INTERNATIONAL BUSINESS TRAVEL OF THE NETHERLANDS: CHARACTERISTICS, DEVELOPMENTS AND ISSUES

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SAMENVATTING

'Internationaal zakelijk verkeer van en naar Nederland: karakteristieken, ontwikkelingen en belangrijke thema's'


Dit paper presenteert de resultaten van een exploratieve studie naar het internationaal zakelijk verkeer naar en van Nederland. De studie is uitgevoerd op basis van bestaande data en interviews met sleutelpersonen van organisaties als vliegvelden, vliegtuigmaatschappijen, spoorwegmaatschappijen, etc. Onderwerpen die in dit paper onder andere aan de orde komen zijn: omvang van het internationaal (zakelijk) verkeer, modal split en de ruimtelijke structuur van dit internationaal zakelijk verkeer. Enkele belangrijke thema's voor de planning van Europese infrastructuur worden behandeld: concurrentie tussen de verschillende vervoerwijzen (lucht, auto en trein), de potentiële mogelijkheden voor de Hogesnelheidstrein, congestie in de lucht alsook de effecten van de Kanaaltunnel.

SUMMARY

'International business travel of the Netherlands: characteristics, developments and issues'

International business travel is an important class of travel in the context of a quickly integrating European economy. This paper is based on an exploratory study on the backgrounds, factors and characteristics of international business travel to and from the Netherlands. Based on currently available data and interviews with experts in the field the main characteristics are described. Items dealt with are volumes, modal shares, geographical distributions etc. Important issues in European transport planning are discussed: competition between modes (air, car and rail), potential role of high speed trains, air congestion as well as the effect of the Channel tunnel.
1 INTRODUCTION

Since the mid-eighties European integration is making more progress than expected. The objective of the politicians is to complete the Single European Market by 1993. The business community strongly supports and stimulates this political aim. The impetus behind the current drive to complete the single market is the belief that the 'costs of non-Europe', i.e. the inefficiencies from a fragmented European economy, are causing Europe to lag behind the USA and Japan.

The economic growth due to the integration envisaged will lead to an increased demand for transport of goods and persons; in particular, transport between member states will be affected strongly. The growing transport movements on a European scale in turn requires a European transport and infrastructure policy and a stronger orientation of national policies towards international aspects as well. These policies should be based on a thorough understanding of future demands for international transport.

One important category of international transport is business travel since it is essential to a true economic integration that international business trips can be made efficiently. Otherwise the removal of traditional barriers in a physical, regulatory and fiscal sense still will not lead to integrated markets and production.

One important objective of Dutch economic policy is to remain the distributitional hub of North-West Europe. In addition, competitiveness of the major economic centers is a prime consideration. In Dutch transport policy, a high quality of the transport system to business travel - and goods transport, of course - has a high priority.

In the past, almost no attention has been paid to international business travel and consequently hardly any systematic insight is available. This hampers the formulation of adequate policies seriously. Therefore, the Dutch Ministry of Transport and Public Works commissioned an exploratory study into the characteristics and factors of international business travel to and from the Netherlands.

In this paper we will briefly deal with the empirical findings of the study and discuss possible implications for transport policies. For other aspects such as market structure, opinions of the interviewees and a more detailed analysis of congestion in the air system the reader is referred to the report [1].

The set-up of the paper is follows. Section 2 of the paper describes the significance of this type of travel. Section 3 presents the set-up of the study and the definitions adopted. In Section 4 deals with the main empirical findings on the international business trips to and from the
Netherlands. Important issues like intermodal competition, air congestion, the impact of the Channel tunnel etc. are discussed in Section 6. The paper concludes with a summary of the main findings in Section 7.

2 RELEVANCE AND BACKGROUND OF INTERNATIONAL BUSINESS TRAVEL

Transport is a commodity directly derived from economic and other social activities. The 1988 Cecchini report estimated that the single market will lead to an additional increase of EC GDP of about 3 to 7 per cent within five to seven years. It is clear therefore that the economic changes due to the integration will lead to an additional demand for cross-national transport of goods and persons.

