is the most dominant mode for extra-EU trips. However, for intra-EU trips, rail is the dominant mode in three countries (Austria, Belgium, and Luxemburg) – all of which are relatively small countries sharing borders with the EU's largest member states with high-quality rail networks. The difference between EU15 and EU13 becomes greater with distance, at 8.2% and 9.1% for intra-EU and extra-EU trips respectively.

Table 2.10 – Business Passenger Transport

	Urban	Main mode	Intercity	Main mode	Intra-EU	Main mode	Extra-EU	Main mode
AT	0.70%	tram/metro	18.57%	rail	34.18%	rail	22.49%	air
BE	2.24%	tram/metro	17.94%	rail	53.25%	rail	28.12%	air
BG	3.39%	tram/metro			19.48%	air	24.08%	air
CY					20.21%	air	17.16%	air
CZ	3.67%	tram/metro	3.79%	rail	16.45%	air	17.38%	air
DE	0.87%	rail	19.32%	rail	28.69%	air	24.16%	air
DK	4.63%	tram/metro	33.33%	air*	21.14%	air	25.49%	air
EE	1.95%	tram/metro			23.63%	air	21.81%	air
ES	1.90%	bus	17.17%	rail	23.11%	air	23.10%	air
FI	2.97%	tram/metro			32.06%	air	33.24%	air
FR	3.22%	tram/metro	32.78%	rail	35.02%	air	29.68%	air
GR	2.39%	tram/metro	21.71%	rail	18.43%	air	19.27%	air
HR	3.26%	tram/metro			26.91%	air	8.90%	air
HU	3.23%	tram/metro			26.62%	air	25.99%	air
IE	3.64%	tram/metro			29.88%	air	32.81%	air
IT	1.37%	bus	25.98%	rail	30.22%	air	30.05%	air
LT	0.84%	bus			18.03%	air	17.61%	air
LU					34.62%	rail	24.46%	air
LV	2.16%	tram/metro	4.87%	rail	22.70%	air	24.86%	air
MT	0.51%	bus			32.93%	air	30.93%	air
NL	2.21%	tram/metro	12.42%	rail	27.93%	air	28.81%	air
PL	3.12%	tram/metro	12.11%	rail	24.96%	air	21.86%	air
PT	1.77%	tram/metro	21.56%	rail	28.44%	air	24.75%	air
RO	3.07%	tram/metro	23.51%	rail	24.81%	air	15.23%	air
SE	2.83%	tram/metro			18.10%	air	27.26%	air
SI	1.02%	rail			20.61%	air	20.48%	air
SK	3.02%	tram/metro			14.66%	air	24.91%	air
UK	3.69%	tram/metro	12.80%	rail	34.03%	air	35.47%	air
<i>EU15</i>	<i>2.20%</i>	<i>tram/metro</i>	<i>17.73%</i>	<i>rail</i>	<i>30.23%</i>	<i>air</i>	<i>28.68%</i>	<i>air</i>
<i>EU13</i>	<i>3.16%</i>	<i>tram/metro</i>	<i>11.17%</i>	<i>rail</i>	<i>22.02%</i>	<i>air</i>	<i>19.53%</i>	<i>air</i>
<i>EU28</i>	<i>2.39%</i>	<i>tram/metro</i>	<i>17.49%</i>	<i>rail</i>	<i>29.27%</i>	<i>air</i>	<i>27.74%</i>	<i>air</i>

\*Likely due to data anomaly

## **B. The European passenger transport market from the operators' perspective**

The structure of the European passenger transport market is rather different from the perspective of the supply of services to that of the outcome of the interaction of that supply with demand as reflected in the amount of travel (Section A of this Chapter). The supply of passenger transport services, and in particular the competition between modes and operators, is the topic of this section of the Chapter.

There are some common features of all passenger transport markets within the European Union that impact on the competitiveness of their supply<sup>4</sup>. First, markets within transport modes tend to be concentrated, with oligopolistic interactions between operators interfering even where the markets appear to be competitive (airline and inter-urban bus alliances reflect this tendency). Competitive market equilibria tend to be unstable and quickly decline into some form of oligopoly. Many of the transport policies and regulations of the EU are designed to address these tendencies, with increasing success in most cases (such as railways) but slower progress in others (such as ferries).

Second, demand is much more heterogeneous than supply. Each passenger has an individual set of attributes (income, family circumstances, value of time, etc.) that weigh differently for each trip for which a service is sought, while at the same time the balance of attributes of the service being sought (fare, time, frequency, comfort, etc.) is also different for each trip. In contrast, there are relatively few suppliers to provide the required services. Transport operators have become skilled at market differentiation, being able to offer a wide range of fares and service characteristics to satisfy distinct market segments, but they still need to be selective in the vehicles they use to provide the wide range of services. One result is the now common practice of yield management through which revenue per vehicle km is maximized through the wide range of options offered for seats on the same vehicle.

Third, providing transport services is a capital intensive activity. For the network based modes (such as rail and metro) the costs of fixed infrastructure are even higher than for the other modes that use non-mode specific infrastructure (such as roads, seas and airspace). But even for the users of common infrastructure, the operator is often required to cover at least the marginal costs of infrastructure use and where the infrastructure is provided as a commercial venture, the operators between them need to cover the full costs of the infrastructure they use. Investments in buses, railway coaches, rolling stock, road vehicles or aircraft in one way or another (debt or equity) make up between 15% and 25% of operating costs. These costs are borne directly by the operators and need to be recovered from fare revenue, except where the service is provided for social rather than commercial reasons and can attract a subsidy, now usually in the form of payment of a public service obligation. With large long-term fixed costs in long-lived infrastructure and average-term large investments in vehicles, operators face a wide gap between average and marginal costs and therefore need to have very sophisticated tariff schemes if they are operating in competitive markets.

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<sup>4</sup> A more extensive description of these common features is given in Sevy (2010).

In part because of the high fixed costs of transport operations, providers of transport services face significant economies of scale and network benefits. Both of these characteristics give competitive advantages to larger compared to smaller operators and create significant barriers to the entry of new competitors. The response of smaller operators is often to operate a form of joint marketing that may or may not include other forms of cooperation. For example, at least two large marketing associations of smaller transport operators have emerged in the EU inter-city bus market. In one of these, participants include some of their services in the jointly marketed service, while competing with these services with their other operations<sup>5</sup>. Joint marketing of services is also becoming prevalent between operators in different modes, to compete with large transport operators that offer their own inter-modal connections. Some of the EU's larger bus companies are also major rail operators. An example is Arriva, a multinational public transport company with bus, rail, tram and urban ferry services in 14 EU countries. It is now a subsidiary of Deutsche Bahn. Most of the members of the European Passenger Transport Association have similar profiles.

Even where there appear to be multiple operators (such as on many inter-urban bus routes in Central Europe), some of them are likely to be members of a marketing group that in one way or another reduces competition; where there appears to be competition between modes, in practice the competing services might be operated by the same company. The various forms of market integration make it difficult to assess the level of competition in many passenger transport markets. Less competition is not necessarily a wholly negative outcome of service integration. Passengers benefit from operators being able to offer a more extensive range of routes and services, and from the ability to book travel to destinations that are not served directly by one operator or mode from their home city. The more choices offered by in terms of routes, schedules, modes of transport and tariffs, the more competitive are its offerings.

All these considerations need to be taken into account when looking at the supply of transport services in particular markets. More available modes or operators does not necessarily indicate more competition.

## **Transport markets**

The passenger transport market in the EU Member States is not sufficiently homogenous to permit a single profile to describe the demand or supply of transport services or to address sensitivity to price changes (Task 1), the impacts of VAT exemption or reduced rates, market distortions arising from policy differences between modes, the presences of powerful incumbents or alliances or of some operators being established or supplying services in different member states (Task 3).

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<sup>5</sup> Eurolines is a network of 29 co-operating companies serving more than 600 destinations in 38 countries, offering partially integrated ticketing and inter-connected services. In some Member State, Eurolines has only one participating operator (such as Bus Éireann in the Republic of Ireland) but several operators in others Member State. Although it minimum service standards, the quality of service depends on the particular operator. Its services are strong competitors with rail in some shorter inter-city routes but where the trip lengths are longer bus services are less competitive. Bus Europe is a less integrated marketing association of 40 bus operators and bus terminals that markets their services to about 1,200 destinations in 19 countries. Its participants maintain more independent operations than those of Eurolines.

Most previous comparisons of transport in the Member States have focussed on national statistics, and we have started from the same point as this is the level at which the most reliable data on the demand for and supply of passenger transport services can be found.

But national statistics hide a wide variation in passenger transport market characteristics. For example, in terms of demand, the mixture of journey purposes, length of trips and frequency of travel are very different for urban and inter-urban travel; in terms of supply very few urban vehicles are suitable for international transport, but the level of competition between modes and operating companies is usually greater than in other markets. For example, in urban transport there are up to seven different modes of transport available<sup>6</sup> and many passenger trips involve combinations of two or more of these. The other markets typically have at the most four modes available<sup>7</sup> (and often fewer) and few trips involve more than two of these.

The market for any particular passenger trip is not the urban, domestic, national, intra EU or extra-EU market, but that between the place that the passenger is travelling from and to. The ETISplus transport model uses almost 1,300 zones as trip origins and destinations, giving a theoretical 1.5m possible combinations. The model also uses four purposes of travel. For each possible combination of an origin and destination zone the parameters that determine the market competitiveness are similar to those at the more aggregate levels.

The detailed assessment of competition we have made from the passenger perspective combines the four purposes of travel of the ETISplus model into just two (business and non-business) and 220 possible origin and destination zones. For each mode of travel the passengers' market perception is influenced by the fare and time needed to make the trip and the frequency of service<sup>8</sup>.

For travel between some Member States and city pairs, ferry transport plays an important role for some segments of the market (for example, bus services to and from the UK and Ireland and between Cyprus, Malta and other Member States). But other than for travel between port cities, ferry travel is part of multi-modal travel and is included in the data for bus travel<sup>9</sup>. In the passenger market for travel between most Member States and other countries (extra-EU travel) air services predominate. However, rail and bus services are significant for travel between some Member States and cities, and that significance is increasing with the expansion of HSR and the liberalization of bus markets.

An analysis undertaken only at the national level would overlook many of these differences. Although most of the data relating to passenger transport supply is available only at the national level, to better take

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<sup>6</sup> Bus, trolleybus, tram, light rapid transit, conventional rail, ferry and even funicular.

<sup>7</sup> Air, bus, rail and ferry.

<sup>8</sup> There are other characteristics of the possible trip by each mode that the passenger takes into account but which we have not measured here. These include the number of times there is a change of vehicle (such as between a bus and a train, or even between two trains) and the reliability of the time taken for the travel. The time reliability can be influenced by the performance of a particular transport operator, the external factors such as road congestion and the weather.

<sup>9</sup> In our city pair analysis the ferry transport is included in that of other modes, as for most trips (but not necessarily most ferry trips) ferry travel is a component of a trip that is mostly by bus. We do not include trips made by passengers in cars as their main mode of transport is private and not usually included in a passenger transport market from a VAT perspective.

into account differences in supply competitiveness, we have disaggregated the national data into the four sub-markets.<sup>10</sup>

### **Measures of passenger transport supply**

Supply is measured by three indicators of capacity: the numbers of vehicles, the number of seats (sometimes called static capacity) and the quantity of seat-kms provided (or dynamic capacity). As the estimates progress from the simplest (vehicles) to the most useful (dynamic capacity), more variables have to be estimated, and each of these additions reduces the reliability of the final indicator. In deciding which measure to use there is a trade-off between reliability and usefulness.

Using the number of vehicles as the measure of capacity overlooks the large differences in size between vehicles, either in the same mode (for example passenger aircraft sizes range from less than 30 to more than 500 seats) or between modes (for example, the average bus has a much smaller capacity than the average ferry).

To overcome this problem the next best measure is the number of seats available (static capacity). This is derived by multiplying the number of vehicles by their average size. The size estimates are disaggregated as far as the data will allow. Although estimates of average size at the total EU level can be made with some confidence, providing different estimates for each of the four markets (and the city pairs) becomes increasingly less reliable.

The third measure of supply capacity is seat kms (dynamic capacity), which takes into account the greater utilization of vehicles in certain circumstances. A small passenger aircraft of about 65 seats might fly for up to seven hours per day for more than 250 days per year at an average speed of 350km/hr. and so travelling a total distance of more than 600,000kms in a year; a bus of the same size used in the urban transport market might operate for only five hours per day for only 200 days per year and at an average speed of less than 20km/h, thus travelling for only about 20,000kms per year.

The aircraft therefore provides much more effective annual capacity per seat, that is, it can transport more passengers in any period of time. Estimates of this dynamic capacity measure, obtained by multiplying the average seats per vehicle by the average distance travelled in a year, are the most useful of the three measures of capacity but also the least reliable, as the estimates of average distance travelled by each vehicle type in a year is very specific to the market and circumstances in which it is operating.

### **How to measure passenger transport capacity**

Not only are there different measures of capacity, there are two very different ways of estimating them. One starts from published data on the numbers of registered vehicles of each type in each country, then makes assumptions about vehicle sizes to progress to estimates of seats, then uses vehicle utilization to reach the estimate of dynamic capacity. The second method starts from the other end of the process, with demand measured in terms of passenger kms, then uses estimates of vehicle occupancy and size to derive estimates of seat kms, and then the inverse of vehicle utilization to reach the number of vehicles. Both methods provide estimates of the same three measures of capacity. The first method on which we have relied for the results presented here is presumed to be more accurate as its starting point is actual data -

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<sup>10</sup> This analysis excludes the travel markets between small cities within and between the Member State and the rural transport market. While important from economic and social perspectives, these markets do not have any VAT distortions that are covered by the other markets included in the analysis.

the number of registered vehicles while the second method starts from estimated numbers, those of the originating passengers in each Member State. We have used the second method to provide a verification of the results of the first.

Since we have segmented the total EU passenger transport market into four submarkets, capacity estimates are needed for each of them. They are also needed for each of the 220 city pairs in our database, since this is the basic level at which we are estimating the impacts of alternative VAT regimes. At this detailed level of analysis we can introduce service frequency as another measure of capacity that is not available at the more aggregate levels. However, at the city pair level we have to exclude the dynamic seat capacity measure as it does not apply when the distance over which the capacity is being measured is fixed.

### **Estimates of numbers of vehicles**

In the first method of estimating the supply of passenger transport, the starting point is the EUROSTAT data on numbers of vehicles for road, rail and air in each Member State<sup>11</sup>. No data is available from this source on the numbers of ferries registered or operating within the EU28 and its territorial waters.

Published data on the number of registered transport vehicles in each Member State needs careful interpretation. The number of vehicles registered is not necessarily the same as the number of vehicles providing services in that Member State. This is particularly applicable to aircraft and ferries, with many of those registered in one Member State providing most of their supply in other Member States or even totally outside the EU. Buses and railway coaches are more likely to provide a large proportion of their services in their country of registration, although even for these vehicle types, further integration of EU passenger services is leading to their increased use outside of their Member State of registration. Urban transport vehicles have the highest probability of all of their supply being in their Member State of registration.

In 2010 there were 4,110 civil aircraft registered in the Member States; 818,000 registered buses and coaches and 102,168 rail passenger coaches of various types. The data is available at the level of Member State, as presented in Table 2.11. The data for numbers of aircraft is provided by numbers in four different size ranges, but no data on vehicle size is available for other modes.

This data is the starting point for our estimate of vehicles available for scheduled public passenger transport that is subject to VAT. The operation of most other vehicles used for other passenger transport is subject to VAT at the standard rate and is considered a separate part of our analysis of distortions.

The data on buses and coaches and aircraft includes those not used for scheduled services, but for private hire or charter services. These are not subject to the derogations of VAT rates for passenger transport so they need to be separated in our analyses. We made a first estimate that these represented 25% of all registered buses and coaches, 6% of metro vehicles, 10% of aircraft and 2% of rail passenger coaches.

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<sup>11</sup> EU Transport in Figures, Statistical Pocketbook, 2012



**Table 2.11 Number of vehicles by Member State**

	Member State	Air	Bus	Rail	Total
<b>AT</b>	Austria	110	9,600	2,974	12,684
<b>BE</b>	Belgium	81	16,200	3,412	19,693
<b>BG</b>	Bulgaria	40	24,500	1,369	25,909
<b>CY</b>	Cyprus	11	3,400	0	3,411
<b>CZ</b>	Czech Republic	49	20,400	4,514	24,963
<b>DE</b>	Germany	673	76,500	18,565	95,738
<b>DK</b>	Denmark	101	14,500	1,307	15,908
<b>EE</b>	Estonia	9	4,200	189	4,398
<b>ES</b>	Spain	336	62,400	5,665	68,401
<b>FI</b>	Finland	97	13,700	1,071	14,868
<b>FR</b>	France	443	96,200	16,890	113,533
<b>GR</b>	Greece	359	27,300	718	28,377
<b>HR</b>	Croatia	15	4,900	523	5,438
<b>HU</b>	Hungary	60	17,600	3,136	20,796
<b>IE</b>	Ireland	359	8,200	592	9,151
<b>IT</b>	Italy	255	99,900	12,465	112,620
<b>LT</b>	Lithuania	14	13,700	337	14,051
<b>LU</b>	Luxembourg	16	1,600	214	1,830
<b>LV</b>	Latvia	37	13,700	491	14,228
<b>MT</b>	Malta	20	1,200	0	1,220
<b>NL</b>	Netherlands	177	11,300	2,824	14,301
<b>PL</b>	Poland	71	97,000	6,926	103,997
<b>PT</b>	Portugal	95	15,600	965	16,660
<b>RO</b>	Romania	55	40,900	3,037	43,992
<b>SE</b>	Sweden	101	13,900	871	14,872
<b>SI</b>	Slovenia	13	2,400	355	2,768
<b>SK</b>	Slovakia	10	9,400	1,530	10,940
<b>UK</b>	United Kingdom	804	111,500	11,751	124,055
	Total	4,411	831,700	102,691	938,802

*Source; European Transport in Figures, 2012*

After excluding these vehicles, the next task was to separate the urban transport vehicles as they are to a large extent captive to their market and their characteristics are quite different to those used in the other markets. Nearly all trams, metros and LRT (light rapid transit) vehicles are used in urban transport while no passenger aircraft are in this market.

### ***Urban transport vehicles***

The estimate of vehicles used in urban transport was based on the data available in Jane's Urban Transport Systems (JUTS 2013). This gives a description of the organization of urban transport in each major city in each Member State (as well as for other countries). From the text it is possible to estimate the number of vehicles available for most modes in most cities, other than for rail passenger transport where this is provided by a national railway. While some national railways operate separate vehicle fleets for some urban areas, for many the rail service is part of a regional service and is not possible to separate

the vehicles used only in urban services or to allocate part of those used in regional services to urban routes.

To cover this lack of data, we ran a simple regression analysis using the number of vehicles as the dependent variable and the total city population and the urban area as the independent variables<sup>12</sup>. From this regression we were able to estimate the number of rail passenger vehicles in the cities where the statistic was not available.

With the estimate of the number of vehicles by mode for the major cities in each country, the next task was to scale this estimate to a national total. This was done using a multiplier of the total national urban population to the urban population of the cities included in the database<sup>13</sup>.

A similar approach was used with another data source, the UITP's Mobility in Cities database (UITP). This provides also estimates of the numbers of different types of vehicles used in major cities, but on a more consistent basis and using more rigorous definitions of the different types of vehicle. Unfortunately the data is for the year 2000, and there have been some significant changes in the supply of urban passenger transport since that time. However, by using vehicles and vehicle seats per capita and updating the population data to 2010, it was possible to obtain an alternative estimate of the numbers of urban transport vehicles. Both the JUTS and UITP data distinguish between many different types of urban transport vehicles, including buses, trolleybuses, trams, light rapid transport, metros and rail. Sometimes the specifications between these different types is rather subjective, so to avoid errors the data has been aggregated into three vehicle types – metro, bus and rail. This is compatible with the demand data by mode presented earlier in this Chapter.

The resulting estimates of numbers of vehicles used in urban transport is 93,400 metro vehicles, 222,400 buses and 72,400 railway coaches, accounting for 27% of the total buses and 72% of the total railway coaches.

**Table 2.12 Share of total registered vehicles available for passenger services**

<b>VEHICLES</b>	Metro	Air	Bus	Rail	Total
<b>Transport in Figures</b>	93,340	4,110	818,600	102,168	1,018,2
<b>Available for passenger</b>	87,849	3,686	622,472	100,512	814,519
<b>% included</b>	94%	90%	76%	98%	80%
<b>For Urban transport</b>	87,849	0	222,400	72,400	382,649
<b>For non-urban transport</b>	0	3,686	400,072	28,112	431,870

### *Allocations of remaining vehicles between other markets.*

There is no data source that provides the allocation of passenger transport capacity between markets. In part this is attributable to the fluidity in the allocation, with passenger aircraft, buses and railway passenger coaches being interchangeable between the three markets. One way to assess the relative sizes

<sup>12</sup> This followed the practice of the UITP in its Mobility in Cities (MiC) database which included capacity per mode per capita and per unit of area as benchmark statistics. We used the MiC data projected to 2010 as a check but not as a primary source as the base year for the data was 2001

<sup>13</sup> These populations were available from JUTS and were generally larger than population estimates for the metropolitan areas of the cities. Part of the explanation is that the transport agencies and operators typically cover a rather larger area than the metropolitan area.

of the three markets is to use the distribution of satisfied passenger demand (numbers of passengers or passenger kms) between them for each of the three principal modes.

**Table 2.13 Allocation of each passenger kms for each mode between non-urban markets**

	<b>Air</b>	<b>Bus</b>	<b>Rail</b>
<b>Domestic</b>	8%	97%	90%
<b>Intra EU</b>	37%	3%	9%
<b>Extra-EU</b>	55%	1%	1%
<b>Total</b>	100%	100%	100%

This information is available from the demand estimates from the TREMOVE model, and described in the first section of this Chapter. The allocation of capacity between markets is made using the same allocation of passenger kms as in the demand estimates. About 8% of air passenger capacity is needed for domestic travel, whereas domestic travel accounts for about 97% of bus and 90% of the capacity of these vehicle types. The remainder of this first method of estimation is relatively straightforward, using industry estimates of average vehicle sizes and utilization.

The second method starting from the estimates of passenger demand was used as a verification check for the results of the first method. The estimates of dynamic capacity from the first method agreed to within 5% with those of the second method, while the estimates of numbers of vehicles from the second method agreed with the numbers of vehicles used as a starting point for the first method also to within 5%, other than for the number of buses. The estimate from the second method was about 18% less than the starting number of vehicles in the first method. The conflict was addressed by assuming that this greater share of the available bus capacity was used mostly for charter services than was originally assumed.

### Seat capacity

With the vehicles allocated between markets, it was then possible to make a better estimation of the seats per vehicle using vehicle size estimates from several previous transport sector studies and operators statistics.

The average capacity of passenger aircraft was estimated from the distribution number of seats in the EUROSTAT data, with the average for each size group being assessed from knowledge of the aircraft types. A similar approach was used for bus and railway passenger coach seat capacities, but these had to start from a single statistic rather than from a distribution by vehicle size groups. As average trip length increases, both buses and passenger railways coaches tend to provide greater legroom per vehicle to increase the comfort level but this reduces the capacity in terms of numbers of seats per vehicle, offsetting an opposing tendency for the vehicles to be longer.

**Table 2.14 Assumed or derived seat capacity per passenger vehicle**

<b>Mode</b>	<b>Domestic</b>	<b>Intra-EU</b>	<b>Extra-</b>	<b>Average</b>
<b>Air</b>	59	142	280	159
<b>Bus</b>	42	50	48	46
<b>Rail</b>	68	64	60	66

By applying the seat capacity by vehicle type and market to the distribution of vehicles by Member State and market, it was possible to estimate the second measure of capacity, the number of seats. These estimates were made for each Member State, each market and each mode.

To convert static seat capacity to dynamic seat capacity it is necessary to multiply the seat kms by each mode in each market by an estimate of the vehicle utilization, the distance the vehicle travels in one year.

### Results of capacity estimates

A summary of the results of the capacity estimates showing the share of each vehicle type in each market is shown in Table 2.15<sup>14</sup>. The capacity indicators are in the order they are estimated by the first method, starting with the number of vehicles, then seats and ending with the seat capacity. The first assessment is of the distribution of capacity.

The distribution of vehicles in Table 2.15 is by market for each mode, to show how the total supply at the national level was allocated to markets. The percentages in the table are the result of the sum of data for each Member State.

**Table 2.14 Summary of three measures of capacity**

VEHICLES	Metro	Air	Bus	Rail	Total	VEHICLES
Urban	100%	0%	36%	70%	47%	382,261
Domestic	0%	25%	62%	27%	50%	411,077
Intra EU	0%	48%	2%	3%	2%	17,311
Extra-EU	0%	27%	0%	0%	0%	3,871
<b>Total</b>	100%	100%	100%	100%	100%	814,520
<i>Vehicles</i>	87,849	3,686	622,472	100,512	814,519	
SEATS	Metro	Air	Bus	Rail	Total	SEATS M
Urban	100%	0%	38%	68%	49%	21.87
Domestic	0%	2%	60%	28%	48%	21.27
Intra EU	0%	23%	2%	3%	2%	0.89
Extra-EU	0%	75%	0%	0%	1%	0.59
<b>Total</b>	100%	100%	100%	100%	100%	44.63
<i>Seats m</i>	5.21	0.59	32.30	6.53	44.63	
SEATS KMS	Metro	Air	Bus	Rail	Total	SEAT KMS M
Urban	100%	0%	18%	47%	21%	595,304
Domestic	0%	1%	80%	48%	53%	1,523,740
Intra EU	0%	20%	2%	5%	7%	189,469
Extra-EU	0%	79%	0%	0%	20%	565,639
<b>Total</b>	100%	100%	100%	100%	100%	2,874,152
<b>Seat km m</b>	134,460	707,881	1,702,475	329,335	2,874,152	

*Sources: Vehicle data from Eurostat, JUTS (2013) and UITP*

The most important feature is that the distribution of seats is more concentrated in the markets with average longer trip lengths than is the distribution of vehicles, as those used in these markets tend to

<sup>14</sup> The percentages shown are not those usually used. Instead of showing the modal share for each market, they show for each mode how the demand and capacity is allocated between the markets

utilize larger vehicles. For example, domestic aircraft account for 25% of all passenger aircraft but only 9% of aircraft seats. Similarly, seat kms are even more concentrated on markets with longer trip lengths as the vehicles used on longer trips tend to have higher utilizations, they travel longer distances each year as they spend less time in terminals and stations.

Aircraft capacity is mostly distributed between the intra-EU and extra-EU markets, with the share in the extra-EU market increasing from 27% through 48% to 55% as the measure of capacity changes from vehicles through seats to seat kms. Bus capacity is heavily concentrated in the domestic market, its share decreasing from 85% through 63% to 58% as the capacity measure changes. Rail capacity does not follow the pattern of air and bus capacity, but like bus capacity it is concentrated on the domestic market. The share increases from 50% through 53% to 67% as the capacity measure changes.

These market distributions are important for understanding the competitiveness of the markets, as the use of seat and seat km capacity as indicate lower competitiveness than using vehicles as the measure of capacity. The use of the single indicator of a number of vehicles would not have given a dependable estimate of supply competition.

The data in Table 2.16 is the same as in Table 2.15, but it is shown as mode shares for each market rather than as market shares for each mode.

**Table 2.16 Transport supply by market and indicator**

<b>VEHICLES</b>	<b>Metro</b>	<b>Air</b>	<b>Bus</b>	<b>Rail</b>	<b>Total</b>
<b>Urban</b>	23%	0%	59%	18%	100%
<b>Domestic</b>	0%	0%	93%	7%	100%
<b>Intra EU</b>	0%	10%	72%	18%	100%
<b>Extra-EU</b>	0%	26%	65%	9%	100%
<b>Total</b>	11%	0%	76%	12%	100%
<i>Vehicles</i>	87,849	3,686	622,472	100,512	814,519
<b>SEATS</b>	<b>Metro</b>	<b>Air</b>	<b>Bus</b>	<b>Rail</b>	<b>Total</b>
<b>Urban</b>	24%	0%	56%	20%	100%
<b>Domestic</b>	0%	0%	91%	9%	100%
<b>Intra EU</b>	0%	15%	60%	24%	100%
<b>Extra-EU</b>	0%	75%	20%	4%	100%
<b>Total</b>	12%	1%	72%	15%	100%
<i>Seats m</i>	5.21	0.59	32.30	6.53	44.63
<b>Seat km m</b>	<b>Metro</b>	<b>Air</b>	<b>Bus</b>	<b>Rail</b>	<b>Total</b>
<b>Urban</b>	23%	0%	51%	26%	100%
<b>Domestic</b>	0%	1%	89%	10%	100%
<b>Intra EU</b>	0%	75%	17%	8%	100%
<b>Extra-EU</b>	0%	99%	1%	0%	100%
<b>Total</b>	5%	25%	59%	11%	100%
<b>Seat km m</b>	134,460	707,881	1,702,475	329,335	2,874,152

The domestic market is dominated by bus capacity, but with its share falling from 93% through 91% to 89% as the measure of capacity changes. The intra-EU market is more balanced between the three modes when measured by number of vehicles but it is dominated by aircraft capacity as the measure progresses through seats (15%) to seat kms (75%). This is because aircraft in this market are significantly larger than buses or railway coaches (for the seats measure) and they have a much higher utilization rate (for the seat capacity measure). The extra-EU market is dominated by air travel whichever measure of capacity is used, and reaches almost 100% in this market using the seat kms indicator.

