Bode, Eckhardt; Krieger-Boden, Christiane; Lammers, Konrad

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Cross-border activities, taxation and the European single market

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Eckhardt Bode · Christiane Krieger-Boden
Konrad Lammers

Cross-Border Activities, Taxation and the European Single Market

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Preface

In November 1991, the Commission of the European Communities commissioned the Institut für Weltwirtschaft to carry out a report on *Taxation in Border Regions*. This study is a revised version of the report, which was submitted in 1993.

The purpose of this study is to analyse the present pattern of cross-border activities, in particular cross-border shopping, cross-border commuting and cross-border movements of enterprises within the EU. Special attention is given to the extent that these activities are induced by differences in taxation between member countries. Furthermore, the study provides answers to the question of how cross-border activities might be affected by the European Single Market. Each cross-border activity is analysed in two border regions: cross-border shopping in the Danish-German border region (Sønderjylland, Südschleswig) and in the Euregio Meuse-Rhine, the border region between Belgium, Germany and the Netherlands; cross-border commuting and cross-border movements of enterprises in the Euregio Meuse-Rhine and in the French-German border region Alsace-Baden.

The study is a collaborative effort of three authors: Eckhardt Bode, who was responsible for the chapter on cross-border movements of enterprises; Christiane Krieger-Boden, who wrote the chapter on cross-border shopping; and Konrad Lammers, who wrote the chapter on cross-border commuting and also directed the study. Hartmut Wolf provided valuable information about the fiscal systems and tax receipts of the member countries under consideration. The authors wish to thank Rüdiger Soltwedel for helpful comments and constructive criticism, Hans Böhme for translating portions of the study, Edda Köster, Andrea Schäfer and Holger Brauer for their statistical computations, and Renate Schramm, Kerstin Stark and Carmen Wessel for typing and retyping various drafts of the study. Brigitte Mohn, Susanne Rademacher and Korinna Werner provided the editing expertise.

Many thanks are also due to the Institut for Grænseregionsforskning in Åbenrå for its cooperation and to several institutions from the Danish-German border region, the Euregio Meuse-Rhine, and Alsace and Baden, who provided countless statistical and other information about their regions.

Kiel, May 1994 Horst Siebert

A. Introduction

The programme of the Single Market aims in the first line at the integration of formerly national markets into a common market by removing mobility restrictions for goods, services, capital and labour. Differences between countries in taxation of commodities and factors are largely left unaffected. Since mobility restrictions have been removed and tax differentials still persist, factors of production may be relocated more easily in order to take advantage of the most favourable tax system among the countries in Europe and consumers might more easily buy goods abroad that are subject to comparatively high taxation at home. A higher mobility of tax bases might seriously affect the budgets of member states. The effects of differences in national tax and social security systems on economic activities are most striking in border regions, where economic agents can most easily take advantage of a more favourable tax system in the respective neighbouring country.

The purpose of this study is to describe and to analyse the present pattern of cross-border activities and, in particular, the pattern of tax-induced activities across selected borders in the EU.[1] Furthermore, the purpose is to determine how cross-border activities are affected by completing the Single European Market. Three of the most important cross-border activities are investigated: cross-border shopping, cross-border commuting and cross-border movements of enterprises. We analyse each activity in two border regions: cross-border shopping in the Euregio Meuse-Rhine, which is a border region of Belgium, Germany and the Netherlands, and in the Danish-German border region (Sønderjylland, Südschleswig); cross-border commuting and cross-border movements of enterprises in the Euregio Meuse-Rhine and in the French-German border region Alsace-Baden. We show the geographical location of the border regions in Figure 1.[2]

The study consists of three main chapters: Chapter B analyses cross-border shopping, Chapter C presents the analysis of cross-border commuting and Chapter D investigates cross-border movements of enterprises. All three Chap-

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1 In this study, the terms tax system, taxation or tax burden refer to all relevant taxes, including liabilities imposed by the social security system.

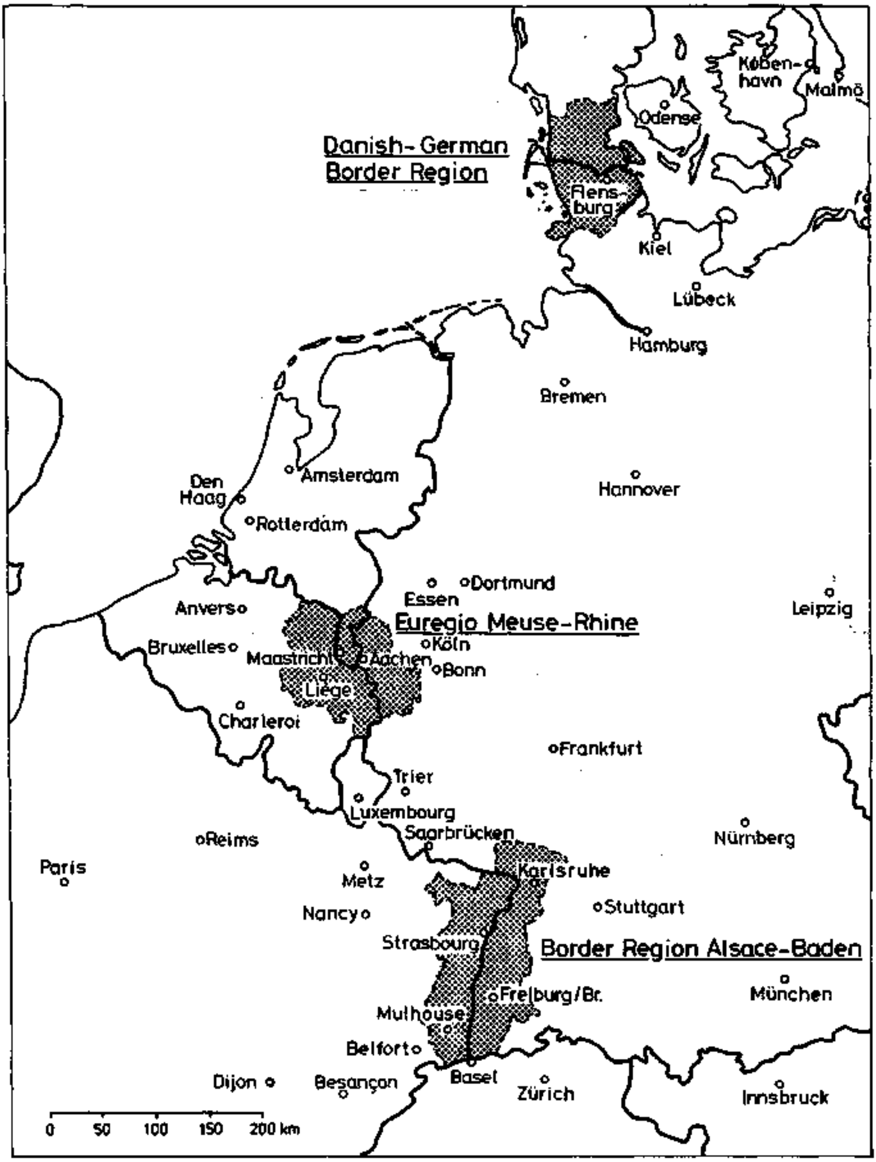
2 In addition, the appendix contains more detailed figures of each of the three border regions under consideration (Figures A1 to A3), a list of administrative units within the regions (Synoptical Table A1) and different tables with the main characteristics of the three regions (Tables A1 to A3).

ters B, C, and D are organized broadly in the same way. Each chapter answers five central questions:

- What are the differences in taxation of consumer goods, employees and enterprises between the respective neighbouring countries and regions? We applied differences in tax burdens, drawn from model calculations, to identify tax-induced incentives and disincentives for the respective cross-border activities.
- What are the extent and the characteristics of cross-border shopping, cross-border commuting and cross-border movements in the regions under consideration? We drew information on cross-border commuting mainly from available (published and unpublished) statistics, whereas we collected data on cross-border shopping and on cross-border movements of enterprises mainly by own enquiries.
- To what extent do differences in taxation induce shopping, commuting and movements of enterprises across borders, and what are other reasons affecting them? We answer this question mainly by analysing the results of the foregoing sections.
- What are the economic and budgetary effects of cross-border shopping, commuting and enterprise movements in the regions under consideration? We determine the economic effects by estimating the contribution of the respective cross-border activities to regional turnover, income and employment. We evaluate the budgetary effects by estimating their contribution to the budgets of various levels of public authorities (local, regional, and central authorities).
- Are there any changes in the pattern of these activities that can be expected from completing the Single Market? We outline and analyse the changes in the conditions of cross-border shopping, commuting and movements of enterprises, induced by the Single Market programme, with respect to the effects they are expected to have on the pattern of the cross-border activities in general and on tax-induced activities in particular.

Each of the Chapters B, C and D contains a brief introduction and a summary. In Chapter E, we outline the conclusions of the study in a broader perspective.

Figure 1 — The Geographical Location of the Border Regions under Consideration



B. Cross-Border Shopping

I. Overview

The aim of this chapter is to answer the question to what extent cross-border shopping is influenced by indirect taxation and in which way it is affected by completing the Single Market. We analyse cross-border shopping in the Danish-German border region and the Euregio Meuse-Rhine. The analysis starts with the evaluation of the differences in indirect taxation between the countries under consideration by comparing estimated tax burdens carried by commodities. The comparison gives rise to hypotheses on the pattern of cross-border shopping (Section B.II). We compare the hypothetical pattern with the actual extent and structure of cross-border shopping (Section B.III). We take the information on the actual pattern of cross-border shopping from an own survey of households in the two border regions, and from an additional survey in the Danish-German border region that has been prepared by the Institut for Grænseregionsforskning, Åbenrå, acting as a subcontractor. In general, both surveys cover the year 1991. We use the actual pattern of cross-border shopping to assess the significance of indirect taxation for cross-border shopping relative to other determining factors (Section B.IV). We estimate the economic effects of cross-border shopping on the economy where the shopping takes place and on the economy where the customers live in terms of turnover, value added, and employment, with special attention given to the retail trade branch. Moreover, we estimate the effects on all fiscal budgets affected (Section B.V). Finally, we answer the questions in how far the Single Market changes the conditions for cross-border shopping and what the consequences of these changes on cross-border shopping are (Section B.VI).

Cross-border shopping, for the purpose of this study, is defined as purchases in a border region by private persons domiciled in a neighbouring country, provided that these purchases are for domestic rather than immediate consumption. All purchases are included, irrespective of whether they are taxed in the country where the goods are bought or in the home country of the customer. Included are also exportable consumer services such as car repair and maintenance.[3]

3 Services related to tourism, however, are excluded, since these are services that are consumed immediately.

II. Incentives from Indirect Taxation for Cross-Border Shopping

To assess the influence of taxation on cross-border shopping, we consider indirect taxation because indirect taxes may be shifted to consumer prices more easily than other taxes, as they are levied on domestic goods and imports alike. Consequently, differences in indirect taxation between neighbouring countries may cause price differentials that constitute incentives for cross-border shopping.

1. Differences in Value-Added Taxes

In the 1960s and 1970s, in most EC member states turnover taxes were converted into value-added taxes. Since then, similar principles of value-added taxation have been applied in all member countries:

— Value-added taxes take the form of all-stage gross turnover taxes applying the tax credit method.
— They are raised on domestic supplies as well as on imports, including all duties and charges except the value-added tax itself. Commercial exports are exempt from taxation (country-of-destination principle).

Although methods of taxation have largely been harmonized, there are still considerable differences to be observed between countries with respect to tax rates (Tables 1 and A4):[4]

— The number of tax rates applied varies. In Belgium, until March 1992, five different rates existed; in addition to a standard rate, Belgian legislation specified two reduced rates for goods that are considered to be of basic need, and two increased rates for goods that are considered to be luxury goods.[5] In the Netherlands and in Germany, two rates (standard and reduced) are applied. In Denmark is only one single rate.
— In addition, the individual tax rates differ remarkably. In 1991, the year of the present analysis, standard rates varied from 14 per cent in Germany to 18.5 per cent in the Netherlands, to 19 per cent in Belgium and to 22 per cent in Denmark.

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4 For details of value-added taxation, see COM [1991] or Mennel [1991].

5 Since April 1992, three rates (a standard and two reduced) have been applied in Belgium.

Table 1 — Rates of Value-Added Taxes in Denmark, Germany, Belgium and the Netherlands (per cent)

	Denmark		Germany		Belgium		Netherlands	
	until Dec. 1991	since Jan. 1992	until Dec. 1992	since Jan. 1993	until March 1992	since April 1992	until Sept. 1992	since Oct. 1992
Reduced rate I	–	–	7.0	7.0	6.0	6.0	6.0	6.0
Reduced rate II	–	–	–	–	17.0	12.0	–	–
Standard rate	22.0[a]	25.0	14.0	15.0	19.0	19.5	18.5	17.5
Increased rate I	–	–	–	–	25.0	–	–	–
Increased rate II	–	–	–	–	33.0	–	–	–

[a]Additionally, an *arbejdsmarkedsbidrag* of 2.5 per cent was levied on each good before taxation with value-added tax.

Source: COM [1991].

Between Denmark and Germany, the differences between tax rates are particularly pronounced. In 1991, the Danish tax rate was 8 percentage points higher than the German standard rate applied to most goods and services, and 15 percentage points higher for foodstuff. The difference was even more pronounced, 11 and 18 percentage points respectively, when the *arbejdsmarkedsbidrag*, a duty very similar to the value-added tax, was included.

Of the three countries in the Euregio Meuse-Rhine, tax rates are highest in Belgium, particularly before, but also after the Belgian tax reform, and lowest in Germany. Until April 1992, the difference rose up to 19 percentage points for some luxury goods (Table A4), thereafter it decreased to a maximum of 5.5 percentage points. Dutch tax rates in general are lower than Belgian, but higher than German tax rates. For basic goods, however, tax rates are higher in Germany than in the Netherlands and Belgium.

2. Differences in Excise Duties

In all four countries a number of excise duties are levied, inter alia on mineral-oil products, alcoholic beverages and tobacco products (Table A5). In the majority, excise duties are quantity taxes, sometimes accompanied by additional ad valorem tax rates.[6]

6 For details of leviation of excise duties, see COM [1991] or Mennel [1991].

Tax rates differ significantly between the countries. Excise duties tend to be higher in Denmark than in Germany. In particular, this applies to spirits and other alcoholic beverages, to cigarettes and to cars, all of which are subject to high duties. On the opposite, only coffee and tea are taxed at a higher rate in Germany than in Denmark. In July 1991, a number of Danish taxes were abolished, others were reduced in preparation for the Single Market and as a response to efforts of the EC to harmonize excise duties.[7] In Germany, the tax rate on mineral-oil products was raised. As a result, the differences in excise duties between the two countries diminished. Since then, lower duties have been levied on mineral-oil products in Denmark than in Germany.

Comparing the three Euregio countries, tax rates of excise duties are found to be more similar in magnitude. Belgium offers slight advantages with respect to motor fuels, diesel oil and beer, Germany with respect to most alcoholic beverages and the Netherlands with respect to coffee, tea and, compared to Germany, with respect to diesel oil.

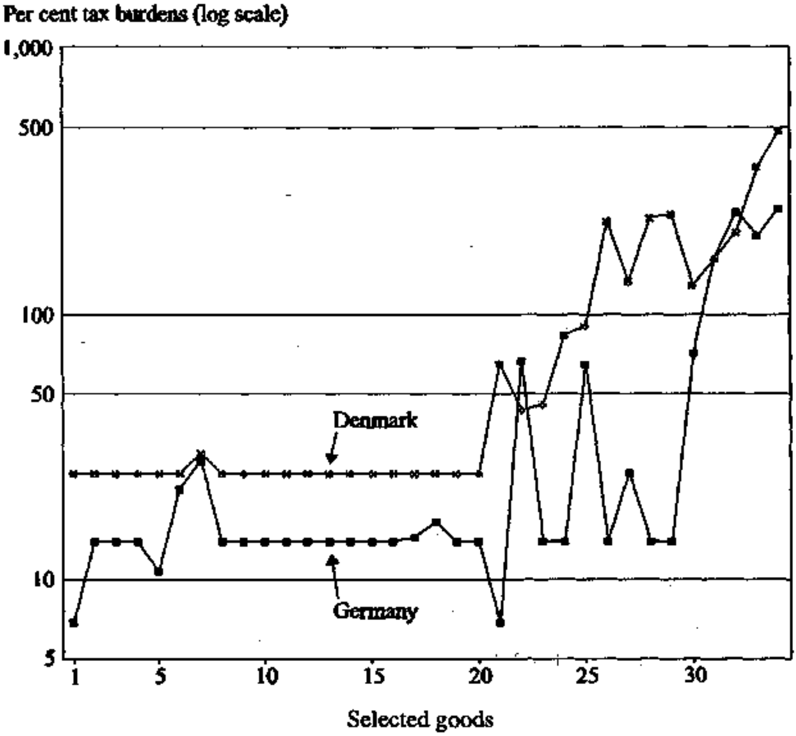
3. Tax Burdens due to Indirect Taxation

In order to assess the combined effects of value-added taxes and excise duties on prices, the ad valorem equivalents of quantity excise duties had to be estimated. For this purpose, we assumed a pre-tax bench mark price to be identical in all regions under consideration before indirect taxation.[8] We derived this pre-tax bench mark price from consumer prices that were adjusted to indirect taxes. On the basis of this pre-tax price, applying the respective national tax rates, we calculated after-tax prices for each country. Thus, we can define total tax burdens as the difference between after-tax and pre-tax prices, expressed as a percentage share of the pre-tax price (Table A6), and use these tax burdens to compare tax levels in the respective neighbouring countries for specific goods and services.

7 Even before July 1991, in 1990, several excise duties (for example, on sugar and on domestic electrical appliances) were abolished in Denmark.

8 This method seems valid, as we want to isolate the effect of tax differentials on price differentials from all other determining factors, such as currency valuations, costs of arbitrage and trade barriers (see Section B.II.4). Moreover, as these other determinants are of minor importance within the free trade area of the EC compared to the outside world, prices before indirect taxation tend to be equalized within the EC [Wieser, 1989; Brenton, Parikh, 1987; Langhammer, 1987]. Nevertheless, considerable price differentials remain [Eurostat, b] that cannot be explained by indirect taxation. For convenience, we applied German pre-tax prices as a bench mark. Application of different pre-tax prices would change the figures on tax burdens slightly, however, the ranking of the countries with respect to the tax burdens would remain the same.

Figure 2 — Tax Incentives for Cross-Border Shopping between Denmark and Germany, 1991



Legend of selected goods:[a]

1	Other food	13	Furniture	25	Tobacco
2	Pharmaceuticals	14	Jewellery	26	Cars (lower class)
3	Soap, detergent	15	Cosmetics	27	Beer
4	Printed material	16	Electr. tools	28	Cars (medium class)
5	Sugar	17	Eau de Cologne	29	Cars (upper class)
6	Salt	18	Perfume	30	Sparkling wine
7	Tea	19	Leather	31	Diesel
8	Shoes	20	Entertainm. equipm.	32	Fuel
9	Clothing	21	Sweets	33	Spirits
10	Domestic articles	22	Coffee	34	Cigarettes
11	Car repair	23	Non-alc. beverages		
12	Electr. appliances	24	Wine		

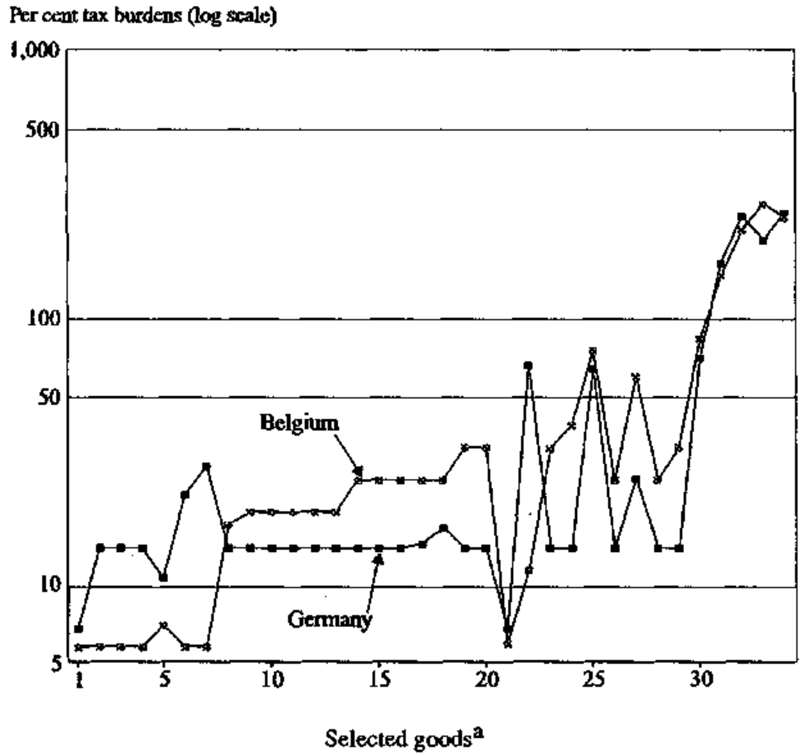
[a]Goods have been arranged according to average tax burdens within the four countries under consideration.

Source: Table A6.

The calculations for Denmark and Germany show that Danish tax burdens are higher for almost all goods, even after the Danish tax reforms of 1990 and 1991 and the German tax reform of 1991 (Figure 2). Most striking are differences in taxation of alcoholic beverages, cigarettes and cars, where Danish tax burdens are between twice and six times as high as German tax burdens and exceed 100 per cent of the respective pre-tax prices. German tax burdens are higher only with respect to coffee and, since July 1991, with respect to perfumes and unleaded fuel.

For the three neighbouring countries Belgium, Germany and the Netherlands, differences in tax burdens are generally smaller (Figures 3 to 5). German

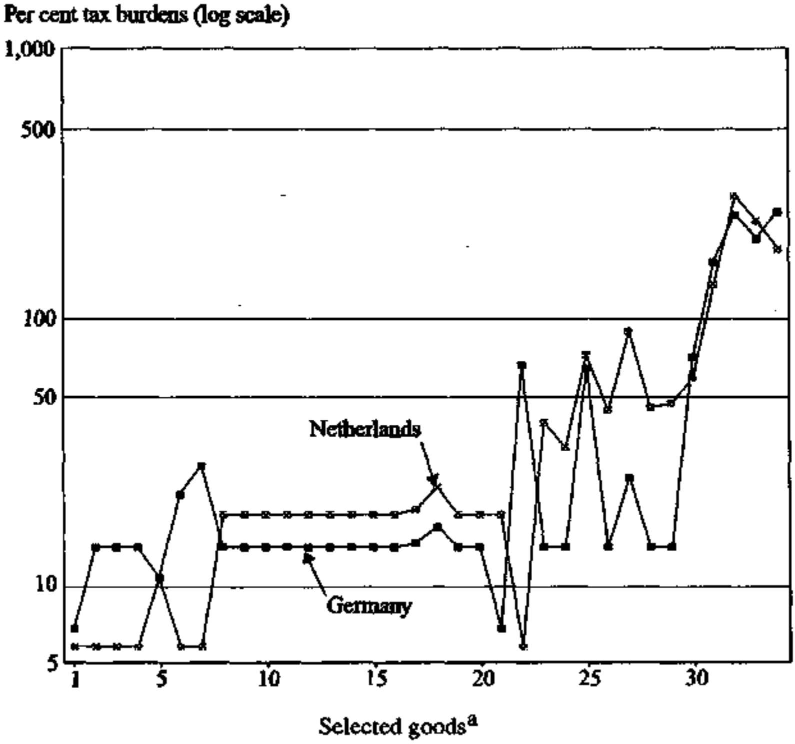
Figure 3 — Tax Incentives for Cross-Border Shopping between Belgium and Germany, 1991



[a]For legend, see Figure 2.

Source: Table A6.

Figure 4 — Tax Incentives for Cross-Border Shopping between the Netherlands and Germany, 1991



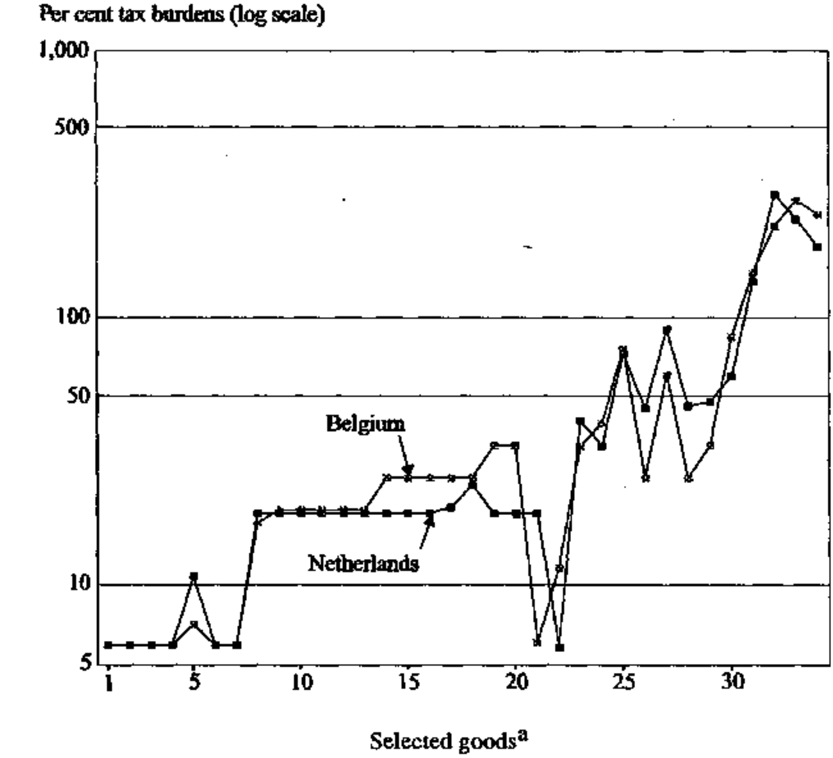
[a] For legend, see Figure 2.