It is to be expected that in particular transport between member states will grow as a consequence of the economic integration. Important examples of economic restructururing that may occur and will affect transport demand are:
- markets will be extended across borders,
- firms will merge internationally,
- headquarters will be relocated,
- the divisional set-up of multinationals will increasingly be reorganized from a regional to a more product-based structure,
- logistics will be reorganized on a much wider geographical scale.

These processes will cause not only interstate goods transport to grow quickly but will stimulate business travel as well. It is clear that trade in industrial products requires extensive business contacts. In the growing service sector it is obvious that export is strongly related to personal contacts. Liberalization of the service sector, e.g. banking, insurance, transport, will also result in a growing demand for business contacts across borders.

Apart from the creation of the single market within the EC it is to be expected that economic integration will extend to a wider part of Europe. Current negotiations with the EFTA countries are aiming at a so-called European Economic Space where trade relations are liberalized to a large extent. Another important contribution to a wider integration may be expected on the long run from the economic changes in the Eastern European countries.

As explained already in the introduction a true economic integration in Europe can not be attained without an efficient transport system which enables a swift and efficient movement of goods and persons. Without such a system Europe's economy will remain fragmented.

The need for a European policy on transport and infrastructure is steadily growing. Apart from regulations, taxes and harmonization a major subject of this policy will become the further
development of a strategic long-distance transport network comprising motorways, high-speed rail lines and air connections. In addition, international aspects of national planning are becoming increasingly important. First, because international transport links will often also serve domestic long-distance travel and second, because local networks have to function as feeders to the European network.

Important issues regarding infrastructure at a European level are at the moment:
- development of a coherent high-speed rail network;
- extension of the motorway network, especially across borders and other geographical barriers, e.g. Alps, Scandinavian sea crossings;
- creation of a high-quality system linking up Eastern Europe;
- capacity of the air transport system.

It should be noted that these issues not only have technical and operational aspects but financial matters are equally important.

A top priority of current Dutch transport policy is a high-quality access for commercial transport by all modes to and from European markets, i.e. goods transport and business travel. The large share of export in the Dutch economy (> 50%) as well as the importance of transport and other services to that export explains this policy objective.

Decisions with respect to international infrastructure have to be based upon sound knowledge of transport demand and its determinants. For instance, the feasibility from a transport and financial point of view of a high speed rail network is heavily dependant among other things upon the mode choice behavior of long-distance travellers.

A key segment of the relevant transport market is international business travel. Its significance not so much stems from its volume but rather from its economic value. Business trips make up approximately 20% of total world-wide international travel [2]. For specific modes like air and high speed trains the share is much higher and business travellers account for a significant part of total receipts of the operators. The profitability of the transport systems is determined to a large extent by the business travel segment. For instance, 70 per cent of the air travellers between London and Amsterdam are businessmen [3]. Total expenditure on business travel in Western Europe amounted to about 140 billion US$ in 1986.
3 RESEARCH QUESTIONS AND SET-UP OF THE STUDY

3.1 Research questions

The significance of international business travel and the fact that very little is known about it, were the reasons for a study into this matter. The following research questions with respect to international business travel to and from the Netherlands were subject of the study:

1. What is the current volume and composition of international business travel; where possible give recent developments.
2. What are the expectations about future demand for this type of travel?
3. What modal shares can be predicted given various economic scenario's and investments in transport systems?
4. What are the effects of increasing congestion in the air transport system?
5. How can changes in the demand for international business travel be related to changes in economic relations?

The present paper is based on the first phase of the study, which was exploratory in nature and had to concentrate on questions 1, 2, 4 and 5. Its main purpose is to bring together currently available material and insights in a systematic manner.

3.2 Definition of international business travel

Business travel is the convenient term which describes all non-discretionary trips made either in the course of, or for, a work related purpose. Trips from home to the regular place of work and vice versa are excluded. The same holds for trips to deliver or transport goods by truck or van.

From the literature no precise and generally accepted definition of a business trip emerged. The distinction between this purpose and tourism trips on the one hand and delivery trips on the other is not easy to be made. Although if restricted to long-distance travel the definition problem is not as serious as in domestic travel.