These indications from this assessment by market share strongly reinforces those from the vehicle-type share: the level of competitiveness between markets changes according to the measure of capacity that is used, and the usual measure using the number of vehicles overestimates the level of market competition compared with the other measures.

### **Modal shares by market supply**

The three measures of transport supply give rather different indications for each of the four markets. Overall, about 11% of supply is provided by metro vehicles, less than 1% by aircraft, more than three quarters by buses and coaches and only 12% by railcars.

#### ***Urban supply***

In the urban market, metro coaches are almost a quarter of the total, buses are more than 50%, while rail coaches are almost 20% of the total. When supply is measured by seats rather than vehicles, the metro vehicles provide slightly more of the seats (24%), buses rather less (56%) and rail coaches about 2% more seat capacity than they do as vehicles. Using seat kms as the measure of capacity, the metro coach share falls slightly to 23%, the bus share to 51%, while the rail share increases to 26%. The changes between vehicles and seats are attributable to the different seat capacity of vehicles in different modes, while the difference between seats and seat kms is a consequence of the very different vehicle utilizations. Buses are constrained by traffic congestion while all three modes have low utilizations because of the high peak demand which results in some vehicles being not needed during the rest of the day.

#### ***Domestic supply***

The domestic pattern of supply is more concentrated with buses being 93% of the vehicles and rail coaches only 7% and aircraft being less than 1%. On domestic routes the size of aircraft used is not much greater than the size of buses and is slightly smaller than rail coaches, so using the seat measure of capacity the aircraft share hardly changes, while the bus and rail shares change with a transfer of 2% from bus to rail. When seat kms are used as the capacity measure, the aircraft share increases to 1% while the bus share falls to 89% and the rail vehicle share increases to 10%. The increased air share measured in seat kms is attributable to its much higher utilization (kms per year), which comes from aircraft being flown for many more hours per year than are buses or rail coaches, combined with their much higher speed.

#### ***Intra-EU supply***

Aircraft have a 10% vehicle share of the intra-EU market, a 15% share of seat kms and make up 75% of the seat km capacity. Buses dominate the market when capacity is measured by vehicles (72%) and

seats (60%) but not with seat kms where their share falls to 17%. Rail coaches are 18% of intra-EU vehicles but 24% of seat capacity and 8% of seat kms.

Despite the recent growth of HSR, rail coaches still only supply 3% of the intra-EU supply, while deregulation of bus and coach travel has resulted in its supply being about 8% of the total. These averages conceal some significant differences between Member States.

Since most of the quantifiable distortions of the VAT regime are most apparent in intra-EU passenger transport, the rather different distribution of seat kms for this market compared to the total market by Member State is of particular significance (Table 2.17).

**Table 2.17 Modal share of supply (seat kms) in the Intra-EU market**

Country		Air	Bus	Rail	Total
AT	Austria	78%	8%	15%	100%
BE	Belgium	63%	20%	17%	100%
BG	Bulgaria	57%	41%	2%	100%
CY	Cyprus	100%	0%	0%	100%
CZ	Czech Republic	80%	11%	10%	100%
DE	Germany	93%	4%	3%	100%
DK	Denmark	97%	2%	1%	100%
EE	Estonia	90%	8%	2%	100%
ES	Spain	97%	1%	1%	100%
FI	Finland	88%	6%	6%	100%
FR	France	80%	15%	5%	100%
GR	Greece	99%	1%	0%	100%
HR	Croatia	80%	7%	12%	100%
HU	Hungary	70%	19%	12%	100%
IE	Ireland	98%	2%	0%	100%
IT	Italy	91%	3%	7%	100%
LT	Lithuania	56%	40%	4%	100%
LU	Luxembourg	90%	1%	9%	100%
LV	Latvia	87%	12%	1%	100%
MT	Malta	100%	0%	0%	100%
NL	Netherlands	91%	6%	2%	100%
PL	Poland	62%	36%	2%	100%
PT	Portugal	92%	6%	2%	100%
RO	Romania	64%	31%	4%	100%
SE	Sweden	98%	1%	1%	100%
SI	Slovenia	82%	4%	15%	100%
SK	Slovakia	45%	15%	40%	100%
UK	UK	93%	5%	1%	100%
<b>Total vehicles</b>		89%	8%	3%	100%

Seven Member States have less than 75% of their intra-EU seat kms provided by aircraft (Hungary, Romania, Belgium, Poland, Bulgaria, Lithuania and Slovakia) and of these six have more than 15% provided by buses (Bulgaria, Lithuania, Poland, Romania, Belgium and Hungary). Seven Member States, including three of those with low aircraft supply, have more than 10% provided by rail coaches (Slovakia,

Belgium, Slovenia, Austria, Croatia, Hungary and Czech Republic). Only four Member States have at least 10% of seat kms provided by all three intra-EU modes, Belgium, Czech Republic, Slovakia and Hungary.

While there are many other contributing factors to the dominance of air transport supply in this market, and there are several other transport and taxation issues that work in the opposite direction, the VAT advantages enjoyed by air transport relative to other modes is probably one of the more important contributing issues. For example, bus and rail are only effectively competing modes when their travel times are comparable with those by air. This rules out their competition on a high proportion of routes, despite the potential of HSR and expressway based bus services. The assessment of capacity at the city pair level is expected to shed more light on the reasons for the current pattern of supply.

### ***Extra-EU supply***

In the extra-EU market aircraft start from being 26% of the vehicles. Their higher seat capacity increases their seat share to 75% and their higher utilization brings their share of seat kms in this market to close to 100%. Buses account for most extra-EU vehicles (65%), but their relatively smaller size reduces their seat share to 20% and their lower utilization than aircraft gives just a 1% share of seat kms. Rail coaches are 9% of intra-EU vehicles, but only 4% of seats and a negligible share of seat kms.

### ***Total EU market***

The total EU28 market is the sum of these submarkets, so the vehicles shares follow the same pattern as the measure changes from vehicles through seats to seat kms. The 11% overall metro and 12% rail share of vehicle capacity increase slightly to 12% and 15% respectively of seat capacity while the 76% bus share of vehicles reduces to 72%. The aircraft share of both vehicle and seat capacity is negligible when the four markets are combined. But the aircraft share of seat kms becomes 25, with corresponding reductions of metro to 5%, buses to 59% and rail coaches to 11%.

### **Competition within modes**

The third passenger choice, after deciding on a destination and the mode of travel, is to select a particular service. In a competitive market this could offer more options than just a choice of mode, but despite the many attempts to increase intra-modal competition, other than in air passenger transport the operator choices are rather limited.

### ***Competition within air transport***

From data available on the supply in terms of seat km by airlines operating from a few Member States for which we have been able to collect such data, it has been possible to develop a time series of measures of the HHI, an indicator of competition in a market in which a lower value of the index indicates more competition (Table 2.18).

This table shows that there has been a consistent increase in the competitiveness of air transport in the small sample of Member States, other than France where the HHI value in 2012 was almost the same as



in 2005. The HHI for the UK has increased since reaching a minimum value in 2004, whereas the values for Czech Republic, Malta and Denmark indicate continued increase in competition. Unfortunately there is not enough data to distinguish between regular and low-cost airlines, so it not possible to use this analysis to see whether it is the presence of the low-cost airlines or increasing competitive pressures on regular airlines, or both, that have led to the increased competition. Neither is it possible to determine in which market the competition has increased, whether it is in domestic (unlikely), or the intra-EU or extra-EU markets.

**Table 2.18 Measures of HHI for airlines in selected Member States**

Year	Member State				
	Czech Rep.	Malta	UK	France	Denmark
1991			0.346		
1992			0.321		
1993			0.328		
1994			0.303		
1995			0.292		
1996			0.292		
1997			0.278		
1998			0.275		
1999			0.267		
2000			0.249		
2001			0.217		0.284
2002		0.403	0.214		0.278
2003	0.513	0.364	0.203		0.238
2004	0.500	0.349	0.181		0.240
2005	0.645	0.327	0.186	0.581	0.226
2006	0.623	0.363	0.187	0.582	0.215
2007	0.553	0.313	0.179	0.598	0.207
2008	0.532	0.333	0.193	0.576	0.204
2009	0.445	0.345	0.210	0.575	0.191
2010	0.338	0.313	0.212	0.547	0.185
2011		0.291	0.219	0.562	0.185
2012				0.580	0.181

*Source: Based on CASE analysis of data from CAPA*

### ***Competition within rail model***

Even with the increased operation of HSR services there are still relatively few international railway services other than those provided by quasi-established operators (such as Thalys) or monopoly concessions such as Eurostar. But competition is beginning to emerge with an announcements for an additional operator to compete with Eurostar starting in 2017.

### ***Competition within bus transport***

The number of intra-EU bus services continues to expand, to such an extent that it is difficult to know how many operators there are, even on a route between one city and another. There are at least three large cooperative bus marketing operator associations. Eurolines and Bus Europe claim to represent more than

70 individual bus/coach companies. The third largest bus service integrator, Sinbadis, appears to follow a more aggressive strategy. While at first entering into operating agreements with other bus lines, it ends up acquiring their names and then taking over their services. Among the other operators included in the group are Albatros, Janosik, Riviera, Star Turist, Nord Gydnia, Alambus, Trans-Express and Turing Sofia. In 2010, Sinbadis took over the name Interbus and then the operation of its routes. Sinbadis currently offers services between seventeen EU countries and Switzerland. There are also several large independent bus/coach companies that operate large networks of intra-EU routes. More detail on competition in bus services will be available as we complete our analysis of services on the city pairs' routes.

Initial indications are that the HHI for bus services are not very different for those for air services (table 2.19). As with airlines, bus services in France appear to have the least competition of the four countries for which we currently have data, while Denmark appears to have the most competitive market. The Danish bus market is probably even more competitive than the estimate indicates as there are several hundred small operators that make up the excluded 20% of the market.

**Table 2.19 Measures of HHI for bus services in selected Member States**

Country	No. of large operators	Share of market	HHI
<b>Denmark</b>	15	80%	0.120
<b>Netherlands</b>	7	95%	0.264
<b>Portugal</b>	12	92%	0.211
<b>France</b>	7	93%	0.404

### *Competition within ferry transport*

Although not covered so far in our market assessments, the passenger ferry markets for domestic, intra-EU and extra-EU routes are very competitive. A recent assessment of ferry routes in the three main ferry regions – the Mediterranean, the English Channel/North Sea and the Baltic identified more than 20 ferry operators, and there are possibly at least as many covering services to the Greek and Balearic Islands.

*Competition for the market*<sup>15</sup>. For many of the domestic passenger ferry services with low demand there is competition for the market rather than in the market, as there is also for low density urban and rural bus, rail and even air services. The advantages of competition are believed to be largely retained by this form of competition without the risk of competition in the market being commercially destructive to those engaged in it, often to the detriment of the passengers who depend on the availability of at least one low fare operator. The passenger in this form of competition does not have a choice between competing services, but does benefit from at least having a commercially contested service available. Unfortunately, in many instances there is only very limited competition for many of these low demand services, and in

<sup>15</sup> Competition for the market is the method applicable to concessions for passenger transport services in other markets where social rather than commercial justification requires that some form of public financial support (usually now referred to as a public service obligation). It widely used in urban transport and increasingly for rural rail services.

some there are no bidders for the concession. As a general rule it is expected that at least three bids are needed to ensure that there is adequate competition for the service.

### **Coach tour and maritime cruise passengers<sup>16</sup>**

Cruise and coach tour passengers have very different travel characteristics than passengers using scheduled or regular transport services, and neither are subject to any of the derogations of passenger output VAT that are available to those using scheduled services. However, there are some VAT allowances on inputs to operators of vessels for cruise passengers, and Article 148 of the VAT Directive only requires that the vessels be for “navigation on the high seas and carrying passengers for reward.”

The most reliable source of data on the number of passengers, vehicles and operating companies in the coach tour market is a study completed for DGTREN in 2009. It provides what little data is available, although it is not always possible to distinguish coach tour data from all coach data.

One differentiation between types of bus and coach service is based on that drawn in Regulation 684/92. However, there are very few cases where the data is disaggregated in this way, and where it is, there are differences between Member States in how different services are classified.

**Regular** (domestic and international) services operate at specified times on defined routes, with specific boarding and alighting points, and are open to all.

**Special regular** services operate on defined routes and at defined times, but provide for the carriage of specific types of passengers to the exclusion of others.

**Occasional** services are services which do not meet the definition of regular or special regular services, and which are characterized above all by the fact that they carry groups of passengers assembled on the initiative of the customer or the carrier itself. This is the definition that comes closest to the coach tour market.

The distinction between bus and coach services is particularly problematic for services other than regular services. In many Member States, all occasional and special regular services are considered coach services, but in some cases these may cover short distances and have characteristics that are otherwise more similar to bus services. In particular, since school transport accounts for a very large proportion of journeys in certain Member States (such as Sweden), whether this is included has a large impact on the statistics,

#### *Demand: Number of passengers*

Only very limited data is available for a few Member States on the composition of the coach market by the three types of passenger. The data is only complete for Lithuania. Of the larger Member States, only France has almost complete data, which shows that occasional transport accounts for the largest proportion of coach passenger kilometres (45%), but only 23% of passenger journeys, because average

<sup>16</sup> We do not yet have data on river cruise passengers or numbers of vessels or operators

journey lengths are much longer for this type of journey than for other types of coach transport. Based on the limited data, the report provides estimates of the sizes of the three markets by using data from the few Member States where it is available. The estimates are shown in table 2.20:

**Table 2.20 - Estimated Composition of Coach Market in the EU27 (2008)**

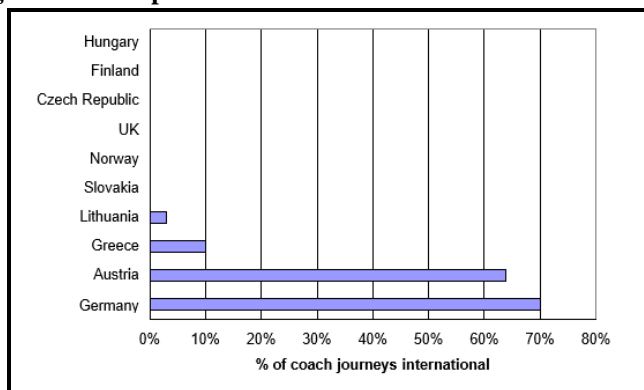
Type of passenger	Number of passengers	passenger km	Trip length	Share of passengers	Share of passenger km
	Million	million	km	%	%
<b>Regular</b>	2,912	81,226	28	44%	38%
<b>Special regular</b>	2,226	5,252	2	34%	2%
<b>Occasional</b>	1,484	129,185	87	22%	60%
<b>Total</b>	6,622	215,663	33	100%	100%

*Source: Study of passenger transport by coach, Steer Davis Gleave, 2009*

The coach tour market accounts for about 22% of all coach passengers but, because their average trip length is much longer than the Special regular type of passenger, they account for about 60% of passenger kms.

In most Member States, the vast majority of coach journeys are domestic. The main exceptions are Germany and Austria, which have very large markets for outbound international coach tours but almost no domestic regular coach market (Fig. 2.1).

**Fig. 2.1 Percentage of coach trips that are intra EU and extra EU for some Member States**



*Source: Study of passenger transport by coach, Steer Davis Gleave, 2009*

*Supply: Number of vehicles and operators*

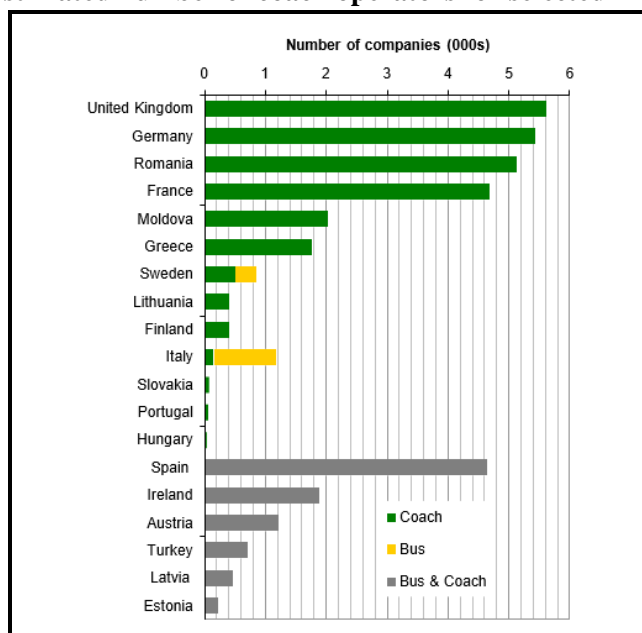
The estimates for the EU27 (table 2.21) indicate that there were about 250,000 coaches in operation out of a combined bus and coach fleet of about 680,000 vehicles in 2009 (this total is rather lower than that reported by Eurostat for 2010, see Table 2.12).

**Table 2.21 - Estimated vehicle fleet**

	Coach only	Bus and coach
EU15	180,185	457,352
EU12	68,694	221,714
<b>EU total</b>	<b>248,879</b>	<b>679,066</b>
Other	196,836	341,254
<b>Total</b>	<b>445,715</b>	<b>1,020,319</b>

Source: study of passenger transport by coach, Steer Davis Gleave, 2009

There are a number of very large coach operators in the EU (such as Alsa in Spain, which has 2,300 coaches in its fleet). However, the average size of companies are small. On the basis of the data available (summarised in Figure 2.2), it appears that the average coach operator has only 16 vehicles in its fleet. In some Member States, the figure is lower; for example, in the UK there are 5,610 companies advertising coach services, and since the total coach fleet is only about 21,900 vehicles; this indicates that there are less than 4 vehicles per company in the UK on average.

**Fig. 2.2 Estimated number of coach operators for selected Member States**

Source: study of passenger transport by coach, Steer Davis Gleave, 2009

### Maritime cruise market

This is another market that has only limited data available, but rather more than the coach tour market. However, the European cruise market is highly integrated with the global market, such that many cruise

vessels that are used in Europe during the summer are diverted to other markets during the northern hemisphere winter.

*Demand: Number of passengers*

Passenger demand is measured only in numbers of passengers, as there is no data on how far each cruise passenger travels before returning to the port of origin. In 2011 there were just over 6m cruise passengers, with the UK and Germany each providing more than 20% of the total and Italy and Spain each having more than a 10% market share.

**Table 2.22 - European cruise passengers, 2011**

<b>Origin country/region</b>	<b>Number of passengers 2011</b>	<b>Market share</b>
<b>UK</b>	1,700,000	28%
<b>Germany</b>	1,388,000	23%
<b>Italy</b>	923,000	15%
<b>Spain</b>	703,000	12%
<b>France</b>	441,000	7%
<b>Scandinavia</b>	306,000	5%
<b>Benelux</b>	159,000	3%
<b>Switzerland</b>	121,000	2%
<b>Austria</b>	104,000	2%
<b>Other</b>	224,000	4%
<b>Total</b>	6,069,000	100%

*Source: European Cruise Council, Annual Report 2012/2013*

*Supply: Number of vessels and operators*

We are still analysing the vessel fleet, distinguishing between vessels wholly allocated to the European market and those that pass between 50% and 100% in this market, and discounting vessels that are assigned to the European market for less than 50% of their working time.

We have so far identified 28 cruise lines that have at least one vessel equivalent wholly allocated to the European cruise market. They have a total of 225 cruise vessels between them, with the largest operators having more than 20 and the smallest only 2. Based on the number of berths offered in the 2013 season, we are analysing the market share of each of these lines to assess the competitiveness of the market.

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## Chapter 3 - The VAT Regime for Passenger Transport

This chapter provides an overview of the current VAT regime in the EU Member States as encountered by providers of passenger transport services, as well as other charges affecting passenger transport. In Section A we review output VAT (VAT rates, special regimes), input VAT and administrative issues. The information given in this section depicts our current state of knowledge and might be subject to some rework, especially if additional information is given by the national tax authorities. We hope that cases for which the available sources are ambiguous can also be clarified by the tax authorities. In Section B, we provide some initial information on other transport taxes and user charges.

Detailed Country Fiches (for 25 of the 28 Member States) are presented in Vol. 2 of this Second Interim Report.

### A. Overview of VAT Rates

In this section we provide several tables on the current VAT rates concerning passenger transport for all 28 EU-Member States, as well as a general overview on VAT rates in place in Member States at present.

We review VAT rates for each mode of transport and distinguish among domestic, extra-EU (i.e. to and from third countries) and intra-EU travel. In the case of domestic transport, a further distinction is made according to several types of transport. For transport by road, these are taxi, scheduled bus services (including trolleybuses) and non-scheduled bus services. The categories with respect to rail transport are (normal) train, high-speed rail, metro/subway and tram. For the remaining transport modes we distinguish between scheduled and non-scheduled services. To the best of our knowledge no Member State has implemented specific rates for round-trips (A-to-A-transports), as they occur e.g. in the course of cruises or bus tours. For such transports the same rate as for 'normal' A-to-B-transports is applied.

The data used for the following tables refers to information from a number of sources: the websites of the national Ministries of Finance, documents by the European Commission, the national VAT Acts and tax legislation, country reports of the International Bureau of Fiscal Documentation (IBFD) and other studies on VAT regimes, as well as documents (guides, manuals, application decrees) provided by the respective fiscal authorities. As a basis, recent compilations of VAT rates have been used (e.g. European Commission (2014), IBFD (2012) and Van Essen et al. (2012)) and if necessary updated.

Rates and special regimes relevant in rather rare cases are omitted, such information can be found in the country sheets. A few rates are also pending clarification by the tax authorities, since our sources have not always been precise and unambiguous.

## General national VAT rates

Table 3.1: Overview of VAT rates applied by the Member States

EU Member State	Standard Rate	Reduced Rate(s)	Super Reduced Rate	Parking Rate	Zero Rate
<b>Austria</b>	20	10	-	12	0
<b>Belgium</b>	21	6 / 12	-	12	0
<b>Bulgaria</b>	20	9	-	-	0
<b>Croatia</b>	25	5 / 10	-	-	0
<b>Cyprus</b>	19 <sup>17</sup>	5 / 9 <sup>18</sup>	-	-	0
<b>Czech Republic</b>	21	15	-	-	0
<b>Denmark</b>	25	-	-	-	0
<b>Estonia</b>	20	9	-	-	0
<b>Finland</b>	24	10 / 14	-	-	0
<b>France</b>	20	5 / 10	2.1	7	0
<b>Germany</b>	19	7	-	-	0
<b>Greece</b>	23	6.5 / 13	-	-	0
<b>Hungary</b>	27	5 / 18	-	-	0
<b>Ireland</b>	23	9 <sup>19</sup> / 13.5	4.8	13.5	0
<b>Italy</b>	22 <sup>20</sup>	10	4	-	0
<b>Latvia</b>	21	12	-	-	0
<b>Lithuania</b>	21	5 / 9	-	-	0
<b>Luxembourg</b>	15	6 / 12	3	12	0
<b>Malta</b>	18	5 / 7	-	-	0
<b>Netherlands</b>	21	6	-	-	0
<b>Poland</b>	23	5 / 8	-	-	0
<b>Portugal</b>	23	6 / 13	-	13	0
<b>Romania</b>	24	5 / 9	-	-	0
<b>Slovakia</b>	20	10	-	-	0
<b>Slovenia</b>	22 <sup>21</sup>	9,5 <sup>22</sup>	-	-	0
<b>Spain</b>	21	10	4	-	0
<b>Sweden</b>	25	6 / 12	-	-	0
<b>United Kingdom</b>	20	5	-	-	0

Source: National VAT legislation, European Commission (2014), Van Essen et al. (2012), IBFD (2012) and other sources; Adaptation and Demonstration: IHS, 2014.

<sup>17</sup> 18% before 13th January 2014

<sup>18</sup> 8% before 13<sup>th</sup> January 2014

<sup>19</sup> Until 31<sup>st</sup> December 2013

<sup>20</sup> 21% until 1<sup>st</sup> October 2013

<sup>21</sup> Since 1<sup>st</sup> July 2013 (before: 20 %)

<sup>22</sup> Since 1<sup>st</sup> July 2013 (before: 8.5 %)



## Road transport

Passenger transport on the road is mainly based on transport by buses and coaches, but also covers taxis and trolleybuses<sup>23</sup>. It includes scheduled and non-scheduled services for urban, regional, national (domestic), intra-community and extra-EU journeys. In cases where more than one VAT rate applies, remarks give additional information. Table 3.2 shows that the VAT rates applied to road transport services differ substantially between Member States.

**Table 3.2: VAT rates on road transport**

EU Member State	Domestic Road Transport				Intra-EU transport	Extra-EU transport	Remarks
	Rates applied	Taxi	Bus (sched.)	Bus (non-sched.)			
<b>Austria</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	
<b>Belgium</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	
<b>Bulgaria</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Croatia</b>	25 % <b>S</b>	25 % <b>S</b>	25 % <b>S</b>	25 % <b>S</b>	25 % <b>S</b>	25 % <b>S</b>	
<b>Cyprus<sup>24</sup></b>	9 % <b>R</b> 5 % <b>R</b> 19 % <b>S</b>	9 % <b>R</b> lump sum tax <b>D</b>	5 % <b>R</b> 9 % <b>R</b>	9 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	See footnote 23
<b>Czech Republic</b>	15 % <b>R</b> 21 % <b>S</b>	21 % <b>S</b>	15 % <b>R</b>	21 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	15 % <b>R</b> : scheduled 21 % <b>S</b> : otherwise
<b>Denmark</b>	ex. <sup>25</sup> <b>D</b> 25 % <b>S</b>	ex. <b>D</b>	ex. <b>D</b>	ex. <b>D</b> 25 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	see footnote <sup>26</sup>
<b>Estonia</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Finland</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>France</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b> 0 % <b>D</b>	10 % <b>R</b> 0 % <b>D</b>	0 % <b>D</b> : certain int. bus services <sup>27</sup>
<b>Germany</b>	7 % <b>R</b> 19 % <b>S</b>	7 % <b>R</b> 19 % <b>S</b>	7 % <b>R</b> 19 % <b>S</b>	7 % <b>R</b> 19 % <b>S</b>	7 % <b>R</b> 19 % <b>S</b>	7 % <b>R</b> 19 % <b>S</b> special regime <b>D</b>	7 % <b>R</b> : regional <sup>28</sup> 19 % <b>S</b> : long distance <b>D</b> : journey-specific VAT assessment <sup>29</sup>

<sup>23</sup> For trolleybuses the VAT rate for buses is applied. Tramways are covered under ‘rail transport’.

<sup>24</sup> 5 %: urban and rural buses; 9 %: urban, intercity and rural taxis, tour buses and suburban buses; flat tax: city taxis; 19 %: other road passenger transport

<sup>25</sup> “exempted”; exemption without the right to deduct input VAT

<sup>26</sup> Domestic: 25 %: non-regular (tourist) bus services and similar; ex.: all other services

Intra-community/extra-EU: 25 %: non-regular (tourist) bus services and similar with buses registered in Denmark; Special scheme: non-regular (tourist) bus services and similar with buses registered abroad; 0 %: all other services

<sup>27</sup> Certain international and intra-EU bus transports of foreign travellers. For details see France Country Sheet.

<sup>28</sup> Within a municipality or for distances less than 50 km (in German territory).

<sup>29</sup> Journey-specific VAT assessment is applied to occasional bus transport with buses not registered in Germany crossing a third-country-border. For details see the country sheet for Germany. Ex post the provider can request a recalculation based on the normal tax procedure.

<b>Greece</b>	13 % <b>R</b>	13 % <b>R</b>	13 % <b>R</b>	13 % <b>R</b>	13 % <b>R</b> lump sum tax: <b>D</b>	13 % <b>R</b> lump sum tax: <b>D</b>	lump sum tax <b>D</b> : int. bus transport <sup>30</sup>
<b>Hungary</b>	27 % <b>S</b>	27 % <b>S</b>	27 % <b>S</b>	27 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Ireland</b>	ex. <b>D</b>	ex. <b>D</b>	ex. <b>D</b>	ex. <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Italy</b>	10 % <b>R</b> ex. <b>D</b>	ex. <b>D</b>	10 % <b>R</b>	10 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	ex.: urban public transport with taxis; 10 %: otherwise
<b>Latvia</b>	12 % <b>R</b>	12 % <b>R</b>	12 % <b>R</b>	12 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Lithuania</b>	9 % <b>R</b> 21 % <b>S</b>	21 % <b>S</b>	9 % <b>R</b> 21 % <b>S</b>	21 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	9 % <b>R</b> : authorized regular services 21 % <b>S</b> : otherwise
<b>Luxembourg</b>	3 % <b>D</b>	3 % <b>D</b>	3 % <b>D</b>	3 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Malta</b>	0 % <b>D</b> 18 % <b>S</b>	18 % <b>S</b>	0 % <b>D</b>	18 % <b>S</b>	n.a.	n.a.	0 % <b>D</b> : scheduled and certain others <sup>31</sup> 18 % <b>S</b> : otherwise
<b>Netherlands</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	
<b>Poland</b>	8 % <b>R</b>	8 % <b>R</b>	8 % <b>R</b>	8 % <b>R</b>	8 % <b>R</b>	8 % <b>R</b>	
<b>Portugal</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Romania</b>	24 % <b>S</b>	24 % <b>S</b>	24 % <b>S</b>	24 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Slovakia</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Slovenia</b>	9.5 % <b>R</b>	9.5 % <b>R</b>	9.5 % <b>R</b>	9.5 % <b>R</b>	9.5 % <b>R</b>	9.5 % <b>R</b>	
<b>Spain</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	
<b>Sweden</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>United Kingdom</b>	0 % <b>D</b> 20 % <b>S</b>	20 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b> : ≥ 10 seats <sup>32</sup> or by a universal service provider 20 % <b>S</b> : otherwise

Source: National VAT legislation, European Commission (2014), Van Essen et al. (2012), IBFD (2012) and other sources; Adaptation and Demonstration: IHS, 2014.

