



Working paper about the  
**Commuter traffic – effects on region's  
prosperity**

(based on desktop research)

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## Introduction

All traffic caused by people travelling some distance regularly, as between a suburb and a city and back, between their place of residence and their place of work, etc. is called commuter traffic. This working paper is about the effects of –especially cross border- commuter traffic on the prosperity of the regions.

## General Information about commuting

Mostly high qualified people commute to get to their workplace, because well-paid jobs are more likely to get in the city while employees prefer to live in a more rural area. From home place to place of work some commuters travel up to 200 km daily. In Germany almost 60% of the commuters (1.5 Mio commuters) are traveling with their own car. This is also because in regions without a good public transport network, there is no alternative.<sup>1</sup> Especially in rural areas driving a car is quite often the only choice, because public transport service is very scarce.

The pie chart below shows the choice of transport vehicles for the commuters in Germany (October 2009)

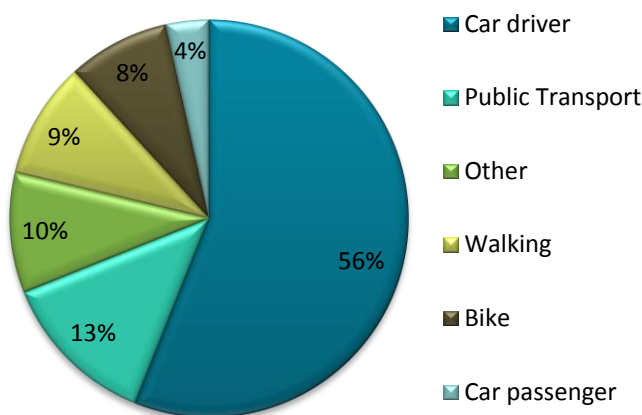


Figure 1: Choice of transport mode for commuting in Germany<sup>2</sup>

- But clear indicators show, local infrastructure is not the only reason for the choice of means of transport. It is also the background of the person itself. This also explains why people who are willing to drive to work by car, are more likely to live in a suburb or rural area where it is more common to commute by car. Others who prefer travelling with public transport (or bicycle) more often choose

<sup>1</sup> [Nickelson 2011]

<sup>2</sup> [Statistisches Bundesamt 2009]

a residence in the city.<sup>3</sup> Several surveys even show that there are more demographic differences concerning traffic behaviour than regional ones and the demographic structure has a greater influence on the motorisation than the spatial structure.<sup>4, 5</sup>

- And very often the one who moved out before, is commuting in now. This is supported by a survey in Cologne, which notes that 26% of the people living in the surrounding land are commuting into the city centre. People who moved from the city to the surrounding land (lower rents, higher quality of life) however are commuters at an amount 47%. The improvement of an attractive public transport commuter network would support this, as urban people quite often do not have a car.<sup>6</sup>

Another important development is an increased distance of travel. For example, in Germany in 1996 14% were commuting a distance of 25km or more, but in 2004 already 17% commute this daily distance. Furthermore the percentage of commuters living in a distance of under 10km from their workplace decreased by 3% to 52% during the same period. In 2008 the rate even dropped to 45.8%. These increasing distances have a negative effect on the choice of the transport vehicle, because walking (and in most cases cycling too) is obviously only suitable for short trips.<sup>7</sup>

Since the Schengen agreement employees even commute more often in another country. But especially for those who commute cross-border, it is still very difficult to do so with the public transport (bad connections and timetables as well as complicated fares in the various countries).

A survey by ETH Zurich on 1,000 households in the Greater Zurich area shows that 60% are just willing to move a maximum of 5km and 13% are willing to move a maximum of 10km.<sup>8</sup> In contrast the number of employed people working close to their residence is continuously decreasing, as indicated in a long-time survey. Many of the commuters using their own car have to pay several hundred Euros for car operation costs and fuel. Public transport users might have similar costs for season tickets, but do not suffer from stress with congestion at traffic peak times as much as car commuters. In addition, commuting by car is more dangerous because the attention while driving on regular routes drops down to a dangerous level.<sup>9</sup> This is accepted by many car commuters as part of their daily life. Others do not want to accept this risk but do not see any other alternative out of their personal situation.

