Abstract

Based on the ordoliberal foundations of the Social Market Economy this paper examines taxes, externalities and the cost of infrastructure. As evaluation criteria serve the freedom of discrimination and the reduction of environmental incrimination. The study applies these criteria to automobiles, buses, trains and planes and compares them on the basis of cost per user per 100 passenger-kilometer. In conclusion, traffic by automobile is the most privileged, which explains its high market share of 75%; and traffic by rail is the most discriminated against. The study develops a concept for a non-discriminating regulation in the traffic sector with which the actual costs of each mode of traffic would be borne by its users. Mobility would then be more expensive and overall traffic would be reduced by more than 20%. It is predicted that the market share of automobiles would drop to 66%; the market share of buses and planes would increase slightly, and the use of trains would increase significantly to a market share of 20%. As a result, pollution of the environment would be reduced enormously.

Keywords: Intermodal competition, passenger transport, non-discriminatory regulation, taxes, infrastructure, external effects

JEL codes: H 23, H 54, L 52, L 92, L 93
1. Introduction

For the past twenty years deregulation of the transportation sector in Europe has been on the political agenda. However, discussions of regulation of the industry which discriminates against certain modes of transportation tend to have increased, e.g. air transport is considered to be subsidized due to the exclusion from energy taxes, and railways are said not to pay full costs of their infrastructure. Relevant studies so far look only at isolated parts of the regulatory framework. This, however, this is not sufficient for a clear answer to the question whether existing regulations are discriminatory or not. Therefore, this study goes one step further by following a more holistic analytical approach. It examines taxes, externalities, and the extent to which the costs of infrastructure are charged to the individual modes of transportation.

Increasing traffic flows constitute one of the most serious problems for environmental policy. E.g. the CO₂-emissions of the transport sector in Germany rose by 11 per cent between 1990 and 1998 while total emissions fell by 15 per cent.³ Figure 1 shows that an average long-distance trip (> 50 km)⁴ produces much more traffic volume than a short-distance trip. If the mode of transport of one long-distance trip is changed, the environmental effect is more than 20 times as strong as if one short distance trip was changed (e.g. a change from car to bus or vice versa). As external costs are mainly linked to the traffic volume⁵ and as long-distance passenger travel plays a more and more important role in transportation this paper concentrates on this segment.

![Figure 1: Modal split short- and long-distance in Germany](source: Own calculation with DIW (1994).⁶)

⁴ In Germany short- and long-distance passenger transport is differentiated at 50 kilometres. Up to 50 kilometres passenger transport is seen as a public service obligation and receives different kinds of support, i.e. a reduced VAT rate.
⁵ That is true in average, in detail short-distance trips can be associated with more coldstart emissions (automobiles) or no emissions (cycling and walking).
2. Scientific basis

2.1. Economic basis

Based on the ordoliberal foundations of the Social Market Economy in Germany, the study examines the overall conditions of the German long-distance passenger transport in relation to the market system. Two evaluation criteria are used: the freedom from discrimination (as a constituting principle according to Eucken) and the reduction of environmental damage by the internalization of external costs (as a regulating principle). As far as the second criterion is concerned, the concept of Sustainable Development should be taken into account. The study applies these criteria to the four relevant modes of transportation in long-distance passenger travel – automobiles, buses, trains and planes – and compares them to each other on the basis of cost per user per 100 passenger-kilometer (pkm).

Since the foundation of the Federal Republic of Germany the existing regulation has been developed step by step. Especially tax rates were often changed without looking at discriminating effects. E.g. problems with the budget caused the rise of fuel tax (which affected automobiles, buses and diesel powered trains) of more than 60 per cent between 1991 and 1994. Within the German budget system taxes are generally not linked to any particular expenses, i.e. taxes are not payments for certain goods or services, unlike a toll for the use of roads. Following this basic rule and the historic experience the examined parts of regulation (taxes, infrastructure costs, external effects) shall be treated separately and then, in a second step, viewed together in order to assess the total effect of current regulation on the competition between the modes in long-distance passenger transportation.

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7 From the ordoliberal point of view it is the task of the regulatory framework of a state to provide a stable environment – based on the rules of a market economy – in which individuals and firms have freedom to act and which limits the negative consequences of a free market economy and protects individuals from the abuse of power. The concept of ordoliberalism goes back to Walther Eucken; cf. Broyer, Sylvian (1996), Starbatty, Joachim (1994), Eucken, Walther (1952).