Source: Table A6.

tax burdens as a whole tend to be lower than, in particular, tax burdens in Belgium, but also than tax burdens in the Netherlands. In each country, however, at least a small number of goods with tax advantages exists. For the year 1991, it turns out that

— comparing Belgium and Germany (Figure 3), Belgium offered tax advantages for food products, particularly for salt, tea and coffee, for mineral-oil products and cigarettes, whereas Germany had advantages for most other products, for instance, for home entertainment equipment and alcoholic beverages and also for cars;

Figure 5 — Tax Incentives for Cross-Border Shopping between Belgium and the Netherlands, 1991



[a] For legend, see Figure 2.

Source: Table A6.

- — comparing the Netherlands and Germany (Figure 4), Dutch taxes were lower for the food products salt, tea and coffee, for sparkling wine, diesel oil and cigarettes, whereas German taxes were lower for most consumer goods and for wine, beer, spirits, fuel and also for cars;
- — comparing Belgium and the Netherlands (Figure 5), Belgian taxes are lower for sugar, sweets, beer, cars and fuel, and Dutch taxes are lower for high-grade consumer goods, coffee and alcoholic beverages, except beer, diesel oil and cigarettes, while most goods are taxed almost equally in both countries.

4. Indirect Taxation and Cross-Border Price Differentials

As tax differentials affect cross-border shopping only indirectly (via price differentials), we have to analyse to what extent price differentials are determined by tax differentials:

- In competitive markets, the burden of indirect taxation will be fully shifted to consumers only if demand is completely inelastic with respect to prices. The higher the price elasticity of demand and the lower the price elasticity of supply, the lower the degree to which taxes can be shifted to consumers, and hence the lower the effect of tax differentials on retail price differentials.
- A policy of price differentiation taking into account the specific tax burdens of each country may be particularly worthwhile for producers in oligopolistic markets, such as the automobile market [see Kirman, Schueller, 1990; Gual, 1987; Mertens, Ginsburgh, 1985]. As a result, the pre-tax prices for cars tend to be lower in high-tax countries than in low-tax countries, and the price differentials in retail prices may be markedly smaller than the respective tax differentials.
- Generally, all factors segmenting national, or even local, markets may lead to price differentials at the border. Such factors are costs of arbitrage (for example, transportation costs), exchange rates, numerous kinds of administrative barriers to trade (besides indirect taxes, for example, health and safety standards, state monopolies for certain goods, discrimination in public procurement) and country-specific preferences in demand [see Wieser, 1989; Maucher, Brabeck-Lethmathe, 1991].

Factors other than tax differentials may either increase the effects of indirect taxation or weaken them. They are, however, less influential in shaping the prices of most goods than indirect taxation is. Thus, we can conclude that in most cases positive (negative) tax differentials can be expected to induce positive (negative) price differentials, whereas the size of price differentials may differ to some extent from that of tax differentials. This conclusion is confirmed by a short study comparing prices across the borders between Belgium, the Netherlands and Germany for selected goods, i.e. for certain food products, photographic articles, home entertainment equipment, domestic electrical appliances, toys and sports articles [see IFAV, 1990]. The general conclusion of this study is that "prices in Belgium, with few exceptions, are relatively higher than in the two neighbouring countries. German prices in most cases are cheapest. Nevertheless, for certain products it may be advantageous even for German consumers to purchase them abroad, particularly in the Netherlands" [IFAV, 1990, p. 3; own translation]. This pattern of price differentials is very much in line with the pattern of tax differentials as described above. Also, the Institut for Grænseregionsforskning has shown that tax differentials are major determinants for price differentials between Denmark and Germany. "On commodities such as, for example, beer, wine, alcohol, tobacco, petrol, chocolate, ... the Danish excise rates are considerably higher than the German rates. ... this often results in rather high differences in prices" [Bygvrå et al., 1987, p. 8].

5. Administrative Limits to Cross-Border Shopping

Until the end of 1992, the effects that tax incentives had on the generation of cross-border shopping was limited by import restrictions for consumers, namely by the duty-free allowances. Although consumers were generally allowed to import goods free of domestic duties from a neighbouring EC member country at that country's tax rates, the total value of such goods was limited, and for goods like alcoholic beverages, tobacco products, perfume, coffee and tea even the quantities that consumers were allowed to import were limited. The EC Council fixed uniform duty-free allowances for all member countries. Denmark, however, was conceded a more restrictive exceptional rule (Table 2). As a consequence, certain high-grade consumer goods (for instance, cars and jewellery) whose value exceeded the duty-free allowances could only be purchased in the neighbouring country if the indirect taxes of the home country were paid. In turn, the indirect taxes paid in the neighbouring country could be refunded. Thus, the tax incentives for consumers from high-tax countries to buy such goods in low-tax countries were neutralized. There was, however, an incentive for consumers from the country with the low-tax level to buy some of these goods in the country with the high-tax level. In some market segments, producers differentiated prices between countries in response to the differing tax burdens. Accordingly, pre-tax prices were lower in the high-tax country (for instance, for cars in Denmark and in the Netherlands), and consumers from the neighbouring low-tax country (particularly from Germany) could take advantage of these lower pre-tax prices, while paying only the low domestic taxes.[9]

Duty-free allowances also had an effect on shopping behaviour with respect to other consumer goods that, individually, did not exceed the allowance. The higher the duty-free allowances were, the less frequent the shopping tours made

9 For cars, this mechanism is still effective, because they have been subject to import restrictions even after January 1993 (see Section B.VI).

Table 2 — Duty-Free Allowances in the EC, 1991[a]

	General rule for all EC countries	Exceptional rule for Denmark during a stay of less than 36 hours[b]
Maximum value		
Per person (ecus)	600[c]	390
Per person less than 15 years (ecus)	150[d]	
Per each single good (ecus)	.	340
Maximum quantities per person		
Beer (liter)	no limit	12
Wine (liter)	5	5
Alcoholic beverages (liter)[e]	1.5	none
Tobacco (g)	400[f]	400[f]
Cigarettes (number)	300[f]	100[f]
Coffee (g)	1,000	1,000
Tea (g)	200	200
Perfumes (g)	75	75

[a]For goods imported by travellers from another EC country. — [b]Since February 1991. During a stay of more than 36 hours, the general rule for all EC countries is applied. — [c]Until June 1991: 390 ecus. — [d]Until June 1991: 100 ecus. — [e]Alcoholic content less than 22 per cent. — [f]Alternatively either tobacco or cigarettes.

Source: Own compilation.

by each customer were, and the more attractive a shopping tour was, even if the customer had to travel a large distance. Moreover, duty-free allowances influenced the structure of goods bought beyond the border. As customers had to limit their purchases on each shopping tour, they had to concentrate on those with the highest incentives and were not able to buy all goods that would have been reasonable to buy. Of course, such import restrictions are only effective, if they are observed by border controls. However, it should be noted that border controls had already been largely abolished in the Euregio Meuse-Rhine even in 1991.

6. The Expected Pattern of Tax-Induced Cross-Border Shopping

Based on the above analysis, the following pattern of tax-induced cross-border shopping can be assumed:

— In the Danish-German border region, most cross-border shopping is done by Danes in Germany. By contrast, cross-border shopping by Germans in Denmark is only very small in magnitude. For Danes, shopping in Germany is worthwhile for almost all goods, demand being concentrated, however, on alcoholic beverages and tobacco products, which are goods where tax differentials are highest. For Germans, tax-induced price incentives exist only for coffee, motor fuel (since July 1991) and cars at low pre-tax prices.

— In the Euregio Meuse-Rhine, cross-border shopping is generally less important than in the Danish-German border region. It is undertaken most intensively by Belgians and by Dutch buying in Germany, while expenditure flows in opposite directions are small. Belgians also shop in the Netherlands at a medium intensity. The extent of Dutch cross-border shopping in Belgium is somewhat smaller. Belgian and Dutch consumers buy mainly high-grade consumer goods in Germany, such as home entertainment equipment, jewellery, leather goods, cosmetic products and certain food products. Belgians buy such goods also in the Netherlands. For Germany, price incentives exist in only for few goods, in particular for fuel bought in Belgium and for diesel oil bought in the Netherlands. Such purchases are also advantageous for Dutch and Belgians.

III. The Extent, Structure and Motives of Cross-Border Shopping

1. Methods of Enquiries

Only sparse information exists on cross-border shopping. In particular, there are no official statistics. Hence, we had to collect primary data. For this purpose, we carried out surveys of households on their cross-border shopping behaviour in the Danish-German border region and in the Euregio Meuse-Rhine.[10] A total of 5,000 questionnaires were mailed in May 1992 to a random sample of

[10] For other investigations in border regions, see Fitzgerald et al. [1988] on the Irish-Northern-Irish border region and Fichtner [1988] on the region of Basel; for investigations in the Danish-German border region, see the various studies of the Institut for Grænseregionsforskning, for instance, Gammelgård et al. [1978]; Bygvrå [1982]; Bygvrå, Hansen [1987]; Bygvrå [1992a].

households.[11] The questions referred to the households' shopping behaviour in the neighbouring countries during the preceding twelve months.[12] Accordingly, the information received covered approximately the period from June 1991 to May 1992, though, for simplicity, we make references here to 1991 only. About 98 per cent of the questionnaires reached their addressee; about twenty per cent were answered (for details, see Table A7).

We extrapolated the results of the survey of households to cover the whole population inside and outside the border regions by assuming that

- all inhabitants of a border region participate in cross-border shopping to the same extent as the persons in the sample;
- the degree to which inhabitants from outside the border region participate in cross-border shopping depends on the distance of their residence from the border and can be estimated by regression analysis;[13]

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11 We took the sample proportional to the regional distribution of population; we took every 400th address from the telephone books of the subregions under consideration.

12 Besides questions regarding to the location of the family's place of residence and the number and age of family members, we asked for information on participation in cross-border shopping, on the expenditure on cross-border shopping per month and per year, on the goods preferred, on the motives for participation or non-participation, on the frequency of shopping tours and on the underlying main purpose of such tours. The appendix contains a copy of the questionnaire.

13 We based this regression analysis on data drawn from the surveys on the shopping behaviour of border region residents. We assumed that the amount of per capita expenditures by consumers decreases as the distance of the consumer's place of residence rises, approaching the asymptotic value of zero. To reflect the assumptions on the relations between expenditures and distances, we estimated exponential functions of the type

$$c(d) = f(e^{ad}) \qquad (a < 0)$$

with c indicating per capita expenditures on cross-border shopping at a distance d, and the constant a being negative. We estimated such functions for each of the 8 cross-border shopping relations of the surveys. We used the exponential functions to estimate the total expenditures from outside the border regions by integral calculus, written as

$$C_{[l,\infty]} = wp\int_{l}^{\infty} f(e^{ad})dd$$

with $C_{[l,\infty]}$ being the total expenditures from outside the border region, w marking the approximate width of the area from which cross-border purchasers might come, p marking the population density in this respective area, and l marking the depth of the area up to the limit between the border region and the remainder of the respective country.

— all inhabitants show the same behaviour as the respondents to our survey, with regard to expenditures, preferred goods, frequencies and motives.

For the Danish-German border region, we further commissioned a supplementary study that was prepared by the Institut for Grænseregionsforskning [Bygvrå, 1992b].[14] In this study, a different method of collecting primary data was adopted. Selected German and Danish passengers were interviewed at the border about their purchases in the respective neighbouring country. The overall results were estimated by assuming that all travellers passing the border show the same cross-border shopping behaviour as the sample. The information covers the year 1991.[15] For our own survey, this method had been ruled out, since a uniform method had to be applied to both border regions under consideration and since the method of the Institut for Grænseregionsforskning could not be adopted to the Euregio Meuse-Rhine.[16] The results of the two surveys in the Danish-German border region proved to be broadly similar in spite of differing methods. Although such surveys should generally be viewed with a certain degree of caution, the consistency of these results confirms the reliability of both methods.

2. The Extent and Structure of Cross-Border Shopping

a. Expenditures on Cross-Border Shopping

The extent of cross-border shopping in a border region can be measured as total expenditures on cross-border shopping by inhabitants of a neighbouring coun-

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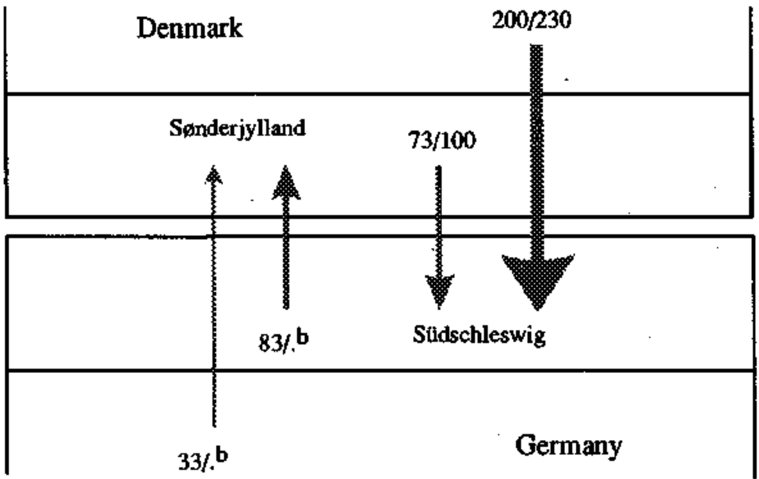
14 The results of this study and some additional results have been published in Bygvrå [1992a].

15 The Institut for Grænseregionsforskning based the estimates for 1991 on two different surveys, assuming that there were no significant changes in cross-border shopping behaviour of Germans between 1989 and 1991: a 1991 survey of Danes buying in Germany (with almost 3,000 interviews) and a 1989 survey of Germans buying in Denmark (with almost 350 interviews). In both cases, the shoppers were asked about their places of residence, about their expenditures on cross-border shopping, about the goods preferred, about the motives for and frequencies of shopping tours. Also, in both cases, the results were projected to the total number of Danes and Germans crossing the border. These figures were provided by the Danish Vejdirektorat [Bygvrå, 1992a; 1992b].

16 As border controls have already been largely abolished, it is not possible to distribute questionnaires to the shoppers at the border. Also, no basic statistics on border crossers are available, which would be necessary for the extrapolation of the sample.

Figure 6 — Expenditures on Cross-Border Shopping in the Danish-German Border Region, 1991 (million ecus)[a]



[a]The first number refers to estimates of the Institut für Weltwirtschaft, Kiel (IfW); the second refers to estimates of the Institut for Grænseregionsforskning, Åbenrå (IfGf). — [b]Comparable IfGf estimates are not available; the IfGf estimates the total flow from Germany to 114 million ecus.

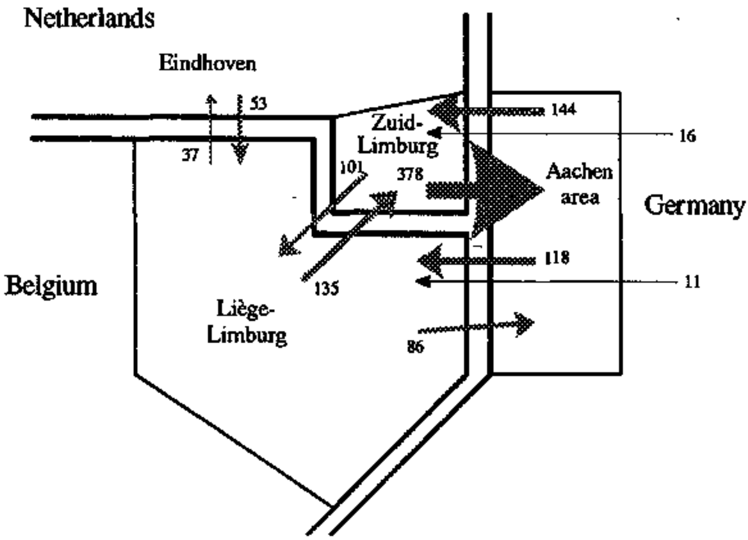
Source: Table A8.

try. According to the estimates of the underlying surveys, these expenditures differed remarkably.

In the *Danish-German border region*, according to our own estimates, Danes spent about 270 million ecus on purchases in Südschleswig. By comparison, the Institut for Grænseregionsforskning estimates a value of 330 million ecus (Figure 2 and Table A8). The difference between both estimates is due to the divergence of the observation periods: our survey covers the period from June 1991 to May 1992 and, accordingly, a greater proportion of the period after the tax reforms of July 1991 than the survey of the Institut for Grænseregionsforskning. Since the tax reforms reduced the incentives for Danes to buy in Germany, a decline of purchases, as indicated by the comparison of the two surveys, seems very probable. According to the estimates, less than one third of the expenditures was spent by residents of Sønderjylland. The majority of expenditures originated from the remainder of Denmark.

The expenditures by Germans in Denmark were only about one third of the corresponding flow in the opposite direction. According to both estimates,

Figure 7 — Expenditures on Cross-Border Shopping in the Euregio Meuse-Rhine, 1991 (million ecus)



Source: Table A9.

Germans spent about 116 million ecus in Denmark (Figure 6 and Table A8). More than 70 per cent of these expenditures originated from Südschleswig.

In the *Euregio Meuse-Rhine*, the situation is a bit more complicated because three possibilities of cross-border shopping have to be considered: (i) Germans buying in the Dutch subregion, (ii) Dutch buying in the German subregion and (iii) Belgians buying in the Dutch subregion. The major expenditure flow of cross-border shopping consisted of expenditures made by the Dutch buying in the Aachen area. It amounted to almost 380 million ecus (Figure 7 and Table A9).[17] By contrast, the opposite flow was significantly smaller, namely about 160 million ecus, but nevertheless larger than the other flows in the border region.

The flows across the Belgian-Dutch border were similar in magnitude in both directions. According to the estimates, Dutch spent about 155 million ecus in Liège-Limburg and Belgians about 135 million ecus in Zuid-Limburg. Almost 40 per cent of Dutch expenditures in Liège-Limburg originated from out-

[17] This amount originated entirely in Zuid-Limburg. For geographical reasons, we may assume that Dutch consumers from other parts of the country have not bought goods in the Aachen area to a notable extent, since these Dutch consumers can reach other areas of Germany more easily.

side the Dutch subregion of the border region, mainly from the Eindhoven area, which also borders on Liège-Limburg (Figure 7).[18]

Expenditure flows across the Belgian-German border were small, in particular regarding Belgian purchases in the Aachen area, which amounted to only 90 million ecus, compared with 130 million ecus spent by Germans in Liège-Limburg. Most of these expenditures originated from inside the border region.

b. Per capita Expenditures on Cross-Border Shopping

The border regions under consideration vary significantly with regard to size and population density (Tables A1 and A2). These factors influence the cross-border expenditures, apart from economic determinants. Ceteris paribus, expenditure flows from large and densely populated border regions are larger than those from small and sparsely populated regions. The effects of differing population densities can be excluded by looking at per capita purchases. The effects of differing sizes of the border regions can be excluded by referring to the per capita purchases by residents living in an area extending from the border to a certain parallel line. In the following, this latter indicator will be taken as a measure of the intensity of cross-border shopping, the distance of the parallel line being set at 20 kilometres from the border.

In the *Danish-German border region*, the intensity indicator for Danes buying in Südschleswig was clearly higher than that for Germans buying in Sønderjylland (630 versus 365 ecus; Table 3), although even the latter was considerably high.

In the *Euregio Meuse-Rhine*, the highest intensity of cross-border shopping could be observed for Dutch customers in the German subregion. It was considerably higher than that of Germans buying in Zuid-Limburg (Table 4). Also, Belgians residing close to the border showed a relatively high intensity of cross-border shopping, with a marked orientation towards the Aachen area, whereas the intensities of cross-border shopping of Germans and Dutch in Belgium were low. The fact that the high intensity of Belgian cross-border shopping resulted in low total cross-border expenditures, as has been shown before, can be traced to the fact that the population density in Liège-Limburg is lower as compared with the two other subregions, and it is particularly low in the close vicinity of the borders. The few existing agglomerations (primarily the city of Liège) are too far from the border to make intensive cross-border shopping worthwhile (see Synoptical Table A2).

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18 Purchases by Belgians from Liège-Limburg in the Dutch Eindhoven area of about 37 million ecus are not taken into consideration because the Eindhoven area is not included in the Euregio Meuse-Rhine.

Table 3 — Per Capita Expenditures on Cross-Border Shopping in the Danish-German Border Region, 1991 (ecus)

	Per capita expenditures by			
	Germans in the Danish subregion		Danes in the German subregion	
	own estimates	IfGf estimates[a]	own estimates	IfGf estimates[a]
	June 1991 to May 1992	1991	June 1991 to May 1992	1991
By inhabitants of the border region	198	.	291	399
Intensity indicator[b]	365	.	630	.

[a]Estimates by the Institut for Grænseregionsforskning, Åbenrå. — [b]Per capita purchases by residents within a 20 kilometres area at the border.

Source: Own survey; Bygvrå [1992b].

Table 4 — Per Capita Expenditures on Cross-Border Shopping in the Euregio Meuse-Rhine, 1991 (ecus)[a]

	Dutch-German border		Belgian-German border		Belgian-Dutch border	
	per capita expenditures by					
	Germans in the Dutch subregion	Dutch in the German subregion	Germans in the Belgian subregion	Belgians in the German subregion	Dutch in the Belgian subregion	Belgians in the Dutch subregion
By inhabitants of the border region	123	513	100	50	137	78[b]
Intensity indicator[c]	180	354	117	169	157	234

[a]June 1991 to May 1992. — [b]Moreover, Belgians from Liège-Limburg spent 21 ecus per capita on cross-border shopping in the Dutch Eindhoven area. — [c]Per capita purchases by residents within a 20 kilometres area at the border.

Source: Own survey.

c. *Merchandise Structure*

From the surveys, we can describe the structure of goods bought by cross-border shoppers. In the following, we describe the merchandise structure by using the shares of various goods in total expenditures. For further analysis, it is useful not only to list the goods bought most frequently, but also to characterize them according to the tax burden that they carry.

For the *Danish-German border region*, we observed that the goods and services bought by Danes in Südschleswig differed significantly from those bought by Germans in Sønderjylland. According to our survey and to the survey made by the Institut for Grænseregionsforskning, Danes bought mainly beer and wine, cigarettes and sweets in Germany (Figure 8). These goods were taxed more heavily in Denmark than in Germany. By contrast, Germans bought in particular goods in Denmark that did not offer tax advantages for them, such as furniture, food (i.e. Danish food specialities), antiques, arts-and-crafts articles and clothing.

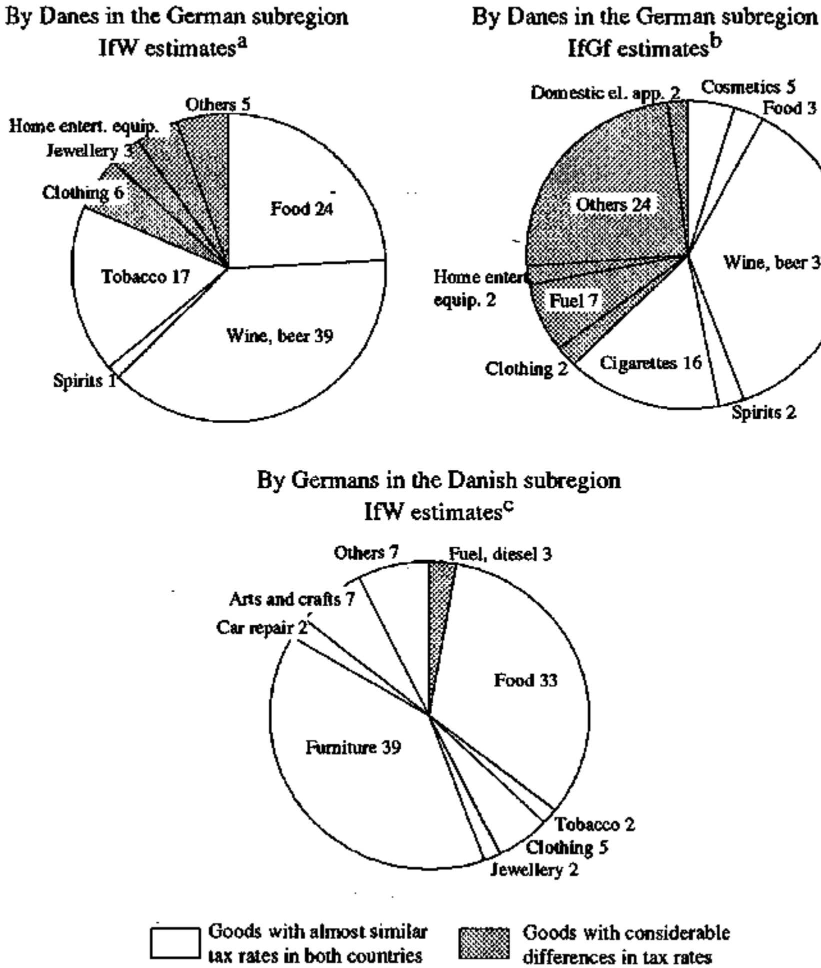
The *Dutch-German border* was passed

- by Germans in order to buy mainly such goods, as beverages (coffee, tea), diesel oil and tobacco products, that are taxed lower in the Netherlands than in Germany; only relatively few goods (clothing, furniture) were bought for which no definite tax advantages existed (Figure 9);
- by Dutch in order to buy goods offering tax advantages, for example, motor fuel and alcoholic beverages; however, the Dutch bought also goods in Germany that were not taxed significantly higher in the Netherlands than in Germany, especially food, home entertainment equipment and clothing.