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<sup>3</sup> [Van Wee 2002 & Scheiner 2005]

<sup>4</sup> [Hanson/Schwab & Holz-Rau/Scheiner 2005, pp.154 - 178]

<sup>5</sup> [Bauer, Holz-Rau & Scheiner 2005]

<sup>6</sup> [Holz-Rau & Scheiner 2005]

<sup>6</sup> [Holz-Rau & Scheiner 2005]

<sup>7</sup> [Nöther 2004, pp.57]

<sup>8</sup> [Krättli & Meier 2011]

<sup>9</sup> [Rößler 2012]

First consequence could be to move closer to the workplace to avoid the daily commuting. But this is a problem if the work place is located downtown, because living costs are quite high in city centres especially for families. Thus, commuters often prefer travelling longer distances to work.<sup>10</sup>

Another possibility to lower travel costs and make commuting safer is to organise car-pooling. In many cases commuting by public transport might also be the more reliable option especially during peak times.

But what effects does commuting have for the region, from where the employees are commuting off? Is it only negative if people leave the region in the morning to work somewhere else? Is there anything positive?

To answer this, it is helpful to analyse the development of commuting and their effects first.

Statistics of commuting in Germany (and other European countries) show that both the number of commuters and the distances have been rising significantly over the last decades.<sup>11</sup> Below a few essential factors are mentioned.

### Reasons for increased commuter traffic

- There is an increasing division of work place and residence over the last decades as a result of the advanced specialisation and differentiation of labour (Adam Smith: differentiation of work enlarges the productivity).<sup>12</sup>
- Since the 1970s the economic change in rural areas (decline of agriculture) led to spread of urban lifestyle (mobility) and the centralisation of supply facilities. This led to so called compelled mobility in rural areas and to extensive increase of car usage in rural areas.<sup>13</sup>
- The rising employment of womankind (in western countries) is one reason for the higher number of households with more than one employed person. Therefore finding a location where both partners live near their workplace is getting more complicated. Relocation after changing the work place is also more difficult, if another person of the household is working too.<sup>14</sup>
- The attendance to move decreased significantly in the last 30 years in western countries. However, the number of commuters has been rising extremely. People are mostly not willing to move just because of the workplace (In case of at least two family members working it is also getting more complicated to realize a short trip to

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<sup>10</sup> [MVV 2012]

<sup>11</sup> [Statistisches Bundesamt 2009]

<sup>12</sup> [Eichler 2010]

<sup>13</sup> [Holz-Rau & Scheiner 2005, p. 67]

<sup>14</sup> [Krättli & Meier 2011]

work for everybody.). People more likely even do accept lower wages than to relocate.<sup>15</sup>

- More and more people work part time or are just employed limited in time. Therefore it seems not worth to relocate each time, but commute over a longer distance if necessary.<sup>16</sup>
- People who produce a lot of (car) traffic as a consequence of their social background (age, financial sources, status, mobility preferences, obligation, etc.) mostly prefer to live in the suburbs or more rural areas. In contradiction, other groups of people (like students, older/poorer ones) often choose to live in the city. That means, for personal reasons people quite often do not live close to the work place and their preferences produce an extra level of commuter traffic.<sup>17</sup>

Many factors are influenced by the commuting action or do influence the action of commuters. In the figure below the interdependences of such transport related factors are shown.

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<sup>15</sup> [Daum 2010]

<sup>16</sup> [Schulze 2009, p. 12,17]

<sup>17</sup> [Holz-Rau & Scheiner 2005, p.68]