8 Constituting principles set the main frame of the regulation, e.g. the rules of a market economy. The task of regulation principles is to reduce “imperfect” parts of the market, like external effects which are not internalised; cf. Eucken, Walther (1952), p. 254 - 304.

9 With regard to long-distance travel, bicycles are only used for leisure trips and can therefore be omitted.

10 This is the best way to make modes comparable. A comparison on vehicle kilometers is not useful as the size of vehicles differs significantly between the modes of transportation and even within each mode, e.g. an Airbus 320 (about 140 seats) and a Boeing 747-400 (about 400 seats).

11 Gasoline tax rose between 1991 and 1994 from 0.60 DM to 0.98 DM (63.3 per cent) and diesel tax rose from 0.45 DM to 0.62 DM (37.8 per cent); cf. Vestner, Klaus (2004), table 25.

12 Cf. § 3 Abs. 1 Satz 1 Abgabenordnung.
2.2. Relevant market

There are two basic options of how to fulfill one’s personal need for spatial mobility:

1. As entrepreneur, by driving with a private or company owned automobile.
2. As customer, by using a transportation service by train, bus or airplane.

In other words, it’s a classic make-or-buy decision of a small company, i.e. an individual person: For each way every person has to decide about using a transportation service or driving, cycling or walking on his own. In Germany, the first option is used for more than 50% of all trips and for about 75% of the traffic volume, measured in passenger kilometers. For the long-distance part which is relevant in this paper, however, automobile traffic accounts for almost 90% of the trips and for 75% of the traffic volume. The situation in other countries is similar.

What is the reason for this dominant market position of the automobile? The following table shows the usage costs for each mode in Germany.

<table>
<thead>
<tr>
<th>Table 1: Usage costs and energy consumption in long-distance transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total costs for the user of mobility</strong>&lt;br&gt;[€ per 100 Pkm, incl. VAT]</td>
</tr>
<tr>
<td>Automobile</td>
</tr>
<tr>
<td><strong>Out-of-pocket-costs</strong>&lt;br&gt;[€ per 100 Pkm]</td>
</tr>
<tr>
<td>6.50 €¹⁸</td>
</tr>
<tr>
<td><strong>Energy-consumption</strong>&lt;br&gt;[Final energy l/kWh per 100 Pkm]</td>
</tr>
<tr>
<td>6.07 l</td>
</tr>
</tbody>
</table>

Source: Own calculation according to different studies.

¹³ As the way to and from train stations and airports differ significantly the numbers for bus, train, and plane are from station to station and not door-to-door-costs.

¹⁴ Based on the costs for a Golf 1.6 with 77 kW; cf. ADAC (2003). The value loss is calculated for 12 instead of 4 years and therefore total cost per vehicle kilometer of 25.2 Euro cent instead of 35.5. A seat load factor of 1.4 persons for long-distance is used.

¹⁵ According to Panten, David (2000), p. 11 average costs for buses 4.09 Euro cent per passenger kilometer. With a factor of 15 per cent for risk and profit and 16 per cent VAT average cost for the usage of a bus service is 5.46 Euro per 100 kilometer.

¹⁶ Own calculation according to Deutsche Bahn (2001), p. 4 + 12.

¹⁷ Own calculation according to Deutsche Lufthansa (2001). A turnover in Germany of 1.588 billion Euro for 5.938 billion seat kilometer and therefore 26.74 Euro per 100 kilometer. With 16 per cent VAT this results in an average price of 31.02 Euro per 100 kilometer for flights within Germany. This is two and a half times more expensive than the world wide average of Deutsche Lufthansa which was 12.60 Euro in 2000.

¹⁸ Calculated on the basis of 1.07 Euro per liter gasoline (cf. ADAC (2003)) and the average fuel consumption of 6.07 liters per 100 passenger kilometer (cf. Vestner, Klaus (2004), table 24) out-of-pocket-costs are about 6.50 Euro per 100 pkm. These costs are below the real variable costs, which include value loss through usage and costs for tires etc.