For cross-border shopping across the *Belgian-German border*, we have observed that

- in Liège-Limburg, the Germans made considerable expenditures on goods with tax advantages (foodstuffs, in particular coffee and tea) and on cars at relatively low pre-tax prices; however, they also bought furniture and tobacco products, where tax advantages were very small or did not exist;
- in the Aachen area, the Belgians bought goods, such as clothing, home entertainment equipment, alcoholic beverages and fuel, all of which were subject (in 1991) to high excise duties or to the high increased rates

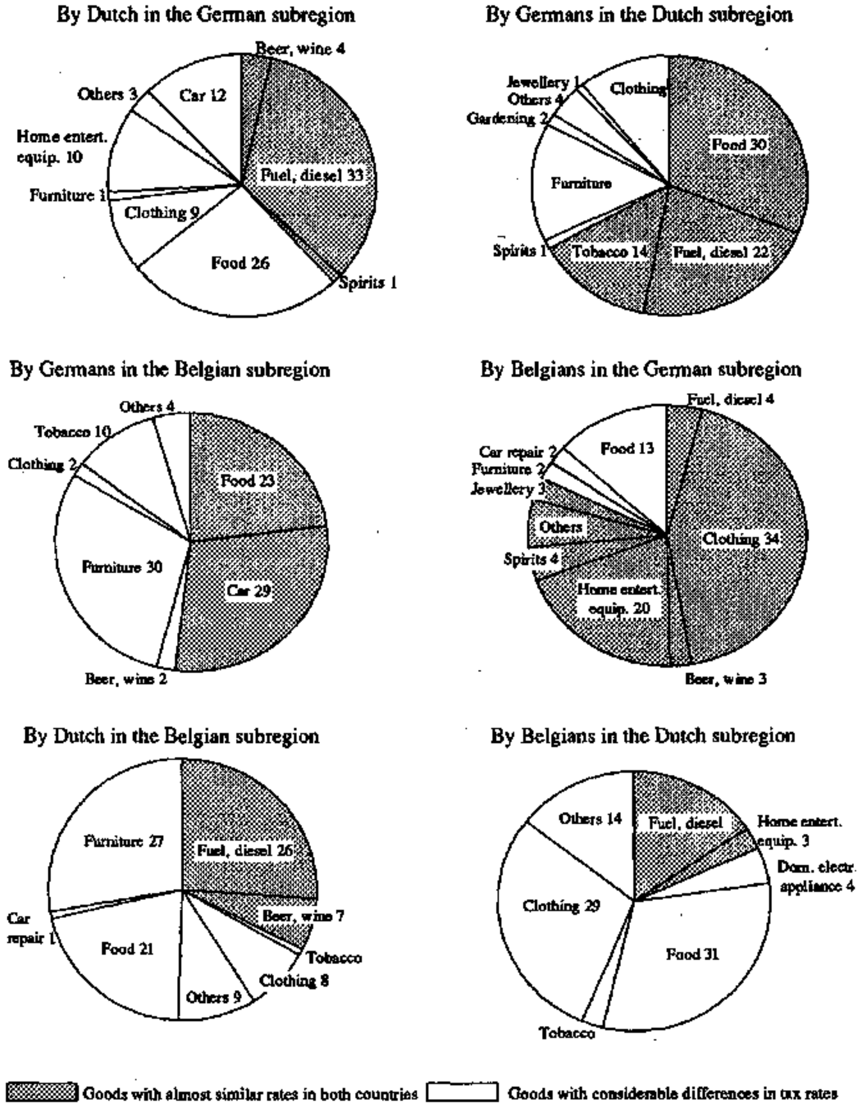
Figure 8 — Merchandise Structure of Cross-Border Shopping in the Danish-German Border Region, 1991



[a]Own estimates by the Institut für Weltwirtschaft, Kiel (IfW). — [b]Estimates by the Institut for Grænseregionsforskning, Åbenrå (IfGf). Note that the classification of goods differs somewhat between the two estimates. — [c]Own estimates by the IfW. IfGf estimates for German purchasers in the Danish sector are not available.

Source: Bygvrå [1992b]; Institut for Graenseregionsforskning [1992]; own survey.

Figure 9 — Merchandise Structure of Cross-Border Shopping in the Euregio Meuse-Rhine, 1991



Source: Own survey.

of the value-added tax in Belgium;[19] by contrast, they bought only few goods and services (food, car repair, furniture) without significant tax advantages (Figure 9).

With respect to the *Belgian-Dutch border*, we have found out that

— in Zuid-Limburg, the Belgians bought diesel oil and, to a small extent, home entertainment equipment at lower taxes in the Netherlands than in Belgium;[20] yet, for the bulk of purchases (food, clothing), distinct tax advantages cannot be identified;
— in Liège-Limburg, the Dutch bought to some extent fuel and beer, which were both taxed at lower rates in Belgium than in the Netherlands, but more significant were purchases without definite tax advantages such as furniture, food and clothing (Figure 9).

d. Frequencies of Cross-Border Shopping

The frequency of cross-border shopping is defined as the number of shopping tours that customers undertake during a year. The indicator is correlated positively to per capita expenditures and total expenditures. This is because, at least in the observation period (1991), customers could only increase their cross-border purchases by crossing the border more frequently since the number of purchases on each shopping tour was restricted.

In the *Danish-German border region*, according to our estimates, Danes in particular crossed the border frequently (three times or more per year) in order to shop in Südschleswig, whereas only one or two cross-border shopping tours per year were made by the most Germans (Table 5).[21] In the *Euregio Meuse-Rhine*, the Dutch from Zuid-Limburg crossed the border most frequently to shop in the Aachen area and in Liège-Limburg (Table 6). In part, this may be because the area of Zuid-Limburg is very small. Travel costs are low because people live close to the borders. The Belgian-Dutch border was crossed relatively frequently not only by Dutch on their way to Liège-Limburg but also

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19 With respect to clothing, however, this is only true for specific luxurious clothing.

20 As home entertainment equipment is taxed lowest in Germany, Belgians seem to prefer to buy these goods in the Aachen area.

21 Also, the Institut for Grænseregionsforskning analysed the frequency of cross-border shopping [Bygvrå, 1992b]. However, because the method used in this analysis differs from ours, their results cannot be compared with ours. As the Institut for Grænseregionsforskning asked passengers at the border, the probability of meeting customers who shopped frequently was much higher than that of meeting customers who shopped only by chance. In this respect, the results of the Institut for Grænseregionsforskning are biased towards a higher frequency.

by Belgians in the opposite direction. This observation may reflect inter alia that border controls were abolished long ago. By contrast, Belgians shopped the least frequently in the Aachen area, probably in part because of the large area covered by the Belgian part of the border region and because of the low population density in the areas close to the border.

Table 5 — Frequencies of Cross-Border Shopping[a] at the Danish-German Border, 1991 (per cent)

<table>
<tr><th rowspan="3"></th><th colspan="2">Germans in the Danish subregion</th><th colspan="2">Danes in the German subregion</th></tr>
<tr><th>IfW estimates[b]</th><th>IfGf estimates[c]</th><th>IfW estimates[b]</th><th>IfGf estimates[c]</th></tr>
<tr><th>June 1991 to May 1992</th><th>1991</th><th>June 1991 to May 1992</th><th>1991</th></tr>
<tr><td>Less than once a year</td><td>.</td><td>14</td><td>.</td><td>3</td></tr>
<tr><td>Once or twice a year</td><td>45.2</td><td rowspan="2">14</td><td>19.4</td><td rowspan="2">38</td></tr>
<tr><td>Three times or more a year</td><td>31.9</td><td>49.5</td></tr>
<tr><td>Once or more a month</td><td>16.3</td><td>31</td><td>22.6</td><td>34</td></tr>
<tr><td>Once or more a week</td><td>6.7</td><td rowspan="2">41</td><td>8.6</td><td rowspan="2">25</td></tr>
<tr><td>Almost every day</td><td>–</td><td>–</td></tr>
</table>

[a]Number of shopping tours per year. — [b]Own estimates of the Institut für Weltwirtschaft, Kiel (IfW), referring to inhabitants of the border region. — [c]Estimates made by the Institut for Grænseregionsforskning, Åbenrå (IfGf), referring to passengers at the border, thus not comparable to estimates made by the Institut für Weltwirtschaft.

Source: Own survey; Bygvrå [1992b].

Table 6 — Frequencies of Cross-Border Shopping[a] in the Euregio Meuse-Rhine, June 1991 to May 1992 (per cent)

	Dutch-German border		Belgian-German border		Belgian-Dutch border	
	Germans in the Dutch subregion	Dutch in the German subregion	Germans in the Belgian subregion	Belgians in the German subregion	Dutch in the Belgian subregion	Belgians in the Dutch subregion
Once or twice a year	31.5	20.3	35.0	56.7	18.6	33.0
Three times or more a year	37.0	28.4	30.7	25.8	39.2	28.4
Once or more a month	23.0	34.0	26.4	15.5	27.8	25.6
Once or more a week	8.2	16.2	7.9	2.1	14.4	13.1
Almost every day	0.4	1.0	–	–	–	–

[a]Number of shopping tours per year.

Source: Own survey.

e. *Distances in Cross-Border Shopping*

Distances between places of residence and shopping places may be expected to be an important determinant for the shopping behaviour of consumers because the costs of the journey must be compensated by the advantages of shopping beyond the border.

With regard to the distance of the shopping places from the border, the answers to the surveys indicate that main shopping border places were

- — shops located directly beyond the border that cater merely for cross-border shopping;
- — larger cities near the border that offer a diversified range of goods.

In order to assess the maximum distance over which customers will undertake cross-border shopping tours, we applied two indicators. First, from our survey, we calculated participation rates for certain distances from the border, i.e. the number of persons living at a certain distance from the border and crossing it at least once a year for a shopping tour, as a percentage of all residents living at the same distance. Second, from its survey, the Institut for Grænseregionsforskning estimated for the Danish-German border region the number of customers crossing the border and coming from a certain distance, as a percentage of all customers crossing the border.

In the *Danish-German border region*, Danish customers travelled over long distances in order to shop in Südschleswig. According to our survey, at a distance of more than 50 kilometres the rate of participation in cross-border shopping was still very high: about 80 per cent of all inhabitants crossed the border at least once a year in order to purchase in Südschleswig (Table 7). And we estimated that participation may have diminished only slightly as distance increased beyond the area of Sønderjylland. The Institut for Grænseregionsforskning found out that almost 50 per cent of Danish customers crossing the border came from distances of more than 50 kilometres from the border, but only 20 per cent from distances up to 10 kilometres [Bygvrå, 1992b]. Hence, for Danish cross-border purchasers the distance of their places of residence from the border seemed to be of low importance. For German consumers, the rates of participation in cross-border shopping seemed to diminish more steeply with rising distance. This corresponds to the findings of the Institut for Grænseregionsforskning that only 25 per cent of all German customers crossing the border lived at a distance of more than 50 kilometres from the border, but 50 per cent of the passengers lived at a distance of less than 10 kilometres.

In the *Euregio Meuse-Rhine* in general, distances covered by cross-border shopping seemed to be smaller. Whereas almost 50 per cent of the Germans residing within a distance of 10 kilometres from the border made purchases in

Table 7 — Participation Rates in Cross-Border Shopping in the Danish-German Border Region, 1991 (per cent)[a]

	Germans in the Danish subregion	Danes in the German subregion
Distance of		
0 to 10 km	56.2	77.4
10 to 20 km	61.7	100.0
20 to 30 km	30.6	69.5
30 to 40 km	25.0	63.0
40 to 50 km	15.9	73.8
More than 50 km	42.5	83.9
Average	39.2	75.0

[a]June 1991 to May 1992, referring to inhabitants of the border region shopping at least once a year beyond the border.

Source: Own survey.

Table 8 — Participation Rates in Cross-Border Shopping in the Euregio Meuse-Rhine, June 1991 to May 1992 (per cent)[a]

	Dutch-German border		Belgian-German border		Belgian-Dutch border	
	Germans in the Dutch subregion	Dutch in the German subregion	Germans in the Belgian subregion	Belgians in the German subregion	Dutch in the Belgian subregion	Belgians in the Dutch subregion
Distance of						
0 to 10 km	48.8	47.9	37.0	41.9	25.8	48.2
10 to 20 km	42.0	39.8	18.2	35.9	20.6	38.2
20 to 30 km	36.1	} 32.4	11.5	11.9	5.3	37.9
30 to 40 km	31.9		9.9	12.0	19.2	18.0
40 to 50 km	11,5	–	7.8	13.2	–	10.6
More than 50 km	6.6	–	12.5	8.1	–	10.0
Average	36.5	43.4	19.0	14.6	21.4	26.3

[a]Referring to inhabitants of the border region shopping at least once a year beyond the border.

Source: Own survey.

Zuid-Limburg, the participation rate diminished strongly as distance rises (Table 8). Fewer than 7 per cent of the people who lived more than 50 kilometres from the border participated in cross-border shopping. For Dutch residents from Zuid-Limburg shopping in the Aachen area, the participation in cross-border shopping was higher. The rate of participation was relatively uniform for all parts of Zuid-Limburg. Apparently, this is because the area of the region is relatively small and distances from the border are generally short.

At the Belgian-German border, the rate of participation in cross-border shopping was relatively low in either direction and declined markedly with rising distances between place of residence and the border, from about 40 per cent for residents living within a distance of 10 kilometres to some 10 per cent for residents living more than 50 kilometres from the border (Table 8).

At the Belgian-Dutch border, the participation rate of Belgians shopping in Zuid-Limburg was also negatively correlated to distance. Almost 50 per cent of the residents living close to the border, but only 10 per cent of those residents living more than 50 kilometres from the border passed the border on a shopping tour at least once a year. For Dutch shopping in Liège-Limburg, the findings exhibit no clear trend because the whole area of Zuid-Limburg is not very far from the border (Table 8).

3. Motives for Cross-Border Shopping

The surveys further aimed at evaluating the circumstances and reasons of cross-border shopping behaviour. The overwhelming majority of respondents from all border regions stated that they shopped in the neighbouring country mostly on tours that were done on the mere purpose of shopping and not accidentally, for example, on business tours, excursions or vacation trips. In addition, we asked about the motives of cross-border shopping, such as

— price advantages,
— availability of certain attractive specialities in the neighbouring country,
— an agreeable shopping climate with a diversified range of goods in certain cities beyond the border and
— favourable shop-opening hours in the other country.

We also searched for the restraining motives of those inhabitants of the border regions who did not participate in shopping tours in the neighbouring country, such as

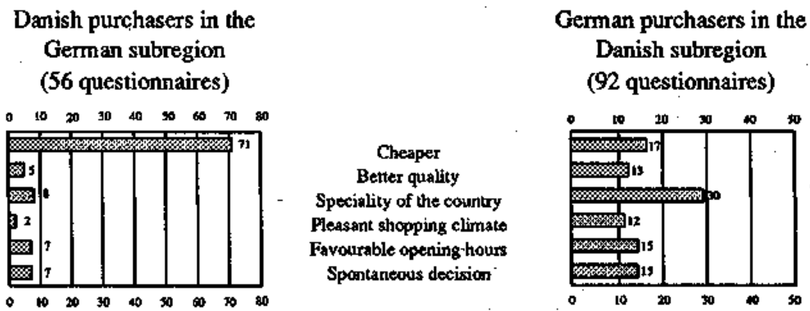
— unfavourable shopping conditions (for example, prices, shopping climate, opening hours),
— the advantages being too small to make a long journey worthwhile and
— the lack of opportunity.[22]

In the following, the various motives given in the replies received will be discussed.[23]

22 The latter reason, brought forward mostly by elderly people, is, of course, no case against cross-border shopping.

23 With respect to the motives in favour of cross-border shopping, multiple responses were possible for each of 13 product groups. All quotations have been summarized.

Figure 10 — Motives of Purchasers in the Danish-German Border Region, 1991 (per cent)[a]



[a]Multiple responses per questionnaire were possible. The figures are expressed as per cent of all responses.

Source: Own survey.

In the *Danish-German border region,* large price differentials were by far the major reason for Danes to shop in Südschleswig (Figure 10). Other motives were of minor importance. By contrast, we found out that price differentials were of very little significance for Germans buying in Denmark. Rather, the major reasons given were purchases of Danish specialities (i.e. furniture of Danish design and food) more favourable opening hours (for instance, on certain German holidays) and better qualities of the goods.

Table 9 — Motives of Non-Purchasers in the Danish-German Border Region, 1991 (per cent)[a]

	Germans not buying in the Danish subregion	Danes not buying in the German subregion[b]
Too expensive	21	–
Qualities worse	1	33
Shopping climate less agreeable	2	–
Opening hours unfavourable	1	–
Journey takes too long	37	–
No opportunity	34	–
Do not know or no motive given	3	67

[a]On the basis of households responding; multiple responses possible. — [b]Figures are not representative, since the sample was extremely small.

Source: Own survey.

Less than 25 per cent of the Danish population did not shop on the German side of the border. By contrast, more than half of the German population did not engage in cross-border shopping on the Danish side of the border. The main reasons given were that the journey took too long (i.e. compared with the advantages that are expected from purchases in the neighbouring country) and that prices were too high (Table 9). In addition, "no opportunity" was mentioned very frequently, mostly by elderly people.

In the *Euregio Meuse-Rhine*, in general, price differentials were dominant motives for cross border shopping. Other motives were of low significance (Figure 11). Other motives than price advantages were frequently named only with regard to German customers shopping in Liège-Limburg and in Zuid-Limburg. Among these motives were the preference for Belgian specialities and the more favourable shop-opening hours in Liège-Limburg as well as in Zuid-Limburg.

Four fifths of the German and of the Dutch population of the border regions did not buy in the Belgian subregion. The reasons given were, apart from lack of opportunity, that the journey took too long and that goods were too expensive (Table 10). Similarly, Dutch and Belgians who did not buy in Germany argued that there was a lack of opportunities or that the journey took too long. Another important reason was that opening hours were unfavourable. By contrast, the reason that goods were too expensive was of minor significance, at least for Dutch. For many Germans and Belgians, cross-border shopping in the

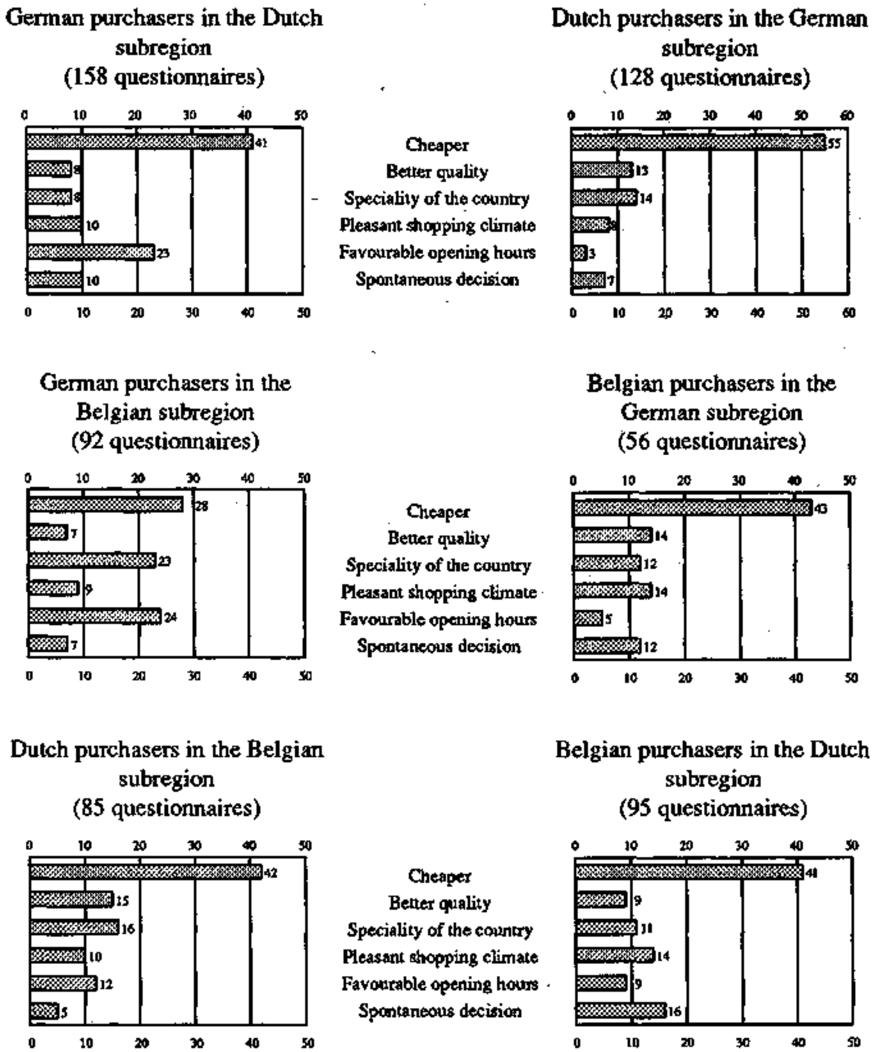
Table 10 — Motives of Non-Purchasers in the Euregio Meuse-Rhine, 1991 (per cent)[a]

	German-Dutch border		German-Belgian border		Dutch-Belgian border	
	Germans not buying in the Dutch subregion	Dutch not buying in the German subregion	Germans not buying in the Belgian subregion	Belgians not buying in the German subregion	Dutch not buying in the Belgian subregion	Belgians not buying in the Dutch subregion
Too expensive	6	5	5	4	6	1
Qualities worse	3	–	1	0	–	1
Shopping climate less agreeable	8	2	6	2	6	3
Opening hours unfavourable	–	5	0	4	–	1
Journey takes too long	40	23	38	26	24	19
No opportunity	27	26	25	43	22	46
Do not know	16	40	24	21	42	28

[a] On the basis of households responding; multiple responses were possible.

Source: Own survey.

Figure 11 — Motives of Purchasers in the Euregio Meuse-Rhine, 1991 (per cent)[a]



[a]Multiple responses per questionnaire were possible. The figures are expressed as per cent of all responses.

Source: Own survey.

Netherlands was not attractive because of the long journey and because of a shopping climate felt to be less agreeable. High prices were considered to be less important.

IV. Tax-Induced Cross-Border Shopping

Generally, a strong influence of indirect taxation on cross-border shopping can be assumed if wide tax differentials between neighbouring countries correspond (i) to a large number of cross-border shopping tours, (ii) to a pronounced tax orientation of the merchandise structure of such purchases and (iii) to a frequent quotation of price advantages as a major shopping motive. Relying on the data presented in the previous sections, we will now analyse if such correspondences between the data exist. For this purpose, the number of cross-border shopping tours will be measured by the intensity indicator.[24] The merchandise structure of cross-border shopping will be analysed with respect to the share of goods that have a definite tax advantage. Since only broad lines of the merchandise structure can be drawn from the survey — only 13 groups of goods have been distinguished in the questionnaire[25] —, the classifications with respect to tax advantages are not always unambiguous.[26] Finally, the quotations of various motives for cross-border shopping will be used to assess whether price advantages were mentioned more frequently than other motives listed in the questionnaire.

Considering the various kinds of cross-border shopping relations, one gets the impression that, indeed, cross-border shopping seems to be intensive where tax advantages are high and low where tax advantages are low. This can be shown by analysing each kind of relation according to the extent of underlying tax incentives (Table 11).

24 The intensity indicator is defined as per capita expenditures within an uniform 20 kilometres area at all borders under consideration. The amount could also be measured in terms of total expenditures. However, as has already been stated, this measure is influenced apart from any incentives by population density and by sizes of border regions.

25 Strongly differentiated questions would have been too complicated to answer.

26 For instance, the group "food" may contain goods with tax advantages and goods without tax advantages, and no exact information is available which kinds of goods have been bought primarily. One may, however, assume that, if considerable tax advantages exist for several goods within this group, customers would concentrate their demand on these goods, and, hence, the whole group would be classified as being one with tax advantages.

Table 11 — Tax-Inducement of Cross-Border Shopping

Customers	Shopping places	Tax incentives for cross-border shopping		Characteristics of cross-border shopping		
		general direction	number of tax advantages	intensity indicator[a]	tax orientation of merchandise structure[b]	motivation by price incentives[c]
				Danish-German border region		
Germans	Danish subregion	– –	very low	high	very low	very low
Danes	German subregion	+++	very high	very high	very high	very high
				Euregio Meuse-Rhine		
Germans	Dutch subregion	–	low	medium	medium	medium
Dutch	German subregion	+	medium	high	medium	high
Germans	Belgian subregion	–	low	low	medium	low
Belgians	German subregion	++	high	medium	high	medium
Dutch	Belgian subregion	0/–	low	medium	low	medium
Belgians	Dutch subregion	0/+	medium	high	low	medium

Legend: – – strongly negative, – negative, 0 neutral, + positive, ++ strongly positive, +++ very strongly positive.

[a]Per capita expenditures on cross-border shopping by residents within a 20 kilometres area at the border. — [b]Share of goods that may be classified as goods with tax advantages. — [c]Weight of quotations of price advantages as major shopping reasons.

Source: Tables 2, 6 and 7; Figures 4 to 7.

Tax incentives were clearly highest in the Danish-German border region for *Danes buying in Südschleswig*, and, correspondingly, cross-border shopping was very intensive. Most Danish customers (more than 70 per cent) gave price advantages as major shopping reasons, and most of the goods they bought (between 60 and 80 per cent) were in fact those with the highest tax differentials. Thus, a very large share of cross-border shopping was presumably induced by indirect taxation.

For *Belgians and Dutch buying in the Aachen area*, considerable tax advantages were identified. They go along with intensive cross-border shopping, particularly in the case of Dutch purchasers. More than 50 per cent of Belgian customers and 40 per cent of Dutch customers participated in cross-border shopping mainly because of price advantages, and bought goods at 60 to 70 per cent (60 to 80 per cent, respectively) that offered high tax advantages. Thus, a large share of the cross-border purchases by Dutch and Belgians is likely to be tax-induced in the Aachen area.