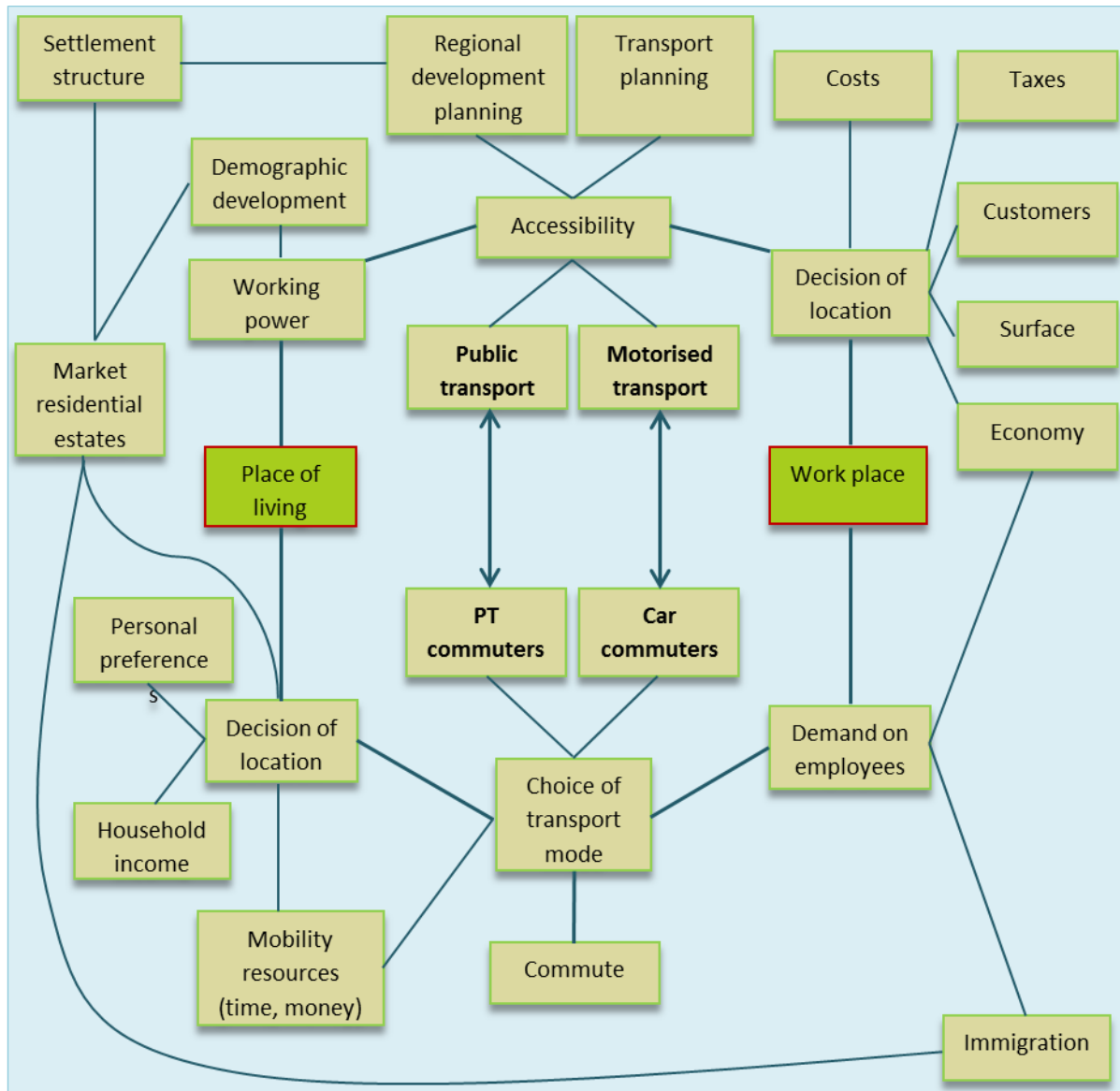


Figure 2: Spatial economic model of commuting<sup>18</sup>

On the right hand side there are some factors which are influencing the decisions of companies where to locate. On the other side there are factors concerning the decision of people (employees). As seen, the decision of companies and of employees is both correlated to accessibility and to the choice of the mode of transport. Therefore the organisation of the transport in a region is determining and the provision of a well organised (sustainable) transport system can have a significant effect (decision and behaviour) on all parties involved!

<sup>18</sup> [Scherer et al. 2010, p.50]

## Effects of commuting (from the point of view of the commute off region)

For a region to decide whether to support commuting or not, a further look on its effects might be of great help. Thus, in the following, positive and negative effects of (increasing) commuter traffic by (sustainable) transport modes are analysed, from the point of view of the commute off region.