### Domestic road passenger transport

20 Member States apply the same rate to all types of domestic road passenger transport services. In 6 Member States this is the standard rate, in 12 it is a reduced rate. Luxembourg applies a super-reduced rate of 3 % and Ireland exempts all domestic passenger transport. The 8 Member States which distinguish between different rates apply diverse criteria: type of service (scheduled vs. occasional) is used in Malta, Lithuania, Denmark and the Czech Republic. Italy exempts urban public transport by taxi and similar

<sup>30</sup> To be verified.

<sup>31</sup> Scheduled bus transport and regular transport of school pupils, students and workers.

<sup>32</sup> There are some exceptions, for details see the country fiche for the UK.

vehicle. In Germany the rate of VAT depends mainly on the distance. In the UK the size of the vehicle is decisive in most cases. Cyprus distinguishes between urban, for which also a flat tax regime is available and rural taxi transport and several types of bus services. Derogations are applied by 6 Member States: Malta and the UK zero-rate most services. Italy, Denmark and Ireland apply exemptions (without credit) and Luxembourg uses a super-reduced rate. The rates in place for domestic road passenger transport range from 0 % (UK, Malta) to 27 % (Hungary). Generally, rates tend to be higher in the Central/Eastern European Member States.

### Extra-EU and Intra-EU road passenger transport

For extra-EU and intra-EU services the picture is quite different: extra-EU road passenger transport is generally exempt in 17 Member States, and 9 Member States apply a reduced rate, ranging from 6 to 13%. Only in Croatia and Germany (long distance services) extra-EU road passenger transport is taxed at the standard rates of 25 % and 19 % respectively. Special regimes for certain types of extra-EU road passenger transport are applied by Germany, Greece and France.

With respect to the difference between the tax rates applied to domestic and international<sup>33</sup> services, 11 Member States apply basically the same rates. Looking at the remaining Member States the gap between the rates applied to domestic and international services ranges from 3 % (Luxembourg) up to 27 % (Hungary). The highest differences can be found in the Central/Eastern European Member States, which frequently zero-rate international transport while taxing domestic services at the standard rate (e.g. Slovakia, Romania, Hungary, Estonia, and Bulgaria).

### Rail transport

Table 3.3 shows the VAT rates applicable for transportation of persons by rail. Detailed rates are additionally given for high speed rail (HSR), subway/metro, tram and ‘normal’ trains. With respect to intra-EU and extra-EU transport this breakdown is omitted, since the respective rates are the same for all types of rail transport or, in the case of metro and tram, rarely applicable. In Member States, where a railway system doesn’t exist and thus no taxation occurs (Cyprus and Malta), the term “not applicable” is noted.

**Table 3.3: VAT rates on rail transport<sup>34</sup>**

EU Member State	Domestic Transport					Intra-comm. transport	Extra-EU transport	Remarks
	Rates Applied	Train	HSR	Metro	Tram			
<b>Austria</b>	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	
<b>Belgium</b>	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	
<b>Bulgaria</b>	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	

<sup>33</sup> ‘International’ means intra-community as well as extra-EU passenger transport services.

<sup>34</sup> The table concerns scheduled transport, conducted with means of transport of more than 9 seats.

<b>Croatia</b>	25 % <b>Ⓢ</b>	25 % <b>Ⓢ</b>	25 % <b>Ⓢ</b>	25 % <b>Ⓢ</b>	25 % <b>Ⓢ</b>	25 % <b>Ⓢ</b>	25 % <b>Ⓢ</b>	
<b>Cyprus</b>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Czech Republic</b>	15 % <b>Ⓡ</b>	15 % <b>Ⓡ</b>	15 % <b>Ⓡ</b>	15 % <b>Ⓡ</b>	15 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Denmark</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Estonia</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Finland</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>France</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Germany</b>	7 % <b>Ⓡ</b> 19 % <b>Ⓢ</b>	7 % <b>Ⓡ</b> 19 % <b>Ⓢ</b>	19 % <b>Ⓢ</b>	7 % <b>Ⓡ</b>	7 % <b>Ⓡ</b>	19 % <b>Ⓢ</b> 7 % <b>Ⓡ</b>	19 % <b>Ⓢ</b> 7 % <b>Ⓡ</b>	7 % <b>Ⓡ</b> : regional <sup>35</sup> 19 % <b>Ⓢ</b> : on long-distance
<b>Greece</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	
<b>Hungary</b>	27 % <b>Ⓢ</b>	27 % <b>Ⓢ</b>	27 % <b>Ⓢ</b>	27 % <b>Ⓢ</b>	27 % <b>Ⓢ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Ireland</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	ex. <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Italy</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 %	10 %	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Latvia</b>	12 % <b>Ⓡ</b>	12 % <b>Ⓡ</b>	12 % <b>Ⓡ</b>	12 % <b>Ⓡ</b>	12 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Lithuania</b>	9 % <b>Ⓡ</b>	9 % <b>Ⓡ</b>	9 % <b>Ⓡ</b>	9 % <b>Ⓡ</b>	9 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Luxembourg</b>	3 % <b>ⓓ</b>	3 % <b>ⓓ</b>	3 % <b>ⓓ</b>	3 % <b>ⓓ</b>	3 % <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Malta</b>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Netherlands</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	
<b>Poland</b>	8 % <b>Ⓡ</b>	8 % <b>Ⓡ</b>	8 % <b>Ⓡ</b>	8 % <b>Ⓡ</b>	8 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Portugal</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Romania</b>	24 % <b>Ⓢ</b>	24 % <b>Ⓢ</b>	24 % <b>Ⓢ</b>	24 % <b>Ⓢ</b>	24 % <b>Ⓢ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Slovakia</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Slovenia</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>Spain</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	
<b>Sweden</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	
<b>United Kingdom</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	0 % <b>ⓓ</b>	

Source: National VAT legislation, European Commission (2014), Van Essen et al. (2012), IBFD (2012) and other sources; Adaptation and Demonstration: IHS, 2014.

<sup>35</sup> Within a municipality or for distances less than 50 km (in German territory).

The situation with respect to rail transport is very similar to road transport, with only a few exceptions. In the case of domestic transport, nearly all Member States apply the same rates as for road transport. Differing values in the tables often stem from the fact that almost all rail passenger transport is scheduled, which is why only the rate for scheduled transport is stated for the Czech Republic, Denmark and Lithuania. In the case of the UK, almost all rail passenger services will be zero-rated because of the vehicle size. With respect to intra-community and extra-EU transport 3 Member States, which tax cross-border road transport at the reduced rate, apply a zero-rate to cross-border rail transport (France, Poland and Slovenia).

5 EU Member States tax all rail passenger transport at the reduced rate (Austria, Belgium, Greece, Netherlands, Spain), and one (Croatia) at the standard rate. 16 Member States apply a positive rate to domestic services (of which 10 the reduced, 5 the standard and 1 a super-reduced rate), but zero-rate extra-EU and intra-EU rail passenger transport. In the UK both domestic and international services are zero-rated. Denmark and Ireland exempt domestic services without credit. In Germany, finally, the VAT rate depends on the distance travelled.

In summary, the tax rates applied to domestic rail passenger transport range from 0 % to 27 %, whereby 23 Member States apply predominantly positive rates. Extra-EU and intra-EU transport on the other hand is zero-rated by 19 Member States, the remaining 7 apply rates between 6 and 25 %. Cyprus and Malta currently don't operate a rail system.

### Inland navigation

Inland navigation means passenger transportation by passenger ships on rivers and lakes (inland waterways). A further distinction is made between scheduled and non-scheduled domestic services. For extra-EU and intra-EU transport this differentiation is omitted, because no Member State applies different rates. The applicable tax rates are listed in Table 3.4.

**Table 3.4: VAT rates on inland navigation**

EU Member State	Domestic Transport			Intra-EU transport	Extra-EU transport	Remarks
	Rates applied	Scheduled	Non-Sched.			
<b>Austria</b>	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$ 10 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$ 10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$ : on Lake Constance 0 % $\text{\textcircled{D}}$ : otherwise
<b>Belgium</b>	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	
<b>Bulgaria</b>	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Croatia</b>	25 % $\text{\textcircled{S}}$	25 % $\text{\textcircled{S}}$	25 % $\text{\textcircled{S}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Cyprus</b>	19 % $\text{\textcircled{S}}$	19 % $\text{\textcircled{S}}$	19 % $\text{\textcircled{S}}$	n.a.	n.a.	
<b>Czech Republic</b>	21 % $\text{\textcircled{S}}$ 15 % $\text{\textcircled{R}}$	15 % $\text{\textcircled{R}}$	21 % $\text{\textcircled{S}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	15 % $\text{\textcircled{R}}$ : scheduled 21 % $\text{\textcircled{S}}$ : otherwise
<b>Denmark</b>	ex. $\text{\textcircled{D}}$	ex. $\text{\textcircled{D}}$	ex. $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	

<b>Estonia</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Finland</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>France</b>	10% <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	
<b>Germany</b>	19 % <b>Ⓢ</b> 7 % <b>Ⓡ</b>	19 % <b>Ⓢ</b> 7 % <b>Ⓡ</b>	19 % <b>Ⓢ</b> 7 % <b>Ⓡ</b>	19 % <b>Ⓢ</b> 7 % <b>Ⓡ</b>	19 % <b>Ⓢ</b> 7 % <b>Ⓡ</b>	7 % <b>Ⓡ</b> : regional <sup>36</sup> 19 % <b>Ⓢ</b> : long distance
<b>Greece</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	13 % <b>Ⓡ</b>	
<b>Hungary</b>	27 % <b>Ⓢ</b>	27 % <b>Ⓢ</b>	27 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Ireland</b>	ex. <b>Ⓓ</b>	ex. <b>Ⓓ</b>	ex. <b>Ⓓ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Italy</b>	10 % <b>Ⓡ</b> ex. <b>Ⓓ</b>	10 % <b>Ⓡ</b> ex. <b>Ⓓ</b>	10 % <b>Ⓡ</b> ex. <b>Ⓓ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	ex. <b>Ⓓ</b> : urban transport
<b>Latvia</b>	12 % <b>Ⓡ</b>	12 % <b>Ⓡ</b>	12 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Lithuania</b>	21 % <b>Ⓢ</b> 9 % <b>Ⓡ</b>	9 % <b>Ⓡ</b>	21 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	9 % <b>Ⓡ</b> : authorized regular services 21 % <b>Ⓢ</b> : otherwise
<b>Luxembourg</b>	3 % <b>Ⓓ</b>	3 % <b>Ⓓ</b>	3 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Malta</b>	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Netherlands</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	
<b>Poland</b>	8 % <b>Ⓡ</b>	8 % <b>Ⓡ</b>	8 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Portugal</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Romania</b>	24 % <b>Ⓢ</b>	24 % <b>Ⓢ</b>	24 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Slovakia</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Slovenia</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Spain</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	
<b>Sweden</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>United Kingdom</b>	0 % <b>Ⓓ</b> 20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b> 20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b> 20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b> : ≥ 10 seats <sup>37</sup> 20 % <b>Ⓢ</b> : otherwise

Source: National VAT legislation, European Commission (2014), Van Essen et al. (2012), IBFD (2012) and other sources (see introduction to chapter 3.1); Adaptation and Demonstration: IHS, 2014.

The rates applied to passenger transport services on inland waterways are very similar to those in the rail sector. Noticeable differences can be found in Austria, which zero-rates most international transport on rivers and lakes while taxing international rail and road transport at the reduced rate, Croatia, which applies the standard rate to international rail and road transport, and the zero-rate to inland navigation, and France, where international rail transport is zero-rated while inland navigation is subject to 10 % VAT.

<sup>36</sup> Within a municipality or for distances less than 50 km (in German territory).

<sup>37</sup> There are some exceptions, for details see the country fiche for the UK.

Member States situated in Western or Northern Europe tend to apply the reduced rate to domestic passenger transport on rivers and lakes and either the reduced or the zero-rate to extra-EU and intra-community transport, whereas Central/Eastern European Member States more frequently apply the standard rate to domestic and the zero rate to international services. The rates in place for domestic inland navigation range from 0 % (United Kingdom) to 27 % (Hungary); all Member States except for the UK (zero-rate), Denmark and Ireland (exempt) apply positive rates. For extra-EU and intra-community transport the range is 0 % to 19 %, but only 7 Member States apply positive rates<sup>38</sup>. The only Member State taxing international inland navigation at the standard rate is Germany (restricted to long-distance services).

## Maritime shipping

This section covers passenger transport services by sea ships. Once again, a distinction is made between domestic and international services and, in case of domestic services, between scheduled and non-scheduled transport. Land-locked countries are marked “*not applicable*” (*n.a.*). To the best of our knowledge no Member States have adopted special tax rates for round trips (A-to-A-transport) or cruises, therefore the normal rates as stated in **Error! Reference source not found.** are applicable.

**Table 3.5: VAT rates on maritime shipping**

EU Member State	Domestic Transport			Intra-EU transport	Extra-EU transport	Remarks
	Rates applied	Scheduled	Non-Sched.			
<b>Austria</b>	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Belgium</b>	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	6 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Bulgaria</b>	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Croatia</b>	25 % $\text{\textcircled{S}}$	25 % $\text{\textcircled{S}}$	25 % $\text{\textcircled{S}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Cyprus</b>	9 % $\text{\textcircled{R}}$	9 % $\text{\textcircled{R}}$	9 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Czech Republic</b>	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Denmark</b>	ex. $\text{\textcircled{D}}$	ex. $\text{\textcircled{D}}$	ex. $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Estonia</b>	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	20 % $\text{\textcircled{S}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Finland</b>	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>France</b>	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	10 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	
<b>Germany</b>	19 % $\text{\textcircled{S}}$ 7 % $\text{\textcircled{R}}$ 0 % $\text{\textcircled{D}}$	19 % $\text{\textcircled{S}}$ 7 % $\text{\textcircled{R}}$	19 % $\text{\textcircled{S}}$ 7 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$ : Helgoland 7 % $\text{\textcircled{R}}$ : regional <sup>39</sup> 19 % $\text{\textcircled{S}}$ : long distance
<b>Greece</b>	13 % $\text{\textcircled{R}}$	13 % $\text{\textcircled{R}}$	13 % $\text{\textcircled{R}}$	0 % $\text{\textcircled{D}}$	0 % $\text{\textcircled{D}}$	

<sup>38</sup> Thereof Austria only for shipping on Lake Constance.

<sup>39</sup> Within a municipality or for distances less than 50 km (in German territory).

<b>Hungary</b>	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Ireland</b>	ex. ①	ex. ①	ex. ①	0 % ①	0 % ①	
<b>Italy</b>	10 % ② ex. ①	10 % ② ex. ①	10 % ② ex. ①	0 % ①	0 % ①	ex. ①: urban transport
<b>Latvia</b>	12 % ②	12 % ②	12 % ②	0 % ①	0 % ①	
<b>Lithuania</b>	21 % ③ 9 % ②	9 % ②	21 % ③	0 % ①	0 % ①	9 % ②: authorized regular services 21 % ③: otherwise
<b>Luxembourg</b>	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Malta</b>	0 % ① 18 % ③	0 % ①	18 % ③	0 % ①	0 % ①	
<b>Netherlands</b>	6 % ②	6 % ②	6 % ②	0 % ①	0 % ①	
<b>Poland</b>	8 % ②	8 % ②	8 % ②	0 % ①	0 % ①	
<b>Portugal</b>	6 % ②	6 % ②	6 % ②	0 % ①	0 % ①	
<b>Romania</b>	24 % ③	24 % ③	24 % ③	0 % ①	0 % ①	
<b>Slovakia</b>	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>Slovenia</b>	9.5 % ②	9.5 % ②	9.5 % ②	0 % ①	0 % ①	
<b>Spain</b>	10 % ②	10 % ②	10 % ②	0 % ①	0 % ①	
<b>Sweden</b>	6 % ②	6 % ②	6 % ②	0 % ①	0 % ①	
<b>United Kingdom</b>	0 % ① 20 % ③	0 % ① 20 % ③	0 % ① 20 % ③	0 % ①	0 % ①	0 % ①: ≥ 10 seats 20 % ③: otherwise

Source: National VAT legislation, European Commission (2014), Van Essen et al. (2012), IBFD (2012) and other sources; Adaptation and Demonstration: IHS, 2014.

A common feature of maritime passenger transport and air passenger transport is that all international – both intra-community and extra-EU – services are zero-rated. With respect to domestic services most Member States apply the same rates as to inland navigation. Exceptions are Cyprus, which applies the reduced rate instead of the standard rate, and Malta, which zero-rates most scheduled sea passenger transport. Germany zero-rates passenger transport to and from Helgoland (0 %), since Helgoland is treated as a third country for VAT purposes. The tax rates in place range from 0 % (Malta, UK) to more than 20 % (Lithuania, Croatia, Romania) for domestic transport, intra-community and extra-EU passenger transport services are commonly zero-rated.

### Air transport

The VAT rates displayed in Table 3.6 apply to domestic and international flights; in the case of domestic flights a distinction is made between scheduled and non-scheduled services. For extra-EU and intra-EU transport such a distinction is not meaningful, since the same rates are in place for both scheduled and occasional services.



Table 3.6: VAT rates on air transport

EU Member State	Domestic Transport			Intra-EU transport	Extra-EU transport	Remarks
	Rates applied	Scheduled	Non-Sched.			
<b>Austria</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Belgium</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Bulgaria</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Croatia</b>	25 % <b>S</b>	25 % <b>S</b>	25 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Cyprus</b>	19 % <b>S</b>	19 % <b>S</b>	19 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Czech Republic</b>	15 % <b>R</b> 21 % <b>S</b>	15 % <b>R</b>	21 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	15 % <b>R</b> : scheduled 21 % <b>S</b> : otherwise
<b>Denmark</b>	ex. <b>D</b>	ex. <b>D</b>	ex. <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Estonia</b>	20 % <b>S</b>	20 % <b>S</b>	20 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Finland</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>France</b>	7 % <b>R</b>	7 % <b>R</b>	7 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Germany</b>	19 % <b>S</b> 7 % <b>R</b>	19 % <b>S</b> 7 % <b>R</b>	19 % <b>S</b> 7 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	7 % <b>R</b> : regional <sup>40</sup> 19 % <b>S</b> : long distance
<b>Greece</b>	13 % <b>R</b>	13 % <b>R</b>	13 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Hungary</b>	27 % <b>S</b>	27 % <b>S</b>	27 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Ireland</b>	ex. <b>D</b>	ex. <b>D</b>	ex. <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Italy</b>	10 % <b>R</b>	10 % <b>R</b>	10 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Latvia</b>	12 % <b>R</b>	12 % <b>R</b>	12 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Lithuania</b>	9 % <b>R</b> 21 % <b>S</b>	9 % <b>R</b>	21 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	9 % <b>R</b> : authorized services on regular routes 21 % <b>S</b> : otherwise
<b>Luxembourg</b>	3 % <b>D</b>	3 % <b>D</b>	3 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Malta</b>	0 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Netherlands</b>	21 % <b>S</b> (6 % <b>R</b> )	21 % <b>S</b>	21 % <b>S</b> (6 % <b>R</b> )	0 % <b>D</b>	0 % <b>D</b>	6 % <b>R</b> : medical passenger transport <sup>41</sup>
<b>Poland</b>	8 % <b>R</b>	8 % <b>R</b>	8 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Portugal</b>	6 % <b>R</b>	6 % <b>R</b>	6 % <b>R</b>	0 % <b>D</b>	0 % <b>D</b>	
<b>Romania</b>	24 % <b>S</b>	24 % <b>S</b>	24 % <b>S</b>	0 % <b>D</b>	0 % <b>D</b>	

<sup>40</sup> Within a municipality or for distances less than 50 km (in German territory).

<sup>41</sup> Passenger transport with planes and balloons designed for the transport of sick or injured persons.

<b>Slovakia</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Slovenia</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	9.5 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Spain</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	10 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>Sweden</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	6 % <b>Ⓡ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	
<b>United Kingdom</b>	0 % <b>Ⓓ</b> 20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b> 20 % <b>Ⓢ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b>	0 % <b>Ⓓ</b> : ≥ 10 seats scheduled or by a universal postal service provider 20 % <b>Ⓢ</b> : otherwise

Source: National VAT legislation, European Commission (2014), Van Essen et al. (2012), IBFD (2012) and other sources; Adaptation and Demonstration: IHS, 2014.

As is evident, all extra-EU and intra-EU air passenger transport is zero-rated in the European Union<sup>42</sup>. With respect to domestic services 2 Member States apply predominantly the zero rate (Malta and the UK), 15 Member States predominantly the reduced rate (2 of them only for scheduled services) and 9 Member States predominantly the standard rate. Denmark and Ireland exempt domestic air passenger transport. The highest rates are in place in Hungary (where currently no scheduled domestic flights are offered) with 27 %, Croatia (25 %) and Romania (24 %).

<sup>42</sup> According to the German legislation zero-rating of international air passenger transport to third countries can be subject to the reciprocity principle. However, we did not come across any case, where actually a positive rate is applied.

## B. Other Transport Taxes and User Charges

VAT is only one of several user charges and taxes that passengers have to pay in addition to the price of the ticket determined by the transport operators. Nearly all of these charges and taxes are predicated on the need to generate revenues to pay for particular costs and not to contribute to general public revenue. A recent study on the internalization of the costs of transport externalities<sup>43</sup> provided a comprehensive description and quantification of these charges and taxes as shown in Table 3.7.

**Table 3.7: Internalization charges by mode and level of administration**

	EU	National	Regional	Local
<b>Road Transport</b>		Fuel taxes (including reduced levels and exemptions) Infrastructure charges: - Time-based user charges (vignettes) - Distance-based user charges Insurance taxes Vehicle purchase and/or registration taxes Vehicle ownership and/or circulation taxes Company car taxation VAT reductions/exemptions	Tolls on specific parts of the regional network (e.g. bridges, tunnels).	Urban road pricing schemes.
<b>Rail Transport</b>	ETS	Fuel taxes Electricity taxes Infrastructure charges (incl. fees for delays) VAT reductions/exemptions	<i>out of scope</i>	<i>out of scope</i>
<b>Inland Navigation</b>		Fuel taxes Fairway dues Charges related to prevention of water pollution. VAT reductions/exemptions	Fairway dues	Port charges for selected ports of the TEN-T Core Network, as defined in COM (2011) 650 final. Not included in the analysis are dues for locks and bridges (for maritime shipping and inland navigation), as far as they are not related to one of the TEN-T core network ports.
<b>Maritime shipping</b>		Fuel Taxes Charges related to prevention of water pollution VAT reductions/exemptions		

<sup>43</sup> European Commission (2012a)

<b>Aviation</b>	ETS	Fuel taxes Ticket taxes VAT reductions/exemptions		Airport charges for selected airports of the TEN-T Core Network, (as defined in COM (2011) 650 final), in particular: Landing and Take-Off (LTO) charge
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Some of these additional charges are more akin to taxes than user charges as their incidence is not proportional to the use of a specific facility and the revenue they generate is not earmarked for the funding of a specific type of infrastructure facility or service. The following subsection reviews in detail such taxes and charges, limited to those that are directly added to the ticket price of the final consumer. We therefore exclude taxes charged to the carrier and possibly passed on via the ticket price later (e.g. noise charges, emission charges) as well as fees directly added to the ticket price, but charged for certain services (e.g. passenger service charges and security charges at airports, air transport supervision charges, infrastructure charges).

These taxes are currently in place in Austria, France, Germany, Italy and the UK. All of them are attributable to air passenger transport; the French *Tax on public air and sea transport to Corsica* is additionally applied to maritime navigation.

The oldest tax is the UK's *Air Passenger Duty*, an excise duty introduced in 1994 and charged on the carriage of passengers flying from a UK airport on an aircraft that has an authorized take-off weight of more than ten tons or more than twenty seats for passengers (different to the thresholds for VAT liability). The rate applied depends both on the distance and the class of travel and ranges from GBP 13 per passenger (short distance in the lowest class available on the flight) to GBP 388 per passenger (higher rate<sup>44</sup> for flights exceeding a distance of 6,000 miles). The distance is measured as the distance between London and the capital city of the country of final destination. Recently the rates have been slightly increased, taking effect on 1 April 2014; in 2015 it is planned to abolish the bands C and D, which would considerably reduce APD on long-distance flights. Exceptions from APD are direct long-haul flights originating from airports in Northern Ireland, since the North Ireland Assembly set the relevant rate to GBP 0 with effect from 1 January 2013. The APD takes distance into account. But critics of the APD point out that its rates are not proportional to the environmental damage from aviation emissions that it is claimed to address.

A similar Air Travel Tax in **Ireland** was abolished this year (effective April 1, 2014).

**France** introduced the *Civil Aviation Tax* in 1999. The rates are currently EUR 4.36 per passenger for journeys to destinations within the European Economic Area and French overseas territories and EUR 7.85 per passenger for journeys to other destinations. An annual adjustment of the rates is made based on the consumer price index. Unlike APD, the Civil Aviation Tax is also applied to freight and mail transport by air. The *Solidarity Tax* on aircraft tickets was established in 2006 as an additional surcharge on the ticket price. The rates of the Solidarity Tax are grouped by distance and travel class. Destinations in

<sup>44</sup> For details on the application of the higher rate see footnote 50.

France and the European Economic Area are taxed at lower rates than other destinations. Additionally higher rates are in place for passengers travelling first or business class. A third tax is finally charged to passengers embarking to or disembarking from ships and aircraft in Corsican territory, the so-called *Tax on public air and sea transport to Corsica*. This tax is set by the Corsican Assembly, which also receives the revenue—the basic conditions however are governed by the central government. Currently a rate of EUR 4.57 per passenger embarking or disembarking is applied. A lower rate is in place for certain short-haul connections to and from Sardinia (EUR 1.52). Inland transport in Corsica is exempt.

**Italy** has implemented two different taxes on air passenger transport. The so-called *City Council Tax* was introduced in 2004 to generate additional revenues for the state budget as well as for municipalities where airports are situated, and for general security measures on airports and in major train stations. The tax has frequently been increased since and currently amounts EUR 7.50 per passenger boarding in the Roman airports of Fiumicino and Ciampino and EUR 6.50 per passenger boarding in the other Italian airports. Currently the distribution of a large portion of the revenues is managed by the National Institute of Social Security. Despite the name only a relatively small fraction seems to go to the municipalities. The *Air Taxi Tax* was adopted in 2012. It is collected from the passengers of air taxi flights, which are passenger flights, where the entire capacity of the aircraft is chartered by a single contract. The air carrier is liable for the payment of the tax. The tax must be paid for each section separately, the rates range from EUR 100 per passenger and leg (< 1500 km) to EUR 200 per passenger and leg (> 1,500 km). According to Agenzia Entrate, the Air Taxi Tax is not only due upon embarking in Italy, but also on disembarking<sup>45</sup>.

The **Air Passenger Tax** (Luftverkehrsteuer) was introduced in Germany in 2011 as an additional fee on the departure of passengers from German airports. There are three different rates – for short, medium and long-haul – ranging from EUR 7.50 per passenger to EUR 42.18 per passenger. Which rate is applicable for journeys to which country is defined in the annexes to the Air Transport Tax Act, broadly speaking short-haul corresponds to distances less than ~2,500 km and long-haul to more than ~6,000 km from Frankfurt/Main. Unlike France and the UK, Germany does not distinguish between different classes of travel. The tax rate is tied to and limited by the costs of EU emissions trading, which lead to a slight decrease of the rates in the last years.

**Austria** also implemented an **Air Transport Levy** in 2011, which is very similar to the German Air Passenger Tax. The Austrian rates are slightly lower (EUR 7 to EUR 35 per passenger). Additionally and in contrast to Germany, VAT for domestic flights is already included in the Air Transport Levy, which in practice results in a rate of EUR 6.36 for domestic flights.

A number of Member States applied similar charges in the past, but have abolished them in the meantime. This holds for Malta, the Netherlands (2008-2009/10), Ireland (2009-2014) and Denmark (1991-2006)

Table 3.8 gives an overview on the respective taxes as in place in April 2014. Further details and sources used can be found in the country fiches.

<sup>45</sup> <http://www.agenziaentrate.gov.it/wps/wcm/connect/10b64e804bc82b0285a9fd067ba7a5f6/97718-+Provvedimento+imposta+aeromobili+-+27+giugno.pdf?MOD=AJPERES&CACHEID=10b64e804bc82b0285a9fd067ba7a5f6>, p.2.