Some mutual tax advantages existed also between Belgium and the Netherlands. They were, however, smaller than in all cases discussed before. Correspondingly, *the cross-border shopping of Belgians in Zuid-Limburg* and of *Dutch in Liège-Limburg* was less intensive, particularly with regard to the Dutch.[27] In both cases, about 40 per cent of the customers indicated to have made their purchases because of price advantages. They bought goods of which about 40 per cent can be classified as carrying a markedly lower tax burden in the neighbouring country (particularly fuel in Belgium and diesel in the Netherlands). Cross-border purchases were thus tax-induced to a lesser extent than in the cases mentioned before.

As *Germans* had mostly tax disincentives to shop *in Zuid-Limburg or in Liège-Limburg*, their per capita expenditures on cross-border shopping were low. Less than 40 per cent (30 per cent) of German customers indicated to have bought goods in the Netherlands (in Belgium) because of low prices. About 30 to 50 per cent (about 20 per cent) of all goods bought were taxed less heavily abroad. Thus, only a minor share of the German cross-border purchases in the other regions of the Euregio Meuse-Rhine was induced by indirect taxation. Hence, most of the cross-border shopping was induced by other factors than taxation.

At the end of the scale, tax incentives for *Germans buying in Sønderjylland* were definitely negative. This is, however, a special case because in spite of the negative tax disincentives, the extent of cross-border shopping was high. The motives quoted most often were others than price advantages, and many of the goods bought can be judged to be Danish specialities.

To summarize, in almost all cases the extent of cross-border shopping corresponded to the extent of tax incentives. The striking exception from this rule was Germans buying in Sønderjylland. Moreover, the merchandise structure of cross-border shopping was the more (the less) determined by tax advantages, the higher (the lower) these advantages were, and this was valid also for Germans buying in Sønderjylland. As a result, indirect taxation had a significant influence particularly on the structure, but also on the extent of cross-border shopping. The volume of cross-border shopping that was generated by other incentives seemed to be relatively small in most cases.

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27 It is interesting to note that Belgians spent more per capita expenditures on cross-border shopping in the Netherlands than in Germany, although in Germany tax incentives were higher. Reasons for this behaviour, which is not in line with expectations, may be seen perhaps in language difficulties. Whereas the Aachen area borders on a French-speaking part of Belgium (and also on a German-speaking part, which, however, is small), Zuid-Limburg borders on a Dutch-speaking part of Belgium.

V. Economic and Fiscal Effects of Cross-Border Shopping

We measured the effects on the economies generated by cross-border shopping in terms of net turnover, value added and employment. Further, we calculated net turnover by subtracting indirect taxes from total expenditures on cross-border shopping estimated on the basis of the surveys.[28] By relating net turnover of cross-border shopping to total net turnover of the retail trade branch, we evaluated the effects of cross-border shopping on the retail trade branch. With respect to the effects on the economies of the border regions as a whole, however, it is not useful to measure them in terms of turnover, because turnover depends on the amount of input of intermediate goods and services, which varies widely across branches. Therefore, we estimated the value added generated by cross-border shopping. We did this by applying the average share of value added in national retail trade turnover and related it to the total value added of the border regions. Likewise, in order to estimate the employment effect of cross-border shopping, we applied the average number of persons employed per net turnover of national retail trade.

To evaluate the effects of cross-border shopping on fiscal budgets, we calculated the indirect-tax yields from cross-border shopping and related it to the total tax receipts of the public authorities to which they are due to.[29] In almost all countries under consideration, indirect taxes are due to central governments. Only in the case of Germany, a few excise duties and a small fraction of value-added taxes are due to the *Länder*.[30] Local authorities are not affected.

Each act of cross-border shopping influences the economies of two countries: (i) the country where the goods are bought and (ii) the country where the customer lives. Whereas the country where the goods are bought receives a contribution to its economy and its fiscal budgets, the country where the cus-

28 Indirect taxes have been subtracted from total expenditures according to the merchandise structure by applying the average tax burdens that can be attributed to each respective group of goods.

29 In addition there may be tax gains due to the taxation of the income that is produced by cross-border shopping. However, such more indirect effects of cross-border shopping have not been calculated here. At any account, they would be small.

30 In 1991, value-added taxes in Germany are distributed between central government and all *Länder* governments, according to the relation 65 to 35 per cent. The total countries receipts from value-added tax are distributed according to the respective share of each country in national population. Thus, the two countries under consideration, Schleswig-Holstein and North Rhine-Westphalia, received about 1 and 7 per cent, respectively, of all receipts from value-added tax in 1991.

tomer lives bears the effects of foregone revenues. Retailers' associations and governments take much interest in this point, often assuming that the expenditures by domestic consumers in the neighbouring country are equivalent to the foregone revenues of the home country. In fact, in order to evaluate this foregone revenues, one has to compare the observed situation with a hypothetical one in which cross-border shopping is not possible. What can be ascribed to this hypothetical situation, and what can accordingly be assumed to be foregone in the real situation depends crucially on assumptions on the behaviour of consumers.[31] At any rate, the customers would suffer a welfare loss, if they were prevented from shopping abroad according to their preferences. But the result of the hypothetical adjustment process and, hence, of foregone turnover cannot easily be determined. As an approximation, we assume that the foregone net turnover of retail trade in the home country equals the net turnover of cross-border purchases by domestic customers, and the foregone value added and employment is derived from this foregone turnover. We assume that the foregone tax receipts are the domestic taxes that would be levied on a bundle of goods similar to that of the cross-border purchases. These figures, however, must be interpreted cautiously.

In the following, first, we describe the contributions of cross-border shopping to net turnover, value added and employment of the region and country where cross-border shopping takes place, as well as the turnover, value added and employment foregone for the customers' home region and country. Second, likewise, we lay down the contributions to fiscal budgets in the country where cross-border shopping takes place, as well as the approximate tax receipts that the customers' home country foregoes.

1. Economic Effects

a. *Danish-German Border Region*

Within the Danish-German border region, cross-border shopping had the strongest effect on the German subregion because of the purchases by Danes. In 1991, the additional net turnover of the retail trade branch in Südschleswig was estimated at about 210 million ecus, equalling 14 per cent of turnover of this

[31] Depending on whether the bundle of cross-border shopping contains more goods with tax advantages or more goods with tax disadvantages, a higher or a lower amount of money would be necessary to buy the same bundle at home instead of abroad. Thus, customers would have a negative or positive income effect. In reaction to this situation, they might substitute goods (for instance, low-taxed goods for high-taxed goods), and they might change their savings rate. No information is available on the degree to which these adjustments would occur.

branch (Table 12). Nevertheless, the effect on the whole economy of the border region in terms of value added and employment was small. The value added of 40 million ecus that were drawn from cross-border shopping and the more than 1,700 persons that were employed account for less than 1 per cent of total value added and for barely 1 per cent of employment, respectively, in Südschleswig (Table 13).

According to our estimates, in the Danish subregion the retail trade branch in 1991 realized an additional net turnover from cross-border shopping by German customers of almost 100 million ecus, i.e. about 8 per cent of total retail turnover (Table 12). In terms of value added, the contribution was almost 20 million ecus, i.e. about 0,5 per cent of the total regional value added. An estimated number of about 760 persons were employed in order to produce this additional value added, i.e. less than 1 per cent of the border region's total employment (Table 13).

Turning to the effects of cross-border shopping on the customers' home countries, it has been found out that for the Danish retail trade branch in all over Denmark the foregone turnover may have amounted very broadly to about 210 million ecus, or the equivalent of less than 1 per cent of its total turnover (Table 12). Accordingly, for the economy of Denmark as a whole, an approximate value added of about 40 million ecus may have been foregone and employment opportunities for about 1,730 persons, which is less than one per

Table 12 — Effects of Cross-Border Shopping in the Danish-German Border Region on Retail Trade, 1991

	Denmark			Schleswig-Holstein		
	mil. ecus	per cent of retail trade		mil. ecus	per cent of retail trade	
		in Denmark	in Sønderjylland		in Schleswig-Holstein	in Südschleswig
Net turnover[a]						
Additional[b]	92	0.4	8.1	209	2.0	14.0
Foregone						
in the whole country[c]	209	0.9	x[e]	92	0.9	x[e]
in the border region[d]	56	x[e]	5.7	66	x[e]	3.9

[a]Indirect taxes are excluded. — [b]Due to cross-border purchases by inhabitants of the neighbouring country. — [c]Due to cross-border purchases by domestic residents. — [d]Due to cross-border purchases by domestic residents of the border region. — [e]Provision is not meaningful.

Source: Own survey; Danmarks Statistik [1992b]; Statistisches Landesamt Schleswig-Holstein [d]; own calculations.

Table 13 — Effects of Cross-Border Shopping in the Danish-German Border Region on Value Added and Employment, 1991

	Denmark			Schleswig-Holstein		
	mil. ecus	in Denmark	in Sønderjylland	mil. ecus	in Schleswig-Holstein	in Südschleswig
		per cent of total economy			per cent of total economy	
Value added						
Additional[a]	17	0.02	0.4	40	0.09	0.3
Foregone						
in the whole country[b]	40	0.04	x[d]	17	0.04	x[d]
in the border region[c]	11	x[d]	0.3	13	x[d]	0.1
	persons	per cent of total employment		persons	per cent of total employment	
Employment						
Additional[a]	758	0.03	0.6	1,745	0.2	1.1
Foregone					0.1	
in the whole country[b]	1,726	0.06	x[d]	766		x[d]
in the border region[c]	462	x[d]	0.3	550	x[d]	0.4

[a] Due to cross-border purchases by inhabitants of the neighbouring country. — [b]Due to cross-border purchases by domestic residents. — [c]Due to cross-border purchases by domestic residents of the border region. — [d]Provision is not meaningful.

Source: Own survey; Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Danmarks Statistik [1992a; 1992c]; Deutsche Bundesbank [1992b]; Statistisches Landesamt Baden-Württemberg [f]; Statistisches Landesamt Schleswig-Holstein [a; e]; own calculations.

thousand of total value added and employment (Table 13). Regarding Sønderjylland, only those purchases have to be considered that were made by residents from the region itself. The border region's retail trade branch may have suffered a foregone turnover of about 56 million ecus, which is equivalent to almost 6 per cent of its total turnover.[32] For the entire economy of Sønderjylland, this means a foregone value added of 11 million ecus and almost 500 foregone employment opportunities, less than 1 per cent of total regional value added and employment, respectively. The turnover foregone for retail trade in

32 Bygvrå [1992a] estimated a higher share of 9 per cent. This difference is partly because of the different periods covered (the year 1991 in Bygvrå [1992a] compared with June 1991 to May 1992 in our study), partly because we considered value-added taxes in calculating the shares.

fact may have been somewhat below the calculated figure, even if Danish purchases at home had been equally high in a situation without cross-border shopping: these purchases were tax-induced to a high degree, and substitution towards low-tax goods certainly would not have been complete. Consequently, the higher rates of taxation would have requested a certain shift of expenditures from retail trade turnover to receipts of the fiscal budget. However, for the retail trade branch in the border region, the foregone turnover surely was of importance.

For the German retail trade branch in 1991, a turnover of approximately 90 million ecus may have been foregone, i.e. less than 1 per cent of its total turnover in Schleswig-Holstein.[33] In terms of value added, about 20 million ecus may have been foregone and, in terms of employment, about 770 jobs, equivalent to less than 1 per cent of the economic aggregates in Schleswig-Holstein. For Südschleswig, foregone turnover of its retail trade branch due to cross-border purchases by the inhabitants may be estimated at about 64 million ecus (equivalent to almost 4 per cent of total turnover). Accordingly, the German part of the border region had borne a foregone value added of 13 million ecus, or 500 employment opportunities, i.e. much less than 1 per cent (Table 13).

The analysis showed that cross-border shopping contributed considerably to the retail trade branch of the border region, particularly in the German subregion. By contrast, foregone revenues, which may be attributed to these contributions, were spread over almost the whole area of Denmark and Schleswig-Holstein, according to where the customers came from. Any effects of cross-border shopping on the total economies of the border region were very small.

b. Euregio Meuse-Rhine

According to our estimates, the strongest effects of cross-border shopping within the Euregio Meuse-Rhine were observed in the German subregion, primarily because of purchases by Dutch customers. The German retail trade branch registered an additional turnover of about 340 million ecus, accounting for 9 per cent of its total turnover (Table 14). The contribution to the regional value added and employment was very small (Table 15).

In the Dutch subregion of the border region, purchases by Belgians and Germans resulted in an additional turnover of almost 220 million ecus, more than 5 per cent of its total turnover (Table 14). The contribution to the economy of Zuid-Limburg measured in terms of value added and employment was, however, less than 1 per cent (Table 15).

33 Schleswig-Holstein should be the appropriate regional unit for comparison, as very few customers come from places outside Schleswig-Holstein.

Table 14 — Effects of Cross-Border Shopping in the Euregio Meuse-Rhine on Retail Trade, 1991

	Belgium			North Rhine-Westphalia			Netherlands		
	mil. ecus	per cent of retail trade		mil. ecus	per cent of retail trade		mil. ecus	per cent of retail trade	
		in Belgium	in Liège-Limburg		in North Rhine-Westphalia	in the Aachen area		in the Netherlands	in Zuid-Limburg
Net turnover[a]									
Additional[b]	220	0.8	4.8	342	0.3	9.0	219	0.4	5.5
Foregone									
in the whole country[c]	182	0.7	x[e]	221	0.2	x[e]	378	0.6	x[e]
in the border region[d]	178	x[e]	3.7	201	x[e]	5.1	339	x[e]	8.5

[a]Indirect taxes are excluded. — [b]Due to cross-border purchases by inhabitants of the neighbouring country. — [c]Due to cross-border purchases by domestic residents. — [d]Due to cross-border purchases by domestic residents of the border region. — [e]Provision is not meaningful.

Source: Own survey; Centraal Bureau voor de Statistiek [d]; Institut National de la Statistique [c]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [g]; own calculations.

In the Belgian subregion the retail trade branch realized 220 million ecus from cross-border purchases by Dutch and Germans, accounting for about 5 per cent of its total turnover in 1991 (Table 14). The effect on the economy of the border region was almost negligible (less than 0,5 per cent, Table 15).

Each of the three countries under consideration is also the home country of cross-border purchasers and, therefore, suffered foregone revenues from cross-border shopping in the Euregio Meuse-Rhine. The highest foregone turnover may have been incurred in the Netherlands — because of the massive purchases of Dutch particularly in Germany. For the Dutch retail trade branch, a turnover of approximately 380 million ecus were foregone, which was equivalent to less than 1 per cent of its total turnover. As many Dutch customers came from Zuid-Limburg, the retail trade branch of the border region had to bear the major part of the foregone turnover, which was about 340 million ecus, equal to almost 9 per cent of its total turnover (Table 14). The effect on the regional economy as a whole was small (Table 15).

In Germany and in Belgium, the foregone turnover of the retail trade branch from cross-border shopping in the Euregio Meuse-Rhine was smaller, it amounted to approximately 220 million ecus for the retail trade of North

Table 15 — Effects of Cross-Border Shopping in the Euregio Meuse-Rhine on Value Added and Employment, 1991

	Belgium			North Rhine-Westphalia			Netherlands		
	mil. ecus	in Belgium	in Liège-Limburg	mil. ecus	in North Rhine-Westphalia	in the Aachen area	mil. ecus	in the Netherlands	in Zuid-Limburg
		per cent of total economy			per cent of total economy			per cent of total economy	
Value added									
Additional[a]	42	0.03	0.2	65	0.02	0.2	41	0.02	0.4
Foregone									
in the whole country[b]	34	0.02	x[d]	42	0.01	x[d]	72	0.03	x[d]
in the border region[c]	34	x[d]	0.1	38	x[d]	0.1	64	x[d]	0.7
	persons	per cent of total employment		persons	per cent of total employment		persons	per cent of total employment	
Employment									
Additional[a]	1,531	0.04	0.3	2,850	0.07	0.7	2,016	0.04	0.6
Foregone									
in the whole country[b]	1,268	0.03	x[d]	1,840	0.05	x[d]	3,486	0.07	x[d]
in the border region[c]	1,240	x[d]	0.2	1,673	x[d]	0.4	3,126	x[d]	0.9

[a]Due to cross-border purchases by inhabitants of the neighbouring country. — [b]Due to cross-border purchases by domestic residents. — [c]Due to cross-border purchases by domestic residents of the border region. — [d]Provision is not meaningful.

Source: Own survey; Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Centraal Bureau voor de Statistiek [b; c]; Deutsche Bundesbank [1992b]; ETIL [1992b]; Institut National de la Statistique [b]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [a; e]; Statistisches Landesamt Baden-Württemberg [f]; own calculations.

Rhine-Westphalia, which was much less than 0,5 per cent of its total turnover,[34] while about 180 million ecus were forgone for the Belgian retail trade. As in the case of the Dutch retail trade, it had to be borne mainly by traders within the border region, equivalent to 5 per cent or 4 per cent of regional retail trade turnover, respectively. The effect on the regional economies was very small.

34 North Rhine-Westphalia should be the appropriate regional unit for comparison because only very few customers come from places outside North Rhine-Westphalia.

We may conclude that cross-border shopping made a considerable contribution to the turnover of the retail trade branch in the German subregion, whereas its share was much smaller in the Belgian and Dutch subregions. Foregone revenues were particularly large for the retail-trade in Zuid-Limburg. As only few customers came from outside the Euregio Meuse-Rhine, foregone revenues, unlike the situation in the Danish-German border region, were borne by the subregions of the border region itself. On the whole, however, cross-border shopping had only small effects on the economies of the border regions.

2. Effects on Fiscal Budgets

a. Danish-German Border Region

According to our estimates, fiscal budgets in Germany received additional tax receipts of 64 million ecus from Danish purchases in Südschleswig (Table 16), particularly in the form of excise duties. Of these additional tax payments, the central government received some 52 million ecus and the government of the *Land* Schleswig-Holstein some 3 million ecus. The shares of these amounts in total tax receipts of the respective budgets were negligible.

Fiscal budgets in Denmark realized additional tax receipts from cross-border shopping of about 24 million ecus (Table 16). These receipts consisted only of a small part of excise duties, since Germans avoided buying goods that are charged with high excise duties. All indirect taxes accrued to the central government, accounting for a share of less than one-thousandth of its total tax receipts.

Foregone tax receipts in Denmark from Danish purchases in Südschleswig can be estimated at 145 million ecus. This was more than twice the additional tax receipts that the German state gained from cross-border purchases by Danes (Table 16). The reason is that Danish customers in particular bought goods for which the tax differentials between the two countries were highest. The calculated figure, however, overestimates the real extent of foregone tax receipts, because it may be assumed that in a hypothetical situation without cross-border shopping Danish customers would not have bought the same bundle of goods at home. The effects on fiscal budgets as a whole would have been negligible anyway.

Foregone tax receipts from German purchases in Sønderjylland were calculated at about 15 million ecus. This is considerably less than the additional taxes that the Danish state received from these purchases, as even the goods that Germans bought in Denmark bear higher taxes than in Germany. The effects on fiscal budgets were negligible.

Table 16 — Effects of Cross-Border Shopping in the Danish-German Border Region on Fiscal Budgets, 1991

	Denmark			Germany		
	total receipts from cross-border shopping	thereof for: central government	thereof for: regional authority	total receipts from cross-border shopping	thereof for: central government	thereof for: regional authority (Schleswig-Holstein)
	million ecus					
Value added taxes						
Additional[a]	20	20	–	25[b]	16	0
Foregone[c]	46	46	–	12[b]	8	0
Excise duties						
Additional[a]	4	4	–	39[d]	36	3
Foregone[c]	99	99	–	3[d]	3	0
Total indirect taxes						
Additional[a]	24	24	–	64	52	3
Foregone[c]	145	145	–	15	12	0
	per cent					
Share in total tax receipts						
Additional[a]	.	0.07	–	.	0.03	0.08
Foregone[c]	.	0.43	–	.	0.01	0.00

[a]The value-added tax is distributed among the central government and all *Länder* governments, at 65 to 35 per cent in 1991. Schleswig-Holstein in 1991 received about 1 per cent of all receipts from the value-added tax. — [b]Due to cross-border purchases by inhabitants from a neighbouring country. — [c]Due to cross-border purchases by domestic residents. — [d]Excise duties on beer and motor cycles are due to the German *Länder* governments, all other excise duties to the central government.

Source: Own survey; Danmarks Statistik [1992b]; Deutsche Bundesbank [1992a; 1992b]; own calculations.

b. *Euregio Meuse-Rhine*

In the Euregio Meuse-Rhine, cross-border shopping in the German subregion yielded the highest amount of additional taxes (some 120 million ecus; Table 17). In particular, this was due to the purchases by Dutch from Zuid-Limburg. As these purchases were concentrated on goods that were not only subject to value-added taxes but also to excise duties, almost two thirds of all additional receipts were excise duties. These excise duties accrued entirely to the central government of Germany. The *Land* North Rhine-Westphalia received almost

Table 17 — Effects of Cross-Border Shopping in the Euregio Meuse-Rhine on Fiscal Budgets, 1991

	Belgium			Germany			Netherlands		
	total receipts from cross-border shopping	thereof for: central govern-ment	thereof for: regional authority	total receipts from cross-border shopping	thereof for: central govern-ment	thereof for: regional authority (North Rhine-West-phalia)	total receipts from cross-border shopping	thereof for: central govern-ment	thereof for: regional authority
	million ecus								
Value-added taxes[a]									
Additional[b]	34	34	–	43	28	3	29	29	–
Foregone[c]	32	32	–	26	17	2	58	58	–
Excise duties[d]									
Additional[b]	30	30	–	83	83	0	48	48	–
Foregone[c]	21	21	–	44	44	0	120	120	–
Total indirect taxes									
Additional[b]	64	64	–	126	111	3	77	77	–
Foregone[c]	53	53	–	70	61	2	178	178	–
	per cent								
Share in total tax receipts									
Additional[b]	.	0.25	–	.	0.07	0.01	.	0.09	–
Foregone[c]	.	0.21	–	.	0.04	0.01	.	0.21	–

[a]The value-added tax is distributed among the central government and all *Länder* governments, at 65 to 35 per cent in 1991. In 1991, North Rhine-Westphalia received about 7 per cent of all receipts from value-added tax. — [b]Due to cross-border purchases by inhabitants from a neighbouring country. — [c]Due to cross-border purchases by domestic residents. — [d]Excise duties on beer and motor cycles are due to the German *Länder* governments, all other excise duties to the central government.

Source: Own survey; Bundesstelle für Außenhandelsinformation [1993]; Deutsche Bundesbank [1992a; 1992b]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [d]; OECD [b]; Provincie Limburg [1993]; Sociale Verzekeringsraad [1993]; Statistisches Bundesamt [1992]; own calculations.

none of the excise duties and only a small fraction of the value-added taxes from cross-border shopping. In the Belgian and Dutch subregion, additional tax receipts from cross-border shopping were smaller, only about half as much as in the German subregion. In both subregions, tax receipts accrued exclusively to central governments. The contributions to the respective budgets were negligible.

Foregone receipts resulting from cross-border shopping may have been highest in the Netherlands, they have been estimated at approximately 180 million ecus. The dominant motive for purchases by Dutch customers, at least in the German subregion, were tax differences, and, most likely, a different set of goods would have been bought if there had been no cross-border shopping. Thus, foregone tax receipts may in fact have been lower. In either case, the contribution to the budget of the central government would have been small and more limited even in Belgium and Germany.

VI. Consequences of the Single Market for Cross-Border Shopping

1. Indirect Taxation and Border Controls in the Single Market

Any change of the rules on indirect taxes, duty-free allowances and border controls of persons and goods is likely to entail changes in the pattern of cross-border shopping. The abolition of border controls and the efforts of free movement of persons and goods within the EU are the core of the Single Market programme. Thus, shopping across intra-EU borders is likely to be affected. The most important measures with effects on cross-border shopping are

- the abolition of border controls of goods and persons and
- the harmonization of value added taxation and of excise duties.

a. Abolition of Border Controls

Border controls of goods have been removed in the EU since 1 January 1993. Private persons are free in principle to buy as many goods according to quantity and value in other member countries as they wish. However, private persons might be checked after crossing the border to ensure that purchases were actually made for private purposes only.

A precondition for this treatment of goods is the agreement that in general the country-of-origin principle is applied to purchases by private persons (by contrast, commercial imports are still taxed in the country of destination). Purchases by private persons that surmount a fixed margin,[35] however, are

[35] Such margins are, for instance, more than 800 cigarettes, more than 110 l beer, more than 90 l wine, more than 60 l sparkling wine and more than 10 l alcoholic beverages with an alcoholic content of more than 22 per cent.

treated as commercial imports and, hence, are liable to taxation in the country of destination, unless the customers can prove that such purchases are really for private purposes. There is a number of exceptions to the general rule. Special rules are applied to the purchase of new vehicles that are liable to taxation in the country of destination irrespective of whether the buyer is a private person or a trader. Moreover, there are exceptions for some countries, for example, for Denmark. Denmark has been granted the right to maintain import restrictions for private purchasers until 1997.[36]

Persons will continue to be controlled at the border, at least until the Schengen agreement is fully implemented. Border controls of persons crossing the Danish-German border will presumably persist even longer, as Denmark is not a member of the Schengen agreement. Instead, Denmark is a member of the Nordic Passport Union, within which border controls were abolished long ago. As a consequence, the Danish-German border is treated as an external border of the EU, particularly with respect to passengers from and to Sweden and Norway.

b. Harmonization of Indirect Taxes

Regarding the harmonization of *value-added taxes*, the member states of the EU agreed on a lower limit of 15 per cent for standard tax rates, while no upper limit was set. In addition, it was agreed that the standard rate may be supplemented by reduced, but not by increased rates. This agreement had to be carried out by legislative acts of the member countries. In the four countries under consideration reactions so far were as follows:

- Denmark raised its value-added tax from 22 to 25 per cent in January 1992. This was no real increase, however, as the "arbejdsmarkedsbidrag" with effects comparable to those of value-added taxes was abolished simultaneously [Rasmussen, 1991].
- In Belgium, the standard tax rate was raised from 19 to 19.5 per cent, and, for certain goods, the reduced rate was doubled from 6 to 12 per cent in April 1992. While this looks like an increase in value-added taxes, the often used increased rates of 25 and 33 per cent were abolished at the same time. Thus, the tax burdens were in fact reduced

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36 They have been, however, reduced since January 1993. Thus, for beer and wine the general rule of the EU is applied. Restrictions still exist for spirits, cigarettes and fuels. During a stay of less than 36 hours no spirits and only 100 cigarettes may be imported duty-free, during a longer stay 1.5 l spirits and 300 cigarettes may be imported duty-free. As concerns fuels, the content of the tank plus the content of 2 petrol tins can be imported duty-free.