¹⁹ Consumption data are partly own calculations, cf. Vestner, Klaus (2004), table 24. They are not equivalent to a specific fuel type.
In terms of total costs an automobile is relatively expensive, but with regard to out-of-pocket-costs it is the second cheapest means of transport. Knowing that out-of-pocket-costs are very important for mobility decisions\textsuperscript{20} this paper concentrates on them for the comparison of modes. It appears that the perceived price is an important determinant of modal selection and therefore helps to explain the dominant market position of the automobile. The following chapter will provide an overview of the current regulation in Germany and answer the question, what kind of incentives the current regulation (taxes, infrastructure, external costs) gives to the competing modes.

3. Status quo of regulation in Germany

3.1. Taxes

Several taxes could be a relevant source of discrimination. But after a thorough examination only income tax, a special automobile tax\textsuperscript{21} and energy taxes are of relevance.\textsuperscript{22} The German income tax system supports people who do not live nearby their work. Commuting to work is – in contrast to the regulation in the USA – regarded as a necessary part of work. Therefore the full costs for getting to and from work are tax-deductible, thus reducing the income people have to pay taxes on.\textsuperscript{23} When people use the automobile, in their income tax report they can choose between using a lump sum per kilometer or the real costs incurred, including depreciation costs. This system gives preference to the automobile, as it leads people to think they earn money as they calculate only with out-of-pocket-costs. For other modes of transport people know their real costs better and therefore have not the tendency to believe they could earn money via the annual tax refund. In total the state receives through this approximately 5 billion € income tax less. The specific automobile tax (about 6 billion € per year) reduces this effect, as only automobile owners have to pay it.

A very interesting field are energy taxes, where fuel and electricity taxes are the relevant ones, but they are difficult to compare. One evaluation criterion is Sustainable Development. The amount of energy differs considerably between one liter gasoline (8.97 kWh) and one liter diesel (9.93 kWh). Furthermore exist huge differences in efficiency of the production of

\textsuperscript{20} An empirical study proofs that car-driver underestimate their usage costs significantly; cf. König, Herbert (1976), p. 146.
\textsuperscript{21} The so called „Kraftfahrzeug“ tax has to be paid for each automobile a person owns and wants to drive.
\textsuperscript{22} Cf. Vestner, Klaus (2004), Chapter III.2.
\textsuperscript{23} Cf. § 9, I, no. 4 Einkommensteuergesetz and Lang, Joachim (2002), no. 259, footnote 123.
final energy, e. g. for electricity 32 % of the used primary energy will be final energy and for kerosene it is 88 %. In order to consider this and to make energy taxes comparable, they are standardized to Euro cent per kilowatt-hour primary energy (see following table).

### Table 2: Current rates of different energy taxes

<table>
<thead>
<tr>
<th>Type of energy</th>
<th>Tax rate [Euro/ 100 Liter]</th>
<th>Energy tax Basis final energy [Euro Cent/kWh]</th>
<th>Energy tax Basis primary energy [Euro Cent/kWh]</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Aircraft</td>
</tr>
<tr>
<td>Electricity reduced</td>
<td>–</td>
<td>1.14</td>
<td>0.36</td>
<td>Train</td>
</tr>
<tr>
<td>Electricity</td>
<td>–</td>
<td>2.05</td>
<td>0.66</td>
<td>–</td>
</tr>
<tr>
<td>Diesel</td>
<td>47.04</td>
<td>4.74</td>
<td>4.17</td>
<td>Automobile, Bus, Train</td>
</tr>
<tr>
<td>Gasoline</td>
<td>65.45</td>
<td>7.30</td>
<td>6.13</td>
<td>Automobile</td>
</tr>
</tbody>
</table>

Source: Own illustration and calculation according to tax rates from 1\textsuperscript{st} January 2004.

Concerning energy taxes table 2 shows that trains and planes are privileged as they pay very low or no taxes at all on their consumed energy. Automobiles and buses in contrast pay very high taxes especially gasoline cars. The following table 3 shows the difference in the energy tax burden between the modes expressed in the tax reduction (advantage) per 100 pkm. The calculation is based on 6.13 Euro cent taxes per kWh primary energy for gasoline, which is the German tax rate in 2004.