"Typical images associated with business travellers are of the boardroom director or sales manager; in reality, the term includes such non-visibly identifiable groups as actors, musicians, sportsmen, diplomats,... as well as incentive trip winners and conference attendees." [2,p.1]

This study showed that business travel includes a wide range of different types of trips and travellers. Many sub-markets exist and each of these has distinct characteristics, often quite different from each other. Common to the various types is that the traveller's costs are met by
a source other than his own pocket and that the traveller's purpose is not discretionary. See also [1,2]

Despite its great importance no well-founded segmentation of business travel was found. Generally, a distinction is made between:

a. Meetings, e.g. conferences, congresses and conventions;

b. Commercial activities, e.g. sales, marketing, managerial etc.;

c. Governmental/official missions.

Other classifications are based on the type of business and the type of organization.

3.3 Set-up of the study

Given the exploratory nature of this phase of the study the analysis was to be based on existing data sources, literature and a limited number of interviews.

Dutch and foreign data sources on international business travel to and from the Netherlands have been reviewed. To a limited extent some additional statistical analysis has been carried out on a few of these data sources.

The surveys that proved to be most useful for this study were:

- The annually held survey among air travellers at Amsterdam Airport;
- A roadside survey at the German-Dutch border held in 1987;
- A roadside survey at a part of the Belgian-Dutch border held in 1988.

It was surprising to find that hardly any information is available on business travel by train.

An extensive literature survey has been made on the topic of this study. It was found that in the transport field little of a scientific nature has been published. In the general business journals (Financial Times, Wall Street Journal etc.) popular articles on business travel are published more frequently.

Interviews have been held with experts in the field in order to check data availability and to ask for their views on the market structure, determinants and outlooks with respect to business travel. Experts interviewed were from the airline industry, international airports, railway transport operators, travel agencies, travel managers at large firms, aircraft industry and government.
4 CHARACTERISTICS OF INTERNATIONAL BUSINESS TRAVEL PATTERN

4.1 Volume of international business travel

Table 4.1 presents the volume and modal split of international business travel within Europe related to the Netherlands. The number of international, that is border-crossing trips from or to the Netherlands (all purposes) in 1988 is estimated at nearly 150 million. The car is by far the most important mode with a share of 84% of the trips. Trips by coach and air both have a 5% share. Rail only plays a minor role with a modal share of 3% of all trips. The number of border-crossing business trips to and from the Netherlands in 1988 was about 17 million: that is 11% of all international travel. This purpose accounts thus for about 68,000 border-crossing trips per working day, which amounts to about 2% of all business trips in the Netherlands. Thus, only small volumes are involved: about one trip per inhabitant or three per worker per year.

From table 4.1, one can learn that air serves about 5% of all international trips but 19% of the international business trips. Nevertheless, also for international business travel the car is the most important mode: 78% of all trips occur by car. The coach however plays a negligible role in the business travel market. Also ship and rail are rarely used for this travel purpose.

Table 4.1: Volume of international business travel from and to the Netherlands in 1988, in trips (various sources)

<table>
<thead>
<tr>
<th>MODE</th>
<th>All purposes</th>
<th>Business trips</th>
<th>Share of business trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trips [million]</td>
<td>Modal split [%]</td>
<td>Trips [million]</td>
</tr>
<tr>
<td>Car</td>
<td>125.0</td>
<td>84</td>
<td>13.3</td>
</tr>
<tr>
<td>Coach</td>
<td>7.6</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Rail</td>
<td>5.3</td>
<td>3</td>
<td>0.4</td>
</tr>
<tr>
<td>Air</td>
<td>8.0</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td>Ship</td>
<td>2.4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>ALL</td>
<td>148.3</td>
<td>100</td>
<td>17.0</td>
</tr>
</tbody>
</table>

The last column of table 4.1. shows the share of business trips in total travel for each mode separately. It can be seen that this share is by far the largest for air. The equivalent share for total European air traffic is 42% (AEA interview).

Nearly all business travel by air is handled by Schiphol Airport, the Dutch regional airports play
an insignificant role. For sake of comparison, Heathrow and Gatwick have a business travel share in the non-transfer trips of 52% and 54% respectively. The car appears to have a business trip share of about 11%, which is only slightly more than for all inland trips. The share of the train in international business travel is small, only 2%.

4.2 Modal split of international business travel

The large share of the car in international business travel to and from the Netherlands partly stems from the criterion of border crossing, regardless of the length of the trip. So, many of the business trips between adjacent regions in the Netherlands and Belgium and Germany respectively, count as international trips.