(to 19.5 per cent) for a large number of high-grade consumer goods. This also led to a concomitant weakening of the most important tax incentives for cross-border shopping.
- In the Netherlands, the standard tax rate was reduced from 18.5 to 17.5 per cent in October 1992.
- In Germany, the standard tax rate was raised from 14 to 15 per cent in January 1993.

Thus, with the exception of Denmark, the steps taken by the four countries led to diminishing tax differences.

With respect to the harmonization of *excise duties*, the member states of the EU agreed on a list of goods to be subject to excise duties and on lower limits for the tax rates levied on these goods.[37] Mostly, tax rates in the four countries exceed these lower limits. In anticipation of the agreement, the four member states took the following measures:

- In Denmark, excise duties on sugar, light beer and perfumes were abolished already in July 1991. Excise duties on alcoholic and non-alcoholic beverages and on mineral-oil products were reduced. In October 1992, the duties on beer and wine were reduced substantially and the duties on diesel oil raised slightly.
- In Germany, the tax on mineral oil products were raised twice in 1991 (in January and July). Some excise duties — the most important were the duties on salt, sugar and tea — were abolished in January 1993. The excise duty on coffee will be maintained, although coffee is not on the list of the EU. The duty on beer were raised slightly, in accordance with the EU agreement.
- In the Netherlands, excise duties on mineral-oil products were also raised.

On the whole, these measures tend to slightly reduce the differentials of excise duties between the four countries.

The implementation of the country-of-origin rule for commercial imports, which is planned for 1998, is still ahead. This measure may also affect cross-border shopping, as exporters from one country will be enabled to sell goods directly to retailers of the neighbouring country at the former country's tax rates. As a result, customers may take advantage of lower foreign taxes without

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37 Such lower limits are for instance: 0.09 ecus per l beer, 5.5 ecus per l spirit, 57 per cent of the retail price for cigarettes, 8 per cent for tobacco, 28.5 ecus per 100 l unleaded fuel and 24.4 ecus per 100 l diesel oil. Because of the objection of Germany, a lower limit for a tax on wine has not been fixed for the time being.

crossing the border. In turn, this will enhance the equalization of tax rates between the EU member states. At present, however, the realization of this plan is doubtful. Therefore, the possible effects will not be discussed in detail here.

2. Consequences for Cross-Border Shopping

The effects of the Single Market programme on cross-border shopping cannot be quantitatively assessed. We can only indicate the directions and broad magnitude of these effects in each region under consideration.

Generally, we may expect two contrary trends to result from completing the Single Market, but we cannot yet determine the net effect. On the one hand, with the removal of the border controls for goods and of the restrictions for private imports and with the reduction of border controls for persons, the main administrative restrictions for cross-border shopping are reduced. Thus, as long as incentives for cross-border shopping (including tax-induced price advantages) continue to exist, an expansion of cross-border shopping may result. The higer the incentives are, the more appreciable such an expansion may be. This trend is likely to be particularly important in the short run.

On the other hand, the tax incentives for cross-border shopping are likely to diminish. In both border regions under consideration some tendencies towards equalization of indirect taxation could already be observed. As a result, tax-induced cross-border shopping should have declined slightly and should decline even further in the long run, as far as the harmonization of taxes proceeds.

In the *Euregio Meuse-Rhine*, tax differentials are not very high, and the border controls have already been insignificant for some time. Thus, there will not be much of a change. In fact, the experience of the first month under the Single Market regime confirms this assessment. Further equalization of taxes may even reduce tax-induced cross-border shopping.

The situation is different in the *Danish-German border region,* since, in spite of the equalization trends, tax differentials and, hence, the incentives for cross-border shopping remain considerably large. As a consequence, tax-induced cross-border shopping by Danes in Germany is likely to increase after the border controls are reduced. To what extent the import restrictions that Denmark is allowed to maintain will limit this increase depends decisively on the effectiveness of the Danish behind-border controls and on the compliance of the Danish customers to adhere to the restrictions on cross-border purchases.[38] In fact, the impression after the first months of the Single Market

[38] Danish customers are obliged to declare purchases that surmount the import restrictions and to put the declaration into a special letter box at the border.

is that cross-border shopping by Danes in Südschleswig has not increased very significantly. Some Danish retailers tried to create new opportunities for cross-border shopping without crossing the border.[39] However, these attempts have presumably not been successful. Cross-border shopping by Germans in Sønderjylland may become more prevalent to some extent because these customers expect better opportunities for purchases beyond the border, whereas the negative price incentives have diminished slightly.

VII. Summary

According to our estimates, in the Danish-German border region and the Euregio Meuse-Rhine, considerable cross-country differentials in indirect taxation exist. They are largest between Denmark and Germany and between Belgium and Germany because of the high indirect taxes in Denmark and Belgium. These tax differentials induce considerable price incentives for cross-border shopping.

The extent and structure of cross-border shopping and the motives of purchasers can be described as follows:

- The extent of cross-border shopping is highest with respect to Danes and Dutch buying in Germany and Germans buying in Denmark. It is smallest regarding Germans buying in Belgium.
- The merchandise bought beyond the border is oriented most strongly towards goods with tax advantages in the case of Danes buying in Südschleswig and also to a considerable degree in the case of Belgians buying in Germany. It is the least oriented towards such goods in the case of Germans buying in Denmark.
- Price advantages are dominant reasons for Danish and Dutch customers to shop in Germany, whereas reasons, such as demand for certain specialities of the neighbouring country or more favourable opening hours, play a very important role for Germans buying in Denmark and, to a less extent, for Germans buying in Belgium and in the Netherlands.

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39 To this aim, distribution centers were established on the German side of the border. The goods that they offer, mostly high-grade consumer goods, are advertised all over Denmark and can be ordered by mail or by telephone. Forwarding agencies that are formally independent from the trade companies offer to transport the merchandise to the residences of the Danish customers.

This pattern of cross-border shopping is, apart from the purchases by Germans in Denmark, broadly in line with the structure of tax incentives indicating that cross-border shopping is induced to a high degree by differences in taxation. High tax incentives, as for Danes and Belgians buying in Germany, go along with a high or at least medium extent of cross-border shopping. Where tax incentives are low, such as for Germans buying in Belgium and the Netherlands, the extent of cross-border shopping is small. Furthermore, high tax incentives induce a merchandise structure shaped according to tax advantages and the frequent quotation of cheap prices as a main shopping reason for customers.

Cross-border shopping affects the economies and the fiscal budgets of the border regions and countries under consideration only to a small degree. Only the local retail trade branch of the region where the shopping takes place registers a considerable contribution from cross-border shopping, particularly in the case of Danes buying in Südschleswig and of Dutch buying in the Aachen area. Correspondingly, the retail trade branch of the customers' home countries foregoes a considerable turnover from these cross-border purchases. However, as the importance of the retail trade branch is relatively minor as compared with the whole economy, the overall effects of cross-border shopping on the total economy of the border regions are very small, as are the effects on fiscal budgets.

After the completion of the Single Market, cross-border shopping will grow considerably *in the short run* in those regions where border controls are removed, while tax incentives persist. This holds for the Danish-German border region but not for the Euregio Meuse-Rhine, where, on the one hand, tax incentives are lower and where, on the other hand, border controls were largely abolished already. The experiences of the first months of the Single Market seem to confirm these expectations. *In the long run*, however, governments that are confronted with a highly unbalanced cross-border trade may feel forced to reduce tax incentives, and this may reduce tax-induced cross-border shopping. In fact, a certain reduction of tax-induced cross-border shopping was observed, for instance, when the Danish government reduced its indirect taxes in preceding years. What will remain or even increase after further tax adjustments have been made is the cross-border shopping that is induced by incentives other than taxation.

C. Cross-Border Commuting

I. Overview

The aim of this chapter is to describe and analyse cross-border commuting, and to answer the question how it might be affected after the completion of the European Single Market. Special regard is given to the question to what extent cross-border commuting is induced by taxation. We analyse cross-border commuting in the Euregio Meuse-Rhine and in the French-German border region of Alsace-Baden. In Section C.II, we examine the direction and magnitude of tax-induced incentives (including those stemming from social security contributions) for cross-border commuting. We compare tax burdens of two types of workers: (i) workers who are residents of one country, whereas they are employed in another one (frontier workers)[40], and (ii) workers who have their place of residence and job in the same country. Section C.III presents the extent and structure of cross-border commuting in the regions under consideration, using several national statistics. In Section C.IV, we analyse the relationships between tax-induced and other incentives, mainly wage differentials and the effective pattern of cross-border commuting. Section C.V assesses the economic and budgetary effects of cross-border commuting with respect to their importance for regional labour markets, income, value added, and local, regional and national budgets. Finally, we evaluate changes in cross-border commuting that are expected after the completion of the Single Market by discussing the likely influence that the Single Market will have on the determinants of cross-border commuting (Section C.VI).

40 The EU defines a frontier worker as "a worker who, while having his/her residence in the territory of a Member State to which he/she returns, as a rule, each day or at least once a week, is employed in the territory of another Member State" [as quoted in Beatson, 1989, p. 4]. This definition is broader than specific tax-oriented definitions, which play a role in some double-taxation agreements between member states. As defined in such agreements, a frontier worker is a person who lives and works within a specified area on one side of a border. For the purpose of the study, the tax oriented definitions are too narrow because one aim of the study is to show up differences in taxation between both frontier workers who meet these requirements and those who do not.

II. Taxation of Frontier Workers

1. General Aspects

The constitutive characteristics of a frontier worker — namely working and residing in different countries — raise the question where his income is taxed: in the country of his residence, in the country of his workplace or in both countries?

A uniform regulation of taxation of frontier workers does not exist. On the one hand, it is accepted worldwide that the country of residence is allowed to tax all incomes of the domestic residents regardless where the incomes are earned and from what sources they stem from. On the other hand, it is also not controversial that each country is entitled to tax any income at the source. If the source of income and the place of residence are located in two different countries, as in the case of frontier workers, and if both countries raise taxes on labour income, double taxation is the consequence. Therefore, most countries with flows of frontier workers across their borders have established bilateral agreements to avoid double taxation. The provisions of the existing double taxation agreements differ, even between EU member countries and thus also between the countries included in the present study.[41]

In the countries under consideration, the tax treatment of frontier workers according to the relevant double taxation agreements is as follows (Synoptical Table 1). The labour income of frontier workers who commute between Belgium and the Netherlands, Germany and Belgium, and Germany and France is taxed in the country of residence, provided the frontier workers have their residence *and* workplace within specificied areas on both sides of the border. If the place of residence and/or workplace are located outside the specified areas, the labour income is taxed at the source, i.e. in the country of workplace. The labour income of frontier workers who commute between the Netherlands and Germany are generally taxed in the country of workplace and not in the country of residence. Thus, the labour income of frontier workers is taxed either in the

41 Already 1979, the EC Commission proposed to harmonize the tax treatment of frontier workers within the community by applying generally the principle of taxation in the country of residence. However, the European Council did not decide upon the proposal until the end of 1992. Most of the member countries prefer to solve the problems of taxation of frontier workers by bilateral agreements [see COM, 1990].

Synoptical Table 1 — Taxation of Frontier Workers

Country of residence	Country of workplace	Tax treatment of labour income
Netherlands	Germany	Taxation in the country of workplace. Personal circumstances (family status, etc.) are considered provided that at least 90 per cent of the total income (world income) stems from sources that are taxed in the country of workplace.
Germany	Netherlands	Taxation in the country of workplace. Personal circumstances (family status, etc.) are considered provided that at least 90 per cent of the total income (world income) stems from sources that are taxed in the country of workplace.
Belgium	Netherlands	Taxation in the country of residence provided that place of residence *and* workplace are both located within 20 kilometres of the border. If place of residence and/or workplace are located outside these areas the labour income is taxed in the country of workplace. Exception: Belgian residents who are Dutch nationals and have changed their place of residence from the Netherlands to Belgium after 1 January 1970 may be taxed in the Netherlands.
Netherlands	Belgium	Taxation in the country of residence provided that place of residence *and* workplace are both located within 20 kilometres of the border. If place of residence and/or workplace are located outside these areas the labour income is taxed in the country of workplace.
Belgium	Germany	Taxation in the country of residence provided that place of residence *and* workplace are both located within 20 kilometres of the border. If place of residence and/or workplace are located outside the specified areas the labour income is taxed in the country of workplace.
Germany	Belgium	Taxation in the country of residence provided that place of residence *and* workplace are both located within 20 kilometres of the border. If place of residence and/or workplace are located outside these areas the labour income is taxed in the country of workplace.
France	Germany	Taxation in the country of residence provided that place of residence is located in the departments Haut-Rhin, Bas-Rhin or Moselle, and the workplace in Germany is located within 30 kilometres of the border. If place of residence and/or workplace are located outside these areas the labour income is taxed in the country of workplace.
Germany	France	Taxation in the country of residence provided that place of residence *and* workplace are both located within 20 kilometres of the border. If residence and/or workplace are outside these areas the labour income is taxed in the country of workplace.

Source: Arthur Andersen & Co. [b]; BStBl. [1990]; Ruth-Mailänder [1990]; Stenten [1992]; Stenten, Weynand [1989].

country of residence or in the country of workplace, but not simultaneously in both countries.[42]

42 This does not necessarily mean that in any case taxation of frontier workers is as favourable as taxation of non-frontier workers (see the results of the model estimates in Section C.I.3).

The two principles — taxation in the country of residence and taxation in the country of workplace — create different incentives. Taxation in the country of workplace creates incentives to accept employment in the neighbouring country, if taxation of the labour income is more favourable in the neighbouring country than the taxation of the same income in the home country. Taxation in the country of residence, by contrast, creates incentives to change the place of residence to the neighbouring country, but not the workplace, if taxation in the neighbouring country is more favourable.

As a consequence of the existing double taxation agreements, the following tax incentives between the countries under consideration are possible:

— Incentives to accept employment in the neighbouring country can exist at the Dutch-German border. The same incentives might also exist at the other borders, provided place of residence or workplace are located outside the specified areas.

— In all border regions, except the Dutch-German border, incentives to change place of residence may exist provided workplace and new place of residence are located inside the specified areas.

In addition to taxation of the labour income, we have to take social security contributions and children's allowances into account. They can create incentives that are different from those of taxation on labour income. In all countries under consideration social security contributions are levied, and transfers for children are granted in the countries of workplace [see COM, 1990]. Taken together, the overall tax incentive to become a frontier worker depends on the relevant double taxation agreement, the tax rates applied, the magnitude of social security contribution and the amount of children's allowances.

2. Method of Model Estimates

To find out the direction and magnitude of tax-induced incentives for cross-border commuting, we used model estimates. Subcontracting tax consultants made these estimates. They based the estimates on the 1992 tax legislation.[43] We can describe the characteristics of the model estimates as follows:

For each region on each side of the border, a typical gross income was defined, namely the average earnings of manual workers in the manufacturing

43 Accordingly, income taxes that had to be paid in Germany included the *Solidaritätszuschlag* — an additional of 3.75 per cent of the income tax. In Belgium, local authorities levied an additional local income tax, which was also taken into account. Church taxes — as far as they existed — were also considered.

industry, including construction and civil engineering.[44] Net income was defined as gross income minus taxes on labour income and social security contributions plus children's allowances. The net incomes were calculated for two different types of family status (unmarried; married with two children). It was assumed that the persons/families that were included in our analysis do not have other sources of income.

We considered the following combinations of place of residence and workplace:

- place of residence and workplace in the same country;
- place of residence in one country, workplace in the other country, both inside the specified areas, with the consequence that the principle of taxation in the country of residence is valid;[45]
- place of residence in one country, workplace in the other country, one or both outside the specified areas, with the consequence that the principle of taxation in the country of workplace is applied.

We carried out the model estimates for the eight cross-border flows of frontier workers that were possible in the regions under consideration.

We defined three different indicators for incentives to become a frontier worker, namely for wage-induced incentives, for tax-induced incentives and for overall (net income-induced) incentives:

- Domestic workers have a wage-induced incentive to accept employment in the neighbouring country, if gross income is higher beyond the border than in the home country.
- Domestic workers have a tax-induced incentive to accept employment *in* or to change their place of residence *to* the neighbouring country, if the

[44] Respective information was taken from Eurostat [a, 1991]. This source has the striking advantage that it contains figures that are comparable between the member states. The latest figures provided by Eurostat refer to 1990. In order to get hourly earnings for the year 1992, the respective national wage increases were added. Pertinent data was taken from OECD [a]. A weekly working time of 39 hours was assumed for all countries. The gross income per year was calculated by multiplying the weekly earnings with the number of weeks per year. The calculated gross incomes per year were converted to ecus using the 1991 average exchange rate. It was not generally possible to use regionally specified data. No figures were available for the hourly earnings in Alsace. Therefore, the national average was taken, which, according to French experts, represents the wage level in Alsace fairly well. The national average was also applied to the Belgian subregion of the Euregio.

[45] In the German/Dutch case, this combinations could not be considered, because no areas are specified in which the principle of taxation in the country of workplace is applied (see Synoptical Table 1).

relation between net income and gross income given in the neighbouring country is more favourable than the respective relation in the home country.

— Domestic workers have an overall (net income-induced) incentive to accept employment *in* or to change place of residence *to* the neighbouring country, if net income is higher beyond the border than in the home country.

3. Results of Model Estimates

In the following, the results of the model estimates are presented. In order to show the main differences in labour income and taxation between the regions under consideration, we start with a comparison of gross and net income and taxation of domestic workers. Subsequently, the gross and net incomes and the taxation of frontier workers are compared with those of domestic workers. In order to identify wage, tax and overall incentives, the indicators defined above are applied. It should be kept in mind that the conclusions presented in the following sections are based on a specified set of assumptions, that, of course, cannot represent the situation of all workers correctly.[46]

a. *Labour Income and Taxation of Domestic Workers*

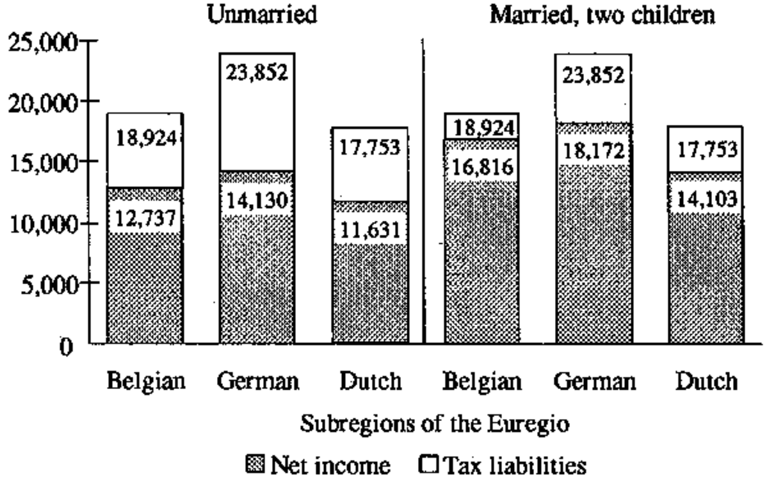
Euregio Meuse-Rhine

In 1992, the average gross income of workers was much higher in the German than in the Belgian and the Dutch subregion (Figure 12). Lowest wages were paid in the Dutch subregion. This order was still the same, if net income is considered, that of unmarried workers as well as that of married workers. But the difference in net income between the Dutch and the Belgian subregion on the one side and in the German subregion on the other side was much lower than that in gross income, indicating that taxation was higher in Germany than in the Netherlands and Belgium. Especially married workers in Belgium retained a high share of their gross income as net income. The main differences between the countries regarding the components of taxation were (Table 18):

— As far as *unmarried workers* are concerned, in Germany they had to bear the highest social security contributions. By contrast, taxation of the

[46] We document the results of the sample calculations in detail in Tables A10 to A12.

Figure 12 — Net Income and Tax Liabilities of Domestic Workers in the Euregio Meuse-Rhine, 1992 (ecus)



Source: Own calculations.

Table 18 — Components of Average Gross Income of Workers in the Euregio Meuse-Rhine, 1992 (per cent)

	Unmarried			Married, two children		
	Belgian subregion	Dutch subregion	German subregion	Belgian subregion	Dutch subregion	German subregion
Gross income	100.0	100.0	100.0	100.0	100.0	100.0
Total tax liabilities	35.9	34.4	40.8	11.1	20.6	23.8
Income tax	22.8	24.1	20.8	11.4	19.6	8.8
Social security contributions	13.1	10.3	20.0	13.1	9.3	20.0
Children's allowances	–	–	–	–13.3	–8.3	–4.9
Net income	64.1	65.5	59.2	88.9	79.4	76.2

Source: Tables A10 to A12; own calculations.

labour income was lowest in Germany, but not low enough to compensate for high social security contributions. In the Netherlands, labour income was taxed highest, but the burden due to social security contributions was lowest.

— The labour income of *married workers* was taxed lowest in Germany and highest in the Netherlands. Again, in Germany the highest rate of social security contributions and, additionally, relatively low children's allowances led to the smallest net income as a percentage of gross income. In Belgium, workers retained a high share of their gross income as net income because the tax rate on labour income was low and because they received high children's allowances. Although workers in the Netherlands had to bear the lowest social security contributions, their net income was low compared with gross income, because the tax rate on labour income was the highest one and children's allowances were not as favourable as in Belgium.

To summarize, taxation of labour income was most rigorous in the Netherlands, whereas workers in Germany face the highest social security contributions. All components taken together, taxation was highest in Germany, with the result that the increases in the gross income of workers in Germany were minimal.

Alsace-Baden

The gross income of workers in the German subregion was much higher than that of workers in the French subregion (Figure 13). But, as in the Euregio, the difference in net income was considerably lower, indicating that taxation was much higher in Germany than in France.

The higher tax burden in Germany resulted from far higher tax rates on labour income, whereas the burdens resulting from social security contributions were nearly the same in both countries (Table 19). Children's allowances were more favourable in France than in Germany.

b. Incentives for Cross-Border Commuting

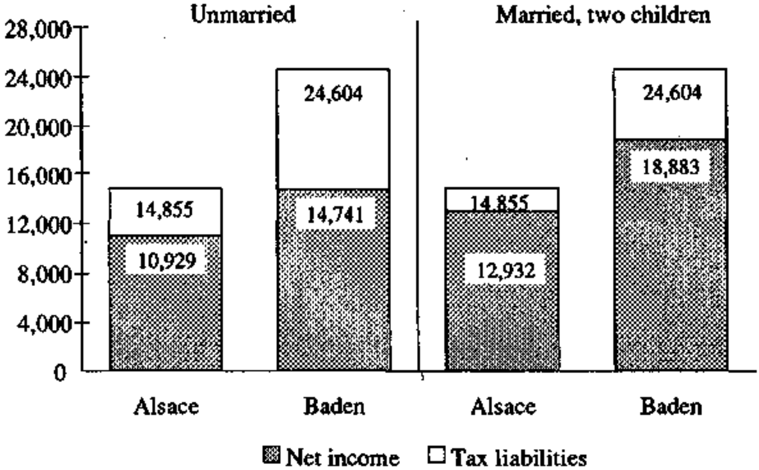
Incentives at the Dutch-German Border

The broad conditions for commuters were as follows:

— According to the German-Dutch double taxation agreement, taxes on labour income were levied in the country of workplace.

— Gross income was much higher, on average, in Germany than in the Netherlands.

Figure 13 — Net Income and Tax Liabilities of Domestic Workers in Alsace and Baden, 1992 (ecus)



Source: Own calculations.

Table 19 — Components of Average Gross Income of Workers in Alsace and Baden, 1992 (per cent)

	Unmarried		Married, two children	
	Alsace	Baden	Alsace	Baden
Gross income	100.0	100.0	100.0	100.0
Total tax liabilities	26.4	40.1	12.9	23.3
Income tax	6.4	21.1	0.0	9.0
Social security contributions	20.0	19.0	20.0	19.0
Children's allowances	–	–	–7.1	–4.8
Net income	73.6	59.9	87.1	76.7

Source: Tables A10 to A12; own calculations.

- Unmarried workers faced a higher total tax burden in Germany, although the tax rate on labour income was somewhat higher in the Netherlands. Social security contributions were much lower in the Netherlands.
- Married workers also faced a somewhat higher tax burden in Germany. The total tax burden from both income taxation and social security

contributions was about the same in both countries. However, children's allowances were more favourable in the Netherlands than in Germany.

Under these conditions, Dutch workers had slight tax-induced disadvantages to work in Germany. Their tax incentives were negative (Table 20). This held for married, but in particular for unmarried workers. However, wages were much higher in Germany. As a consequence, the overall (net income) incentives for Dutch workers to accept employment in Germany were strongly positive.

German workers, in particular unmarried workers, would have had tax-induced incentives to work in the Netherlands. However, these incentives were overcompensated by much higher wages in Germany. As a result, Germans had strong overall disincentives to accept employment in the Netherlands.