Table 3.8: Other indirect taxes levied on passenger transport services

	Modes	Tax base	Who is liable?	Tax rates									
<b>Austria:</b> <i>Air Transport Levy (Flugabgabe)</i>	Air	The number of passengers departing from an Austrian airport using a motorized aircraft	The aircraft owner performing the departure, who adds it to the ticket price	<ul style="list-style-type: none"> <li>• <i>Short haul:</i> EUR 7/passenger (incl. VAT for domestic journeys)</li> <li>• <i>Medium haul:</i> EUR 15/passenger</li> <li>• <i>Long haul:</i> EUR 35/passenger</li> </ul>									
<b>France:</b> <i>Civil Aviation Tax (Taxe de l'aviation civile)</i>	Air	The number of passengers and tons of mail and freight embarked from French territory on commercial flights	The air transport company, who adds it to the ticket price	<p>As per 1 April 2014 the following rates apply:</p> <ul style="list-style-type: none"> <li>• EUR 4.36 per passenger to destinations within France (including overseas departments and collectivities), other EU Member States, Iceland, Liechtenstein, Norway and Switzerland</li> <li>• EUR 7.85 per passenger to other destinations</li> <li>• EUR 1.30 per tons of freight or mail to any destination</li> </ul> <p>As from 2011 the rates are revalued annually based on the consumer price index.</p>									
<b>France:</b> <i>Solidarity Tax (Taxe de solidarité sur les billets d'avion)</i>	Air	The number of passengers embarked on the French territory	The air transport company, who adds it to the ticket price	<table border="1"> <thead> <tr> <th></th> <th>Normal rate</th> <th>Increased rate<sup>46</sup></th> </tr> </thead> <tbody> <tr> <td>Final destination in France or the European Economic Area</td> <td>EUR 1.13 / pass.</td> <td>EUR 11.27 / pass.</td> </tr> <tr> <td>Other destinations</td> <td>EUR 4.51 / pass.</td> <td>EUR 45.07 / pass.</td> </tr> </tbody> </table>		Normal rate	Increased rate <sup>46</sup>	Final destination in France or the European Economic Area	EUR 1.13 / pass.	EUR 11.27 / pass.	Other destinations	EUR 4.51 / pass.	EUR 45.07 / pass.
	Normal rate	Increased rate <sup>46</sup>											
Final destination in France or the European Economic Area	EUR 1.13 / pass.	EUR 11.27 / pass.											
Other destinations	EUR 4.51 / pass.	EUR 45.07 / pass.											
<b>France (Corsica):</b> <i>Tax on public air and sea transport to Corsica</i>	Maritime nav. and air	The number of passengers embarking on or disembarking from ships and aircraft in Corsican territory in the course of commercial flights or on regular shipping lines	Paid to the authorities by airlines and sea carriers, which in turn directly add it to the ticket price.	<ul style="list-style-type: none"> <li>• EUR 1.52 / passenger for distances of less than 20 km (some connections from Sardinia)</li> <li>• EUR 4.57 / passenger otherwise</li> </ul>									
<b>Germany:</b> <i>Air Passenger Tax (Luftverkehrssteuer)</i>	Air	The number of passengers departing from a German airport	The air carrier performing the departure, who adds it to the ticket price	<ul style="list-style-type: none"> <li>• <i>Short haul:</i> EUR 7.50 / passenger (not including VAT for domestic flights)</li> <li>• <i>Medium Haul:</i> EUR 23.43 / passenger</li> <li>• <i>Long Haul</i> (&gt; ~6,000 km): EUR 42.18 / passenger</li> </ul>									

<sup>46</sup> The increased rate is applied to passengers travelling first class, business class and similar, the normal rate otherwise.

<b>Italy:</b> <i>City Council Tax (addizionale comunale sui diritti d'imbarco)</i>	Air	The number of passengers boarding on an aircraft in Italy	The air carrier collects the tax from the passengers and passes it to the airport, which in turn forwards it to the competent authorities	<ul style="list-style-type: none"> <li>• <u>Roma Fiumicino, Roma Ciampino</u>: EUR 7.50 / passenger</li> <li>• <u>Other Italian airports</u>: EUR 6.50 / passenger</li> </ul>																				
<b>Italy:</b> <i>Air Taxi Tax</i>	Air	The number of passengers transported on air taxi flights <sup>47</sup>	The air carrier collects the tax from the passengers and forwards it to the financial authorities	<ul style="list-style-type: none"> <li>• <u>&lt;100 km</u>: EUR 10 / passenger and leg</li> <li>• <u>100-1,500 km</u>: EUR 100 / passenger and leg</li> <li>• <u>&gt;1,500 km</u>: EUR 200 / passenger and leg</li> </ul>																				
<b>UK:</b> <i>Air passenger duty (APD)</i>	Air	The number of passengers departing from a UK airport	The operator of the aircraft, who adds it to the ticket price	<table border="1"> <thead> <tr> <th></th> <th>Reduced<sup>48</sup></th> <th>Standard<sup>49</sup></th> <th>Higher<sup>50</sup></th> </tr> </thead> <tbody> <tr> <td>Band A (0 - 2,000 miles)</td> <td>GBP 13</td> <td>GBP 26</td> <td>GBP 52</td> </tr> <tr> <td>Band B (2,001 – 4,000 miles)</td> <td>GBP 69</td> <td>GBP 138</td> <td>GBP 276</td> </tr> <tr> <td>Band C (4,001 – 6,000 miles)</td> <td>GBP 85</td> <td>GBP 170</td> <td>GBP 340</td> </tr> <tr> <td>Band D (&gt; 6,000 miles)</td> <td>GBP 97</td> <td>GBP 194</td> <td>GBP 388</td> </tr> </tbody> </table>		Reduced <sup>48</sup>	Standard <sup>49</sup>	Higher <sup>50</sup>	Band A (0 - 2,000 miles)	GBP 13	GBP 26	GBP 52	Band B (2,001 – 4,000 miles)	GBP 69	GBP 138	GBP 276	Band C (4,001 – 6,000 miles)	GBP 85	GBP 170	GBP 340	Band D (> 6,000 miles)	GBP 97	GBP 194	GBP 388
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Band D (> 6,000 miles)	GBP 97	GBP 194	GBP 388																					

Sources: see respective country sections in Vol. 2.

<sup>47</sup> Air taxi flights are described as flights by planes or helicopters operated for passenger transport under charter contracts for the entire capacity of the aircraft.

<sup>48</sup> Applies to passengers in the lowest class of travel available on the plane (for details see the UK country fiche).

<sup>49</sup> Applies to passengers in travel classes other than the lowest class available on the flight.

<sup>50</sup> Applies to passengers on aircraft with an authorized take-off weight of 20 tons or more, which are equipped to carry fewer than 19 passengers.

## Chapter 4. Analysis of Competitive Distortions

Having discussed the structure of the passenger transport market in the EU in Chapter 2, and the rules and regulations concerning the existing VAT regime, we now turn to the issue of distortions that might be generated by the features of the system and the way they are implemented.

We adopt the following definition of distortion:

*A distortion is defined as the unequal treatment of passengers and/or operators with respect to any of the parameters composing the VAT regime in force in Member States in the passenger transport sector, and which leads to economic, social and/or environmental changes in behaviour.*

Based on a review of existing legislation as well as feedback from operators, we identify fourteen possible distortions, categorized into four distinct groups:

**Group 1: Distortions due to different VAT rates:** Six possible distortions (Distortions 1a through 1f) that derive from differences in VAT rates between transport modes and markets.

**Group 2: Distortions due to the scope of passenger transport services and associated supplies:** Two distortions (2a and 2b) deriving from the definition of passenger transport services and associated supplies, namely consumption on board ships, aircraft and trains.

**Group 3: Distortions due to the treatment of inputs in the passenger transport sector:** Three distortions (3a, 3b and 3c) that are related to, and the treatment of, input VAT.

**Group 4: Distortions with regard to the place of supply:** Four distortions (4a, 4b, 4c and 4d) related to the current place of supply rules and the different administrative compliance requirements among Member States.

Some of the distortions are more amenable to quantifiable assessment, while others are less so and can best be described qualitatively. The initial assessments of the impacts indicate that some of the distortions have a much smaller overall impact than others, although their impact on particular groups of users or operators might be large. A set of models has been developed (described in Chapter 6) to evaluate those that will be assessed quantitatively.

This Chapter provides an initial evaluation of the impacts of the distortions based on the VAT country fiches included in Volume 2 of this report. It also provides an indication for which distortions we will provide a more detailed assessment and whether it will be quantitative or qualitative, and, if the former, whether or not a modelling or order of magnitude method will be used. Even where the assessment is qualitative we will provide as much numeric support as possible. For the order of magnitude method will provide enough quantitative analysis to indicate the extent of the distortion relative to the others (in more detail than is provided in this Chapter), which types of passengers and transport operators are most impacted and how much the distortion is likely to impact on total VAT revenue and its distribution between Member States.



Based on the initial assessments described in the remainder of this Chapter, we have concluded that seven of the fourteen distortions can best be assessed using a qualitative method, one will not be further considered in the final report, and of the remaining five that will be subject to a quantitative assessment, three will be evaluated using the models described in Chapter 6.

### **Assessment of distortions**

The first task of the assessment of the impact of each distortion is to confirm that it is a real and not theoretical distortion; the second is to determine if any of the real distortions are so insignificant that it would be a low priority to investigate their impact in the same detail as the other more important distortions, and; the third is to determine whether a quantitative assessment is possible and if so whether a modelling method is appropriate.

The first task involves three stages:

- i. To assess how many Member States have VAT regimes that include features that could result in the distortion;
- ii. To assess which proportion of passengers or transport operators in each market are likely to be impacted by the distortion. These assessments are made at both the Member State and EU-28 levels. While the main assessment is at the EU-28 level it is also important to know the significance of the distortions at the Member State level as some distortions that are not significant for the EU-28 as a whole, can be of much greater significance for individual Member State, and;
- iii. To estimate the scale of impacts on passengers affected by the distortion.

As of now we are completing the first stage and are in the process of finalizing the data needed for the second and third stages. For quantifiable distortions, the assessment of the magnitudes will be conducted through the modelling methods discussed in Chapter 6<sup>51</sup>.

For the non-quantifiable distortions, we will use data from three sources – the questionnaires sent to agencies representing transport operators, submissions to the Commission on the Future of VAT (of the 1,726 submissions less than 5% were from transport operators, their representatives or representatives of groups of passengers), and position papers and other published documents of agencies representing transport operators. A preliminary review of these sources provides very little data on the extent of the distortions, so we are following up the returns to our original questionnaires to transport agencies seeking more detailed information.

### **Group 1: Distortions due to different VAT rates**

The Commission is obliged to ensure the proper functioning of the internal market. Any potential distortion existing only in domestic markets falls within the responsibility of each Member State. Such distortions are not fully quantified, but nevertheless described, as possible changes of the current rules,

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<sup>51</sup> In particular, the effect of unequal rates as discussed in 1c and 1d below will be assessed by (i) taking as reference a hypothetical transport market with no VAT imposed, and (ii) imposing on the affected operators or modes a VAT rate equal to the distortion under consideration.

e.g. abolishing zero and reduced rates, may have an impact on domestic passenger transport services that needs to be analysed for each scenario.

### ***1a) Different VAT rates within one mode at the domestic level***

**Issue:** There are three main reasons why Member States apply different VAT rates within a particular transport mode. The first is that *urban transport* might be considered to have different economic and social impacts to inter-urban travel, for example because of the number of trips made per person per year, so for some Member States where this is considered important, a lower VAT rate is applied to a particular transport mode in urban transport than to the same transport mode when used for other domestic transport. Second is that some passenger trips might be considered to be more necessary and less discretionary than others, and so might qualify for a lower VAT rate. The application of this reason is used in some Member States that have a lower VAT rate for *regular (and hence more essential) passenger travel than for unscheduled* (and so more discretionary) travel. The third is that some Member States try to distinguish between *the same vehicle being used for public passenger transport as for private transport*, and this can result in the same vehicle being rated differently for VAT according to how it is used.

#### **Description**

##### *Urban transport*

While there are at least 10 Member States that have some form of this distortion, they often occur in very limited situations.

This distortion is widespread with many Member States having differences in VAT rates between urban and other domestic transport within bus and train modes (trams and metros have the same lower VAT rates as other urban transport modes but they have no other domestic transport equivalent). These differences can be found in Germany, Italy and Cyprus. In Germany passenger transport within municipality or for distances less than 50 km are VAT rated at 7 %, whereas longer distance services are subject to the standard rate of 19 %. The criteria in Italy are similar, but urban services by taxi or vessel are exempt (without credit) and non-urban and long-distance services are taxed at the reduced rate of 10 %. In Cyprus urban and rural bus transport is VAT rated at 5 %, whereas tour buses and other domestic road passenger transport is rated at 9%. Furthermore there is a special flat rate scheme for urban taxis, which does not apply to other domestic taxi services.

##### *Scheduled and unscheduled services*

A distinction between (certain) scheduled and occasional services is made in the Czech Republic, Lithuania and Malta, and to a lesser extent also in Cyprus and Denmark.

##### ***Type of vehicle and other criteria***

In the UK the main criterion for determining whether a passenger transport service will qualify to be zero rated for VAT is the size of the vehicle for all transport modes (zero-rated if the vehicle has 10 seats or more), although a few other factors can also be relevant.

Related effects could also be based on special regimes, which are e.g. applied in Cyprus (flat tax for urban taxis) and the UK (optional flat rate for small businesses).

**Table 4.1 Summary of Different VAT rates within one mode (domestic)<sup>52</sup>**

Member State	Mode(s)	Distortion	Gap (%-points)
<b>Cyprus</b>	road	Road passenger transport services are taxed at different tax rates: <ul style="list-style-type: none"> <li>• Urban taxis: flat rate scheme</li> <li>• Urban and rural buses: 5 %</li> <li>• Urban, intercity and rural taxis; tour buses and suburban buses: 9 %</li> <li>• Others: 19 %</li> </ul>	4/10/14/flat rate
<b>Czech Republic</b>	all	Scheduled services (15 %) are taxed at a lower rate than non-scheduled services (21 %)	6
<b>Denmark</b>	road	Tourist bus services are taxed at 25 %, whereas other domestic road transport is exempt	25 % vs. ex.
<b>France</b>	rail	Certain domestic rail connections – mainly using international high-speed rail – might be zero-rated <sup>53</sup>	10
<b>Germany</b>	all	Most short-distance transport <sup>54</sup> is taxed at 7 %, other connections at 19 %.	12
<b>Italy</b>	road, inland waterways, maritime shipping	Urban passenger transport services by taxi, or by any means of transport on inland waterways and the sea is exempt, otherwise the reduced rate of 10 % is applicable.	ex. vs. 10 %
<b>Lithuania</b>	all	Scheduled services (9 %) are taxed at a lower rate than non-scheduled services (21 %).	12
<b>Malta</b>	mainly road	Scheduled bus services and special regular services <sup>55</sup> are zero-rated, whereas other services are taxed at 18 %.	18
<b>Netherlands</b>	air	Domestic air passenger transport is taxed at 21 %, except for aircraft especially equipped for the transport of sick or injured persons (6 %).	15
	(inland waterways)	Certain ferry services might still apply an old exemption, abolished for the provision of new services in 2002 <sup>56</sup> .	ex. vs. 6 %
<b>UK</b>	all	Zero-rating depends on certain criteria, most important the size of the vehicle ( $\geq 10$ seats), the provider (providers of universal postal services) and – in case of air passenger transport – the type of transport (scheduled flights).	20

**Extent of distortion<sup>57</sup>**

While the differences in VAT rates only apply to specific modes, the distortions that result apply also to all competing modes. The proportion of EU-28 urban passenger transport that occurs in Member States that have a different VAT rate for all urban transport is around 20%, while the share of bus travel in countries that differentiate between scheduled and non-scheduled bus services is about 5%. The UK vehicle size criterion applies to all modes but there are few air or rail passenger service vehicles that are

<sup>52</sup> This table does not take into account general VAT rules like exemptions for small enterprises applied in many Member States.

<sup>53</sup> Subject to verification by the tax authorities, since the law does not clearly state, if domestic connections are covered.

<sup>54</sup> The transport of passengers by rail, with motor vehicles in approved regular services, taxis, trolleybuses, cableways and similar facilities as well as on ships (in approved regular services) and ferries, if the transport takes place within a municipality or the distance is not more than 50 kilometres.

<sup>55</sup> E.g. the carriage of school pupils, students or workers to and from educational facilities or the place of work, respectively.

<sup>56</sup> Subject to verification by the tax authorities

<sup>57</sup> All references to the extent of distortions are expressed as shares of passenger kms

excluded by this criterion. It mostly impacts on urban transport where it excludes taxis and some mini-buses from qualifying for zero VAT rate. UK urban transport accounts for about a 13% share of all EU-28 urban passenger transport.

The trip database (Chapter 6) does permit an approximation to the number of passenger trips subject to the trip length criterion for applying different VAT rates. However, there is no comprehensive data on the numbers of unscheduled services in all of the Member States which have this distinction between services that are subject to lower VAT rates or on the numbers of vehicles excluded by the size qualification for a lower VAT rate. So this distortion cannot be quantified using the models (Chapter 6). However, given that it affects a substantial minority of trips, it will be subject to an order of magnitude and quantitative assessment.

### *1 b) Different VAT rates between different modes at the domestic level*

**Issue:** The application of different VAT rates to different domestic transport modes is aimed at influencing the modal share of specific modes.

**Description:** The application of different VAT rates to the various modes of domestic transport within the same Member State is not very common. Unambiguous examples include the Netherlands, where domestic air travel is taxed at the standard rate of 21 %, whereas all other modes benefit from the reduced rate (6 %), and Cyprus, where the standard rate (19 %) is applied to transport by air and inland waterways, whereas maritime shipping is taxed at the reduced rate of 9 % - road transport in Cyprus is subject to 3 different rates (19 %, 9 % or 5 %).

**Table 4.2 Different VAT rates between modes (domestic)**

Member State	Road	Rail	Inland waterways	Maritime shipping	Air	Gap (%-points, max.)
Cyprus	5/9/19 % flat rate	n.a.	19 %	9 %	19 %	14
Netherlands	6 %	6 %	6 % (ex.)	6 %	21 % (6 %)	15

It is more common that the VAT rate depends on particular provisions, which are in theory applicable to all modes of transport, but some modes will benefit more than others. An example is Germany, where domestic HSR travel is subject to the standard rate in most cases because of a distance exceeding 50 km, whereas taxi transport will usually benefit from the reduced rate as a mainly local service. Similar situations can also be found in the UK, where the application of the zero-rate depends (mostly) on the size of the vehicle. Consequently, long-distance taxi services and minibuses are nearly always taxed at 20 %, whereas passenger transport by train is practically always zero-rated. Finally Member States that tax certain scheduled services at a lower rate (such as the Czech Republic, Malta and Lithuania) belong to this category, since rail transport are almost exclusively scheduled, whereas bus transport is frequently not. For details on such cases see 1a above.

**Extent:** The extent and impact of this type of distortion are both very limited. Both the Netherlands and Cyprus have few domestic air services (for the Netherlands there are only services from

Amsterdam to Eindhoven and Maastricht) while for Cyprus domestic passengers only account for 2% of total air passengers and services are only available on one route<sup>58</sup>.

The other distortions in this group have a minimal impact on competition between transport modes, as modes with different VAT rates do not compete strongly with each other (for example, taxis and HSR travel in Germany). The extent of the distortion of different VAT rates on scheduled and unscheduled services and of the UK vehicle size distortion have already been estimated under distortion 1a.

The extent of this distortion will be described but not quantified.

### *1c) Different VAT rates within one mode of transport between domestic and extra-EU/intra-EU transport*

**Issue:** For all Member States there are policy reasons to encourage transport in one market rather than another. This objective can be supported by having different VAT rates in different markets for the same transport mode.

**Description:** This distortion is one of the most widespread and some of the gaps between domestic and intra-EU VAT rates are quite high—to the extent that some Member States have devised schemes that eliminate the differences in some situations.

All 28 Member States apply higher VAT rates to domestic passenger transport than to intra-EU and extra-EU transport, at least for some modes or in some situations.

**Table 4.3: Gap between the rates for domestic and international transport by the same mode**

Member State	Road	Rail	Inland navigation	Maritime navigation	Air	<i>no. of modes where a gap occurs</i>
<b>Austria</b>	0	0	10(0)	n.a.	10	<i>2 of 5</i>
<b>Belgium</b>	0	0	0	6	6	<i>2 of 5</i>
<b>Bulgaria</b>	20	20	20	20	20	<i>5 of 5</i>
<b>Croatia</b>	0	0	25	25	25	<i>3 of 5</i>
<b>Cyprus</b>	5/9/19	n.a.	n.a.	9	19	<i>3 of 3</i>
<b>Czech Republic</b>	15/21	15	15/21	n.a.	15/21	<i>4 of 4</i>
<b>Denmark</b>	Inp. (25)	Inp.	Inp.	Inp.	Inp.	<i>5 of 5</i>
<b>Estonia</b>	20	20	20	20	20	<i>5 of 5</i>
<b>Finland</b>	10	10	10	10	10	<i>5 of 5</i>
<b>France</b>	0 (10)	10 (0)	0	10	10	<i>3(4) of 5</i>
<b>Germany</b>	0	0	0	7/19	19 (7)	<i>2 of 5</i>
<b>Greece</b>	0	0	0	13	13	<i>2 of 5</i>
<b>Hungary</b>	27	27	27	n.a.	27	<i>4 of 4</i>

<sup>58</sup> Economics of Air Transport in Cyprus, Oxford Economics, 2011

<b>Ireland</b>	Inp.	Inp.	Inp.	Inp.	Inp.	<i>5 of 5</i>
<b>Italy</b>	10 (Inp.)	10	10 (Inp.)	10 (Inp.)	10	<i>5 of 5</i>
<b>Latvia</b>	12	12	12	12	12	<i>5 of 5</i>
<b>Lithuania</b>	9/21	9	9/21	9/21	9/21	<i>5 of 5</i>
<b>Luxembourg</b>	3	3	3	n.a.	3	<i>4 of 4</i>
<b>Malta</b>	n.a.	n.a.	n.a.	0/18	0	<i>1 of 2</i>
<b>Netherlands</b>	0	0	0	6	21 (6)	<i>2 of 5</i>
<b>Poland</b>	0	8	8	8	8	<i>4 of 5</i>
<b>Portugal</b>	6	6	6	6	6	<i>5 of 5</i>
<b>Romania</b>	24	24	24	24	24	<i>5 of 5</i>
<b>Slovakia</b>	20	20	20	n.a.	20	<i>4 of 4</i>
<b>Slovenia</b>	0	9.5	9.5	9.5	9.5	<i>4 of 5</i>
<b>Spain</b>	0	0	0	10	10	<i>2 of 5</i>
<b>Sweden</b>	6	6	6	6	6	<i>5 of 5</i>
<b>UK</b>	0/20	0	0 (20)	0 (20)	0 (20)	<i>1<sup>59</sup> of 5</i>
<b>Number of Member States<sup>60</sup></b>	<b>16</b>	<b>18</b>	<b>19</b>	<b>22</b>	<b>26</b>	

There are 14 Member States which zero-rate all international services irrespective of the mode of transport, while at the same time apply a positive VAT rate to all modes of domestic transport<sup>61</sup>:

- in 5 countries this is the standard rate (Bulgaria [20 %], Estonia [20 %], Hungary [27 %], Romania [24 %], Slovak Republic [20 %]);
- in 4 of these countries all domestic transport is subject to the reduced rate (Finland [10 %], Latvia [12 %], Portugal [6 %] and Sweden [6 %]), in Luxembourg it is a super-reduced rate of 3 %; and
- in 4 countries domestic transport is taxed at different rates (Cyprus [5/9/19 %], Czech Republic [15/21 %], Italy [10 %/ex.]<sup>62</sup> and Lithuania [9/21 %]).

Special cases are Denmark and Ireland, where both domestic<sup>63</sup> and international transport are exempt, but input VAT may only be deducted with respect to international transport.

Of the remaining Member States, rate gaps between domestic and international transport occur for the following modes:

- all modes except for road: Poland [8 %] and Slovenia [9.5 %],
- inland waterways, maritime shipping and air: Croatia [25 %],
- rail, maritime and air: France [10 %]<sup>64</sup>,

<sup>59</sup> Only in certain situations, since most domestic road passenger transport is zero-rated as well.

<sup>60</sup> Not including MS, where this gap applies only in certain situations.

<sup>61</sup> The relevant tax rate is indicated in brackets.

<sup>62</sup> Domestic urban transport by taxi or ship is exempt, but input VAT may not be deducted.

<sup>63</sup> In case of Denmark with the exception of tourist bus services.

- inland waterways and air: Austria [10 %], and
- maritime and air: Belgium [6 %], the Netherlands [6 %/21 %], Germany [7 %/19 %], Spain [10 %] and Greece [13 %]).

In Malta and the UK, domestic transport is taxed at higher rates in certain situations.

Related effects could also be based on special regimes, which are e.g. applied in Germany (journey specific VAT assessment for foreign buses entering Germany at a third country-border) and Greece (flat tax for foreign buses).

**Extent:** The impacts of this type of distortion are difficult to estimate quantitatively before applying a transport model, as they are potentially widespread and complex. Unlike the distortions related just to one market where the potential impact can be estimated from the size of that market, the distortions of this type have an impact on demand between markets. The markets that could be impacted are other domestic, intra-EU and to a lesser extent extra-EU. Since all Member States have some form of VAT discrimination between markets and within modes, the potential extent of this distortion covers all Member State and transport modes.

However, the practical impact of the distortion is probably much less than its potential one, as there is only limited competition between the markets that could be influenced by transport fares. Passenger travel choices are conventionally considered as a three stage process- first a choice of destination, then a choice of mode then a choice of route, although increasingly the latter choices are simultaneous. Choice of destination and so of travel market is to some extent influenced by transport fares (and so by VAT rates) for some non-business travel but choice of destination for business travel is usually determined by factors other than fare.

Given that this distortion has a high potential extent it is a high priority for attention by consideration of alternative VAT rate structures and it will be both quantified and further described.

#### *Id) Different VAT rates between different modes of transport for intra-EU/extra-EU*

**Issue:** The main reasons why Member States apply different VAT rates to different transport modes in these two markets are historical. There has been a long term international community reluctance to tax international trade, of which international passenger transport is an integral part. When this reluctance was first expressed the only significant modes of international passenger transport were maritime and air, so these were zero rated for VAT. Since that time, international rail and bus services from and to Member State have expanded dramatically but there has been no general change in the VAT legislation to include these transport modes in the same zero rate scheme as air and maritime transport, or to review the zero rating applied to these latter transport modes. The current VAT rules of Member State are a mixture of some that continue to zero rate air and maritime transport and those that have extended the zero rate to one or more other transport modes either for intra-EU or extra-EU passenger transport or both.

**Description:** Whereas all Member States zero-rate intra-community and extra-EU air and maritime passenger transport, 10 Member States predominantly apply positive tax rates to extra-EU road passenger transport, 7 to rail transport and 6 to inland navigation. The gap between the rates applied to the different

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<sup>64</sup> Additionally, road up to a certain extent (zero-rating of occasional bus transport of foreigners).

modes of intra-community and extra-EU passenger transport within the same Member State ranges from 5 to 25 percentage points.

**Table 4.4: Gap between VAT rates applied to the different modes of transport in intra-EU and extra-EU passenger transport**

Member State	Road	Rail	Inland Navigation	Maritime Navigation	Air	Gap (%-points, highest to lowest)
<b>Austria</b>	10%	10%	0% (10%)	n.a.	0%	10
<b>Belgium</b>	6%	6%	6%	0%	0%	6
<b>Bulgaria</b>	0%	0%	0%	0%	0%	0
<b>Croatia</b>	25%	25%	0%	0%	0%	25
<b>Cyprus</b>	0%	n.a.	n.a.	0%	0%	0
<b>Czech Republic</b>	0%	0%	0%	n.a.	0%	0
<b>Denmark</b>	0%	0%	0%	0%	0%	0
<b>Estonia</b>	0%	0%	0%	0%	0%	0
<b>Finland</b>	0%	0%	0%	0%	0%	0
<b>France</b>	10%	0%	10%	0%	0%	10
<b>Germany</b>	19%/7%	19%/7%	19%/7%	0%	0%	19/7
<b>Greece</b>	13%	13%	13%	0%	0%	13
<b>Hungary</b>	0%	0%	0%	n.a.	0%	0
<b>Ireland</b>	0%	0%	0%	0%	0%	0
<b>Italy</b>	0%	0%	0%	0%	0%	0
<b>Latvia</b>	0%	0%	0%	0%	0%	0
<b>Lithuania</b>	0%	0%	0%	0%	0%	0
<b>Luxembourg</b>	0%	0%	0%	n.a.	0%	0
<b>Malta</b>	n.a.	n.a.	n.a.	0%	0%	0
<b>Netherlands</b>	6%	6%	6%	0%	0%	6
<b>Poland</b>	8%	0%	0%	0%	0%	8
<b>Portugal</b>	0%	0%	0%	0%	0%	0
<b>Romania</b>	0%	0%	0%	0%	0%	0
<b>Slovakia</b>	0%	0%	0%	n.a.	0%	0
<b>Slovenia</b>	9.5%	0%	0%	0%	0%	9.5
<b>Spain</b>	10%	10%	10%	0%	0%	10



<b>Sweden</b>	0%	0%	0%	0%	0%	0
<b>United Kingdom</b>	0%	0%	0%	0%	0%	0

If we take the gap between international air transport and (high-speed) rail transport, which are likely competitors in some markets, as an example, the numbers are:

- 19 Member States apply the same rate to both modes of transport;
- for 4 Member States the gap is 10 % or lower (6 % for Belgium and the Netherlands, 10 % for Austria and Spain);
- for another 2 Member States the gap is between 10 % and 20 % (13 % Greece and 19 % Germany);
- for Croatia the gap is 25 %.

However, especially in the cases of Greece and Croatia the substitutability between international air and rail transport is currently very limited. Cyprus and Malta currently don't operate a rail system, therefore this comparison would not make sense for them.

Another example of different modes of transport potentially competing, is that of bus and rail services. Here 3 Member States apply lower rates to international rail transport than to road transport: Slovenia (0 % vs. 9.5 %), Poland (0 % vs. 8 %) and France (0 % vs. 10 %<sup>65</sup>).