### Positive effects

- If the number and range of jobs in the region is not sufficient, commuting can lower the number of unemployed people by enlarging the radius of action of each person through (public) transport services. The same time people can keep their homes and social environments in the region. → **enlargement of the labour market** → **reduction of unemployment**
  - A survey of BAKBASEL<sup>19</sup> unveils that the unemployment is higher in regions where the net rate of commuters is lower. In consequence a reliable transport system and the willingness to commute are determinative to fight this unemployment. Furthermore the reduction of unemployment generates income for the employee and the region and lowers necessary state subsidies.
  - Areas providing good accessibility usually have a higher economic activity (measured by the density of employment). → **enlargement of the labour market**
  - The variety of jobs is higher having an attractive commuter transport network and a larger reachability of destinations. Workers are likely to be more satisfied (as they are acting in their preferential field) and companies can hire specialised employees more easily. → **productivity, profit**
- On the other side an attractive commuter network might support the concentration of companies of one sector at the same (bigger) area. Those companies can produce more efficient (higher profit/ localisation economies<sup>20</sup>) and a specific labour market can be extended through measures of (further) education. → **spill over of knowledge**
  - The prime example for the spill over effect is the Silicon Valley in the USA: "The decentralised and fluid environment accelerated the diffusion of technological capabilities and know-how within the region [...] when engineers moved between companies; they used the knowledge, skills, and experience acquired at their previous jobs."<sup>21</sup>
  - In case of a concentration of several companies of the same industry, these companies can organise operations more efficient and increase the productivity. → **localisation economies**

<sup>19</sup> [Eichler 2010, p.10]

<sup>20</sup> Ibid.

<sup>21</sup> [Rosenthal & Strange 2004, pp.2119 – 2172]



- A person who is commuting off the region to work somewhere else, is still supporting the local economy by his purchasing power.<sup>22</sup> → **support local economy**
  - This aspect is also relevant if the person, who is commuting off a region, is working in another country. Lower living costs or lower wages at the place of living might overbalance time and travel costs for commuting to work abroad. These differences in wage and living costs are also relevant in the other direction. Therefore people might take the decision to move to the neighbouring country while maintaining a job in the country of origin. → **Settlement of people working in the foreign country (support local economy)**
  - Depending on the travel distance to the work place, commuters choose those places of residence with the lowest total costs (living costs, rents, travel costs, etc.).<sup>23</sup> In case of two comparable sites people are likely to choose the more attractive option (advertisement, infrastructure, recreational options).
- If there are any touristic sights or attractive recreational offers such as walking or cycling tracks, the connection to other cities by sustainable transport modes might be a chance to boost tourism. Sure, to compete with other cities alongside the new (public transport) connection, one important aspect is to work on public relations and eventually upgrade the facilities. → **tourism**
  - In addition to previous arguments the difference in living costs can also be an option for shopping tourism. Many people who live close to a border to a country with lower prices for shopping goods take the chance to make a good bargain if the shopping area is accessible for them. → **shopping tourism**
  - Shopping tourism is also an option for regions where basic living costs are higher than in neighbouring region(s). For example: Czechs who live close to the German border very frequently travel to Dresden for shopping as range but also prices of many goods are more attractive there than in the Czech Republic. On the other side, basic living costs are much cheaper there.
- The provision of good transport offers is also an incentive in (cheaper) rural areas. It is of great importance in terms of accessibility for employees coming from another region. In consequence, this might attract workers commuting from bigger cities to small towns. → **immigration (enlargement of human capital)**
  - Example: Though many people commute from France to Geneva/Swiss, only certain qualifications are on demand. The structural transformation from an industrial to a service society heavily hit the Swiss canton. In consequence 6.6% of the population of Geneva is unemployed as e.g. mechanics are not that needed anymore whereas bankers, tradesmen or lawyers are demanded. Thus, one option for “commute off regions” might be to concentrate on those businesses not focussed on in the “commute in region”.

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<sup>22</sup> [Haas & Harmann 2008]

<sup>23</sup> [MVV 2012]

- An attractive commuter network can also play an important role regarding the interregional risk compensation. If one region suffers an economic crisis, people could commute to another area to work there for a limited time (or permanently) without needing to move.<sup>24</sup>
- A well-developed commuter network especially with a railway connection is a determinative location factor for companies in the process of choosing a site. → **positive location factor for companies**<sup>25</sup> (see figure 2)
  - Thereby this is not only an advantage for transportation of the produced good, but also for the potential workers. If a company site is easily accessible, this company can reach more qualified workers as well.
  - Compared to other sites like areas close to a city centre, regions in the agglomeration which are part of a great infrastructural network have a considerable cost advantage. (Land in rural regions is less expensive than the ground in or close to the city centre.)
  - An immigration of workers as production factors does also have a strengthening effect on the local capacity of production. And, a well-developed infrastructure reduces the mobility barrier of the production factors between a rural area and the city.
  - Though it should not be trivialised, the interdependence of effects between accessibility and the gross value added is proved by the Credit Suisse Economic Research as shown in the Swiss example (Figure 3) below. The figure shows the correlation between the gross value added of several cities in Switzerland and their accessibility (measured with a synthetic factor). However the dispersion points out that gross value added cannot be attributed to accessibility only.