Table 20 — Incentives for Cross-Border Commuting in the Euregio Meuse-Rhine between Germany and the Netherlands, 1992[a]

Reference situation	Alternative situation		Wage incentive	Tax incentive[b]		Overall incentive	
place of residence and workplace in	place of residence in	workplace in		unmarried	married, two children	unmarried	married, two children
			Incentives to change the workplace				
Netherlands	Netherlands	Germany	134.3	93.0	96.7	124.9	129.9
Germany	Germany	Netherlands	74.4	110.6	104.3	82.3	77.6
			Incentives to change the place of residence				
Netherlands	Germany	Netherlands	100.0	100.0	100.0	100.0	100.0
Germany	Netherlands	Germany	100.0	102.8	100.8	102.8	100.8

[a]100: no incentive; > 100: positive incentive; < 100: negative incentive (disincentive). — [b]The terms "tax" and "tax induced" are used including social security contributions and children's allowances.

Source: Table A10; own calculations.

Incentives at the Belgian-Dutch Border

The broad conditions at this border were as follows:

- Labour income was taxed in the country of residence provided place of residence and workplace are both located within 20 kilometres of the border. Otherwise, labour income was taxed in the country of workplace.
- Gross income was higher in Belgium than in the Netherlands.

Table 21 — Incentives for Cross-Border Commuting in the Euregio Meuse-Rhine between Belgium and the Netherlands, 1992[a]

Reference situation	Alternative situation		Wage incentive	Tax incentive[b]		Overall incentive	
place of residence and workplace in	place of residence in	workplace in		unmarried	married, two children	unmarried	married, two children
				Incentives to change the workplace			
Belgium	Belgium	Netherlands	93.8	104.1	98.6	97.7	92.5
	Both inside the 20 kilometres area						
Belgium	Belgium	Netherlands	93.8	102.2	89.4	95.9	83.9
	One or both outside the 20 kilometres area						
Netherlands	Netherlands	Belgium	106.6	95.8	95.8	102.2	102.1
	Both inside the 20 kilometres area						
Netherlands	Netherlands	Belgium	106.6	97.8	111.9	104.3	119.2
	One or both outside the 20 kilometres area						
				Incentives to change the place of residence			
Belgium	Netherlands	Belgium	100.0	97.9	85.6	97.9	85.6
	Both inside the 20 kilometres area						
Belgium	Netherlands	Belgium	100.0	100.0	100.0	100.0	100.0
	One or both outside the 20 kilometres area						
Netherlands	Belgium	Netherlands	100.0	101.9	110.3	101.8	110.3
	Both inside the 20 kilometres area						
Netherlands	Belgium	Netherlands	100.0	100.0	100.0	100.0	100.0
	One or both outside the 20 kilometres area						

[a] 100: no incentive; > 100: positive incentive; < 100: negative incentive (disincentive). — [b] The terms "tax" and "tax induced" are used including social security contributions and children's allowances.

Source: Table A11; own calculations.

- Social security contributions were higher in Belgium than in the Netherlands, but the tax rate on labour income was lower, in particular for married workers.
- Children's allowances were more favourable in Belgium.

Under these conditions, an unmarried Belgian worker had slight tax incentives to work in the Netherlands, if workplace and residence were located within the specified areas (Table 21). A married Belgian worker, however, had slight tax disadvantages. The overall incentives for Belgian workers to accept employment in the Netherlands were negative for both unmarried and married workers because wages were considerably higher in Belgium.

Unmarried Dutch workers and married workers had small tax-induced disincentives to work in Belgium. But because of wages in Belgium, they faced small positive overall incentives.

If workplace or place of residence were located outside the specified areas, and thus labour income was taxed in the country of workplace, the patterns of tax incentives described above were broadly the same, with the exception that there was a considerable tax disincentive for married Belgian workers in the Netherlands. Correspondingly, married Dutch workers had high tax incentives to work in Belgium. This was the result of the favourable tax rates on labour income for married workers in Belgium.

The taxation of frontier workers at this border created incentives for Dutch workers to change the place of residence to Belgium, provided the new place of residence and the workplace were located within the 20 kilometres area. These incentives were considerable for married workers, again because of the family-oriented Belgian tax system. Correspondingly, Belgian workers, in particular married ones, had tax disadvantages to change their place of residence to the Netherlands.

Incentives at the Belgian-German Border

Workers are confronted with the following conditions:

— Labour income is taxed in the country of residence provided residence and workplace are both located within 20 kilometres of the border. Otherwise, labour income was taxed in the country of workplace.
— Gross income was higher in Germany than in Belgium.
— The tax rate on labour income was higher in Belgium, but the social security contributions were much higher in Germany.
— Children's allowances were much more favourable in Belgium.

Belgian unmarried workers and in particular married workers faced strong tax-induced disincentives to work in Germany (Table 22). However, as wages were much higher in Germany, the overall incentives were positive. German workers had tax advantages if they accepted employment in Belgium. But the positive tax incentives were overcompensated by wage disincentives. Their overall incentives were negative, in particular for single workers.

Table 22 — Incentives for Cross-Border Commuting in the Euregio Meuse-Rhine between Belgium and Germany, 1992[a]

Reference situation	Alternative situation		Wage incentive	Tax incentive[b]		Overall incentive	
place of residence and workplace in	place of residence in	workplace in		unmarried	married, two children	unmarried	married, two children
			Incentives to change the workplace				
Belgium	Belgium	Germany	126.0	88.6	80.6	111.7	101.6
	Both inside the 20 kilometres area						
Belgium	Belgium	Germany	126.0	95.0	79.6	119.7	100.4
	One or both outside the 20 kilometres area						
Germany	Germany	Belgium	79.3	116.4	124.3	92.3	98.6
	Both inside the 20 kilometres area						
Germany	Germany	Belgium	79.3	98.4	94.0	78.0	74.5
	One or both outside the 20 kilometres area						
			Incentives to change the place of residence				
Belgium	Germany	Belgium	100.0	107.5	106.6	107.5	106.6
	Both inside the 20 kilometres area						
Belgium	Germany	Belgium	100.0	90.9	80.6	90.9	80.6
	One or both outside the 20 kilometres area						
Germany	Belgium	Germany	100.0	95.9	94.0	95.9	94.0
	Both inside the 20 kilometres area						
Germany	Belgium	Germany	100.0	102.8	92.9	102.8	92.9
	One or both outside the 20 kilometres area						

[a]100: no incentive; > 100: positive incentive; < 100: negative incentive (disincentive). — [b]The terms "tax" and "tax induced" are used including social security contributions and children's allowances.

Source: Table A12; own calculations.

If workplace or place of residence were located outside of the specified areas and, as a consequence, labour income was taxed in the country of workplace, Germans had also no tax incentives to work in Belgium, because the tax rate on labour income in Belgium was higher than in Germany.

There were tax-induced incentives for Belgians to change place of residence to Germany and respective disincentives for Germans to change it to Belgium provided workplace and residence were located inside the specified areas. This was because of a lower tax rate on labour income in Germany. If workplace or place of residence were located outside these areas, no incentives to change place of residence did exist, neither in one nor in the opposite direction.[47]

Incentives at the French-German Border

The broad conditions for frontier workers at this border were as follows:

- Labour income was taxed in the country of residence provided place of residence and workplace were located within specified areas at both sides of the border. Otherwise, labour income was taxed in the country of workplace.
- Gross income was much higher in Germany than in France.
- Taxes on labour income were much higher in Germany, social security contributions were about the same in both countries.
- Children's allowances were somewhat more favourable in France.

French workers had tax disincentives to work in Germany (Table 23). But these disincentives were overcompensated by much higher wages in Germany. As a result, French workers had very strong overall incentives to accept employment beyond the border. The opposite was true for German workers because wages were much lower in France.

There were considerable tax incentives for Germans to change their place of residence to France provided workplace and the new place of residence were located within the specified areas. In this case, Germans could have benefited from the favourable taxation of labour income in France. French workers faced strong tax disincentives to change their place of residence to Germany.

To summarize, there were some tax incentives to work in the regions of the neighbouring countries. But these incentives were overcompensated by lower wages in these regions. In the opposite directions, tax disincentives to work beyond the border were overcompensated by higher wages. Thus, overall (net income) incentives existed for Belgian, Dutch and French workers to accept employment in Germany. Additionally, Dutch workers had some net income incentives to work in Belgium. As far as the incentives to change place of residence are concerned, there were tax incentives for the Dutch to change their

47 There was one exception: an unmarried German worker had a small tax advantage if he changed his place of residence to Belgium.

place of residence to Belgium, for Belgians to change their place of residence to Germany and for Germans to change their place of residence to France.

Table 23 — Incentives for Cross-Border Commuting in Alsace-Baden between France and Germany, 1992[a]

Reference situation	Alternative situation		Wage incentive	Tax incentive[b]		Overall incentive	
place of residence and workplace in	place of residence in	workplace in		unmarried	married, two children	unmarried	married, two children
			Incentives to change the workplace				
France	France	Germany	165.6	95.5	95.3	158.1	157.8
	Both inside the specified areas						
France	France	Germany	165.6	83.6	76.1	138.4	126.0
	One or both outside the specified areas						
Germany	Germany	France	60.4	109.1	110.9	65.8	67.0
	Both inside the specified areas						
Germany	Germany	France	60.4	100.2	102.8	60.5	62.1
	One or both outside the specified areas						
			Incentives to change the place of residence				
France	Germany	France	100.0	88.8	97.8	88.8	97.8
	Both inside the specified areas						
France	Germany	France	100.0	81.6	90.7	81.6	90.7
	One or both outside the specified areas						
Germany	France	Germany	100.0	117.2	108.1	117.1	108.1
	Both inside the specified areas						
Germany	France	Germany	100.0	102.6	86.3	102.6	86.3
	One or both outside the specified areas						

[a]100: no incentive; > 100: positive incentive; < 100: negative incentive (disincentive). — [b]The terms "tax" and "tax induced" are used including social security contributions and children's allowances.

Source: Table A13; own calculations.

III. Extent and Structure of Cross-Border Commuting

To describe the patterns of cross-border commuting in the Euregio Meuse-Rhine and in the German-French border region, we have to rely on national statistics, since community-wide statistics are not available. Some countries provide statistics for selected years only. Moreover, the methods of collecting data about frontier workers differ between countries with the consequence that the comparability of the available data sets is restricted.[48] As far as data about cross-border commuting between regions are concerned, the available statistics report either where frontier workers have their place of residence or their workplace, but not both. By a careful evaluation of all available information including those from unpublished statistics, it has been possible to draw a sufficiently precise picture of the frontier worker flows, which is shown in detail in the Tables A14 and A15. With regard to the question whether tax incentives play a role for cross-border commuting, it is necessary to know how people became frontier workers, either by taking up a job in the neighbouring country while retaining the place of residence in the home country, or by moving the place of residence to the other country while the workplace remains the same. Information on these issues is not available. As a rough approximation, we assumed that the nationality of frontier workers indicates whether they changed the place of residence or the workplace. If, for example, a frontier worker who commutes from Alsace to Baden is a German, we assumed that he moved his residence. Figures on the nationality of frontier workers of some important flows are presented in Table A16.

1. Cross-Border Commuting in the Euregio Meuse-Rhine

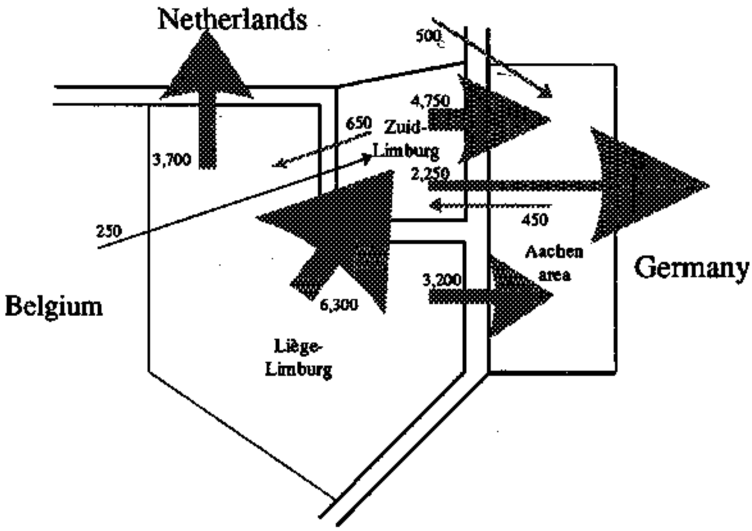
According to our evaluation of the sources available, about 15,200 to 15,800 frontier workers had their place of residence in one subregion and were employed in another subregion of the Euregio in 1991 (Figure 14 and Table A14). Another 5,900 to 6,600 frontier workers were residents of the Euregio, but had their workplace in regions outside. Moreover, there were only 900 to 1,200 frontier workers who had their workplace within, but their place of residence outside the Euregio.

[48] For an overview of data problems concerning frontier worker flows within the EU, see Beatson [1989]. Beatson indicates as a main problem that frontier workers statistics are the by-product of procedures not designed for the special purposes of generating frontier worker statistics.

Important flows within the Euregio were those of workers commuting

— from the Belgian to the Dutch subregion (6,300 persons);
— from the Dutch to the German subregion (4,500 to 5,000 persons);
— from the Belgian to the German subregion (3,200 persons) (Figure 14).

Figure 14 — Cross-Border Commuting in the Euregio Meuse-Rhine, 1991



Source: Bundesanstalt für Arbeit [1992]; Centraal Bureau voor de Statistiek [b; d]; ETIL [1992a]; Institut National de la Statistique [a]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [b; c]; Statistisches Landesamt Niedersachsen [1992]; Statistisches Landesamt Rheinland-Pfalz [e]; own calculations.

There were two large flows of out-commuting frontier workers to regions outside the Euregio, namely

— from the Belgian subregion to the Netherlands (3,800 persons) and
— from the Dutch subregion to Germany (2,000 to 2,500 persons).

Flows in the respective opposite directions were very small. Thus, the main cross-border flows were those from Belgium to the Netherlands and from Belgium and the Netherlands to Germany. Consequently, the German subregion of the Euregio had a considerable surplus of in-commuting frontier workers whereas the Belgian subregion had a clear surplus of out-commuting frontier workers. The Dutch subregion had a large number of both in-commuting and out-commuting frontier workers. This pattern did not change substantially between the mid-seventies and 1991.

A considerable share of the commuters in the Euregio became frontier workers, because they changed their place of residence across the border while retaining their workplace in the home country. Assuming that the nationality of the frontier workers indicates whether a change of their place of residence or of their workplace in the other country took place,[49] we roughly estimate for the important flows in the region that[50]

— 50 to 60 per cent of the frontier workers who lived in the Belgian subregion and had their job in the German subregion changed their place of residence from Germany to Belgium;
— 30 to 50 per cent of the frontier workers who were residents of the Dutch subregion and who were employed in the German subregion of the Euregio changed their place of residence from Germany to the Netherlands.[51]

It is probable that most of the frontier workers had their workplace and their place of residence within 20 kilometres of the borders, defined for the purpose of taxation.[52] They were, thus, taxed in the country of residence. This was especially true for the Dutch subregion, which is very small, and for the German subregion, where the large city of Aachen is located near the border.[53] However, because the Belgian subregion of the Euregio is relatively large and the city of Liège is relatively far from the border, it cannot be precluded that some frontier workers with their place of residence in Belgium and their jobs in Germany or the Netherlands did not live within the 20 kilometres area and thus were not subject to taxation in Belgium.

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49 If, for example, a frontier worker residing in Belgium and working in Aachen is a German, we assumed that he changed his place of residence.

50 For details, see Table A16, which shows the figures on which these estimates are based.

51 According to an enquiry by Vreuls [1982], roughly 30 per cent of the frontier workers with residence in Zuid-Limburg and working place in the Aachen area were born in Germany. Figures on the number of Dutch frontier workers with their place of residence in Liège-Limburg and workplace in the Netherlands are not available. According to regional experts, their number is also considerable high.

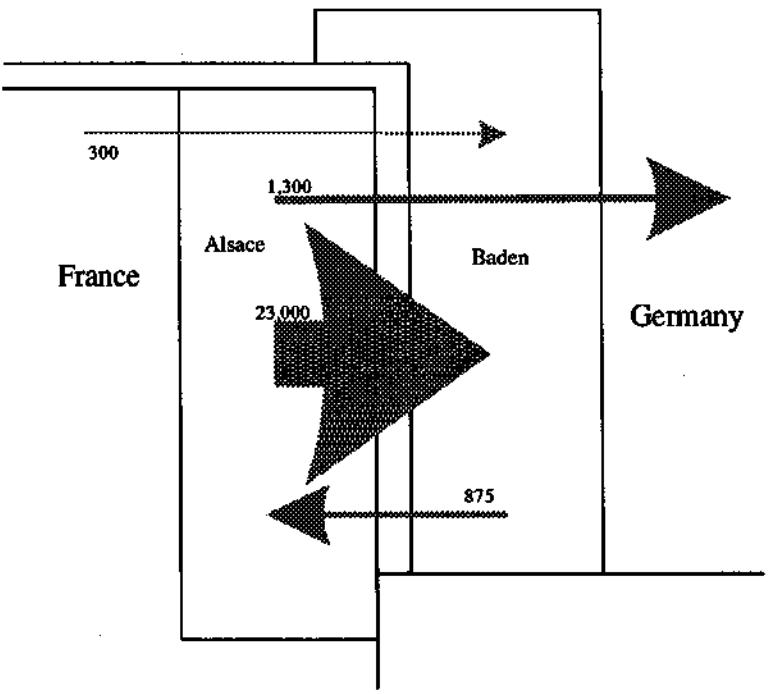
52 As stated above, data that show place of residence and workplace simultaneously do not exist.

53 In any way, commuters from the Dutch to the German subregion and those commuting in the other direction were taxed in the country of residence.

2. Cross-Border Commuting in Alsace-Baden

In 1991, about 23,000 frontier workers had their place of residence in Alsace and their jobs in Baden (Figure 15 and Table A15). In addition, 1,300 frontier workers living in Alsace were employed in Germany outside Baden. The number of commuters from Baden to Alsace was much smaller (850 to 950 persons).[54] In 1990 and 1991, the number of commuters from Alsace to Germany increased sharply.

Figure 15 — Cross-Border Commuting in Alsace-Baden, 1991



Source: Bundesanstalt für Arbeit [1992]; Institut National de la Statistique et des Etudes Economiques [a; b]; Statistisches Landesamt Baden-Württemberg [d]; Statistisches Landesamt Rheinland-Pfalz [e]; Statistisches Landesamt Saarland [1992].

[54] In addition, a large number of workers from both, Alsace and Baden commuted to Switzerland [see Institut National de la Statistique et des Etudes Economiques, a; Mohr, 1991].

Assuming that the nationality of frontier workers indicated whether they had their place of residence or job abroad, we conclude that about 1,500 Germans changed their place of residence to Alsace, according to the French population census in 1990. That was 6 per cent of all frontier workers commuting from Alsace to Baden.[55] This share increased permanently, especially between the early 1980s and 1991.

From the geography of the French-German border region, we conclude that almost all frontier workers had their workplace and place of residence within the specified areas, because these areas cover the region nearly completely.[56] Thus, the labour income of nearly all frontier workers commuting between Alsace and Baden was taxed in the country of residence.

IV. Cross-Border Commuting and Tax Incentives

The decisive question is whether cross-border commuting in the regions under consideration is caused by tax advantages that can be exploited by changing the workplace or the place of residence to the neighbouring country. In order to get an answer, the patterns of cross-border commuting derived in Section III are confronted to those of tax-induced incentives. Thereby, it is very important to distinguish the incentives to accept employment in the neighbouring country from those to change place of residence across the border.

As concerns the incentives to look for a workplace in the neighbouring country, in 1992 there were no positive tax incentives and important corresponding flows of frontier workers (Table 24). Consequently, it can be concluded that tax incentives do not play a decisive role for workers in the regions under consideration to look for a workplace in the neighbouring country. The reason is that tax incentives are overcompensated by opposed wage incentives. In fact, flows are clearly in line with net income incentives. This is true for frontier workers who are residents of Belgium, the Netherlands and France, and are employed in Germany. Correspondingly, negative income incentives are concomitant to small flows of frontier workers who live in Germany and work in Belgium, the Netherlands and France.

55 According to information provided by German sources, this number is much higher, namely 8,200 and 35 per cent, respectively. However, this information has to be considered carefully. For details, see Table A16.

56 Frontier workers commuting from France to Germany were taxed in France when their residence is located in Haut-Rhin, Bas-Rhin or Moselle and when their workplace in Germany is located within 30 kilometres of the border.

Table 24 — Tax-Induced Incentives to Change the Workplace and Cross-Border Commuting in the Euregio Meuse-Rhine and in Alsace-Baden, 1992

Changing the workplace		Tax incentive		Overall (net income) incentive		Important flow of frontier workers who changed their workplace
from	to	un-married	married, two children	un-married	married, two children	
				Euregio Meuse-Rhine		
Netherlands	Germany	(–)	(–)	+ + +	+ + +	yes
Germany	Netherlands	(+ +)	(+)	– – –	– – –	no
Belgium	Netherlands					
Both inside specified areas		(+)	–	–	–	yes
One or both outside specified areas		(+)	– –	–	– –	yes
Netherlands	Belgium					
Both inside specified areas		(–)	(–)	+	+	no
One or both outside specified areas		(–)	+ +	+	+ +	no
Belgium	Germany					
Both inside specified areas		(– –)	(– –)	+ +	+	yes
One or both outside specified areas		(–)	(– – –)	+ +	+	yes
Germany	Belgium					
Both inside specified areas		(+ +)	(+ + +)	–	–	no
One or both outside specified areas		–	–	– – –	– – –	no
				Alsace-Baden		
France	Germany					
Both inside specified areas		(–)	(–)	+ + +	+ + +	yes
One or both outside specified areas		(– –)	(– – –)	+ + +	+ + +	no
Germany	France					
Both inside specified areas		(+)	(+ +)	– – –	– – –	no
One or both outside specified areas		(+)	(+)	– – –	– – –	no

Legend: +, + +, + + +: weak, medium, strong incentive. –, – –, – – –: weak, medium, strong disincentive. ( ): not effective because overcompensated by countervailing wage effect.

Source: Tables 20 to 23 and A14 to A15.

Only the frontier worker flows between Belgium and the Netherlands do not fit into this general pattern. The number of frontier workers commuting from Belgium to the Netherlands was high, in spite of net income disadvantages. The other way round, no important flow of the Dutch commuting from the Netherlands to Belgium can be observed although they had net income incentives. However, the respective incentives and disincentives for cross-border commuting were rather small (Table 21). Consequently, other reasons, not covered by net income incentives, could easily have been effective.

Obviously, the main reason for Belgians to take up employment in Zuid-Limburg is the difference in the labour market performance in the Belgian and Dutch subregion of the Euregio. In the Belgian subregion, the rate of unemployment is significantly higher.[57] Moreover, Maastricht is a centre of economic activity not only for the small Dutch subregion of the Euregio but also for the province of Limburg in Belgium. Thus, it is quite natural that many workers who have their place of residence in areas near Maastricht are employed where the workplaces are concentrated.

Differences in the labour market performance seem to be an important cause for cross-border commuting in general. Unemployment was higher in the Belgian subregion compared with the Aachen area, and in Alsace compared with Baden. Apparently, cross-border commuting from the Belgian to the German subregion of the Euregio as well as from Alsace to Baden is not only caused by net income incentives but also by better opportunities to get a job. Only as far as cross-border commuting between the Dutch and the German subregion of the Euregio is concerned, the high number of commuters from the Dutch to the German subregion do not correspond with the labour market performance that is better in Zuid-Limburg than in the Aachen area. In this case, net income incentives seem to play the decisive role for cross-border commuting.[58]

With a view to commuters who became frontier workers by changing place of residence to the neighbouring country, important flows are in line with tax incentives at three borders (Table 25). Positive incentives correspond to important flows of the Dutch who changed place of residence to Belgium, and to those of the Germans who changed their place of residence to the Netherlands and to France. The unimportant flows in the opposite direction are in line with tax disincentives. Thus, tax incentives may have lead to removals from the Dutch to the Belgian subregion, and from the German to the Dutch subregion

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57 The rates of unemployment were in Liège-Limburg 11.6 per cent (1989), in the Aachen area 7.9 per cent (1991), in Zuid-Limburg 5.4 per cent (1990), in Alsace 5.2 per cent (1990) and in Baden 3.7 per cent (1990) [ETIL, 1992b; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen, e; Ministère de l'Industrie et du Commerce Extérieur, 1991; Statistisches Landesamt Baden-Württemberg, c; Statistisches Landesamt Rheinland-Pfalz, c; own calculations].

58 The existing pattern of cross-border commuting between the Dutch and German subregion was also the result of earlier differences in labour market conditions. Before 1980, the Aachen area experienced a better labour market performance than Zuid-Limburg. Since employment growth is higher in Zuid-Limburg than in the Aachen area, the number of frontier workers from the Dutch to the German subregion has slightly decreased whereas the number of frontier workers in the opposite direction has slightly grown.

Table 25 — Tax-Induced Incentives to Change the Place of Residence and Cross-Border Commuting in the Euregio Meuse-Rhine and in Alsace-Baden, 1992

Changing the place of residence		Tax incentive		Important flow of frontier workers who changed their place of residence
from	to	unmarried	married, two children	
		Euregio Meuse-Rhine		
Netherlands	Germany	o	o	no
Germany	Netherlands	+	+	yes
Belgium	Netherlands			
Both inside specified areas		–	– –	no
One or both outside speciefied areas		o	o	no
Netherlands	Belgium			
Both inside specified areas		+	+ +	yes
One or both outside speciefied areas		o	o	yes
Belgium	Germany			
Both inside specified areas		+	+	no
One or both outside speciefied areas		–	– –	no
Germany	Belgium			
Both inside specified areas		–	–	yes
One or both outside speciefied areas		+	–	yes
		Alsace-Baden		
France	Germany			
Both inside specified areas		– –	–	no
One or both outside speciefied areas		– –	–	no
Germany	France			
Both inside specified areas		+ +	+	yes
One or both outside speciefied areas		+	– –	no

Legend: +, + +, + + +: weak, medium, strong incentive. –, – –, – – –: weak, medium, strong disincentive. o: no incentive/disincentive.