**Table 4.5: Comparison between the modes in intra-community and extra-EU transport**

Intercommunity and extra-EU passenger transport by ...	... is taxed at a higher rate than ... (No. of Member State)				
	Road	Rail	Inland navigation	Maritime navigation	Air
<b>Road</b>	-	3	4	10	10
<b>Rail</b>	0	-	2	7	7
<b>Inland navigation</b>	0	1	-	6	6
<b>Maritime navigation</b>	0	0	0	-	0
<b>Air</b>	0	0	0	0	-

*Remark: The table reads: "The rate applied to international passenger transport by road is higher than the rate for rail in 3 Member State, higher than the rate for inland navigation in 4 Member State and higher than the rate for maritime navigation and air in 10 Member State.*

**Extent:** With this wide application, this is considered a significant distortion with potentially major impacts on all four major transport modes (bus, railway, air and maritime transport), both markets and all Member States. It will be both quantified and further described.

#### ***1e) Different delimitation between domestic and intra-EU/extra-EU (two-sector trips)***

**Issue:** This distortion results from Member States having different interpretations of how to define the three transport markets (domestic, intra- and extra-EU), and this impacts on those passenger trips that could be considered as taking place partially in two or more markets. There could also be an issue of a

<sup>65</sup> Some bus services for foreign travellers are however exempt.

Member State applying definitions of the markets that would maximize its VAT revenue rather than to maximize the overall economic benefit of passenger transport.

**Description:** We already know of a few Member States in which the domestic sections of international trips are considered to be part of the international trip, if the connection indicated on the ticket is international (Finland, Lithuania, and Poland). In Croatia, the ticket specification is also decisive, but this is restricted to air and sea transport; Luxembourg and Italy refer to a single contract. We are seeking further information in the questionnaire to the tax authorities.

**Extent:** It is possible that this distortion has only a limited extent since the number of trips that fall into the impacted categories is only a small proportion of total international trips. With an increasing proportion of international trips being direct between the origin and destination and not requiring transit through an intermediate destination, it is probable that the incidence of this distortion will diminish over time. However, it has attracted much attention as a potentially important distortion so it will be further described, and an effort will be made to gauge its order of magnitude (perhaps by assessing specific examples).

#### *If) Lower VAT rates applied in certain regions*

**Issue:** Some Member States have economic and social policies aimed at stimulating the economies of specific territorial regions, and part of the implementation of these policies can be to apply a lower VAT rate for passenger travel and from these regions than for other domestic transport.

**Description:** We found 3 Member States that apply lower VAT rates with respect to passenger transport in certain regions:

- Greece: certain Aegean isles (VAT at 9% instead of 13 %),
- Portugal: Madeira (5 % instead of 6 %), and the Azores (4 % instead of 6 %). Some passenger transport between the mainland and the Autonomous Regions of the Azores or Madeira as well as between those Regions and between the islands within these regions is zero-rated.
- France: Corsica (within the island, 2.1 % instead of 10 %). In addition, passenger transport between continental France and Corsica is zero-rated, except for the section in continental France.

Furthermore passenger transport services to some regions are treated as international, because they are not part of the national (and European) VAT area, e.g. the Canary Islands, Ceuta and Melilla (Spain), Madeira and Azores (Portugal), Helgoland (Germany), the French overseas departments and territories, the Åland Islands (Finland) and the Channel Islands (UK). These are not considered as VAT distortions but simply the result of application of the VAT territoriality rules.

**Extent:** The regions that benefit from these distortions only account for small shares of the total population of the Member State of which they are part. The Aegean isles account for about 5% of the total population of Greece, the Azores and Madeira together make up about the same proportion of the population of Portugal, while Corsica makes up only about 0.5% of the population of France. The different VAT rates applied are only a few percentage points different to those applying to other domestic passenger transport, except for those passenger services to these regions that are zero rated.

Given the limited extent of these distortions, they will be further described but not quantified.

## **Group 2: Distortions due to the scope of passenger transport services and associated supplies**

### ***2a) Definition of passenger transport and related incidental services***

**Issue:** Most Member States have a clear specification in their legislation of which passenger services are subject to VAT, but in practice some Member States are more prone to making practical implementations that are potentially inconsistent with that legislation.

**Description:** Although only a few Member States provide detailed definitions for the scope of passenger transport, there seem to be some differences with respect to the exact delimitation of passenger transport. The renting of vehicles including a driver is normally considered passenger transport, whereas the rental of a means of transport without a driver or crew is not. Incidental services like the transport of accompanying luggage, seat reservations or the provision of sleeping compartments are usually subject to the same rules as the underlying passenger transport service, though some countries seem to restrict that to services that are not separately billed (e.g. Poland). The transport of accompanying motor vehicles is usually also covered if incidental to passenger transport, with certain exceptions.

A variation of this deviation can apply to domestic passengers on services that also transport intra-EU passengers. Since both use the same service and some of them board and alight from the transport vehicle at the same place, some Member States treat the domestic passengers for VAT purposes as though they were intra-EU passengers. This variation does not apply to domestic and extra-EU passengers as they need to be segregated for immigration and security purposes.

**Extent:** The extent of this distortion is small (but not insignificant) as the majority of passengers travel is by transport modes that fall clearly within or outside the Member States VAT regulations. The distortion will be further described but not quantified.

### ***2b) Consumption on board ships, aircraft or trains***

We have not focussed on this topic, since it is covered in detail in the “Expert study on the issues arising from taxing the supply of goods and the supply of services, including restaurant and catering services, for consumption on board means of transport” by PWC<sup>66</sup>, and it was not included in the terms of reference.

DG TAXUD will elaborate further on this aspect.

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<sup>66</sup> For further information see EC Report COM(2012) 605 final available on [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/vat/key\\_documents/reports\\_published/com\\_2012\\_605\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/key_documents/reports_published/com_2012_605_en.pdf) and the “*Expert study on the issues arising from taxing the supply of goods and the supply of services, including restaurant and catering services, for consumption on board means of transport*” by PWC available on <https://circabc.europa.eu/w/browse/59941dff-4fd3-47bb-8ee9-c502cab5b7b6>. The report does not cover the distinction between the supply of goods and services and does not clarify if the supply of services might be covered by the derogation listed under Annex X, Part B, Point 9 of the VAT Directive. Input from DG TAXUD will be needed here.

### **Group 3: Distortions due to the treatment of inputs in the passenger transport sector**

**Issue:** There are three distortions identified in this group. In the first, the historic reasons that led to the zero rating of air and maritime passenger transport also resulted in the zero rating of their inputs. In the second, Member States have their own regulations for how to specify when a vehicle is used predominantly for passenger services (and hence subject to VAT rates for passenger transport) and for private use (and hence subject to standard VAT rates).

#### ***3a) Exemptions following Article 148 VAT Directive***

**Description:** Art. 148 of the VAT Directive implements the zero-rating of certain supplies to maritime and international aviation. It covers the supply of vessels and aircraft fulfilling certain requirements as well as their equipment, services related to such qualifying vessels and aircraft, their equipment or cargo, and the provisioning and fuelling of such vessels and aircraft. However, it is for the national legislation to lay down certain details. Furthermore a number of Member States apply derogations from the provisions of Art. 148.

With respect to qualifying vessels some Member States require specific additional conditions to be met, for example a minimum size (e.g. Finland, Sweden) or tonnage (e.g. UK, Ireland), to qualify for zero-rating. Others extend the scope to other types of vessels (e.g. Italy and Greece to certain military vessels or vessels used by state institutions; Finland to all vessels of a certain size except those intended for recreation or sports purposes). Some Member States use formulations to define qualifying vessels that do not fully comply with the VAT Directive, which complicates assessment of the scope of zero-rating.

Aircraft generally qualify for zero-rating, if they are used by airlines operating for reward chiefly on international routes. We have already found definitions of this term for nine Member State. The most common criterion used is a preponderance of turnover realized on extra-EU or intra-EU routes (Austria, Estonia, Germany, Greece, Portugal), but some Member States also apply different rules. More restrictive are the provisions in France (80 % of the services effected on international routes), Bulgaria (60 % of the total income in a period of 5 years) and Poland (60 % of revenues, number of flights and number of passengers/goods). The rules applied in the UK on the other hand are more flexible, since they allow any assessment method, as long as it produces fair and reasonable results and is consistently applied.

Particularly difficult is a comparison of other supplies to maritime shipping and international aviation (provisioning, services for the direct needs of qualifying vessels/aircraft and their cargoes), because the national implementations are often structured very differently than indicated in the VAT Directive. Some Member States for example provide lists of services covered, while others adopt the rather general wording of the VAT Directive.

**Extent:** We are of the view that these provisions, while perhaps giving some operators a cash-flow financial advantage from not having to carry the burden of VAT payments before refunds are issued, do not lead to significant discrimination among operators, as generally all inputs into the business process are deductible (with few restrictions and exceptions). The different time to process VAT reimbursements might increase the distortion in certain Member States (see distortion 4a).

Given the importance that transport operators have expressed on this issue, it will be described in more detail but not quantified.

### **3b) Specification of vehicle use for passenger transport for purposes of input VAT**

**Description:** All Member States allow for the deduction of input VAT on vehicles used for the provision of commercial passenger transport services. There are a few Member States, which apply certain restrictions though, mainly in connection with passenger cars: In some Member States such vehicles must be used exclusively (Belgium, Finland) or predominantly (Hungary [>90 % use for taxi services]) for commercial passenger transport services, others refer to the core activity of the business (Bulgaria, Italy, and Portugal). Poland seems to restrict the deduction of input VAT on passenger cars to 60 % or PLZ 6,000, including those used for passenger transport.

**Extent:** These restrictions will be evaluated further.

### **3c) Tax incentives for excise duties on fuel and electricity**

**Issue:** To encourage the use of public transport in general and in some transport modes, some Member States have lower VAT rates and reduced tax and duty rates for some other inputs. While helping to achieve this objective, these lower rates can introduce distortions.

**Description:** The general distortion of VAT on inputs is already assessed as distortion 3a. The descriptive assessment of this distortion is therefore limited to identifying potential distortions within one mode of transport (either bus or trains) among different Member States.

Multiple Member States grant providers of passenger transport services tax incentives with respect to fuel. However, in most cases this is put into effect by a reduction of excise duties. Regarding gasoil, only Portugal and Ireland seem to apply the reduced VAT rate to gasoil supplied to railways, whereas 13 Member States apply reduced excise duties to railways and 6 to busses<sup>67</sup>. Luxembourg and Cyprus generally apply reduced VAT rates to LPG. With respect to electricity Greece, Ireland and Luxembourg apply reduced VAT rates, but 8 Member States<sup>67</sup> use lower excise rates for railways or public transport companies. So the majority of tax benefits granted on fuel and electricity seems to be based on excise duties.

In Germany train operators do not pay any supplements on electricity except VAT.

The assessment of distortion 3b recognizes that the main differences among Member States are in relation to excise duties on fuel.

**Extent:** Assessing this distortion is very complex and reference to existing publications by other DG's will be made (e.g. DG ENRGIE, DG MOVE) to provide a more detailed description and order of magnitude estimate of its impact.

## **Group 4: Distortion with regard to the place of supply**

There are four distortions in this group. The first results in burdens for operators and also impacts on total revenue and its distribution among Member States; the second results in the imposition of additional costs on transport operators; the third derives from that part of domestic trips that takes place outside of

<sup>67</sup> Source: [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf).

the national territory. The fourth distortion is a potential one, that could arise in the case of taxation of international air and maritime passenger transport, and is linked to distortion 1d above.

#### ***4a) Place of VAT liability: Complexity of calculating the place of supply (distance) of extra-EU/intra-EU rail and road transport***

**Issue:** The place of VAT liability has attracted much attention for the administrative costs that it is believed to impose on transport operators for its collection and distribution to the various Member States through which passenger trips pass. The implementation of this rule is not itself a distortion, but does impose higher costs on transport operators than might be incurred with alternative (and simpler) specifications of the place of liability for passenger transport VAT for intra-EU travel.

Measuring the amount of VAT according to the distance obliges companies in the bus and railway passenger transport sector to determine VAT for each trip separately. Whereas the use of informatics tools allows for such calculations, they involve additional costs. Such costs are deemed to be higher for coach operators in particular with regard to journeys involving several stopovers. They might even be considered as a handicap for small operators that cannot make use of professional software tools.

Any remedy to this administrative burden (including the ones discussed in Scenarios 3 and 4) would have to take into account the consequences on the distribution of VAT revenues among origin, destination and transit countries. For the passenger travel that takes the form of outbound and return trips without a transit country, the place of taxation makes little if any difference in total VAT liability or its share between the origin and destination Member States. But for those trips that pass through an intermediate Member State changing the place of VAT liability could have a substantial fiscal impact. For many of the smaller Member States, VAT revenue generated from these transiting trips is believed to contribute substantially to their total VAT passenger revenue<sup>68</sup>.

**Extent:** This distortion is relevant for rail and bus, and for countries that charge VAT on international travel (intra- and extra-EU), namely 9 Member States for bus and 7 Member States for rail. Note that operators from countries that do not impose such charges, but have sections of their travel through them, also have to incur such administrative costs.

The impact of this distortions on transport operators' administrative costs will be assessed using an order of magnitude method.

#### ***4b) Additional compliance costs***

Supplying passenger transport services in some Member States entails higher administrative costs than in others, because for example rules with respect to registration and returns differ. Furthermore the time between when output VAT must be paid and input VAT can be refunded vary.

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<sup>68</sup> The impact of specification of the place of supply is greater on the Member States that are closer to the geographic centre of the EU28. Member States that are on the periphery are unlikely to have many trips that are transiting between other Member States whereas those closer to the centre will have more. As an indication of the potential importance of this revenue, from the cities included in the city pairs model (see Chapter 6) about 62% of the total passenger kms within Belgium and 87% of those within Austria would be generated from transit trips between other Member States. All the VAT revenue from these trips would be lost to Belgium and Austria under an arrival or departure based option. It would instead be allocated to the origin/departure Member States of the passenger trips. There would also be a change in total VAT revenue as the rates charges by the transit Member States are not necessarily the same as those in the origin or destination Member States.

However, the detailed rules are not always clear from legislation and often depend on administrative practice. An example is the obligation to register for non-established providers of exclusively international passenger transport, which is zero-rated (or exempt with credit respectively) in many Member States. According to the information we found so far, Belgium, Cyprus, the Czech Republic, Greece, Luxembourg, Malta and Portugal generally require the registration of such zero-rated providers, whereas Estonia, Finland, Lithuania and Sweden state that a registration is not necessary, as long as no deduction of input VAT is intended. Some Member States on the other hand require even providers of exempt supplies (such as small operators) to register for VAT purposes, although they are exempt from most other related obligations. However we will check back that information with the tax authorities. Furthermore, even if there is a (theoretical) obligation to register for foreign providers, it might be not equally enforced among Member States.

Most Member States provide some kind of simplification for small taxable persons. In most cases an (optional) VAT exemption is available, with thresholds ranging from approximately EUR 5,000 to EUR 100,000. Differences can furthermore be found with respect to the items included in the calculation of the relevant turnover, the reference period (calendar year or any 12 subsequent months) and the commencement of VAT obligations in case the threshold is exceeded (retrospective application to the complete tax year or start in or even after the month of transgression). Other simplifications for small businesses include partial refunds of output VAT paid (Finland, Netherlands), extended taxable periods, cash-based accounting, flat rate schemes (e.g. UK) or lump-sum schemes (e.g. urban taxis in Cyprus). However, the thresholds are so low that only small taxi businesses could be concerned.

Taxable periods in general last between one and three month, and for smaller businesses they can last sometimes up to one year. Returns and payments of VAT are usually due between 14 days and two months after the end of the relevant taxable period, in case of annual returns sometimes even later. The period between a taxable supply and the relevant VAT payment can therefore vary considerably, ranging from less than 15 days to 5 months in the general case. This of course is not unique to the passenger transport sector. Closely related and especially relevant for operators supplying occasional services in many different Member States is the obligation to submit zero-returns. We do not have information yet for all Member States, but in the majority of cases such zero-returns are obligatory. One exception identified so far is Slovakia.

An issue frequently mentioned in the statements in the Green Paper on the Future of VAT as a possible distortion, which is especially relevant for international passenger transport, is the difference regarding the deduction of input VAT. In most Member States input VAT can be recovered in the period the tax point occurs or the invoice is issued respectively, the invoice must however be already available when applying for the deduction. Some Member States however also refer to the period the invoice is received.

Distortions could also arise from the treatment of excess amounts of input VAT deducted. A few Member States automatically refund such excesses. In the majority of cases a corresponding application is necessary. Some Member States however restrict the right to receive refunds, until excess amounts have been carried forward for a certain period (e.g. Bulgaria, Slovakia), minimum amounts are reached (e.g. Czech Republic, Hungary, France, Luxembourg, Romania) or other conditions are fulfilled (e.g. Belgium, Cyprus, Lithuania).

The rules for foreign providers usually match those applied to domestic enterprises, with certain exceptions: The exemptions for small enterprises, for example, cannot be applied by operators without a fixed establishment in the relevant Member State, and a few Member States apply the reverse charge rule to B2B supplies of passenger transport services. Special regimes are sometimes available especially for foreign providers of occasional international bus transport (for example Germany, Denmark, and Poland).

Only 4 Member State allow VAT returns in 3 or more languages, but the effects of this distortion are declining as more Member States allow the electronic submission of VAT claims from companies registered in other Member States. Since there is a high compatibility in the structure of electronic VAT forms between Member States and so between different languages, it is easier make electronic submissions. But some Member States are very strict on 100% compliance in the ways that forms are completed (if differences show up in electronic checks, the forms are rejected).

**Extent:** For a first analysis we are using *The Impact of VAT compliance on Business* (PWC, 2010) as a source, as the distortions apply to companies in all sectors of the economy (although the impact on transport companies might be higher) supplemented by comments from operators included in their responses to our questionnaires. This distortion will be described further and an order of magnitude assessment made of its impact.

#### ***4c) Different treatment of sections in/above international areas outside EU***

**Issue:** Member States have their own regulations for determining VAT liability for passenger transport that takes place in international water or airspace when it forms part of a domestic trip. Resulting distortions are due to the fact that Member States do not want to measure the distance of journeys that are not entirely domestic and they are therefore a result of the current rules to define the place of supply as the place, where the transport effectively takes place.

**Description:** We do not yet have detailed information with respect to most Member States, but we can confirm that there are (or at least that there have been) differences in the treatment of sections in international waters, when they are crossed in the course of domestic journeys. Italy (see ECJ Case C-283/84) seems to tax such sections between the Italian peninsula and Sardinia and the UK considers such sections – and even sections through foreign territorial waters – domestic, although in most cases the tax rate will be zero. France on the contrary does not apply VAT to sections outside its territorial waters (see e.g. ECJ Case C-30/89).

Another possible source of distortion closely related to this one is the differentiation between domestic and international transport. Many Member States define international transport as transport, where either the place of departure or the place of arrival or both (often as indicated on the ticket) are outside the territory of the relevant Member State (e.g. Austria, Belgium, Bulgaria, Romania). Journeys starting and ending within the Member State therefore seem to be considered domestic, even if the territory of another country is crossed. Sweden, on the other hand, treats a transport service as international, if only a short section takes place in the territory or the territorial waters of another country (sections through international waters however do not constitute international transport).

Finally some Member States also apply derogations to the normal place of supply rules, the most prominent example is Germany, which treats short sections in foreign countries as domestic and short domestic sections as foreign, subject to certain conditions.



**Extent:** The extent of this distortion is believed to be very limited as few domestic trips pass through international airspace or waters. However, the distortion appears to raise important issues for some Member State and so it merits further description and an order of magnitude estimate of its impact.

***4d) Difficulty in determining the place of supply (distance) of extra-EU/intra-EU air and sea transport***

**Issue:** If extra-EU and intra-EU sea and air travel were to be positively rated for VAT, it would be difficult to determine what distance had been travelled in the territorial water or air space of the transited Member States.

**Description:** Sea and air transport of passengers for extra-EU/intra-EU travel is zero-rated for VAT purposes. Although the generally accepted explanation of the different treatment of these modes of transport to those for land transport refers to historical taxation habits (see description of distortion 1d), it would be virtually impossible to create an equal treatment between different modes of transport under the current rules, if Member States intended to tax Extra-EU and Intra-EU passenger transport. As a result, those Member States that tax Extra-EU and Intra-EU passenger transport only tax road and railway transport services.

**Extent:** Rail (and to a lesser extent road) transport is constrained in its distances and routes by the fixed infrastructure that it uses, so limiting the complexity of calculating the distances travelled in each Member State for the liability to VAT. Sea and air transport are less constrained in this sense. Passenger vessels have a wider scope in their use of shipping lanes, and passenger aircraft are only constrained to the available flight paths. These can be very indirect because of military air space and other constraints and the actual flight paths might be different to those planned because of congestion and other reasons. Given that the distances actually travelled by air and sea are in many case much greater than for rail or road transport, the distortion would be greater than for those modes if sea and/or air travel were to be positively rated for VAT. In the broader sense, this potential distortion represents the ultimate cause of distortion 1d, because it complicates the taxation of air and sea travel. The extent to be quantified would thus represent a strict subset of distortion 1d, i.e. the amount of VAT collected by companies providing Extra-EU and Intra-EU road and railway passenger transport services.

**Table 4.6 - Summary of distortions and assessment methods**

<b>Distortion</b>	<b>Description</b>	<b>Extent</b>	<b>Assessment method</b>
<b>1 - Different VAT rates</b>			
<b>1a</b>	Different VAT rates within one mode at the domestic level	Small	O
<b>1b</b>	Different VAT rates between modes at the domestic level	Small	D
<b>1c</b>	Different VAT rates within one mode between domestic and extra-EU/intra-EU	Large	Q
<b>1d</b>	Different VAT rates between modes for domestic and extra-EU/intra-EU	Large	Q
<b>1e</b>	Different delimitation between domestic and extra-EU/intra-EU (two-sector trips)	Medium	O/D
<b>1f</b>	Lower VAT rates applied in certain regions at the domestic level	Small	D
<b>2 - Scope of passenger transport services and associated supplies</b>			
<b>2a</b>	Definition of passenger transport and related incidental services	Small	D
<b>2b</b>	Consumption on board ships, aircraft or trains	Not addressed in this study	
<b>3 - Treatment of inputs in the passenger transport sector</b>			
<b>3a</b>	Exemptions following Article 148 of VAT Directive / Delay in processing VAT refunds	Small	D
<b>3b</b>	Specification of vehicle use for passenger transport for purposes of input VAT deductibility.	Small	D
<b>3c</b>	Tax incentives for excise duties on fuel and electricity between Member States	Small	D
<b>4 - Place of supply</b>			
<b>4a</b>	Complexity of calculating the place of supply (distance) of extra-EU/intra-EU rail and road transport	Medium	Q
<b>4b</b>	Additional compliance costs (proportion of distance, multiple registration) <sup>69</sup>	Medium	O
<b>4c</b>	Different treatment of sections in/above international areas outside EU	Small	O
<b>4d</b>	Difficulty in determining the place of supply (distance) of extra-EU/intra-EU air and sea transport	Large	Q

*Q signifies quantified assessment, O order of magnitude assessment and D descriptive assessment only*

<sup>69</sup> e.g. different registration and documentation requirements, invoicing rules, VAT returns, languages

## Chapter 5 - Policy Options to Address Distortions

The topic of this Chapter is the alternative VAT reform Scenarios that we are using to assess how the distortions described in Chapter 4 might be addressed.

### Methodology for assessing measures to address distortions

Having established in Chapter 4 which of the distortions created by the current VAT regime in Member States will be considered in the Final Report, we will (i) provide a quantitative assessment (for the distortions for which this is possible) of the costs and other impacts of the distortion and (ii) evaluate policy options to eliminate each of them through reform of VAT rates and regulations (i.e. place of taxation, exemptions, etc.).

We will first provide a baseline run of the various models, described below in Chapter 6, for the year 2010 (2013 for the City-pairs model). This will also be the year of evaluation of the distortions discussed in Chapter 4. We then define a number of VAT Reform Scenarios as a combination of input VAT derogations and output VAT rates and rules of applications. They will be evaluated at two points in time, the year 2020—the year in which the initial impacts of the new VAT Scenarios would occur - and 2030--indicative of the year when the longer term impacts will be realized. We will use the economic projections incorporated in the Transport White Paper as the context for the analysis of alternative VAT Scenarios (that is as the source of GDP, population and other macro variables). We also assume that the proposals of the 2010 Transport White Paper will be implemented according to the schedules indicated in the papers.

### VAT Reform Scenarios

#### *VAT Scenario 1*

Output VAT on all modes of passenger transport in the urban, other domestic and intra-EU markets will be set at the national standard rates, while retaining input VAT rates as they are currently. This is a Scenario that would come close to the principle of VAT not having any output exemptions to the application of the national rates. It would have a large impact on inter-modal competition between air and rail in the intra-EU markets, where air is currently the dominant mode and is zero rated for VAT. It would also have a large impact on total demand for urban and other domestic passengers in the Member States where these are currently rated lower than the standard rates, especially the UK where most passenger travel is zero rated and Ireland where it is exempted from VAT.

This Scenario is aimed at reducing distortions within and between modes (Distortions 1a-d, table 4.6). It would not address distortions arising from different Member States applying different VAT rates to each other. This Scenario would involve ending the temporary derogations that allow the use of VAT rates for passenger transport that are lower than the national standard rates, some of which have continued for decades rather than the five years of their original intention.

#### *VAT Scenario 2*

This Scenario is similar to Scenario 1, but the output VAT rates would be the reduced national rates. The objective of this Scenario is similar to that of Scenario 1 but it is intended to have a smaller negative

impact on the demand for urban and other domestic transport as many Member States currently apply less than the standard rate<sup>70</sup>. It would also have a smaller impact on competition between air and sea transport in the inter-EU market as the increase in VAT on these modes would be less than in Scenario 1.

### ***VAT Scenario 3***

This Scenario would be based on Scenario 1, but would change the place of taxation, from the Member State in which the transport service is provided to the Member State of departure of the passenger. The objective of this Scenario would be to reduce the distortions that arise from operators of passenger services having to calculate, charge and distribute VAT based on the distance the passenger travels in each Member State through which he/she passes. We choose the option of “Departure Point” and do not separately consider the option of “Arrival Point”, as we assume that most (virtually all) intra-EU trips are of a round-trip nature, and hence the considerations applying to each option are similar.<sup>71</sup> A justification for this assumption is provided in the “Note on Multi-Sector Trips and Definition of Place of Departure” later in this chapter.

### ***VAT Scenario 4***

Same as Scenario 2, but with change in the place of taxation as per Scenario 3.

### ***VAT Scenario 5***

This Scenario would have the same VAT rates as currently apply, but the place of taxation would be as per Scenario 3.

### ***VAT Scenario 6***

This Scenario would have the same output VAT rates as those that currently apply, but would abolish Article 148 of the VAT Directive that exempts VAT on some passenger transport inputs. It would therefore extend VAT to the inputs used to provide sea and air passenger services. Under Article 148 aircraft need to operate “chiefly for hire or reward on international routes” while ships need to navigate “on the high seas.” Since “the high seas” are for legal purposes maritime areas outside of territorial waters, there is some (but not exact) comparability between the conditions for ships and aircraft to qualify for the exemption. Since there is no land equivalent of the high seas, we will use a similar condition for trains and buses to that for aircraft for them to qualify for the exemption. As for aircraft, international routes for trains and buses will include both intra-EU and extra-EU routes. The objective of this Scenario is to remove one of the distortions to competition between transport modes in the intra-EU market. This scenario, as mentioned in chapter 4, would allow to quantify the importance of distortion 3a.

### ***VAT Scenario 7***

The objective of this Scenario would be the same as that of Scenario 5, but instead of removing the exemptions of Article 148 it would extend its provisions to inputs for bus and rail passenger services. Since there is no land equivalent of “the high seas”, this Scenario would need to use a similar condition

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<sup>70</sup> See Chapter 3 for the details of which Member States apply standard, reduced, super reduced and zero/exempt VAT rates to passenger transport outputs

<sup>71</sup> Exceptions are trips that involve permanent relocation outside the Member State of departure, and trips for which one way might entail a different mode than the return. These two factors are assumed to be of a second order of magnitude.

for trains and buses as that for aircraft to qualify for the exemption. As for aircraft, international routes for trains and buses will include both intra-EU and extra-EU routes.

### ***VAT Scenario 8***

This would be similar to the current VAT Scenario 4, to make the Member State of departure of the passenger that where VAT liability is incurred, but extending that liability to the domestic part of an extra-EU passenger trip.

### ***VAT Scenario 9***

This would be similar to VAT Scenario 8 but the VAT liability for VAT on extra-EU passengers would be based on the fare before any user charges or taxes were added, with specific ticket taxes being eliminated as they would be replaced by VAT. This is consistent with VAT being based on value added and the taxes and user charges not reflecting any added value. User charges that are to recover the costs of using transport infrastructure would remain included in basis for VAT. The variation is intended to reduce the negative impact on total demand of imposing VAT on extra-EU passengers.

### ***VAT Scenario 10***

This scenario would consist of the implementation of the one-stop-shop provision for all VAT transactions. It would address distortions 4a and 4b.