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<sup>24</sup> [Eichler 2012]

<sup>25</sup> [Scherer et al. , p. 10]

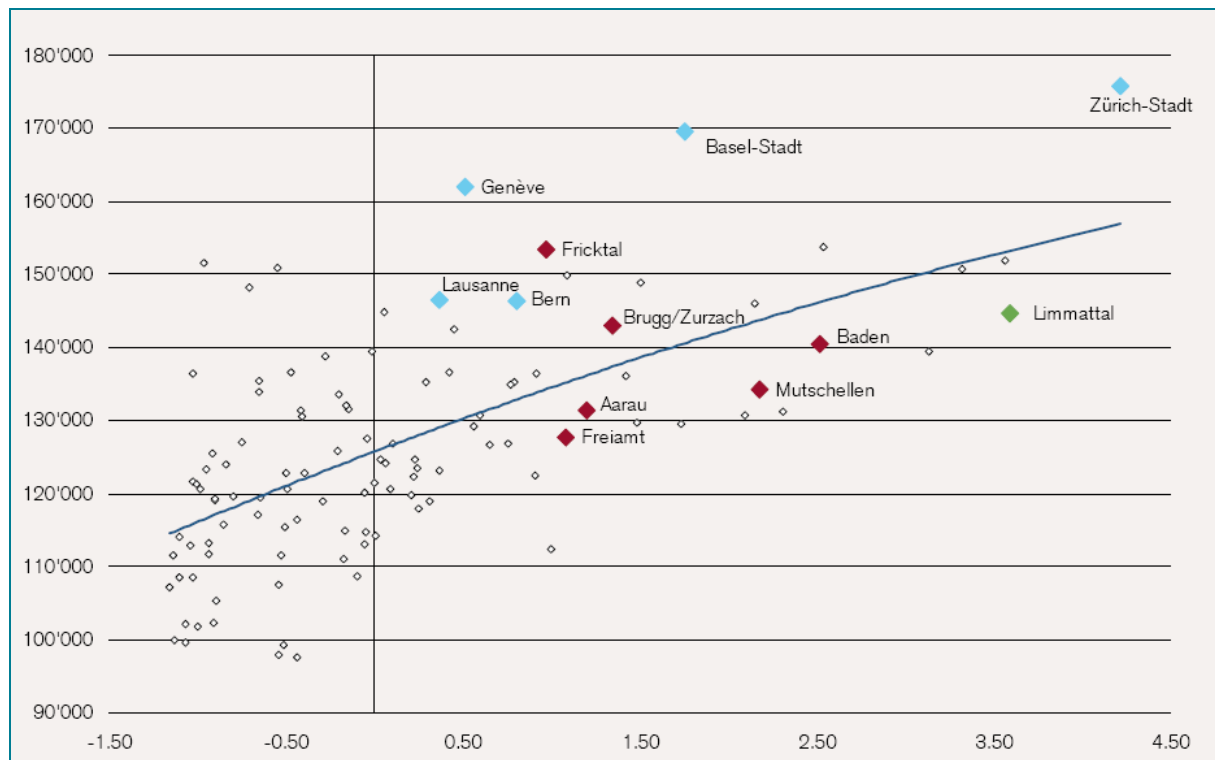


Figure 3: Gross value added in CHF (~0.83€) on the ordinate 2006 against the accessibility 2004 on the abscissa (synthetic factor)<sup>26</sup>

- Communities in the hinterlands also benefit from additional residents as they pay taxes and their estate industry prospers. Between Switzerland and France there is even an agreement from 1973 which determines that 3.5 % of the wages of the border crossers is refunded to the French communities.<sup>27</sup>

### Certain effects of commuting by public transport

From the point of view of the commute off region, the companies and the commuters themselves benefit from an attractive public transport system which is positively evaluated.