### Table 3: Missing neutrality of existing energy tax rates

<table>
<thead>
<tr>
<th>Advantage trough energy taxes</th>
<th>Total in bill. €</th>
<th>Per 100 pkm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile</td>
<td>-1.4</td>
<td>-0.19 €</td>
</tr>
<tr>
<td>Bus</td>
<td>-0.2</td>
<td>-0.31 €</td>
</tr>
<tr>
<td>Train</td>
<td>-0.4</td>
<td>-1.33 €</td>
</tr>
<tr>
<td>Airplane</td>
<td>-0.5</td>
<td>-5.16 €</td>
</tr>
</tbody>
</table>

Source: Own calculation.

### 3.2. Infrastructure costs

Three different types of cost accounting are typically used in order to determine the costs of infrastructure. The first type is an expense statement, that takes all fiscal payments into account. Due to political decisions about building or repairing for example streets this or next
year the annual costs can vary significantly. Therefore there is no direct connection between these costs and the real utilization costs. The second type is a marginal analysis. Using marginal infrastructure costs causes the problem that they are almost zero as long as a road or a railroad is used only by 10 or 20 per cent of its capacity; but they rise sharply when they are used beyond the capacity and new infrastructure has to be built. Thus, using marginal cost pricing can be problematic, too. The third possibility is to determine total costs. This type has been the basis for infrastructure cost accounting in Germany since 1969. It allows full cost recovery with a “pay-as-you-use-principle” and is the basis for the comparison in this paper.

Infrastructure in Germany is generally financed by the state. Except for a few new projects, roads can be used without any road pricing, thus automobiles and buses do not directly pay for utilizing their infrastructure. In average the unpaid costs per 100 passenger kilometer for journeys by bus are 0.78 €. This is roughly half of the infrastructure costs for trips with the automobile which add up to 1.79 €. Railroads are to a high degree financed by the state, too. But railway companies have to pay a track-usage-toll of approximately 1.80 € per 100 passenger kilometer. The most recent study on infrastructure costs of railroads calculates usage costs of 2 € per 100 passenger kilometer for long-distance passenger trains. For railroads and for roads several studies exist on the costs that users should pay for. Concerning airports the situation is more difficult. A nationwide study does not exist so far and airport companies claim that they fully cover their costs through landing and ground handling fees they have to pay. A detailed analysis of a few airports (Bielefeld, Munich, Cologne, Augsburg, Dortmund) in Germany, however, leads to a different result. Airports are subsidized through different circumstances:

1. Allowances for investments in terminals or runways and through loss assumptions
2. Benefits through no or reduced charge for real estate and loans
3. Full or partial funding of connection to road- and rail network by public authorities

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26 Cf. Vestner, Klaus (2004), Chapter IV.2.2.
27 Cf. IWW (2002), p. 74. Others calculated with a different approach much higher costs, e. g. DIW (2000) with 5,40 €.
28 Which is neither true for Germany nor for other states, e. g. the USA: More than 18,000 airports are owned and operated by states, municipalities, or agencies set up by local governments to operate airports. Annual government expenditure on airports is about $12 billion. Of this amount, approximately $2 billion is provided by the federal government in grants to the states and for expansion of runways and control equipment. The
For the analyzed airports a range of uncovered costs from 0.45 € to 3.07 € per 100 passenger kilometer can be calculated.\footnote{Cf. Vestner, Klaus (2004), Chapter III.3.2.3: Bielefeld (a very small airport) 0.45 €, Munich 0.69 €, Cologne 1.36 €, Augsburg 2.67 € and Dortmund 3.07 €.}

Therefore, no mode of transportation fully covers its costs of infrastructure.\footnote{As defined in chapter 2.1. taxes, infrastructure and external costs are examined separately and will later be added. Therefore fuel taxes are not taken into account here.} Travelers by train or plane pay for a small part of infrastructure costs with their tickets. To date, there is no toll for automobiles or buses on any type of roads in Germany, which makes travel by automobile the most attractive mode of transportation with regard to costs of infrastructure.