**Table 5.1 Summary of alternative VAT Scenarios**

<b>Scenario</b>	<b>Description of VAT Scenario</b>	<b>Distortions addressed</b>	<b>Method of assessment</b>
<b>1</b>	The national standard rates will apply to outputs of all modes of urban, other domestic and intra-community passenger transport.	<b>1</b>	<b>Q</b>
<b>2</b>	The national reduced rates will apply to all modes of urban, other domestic and intra-community passenger transport. If no reduced rate exist, the standard rate will apply.	<b>1</b>	<b>Q</b>
<b>3</b>	As for Scenario 1, but with the place of taxation changed to the Member State of departure/arrival	<b>1, 4a</b>	<b>Q</b>
<b>4</b>	As for Scenario 2, but with the place of taxation changed to the Member State of departure/arrival	<b>1, 4a</b>	<b>Q</b>
<b>5</b>	Current VAT rates but the place of taxation changed to the Member State of departure/arrival	<b>4a</b>	<b>Q</b>
<b>6</b>	Exemptions according to Article 148 of the VAT Directive abolished.	<b>3a</b>	<b>O</b>
<b>7</b>	Exemptions according to Article 148 of the VAT Directive extended to buses and trains.	<b>3a</b>	<b>O</b>
<b>8</b>	As for Scenario 4, but with obligation to VAT extended to extra-EU passengers departing from a Member State.	<b>1, 4a</b>	<b>Q</b>
<b>9</b>	As for Scenario 7, but with VAT applied to pre-tax fares as for the Air Passenger Duty.	<b>1, 4a</b>	<b>O</b>
<b>10</b>	Implementation of One-Stop-Shop for all VAT transactions.	<b>3a, 3b</b>	<b>D</b>

Q = Quantitative; O = Order of Magnitude; D = Description.

### **Possible additional administrative distortions from the implementation of Scenarios**

For operators in transport modes that are currently zero rated for VAT, there would be additional administrative costs (distortions) in all Scenarios other than Scenario 6. The impact of Scenario 10 would reduce the additional costs, but they would nevertheless continue from the other Scenarios.

For operators in transport modes that are currently positively rated for VAT there would be administrative cost reductions with Scenarios 3, 4, 7 and 10. There would be no administrative cost reductions from Scenarios 1, 2 and 6: they would still have to deal with different VAT rates in each Member State and with VAT being charged on inputs. There would be an administrative cost increase with Scenarios 8 and 9 as they would be responsible for collecting VAT due on extra-EU travel, but this and other administrative costs would be less with Scenario 10.

### **Passenger trips excluded from the quantitative assessments**

Cruise passengers and tourist coach passengers are not included in the ETISplus database, and therefore cannot be included in the same quantification of outcomes as other passengers. There is data on current numbers of cruise line passengers for nine Member State which account for 97% of total European cruise passengers, and three markets (but not the same markets definitions as used in this Study). This will be projected forward using cruise trade projected growth rates and used in an order of magnitude estimate of the impacts of each VAT Scenario on this category of passenger. There is no equivalent estimate of tourist coach passengers, only an estimate of the total coach market size for twelve Member States and estimates of the coach share of the bus and coach market of the EU27. There are no projections of demand available for coach passengers, so with the limited data on the current market size, we will make only a descriptive assessment of the VAT Scenarios for coach passengers.

### **Note on Multi-Sector Trips and Definition of Place of Departure**

#### *Two sector and multi-sector trips*

The database that we will use for the modelling method of quantifiable assessment (see Chapter 6) only includes one-way single sector trips. The assumption in compiling the database is that all passenger trips are of two sectors, one origin to destination and the other using that destination as the origin of a return trip. There are no records of more complex trips, such as those with multiple destinations that could be included in the database. Even if such data were available, its introduction into the database would increase its complexity because of the vast number of different types of trips that would need to be included, with many different combinations of origins and intermediate and final destinations. Even specification of multi sector trips would require a restructuring of the model to accommodate the concept of intermediate destinations.

As far as we are aware, there is no analysis of what proportion of total trips are multiple rather than two-sector trips. Recent changes in the structure of the airline industry and in airline fare policies have reduced the incentives for multi-sector tickets. The route structure of low-cost airlines is based on direct origin to destination travel and the airlines offer few or no incentives to passengers to make multi-sector trips. Conventional airlines tend to lose revenue yield with multi-sector travel and so the practice is discouraged in the pricing strategies<sup>72</sup>. By combining recent IATA estimates of the numbers of multi

<sup>72</sup> Flying Off-Course: Airline Economics and Marketing Fourth Edition, Rigas Doganis, Routledge, 2010

sector and total international air passengers it appears that the latter represented less than 2% of the total in 2010<sup>73</sup>. There are no equivalent published estimates of the proportion of multi-destination trips for other transport modes. We will consult with transport operators' trade associations to see what information they have.

Our database limits us to considering only two sector travel, but since multi-sector travel accounts for only a small (less than 2%) of air trips and declining share of total trips, we assume for now that all trips are of only two sectors will that this assumption will not introduce any significant errors into our analyses.

***Additional costs of arrival point of VAT liability.*** There are few differences in the impacts of an arrival or departure option for the location of liability for VAT. In the only previous comprehensive assessment of these two alternatives there was found to be some additional accounting cost compared to a departure option, as most scheduled airlines have their hub in their home country and this is the place of departure rather than arrival for most of their passengers (passengers are more likely to use an airline based in their home country than one based in another country) and where they have their main accounting facility. However it was concluded that “under the arrival option the additional cost of VAT accounting should not be particularly onerous.”<sup>74</sup>

Notwithstanding the similarities between an arrival and a departure option, a departure option would require some special considerations:

Special considerations for a place of departure option:

- ***Definition of place of departure.*** For many passengers, defining the place of departure would not be difficult. However, some issues would need to be addressed for multi-sector trips where there is an intermediate break between the places of departure and destination. These could be treated as a single trip or two separate trips. The former would be more practical where the first leg is a feeder to the second leg, while the latter would be more appropriate for the second case, where the two parts of the trip are largely independent of each other. The departure point could be defined as the place where the passenger travel begins. In VAT regimes where “intra-EU legs” of extra-EU trips were to come within VAT coverage, the place of departure for inbound journeys could be defined as the external EU frontier. This would detract from one of the main advantages of a place of departure VAT liability as it would require the use of distances to determine VAT liability, whereas the VAT liability for all other passenger trips would depend only on the ticket price

Where operators issue “through” tickets (which involve the passenger travelling with a number of transport operators using a ticket issued by a single operator), the same issues and principles could apply.

- ***Intra-EU sector of extra-EU trips.*** Resolution would be needed for the situation of non-EU operators providing passenger services wholly or partly within the EU. A mechanism will need to be put into place to ensure that such operators include VAT in the first case and in the second for the regimes where VAT is applied to the intra-EU part of an extra-EU trips
- ***Return Journeys.*** Another issue that would need to be addressed would be that of return journeys for which the passenger buys a single ticket for both the outbound and return leg of his trip.

<sup>73</sup> [http://www.iata.org/about/pages/history\\_2.aspx](http://www.iata.org/about/pages/history_2.aspx) and <http://www.iata.org/pressroom/pr/pages/2012-12-06-01.aspx>

<sup>74</sup> KPMG, 1997

Such return travel could be considered as two separate trips, with the relevant departure VAT being assessed separately for each, but the sum of the two included in the ticket price.

- **Multi-sector trips.** There are at least two VAT options for passengers making trips that require stops in at least one intermediate destination. The first, to have one ticket with multiple sections would be relatively easy to address, with each intermediate stop being the place of departure for the next leg of the trip. The second would need to address tickets that cover a region and/or a time period without any intermediate destinations being defined. The simplest solution would be to charge the VAT rate of the first point of departure, but this might not reflect the VAT liability that is actually incurred with use of the ticket.
- **Stopovers** Stopovers are similar to intermediate destinations of multi-sector trips when they are made voluntarily by a passenger. They need different consideration when they are imposed by the operator and are not really intermediate destinations from the passenger perspective. A mechanism would need to be found to distinguish between the two situations and to have two places of departure for the first and only one for the second.
- **Documentation Issues.** Whichever definition of place of departure is used, operators' accounting and ticketing systems would have to identify the place of departure for each segment of the journey. For simple one way trips the VAT liability will be more straightforward than with the current place of service VAT liability as only one VAT rate will apply to the whole trip and there will be no need to use distances travelled in each Member State to calculate and account for the VAT charge. Even for simple return trips the calculation and accounting will be simpler than under the current system. However, for multi-stop trips the administration will not be very different. Either each segment will have to be considered a separate trip. If a formula based on distance travelled in each Member State were to be used, there would be no difference to the current situation for this type of trip.

From a business passenger's perspective, reclaiming VAT on passenger travel would be simplified as there would be fewer Member States to deal with and the liability in each of them will be easier to calculate. Even for the multi sector trips the accounting for the reclaim process will be simpler. The information provided on the passenger's ticket should be sufficient to enter VAT deduction or refund claims with relative ease.



## Chapter 6 - Analytical Tools for Evaluating VAT Reform Scenarios

The two previous Chapters provide descriptions of the potential distortions of the current VAT regime on passenger transport (Chapter 4) and the VAT reform scenarios that could be adopted to address them (Chapter 5). In this Chapter we describe the analytical tools that are being used to provide inputs to and outputs from the quantified assessments of the VAT scenarios. It also provides a summary of the outputs that will be provided.

There is a large amount of data that is required to assess the magnitude of the quantifiable distortions reviewed in Chapter 4 and the alternative VAT reform scenarios described in Chapter 5. To provide this information we are using three models and two databases. One of the databases and the two models which make use of it are long established, while the other model makes some use of the same database but also has one of its own. This model and database have been derived specifically for this study. Although the three models have different origins and different objectives, they are compatible with each other in respect of their inputs, operating assumptions and format of their outputs

The analyses of the alternative VAT reform scenarios need to show how they will impact on the Member States, passengers and transport operators. For Member States they need to show how total VAT revenues might change, how the sources of that revenue for different transport modes, different transport markets and from input and output VAT

The outputs that will be produced by these three models are at different levels of aggregation, so that analyses that require different levels of information can be undertaken. Since VAT rates are determined by national governments which retain the revenues from VAT, most of the analyses will be at this level. However, the impacts of different VAT rates on passenger travel will be experienced by passengers using those services. To undertake analyses of passenger behaviour and the impacts of that behaviour on the supply of services, we use a very disaggregated model with data at the level of city pairs. Between these two extremes are the analyses of operators' reactions to different VAT reform scenarios on the inputs to passenger services and passengers responses to changes in VAT on outputs. For these analyses we use data at the market level as well as at the city pair level.

### Background assumptions

The analyses of alternative VAT reform scenarios are based on the reference scenario of the 2011 Transport White Paper "Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system".<sup>75</sup>

A comprehensive description of the White Paper reference scenario is given in the Impact Assessment document<sup>76</sup>. As the TREMOVE model was used in the Impact Assessment of the White Paper, the reference scenario assumptions are incorporated in the model and no modifications are needed. Some of the main assumptions are:

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<sup>75</sup> [http://ec.europa.eu/transport/themes/strategies/2011\\_white\\_paper\\_en.htm](http://ec.europa.eu/transport/themes/strategies/2011_white_paper_en.htm)

<sup>76</sup> [http://ec.europa.eu/transport/themes/strategies/doc/2011\\_white\\_paper/white\\_paper\\_2011\\_ia\\_full\\_en.pdf](http://ec.europa.eu/transport/themes/strategies/doc/2011_white_paper/white_paper_2011_ia_full_en.pdf), starting from p.130.

- **The GDP projections** follow the baseline scenario of the 2009 Ageing Report<sup>77</sup>. Furthermore, the reference scenario assumes a lasting effect of the economic crisis that started in 2008, leading to a permanent loss in GDP. The projected growth rate for the EU27 for 2010-2020 is around 2.2%, which is similar to the growth rates between 1990 and 2000. Beyond 2020, growth rates are projected to fall to 1.6%, mainly due to the ageing of the population.
- **Oil prices** are assumed to be relatively high, and are based on the most recent projections (at that time) of the International Energy Agency (IEA). From 59 \$/barrel in 2005, the oil price is expected to rise to 106 \$/barrel in 2030.
- **Total passenger transport activity is expected to grow** by 34% between 2005 and 2030 in the reference scenario, equivalent to an average growth of 1.2% per year. However, growth is not distributed proportionally among transport modes, with air transport activity almost doubling by 2030. The weaker growth in passenger transport compared to GDP per capita (1.4% per year) is explained by the assumption that passenger car activity in some EU-15 Member States is close to saturation levels and by national and EU policies to reduce the transport intensity of the economy. Rail competes with both road and air, but the results on its performance differ considerably between the EU-15 and the EU-13. In the EU-15, given the expected saturation of passenger car demand, a large share of potential additional demand could be covered by (in most cases high-speed) rail, at least in the Member States where investments in (high-speed) rail are foreseen. At the same time, high-speed rail attracts traffic from air transport. In the EU-13, the competitive situation of rail relative to air and road is expected to worsen, resulting in slower growth than the other two main modes.
- **Policies whose effects** are accounted for in the reference scenario include:
  - Minimum levels for biofuel content of fuels (Directives 2003/30/EC and 2009/28/EC)
  - Fuel quality Directives (98/70/EC and 2009/30/EC)
  - Eurovignette (amendment 2006/38/EC)
  - Energy taxation directive (2003/93/EC)
  - Improvement to the TEN network
  - Euro V and Euro VI for HDV, Euro 6 for LDV
  - CO<sub>2</sub> targets for cars (95g/km by 2025) and vans (135g/km by 2025)
  - Inclusion of aviation in EU ETS
  - Single European Sky
  - 3rd railway package

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<sup>77</sup> European Commission, DG Economic and Financial Affairs: 2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060). EUROPEAN ECONOMY 2|2009, [http://ec.europa.eu/economy\\_finance/publications/publication14992\\_en.pdf](http://ec.europa.eu/economy_finance/publications/publication14992_en.pdf)

## The three models

The quantitative analyses at the country level makes use of two models, TREMOVE and EDIP, that have a long history of use in transport policy research by DG MOVE, DG CLIMA and DG ENV. The models are designed specifically to simulate the effect of transport policy at the national level and use a wide range of input parameters, for which values have been collected and updated over the years. The two models have been designed to work together and complement each other.

The analyses at the most disaggregate level make use of a City Pairs Model (CPM) and database that have been developed specifically for this study. The database that provides inputs to the CPM includes details of passenger travel between a sample of 220 city pairs, including some pairs where both cities are in one country, some where each city is in different Member State, and a smaller number where one city is within the EU28 and the other is in country outside.

For the analyses of the impact of different VAT reform scenarios on transport operators at the market level, we also use the TREMOVE and EDIP models. Although the basic outputs from these models are at the national level, their inputs from the ETISplus database are at the level of zones, so by careful selection among the zones it is possible to closely replicate outputs for the four identified markets (urban, other domestic, intra-EU and extra-EU).

Table 6.1 shows which outputs from which model will be used in the assessments of alternative VAT reform scenarios.

**Table 6.1 Outputs from the three transport models**

Data required for analyses	Level of disaggregation of data				
	Trip purpose	Mode	Market	Member State	City pair
<b>Direct outputs from models</b>					
1.Number of passengers	TREMOVE	TREMOVE	TREMOVE	TREMOVE	CPM
2.Number of passengers kms	TREMOVE	TREMOVE	TREMOVE	TREMOVE	CPM
3.Number of vehicle kms	TREMOVE	TREMOVE	TREMOVE	TREMOVE	CPM
4.Amount of VAT revenue	EDIP	EDIP	TREMOVE	EDIP	CPM
5.Amount of fare revenue	EDIP	EDIP	TREMOVE	EDIP	CPM
6.Impact of changes on VAT revenue	EDIP	EDIP	TREMOVE	EDIP	
7.Impact of changes on GDP	EDIP	EDIP	EDIP	EDIP	
8.Impact of changes on vehicle emissions	TREMOVE	TREMOVE	TREMOVE	TREMOVE	
<b>With additional assumptions</b>					
3a.Vehicle kms	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	CPM
4a.VAT revenue	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	CPM
5a.Fare revenue	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	CPM
9.Number of Vehicles	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	<i>CPM</i>	CPM
10. Number of operators	EXCEL	EXCEL	EXCEL	EXCEL	CPM

### Models and Scenarios

The full set of models will be applied to six of the nine Scenarios. The remaining three Scenarios, two of which (Scenarios 5 and 6) relate to input VAT and one (Scenario 9) to an overall VAT administrative measure, are not capable of being quantified by the models that are available. For Scenarios 7 and 8 the models will only apply to the extension of Scenario 4 to extra EU travel and not to the part related to input VAT.

The CPM model will provide detail to the outcomes of the Scenarios that is not available from the REMOVE and EDIP models, but it cannot give reliable estimates of the outcomes at the national and market levels. These will be available from REMOVE and EDIP. The strengths and weaknesses of all three models need to be taken into account when assessing how well the models will provide the outputs that are expected (summarized in Table 6.1)

**Table 6.2 - Application of models to Scenarios**

Scenario		Models that will be applied		
		TREMOVE	EDIP	CPM
1	National standard rates to all modes in Domestic and Intra EU markets	X	X	X
2	National reduced rates to all modes in Domestic and Intra EU markets	X	X	X
3	Scenario 1 plus place of VAT liability changed to departure Member State	X	X	X
4	Scenario 2 plus place of VAT liability changed to departure Member State	X	X	X
5	Current VAT rates with place of VAT liability changed to departure/arrival	X	X	X
6	Input exemptions abolished (art. 148)			
7	Input exemptions extended to bus and rail (art. 148)			
8	Scenario 4 plus extended to extra EU travel	X	X	X
9	Scenario 7 but all VAT applied to pre-tax fare	X	X	X
10	One-Stop-Shop for all VAT issues			

## Models for the Quantified Assessment of Scenarios—outputs, strengths and weaknesses

### TREMOVE

The first model to be used in the assessment is TREMOVE. A general presentation of the model was given in the first interim report, Annex 1. In this section, we will briefly present the main mechanisms of the model and show the potential impact of the VAT reform scenarios described in the previous chapter using the model.

TREMOVE consists of several modules employed to assess different aspects of policies.

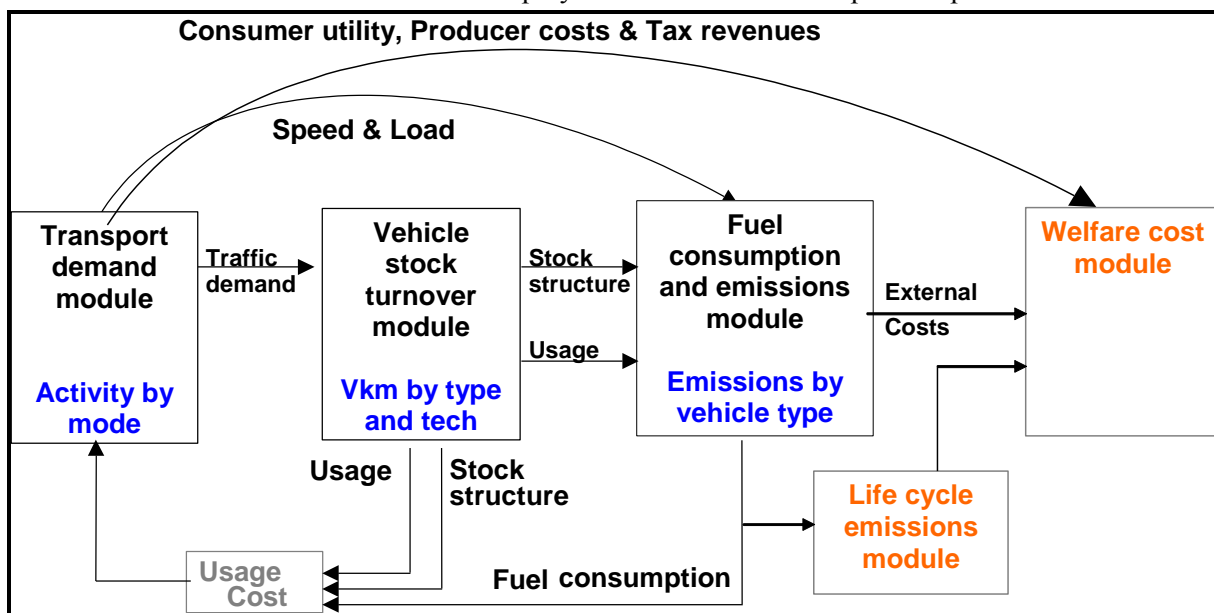


Figure 6.1 - Structure of TREMOVE

The most important effects of a change in VAT policy will be processed in the transport demand module. This module will calculate the changes in demand relative to a given baseline (the Transport White Paper reference scenario) as a result of a change in the relative costs (“Usage cost” in the figure) of different transport options (= the tree structures that were included in the first interim report), using a methodology based on a nested CES (constant elasticities of substitution) tree<sup>78</sup>.

As the relative usage costs/prices of two options change as a result of VAT policy (for example a plane and a train ticket), their relative demand will change as well. The model calculates these relative changes throughout the user choice tree to come to an aggregated outcome. The model runs and generates output for the entire period 1995-2030. It can be run for the entire EU, or for specific countries. One VAT scenario can be run at a time.

The effects of these changes in demand also work through in the other modules. If air transport demand would decrease, so would the emissions of airplanes. Emissions of trains and buses on the other hand could increase, which may or may not create a positive balance. This could for example be impacted by the energy mix of a country (e.g. how much of the electricity used by trains comes from fossil fuels, how

<sup>78</sup> For an elaborate discussion of the mechanisms of CES, we refer to the paper of Ramskov, J. and Munksgaard, J.: “Elasticities – A Theoretical Introduction” <http://balmorel.com/doc/b-elasttheory0201.pdf>

much from nuclear power, how much from renewables) and the structure of the vehicle fleet (e.g. old vs. new buses). While these are secondary effects, it is important to note there would also be an effect on the government budget (income from VAT/other taxes, expenses on subsidies...), calculated in the welfare cost module.

The VAT rate is an integral part of the calculation of the “usage costs”, and can be modified directly as a model parameter for simulations with REMOVE. Any considerations on cost pass-through will be processed exogenously in the fare level, as it will also be done in reality. Say that for example only 50% of the VAT can be passed on to consumers, the fare will be decreased in the model simulation so that net fare + VAT equal final user price, and the VAT rate follows the VAT scenario. These adaptations, all standard within the model’s setup, allow us to model the first 4 VAT scenarios (BAU, VAT standardised at national normal rates, reduced rates and zero rates). For the scenarios where the place of taxation changes to Member State of departure/arrival, a more extensive procedure will have to be followed, whereby the demand for international trips is redistributed over the countries, based on country of origin. We will build a matrix of international trips, based on the ETISplus dataset, to assess the amount of taxable trips and VAT revenue that would shift between countries, with special attention for transit countries, who are most likely to feel negative consequences from such a policy change.

The output of the model is a standardised set of pivot tables, with all the main outputs in them. Relevant outputs will be changes in passenger km, vehicle km, vehicle stock, emissions, and VAT and fare revenue (in part). These will be split by country, mode, trip distance class, and trip motive.

### **Strengths and weaknesses of REMOVE**

The main strength of the REMOVE model is that it calculates all these effects together. It takes into account almost all of the relevant choices and costs for transport users. Indeed, transport costs are calculated as generalised prices, meaning that not only the monetary cost of the trips (for the context of this study: the fare) is accounted for, but also the time cost. This allows for a differentiation in preferences depending for example on the travel motive, which has an effect on value of time.

However, the model is not without its weaknesses. Some of these are hardly relevant for this study, such as the lack of income effects (a given total transport budget is assumed). However, others are:

- The model is at the **Member State level**, which implies that it does not directly allow the identification of international trips. We have mitigated this by using supporting data from the ETISplus model, and have matched these with REMOVE data to identify cross-border trips, both intra- and extra-EU.
- Another implication of the Member State level is that **only aggregate results can be shown**. For example, while a distinction can be made for long distance air trips, there is no direct identification of trips which would compete heavily with rail transport and of those where no real alternatives exist. These effects will be covered in the City Pairs Model.
- **The elasticities are fixed**, so called “point elasticities”, which may only be applicable for limited changes in the costs parameters. While the range in which these “limited changes” are valid is not determined by economic theory, and could well vary between applications, results will not diverge too much from the expected outcome. The model projection would in such a case be a cautious estimate of the effect of a policy.

- **The substitution elasticities at the lower levels of the tree are all identical and set at 0.5.** This assumption can be defended based on the previous point and on the fact that the model works with generalised costs, instead of just monetary costs, which provides a more equal playing field (i.e. it incorporates the extra time cost “paid” by users choosing a slow mode over a fast mode). Few sources from literature exist that have reviewed elasticities with regard to generalised cost. Past work with the model however gives confidence that the values that are used provide a good reflection of real user behaviour.
- **The effects on government income only cover those aspects that are directly related to the decisions of transport users.** For a more general assessment of the evolution of government income as a result of changes to VAT policy, the EDIP model will be used.

## EDIP

The second model used in the assessment is EDIP, a Computable General Equilibrium (CGE) model that describes the interactions between many economic agents (households, firms, government, and rest of world) on the different markets (goods & services (G&S), capital, labour). The households supply labour and capital to the firms, who organize the production activities. In return they receive payments for the use of their labour and capital factors in the form of wages and capital income (interests or dividends). Furthermore, the households spend their income on G&S, which are delivered by the firms. The government is involved in transfers to and from households and firms. The transfers may refer to taxes on G&S and on production, subsidies, income taxes, social security contributions, social benefits, etc. Finally, there is also an interaction with the rest of the world.

The reference scenario is assumed to be a state of equilibrium: for the current prices there are stable flows of money and commodities between the economic agents. The households have no incentive to change their consumption pattern or the amount of labour they supply, and the firms have no incentive to alter their production process.

VAT taxes are part of the product taxes and the corporate taxes (indicated in red in Figure 6.2). They can be modified directly as a model parameter. A change in VAT policy will initiate a chain reaction of changes in the monetary and commodity flows. Firstly, as the relative prices between different G&S change, the preferences of consumers change, resulting in a different consumption pattern. As in REMOVE, this is modelled by using a methodology based on a nested CES tree. The different transport options are represented in the Transport module in the G&S market. So a change of the VAT regime for one of the transport options will change the demand for the other transport options, as well as the demand for other G&S.

This different consumption pattern has an effect on the prices and the quantity of G&S produced by the firms. In its turn this has an effect on the amount of labour and capital required in the production process. This change in demand for capital and labour has an effect on the wages and return to capital, and leads to a change in income for the households. Furthermore, a change in VAT rate will affect the government revenues and as a result also its expenditure. The government will adapt its own consumption, which will again affect quantity of G&S produced by the firms. This process above repeats itself, and continues until all markets are back in equilibrium.

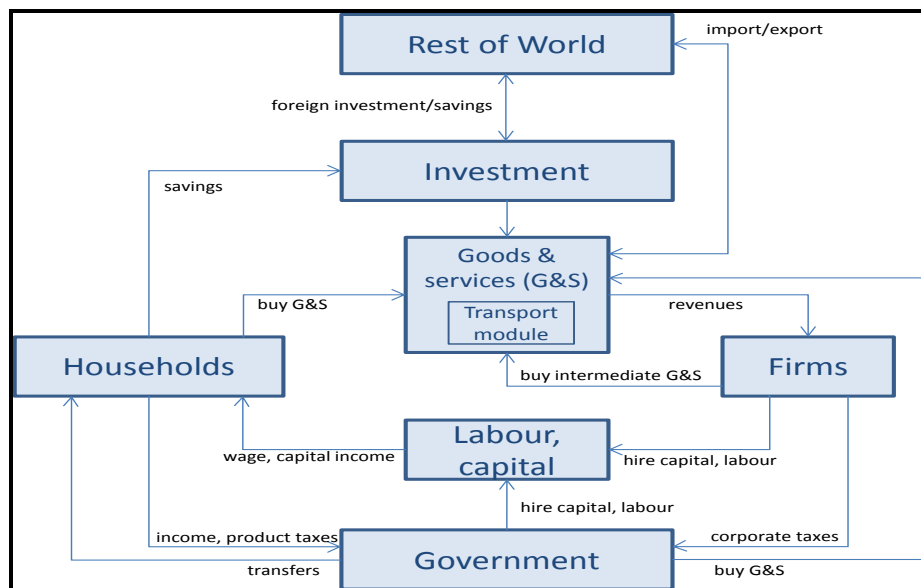


Figure 6.2: EDIP structure and effect of VAT policy

As with REMOVE, one VAT scenario can be run at a time for each Member State. The output of EDIP is a standardised set of reports in the form of pivot tables. Relevant outputs will be changes in price and expenditure for the different transport options, emissions, VAT and fare revenue (in part), GDP, and social effects. These results will be split by country.

### Strengths and weaknesses of EDIP

The main strength of the EDIP model is the fact that all income and substitution effects and the interactions between economic agents are considered. An important element in the case of a change in the VAT regime is the effect on government expenditure. In many European countries the government is an important customer in the service sectors. A decrease of government expenditure leads to less work in the sector, and this can have an effect on other sectors as well. The importance of such effects in the transport sector has been studied for example in the NEUJOBS project<sup>79</sup>.

However, EDIP also has a number of weaknesses:

- Even though a large number of different G&S have already been modelled (56 non-transport goods and 14 transport options), the number of transport options is not as disaggregated as in REMOVE. For example, no distinction is made between national, intra-EU, and extra-EU air transport, and one average VAT rate is applied. Therefore a differentiation of the VAT regime for these three options needs to be calculated externally from the model, and is used as input for EDIP. More specifically, the new average VAT rate needs to be calculated outside of the model, based on the new VAT rates and the old relative importance of each option. The effect of this new average VAT rate can then be calculated using EDIP. But possible changes in the relative importance of each option are not considered.

<sup>79</sup> [www.neujobs.eu](http://www.neujobs.eu)



- EDIP works with expenditures. All (initial) prices are normalized to one. To convert the output to physical units (e.g. pkm, vkm) we need to use conversion factors based on TREMOVE.

### **Interaction between TREMOVE and EDIP**

The EDIP model was built to support the analyses of TREMOVE by looking further into the effects of transport policy on the rest of the economy. The partial equilibrium model of TREMOVE simulates transport policies with variables and parameters that reflect the specific needs of transport policy makers. While the effects on wealth, public budgets and society as whole are somewhat covered in the model's welfare module, the results are only indicative and far from exhaustive. EDIP as a general equilibrium model was designed to work with TREMOVE results, albeit in a less detailed way, and to add the interactions with economic sectors other than transport. Also, whereas TREMOVE works with transport volumes and how they are affected by changes in policies, and thus in transport costs, EDIP models economic interactions expressed in expenditures/monetary terms, i.e. euros.