The car is the natural mode for the shorter business trips. As distances become larger the other modes enter the scene. Figure 4.1 presents the split between car and air by distance, derived from available data (no data for rail trips were available, but volumes were small anyway).

![Modal split between car and air in international business travel from/to the Netherlands.](attachment:image.png)

It shows that almost no trips shorter than 200 km are made by air. Beyond that distance air share picks up quickly. At distances over 800 kilometers the air share exceeds 50%, whereas over 1500 km air serves nearly all business trips. It is surprising to see that the car has a significant share up to very long distances.
From the scarce rail travel data, which were only available at the level of countries, we see that rail is only used to destinations in the nearby countries Germany, Belgium, France and the UK. The rail share in the business market, however, still is small. The near future will show whether High Speed Trains will change this situation.

4.3 Geographical pattern of international business travel

As with inland business trips, the international business trips show a very large percentage of short distance trips. Figure 4.2 shows that 80% of these trips is shorter than 300 kilometers.

![Graph showing cumulative distribution of international business trips from/to the Netherlands by distance.](image)

**Figure 4.2:** Cumulative distribution of international business trips from/to the Netherlands by distance

Table 4.2 gives a geographical split-up of international business travel by country and by mode. Because of lack of data, not all relations can be quantified (indicated with a question mark). For example, figures about business travel by car to France, Spain, Portugal and Italy are not available.

Most of the international business trips are with Germany: 7.8 million per year. Belgium follows with nearly 5 million trips a year. France ranks on the third place followed by the UK. The volume of travel between countries quickly falls with higher ranks. Germany, Belgium, France and the UK together account for about 90% of all international business trips from/to the Netherlands. The remaining 10% is distributed among the rest of Europe. Not surprisingly, there
is a strong correlation with the volume of trade with these countries: 84% of Dutch goods exports to Europe is to these four countries, while 89% of the Dutch import originates from them.

Table 4.2: International business trips within Europe to/from the Netherlands (1988)

<table>
<thead>
<tr>
<th>Total to/ from country</th>
<th>Per capita</th>
<th>Mode</th>
<th>Mode</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[x1000]</td>
<td>(per 1000)</td>
<td>Air [x1000]</td>
<td>Car [x1000]</td>
</tr>
<tr>
<td>W-Germany</td>
<td>7,795</td>
<td>124</td>
<td>442</td>
<td>7,103</td>
</tr>
<tr>
<td>Belgium</td>
<td>4,812</td>
<td>487</td>
<td>42</td>
<td>4,670</td>
</tr>
<tr>
<td>UK</td>
<td>1,207</td>
<td>21</td>
<td>1,176</td>
<td>1</td>
</tr>
<tr>
<td>France</td>
<td>?</td>
<td>?</td>
<td>331</td>
<td>?</td>
</tr>
<tr>
<td>Switzerland</td>
<td>259</td>
<td>39</td>
<td>235</td>
<td>24</td>
</tr>
<tr>
<td>Spain</td>
<td>?</td>
<td>?</td>
<td>173</td>
<td>?</td>
</tr>
<tr>
<td>Italy</td>
<td>?</td>
<td>?</td>
<td>167</td>
<td>22</td>
</tr>
<tr>
<td>Denmark</td>
<td>160</td>
<td>31</td>
<td>136</td>
<td>22</td>
</tr>
<tr>
<td>Sweden</td>
<td>121</td>
<td>14</td>
<td>107</td>
<td>4</td>
</tr>
<tr>
<td>East bloc</td>
<td>73</td>
<td>1</td>
<td>55</td>
<td>18</td>
</tr>
<tr>
<td>Norway</td>
<td>71</td>
<td>17</td>
<td>67</td>
<td>4</td>
</tr>
<tr>
<td>Portugal</td>
<td>?</td>
<td>?</td>
<td>52</td>
<td>?</td>
</tr>
<tr>
<td>Austria</td>
<td>55</td>
<td>7</td>
<td>42</td>
<td>13</td>
</tr>
<tr>
<td>Greece</td>
<td>47</td>
<td>5</td>
<td>47</td>
<td>0</td>
</tr>
<tr>
<td>Finland</td>
<td>41</td>
<td>8</td>
<td>41</td>
<td>0</td>
</tr>
<tr>
<td>Ireland</td>
<td>36</td>
<td>10</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>Turkey</td>
<td>25</td>
<td>1</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>21</td>
<td>2</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>?</td>
<td>?</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>16,900</strong></td>
<td>-</td>
<td><strong>3,203</strong></td>
<td><strong>13,300</strong></td>
</tr>
</tbody>
</table>

1 (Ship use from/to U.K. is included in train and car)
2 Of country of row.