### 3.3. External costs

At the beginning of the 1990s an intensive discussion took place on the relevance of external costs and external benefits in the transport system.\footnote{Cf. Huckestein, Burkhard / Verron, Hedwig (1996), S. 9; Ecoplan (1993); Willeke, Rainer (1992).} Finally, Ecoplan proves that external benefits are of marginal size and therefore only external costs matter.\footnote{Cf. especially Ecoplan (1993) and INFAS / IWW (1995), S. 18 ff.} In Europe, a wide range of studies provide a reliable basis for the existing external costs of transportation. The most comprehensive study is the one by INFRAS / IWW from the year 2000. In a very sophisticated way they have calculated external costs for all modes of transport for each single country in the European Union. The result (see following table) proves that huge costs are not included in current transport prices.

| Table 4: External costs of passenger transport in Germany |
|----------------|------------|-----------|----------|
| [Euro / 1,000 pkm] | Automobile | Bus | Train | Plane |
| Accidents | 48 | 3.2 | 0.8 | 0.7 |
| Noise | 8 | 1.3 | 5.9 | 4.9 |
| Air Pollution | 21 | 19.8 | 5.7 | 1.0 |
| Climate Change | 20 | 7.9 | 7.0 | 35.0 |
| Nature & Landscape | 3 | 0.6 | 0.5 | 1.4 |
| Urban Effects | 2 | 0.5 | 1.0 | 0.0 |
| Upstream Process | 11 | 4.1 | 4.4 | 4.8 |
| **Total** | **113** | **38** | **25** | **48** |

Source: Own illustration according to INFRAS/IWW (2000), S. 273, Table 171. Numbers are for 1995.

Today, no mode of transportation pays for external costs. The mode of transport that is most privileged is the automobile because here the highest external costs are not internalized. The remaining $10 billion of airport expenditures are made directly by the state and local airport authorities.” (Boyer, Kenneth Duncan (1997), p. 139).
advantages of air and bus travel are much smaller. Trains, as the most environmentally friendly mode of transport, can not monetarily benefit from this fact.

4. A new regulation – non-discriminatory and more environmentally friendly
The last chapters have shown that existing regulation in Germany does discriminate between the competing modes of transport in the long-distance passenger transport. For taxes, infrastructure charges and external effects, I would like to develop a proposal for a new regulation.

4.1. Taxes
The basis for comparison in this study is the cost per 100 passenger kilometer. For the proposal of a new regulation I focus on existing energy taxes as they can be directly related to these costs. Energy taxes should charge each energy form equally and not differentiate between single modes. Furthermore, the total tax burden should be stable in order to avoid trouble with the fiscal balance of the state. Taking these assumptions into account, the tax rates for each energy form would be 2.7 Cent per kWh primary energy (PE). This would result in charges per unit of final energy (FE) as shown in the table below.

Table 5: New tax rates with constant tax revenue

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>2.70</td>
<td>28.83</td>
<td>-36.62</td>
<td>-14,648</td>
</tr>
<tr>
<td>Diesel</td>
<td>2.70</td>
<td>30.47</td>
<td>-16.61</td>
<td>-4,983</td>
</tr>
<tr>
<td>Kerosene</td>
<td>2.70</td>
<td>29.15</td>
<td>-36.30</td>
<td>205</td>
</tr>
<tr>
<td>Electricity</td>
<td>2.70</td>
<td>8.44</td>
<td>7.30</td>
<td>20,358</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>932</strong></td>
</tr>
</tbody>
</table>

Source: Own calculation.

With this reform, the total tax burden would be almost stable, and the former heavily taxed energy for cars would become much cheaper – a reduction of the gasoline tax rate of more than 50 % and for diesel of 35 %. In contrast airplanes and trains would have to pay more for their energy. Kerosene would be taxed for the first time and the electricity tax rate would be more than 6 times higher than before. Due to different levels of energy efficiency the resulting
changes per 100 passenger kilometers are slightly different as the following figure shows. Especially the costs for train journeys would – despite the extreme rise of the tax rate for electricity – be not much more expensive as trains have the lowest energy consumption of all modes.

Figure 2: Changes per 100 Pkm through non-discriminating energy taxes

![Figure showing changes per 100 Pkm through non-discriminating energy taxes]

Source: Own calculation.

4.2. Infrastructure costs

The “pay-as-you-use”-principle based on a full-cost-approach would enable the state to cover the costs for infrastructure fully through utilization fees. A solution on this basis would not discriminate between single modes. Moreover, future generations would not have to pay for high infrastructure costs or pay off credits with higher taxes. Chapter 3.2. shows that today no mode of transportation fully covers its costs for the usage of the infrastructure. For roads that are primarily used for long-distance trips (federal roads like the Autobahn) very detailed calculated and current numbers are available. They can be taken from the study which is the basis for the toll system for heavy vehicles on the German Autobahn.\(^{34}\) The amount of uncovered costs for rail and aircraft are not as well-documented as for road. In order to use a conservative approach, the lower values are used for rail and aircraft in the following figure.