The mechanisms linking both models have been tried and tested in several projects, but have not been automated – mainly because the EDIP model is constantly being updated and refined.

In a first step, TREMOVE and EDIP will be run simultaneously for each of the VAT scenarios. Given the more detailed setup of the transport markets in TREMOVE, its results will give a more detailed reflection of the expected outcome for the transport market. This TREMOVE output, mainly with regard to transport volumes (pkm/vkm) will then be compared with EDIP output. If/when differences are found, EDIP will be recalibrated and run again to provide a closer match to the transport volume approach of TREMOVE. With the transport module of EDIP matching TREMOVE's output, the effects on other sectors will be more realistic than for an independent run.

### **Pass-through rates**

Not all changes in VAT rates will be fully passed through from the operators who are liable for the VAT to passengers. Depending on the level of competition of the market in which the operators' service is being provided the percentage of the change in VAT that is passed through to passenger fares will be different. However, there is little empirical evidence of what percentage of previous changes in VAT have been passed through.

The previous study of the VAT regime and competition in the field of passenger transport pointed out that “the extent to which any tax costs will be passed on to consumers will depend on the operators' cost structure... and the degree of competition that they face” and that “...the flatter their (average) costs structures and the more competition that exists in the market, the less scope there will be for absorption of tax costs by the operator and the higher will be the degree of pass through<sup>80</sup>”. Based on these premises, the study presented three scenarios:

- a perfectly competitive case where all the costs arising from the VAT charge are passed through;
- an imperfect competitive case where only 50% of these costs are passed through; and
- a central scenario with 60% to 90% of costs passed through, with the exact amount determined by the extent of competition on the particular route

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<sup>80</sup> KPMG, 1997, p 91

### **Box 6.1 – Modelling Pass-Through Rates**

To better understand how the imposition of new VAT rates changes market equilibrium in transport markets, we are currently developing an N-firm Cournot oligopoly model. A Cournot model is an appropriate tool to analyse equilibrium in imperfectly competitive markets when firms face capacity constraints as in transport. This tool is also general enough to allow the treatment of two extreme cases of perfect competition and pure monopoly.

The imposition of VAT alters market equilibrium. In comparative statics output distortion and resulting consumer price adjustment can be observed. This price effect can be measured in two different ways: as a tax incidence and as a tax pass-through. Tax incidence informs in what proportion consumers and producers pay the tax – compared to no tax equilibrium. The latter measure is elasticity of equilibrium price with respect to tax. We adopt the pass-through measure as it is more informative for policy making.

Our analysis in the above theoretical framework shows that the pass-through effect in market equilibrium is in general determined by three main factors: demand elasticity (demand parameters), technology (costs parameters) and the level of competition (number of firms in the market).

In our empirical analysis we will refer to all three factors to assess the pass-through magnitude for each mode in the EU28. In the next step for each mode we will assess pass-through magnitude for each member state, treating intra-mode demand elasticity and technology as fixed and assuming that those pass-through effects follow *ceteris paribus* differentiation of competition intensity in particular countries (measured by HHI levels).

Only in the third of these scenarios was there any distinction made between the extent of any pass through and the level of competition on a particular route. The other two scenarios applied the same pass through (100% or 50%) to all routes.

We are using a model based on the Lerner index of competition to see if there has been any correlation between pass through and the level of competition within each mode using a dataset that has a panel structure with 112 cross sections (country-mode combinations) and 11 time series. We expect this model to provide a more secure basis on which to estimate the pass through for country-mode combinations in the REMOVE model and for particular city pairs for use in the CTM model (Box 6.1).

For some VAT reform scenarios we need to assess a change in the place of taxation to the destination rather than the transit Member State. For the VAT reform scenarios that specify different VAT rates for domestic, intra-EU and extra-EU passengers some pre and post processing of the model inputs and outputs is needed as REMOVE does not specifically identify these markets in its outputs, but uses trip lengths for each Member State. With a knowledge of the geography and current trip patterns for each Member State, together with some additional specific data collection we can now assign shares of the REMOVE “long distance” transport category to domestic, intra-EU and extra-EU trips.

The results of the model runs will be presented in easy to use Excel pivot tables. Outputs will include several relevant variables such as pkm and number of vehicles by type of vehicle, vehicle emissions, VAT revenues, etc.

### **Analysis with EDIP model**

The EDIP model uses the output of the REMOVE model to estimate the values of several macro-economic parameters. The input VAT and economic growth rates to the EDIP model for each VAT regime will be the same as for the REMOVE model, but without the adjustment for the pass through percentages. Assumptions for the setting the base case values are already harmonised between the two

models. Given the different structure of the models, some further minor adjustments to the scenario parameters will be needed.

The EDIP model outputs are presented in a similar structure to those of the TREMOVE model, i.e. by Member State and trip length category. Similar pre-processing and post-processing of the inputs and outputs will be needed to allocate the appropriate shares of output VAT revenue to the three transport markets that are not distinguished in the trip length results.<sup>81</sup>

Outputs of the EDIP model will provide, for each Member State and the EU28 as a whole, information on the effects of different VAT reform scenarios on total GDP and the contribution of the transport sector, and the change in VAT revenue for Member States. The calibration results of the model for the base case were very close to the actual data for the key macro-economic parameters.

Our first use of the combination of these two models will be to assess the impacts of distortions 1c and 1d (Chapter 4). For these assessments we will compare the outcomes of the current VAT system for passenger transport with a reference set of VAT rates of zero for all passenger transport within and between the Member States. This set of VAT rates is only used to provide a reference point for the assessment of these two distortions and has no policy implications.

## **City Pairs Model (CPM)**

### *Uses of the CPM*

The objective of the CPM is to provide some practical illustrations of how the alternative VAT reform scenarios will change the VAT rates that passengers will be faced with and to gain some insight into how these changes might influence their behaviour. The CPM will also provide indications of how operators' revenues will change with alternative VAT reform scenarios. So far the model does not include an operators' cost function so it is not possible to assess changes in profitability.

The model database that supports the model also includes data about the services provided between each city pair, to support the other objective of the model which is to provide a basis on which an assessment can be made about how competition between modes and between operators within modes might be influenced by alternative VAT reform scenarios. There are no directly applicable models of operator behaviour that can be applied to passenger transport and that would be sensitive to the relatively changes in fares that would result from the alternative VAT reform scenarios (remembering that the pass through of VAT changes to fares is less than 100%). So the assessment of alternative VAT reform scenarios on how operators will respond will be more subjective than that of passenger responses, where the concepts of fare elasticity and cross elasticity indicate a simpler and more direct impact.

The CPM is a valuable resource to know how the VAT on passenger travel will change with alternative VAT rates on passenger fares (it is less useful for assessing the impact at this level of impacts of changes on input VAT rules). By including the distance within each Member State for each city pair, and applying the particular VAT rates for intra-EU passengers of each Member State, it is possible to calculate the VAT liability in the fares for each mode.

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<sup>81</sup> In both models urban the number of urban trips or urban VAT revenues can be closely approximated by using the shorter trip length category (up to 50kms)

While not of its objectives, the CPM will be used to provide some verification of the results of the TREMOVE model. Using the ratio of the populations of cities in the city pair model to the total population of Member States, it will be possible to approximate the changes in VAT revenue from the city pairs to the national totals.

### ***Structure of the model***

The CPM is in five parts, each with a specific set of data for each of the 220 city pairs (see below for a discussion on the choice of cities for the model).

*The first part* provides basic travel data – the distances, travel times and fares between each city pair for each feasible mode. Some city pairs are too close to each other for air to be a viable mode, and for others the travel times by train and bus are too long for them to be viable modes other than for a small segment of non-business passengers. The feasible modes are defined as those for which there are identified trips between the relevant city pairs in the ETISplus data.

*The second part* includes data on the quantity of services provided by each mode. This is based on the number of services provided in a specific week in July 2013 derived from various web sites that offer booking services; for rail they are based on the print edition of *Thomas Cook's European Railway Timetable*, but taking the same week in July 2013. This part of the model is used for a different purpose than the other parts, i.e. to estimate the intermodal and intramodal competition. For the estimate of intramodal competition we need estimates of the capacity of the service provided by each operator in each mode. This data is proving difficult and very time consuming to collect. It might not be obtainable for bus operators for many city pairs where there are no published timetables or on-line booking services.

*The third part* includes the distances travelled in each Member State between each city pair for each mode. It also includes the VAT rates for each travel market (domestic, intra-EU and extra-EU) for each Member State. By multiplying the share of distance in each Member State by the appropriate VAT rate, it is possible to derive the VAT charged for each mode for each Member State and the VAT-free fare for each city pair.

*The fourth part* includes the number of passenger trips for business and non-business travel purposes for each transport mode. This data is extracted from the ETISplus database.

*The fifth part* of the model is where the data from the other parts are brought together to provide intermediate and final outputs.

This part starts by multiplying the fares (Part 1) by the VAT rates (Part 3) to give the actual VAT applicable to travel by each feasible mode between each city pair. These VAT components of fares are then multiplied by the number of trips between each city pair (Part 4) to provide a measure of the VAT revenue. This revenue is then allocated to each of the countries based on the share of the trip distance (Part 3). By summing the VAT revenue for each country from each city pair, we then have an index of the VAT revenue. By comparing the number of trips from each city pair in each country with the total trips for that market indicated by the ETIS data, we have a multiplier between the VAT revenue from the city pairs model and the VAT revenue for that country from that market. By applying the multiplier for each market type to the city pairs in that market and then summing over all markets, we have an estimate of the total VAT from passenger transport attributable to each Member State.

### ***Applications of the model***

The CPM is used to estimate the impact of each VAT scenario. Different VAT reform scenarios, will result in different VAT rates for each combination of city pair and transport mode, different fares, different total numbers of passengers and distributions between modes, and finally different total fares paid by passengers, VAT revenues to each Member State and to transport operators.

The first stage of estimating these impacts is to assess the change in VAT for each mode and city pair combination, starting from the VAT-free fare for each mode (Part 3). The relevant new VAT rates for each mode and country and market combination are entered into the model (also Part 3). Initial estimates are made of the new VAT for each city pair and mode combination by applying the new inter-city VAT rate to the VAT-free fare, and then adding the two components together. The resulting initial estimate of the new fare is then compared with the current fare (from Part 1) and the “pass through percentage” applied to the difference. The resulting revised estimate of the VAT component of the fare is added back to the VAT-free fare (from the original Part 3) to give the final estimate of the new VAT inclusive fare for each city pair and mode combination under the particular VAT scenario.

These new fares can then applied to the TREMOVE model (or just the total and cross mode elasticities are used for more approximate but more easily obtained results) and estimates derived of the changes of demand for both trip purposes. The new data from TREMOVE (or the elasticity model) is entered into CPM (Part 4). Part 5 of the model then uses the new combinations of outputs from Parts 3 and 4 of the model to provide estimates of the new outputs for each VAT scenario.

### ***Outputs of the CPM***

For each alternative VAT scenario there will be a different set of outputs and results for the five parts of the model. The model outputs can be used to estimate the quantifiable impacts of each of the four alternative VAT reform scenarios. The results will be available for each city pair and for the sum of all city pairs that originate in the same Member State. By applying the multiplier (Part 4) the results that will be available for each Member State for each of four VAT alternatives are estimates of:

- the total number of passenger trips by the two trip purposes;
- the total revenue paid by passengers;
- the total VAT revenue to each Member State;
- the total fare revenue available to operators.

These results will be available for each of three travel markets (domestic, inter-EU and extra-EU)<sup>82</sup>.

The scaling up of the city pairs model results to the Member State level will replicate and act as an approximate check on the analyses made by the TREMOVE and EDIP models. By providing supporting data at the city pair level it will be possible to give multiple examples of how the different VAT reform scenarios would impact on specific types of passengers – by different types of combinations of city pairs, for different travel purposes and by different transport modes.

### **Strengths and weaknesses of the CPM**

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<sup>82</sup> There are no city pairs that are exclusive to one urban conurbation

The main strengths of the model are related to its ability to assess the impact of alternative VAT reform scenarios at a very disaggregate level. Although it is based on city to city data, the model could be used to assess individual trips. It is also relatively easy to add further city pairs or change those already included in the model. The CPM provides a wide selection of outputs, both in relation to passenger demand, and with some additional assumptions, on supply of passenger services.

Its main weaknesses are related to the difficulty of scaling up city pair data to the national level. The city pairs do not represent the same share of passenger trips in all markets or for all Member States, so any scaling up would need to apply different scale factors for each market and Member State combination.

The model relies on simple elasticities to estimate the impact of different VAT rates (adjusted for the relevant pass through rate), whereas the REMOVE model includes cross elasticities and so can better estimate the impact on the modal share of trips. It would be possible to have a loop between the CPM and REMOVE so that the VAT changes could feed into the demand module of REMOVE and the resulting percentages shares of passengers between modes could feed back into the CPM model. While this would address this weakness of the CPM model, the time taken to implement this loop appears at present to be prohibitive.

As with the REMOVE/EDIP model combination, the first application of the CPM will be to provide some disaggregate assessments of the impacts of distortions 1c and 1d (Chapter 4).

### ***Selection of city pairs***

The city pairs are in three groups, those where both cities are in the same Member State (to represent Other Domestic passengers), those where each city is in a different Member State (to represent intra-EU passengers) and those where only one city pair is in a Member State (to represent extra-EU passengers).

#### *Other domestic city pairs*<sup>83</sup>

In selecting the sample of domestic city pairs we used three criteria. First, we selected 15 of the 28 Member States based on their total urban population. Second, for these countries we selected the capital city and the three other most populous cities (based on census data for 2010 to 2012). Third, from these four cities we selected six city pairs that were at least 40km apart, at least one city pair that included the capital city, and at least one north south and one east west route. For two of the Member States there were not six city pairs that met these criteria, so for these a lesser number of city pairs was included in the sample.

#### *Intra EU city pairs*

The selection of city pairs for the analysis of intra-EU passengers was based on rather different principles to those for the other domestic routes. With about 104 cities within the EU with a population of more than 300,000, there are about 10,700 possible city pairs. The largest sample that could give any resemblance of statistical significance to the results is 1%, i.e. about 100 city pairs. If we had used a random selection of city pairs we would have included too many for which there are few options of transport mode available and we would not have covered a very high proportion of the population that make intra-EU trips. Instead of taking a random sample, we used a few selection criteria:

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<sup>83</sup> Other domestic is used to emphasize that there is another category of domestic passenger travel (urban) that is not included in the CPM

We started with the capital cities of the fifteen Member States that had a city included in the sample of cities, giving a potential of 210 city pairs. From these we used a stratified sample to include some city pairs:

- with four passenger transport modes (air, rail, bus, ferry) available;
- that are North –South and East West;
- that are of long, medium and short distances
- includes some large, medium and small population cities, and
- that cross transit countries

The routes between capital cities did not provide enough examples of small cities or of the four transport mode routes, so a further seven routes were added to cover these criteria.

Twelve extra city pairs were added where the second city was just across the border and there was another city in the same country as the first city that was also close to the border. The first city was at least 250km from the border. These city pairs are to represent the situation where a passenger might cross the border to gain the advantage of a VAT free intra-EU trip and then travel back the real destination (the city in the first country that is close to the border). There was a belief that this could represent a significant distortion by giving passengers an incentive to convert a domestic trip into an intra-EU trip. In practice we did not find any instances where this might occur (including the examples that were given to as being city pairs where it did occur). However, the city pairs were retained in the database and model. The final sample included 119 intra-EU city pairs.

#### Extra-EU city pairs

No attempt was made to produce a statistical sample of the many extra-EU city pairs. A sample of 12 was chosen based on satisfying the criteria of including:

- At least one city in an island state
- At least one city in each country with a land border with the EU28
- At least three city pairs where the cities are not in bordering countries
- At least one city in another continent

The smallest sample we could find that satisfied all these criteria was 11 city pairs.

The final sample comprised 220 city pairs with the following distances (table 6.3). The full list of city pairs is provided as Annex 3:

**Table 6.3 City pairs distance statistics**

	<b>Domestic</b>	<b>Intra-EU</b>	<b>Extra-EU</b>	<b>Total</b>
<b>Number of Member States in the sample</b>	15	22	13	22
<b>Number of city pairs</b>	89	119	13	220
<b>Average distance between cities (km)</b>	379	1,493	1,005	1,020
<b>Maximum distance between cities (km)</b>	1,086	4,247	2,540	4,247
<b>Minimum distance between cities(km)</b>	30	24	134	24
<b>Standard deviation of distance btw cities (km)</b>	211	222	718	973

The CPM produces some of the same outputs as the TREMOVE and EDIP models but at a much lower level of aggregation. However, scaling the disaggregate results to the Member State and market levels involves more approximations than the TREMOVE/EDIP model combination.

### Current status of the model

Most of the data for the city pairs model has been obtained, and is in the course of being checked (Table 6.4) There are about 20 data points for each of 220 pairs, and many instances of the same data points but for different city pairs has been obtained from different sources so their compatibility needs careful verification. This applies particularly to that for Part 2 of the model on the services available and the numbers of operators.

**Table 6.4 Current state of inputs to the CPM**

Model Part	Parameter	Air	Rail	Bus
<b>Part 1</b>	Distance	X	X	X
	Time	X	X	X
	Fare	X	X	X
<b>Part 2</b>	Frequency	X	X	X
	Number of operators	X	X	x
	Operator shares	x	x	x
<b>Part 3</b>	Distance in each MS	X	X	X
	VAT rates	X	X	X
	Average VAT rate	X	X	X
	VAT free fare	X	X	X
	VAT pass through rates	x	x	x
<b>Part 4</b>	Number of trips	x	X	x

*X indicates that the data collection is complete  
x indicates that data collection is still on-going*

### Comment on the data that is still incomplete

The Part 1 data is complete but some specific values are still being checked

The number of inter-city rail operators is changing rapidly following the de-regulation of 2011. New operators are entering the market, but some do not survive for long or are taken over by other operators on the same route, perhaps maintaining the frequency of service and inter-modal competition but reducing the intra-mode competition. The main source for railway services information, the European Rail Timetable, designates the operating company for international but not domestic services (the vast majority of international train services are still jointly operated by the relevant national railway operators. Where there are exceptions, they are mostly (at least for the present) operated under concessions to a single operator, such as Eurostar). Data on the number of operators and the services they offer has to be obtained from their own websites.

Complete data on the number of bus operators is still being sought for many city pairs.



The number of passenger trips for most city pairs has been obtained from the ETIS model. However, some cities in the city pairs are only small parts of the NUTS3 zones used in the model, and we are still estimating the proportion of the trips from those zones that are attributable to our cities.

## Annex 1 - Relevant EU VAT Legislation

This Annex (i) reproduces the section on Output EU VAT legislation from the Interim Report, and (ii) completes it with a review of laws and regulations concerning Input VAT.

### Legal Framework

The basis of the EU VAT legislation is Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax (VAT Directive (VATD)). It replaced and consolidated Directive 77/388/EEC (Sixth Directive) as well as Directive 67/227/EEG as in force at that time.

Further relevant legislation includes Directive 2008/9/EC (VAT Refund – EU business), Directive 86/560/EEC (VAT Refund – non-EU business), Directive 2009/132/EC (VAT-free importation), Directive 2006/79/EC (private consignments), Directive 2007/74/EC (travellers' allowances) and Council Regulation No 282/2011 (VAT Implementing Regulation). Further information is available on the websites of the European Commission<sup>84</sup>.

### Provisions regarding passenger transport (Output VAT)

The transport of passengers is generally taxable as a service (Art. 24 VAT Directive). The taxable amount results from Art. 73 as the total consideration received in return for providing the transport service<sup>85</sup>. In most cases the service provider as the taxable person<sup>86</sup> is obliged to pay the VAT due to the tax authorities. However, under certain conditions this obligation can be passed to the recipient (reverse charge).

### Place of Supply

The place of supply of passenger transport is defined in Art. 48 VAT Directive, which says: *“The place of supply of passenger transport shall be the place where the transport takes place, proportionate to the distances covered.”*<sup>87</sup> In other words, passenger transport services are taxable where they are performed, which is an application of the destination principle. Concerning the place of supply, the rule is the same for business-to-business and business-to-consumer services as well as for intra-EU and domestic services<sup>88</sup>.

<sup>84</sup> [http://ec.europa.eu/taxation\\_customs/taxation/vat/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/vat/index_en.htm).

<sup>85</sup> *“In respect of the supply of goods or services, other than as referred to in Articles 74 to 77, the taxable amount shall include everything which constitutes consideration obtained or to be obtained by the supplier, in return for the supply, from the customer or a third party, including subsidies directly linked to the price of the supply.”* (Art. 73 EC VAT Directive)

<sup>86</sup> Passenger transport services are also subject to VAT, if they are provided by government authorities or other bodies governed by public law (Art. 13 VAT Directive in conjunction with Annex I).

<sup>87</sup> The question, if the allocation in case of cross-border passenger transport services may also include other factors, e.g. the duration of the stays in the various countries, was raised in case C-36/99. The ECJ decided, that in case of the supply of cross-frontier passenger transport on an all-inclusive basis, the total consideration must be allocated on a pro rata basis based on the distances covered in each Member State, other factors must not be considered (ECJ, 6 November 1997, Case C-116/96, Reisebüro Binder GmbH vs. Finanzamt Stuttgart-Körperschaften, [1998], I-01889).

<sup>88</sup> This is in contrast to the place-of-supply-rules for the transport of goods, where a distinction is made between B2B and B2C and between intra-EU and domestic transport (Lang, Melz & Kristoffersson (2009), p. 1097).

Passenger transport services provided outside the borders of the European Union are usually outside of the scope of the EC VAT Directive<sup>89</sup>, although the Member States may extend the scope of their tax legislation beyond their normal territorial borders (including territorial waters), if purely internal services are affected and no conflicts of jurisdiction regarding taxation arise with other States<sup>90</sup>.

### **Rates Applicable**

- Basic Rules (Title VIII, Chapter 2 VATD)

Supplies of goods and services are normally subject to a standard rate, which can be set individually by the Member States. However, Art. 97 of the VAT Directive states, that the standard rate may not be lower than 15 %.

The Member States are also allowed to apply a reduced rate to the “transport of passengers and their accompanying luggage” (Art. 98 VAT Directive in conjunction with Annex III, Item 5). This reduced rate must not be lower than 5 % and there may only be two different reduced rates in each Member State (Art. 98 and 99 VAT Directive).

There is no obligation to apply the same VAT rate to different modes of transport. According to ECJ Case C-36/99 (European Court of Justice, *Idéal Tourisme SA vs. Belgian State*), diverging VAT rates on different modes of transport do not conflict with the Community’s principle of equal treatment<sup>91</sup>.

A general exemption, without input VAT credit, as an activity in the public interest is stated by the VAT Directive for the “supply of transport services for sick or injured persons in vehicles specially designed for the purpose, by duly authorised bodies” (Art. 132, Item 1, Letter p VATD).

In summary, according to the general rules, the transport of passengers may be taxed at either the standard rate or (one of) the reduced rate(s), unless it is a special medical service. Nevertheless, there are a number of derogations, which allow Member States to apply other rules at present.

- Special Provisions (Title VIII, Chapter 4 VATD)

Art. 110 VATD lays down a transitional arrangement, which allows Member States to continue to apply the zero rate or reduced rates lower than permitted by Article 99 under certain conditions and until the adoption of definitive EU-wide arrangements (see Art. 109 and 402): The conditions state that these measures must have been adopted “for clearly defined social reasons and for the benefit of the final consumer” (Art. 109 and 402 VAT Directive) and they must have been in place on 1<sup>st</sup> January 1991.

In addition Art. 114 allows also Member States, “which, on 1<sup>st</sup> January 1993, were obliged to increase their standard rate in force at 1<sup>st</sup> January 1991 by more than 2 %” (Art. 114 VATD), to apply a reduced rate lower than 5 % to the goods and services listed in Annex III, which includes passenger transport (Item 5). However, in contrast to Art. 110, this article does not permit zero rating (Art. 114, Par. 2). Like Art. 110, these lower rates may be used until the adoption of a definitive EU-wide regime. Furthermore Greece is allowed to apply lower rates - up to 30 % lower than the corresponding rates in the mainland -

<sup>89</sup> See e.g. ECJ, 13 March 1990, Case C-30/89, *Commission of the European Communities vs. French Republic*, ECR 1990, Page I-00691.

<sup>90</sup> See ECJ, 23 January 1986, *Trans Tirreno Express SpA vs. Ufficio provinciale IVA*, ECR 1986, Page I-00231.

<sup>91</sup> See ECJ, 13 July 2000, Case C-36/99, *Idéal Tourisme SA vs. Belgian State*, [2000], I – 6060.

on certain Aegean Islands (Art. 120). And Portugal may treat sea and air transport between the islands of the Azores and Madeira and between those islands and the mainland as international transport (Art. 149).

- Derogations (Title XIII VATD)

Title XIII of the VAT Directive, which contains derogations for individual Member States, also includes some rules, which apply to passenger transport.

Article 371 in conjunction with Annex X (Part B, Item 10) allows Member States, which joined the EC before 1978<sup>92</sup>, to continue to exempt the transport of passengers<sup>93</sup>, provided that this exemption was in place on January 1<sup>st</sup> 1978. This also holds for the transport of accompanying goods (e.g. luggage or motor vehicles) and for the supply of services relating to the passenger transport.

Similar rules are in place for a number of Member States, which joined the Community later and have negotiated a respective derogation upon accession. These provisions can be found in the Articles 375ff (in conjunction with Annex X, Part B, Item 10). Specifically, passenger transport may be exempt based on such derogation in the following Member States, as far as in place at the time of accession, to the following extent:

**Table A1.1: Derogations in VAT Directive to passenger transport for Member States**

Member State	Article	Exemption
Austria	378	international passenger transport carried out by air, sea or inland waterway, with the exception of passenger transport operations on Lake Constance <sup>94</sup> ; input VAT deduction is possible
Bulgaria	390a	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>95</sup>
Croatia	390c	the international transport of passengers, as referred to in Annex X, Part B, Item 10 <sup>96</sup>
Cyprus	383	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Czech Republic	381	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>

<sup>92</sup> I.e. Belgium, Italy, Luxembourg, France, Netherlands, Germany, Denmark, Ireland and the United Kingdom.

<sup>93</sup> The exact coverage is “*the transport of passengers and, in so far as the transport of the passengers is exempt, the transport of goods accompanying them, such as luggage or motor vehicles, or the supply of services relating to the transport of passengers*”.

<sup>94</sup> Linked to the restriction that this exemption is also in place in any of the Member States, which were members of the Community on 31 December 1994.

<sup>95</sup> Linked to the restriction that this exemption is also in place in any of the Member States, which were members of the Community on 31 December 2006.

<sup>96</sup> Liked to the restriction: “*for as long as the same exemption is applied in any of the Member States which were members of the Union before the accession of Croatia*”

Estonia	382	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Finland	379	passenger transport services, the transport of accompanying goods and the supply of services relating to the passenger transport <sup>94</sup>
Hungary	386	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Latvia	384	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Lithuania	385	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Malta	387	domestic and international passenger transport as well as domestic inter-island sea passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Poland	388	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Portugal	377	passenger transport services, the transport of accompanying goods and the supply of services relating to the passenger transport as far as exempt on 1 January 1989
Romania	390b	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>95</sup>
Slovakia	390	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Slovenia	389	international passenger transport services as referred to in Annex 10, Part B, Item 10 as far as exempt at time of accession <sup>97</sup>
Sweden	380	passenger transport services, the transport of accompanying goods and the supply of services relating to the passenger transport as far as exempt at time of accession <sup>94</sup>

Source: Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax (VAT Directive);

Adaptation and Demonstration: IHS, 2013.

It is unclear in how far the exemptions of Art. 371-390c permit zero rating. Only the Austrian and the Maltese derogations (Art. 378 and Art. 387c) explicitly include the deduction of input VAT whereas the others, strictly speaking, only state a 'pure exemption'. KPMG<sup>98</sup> concludes that input VAT deduction is

<sup>97</sup> Linked to the restriction that this exemption is also in place in any of the Member States, which were members of the Community on 30 April 2004.

<sup>98</sup> KPMG (1997), p. 67.

generally not allowed whereas one might also argue that input VAT deduction is still possible if in place at the time of accession (“*as far as exempt at time of accession*”)<sup>99</sup>.

Further derogations are based on special authorization by the Council of the European Union (see Art. 394-396 VATD). Examples include the treatment of short internal transport journeys as international transport, and vice versa, and the flat-rate calculation of the taxable amount for foreign providers of passenger transport services in Germany and special VAT treatment of journeys through the tunnels of Mont Blanc and Fréjus in Italy and France<sup>100</sup>.

However, this system of derogations is also seen as a transitional system. In a final regime passenger transport shall be taxed in the country of departure for the whole intra-EU part of the journey (Art. 393).

### *Extra-EU Passenger Transport*

In case of international passenger transport services, only the domestic leg is taxed in each Member State. Foreign legs, i.e. passenger transport services provided outside the borders of the respective Member State are taxable in the Member State (or third country) where the transport takes place (see chapter (a)). Because Art. 169, letter a, of the VAT Directive permits the deduction of input VAT incurred on foreign legs, passenger transport services outside the European Union are effectively zero-rated as far as EU VAT is concerned. Since a majority of the Member States also exempts the domestic legs – some of them only for certain modes of transport though – under the derogations described above, international passenger transport is often completely zero-rated.