The largest flow of business trips by air is, for obvious reasons, from and to the UK: 1.2 million per year. West-Germany ranks second with about 450 thousand trips, more than e.g. to the USA. Exact figures of the rail share for different relations are not available. It is clear however that rail plays a very minor role in current international business travel. Even for nearby destinations with a good train access rail use by business travellers is very low.
4.4 Some important trends in international business travel

Table 4.3 presents recent developments in international business travel from/to the Netherlands by air, including intercontinental trips (there are no time series available for European travel only). In the recent past, international business travel increased significantly: from 1980 to 1987 an increase of 30%. This growth figure though is smaller than that of total air travel of the Netherlands.

Notably, the number of foreign business travellers is higher than the number of Dutchmen while the foreigners also show the largest growth. The number of Dutch business travellers only started to increase in the second half of the eighties. The result of these developments is among other things that at Schiphol airport the percentage of foreign business travellers increased from 62% to 65%.

Table 4.3: Development of international business travel by air from/to the Netherlands, including transfer (millions of trips).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutchmen</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Foreigners</td>
<td>2.4</td>
<td>2.6</td>
<td>2.7</td>
<td>2.9</td>
<td>3.0</td>
<td>3.2</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>4.0</td>
<td>4.1</td>
<td>4.2</td>
<td>4.3</td>
<td>4.5</td>
<td>4.8</td>
<td>5.2</td>
</tr>
<tr>
<td>% yearly change</td>
<td>-</td>
<td>2.5</td>
<td>2.4</td>
<td>2.4</td>
<td>4.7</td>
<td>6.7</td>
<td>8.3</td>
</tr>
<tr>
<td>Index</td>
<td>100</td>
<td>103</td>
<td>105</td>
<td>108</td>
<td>113</td>
<td>120</td>
<td>130</td>
</tr>
</tbody>
</table>

No similar time series are available for the other modes. It is the general impression that the growth of these modes by business travellers for international trips is much less than for the other travel purposes. Based on scattered data and the interviews we concluded that both for the car and rail international business travel increases less than travel for other purposes, i.e. leisure.

A split-up of the growth in international business travel by geographical relation is only possible for trips by air. Figure 4.3 shows these growth rates for the period 1985 to 1988 for a number of destination countries.
Figure 4.3: Growth rates between 1985 and 1988 for international business travel by air from/to the Netherlands

It appears that the strongest growth took place in business relations with East bloc countries: nearly 80% in three years. Also business travel from/to Portugal, Sweden and Spain exhibits a strong growth in recent years. Only modest growth appeared in relationships with Switzerland, Greece and West-Germany. With Norway, even a decline in business interaction occurred.

5 DETERMINANTS OF MODE CHOICE BEHAVIOUR OF THE INTERNATIONAL BUSINESS TRAVELLER

Reasons for mode choice of international business travellers have been investigated by interviewing experts on this travel market (such as travel agents of coach, railway and airline companies; see section 3.3). They were asked to rank a number of specific criteria such as travel time, comfort, costs, frequency and departure times on a 0 to 100 scale. Of course, this gives only a rough indication of the weight of these factors for the business traveller in making a mode choice. Not surprisingly, door-to-door travel time is considered the most important choice factor with an average rating of 65 (see figure 5.1). The second rank is given to comfort (however with a rating of 17 only). Travel costs only have rank four.

Some travel segments, however, are more sensitive to travel costs than others. It emerged from the investigation that the following two segments are more cost-sensitive than others:

768
travel to conferences and meetings;
- self-employed and representatives of small firms.