Source: Tables 20 to 23 and A14 to A15.

of the Euregio, and from Baden to Alsace.[59] Another, and even more important, reason for these cross-border removals seems to have been that conditions on the housing markets were more favourable in Zuid-Limburg compared with

59 The tax incentives for Germans to change their place of residence were very small. It is very unlikely, that they caused cross-border removals to a considerable extent.

the Aachen area, in Liège-Limburg compared with the Aachen area and Zuid-Limburg, and in Alsace compared with Baden.[60]

Small tax disincentives existed for Germans to change their place of residence to Belgium, although a considerable number of Germans, while employed in the Aachen region, were residents of the Belgian subregion of the Euregio (Table 25). Therefore, other reasons must have caused their removals. Again, much more favourable conditions on the housing markets in the Belgian subregion of the Euregio compared with the Aachen area seem to have been an important reason.[61]

To conclude, cross-border commuting in the regions under consideration is mainly not tax induced. Higher wages and better employment opportunities are the main reasons for workers to accept employment in the neighbouring countries. In some cases, the decision by workers to change their place of residence to a neighbouring country may receive additional support from tax incentives. But another important motive for such removals are more favourable conditions on the housing markets beyond the border.

V. Economic and Fiscal Effects

In this section, we present estimates of the economic and fiscal effects of cross-border commuting. With regard to the economic effects, we analyse the extent to which frontier workers contribute to value added in the regions where they work and to total income in the regions where they reside. Furthermore, we assess the importance of frontier workers relative to the labour forces in the regions where they resided. With regard to fiscal effects, we estimate the contribution that frontier workers made to the tax receipts of local and regional budgets and to the budgets of the central government and of social security institutions in those regions and countries where taxes and social security contributions are levied. We based the evidence presented in this section on simple calculations. Nevertheless, the evidence supports conclusions at least as to the direction and order of magnitude of economic and fiscal effects.

We based the estimates on the figures for the number of frontier workers in 1991 (Table A16), and on the figures for the average income and tax burdens of

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60 This view is supported by experts of the respective regions. For removals from Baden to Alsace, see also Klingbeil [1990].

61 This view is strongly supported by regional experts.

frontier workers as used in the model estimates (Tables A10 to A13). We assumed that

— each frontier worker commuting from one region to the border region of the neighbouring country earned the average regional income;
— one half of the frontier workers commuting between two specified regions were married and had two children, and that the other half were unmarried workers.

Since it cannot be excluded that some frontier workers had their place of residence and workplace outside the specified areas, the contribution of frontier workers — except the contribution of those commuting between the Netherlands and Germany — to the total income and the tax receipts of the regions where they resided might be slightly overestimated. Additionally, the fiscal effects of cross-border commuting that were estimated for 1991 might also be slightly overstated because the calculated tax burdens of frontier workers refered to 1992. But this inaccuracy does not affect the conclusions that can be drawn.

In order to estimate the contribution of frontier workers to value added in the regions where they worked, the total sum of frontier workers' gross income was taken. By contrast, the contribution of frontier workers to total income in the region where they resided consists of their net income plus taxes paid on these incomes, but not of social security contributions. Indeed, in most cases frontier workers were taxed in the region where they resided. An exception were frontier workers commuting between the Netherlands and Germany. These workers were usually taxed in the country where they worked. Consequently, we assumed that the contributions these workers made to the total income of the regions where they resided consisted of their net income only, but not of taxes.

1. Economic Effects

To illustrate the economic effects of cross-border commuting, we calculated the following indicators:

— The number of out-commuting frontier workers as a percentage of employed persons in the region where they resided. This indicator shows to which extent the labour force of the home region is affected by out-commuting frontier workers.
— Total incomes of frontier workers as a percentage of the total gross income of the region where they resided. This indicator shows to which

extent out-commuting frontier workers contributed to the total income of the region.

— Gross value added created by frontier workers in the region where they worked as a percentage of total gross value added of the region. This indicator shows how important in-commuting frontier workers are for the economy of the region where they work.

The calculation of the frontier workers' contribution to regional income and value added were based on figures of the number of frontier workers as presented in Section C.III, and for the average income as used in the model estimates presented in Section C.II.

Euregio Meuse-Rhine

The economic effects of cross-border commuting in the Euregio Meuse-Rhine were determined by the large number of frontier workers commuting from Belgium to the Netherlands and to Germany and from the Netherlands to Germany (Table 26). About 2 per cent of the labour force in the Dutch sub-

Table 26 — Economic Effects of Cross-Border Commuting on the Regions of Residence in the Euregio Meuse-Rhine, 1991

	Belgian subregion		German subregion		Dutch subregion	
	Share of out-commuting frontier workers in the regional labour force					
Commuters to	*persons*	*per cent*	*persons*	*per cent*	*persons*	*per cent*
Belgium	x	x	225	0.0	780	0.3
Germany	3,260	0.5	x	x	7,000	1.9
Netherlands	10,000	1.4	475	0.1	x	x
Total	13,260	1.9	700	0.1	7,780	2.2
	Contribution of out-commuting frontier workers to total regional income					
Commuters to	*mil. ecus*	*per cent*[a]	*mil. ecus*	*per cent*[a]	*mil. ecus*	*per cent*[a]
Belgium	x	x	4.0	0.0	13.8	0.1
Germany	64.2	0.3	x	x	114.9	1.1
Netherlands	167.5	0.7	6.1	0.0	x	x
Total	231.7	1.0	10.1	0.1	128.7	1.2

[a]Per cent of total regional income.

Source: Table A14; Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Centraal Bureau voor de Statistiek [b]; Deutsche Bundesbank [1992b]; ETIL [1992b]; Institut National de la Statistique [b]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [e]; Statistisches Landesamt Baden-Württemberg [c; e]; own calculations and estimates.

region and in the Belgian subregion of the Euregio were out-commuting frontier workers, whereas the respective share in the German subregion was very small. Out-commuting frontier workers contributed roughly 230 million ecus to the regional income in the Belgian subregion, and about 130 million ecus to that in the Dutch subregion, which is 1 per cent of the total regional income in both regions. The contributions of in-commuting frontier workers to regional value added were 180 million ecus in the German subregion, and 120 million ecus in the Dutch subregion, which is also roughly 1 per cent of the respective total regional value added (Table 27).

Table 27 — Effects of Cross-Border Commuting on Value Added in the Regions of Workplace in the Euregio Meuse-Rhine, 1991

	Belgian subregion		German subregion		Dutch subregion	
	mil. ecus	per cent[a]	mil. ecus	per cent[a]	mil. ecus	per cent[a]
Commuters from						
Belgium	x	x	76.9	0.4	116.3	1.2
Germany	2.5	0.0	x	x	8.0	0.1
Netherlands	15.1	0.1	105.9	0.6	x	x
Total	17.6	0.1	182.8	1.0	124.3	1.3

[a]Per cent of value added.

Source: Table A14; Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Centraal Bureau voor de Statistiek [b]; Deutsche Bundesbank [1992b]; Institut National de la Statistique [b]; Statistisches Landesamt Baden Württemberg [f]; own calculations and estimates.

Baden-Alsace

Since the number of workers commuting from France to Germany was much higher than the number of workers commuting from Germany to France, the economic effects of cross-border commuting in Alsace and Baden differed substantially (Tables 28 to 29). Nearly 4 per cent of the Alsatian labour force was employed in Germany, whereas the respective number in Baden amounted only to 1 per thousand. The income of Alsatian frontier workers contributed to the total income in Alsace by about 2 per cent. The contribution of French frontier workers to value added in Baden was roughly 1 per cent. The respective contributions to regional income and value added of frontier workers commuting in the opposite direction were negligible.

Table 28 — Economic Effects of Cross-Border Commuting on the Regions of Residence in Alsace-Baden, 1991

	Alsace		Baden	
	Share of out-commuting frontier workers in the regional labour force			
	persons	*per cent*	*persons*	*per cent*
Commuters to				
France	x	x	900	0.1
Germany	24,300	3.8	x	x
	Contribution of out-commuting frontier workers to total regional income			
	mil. ecus	*per cent*[a]	*mil. ecus*	*per cent*[a]
Commuters to				
France	x	x	11.2	0.0
Germany	498.5	1.9	x	x

[a]Per cent of total regional income.

Source: Table A15; Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Deutsche Bundesbank [1992b]; Institut National de la Statistique et des Etudes Economiques [c]; Ministère de l'Industrie et du Commerce Extérieur [1991]; Statistisches Landesamt Baden-Württemberg [c; f]; Statistisches Landesamt Rheinland-Pfalz [b; c]; own calculations and estimates.

Table 29 — Effects of Cross-Border Commuting on Value Added in the Regions of Workplace in Alsace-Baden, 1991

	Alsace		Baden	
	mil. ecus	per cent[a]	mil. ecus	per cent[a]
Commuters from				
France	x	x	13.4	0.1
Germany	573.3	1.3	x	x

[a]Per cent of value added.

Source: Table A15; Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Deutsche Bundesbank [1992b]; Institut National de la Statistique et des Etudes Economiques [c]; Statistisches Landesamt Baden-Württemberg [f]; own calculations and estimates.

2. Fiscal Effects

To determine the fiscal effects of cross-border commuting, we calculated the total amounts of tax liabilities and social security contributions paid by frontier workers. Furthermore, we determined to what extent the taxes paid by frontier workers contributed to the total tax receipts of the budgets to which they accrued. We distinguished between local authorities, regional authorities, the central government and the social security system. A distinction between the various social security institutions could not be made. We based the calculations of the total tax liabilities and social security contributions paid by frontier workers on the number of frontier workers as presented in Section C.III and on the results of the model estimates presented in Section C.II.

Euregio Meuse-Rhine

According to our estimates, in 1991 the taxes paid by frontier workers were highest in the German subregion (about 56 million ecus), followed by those in the Belgian subregion (about 47 million ecus). The tax payments in the Dutch subregion amounted to about 18 million ecus (Table 30). The comparatively high tax receipts in the German subregion mainly consisted of social security contributions paid by in-commuting frontier workers from the Netherlands and — to a smaller extent — from Belgium. Additionally, in-commuting frontier workers from the Netherlands contributed to the tax receipts of local and regional budgets and to those of the central government, because the labour income of these frontier workers was taxed in Germany and because the tax receipts of labour income in Germany were divided between local and regional authorities and the central government.

Tax receipts in the Belgian subregion mainly consisted of income taxes paid by frontier workers out-commuting to the Netherlands and to Germany. Tax receipts from income taxes accrued to the budget of the central government and to local authorities, who levied an additional local income tax.

In the Dutch subregion the main source of tax receipts were the social security contributions paid by in-commuting frontier workers from Belgium. Furthermore, the central government collected income taxes from out-commuting frontier workers to Belgium and in-commuting frontier workers from Germany. Although many frontier workers resided or worked in this region, the amount of tax receipts was small. This is mainly the result of two effects. First, the labour income of the large number of out-commuting frontier workers to Germany was mostly taxed in Germany. Second, the large number of in-commuting frontier workers from Belgium paid income taxes mostly at home. In-commuting frontier workers only had to pay social security contributions in the

Dutch subregion; these contributions were comparatively low in the Netherlands.

Table 30 — Tax Receipts of Various Levels of Public Administrations from Commuters in the Euregio Meuse-Rhine, 1991 (million ecus)

Commuters to	Commuters from	Local authorities	Regional authorities	Central government	Social security institutions	Total
				Belgian subregion		
Belgium	Netherlands	1.8	–	28.6	–	30.4
Netherlands	Belgium	–	–	–	2.0	2.0
Belgium	Germany	0.9	–	13.4	–	14.3
Germany	Belgium	–	–	–	0.3	0.3
Total		2.7	–	42.0	2.3	47.0
				German subregion		
Netherlands	Germany	2.4	6.9	6.9	23.8	40.0
Belgium	Germany	–	–	–	15.4	15.4
Germany	Belgium	0.1	0.2	0.2	–	0.5
Total		2.5	7.1	7.1	39.2	55.9
				Dutch subregion		
Belgium	Netherlands	–	–	–	11.4	11.4
Netherlands	Belgium	–	–	3.6	–	3.6
Germany	Netherlands	–	–	2.1	1.0	3.1
Total		–	–	5.7	12.4	18.1

Source: Table A14; own calculations and estimates.

Although tax receipts differed between the regions, the fiscal effects of cross-border commuting in the Euregio were generally very small or even negligible. Tax receipts paid by frontier workers approached in no case 1 per cent, in most cases they accounted for less than 1 per thousand of the total receipts of the respective budgets (Table 31).

Table 31 — Contribution of Frontier Workers in the Euregio Meuse-Rhine to Total Tax Receipts of Various Public Budgets, 1991 (per cent)

Commuters from	to	Local authorities	Regional authorities	Central government	Social security institutions
			Belgian subregion		
Belgium	Netherlands	na	–	0.11	–
Netherlands	Belgium	–	–	–	0.01
Belgium	Germany	na	–	0.05	–
Germany	Belgium	–	–	–	0.00
Total		na	–	0.16	0.01
			German subregion		
Netherlands	Germany	0.36	0.03	0.00	0.01
Belgium	Germany	–	–	–	0.01
Germany	Belgium	0.01	0.00	0.00	–
Total		0.37	0.03	0.00	0.02
			Dutch subregion		
Belgium	Netherlands	–	–	–	0.03
Netherlands	Belgium	–	–	0.00	–
Germany	Netherlands	–	–	0.00	0.00
Total		–	–	0.00	0.03

na: no data available on tax receipts of municipalities in Liège-Limburg.

Source: Table A14; Bundesstelle für Außenhandelsinformation [1993]; Deutsche Bundesbank [1992a; 1992b]; OECD [b]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [d]; Provincie Limburg [1993]; Sociale Verzekeringsraad [1993]; Statistisches Bundesamt [1992]; own calculations and estimates.

Baden-Alsace

According to our estimates, in 1991 the French central government collected income taxes from Alsatian frontier workers employed in Germany of about 40 million ecus (Table 32). These frontier workers contributed to the budget of the social security institutions in Germany to about 109 million ecus. The tax revenues on labour income and the social security contributions paid by frontier workers employed in Alsace were very small because of the relatively small number of frontier workers. As in the case of the Euregio Meuse-Rhine, the fiscal effects were negligible compared with the total receipts of the respective budgets (Table 33).

Table 32 — Tax Receipts of Various Levels of Public Administrations from Commuters in Alsace-Baden, 1991 (million ecus)

Commuters from	Commuters to	Local authorities	Regional authorities	Central government	Social security institutions	Total
				Alsace		
France	Germany	–	–	40.5	–	40.5
Germany	France	–	–	–	2.6	2.6
Total		–	–	40.5	2.6	43.1
				Baden		
France	Germany	–	–	–	109.1	109.1
Germany	France	0.2	0.5	0.5	–	1.2
Total		0.2	0.5	0.5	109.1	110.3

Source: Table A15; own calculations and estimates.

Table 33 — Contribution of Frontier Workers in Alsace-Baden to Total Tax Receipts of Various Public Budgets, 1991 (per cent)

Commuters from	Commuters to	Local authorities	Regional authorities	Central government	Social security institutions
			Alsace		
France	Germany	–	–	0.02	–
Germany	France	–	–	–	0.00
Total		–	–	0.02	0.00
			Baden		
France	Germany	–	–	–	0.04
Germany	France	0.01	0.00	0.00	–
Total		0.01	0.00	0.00	0.04

Source: Table A15; Bundesstelle für Außenhandelsinformation [1993]; Deutsche Bundesbank [1992a; 1992b]; Direction des Services Fiscaux du Bas-Rhin [1993]; Direction des Services Fiscaux du Haut-Rhin [1993]; OECD [b]; Statistisches Bundesamt [1992]; Statistisches Landesamt Baden-Württemberg [b]; Statistisches Landesamt Rheinland-Pfalz [e]; own calculations and estimates.

It can be concluded that the economic and fiscal effects of cross-border commuting differ significantly between the regions. However, the contributions of frontier workers to the tax receipts of local, regional and national authorities or to receipts of the social security institutions are small, even if the number of commuting or out-commuting frontier workers in a region is high.

VI. Cross-Border Commuting and the Single Market

1. Measures of the Single Market Programme Affecting Frontier Workers

The programme of completing the European Single Market, laid down in the *White Book*, contains only one measure with explicit reference to frontier workers, namely the proposal of the Commission to tax frontier workers in the country of residence in general.[62] Furthermore, the programme contains some measures that may affect frontier workers, but also other persons: measures to abolish the controls of individuals at the borders of member countries, to harmonize professional education or acknowledge them mutually. The programme does not include measures to harmonize direct taxes.

At the beginning of 1993, the state of the programme with respect to these issues was as follows:

- The European Council had not yet accepted the proposal of the Commission to tax frontier workers in the country of residence generally.
- The controls of individuals at the borders had not been completely abolished between all member countries. However, residents of the member states crossing the borders of the regions under consideration normally were no longer controlled by the respective member states.
- The European Council had decided on several directives that the education of various professions was mutually acknowledged. Other passed directives defined specific criteria that had to be fulfilled if professional education was acknowledged in all member states.

In December 1989, the heads of government of the member states decided on a European Social Charter to supplement the Single Market programme by a so called *social dimension*. Thereupon, in 1990 the Commission developed a *Social Action Programme* to meet the principles laid down in the European Social Charter. One item of this programme was to examine the living and

[62] This proposal had been already made in 1979 [COM, 1990].

working conditions of individuals in border regions, especially those of frontier workers. The Commission submitted the respective communiqué in November 1990 [COM, 1990]. The communiqué describes the problems frontier workers are confronted with. However, the communiqué has had no direct consequences for frontier workers so far. Consequently, no other measures as those described above have to be considered to estimate the effects of completing the Single Market.

2. Expected Changes in Cross-Border Commuting

As nothing has been changed regarding to taxation of frontier workers, no tax-induced effect on the extent and structure of cross-border commuting is to be expected from completing the Single Market.[63] The abolition of border controls for persons might reduce the travelling time of frontier workers on their daily way between workplace and place of residence. The steps towards a mutual recognition of professional education might favour the possibilities of employees to find a job abroad. Consequently, both measures of the Single Market programme may increase cross-border commuting. Provided that border controls of individuals and national differences in professional education were obstacles for cross-border commuting in the past, we could expect that frontier worker flows will become more unbalanced than before. The reason is that the present incentives, such as net income differentials and regional differences in unemployment, gain relatively in importance if disincentives are reduced or removed. However, the stimulating effect on cross-border commuting is probably small because there is no evidence that in the past border controls and different professional education hampered cross-border commuting substantially, at least not in the Euregio Meuse-Rhine and in Alsace-Baden. Border controls of frontier workers in these regions have been handled broad minded

63 No doubt, the tax incentives for cross-border commuting changed in the last years because some member states had altered tax rates and social security contributions. Probably they will also undertake changes in the future. It could be argued that these changes are reactions of the member states on the Single Market to meet the requirements of a higher competition. More probable is, however, that changes in taxation and social security issues are reactions on budgetary problems. At least in the case of Germany, it is obvious that tax rates and social security contributions have raised, and will raise further, to meet the financial burden of the German unification. Provided that the other member states do not raise taxes to the same extent, the incentives to look for a workplace in Germany will become smaller. This scenario looks very probable at the beginning of 1993. Thus, it can be expected that the frontier worker flows between Germany on the one side and Belgium, France and the Netherlands on the other side will become more balanced. But of course, this effect is not due to the completion of the Single Market.

since a couple of years. The mass of frontier workers are blue-collar workers without specific professional education [Mohr, 1991]. Surely, it is possible that for some individuals new possibilities to accept employment in the neighbouring country arise by the harmonization or the mutual acknowledgement of professional education. However, the number of persons for which this is valid is presumably very small, at least compared with the total number of frontier workers.

The preceding sections show that extent and structure of cross-border commuting is dominated by differences in the economic conditions in border regions. Consequently, the Single Market will induce changes in the pattern of cross-border commuting if the economic development of regions is affected by the Single Market. Generally, we could expect that the increased competition between enterprises in the Single Market will enforce them to be more keen on favourable production conditions than before. From considerations about the pattern of firm movements (see Chapter D), we know that especially Alsace and the Belgian subregion of the Euregio Meuse-Rhine seem to have become more attractive as locations for manufacturing enterprises. Therefore, we can expect that the opportunities to get a job in these regions will become better, compared with the neighbouring regions to which many workers commute today. This would mean that the frontier worker flows across the borders under consideration will tend to become more balanced. However, the changes will presumably be small, at least in the short run. Only if firm in-movements continue for a couple of years and contribute substantially to structural change and economic performance in the regions, we could expect significant changes in the present pattern of cross-border commuting.

The general conclusion is that completing the Single Market will not largely change the present pattern of cross-border commuting. No measures are expected that will change the conditions for frontier workers directly. As the present pattern of cross-border commuting is mainly the result of regional differences in wages, unemployment and in prices for real estates, changes are only expected in so far as the Single Market will lead to more economic convergence in respect to these factors in border regions.

VII. Summary

Comparisons of the tax burdens of frontier workers with those of domestic workers in the Euregio Meuse-Rhine and in Alsace-Baden show that there are tax-induced incentives for German workers to be employed in the Netherlands, Belgium and France. Tax rates on labour income in the Netherlands and in particular social security contributions are lower in these countries than in Germany. However, wages are substantially higher in the German subregions of the border regions, and, thus, overcompensate higher taxes and social security contributions. Consequently, foreign workers have net income incentives to accept employment in the German subregions.

The pattern of cross-border commuting in the Euregio Meuse-Rhine and in Alsace-Baden is broadly in line with net income incentives, but not with tax incentives. A large number of frontier workers commute from Belgium, the Netherlands and France to Germany, whereas flows in the opposite directions are very small. However, net income incentives are not the single cause for workers to accept employment beyond the border. Another important motive is lacking employment opportunities in the home region. This is true for workers in Alsace and particularly for workers in the Belgian subregion of the Euregio. Many Belgians even work in Zuid-Limburg, although the average net-income in Zuid-Limburg is lower than in Liège and Limburg.

There are tax-incentives for workers to reside abroad while maintaining the workplace in the home country, when the labour income of frontier workers is taxed in the country of residence. The comparison of the tax burdens of frontier workers with those of domestic workers show that such incentives exist for the Dutch to change their place of residence to Belgium, for Belgians to change to Germany and, especially, for Germans to change to France. Actually, there is some empirical evidence that a considerable number of Germans change their place of residence from Baden to Alsace, while still being employed in Germany. Many ot the Dutch from Zuid-Limburg are now residents of the Belgian subregion of the Euregio, still working in the Netherlands. Another and probably even more important cause for changing the residence beyond the border is a less strained housing market. Low prices and rents for flats, houses and real estates in Alsace compared with Baden have favoured respective cross-border removals; the same applies to the Belgian subregion of the Euregio compared with the German and the Dutch subregion.

The economic and fiscal effects of cross-border commuting on the border regions differ significantly because cross-border commuting is very unbalanced. In the Belgian and Dutch subregion of the Euregio, in 1991 about 2 per cent of the regional labour force were employed abroad. In Alsace 4 per cent of the regional labour force was employed in Baden. However, the contributions of frontier workers to the tax receipts of local, regional and national authorities or to receipts of the social security institutions are small, even if the number of in- or out-commuting frontier workers in a region is high.

The completion of the Single Market will not largely change the present pattern of cross-border commuting. No measures are expected to change the conditions for frontier workers directly. As the present pattern of cross-border commuting is mainly the result of regional differences in wages, unemployment and in prices for real estates, changes are only expected in so far as the Single Market may lead to more economic convergence in respect to these factors in border regions.

D. Cross-Border Movements of Enterprises

I. Overview

The aim of this chapter is to describe and analyse the pattern of cross-border movements of enterprises in the EU, as it can currently be observed and as it may change after the completion of the European Single Market. Attention is given, in particular, to the role of differences in taxation between member states as determinants of corporate location decisions. We confine the analysis to cross-border movements of enterprises to the Euregio Meuse-Rhine and the Alsace-Baden border region.

In Section D.II, we identify tax-induced incentives and disincentives for enterprises to move from a neighbouring country to the border regions under consideration by comparing corporate tax burdens in the respective countries and regions. The tax burdens were taken from an international comparison of corporate taxes by Arthur Andersen & Co. [a] which had to be modified slightly for the purpose of the present study. In contrast to most international tax comparisons, we define the tax burdens in a broader sense, including not only direct and indirect corporate taxes but also the employer's share in social security contributions, and private income and wealth taxes on dividends and on share capital of the share holder or owner. In Section D.III, we consider the general pattern of cross-border movements of enterprises by describing the extent of movements in the past and the characteristics of those enterprises from neighbouring countries that are actually situated in the border regions. We collected necessary data partly from official institutions and partly from an own survey of the enterprises. In order to find out to what extent these movements have been induced by differences in corporate taxation and what other factors have determined relocation decisions, we analyse the motives for cross-border movements on the basis of the survey (Section D.IV). To give an impression about the economic and fiscal effects of the enterprises from abroad on the border regions, Section D.V. presents estimates of the contribution of the enterprises from abroad to regional employment, value added and to the budgets of local, regional and national public authorities. The expected effect of the Single Market on the identified pattern of cross-border movements and, thus, on the border regions we deduct analytically in Section D.VI.

We use the following definitions throughout this chapter:

— "Cross-border movement of an enterprise" means (i) a complete or partial relocation, (ii) an expansion[64] from one country to the border region of a neighbouring country or (iii) an initial set-up of a new enterprise in a border region by an entrepreneur from the neighbouring country.

— Accordingly, a "foreign enterprise in the border region" is an enterprise that moved from one country to the border region of the neighbouring country at some point in time. "Foreign" is generally understood as "stemming from the neighbouring country", not stemming from a third country.[65]

— "Corporate taxes" are used as the short term for three kinds of financial liabilities for enterprises: direct corporate taxes, indirect taxes borne by companies[66] and the employer's share in social security contributions.