- If the possibility to commute by public transport is improved (e.g. by an infrastructural measure) this can have a positive effect on the satisfaction of employees, e.g. if the time of travel decreases and the reliability of the system increases. This could even affect the balance of commutes meaning that some employees from another area might consider now to work in the (better accessible) region (and commute into the region) → **time saving**
- Despite continuous safety improvements, traffic remains dangerous. However, commuters of public transport are exposed to a much lower safety risk. Furthermore commuting by car quite often causes stress. Using public transport, people do not have to fear congestion and can even use the travel time for other activities (such as reading after a busy working day). → **safety, health**

<sup>26</sup> [Scherer et al. 2010]

<sup>27</sup> [Daum 2011]

- Obviously travelling with public transport is – compared to car traffic - also the more sustainable option to commute. Consequently, a shift from car commuters to public transport users leads to a better air quality in the region and an improved quality of life for everybody. → **less emissions (pollutants, noise) less land consumption**<sup>28</sup>
- There are also social aspects about commuting with public transport. In case of an accessible public transport system people with reduced mobility (PRM) can enlarge their radius of action and better satisfy their mobility needs. → **more flexibility for PRM**<sup>29</sup>

### Negative effects

- The (new) connection between a smaller city and a bigger one (e.g. through a railway line) might lead to a process of suburbanisation (-if the region from which people commute off is not too remote) which causes additional traffic (pollution, noise, congestion, land use...) in the region.<sup>30</sup> That means, the extension of traffic infrastructure can lead to dispersion, housing sprawl and might induce traffic.<sup>31</sup> On the other hand, a new public transport connection might also lead to a switch from car use to public transport which lowers the environmental burden.
- For the individual, an increasing level of commuting can also have negative effects on health. This can result in back pain, tensions and depressions. Friends, family and the social life may suffer from this time consuming situation as well. It is said that car-commuters are even supposed to higher peaks of stress than jet pilots, because unexpected situation such as an accident may lead to a loss of control. Furthermore they are expected to be less flexible and reliable, as commuters might be delayed at work and depend on their car or on the public transport system (timetable).<sup>32</sup>
- Commuters who travel with a car need to search a parking space. However this aspect usually is not a huge problem in rural areas. Of course commuters of public transport do not have to worry about that.
- The same applies for the external costs (noise, pollution, land consumption, safety). Almost all transport modes do not bear their real costs themselves but public transportation has a better balance compared to car traffic. Nevertheless internalisation strategies are needed for both transport modes.
- Rising concentration of economic activity might lead to negative effects like higher prices and living costs.

<sup>28</sup> [Ahrens & Schöne 2008, pp. 25]

<sup>29</sup> [Austrian Mobility Research – FGM-Amor 2012]

<sup>30</sup> [Kreibich 1978 & Holz-Rau & Kutter 1995, pp. 61]

<sup>31</sup> [Holz-Rau & Scheiner 2005]

<sup>32</sup> [Klormann 2011]

- If commuting is just orientated in one direction and people mostly live in one area and work in another, this might result in vacant jobs where the people are commuting off in the most wanted working fields in the commuting in region. One solution might be to offer incentives to those workers (subsidised by financial resources from other fields where the region profits from the commuters).
- Most people who commute with public transport also depend on those busses and trains. Thus they risk being late, if the public transport vehicles are delayed or cancelled.

**Summary: (potential) advantages and disadvantages of commuting (from the point of view of the commute off region)**

	<b>Micro / Individual level</b>	<b>Macro / Society level</b>
<b>positive</b>	<ul style="list-style-type: none"> <li>• higher job opportunities / income</li> <li>• avoided costs for relocation</li> <li>• lower costs for rent (living)</li> <li>• high quality of living</li> <li>• more flexibility for PRM (with PT)</li> </ul>	<ul style="list-style-type: none"> <li>• less unemployment</li> <li>• spill over of knowledge</li> <li>• higher differentiation of work</li> <li>• increased welfare</li> </ul>
<b>negative</b>	<ul style="list-style-type: none"> <li>• time consumption</li> <li>• costs for travel</li> <li>• more stress</li> </ul>	<ul style="list-style-type: none"> <li>• higher level of noise, pollution, land use, congestion especially in case of additional (car) traffic</li> <li>• costs for transport infrastructure</li> <li>• vacant jobs in the “commute off region” because of one way commuting</li> </ul>

Table 1: Positive and negative effects of commuting

In total, all these effects lead to higher competition power of the located **companies** and to an advantage concerning the interregional competition for best qualified workers compared to other small towns or smaller regions which do not provide such a good infrastructural connection. Furthermore commuting with public transport allows a huge flexibility for **individuals** causing lower social and external costs (noise, pollution, land use...) compared to car use. As commuting is improving the economic balance between different parts of the region and potentially reduces unemployment it is in many cases also supported by local policies.