Figure 5.1: Mode choice criteria of international business travellers

The various modes do not compete directly with each other. Mode competition differs by distance class. At distances up to 200 kilometers air will not be considered. The car is a more important competitor to rail than air. The car is also a stronger competitor to air than rail is. Also relative to the plane the car competes more seriously than does the train.

From the interviews it clearly emerged that the train is not (yet) a serious alternative mode to the international business traveller. This is corroborated by the very low mode share of 2% only.

If the train has to play a greater role in future business travel then its quality has to be improved drastically, not only relative to its current status but foremost compared to the future quality of its competitors car and air! Not only needs rail travel time to decrease significantly, but the various service elements, which do not meet the requirements of the business travellers and travel agents neither (e.g. ticket handling) have also to be improved.

An important aspect of travel time is that a quick transportation mode will enable the business traveller to complete a visit in a single day without an overnight stay. This is demonstrated by the statistics: business travel in Europe by air consists to a large part (41%) of one-day return trips.

The importance of travel time also has been derived from mode choice modelling studies such as the one on the High Speed Train connecting Paris-Brussels-Cologne-Amsterdam [6]. From a stated preference survey among international business travellers by train and plane to Paris and
Frankfurt, the following mode choice factors appeared important:
- travel time;
- travel cost;
- staying time at destination;
- feasibility and availability of alternative modes,
with travel time as the most dominant one.
Recently, a similar study with the same purpose has been completed for the Dutch Ministry of Housing and Spatial Planning [7]. This study used a subdivision of travel time into time components such as in-vehicle time, access and egress time and waiting times. Waiting time losses was assumed most important, having a disutility of four times larger than in-vehicle time.

Choice between suppliers of the same travel mode service

Train, coach or plane services are mostly supplied by various firms. To international business travellers the choice between various airline companies is relevant. Figure 5.2 presents a ranking of air line choice criteria according to the experts interviewed. Also for this type of choice, costs appear to play a minor role. Departure times and comfort are major factors that determine the choice outcome. The planning of a good network with flights at times and days that fit to the travellers needs is of paramount importance for an airline company. Especially the supply of easy one-day return trip opportunities can give a competitive advantage to a company.

![Criteria relevant to the business traveller's choice between airlines](image)

Figure 5.2: Criteria relevant to the business traveller's choice between airlines
6 DISCUSSION OF SOME IMPORTANT ISSUES

6.1 Competition between modes

European infrastructure requires huge investments. The success of these investments depends in many cases on the shifts that will occur between the available modes. The analysis showed that in particular the competition between car and air travel is heavy up to distances of about 600 km. This result is rather surprising giving the fact that in most investigations the rail/air competition is the central issue.

Rail - air competition

Currently, traditional rail services hardly attract international business travel. One of the main arguments in favour of the creation of a European high-speed rail network is the anticipated shift of air travellers to these new services. This would reduce environmental problems in the vicinity of the airports and release the limited airport capacities to long distance and intercontinental flights. Business travellers are more profitable to the train operators and would thus contribute substantially to the economic viability of the high speed train network.

One of the surprising results of the study is that at this moment traditional rail services do not succeed in attracting international business trips. The big question is whether the high speed train services indeed will be able to do so.

Most of the experts interviewed doubt whether the high speed train is able to compete with air travel successfully other than on a few relations. Since door-to-door travel time is a main mode choice criterion, these relations must be shorter than approx. 500 - 600 km. On longer distances travel time by train becomes too long. As an example, the expected travel time on the new high speed train connection Amsterdam - Paris is 3 hours resulting in an average operational speed of about 165 km/h.

The other key choice factor is the frequency and timing of the services. Business travellers require high frequencies and appropriate scheduling. High frequencies offer them flexibility, whereas appropriate scheduling enables them to make one-day return trips.

It remains to be seen whether on international relations frequent rail services can be offered. For instance, only a two-hour service will be run between Amsterdam and Paris on the new high speed line. This is rather low compared to the average frequency of flights between Amsterdam and London of about one every 20 minutes. It is clear that high train frequencies are only justifiable if there is sufficient potential demand. It requires a much larger integration in Europe to create similar demand on international relations as on equally long domestic connections.
It is expected that as a consequence there will be only a very limited number of international relations where the high speed train will be able to attract a significant number of business travellers from the airlines.