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\(^{33}\) In order to keep the changes to the existing tax system as small as possible the solution takes only the existing energy taxes and no others possibilities – like a taxation of CO\(_2\)-emissions – into account.

\(^{34}\) Cf. Prognos / IWW (2002), p. 156 f., tables 6-8 and 6-9. The start of the toll system for heavy vehicles is delayed and now expected for 1\(^{st}\) January 2005.
4.3. External costs

For an efficient economic solution external costs have to be fully internalized. Therefore the proposed solution comprises the internalization of the external costs named in Chapter 3.3, table 5.

But in contrast to taxes, the budget of internalized costs should not be part of the general budget of the state. As external costs are calculated as relevant avoidance, transaction, abatement and damage costs of third parties,\textsuperscript{35} the budget has to be used to compensate them. I. e. people who suffer from traffic noise from an airport, a street or a railroad have e. g. to be refunded for sound-proof windows.

4.4. Expected result

After separately examining the three parts taxes, financing of infrastructure and internalization of external costs they are now brought together. In addition to the numbers of the single proposals now 16 % VAT are added in order to receive the expected real usage costs. The usage costs after implementing the proposed changes in the three parts can be seen in the following figure 4.

The figure shows fundamental changes in the out-of-pocket-costs through the proposed reform. The costs for automobiles – which is the second-cheapest mode of transport today – would be almost tripled and it would become the second-expensive mode. The costs for flights and for rail travel would increase by 30 per cent and bus journeys would almost double in price.

Train is the mode which would have the least change at all. This proves that long-distance passenger rail traffic is the most discriminated mode in the current German regulation. The automobile is the mode that benefits most from the current regulation.\(^\text{36}\)

But how far would such a change in market prices alter the modal split and the mobile behavior of people? Using the data from above with a simulation model from Intraplan\(^\text{37}\) brings the following result (see table 6):

\begin{table}[h]
\centering
\caption{Forecast for changed traffic volume and modal split}
\begin{tabular}{|c|c|c|c|c|c|}
\hline
 & Automobile & Bus & Train & Plane & Total market \\
\hline
\textbf{Change of traffic volume (pkm)} & - 35.4 % & - 17.6 % & 66.5 % & - 20.2 % & - 23.6 % \\
\hline
\textbf{Old modal split} & 76 % & 6 % & 9 % & 9 % & 100 % \\
\hline
\textbf{New modal split} & 64 % & 7 % & 20 % & 9 % & 100 % \\
\hline
\end{tabular}
\end{table}

Source: Own illustration.

\(^{36}\) This is also true when total costs are compared. They are similar for all modes except the automobile. Total costs for the automobile would rise by 70 % from 18 € (cf. table 1) to almost 31 €.

\(^{37}\) The simulation model was produced for Deutsche Bahn AG and calculates a forecast for the year 2005, based on data from the year 1997.
The forecast proves that – due to low costs – the traffic volume in Germany is very high today.\footnote{The result of the simulation model is in line with known rail elasticity estimates; cf. Seabright, Paul et al. (2003), p. 11.} It is predicted that the market share of automobiles would drop from three quarters to two thirds. Buses and planes would be able to increase their market shares slightly. Travel by train would increase significantly to a market share of 20\% (double!). As a result, environmental pollution caused by long-distance passenger traffic would be reduced enormously.

5. Concluding remarks

The study shows that the existing regulation discriminates against the modes of transportation in different ways and to varying degrees. In total, each mode is subsidized and the costs for the user do not reflect the real costs. By implementing the proposal for a reformed regulation these shortcomings would be addressed and eliminated.

However, the implementation of the concept will not be simple. Due to high interdependencies in the long-distance passenger transport market and the short-distance passenger and the freight market, the latter two should be included in an extended study. An isolated solution is not applicable, neither for the long-distance part nor for Germany alone. Therefore the parties involved – especially the politicians – should use the forthcoming years to develop detailed plans for the implementation and to achieve a European-wide agreement.
References