### *Supply of goods and services on board ships, aircraft or trains*<sup>101</sup>

Art. 37 and 57 of the VATD provide particular rules for on-board supplies. The place of supply of goods and catering and restaurant services supplied on-board ships, aircraft or trains “*during the section of a passenger transport operation effected within the Community*” is deemed to be at the point of departure of the passenger transport operation (Art. 37 VATD). The section of a passenger transport operation effected within the Community (Community section) is defined as “*the section of the operation effected, without a stopover*<sup>102</sup> *outside the Community, between the point of departure and the point of arrival of the passenger transport operation*” (Art. 37 VATD). The point of departure is the first scheduled stop within the community, where passengers can board; the point of arrival is the last scheduled stop within the community, where people, who embarked in the Community, can get out. In case of interim stopovers in a third country, the journey is split into two or more community sections.

<sup>99</sup> This is e.g. the position of the British HM Revenue & Customs (see <http://www.hmrc.gov.uk/manuals/vtransmanual/VTRANS020200.htm>).

<sup>100</sup> A list of relevant derogations currently in place can be found on [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/vat/key\\_documents/table\\_derogations/vat\\_index\\_derogations\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/key_documents/table_derogations/vat_index_derogations_en.pdf)

<sup>101</sup> For further information see EC Report COM(2012) 605 final available on [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/vat/key\\_documents/reports\\_published/com\\_2012\\_605\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/key_documents/reports_published/com_2012_605_en.pdf) and the “*Expert study on the issues arising from taxing the supply of goods and the supply of services, including restaurant and catering services, for consumption on board means of transport*” by PWC available on <https://circabc.europa.eu/w/browse/59941dff-4fd3-47bb-8ee9-c502cab5b7b6>.

<sup>102</sup> A stop, which doesn’t have to be a scheduled point of passenger (dis)embarkation (cf. COM(2012) 605 final, p. 4 or European Court of Justice, Case C-58/04, Antje Köhler vs. Finanzamt Düsseldorf-Nord, I-8233).

These rules apply to all goods and restaurant and catering services supplied on board ships, aircraft and trains during the Community section. Consequently,

- for other services supplied during the Community section,
- for any goods and services supplied on board within the Community, but outside the Community section<sup>103</sup> and
- for any goods and services supplied on board other means of transport (e.g. buses)

the standard rules of Art. 31 VATD for goods (“[...] *the place of supply shall be deemed to be the place where the goods are located at the time when the supply takes place*”), Art. 55 VATD for restaurant and catering services (“*The place of supply [...] shall be the place where the services are physically carried out*”) and Art. 44 and 45 VATD for other services apply.

Regarding the relevant tax rate, Art. 37 (3) VATD states that Member states may exempt, with input VAT deduction, the supply of goods for consumption supplied on board ships, trains and aircraft during the Community section. Goods supplied outside the Community section, supplied on board other means of transport like buses or not intended for consumption on board are not covered by this exemption allowance.

Services relating to the transport of passengers (like restaurant and catering services) might be exempt in a number of Member states, in so far as the transport of the passengers is exempt, according to Art. 371 in conjunction with Annex X, Part B (10) VAT Directive or Art. 375 to 390b VAT Directive. For other services supplied on board, e.g. hairdressing services during cruises, an exemption is not permitted.

However, a detailed analysis of the European VAT reform scenarios regarding supplies of goods and services on board means of transport is provided in EC Report COM(2012) 605<sup>104</sup> and therefore will not be further addressed in this report.

## Provisions with respect to input VAT

The VAT Directive also provides a number of rules especially relevant for inputs to passenger transport services. In the following we have a look at the rules applicable to the acquisition of means of transport and related expenses (repair, modification, maintenance, fuel aso.).

### *Exemptions related to international transport*

Art. 148 of the VAT Directive provide specific exemptions for the supply of goods and services related to international transport by air and sea. It covers – broadly speaking – the supply of certain seagoing vessels and aircraft used by airlines operating chiefly on international routes, the supply of goods for their fuelling and provisioning, and a number of services directly connected thereto.

**Figure 0-1: Art. 148 of Council Directive 2006/112/EC**

#### **Council Directive 2006/112/EC Article 148:**

*“Member States shall exempt the following transactions:*

*(a) the supply of goods for the fuelling and provisioning of vessels used for navigation on the high seas and carrying passengers for reward or used for the purpose of commercial, industrial or fishing activities, or for rescue or*

<sup>103</sup> I.e. within the borders of the EC, but before the point of departure or after the point of arrival.

<sup>104</sup> See footnote 101.

*assistance at sea, or for inshore fishing, with the exception, in the case of vessels used for inshore fishing, of ships' provisions;*

*(b) the supply of goods for the fuelling and provisioning of fighting ships, falling within the combined nomenclature (CN) code 8906 10 00 leaving their territory and bound for ports or anchorages outside the Member State concerned;\*

*(c) the supply, modification, repair, maintenance, chartering and hiring of the vessels referred to in point (a), and the supply, hiring, repair and maintenance of equipment, including fishing equipment, incorporated or used therein;*

*(d) the supply of services other than those referred to in point (c), to meet the direct needs of the vessels referred to in point (a) or of their cargoes;*

*(e) the supply of goods for the fuelling and provisioning of aircraft used by airlines operating for reward chiefly on international routes;*

*(f) the supply, modification, repair, maintenance, chartering and hiring of the aircraft referred to in point (e), and the supply, hiring, repair and maintenance of equipment incorporated or used therein;*

*(g) the supply of services, other than those referred to in point (f), to meet the direct needs of the aircraft referred to in point (e) or of their cargoes.”*

Since Art. 169 (b) permits the deduction of input VAT with respect to the supply of those goods and services, they are effectively zero-rated. In detail, the provisions are as follows:

#### *Maritime shipping*

The following supplies are zero-rated according to Art. 148 (a)-(d) of the VAT Directive:

<b>Supply of qualifying vessels:</b>	<i>Art. 148 (a) and (c)</i>
<p>The supply of qualifying vessels is zero-rated. These are vessels</p> <ul style="list-style-type: none"> <li>• used for navigation on the high seas and carrying passengers for reward or used for the purpose of commercial, industrial or fishing activities, or</li> <li>• for rescue or assistance at sea, or</li> <li>• for inshore fishing.</li> </ul> <p>In the first case it is conditional that the vessel is actually used (or planned to be used) on the high seas, it is not sufficient that the vessel is designed in a way that is could potentially be used for ocean shipping<sup>105</sup>. Not covered are pleasure boats used e.g. by the lessee for leisure activities<sup>106</sup>.</p>	
<b>Services relating to qualifying vessels:</b>	<i>Art. 148 (c) and (d)</i>
<p>Certain services relating to such qualifying vessels are also zero-rated, i.e.</p> <ul style="list-style-type: none"> <li>• chartering and hiring,</li> <li>• modification, repair and maintenance, and</li> <li>• the supply of other services<sup>107</sup> to meet the direct needs of such vessels or of their cargoes.</li> </ul>	

<sup>105</sup> ECJ, 21 March 2013, Case C-197/12, Commission of the European Communities vs. French Republic.

<sup>106</sup> ECJ, 22 December 2010, Case C-116/10, État du Grand-Duché de Luxembourg and Administration de l'enregistrement et des domaines vs. Pierre Feltgen (in his capacity as administrator in the bankruptcy of Bacino Charter Company SA) and Bacino Charter Company SA.



Chartering in this respect comprises full charter as well as partial charter <sup>108</sup> .	
<b>Supply of equipment and related services:</b>	<i>Art. 148 (c)</i>
The supply of equipment, including fishing equipment, incorporated or used in qualifying vessels, as well as the hiring, repair and maintenance of such equipment is zero-rated according to Art. 148 (c).	
<b>Fuelling and provisioning:</b>	<i>Art. 148 (a)</i>
Finally the supply of goods for the fuelling and provisioning of qualifying vessels as above, with the exception of the ships' provisions for ships for inshore fishing, is zero-rated (Art. 148 (a)). According to C-185/89 <sup>109</sup> , in order to profit from zero-rating, goods for the fuelling and provisioning must be supplied directly to the operator of the vessel, supplies at previous stages are not covered, one of the reasons being that it would be too difficult for the Member States to verify the final use of the goods. However it is not conditional that the goods are loaded directly on board the vessel at the time of supply to the operator, they can also be stored ashore by him for later use. <sup>110</sup>	

Most of these provisions are binding for the Member States, only the supply of goods for the fuelling and provisioning can be restricted by member states until the adoption of definitive arrangements (Art. 150).

*Extra-EU Aviation:*

Similar exemptions are in place for international aviation, which are dealt with in Art. 148 (e)-(f). The following supplies are covered:

<b>Supply of qualifying aircraft:</b>	<i>Art. 148 (e) and (f)</i>
The supply of qualifying aircraft, i.e. aircraft used by airlines operating for reward chiefly on international routes, is zero-rated based on Art. 148 (e) and (f) of the VAT Directive.	
In contrast to the exemptions for vessels, which depend on the use of the individual vessels, here the properties of the airline, not the individual aircraft, are decisive.	
<i>'Operating for reward'</i> suggests that the planes must be used for some kind of commercial activities.	
<i>'Chiefly on international routes'</i> signifies that international services must outweigh domestic services. The VAT Directive does not give detailed information, how this assessment must be conducted, but C-382/02 <sup>111</sup> states that " <i>all information which indicates the relative importance of the type of operations</i>	

<sup>107</sup> Only if supplied directly to the shipowner (ECJ, 14 September 2006, Joined Cases C-181/04 to C-183/04, *Elmeka NE vs. Ipourgos Ikononikon*, ECR 2006, Page I-8167).

<sup>108</sup> ECJ, 18 October 2007, C-97/06, *Navicon SA vs. Administración del Estado*.

<sup>109</sup> ECJ, 26 June 1990, C-185/89, *Staatssecretaris van Financiën vs. Velker International Oil Company Ltd NV*, ECR 1990, Page I-02561.

<sup>110</sup> Art. 148 (b) furthermore zero-rates the provisioning of certain fighting ships. The supply of such fighting ships and related services is not covered by the exemption according to Art. 148, but it can be based on Art. 371ff and Annex X, Part B, Item 12, which is applied e.g. in Greece and Spain.

<sup>111</sup> ECJ, 16 September 2004, Case C-382/02, *Cimber Air A/S vs. Skatteministeriet*, ECR 1990, Page I-8395.

<i>concerned, in particular turnover</i> ”, may be taken into account. In practice the Member States apply different rules with respect to the assessment, if international operations prevail.	
Although the term ‘ <i>routes</i> ’ might suggest that the exemption only applies to regular flights on specified routes, the European Court of Justice confirmed that also charter flights, even if they mainly serve the demands from undertakings and private persons, fulfil the requirements, if the predominance of international operations is given <sup>112</sup> . Finally the supply of such qualifying aircraft must not be necessarily effected directly to the airline operating on international routes. The exemption is also applicable, if the aircraft is acquired by a third party for the purposes of exclusive use by such an undertaking <sup>112</sup> .	
<b>Services relating to qualifying aircraft:</b>	<i>Art. 148 (f) and (g)</i>
Art. 148 (f) and (g) zero-rate certain services relating to qualifying aircraft, i.e.	
<ul style="list-style-type: none"> <li>• chartering and hiring as well as</li> <li>• modification, repair and maintenance, and</li> <li>• the supply of other services to meet the direct needs of such aircraft or of their cargoes.</li> </ul>	
<b>Supply of equipment and related services:</b>	<i>Art. 148 (f)</i>
The supply of equipment incorporated or used in qualifying aircraft, as well as the hiring, repair and maintenance of such equipment is also zero-rated.	
<b>Fuelling and provisioning:</b>	<i>Art. 148 (e)</i>
And Art. 148 (e) zero-rates the supply of goods for the fuelling and provisioning of qualifying aircraft as above.	

### *Related provisions*

Art. 3 extends the scope of the Art. 148-supplies to intra-EU acquisitions, services by intermediaries, acting in the name and on behalf of another person and taking part in transactions referred to in Art. 148 are also zero-rated (Art. 153).

Some Member States furthermore exempt the supply of aircraft used by State institutions and related supplies (e.g. Greece and Spain). However this is not covered by Art. 148, but is a derogation based on Art. 371ff and Annex X, Part B, Item 11.

### *VAT on means of transport and fuel*

The acquisition of means of transport and fuel is taxed according to the standard rules in most Member States, usually the standard rate is applicable. Some propellants can be taxed at the reduced rate, especially electricity (Art. 102) and LPG (Cyprus, Art. 104a).

<sup>112</sup> ECJ, 19 July 2012, Case C-33/11, A Oy.

Reduced levels of excise duties on fuel and electricity as applied in many Member States are mainly based on *Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity*.

VAT incurred on inputs is generally deductible in so far as used for business purposes (Art. 168). Nevertheless derogations from that principle can be found, especially with respect to passenger cars and related goods and services (e.g. Italy, Poland, Latvia)<sup>113</sup> or capital goods used primarily for private purposes (e.g. Austria, Germany, France). These derogations are mostly based on Art. 394/395 of the VAT Directive. Finally we also encountered a case, where a derogation from the normal VAT rules is based on an accession act (namely the - compared to Art. 148 wider – zero-rating of the supply of vessels and related services in Finland).

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<sup>113</sup> Vehicles used for commercial passenger transport are however frequently except from such restrictions.

## Annex 2 – Methodological Note on Demand Data

As seen in Chapter 2, Section A, demand data has been obtained through the use of TREMOVE and ETISplus databases. As ETISplus does not deliver pkm directly, an attempt was made to derive pkm data from the amount of trips and the distance of these trips. However, the NUTS3 level at which trips were defined proved to be too coarse a measure for a correct estimate of trip distance. For rail transport, the pkm estimate from ETISplus underestimated actual demand from TREMOVE/EUROSTAT by a significant margin (overestimated on average by 36%), while the opposite was generally true for bus transport (underestimated on average by 37%).

	<b>TREMOVE rail pkm</b>	<b>ETISplus domestic rail pkm estimate</b>	<b>Factor</b>	<b>TREMOVE bus pkm</b>	<b>ETISplus domestic bus pkm estimate</b>	<b>Factor</b>
<b>AT</b>	9,180.05	7,018.94	1.31	9,856.35	12,378.55	0.8
<b>BE</b>	9,868.01	4,666.76	2.11	18,921.51	9,944.68	1.9
<b>BG</b>	2,450.98	1,671.84	1.47	11,419.21	17,605.40	0.65
<b>CY</b>	0	0		1,339.77	2,162.87	0.62
<b>CZ</b>	6,404.71	5,266.42	1.22	16,257.84	48,308.59	0.34
<b>DE</b>	76,658.75	54,632.48	1.4	68,511.81	77,767.94	0.88
<b>DK</b>	6,171.17	5,740.82	1.07	7,403.22	10,726.05	0.69
<b>EE</b>	271.04	177.23	1.53	2,669.04	8,119.73	0.33
<b>ES</b>	21,125.31	24,954.19	0.85	59,691.35	113,447.31	0.53
<b>FI</b>	3,786.66	3,381.95	1.12	7,565.84	20,346.25	0.37
<b>FR</b>	79,968.83	64,129.16	1.25	47,524.18	114,023.71	0.42
<b>GR</b>	1,936.34	1,391.35	1.39	22,156.56	34,702.79	0.64
<b>HR</b>	1,112.70	1,249.53	0.89	2,170.51	7,175.87	0.3
<b>HU</b>	8,546.04	4,893.26	1.75	17,049.10	28,646.30	0.6
<b>IE</b>	1,881.60	1,504.16	1.25	7,167.75	11,699.86	0.61
<b>IT</b>	49,323.73	32,741.36	1.51	103,671.15	181,930.87	0.57
<b>LT</b>	407.44	357.81	1.14	3,598.17	19,962.53	0.18
<b>LU</b>	315.27	244.94	1.29	857.51	1,091.72	0.79
<b>LV</b>	900.7	600.87	1.5	2,546.21	8,166.13	0.31
<b>MT</b>	0	0		517.96	304.5	1.7
<b>NL</b>	16,129.55	11,581.47	1.39	12,364.83	16,645.83	0.74
<b>PL</b>	20,079.15	13,414.43	1.5	28,278.88	118,278.07	0.24
<b>PT</b>	3,938.15	2,812.07	1.4	10,839.15	17,709.15	0.61
<b>RO</b>	7,384.88	4,373.47	1.69	12,602.94	36,398.54	0.35
<b>SE</b>	10,197.13	9,340.58	1.09	8,578.11	46,743.50	0.18
<b>SI</b>	834.65	463.88	1.8	3,292.66	2,768.48	1.19
<b>SK</b>	2,160.08	2,058.19	1.05	8,757.96	30,053.57	0.29
<b>UK</b>	51,058.37	39,252.28	1.3	51,597.19	74,674.44	0.69
		Average	1.36		Average	0.63

There are a number of potential factors contributing to this:

- The ETISplus estimate covers only domestic trips, while the REMOVE/EUROSTAT data covers both domestic trips and the part of international trips on the country's territory.
- Rail transport often does not use the shortest distance between two zones due to the structure of the network.
- Only pure rail trips are counted. When rail is used as the first/last leg of for example an air trip, this is counted as part of the air trips.
- For trips within a NUTS3 zone, no estimate of the trips distance was available. The distance was instead estimated based on the surface area of the zone, which may have led to too low a value (the opposite could explain for the overestimation for bus, generally used for short trips).
- Different data collection methods for EUROSTAT pkm and trips.

For this reason, it was decided to only use the REMOVE/EUROSTAT estimates for pkm, and ETISplus for the amount of trips. ETISplus pkm data will only be relied upon to estimate ratios for the share of international transport, which is not identified in REMOVE.

### **Annex 3 – List of City Pairs**

This Annex provides a list of the 220 city pairs used in the City Pairs Model

They are arranged in three groups. First are the Other Domestic city pairs, followed by the intra EU city pairs and then the extra-EU city pairs

For each city pair, we provide

- the number of the city pair in the basic list,
- the type of city pair (A denotes Other Domestic, B denotes intra EU and C denotes extra EU)
- The name of city A
- The Member State of city A
- The name of city B
- The Member State (or country for extra EU city pairs) of city B

### Other Domestic City pairs

Pair	Pair	City A	MS	City B	MS
203	A	Vienna	AT	Salzburg	AT
44	A	Brussels	BE	Antwerp*	BE
95	A	Lille	BE	Kortrijk	BE
182	A	Sofia	BG	Varna	BG
42	A	Brno	CZ	Liberec	CZ
43	A	Brno	CZ	Ostrava	CZ
143	A	Ostrava	CZ	Liberec	CZ
164	A	Prague	CZ	Brno	CZ
165	A	Prague	CZ	Liberec	CZ
166	A	Prague	CZ	Ostrava	CZ
25	A	Berlin	DE	Cologne	DE
27	A	Berlin	DE	Hamburg	DE
31	A	Berlin	DE	Munich	DE
84	A	Hamburg	DE	Cologne	DE
85	A	Hamburg	DE	Munich	DE
139	A	Munich	DE	Cologne	DE
1	A	Aarhus	DK	Aalborg	DK
2	A	Aarhus	DK	Odense	DK
66	A	Copenhagen	DK	Aalborg	DK
67	A	Copenhagen	DK	Aarhus	DK
70	A	Copenhagen	DK	Odense	DK
142	A	Odense	DK	Aalborg	DK
19	A	Barcelona	ES	Seville	ES
20	A	Barcelona	ES	Valencia	ES
119	A	Madrid	ES	Barcelona	ES
126	A	Madrid	ES	Seville	ES
128	A	Madrid	ES	Valencia	ES
201	A	Valencia	ES	Seville	ES
86	A	Helsinki	FI	Oulu	FI
117	A	Lyon	FR	Toulouse	FR
135	A	Marseille	FR	Lyon	FR
136	A	Marseille	FR	Toulouse	FR
150	A	Paris	FR	Lyon	FR
152	A	Paris	FR	Marseille	FR
157	A	Paris	FR	Toulouse	FR
11	A	Athens	GR	Heraklion	GR
12	A	Athens	GR	Rhodes	GR
14	A	Athens	GR	Thessaloniki*	GR
88	A	Heraklion	GR	Rhodes	GR
197	A	Thessaloniki	GR	Heraklion	GR
198	A	Thessaloniki	GR	Rhodes	GR
21	A	Békéscsaba	HU	Arad	HU
61	A	Budapest	HU	Debrecen	HU
77	A	Dublin	IE	Cork	IE
137	A	Milano	IT	Naples	IT
138	A	Milano	IT	Turin	IT

## Other Domestic City pairs

Pair No.	Pair Type	City A	MS of A	City B	MS of B
140	A	Naples	IT	Turin	IT
141	A	Nice	IT	Ventimiglia	IT
173	A	Rome	IT	Milano	IT
174	A	Rome	IT	Naples	IT
178	A	Rome	IT	Turin	IT
90	A	Kaunas	LT	Klaipeda	LT
91	A	Kaunas	LT	Siauliai	LT
92	A	Klaipeda	LT	Siauliai	LT
205	A	Vilnius	LT	Kaunas	LT
206	A	Vilnius	LT	Klaipeda	LT
209	A	Vilnius	LT	Siauliai	LT
4	A	Amsterdam	NL	Eindhoven	NL
5	A	Amsterdam	NL	Enschede	NL
6	A	Amsterdam	NL	Groningen	NL
93	A	Krakow	PL	Lodz	PL
94	A	Krakow	PL	Wroclaw	PL
212	A	Warsaw	PL	Krakow	PL
214	A	Warsaw	PL	Lodz	PL
217	A	Warsaw	PL	Wroclaw	PL
220	A	Wroclaw	PL	Lodz	PL
39	A	Braga	PT	Faro	PT
97	A	Lisbon	PT	Braga	PT
98	A	Lisbon	PT	Faro	PT
99	A	Lisbon	PT	Porto	PT
162	A	Porto	PT	Braga	PT
163	A	Porto	PT	Faro	PT
56	A	Bucharest	RO	Cluj	RO
57	A	Bucharest	RO	Iasi	RO
60	A	Bucharest	RO	Timisoara	RO
63	A	Cluj	RO	Iasi	RO
64	A	Cluj	RO	Timisoara	RO
199	A	Timisoara	RO	Iasi	RO
82	A	Gothenburg	SE	Linkoping	SE
83	A	Gothenburg	SE	Malmo	SE
131	A	Malmo	SE	Linkoping	SE
188	A	Stockholm	SE	Goteborg	SE
189	A	Stockholm	SE	Linköping	SE
190	A	Stockholm	SE	Malmo	SE
41	A	Bratislava	SK	Kosice	SK
80	A	Glasgow	UK	Leeds	UK
106	A	London	UK	Glasgow	UK
107	A	London	UK	Leeds	UK
110	A	London	UK	Manchester	UK
132	A	Manchester	UK	Glasgow	UK
133	A	Manchester	UK	Leeds	UK



## Intra EU City pairs

Pair No.	Pair Type	City A	MS of A	City B	MS of B
219	B	Wien	AT	Brno	CZ
160	B	Parndorf	AT	Gyor	HU
218	B	Wien	AT	Bratislava	SK
51	B	Brussels	BE	Prague	CZ
47	B	Brussels	BE	Copenhagen	DK
49	B	Brussels	BE	Madrid	ES
45	B	Brussels	BE	Athens	GR
52	B	Brussels	BE	Rome	IT
54	B	Brussels	BE	Vilnius	LT
8	B	Antwerp	BE	Roosendaal	NL
55	B	Brussels	BE	Warsaw	PL
48	B	Brussels	BE	Lisbon	PT
46	B	Brussels	BE	Bucharest	RO
53	B	Brussels	BE	Stockholm	SE
144	B	Ostrava	CZ	Katowice	PL
23	B	Berlin	DE	Brussels	BE
33	B	Berlin	DE	Prague	CZ
76	B	Dresden	DE	Liberec	CZ
26	B	Berlin	DE	Copenhagen	DK
78	B	Flensburg	DE	Kolding	DK
30	B	Berlin	DE	Madrid	ES
32	B	Berlin	DE	Paris	FR
22	B	Berlin	DE	Athens	GR
34	B	Berlin	DE	Rome	IT
36	B	Berlin	DE	Vilnius	LT
7	B	Angermünde	DE	Szczecin	PL
37	B	Berlin	DE	Warsaw	PL
29	B	Berlin	DE	Lisbon	PT
24	B	Berlin	DE	Bucharest	RO
35	B	Berlin	DE	Stockholm	SE
71	B	Copenhagen	DK	Prague	CZ
74	B	Copenhagen	DK	Vilnius	LT
75	B	Copenhagen	DK	Warsaw	PL
69	B	Copenhagen	DK	Lisbon	PT
68	B	Copenhagen	DK	Bucharest	RO
73	B	Copenhagen	DK	Stockholm	SE
195	B	Tallinn	EE	Helsinki	FI
124	B	Madrid	ES	Prague	CZ
121	B	Madrid	ES	Copenhagen	DK
89	B	Irun	ES	Bayonne	FR
118	B	Madrid	ES	Athens	GR
122	B	Madrid	ES	Dublin	IE
125	B	Madrid	ES	Rome	IT
129	B	Madrid	ES	Vilnius	LT
130	B	Madrid	ES	Warsaw	PL
123	B	Madrid	ES	Lisbon	PT

## Intra EU City pairs

Pair No.	Pair Type	City A	MS of A	City B	MS of B
120	B	Madrid	ES	Bucharest	RO
127	B	Madrid	ES	Stockholm	SE
146	B	Paris	FR	Brussels	BE
154	B	Paris	FR	Prague	CZ
193	B	Strasbourg	FR	Offenburg	DE
194	B	Strasbourg	FR	Stuttgart	DE
148	B	Paris	FR	Copenhagen	DK
151	B	Paris	FR	Madrid	ES
161	B	Perpignan	FR	Girona	ES
145	B	Paris	FR	Athens	GR
153	B	Paris	FR	Naples	IT
155	B	Paris	FR	Rome	IT
158	B	Paris	FR	Vilnius	LT
159	B	Paris	FR	Warsaw	PL
149	B	Paris	FR	Lisbon	PT
147	B	Paris	FR	Bucharest	RO
156	B	Paris	FR	Stockholm	SE
62	B	Calais	FR	Dover	UK
18	B	Athens	GR	Prague	CZ
10	B	Athens	GR	Copenhagen	DK
15	B	Athens	GR	Vilnius	LT
16	B	Athens	GR	Warsaw	PL
17	B	Athens	GR	Lisbon	PT
9	B	Athens	GR	Bucharest	RO
13	B	Athens	GR	Stockholm	SE
183	B	Sopron	HU	Wiener	AT
167	B	Püspöklad	HU	Oradea	RO
175	B	Rome	IT	Prague	CZ
171	B	Rome	IT	Copenhagen	DK
200	B	Turin	IT	Grenoble	FR
169	B	Rome	IT	Athens	GR
179	B	Rome	IT	Vilnius	LT
180	B	Rome	IT	Warsaw	PL
172	B	Rome	IT	Lisbon	PT
170	B	Rome	IT	Bucharest	RO
176	B	Rome	IT	Stockholm	SE
208	B	Vilnius	LT	Prague	CZ
207	B	Vilnius	LT	Lisbon	PT
204	B	Vilnius	LT	Bucharest	RO
202	B	Venlo	NL	Viersen	DE
3	B	Amsterda	NL	Bratislava	SK
215	B	Warsaw	PL	Prague	CZ
38	B	Bialystok	PL	Kaunas	LT
216	B	Warsaw	PL	Vilnius	LT
213	B	Warsaw	PL	Lisbon	PT
210	B	Warsaw	PL	Bucharest	RO

**Intra EU City pairs**

Pair No.	Pair Type	City A	MS of A	City B	MS of B
100	B	Lisbon	PT	Prague	CZ
96	B	Lisbon	PT	Badajoz	ES
65	B	Constanta	RO	Varna	BG
59	B	Bucharest	RO	Prague	CZ
58	B	Bucharest	RO	Lisbon	PT
185	B	Stockholm	SE	Prague	CZ
191	B	Stockholm	SE	Vilnius	LT
192	B	Stockholm	SE	Warsaw	PL
184	B	Stockholm	SE	Lisbon	PT
187	B	Stockholm	SE	Bucharest	RO
103	B	London	UK	Brussels	BE
112	B	London	UK	Prague	CZ
102	B	London	UK	Berlin	DE
105	B	London	UK	Copenhagen	DK
109	B	London	UK	Madrid	ES
111	B	London	UK	Paris	FR
101	B	London	UK	Athens	GR
113	B	London	UK	Rome	IT
115	B	London	UK	Vilnius	LT
116	B	London	UK	Warsaw	PL
108	B	London	UK	Lisbon	PT
104	B	London	UK	Bucharest	RO
114	B	London	UK	Stockholm	SE

**Extra EU city pairs**

<b>Pair No.</b>	<b>Pair Type</b>	<b>City A</b>	<b>MS of A</b>	<b>City B</b>	<b>Country of B</b>
50	C	Brussels	BE	Moscow	RU
181	C	Sofia	BG	Istanbul	TR
28	C	Berlin	DE	Kiev	UA
79	C	Frankfur	DE	Oslo	NO
72	C	Copenha	DK	Reykjavik	IS
196	C	Tallinn	EE	Kaliningrad	RU
87	C	Helsinki	FI	St. Petersburg	RU
134	C	Marseill	FR	Algiers	DZ
177	C	Rome	IT	Tunis	TN
168	C	Riga	LV	Moscow	RU
211	C	Warsaw	PL	Kiev	UA
186	C	Stockhol	SE	St. Petersburg	RU
81	C	Gothenb	SE	Oslo	NO
40	C	Bratislav	SK	Kiev	UA

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