Almost unanimously the experts were convinced that train could have a larger share of the market than presently is the case. In order to gain more travellers railway companies should offer a more comprehensive product tailored to the specific needs of the business traveller. It is not enough to offer just transportation.

The requirements refer to the rolling stock, reservation systems, flexibility, payment systems, luggage handling, meals and catering, telephone service on board, lounges at stations, integration with rental car services etc. It will be difficult for one organization to offer both mass transportation on short distances and personal service for long-distance business trips.

Another big disadvantage of the rail mode compared to the air system from a travel manager's point of view, is the absence of on-line connections to computer reservation systems and complex administrative procedures for payment and collecting tickets.

Summing up the findings of the interviews on this point, the expectation is that the development of a high speed rail network will attract a number of international business trips from air approximately equal to about one-year's growth in the European air system. Another recent study [7] on the substitution between air and high-speed train seems to establish somewhat larger shifts. It should be noted however, that these results relate to specific geographical relations only. A study by Tardieu et al. [4] supports our prediction; using a complex model system they found that only 16% of the new train users were former air travellers. It should be noted that this figure relates to all trip purposes which means that for business travellers the shift may be even lower.

The recent report [5] on the evaluation of the new high speed railway line between Amsterdam - Brussels - Paris gives some additional evidence of the intermodal shifts. In case a completely new track would be built between Paris and Amsterdam the future users, travelling between the Netherlands and France, are attracted from:

- 60% traditional train
- 21% car
- 8% air
- 14% induced travel

**Car versus rail and air**

As explained earlier the car is the major mode in international business travel. The big share on shorter distances was expected given earlier findings with respect to domestic business travel and given mode availability. The fact that even for longer distances up to 500 to 600 km the car is
the dominant mode is surprising and has significant consequences for transport planning.

There are two possible explanations for this. First, many longer trips may have origins and destinations that are not served by adequate air service. Second, also between regions with high quality air services many business travellers choose the car. Further analysis is required on this point. Analysis of available data indicates that the geographical distribution of the trips is the major factor.

The air transport system could improve their area-wide coverage by increasing the number of connections to regional airports. Given the fact, however, that in many cases these connections have to serve as feeder lines to major airports at the same time, a transfer at these airports will be unavoidable. This would be detrimental to the travel time and comfort offered. May be abolition of border controls at airports within the EC and efficient car rental systems may enhance competitiveness more.

If rail is going to offer a completely new product based on high speed trains they will probably be able to attract former car users on very specific relations. In order to maintain high operational speeds these train will serve only a limited number of cities. The analysis showed that not more than about five international intercity pairs will have sufficient demand to be served by high-quality connections. In particular, for trips between these cities the train may become an attractive mode. It is clear that the central areas of these cities will be best served but the catchment area will largely depend upon connecting local and regional public transport.

6.2 Integration of modes

In the previous section future intermodal competition was dealt with. To a certain extent integration of modes may be a successful option. Integration may be useful between:

-  high speed rail and air
-  air and car
-  high speed rail and traditional rail.

We will confine ourselves here to the first possibility. The general philosophy is that if high speed trains serve main airports like Charles de Gaulle, Amsterdam Airport etc. these could serve as a feeder system to long-distance air passengers.

This holds in particular for Amsterdam airport which specializes on long-distance passengers who to a large extent transfer to local on-flight connections.

Interviews indicated that a potential role for the new train system as a feeder is clearly recognized. The same limitations that were mentioned in the previous section apply here to the attractiveness of rail as a feeder. On the other hand it was stressed that a real operational integration of both systems is an absolute necessity. This relates to reservation, tickets, luggage, schedules,
fares etc. If connectivity to the high speed train system is seen as a competitive edge of airports, it should be noted that competition between airports with respect to transfer passengers is very complicated; for intercontinental passengers it rather takes place on world wide scale than on the European level. Competition is not only between e.g. Amsterdam and London but also between London, Amsterdam and Atlanta. Also important is the fact that transfer to connecting flights does not incur extra costs to the long-distance traveller within certain limits. Although business travellers are not very price sensitive this is a disadvantage of the rail system.