Another chance of an improved accessibility to and within the region is shopping tourism and tourism in general. That means, a **region** that provides a good (public) transport network for commuters should also advertise existing shopping facilities and touristic sights. At the end this also leads to a better capacity utilisation of the (public) transport network on-site as (shopping) tourists usually use the transport services and infrastructure at other times than commuters. To stimulate (shopping) tourism by environmentally friendly means of transport

it might be worthwhile to improve the surrounding conditions for visitors (e.g. free transport to shopping area/ tourist sights possibly connected to any purchasing action).

From the point of view of the total agglomeration the advantages of a developed commuter network very probably overbalance the disadvantages. However in certain areas of the agglomeration negative effects cannot be neglected (like costs of living in the centre).<sup>33</sup>

Other effects for the agglomeration might be:

The job market is more flexible through labour market pooling and matching (higher diversity of jobs).

- The local differences of wealth can be reduced.
- The agglomeration of knowledge and human capital could be used for an exchange of concerns (“spill over effect” → rising profit, wealth economy).
- The support of commuting might induce additional traffic.
- In the case France-Geneva, French communities benefit from the refund of taxes on the wages of the border commuters.

### Border crossing examples of commuting in Europe

In that chapter some investigated examples of cross border commuting in Europe will be summarized.

#### The taxation issue with border crossing commuters (France → Geneva)

In border regions working in another country is very popular. In consequence of local politics in Geneva new jobs were created. But there was no construction of sufficient (affordable) housing complexes in parallel. Due to the high level of rents in the Swiss Geneva area about 2,000 people move from Geneva to the French side every year. However, the Swiss wages are the world-highest (104,100\$ / 83,678€ on average) and the taxes on wages is fairly low (29.3 %).<sup>1</sup> Hence people living on the French side of Geneva prefer working in Switzerland. That leads to many vacant jobs in France (such as teachers and nursing staff in retirement homes). Currently 85,000 people work in Geneva while living in France (40,000 of them are Swiss).

But French communities in the hinterlands also benefit from these additional residents as they pay taxes and the French estate industry prospers. Due to an agreement from 1973 3.5 % of the wages of the border crossers is refunded to the French communities. In 2010 French communities got 216 Mio CHF (~ 179.8 Mio €) which was strongly helping to overcome the financial crisis.<sup>2</sup>

<sup>1</sup> [OECD]

<sup>2</sup> [Daum 2011]

As investigated on the German border to Czech and Poland the collaboration and provision of a transnational public transport infrastructure between the neighbouring countries can help to reduce disparities and get closer to an equal level (e.g. regarding the population density and wages).<sup>34</sup>

### Excursus: Luxembourg

A very typical cross border commuter region is the region around Luxembourg. Some findings about the commuter travel are presented in the following.

4.2 million employees live in the region of Lorraine, Luxembourg, Rhineland-Palatinate, Saarland and Wallonia. 200,000 of them daily cross a state or country border (region of most border crossing commutes in the EU). Saarland has the highest rate of car ownership in Germany (587 cars per 1000 inhabitants). Luxembourg has even the highest rate in the EU (678 cars/1000 inhabitants).<sup>1</sup> Most of the commuters use their car even if this means to put up with congestions every day. Just 10% of the commuters to Luxembourg use the public transport.

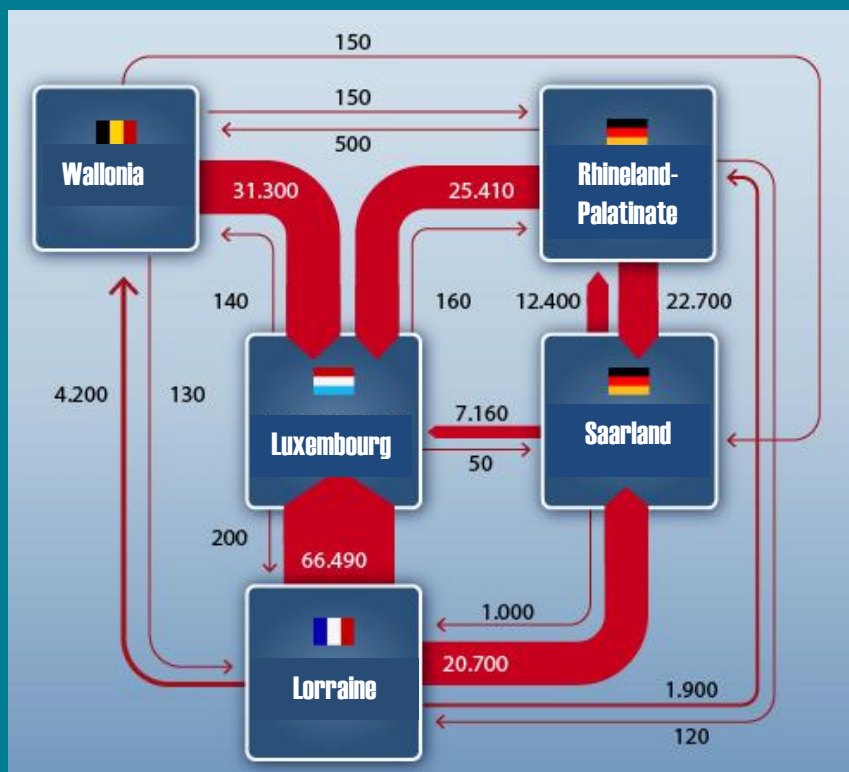


Figure 5: Commuter traffic within the region (commuting persons/day) Source: Offices of statistics of the regions; June 2009 <sup>1</sup>

Though it might be obvious to promote public transport services together in the region, the communication and collaboration between neighbored public transport operators is still highly capable of development. One approach could be to install a cross-border institution which connects all representatives.<sup>2</sup>

<sup>1</sup> [Statistische Ämter der Großregion 2009]

<sup>2</sup> [Blass 2011]

### Cross border commuting by public transport

But there are examples of border crossing public transport like the popular *Vogtlandbahn* (Germany – Czech Republic). Another example with successful 10-year-old history is the rail trail from Enschede/Netherlands to Münster/Germany and to Dortmund/Germany. After a modernisation and with an intensive Dutch-German cooperation a huge increase of ridership was achieved.

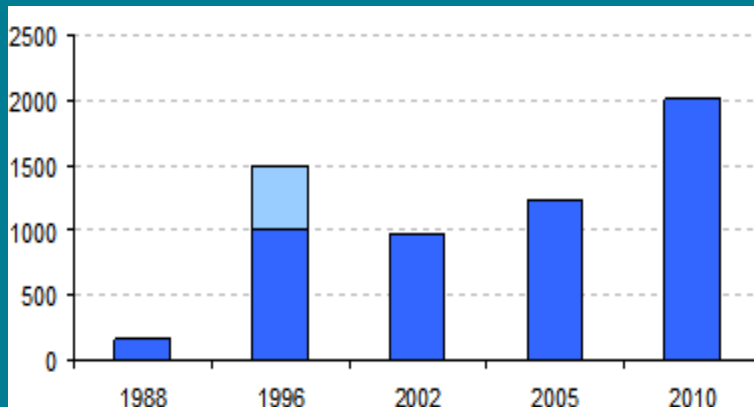


Figure 6: Border crossings demand Gronau – Enschede (Monday to Friday)<sup>1</sup>

Actually the regions around Luxembourg are also planning to improve the existing border crossing rail trail to offer a more sustainable alternative to commuting by car. As a first step it is planned to extend the railway net, to raise the travel speed and to provide “park and ride” facilities. Furthermore the customer service will be improved with an adjusted frequency, electronic schedules for border crossing connection and customer friendly handling of new tariff options. Another long-time approach is to implement a consistent fare system with an improvement of cooperation of various public transport operators.<sup>2</sup>

<sup>1</sup> [Geuckler 2007]

<sup>2</sup> [Wille & Ohnesorg 2005]

## Conclusion

As it can be seen, many processes point into the same direction. In the context of nationwide and international networking, many employees just cannot give up commuting and choose workplaces outside their hometown. Case studies show that especially the transnational connection between employees’ homes and their workplaces also foster the regional development of the commuting off region. To face the rising traffic volume, public transport is a good option with many advantages. Some countries already cooperate with their neighbours to offer a more sustainable way of commuting which might also be cheaper (for individuals and society), faster and more reliable. Other collaborations are about to develop.



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