6.3 Channel Tunnel

With the opening of the Channel Tunnel now expected for the end of 1993, European rail operators are looking to develop a service that is both attractive for leisure and business travellers. Assuming a complete TGV exists between London, Paris, Brussels and Amsterdam, British experts we interviewed held the view that only 3 to 5% of total international business travel to their country will use this mode. They expect the share to be much higher, up to 20%, between Paris and London.

Dutch experts do not expect the volume of business trips be increased substantially. They expect that on the high-volume business route Amsterdam London (approx. 1 million business trips a year) no more than 10% will switch to the TGV. They explain this low figure partly by the high percentage of transfer passengers and partly to the travel time difference. Another study [7] comes up with higher substitution levels based on choice models calibrated in other, partly domestic, situations. Assumptions made on service characteristics both of rail and air may be essential to this outcome.

The interviews clearly revealed that the airlines and airport authorities will react to increased competition, e.g. by improving connections to the central areas of the large cities. Airlines even consider to operate own express rail connections for that purpose. Scenarios assuming static behaviour of suppliers will inevitably lead to wrong predictions of travel volumes.

6.4 Congestion

Both in the road network and in the air transport system congestion is a serious problem. The study on which the present paper is based, paid much attention to the size, nature and developments of the air congestion issue. In this paper we will discuss this problem only briefly. In the last five years the percentage of departures delayed over 15 minutes increased from 10 to 25 per cent. It is expected that the lack of capacity in the air routes can be solved on the
medium term. Congestion on airports, however, will spread quickly among an increasing number of European airports. Punctuality will decrease with increasing congestion and delay.

The literature survey and the interviews both showed that to the international business traveller punctuality is a key factor. Delays and uncertainty constitute major considerations in his choice of mode, apart from travel time. Whether this will affect the competitive position of the air mode depends largely of the punctuality of the alternative modes. It appears that the quality of the car and rail modes are not equal in various countries. Interviews indicated that for instance, in Britain the rail and car system are almost as unreliable as the air system. In Germany on the other hand the reliability of rail appears to be much better. The general feeling was that reliability would put TGV's in a much better position for international business travellers provided travel time and frequencies are competitive as well.

It is not only choice of mode that is affected by delays and lack of punctuality, also choice of airport may be influenced in some cases. The stronger growth of regional airports may have to do with the wish of both travellers and airlines to avoid congested main airports.

7 SOME CONCLUSIONS

The following findings are based on a study on international business travel to and from the Netherlands. Although it is thought that the results have a fairly general meaning, they may not be fully applicable in every respect to the complete European scene.

a. European integration will result in an additional growth of international business travel, due on the one hand to a generally higher economic growth and to intensified cross-national economic relations on the other hand. An annual growth rate of 4 to 7% is expected. It is clear that a European transport network that allows international business trips to be made efficiently, is a prerequisite to a truly integrated market.

b. Although volumes are not large, international business trips constitute an important category to airlines, airport and high speed trains from a profitability point of view.

c. As to the modal distribution of the trips the main finding of this study is that the large majority takes place with the car. The only other mode of importance is air transport. It was found that rail is not able to attract international business trips.

d. The number of trips rapidly declines with distance: three quarters is shorter than about 250 km. This partly explains the dominance of the car.
e. The split between car and air depends strongly on distance, although even at longer distances up to 1000 km the share of the car is notable.

f. Business trips follow trade and commerce. In correspondence with Dutch trade relations the majority of Dutch business trips are with neighbouring countries: Germany, Belgium, Great Britain, and France.

g. It is expected that only on a limited number of international relations, the high speed train will be able to attract a significant number of business travellers from the airlines. The reason is that there is only a limited number of international relations where these trains may be able to offer not only short travel times but also high frequencies and adequate scheduling. The general view of the experts interviewed is that the likely overall shift from air to rail is equal to about one-year’s growth in the number of air trips.

h. Given the large share of the car, competition between car and rail should be given more attention. Apart from users of traditional trains and new travellers, travellers that high speed trains may attract, will to a large extent come from the car.

i. When forecasting modal shifts due to high speed trains, one should take into account various supply reactions of competing modes, e.g. airlines.

As is often the case with cross-national travel adequate analyses are hampered by the lack of available and consistent data. It is strongly recommended to adapt national travel surveys and other data collection exercises in such a way that international travel is measured in a sufficient and coherent way.

REFERENCES