II. Differences in Corporate Taxation

1. Method of the Tax Comparison

In order to derive answers from the tax comparison that are consistent with the intention to identify tax-induced incentives for cross-border movements of enterprises, we developed an appropriate *framework*. The framework defines (1) the exact purpose of the tax comparison, (2) the kind of the economic unit, (3) the taxes to be analysed and (4) the appropriate indicator to measure incentives.[67]

The *purpose* of the tax comparison is to identify actual incentives — resulting from differences in national and regional tax systems — for small and medium-sized enterprises to move from one country to the border region of a

64 A company *may* expand by building up an additional, or by participating in share capital of an existing enterprise in the border region of a neighbouring country.

65 However, if an enterprise from a third country founded a branch in one of the countries under consideration, and this branch itself has a branch in the border region of the respective neighbouring country, the latter is defined as a foreign enterprise, too.

66 Indirect taxes paid for intermediate inputs and services are only relevant in this context if they cannot be deducted from corporate tax liabilities.

67 For a theoretical foundation, see Schneider [1988].

neighbouring country. Basically, this is a microeconomic question, which requires the analysis of single enterprises.

In practice it is not possible to identify tax incentives for a variety of enterprises with a single tax comparison. Depending, for example, on their legal status, the characteristics and nationality of the owners and the intention of the relocation, the comparison might result in incentives of different magnitudes, or even of different directions. Incentives to build up an additional production site abroad might differ from those to relocate an enterprise completely. For this reason, we restricted the present tax comparison to a special, well-defined, case that represents as many real firm movements as possible. As we show in Section D.III, most enterprises from neighbouring countries in the border regions are small or medium sized companies, either independent enterprises or subsidiaries. For the tax comparison, we chose independent enterprises to be analysed. Usually, these small or medium-sized independent enterprises are owned by one person or a small number of shareholders. We assumed that the enterprise is owned by a single person whose preferences are not limited to the maximization of dividend payments only, but include an improvement of the financial situation of the firm. Accordingly, the *economic unit* that we analysed in this study is a firm-owner who is interested in the maximization of total annual net profit, which is the sum of dividends and retained earnings, after all taxes have been paid. Dividends were assumed to be subject to income taxation in the country where the enterprise is situated. This implies that the analysis identifies the tax incentives for the enterprise and the owner to move abroad. Moreover, we assumed for simplicity that the firm's owner is not employed as a manager in his own firm. Otherwise, the analysis would have been faced with the (unnecessary) complication that the firm's owner had profit and wage income and would benefit from social security contributions paid for him by the company.

Another problem that had to be solved is related to the necessity to compare tax burdens of comparable enterprises situated at different locations. The enterprises should ideally be of the same size and should produce the same goods with comparable production techniques and organizations. These characteristics, however, are not independent of the economic environment at the firm's location, which is shaped by factors like taxation, wage level, labour productivity, factor accessibility or sales market conditions. It would have been highly unrealistic to assume that the economic environment (except from taxation) is the the same in the compared locations. At least differences in the wage level and the labour productivity had to be taken into consideration as well, while assuming the other environmental factors to be identical. Thus, the tax burdens were drawn from enterprises that work under the same conditions in all border regions, except from taxation, labour productivity and wages.[68]

As it is nearly impossible to find similar, real existing enterprises at different locations,[69] we based the investigations on a hypothetical company, owned by a hypothetical person. We assumed that the hypothetical company has the same workforce and capital structure in each country, while labour productivity and wage rates differ, depending on the respective location.[70]

The tax comparison includes all important *corporate taxes* in the respective countries and regions. In addition, all important *personal tax liabilities of the firm's owner* were considered.[71] Thus, we analysed

— all direct corporate taxes,[72]
— the company's legal and voluntary social liabilities,[73]
— indirect taxes, as far as they are borne by the company,

68 There are important differences in labour productivity and wages between some of the countries under consideration that could not be neglected.

69 As experiences from the study by Arthur Andersen & Co. [a, p. 19] show, even a sample of eight companies from each country proved to be too small: "Whilst every effort was made to exclude 'abnormal' companies from the sample, inevitably there are situations where the real actions of one of the sample companies have distorted the overall picture".

70 Other environmental factors such as supply of skilled workers, availability of or rents for industrial sites should have been taken into consideration, too. However, this was impossible, since these factors cannot be accounted for appropriately by a one period tax comparison. The hypothetical company was taken from a study prepared by Arthur Andersen & Co. [a] on behalf of the EC Commission. National differences in labour productivity are expressed by differences in turnover of the hypothetical company in each of the border regions. For details, see below and Arthur Andersen & Co. [a]. It should be noted, however, that national differences in labour productivity and wages might overstate real differences between border regions, as commuting and other transborder activities tend to equalize economic conditions and prices on both sides of the border.

71 Taxes generally lay a burden on an economic unit if they lower its income without rendering equivalent returns (for example, in form of subsidies, public or social benefits). However, those returns cannot be measured. Thus, it is impossible to calculate the net burden. We have to assume that the public sector provides the same benefits to the economic agent in question in all regions.

72 It should be ensured that the hypothetical company is subject to corporate income taxation, not only to personal income taxation of the owner. Thus, in Germany we assume that the hypothetical company is a GmbH (Gesellschaft mit beschränkter Haftung), in the Netherlands a BV (Besloten Vennootschap), in Belgium a S.p.r.l. (Société privée à responsabilité limitée) or a B.v.b.a. (Besloten vennootschap met beperkte aansprakelijkheid) and in France a S.a.r.l. (Société à responsabilité limitée).

73 Employer's voluntary social contributions had to be included only as far as they are common in the region or country, and cannot be avoided therefore.

Table 34 — Taxes and Duties Covered by the Tax Comparison

	Belgium	Netherlands	Germany	France
Direct corporate taxes				
Corporate income tax[a]	+	+	+	+
Business tax	–	–	+	+
Indirect corporate taxes				
Tax on corporate wealth	–	–	+	–
Property taxes	+[b]	+[b]	+	+[c]
Insurance premium taxes	+	+	+	+
Duties on petrol	+	+	+	+
Tax on electricity	–	–	+	+[d]
Unrecovered VAT	–	–	–	+
Social security liabilities				
Unemployment insurance	+	+	+	+
Old age pension insurance	+	+	+	+
Health insurance	+	+	+	+
Personal taxes				
Personal income tax	+	+	+	+
Tax on private property	–	+	+	+
Regional development measures				
Business tax concession	–	–	–	+
Other programmes	+	+[e]	+[f]	+

Legend: + covered by the tax comparison; – not existent.

[a]Including corporate income tax on distributed dividends. — [b]Including utility and other occupancy costs. — [c]Including property tax on buildings as well as utility and other occupancy costs. — [d]Including tax on heating. — [e]Only available in the Province Zuid-Limburg, which is part of the Dutch subregion of the Euregio.— [f]Only available in the Aachen-Jülich area, which is part of the German subregion of the Euregio. In Baden there are no measures available at all.

Source: Arthur Andersen & Co. [a]; Mennel [1991]; Yuill et al. [1990].

- the owner's personal income tax on dividends and the property tax on invested capital and
- regional development assistance (Table 34).[74]

[74] Regional development assistance is all kinds of public financial aid to enterprises for regional promotion purposes, inter alia capital grants, soft loans, accelerated depreciation allowances and tax exemptions. It can be interpreted as negative taxes (see below).

In the literature, several different *indicators to measure incentives* are applied to quantify differences in international taxation: many studies measuring general differences in taxation use average effective tax rates.[75] Others, of which the objective is to identify the effect of taxation on decisions for additional investments, calculate marginal effective tax rates [see, for example, Boss, 1988; King, Fullerton, 1984]. As the present analysis primarily deals with movements of entire enterprises rather than additional investment, tax-induced incentives may have been measured by average effective tax rates. However, as in the present model differences in taxation are only one of several factors inducing incentives for enterprises to move abroad, we applied a broader approach. It allowed us to identify incentives resulting from differences in taxation as well as differences in other economic variables such as the wage level and labour productivity. Two indicators are created:

— "Net capital profitability" (after-tax profit related to equity capital) was used as a broader indicator to identify general, profitability-based incentives for cross-border movements.[76] The higher the rentability of invested capital in region A compared with region B is, the higher the incentives to move from B to A are.
— An indicator called "relative tax burden", calculated as total tax burden relative to equity capital, was used to identify tax-induced incentives to move abroad. The higher the relative tax burden in region A compared with region B is, the higher the disincentives to move from B to A are.

Both indicators are directly comparable, as both have the same denominator.[77] The relative tax burden is the difference between gross and net capital profitability. Distinguishing between both kinds of incentives, we could not determine whether tax-induced incentives are effective in practice or not,

75 In contrast to nominal tax rates, effective tax rates (calculated as total taxes divided by profits before taxes; see, for example, Arthur Andersen & Co. [a]) take into consideration differences between enterprises in the tax base resulting, inter alia, from different asset valuations or tax and depreciation allowances.

76 As an enterprise owner is generally interested in a high profitability of his invested capital, he will choose that location for his company that yields the highest profitability (after taxes). As in the present model the owner cares for the financial well-being of his company the numerator of this indicator should contain both after-tax retained earnings and after-tax dividends. Both raise his wealth — either his private or his invested.

77 The denominator should be total equity capital of the company including retained earnings from the preceding years because — from the viewpoint of the owner — retained earnings have the character of investments. They are foregone dividends.

i.e. whether these incentives are enforced or outweighed by (non-tax) cost-induced incentives.[78]

The *main characteristics of the hypothetical company* created by Arthur Andersen & Co. [a] are as follows:

- The company is engaged in industrial production.
- It was founded in 1985. In 1989, it realized a turnover of 50 mil. ecus. In order to take into account differences in national labour productivity, turnover was adjusted by national productivity indices.[79]
- In 1989, it had a workforce of 500 employees: 2 chairmen with a salary of 8x, 18 senior managers (salary: 4x), 60 middle managers (2x), and 420 general employees being paid a salary of x.[80]
- The company distributed 25 per cent of 1989 book profit (before direct corporate taxes) to the shareholder.

Arthur Andersen & Co. set up a general opening balance sheet, a profit and loss account and a closing balance sheet for 1989, the year of reference. These financial data were corrected for national peculiarities as far as possible, assuming that profit before all taxes[81] is 20 per cent of turnover. The revised data were used to calculate corporate tax liabilities in each of the countries.

For the purpose of the present investigation, we modified the model threefold:

- We reduced the hypothetical company of Arthur Andersen & Co. by half in order to take into account the special situation of small and medium-

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78 Taxable profits of the hypothetical company in the countries and regions under consideration differ as a result of different productivity figures. Taking into account incentives that result from non-tax cost components, it is possible to explain not only those enterprise movements that are in accordance with tax differentials, but also those that result from differences in production conditions.

79 The national productivity factor was calculated by Arthur Andersen & Co. as national GDP per working population, divided by the average GDP per working population in all participating countries [see Arthur Andersen & Co., a, p. 64]. Whereas this productivity factor is about the same in France (121), Germany (123) and Belgium (121), it is significantly lower in the Netherlands (106).

80 Arthur Andersen & Co. used country specific average wages to determine "x". They are based on Eurostat statistics of average hourly wages and average hours worked each week [see Arthur Andersen & Co., a, pp. 74 f.].

81 "Profit before all taxes" excludes all kinds of indirect taxes and social security contributions. Thus, it is equal to book profit (before direct taxes) from the profit & loss account plus all indirect taxes, property and wealth taxes and social security contributions borne by the company.

sized enterprises.[82] The reduction in size was necessary to ensure that partitioned tax rates, taxation allowances and exemptions (which loose importance with increasing tax base) have an effect on tax liability. The reduction was possible because the structure of the hypothetical company is relatively simple. All important stock and flow variables depend on the turnover, the number and pyramid structure of workforce or can be taken as exogenous.

— Furthermore, we extended the analysis of Arthur Andersen & Co. by taking into account personal income taxation of the owner's dividend and wealth taxation of his share capital. As these taxes depend strongly on the personal status of the taxpayer and on political objectives, they are very difficult to handle. To make the calculations as simple as possible, we assumed that the hypothetical firm owner is unmarried and has no children. His income consists mainly of dividends. Any additional income received was assumed to be equal to income tax abatements and basic allowances. Accordingly, deductions from dividend income were excluded. We assumed further that the firm owner's wealth consists solely of share capital (2 million ecus). The tax base may be its nominal value minus some general deductions allowed for by national legislation. The dividend income and wealth were assumed to be subject to taxation in 1990.

— In addition to the tax comparison of Arthur Andersen & Co., we took regional development measures into account. For technical reasons, however, we could only formally integrate tax exemptions into the tax comparison. We had to cover the effects of interest subsidies, soft loans and investment grants on incentives to move analytically.

For the case of Belgium, we carried out an additional model calculation, because Belgian companies are liable to high penalty taxes if they do not pay their regularly quaterly income tax prepayments. In the study of Arthur Andersen & Co., it was assumed that these instalments were not paid. Accordingly, the Belgian hypothetical company had to pay penalty taxes of 322,000 ecus (18 per cent of the final direct corporate tax liability for the year in question) without having additional interest income or current assets, com-

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82 According to the fourth company law directive of the EU medium-sized companies are those, who do not exceed two of the following three criteria: balance sheet: 6.2 million ecus; net turnover: 12.8 million ecus; employees: 250 [see COM, 1987, p. 31]. The modified hypothetical company continues to exceed two of these limits (balance sheet: about 17 million ecus; turnover: 27 million ecus). However, it meets the special situation of small and medium-sized companies better than the company of Arthur Andersen & Co. A further reduction in size failed because of the indivisibility of the workforce.

pared with hypothetical companies in other countries. As penalty taxes are avoidable, we assumed — in contrast to the study of Arthur Andersen & Co. — that the hypothetical company is not subject to these payments.[83]

2. Differences in National Taxation

With respect to the Euregio Meuse-Rhine, a comparison of the Belgian, German and Dutch tax systems and tax rates in 1989 shows some important differences:

- Only German authorities levy business taxes.
- In Belgium there are neither corporate nor private property taxes. In the Netherlands only private property taxes are levied, whereas in Germany both types are applied.
- Corporate profits were subject to higher corporate income tax rates in Germany than in Belgium and, especially, the Netherlands.[84]
- In Belgium and Germany, taxes paid by companies on distributed dividends can be deducted from personal tax liabilities of the shareholder; in Germany completely, in Belgium to 50 per cent of the paid dividend. In the Netherlands, dividend income is taxed twice. No tax credit for corporate income taxes paid on dividends is granted to shareholders.
- In all three countries under consideration, a withholding tax of 25 per cent on paid dividend is levied, which was deductible from personal income tax liability. In the Netherlands, however, this tax is not levied when the dividend receiver holds more than 25 per cent of the firm's share capital.
- For a Belgian shareholder, it is possible to opt in favour of a final withholding tax instead of personal income taxation (including tax credit). In the present model, this option is cheaper for the owner than taxation of dividends with personal income taxes. We assumed that he opted in favour of the final withholding tax. Thus, he had to pay only the additional local income tax.

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83 For comparison, however, model calculations for both cases are presented in Tables A17 to A20.

84 In Germany, the tax rate of 56 per cent was applied to retained earnings and 36 per cent to dividends. Profits of Belgian enterprises were charged uniquely with 43 per cent. The Netherlands had a partitioned tax rate: all profits were taxed with 40 per cent, except for the first 250,000 hfl. (about 107,000 ecus) having been taxed with 35 per cent.

Looking at the financial structure of the hypothetical company in 1989 (Table A17), it is apparent that turnover — and thus profit before all taxes — of the hypothetical company in the Netherlands was much lower than that of the German and the Belgian company. This resulted from a lower average labour productivity in the Netherlands than in Belgium and Germany. However, as payroll costs (salaries and employer's share in social security contributions) were also lower in the Netherlands, there were no significant differences in unit labour costs between the three hypothetical companies.

For taxation of the hypothetical company and its owner in Belgium, Germany and the Netherlands, we obtain the following results (see Table 35 and Figure 16):

— Total tax liabilities were higher in Germany (3.8 million ecus) than in Belgium (3.3 million ecus). This was mainly because of the business taxes of 859,000 ecus, which were not levied in Belgium, whereas cor-

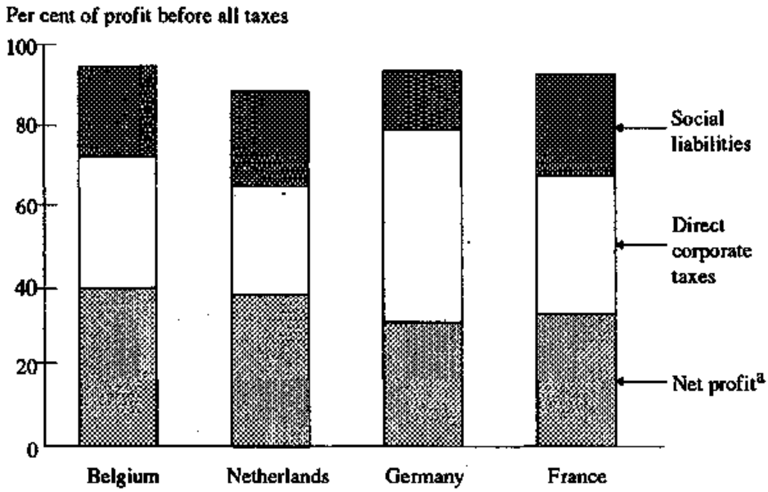
Table 35 — Taxation and Profit Distribution of the Hypothetical Company in Belgium, Germany and the Netherlands, 1989

	Belgium[a]		Germany		Netherlands	
	1,000 ecus	per cent	1,000 ecus	per cent	1,000 ecus	per cent
Profit before all taxes	5,490	100.0	5,552	100.0	4,899	100.0
Total tax liabilities	3,345	60.9	3,843	69.2	3,062	62.5
Direct corporate taxes	1,788	32.6	2,649	47.7	1,317	26.9
Corporate income tax	1,788	32.6	1,790	32.2	1,317	26.9
Business tax	–	–	859	15.5	–	–
Indirect corporate taxes[b]	45	0.8	78	1.4	17	0.4
Social liabilities	1,228	22.4	795	14.3	1,152	23.5
Personal income tax	285	5.2	313	5.6	560	11.4
Personal wealth tax	0	0.0	10	0.0	16	0.3
Profit after all corporate taxes	2,430	44.3	2,031	36.6	2,413	49.3
Net income after all taxes	2,145	39.1	1,708	30.8	1,838	37.5
Net personal income	770	14.0	855	15.4	357	7.3
Retained earnings	1,375	25.0	853	15.4	1,481	30.2

[a]Excluding penalty tax for not regularly paid instalments. — [b]Including corporate property and wealth taxes.

Source: Arthur Andersen & Co. [a]; own calculations.

Figure 16 — Structure of the Tax Burdens of the Hypothetical Company in Belgium, the Netherlands, Germany and France, 1989



[a]Dividends and retained earning after all (personal and corporate) taxes.

Source: Arthur Andersen & Co. [a]; own calculations.

porate income taxes were about the same for the German and the Belgian company (1.8 million ecus).

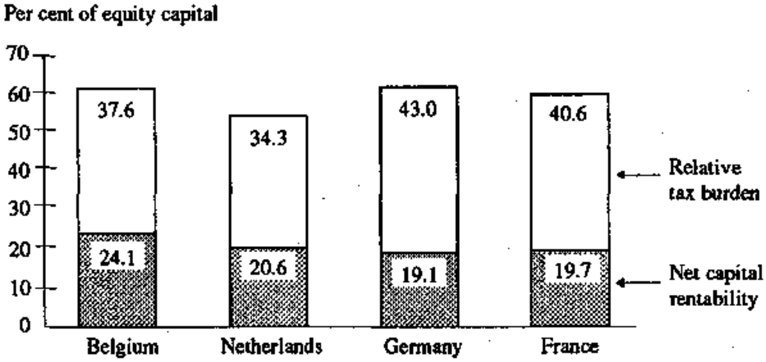
— The Dutch firm faced the lowest total tax burden (3.1 million ecus) because it was not subject to business taxes and because it had a low corporate income tax liability (1.3 million ecus). The latter, in turn, resulted from both a low tax base (taxable profit), which had its origins in low turnover, and a low tax rate.

— In contrast to the direct corporate taxes, social security liabilities were much lower in Germany (795,000 million ecus) than in Belgium and the Netherlands (about 1.2 million ecus each).

— Personal income taxation was very restrictive in the Netherlands, not only because the tax rate was very high (60 per cent), but also because there was a double taxation of dividends. Income tax liabilities faced by the Belgian and the German shareholder were comparable in magnitude (285,000 ecus and 313,000 ecus, respectively).[85]

[85] As mentioned above, the Belgian shareholder's dividend was not subject to conventional personal income taxation because he was assumed to opt in favour of a final withholding tax.

Figure 17 — Results of the Tax Comparison for Belgium, the Netherlands, Germany and France, 1989



Source: Arthur Andersen & Co. [a]; own calculations.

— Although profit before all taxes was lower for the Dutch than for the German hypothetical company, the net income after all taxes was somewhat higher (1.8 million ecus, compared with 1.7 million ecus of the German company). However, net income was highest for the Belgian company (2.1 million ecus).[86]

Summing up, we conclude from the indicator called relative tax burden (total tax liabilities in per cent of share capital; Figure 17), which is 34.3 per cent for the Dutch company, 37.6 per cent for the Belgian company and 43 per cent for the German company, that differences in taxation should induce German enterprises to move to the Netherlands and (to a lesser extent) to Belgium, whereas Belgian enterprises should have some incentives to move to the Netherlands.[87] The second indicator, net capital profitability, shows a different picture: As overall profitability is highest for the Belgian company (24.1 per cent, compared with 20.6 per cent for the Dutch company, and 19.4 per cent for the German company), there are overall incentives to move to Belgium for German and — to a lesser extent — Dutch enterprises. Tax induced in-

[86] This conclusion is also valid, if only corporate taxation is analysed, while personal income taxation is excluded. However, if the Belgian company would have had to pay penalty taxes because instalments had not been paid regularly, it would have faced about the same high tax burden as the German company, which was much higher than that of the Dutch (see Table A17).

[87] If Belgian penalty taxes are unavoidable, a location in Belgium is — with respect to taxation — least favourable among the countries under consideration.

centives to move to the Netherlands are outweighed by countervailing incentives resulting from differences in non-tax cost components.

The *French and German tax systems* analysed with respect to the Alsace-Baden border region are broadly similar with respect to the taxes taken into account in this study (see Table 34).[88] However, there are some differences in the tax bases and the 1989 tax rates that should be noted:

- The corporate income tax rate applied to retained earnings is lower in France (1989: 39 per cent) than in Germany (56 per cent), whereas the tax rate on dividends is higher (1989: 42 per cent and 36 per cent, respectively).[89]
- The tax bases for business taxes, which are levied in both countries, are different. Whereas the French business tax is imposed on fixed assets and payroll costs, in Germany fixed assets and profits are subject to taxation. In both countries, business taxes are imposed by local or regional authorities.
- In Germany, corporate income taxes paid by enterprises on distributed dividends were fully deductible from the shareholder's personal income tax liabilities. In France, this tax credit amounts to only 50 per cent of dividends paid by the company.

The analysis of the financial structure of the hypothetical company in France and Germany (Table A19) shows that average labour productivity was about the same in both countries. Thus, turnover and profit before all taxes did not differ markedly between the French and the German hypothetical company. However, payroll costs were significantly higher in Germany (5.4 million ecus) than in France (4.6 million ecus). This difference was due to high salaries paid by the German company (4.6 million ecus, compared with 3.2 million ecus to be paid by the French company), which were not outweighed by lower social security contributions (0.8 million ecus for the German and 1.4 million ecus for the French company). Thus, unit labour costs were lower for the French than for the German company.

With a view to differences in taxation, the main results of the analysis are (Table 36): In 1989, total tax liabilities amounted to 3.6 million ecus for the French and 3.8 million ecus for the German hypothetical company. Thus, net income after corporate and private taxes was — as profit before all taxes — slightly higher for the French (2.1 million ecus) than for the German company

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88 Generally, the French tax system is more complicated than the German, as French companies are subject to a large number of relatively unimportant taxes. These taxes are not included in the present tax comparison.

89 Since 1989 both countries have reduced their corporate income tax rate by 6 percentage points.

(2.0 million ecus). The only structural differences between the tax burdens resulted from direct corporate taxation and social liabilities (Figure 16): whereas the German company faced higher direct corporate taxes, the French firm had to pay higher social security contributions for its employees. The higher direct corporate tax burden of the German firm resulted mainly from the business tax that was 859,000 ecus, against only 230,000 ecus for the French firm. Personal income and wealth tax liabilities were about the same for the French and the German hypothetical owner.

Thus, from the relative tax burden (total taxes calculated as per cent of equity capital), which is 40.5 per cent for the French and 43 per cent for the German company (Figure 17), we conclude that there are some tax-induced incentives for German firms to move to France. The second indicator, net capital profitability (net profit as per cent of equity capital), which is 19.7 per cent for the French and 19.1 per cent for the German company, points to a similar direction of incentives. However, overall (profitability) incentives for German enterprises to move to France are smaller than tax incentives.

Table 36 — Taxation and Profit Distribution of the Hypothetical Company in France and Germany, 1989

	France		Germany	
	1,000 ecus	per cent	1,000 ecus	per cent
Profit before all taxes	5,385	100.0	5,552	100.0
Total tax liabilities	3,621	67.2	3,843	69.2
Direct corporate taxes	1,842	34.2	2,649	47.7
Corporate income tax	1,612	29.9	1,790	32.2
Business tax	230	4.3	859	15.5
Indirect corporate taxes[a]	99	1.8	78	1.4
Social liabilities	1,353	25.1	795	14.3
Personal income tax	318	5.9	313	5.6
Personal wealth tax	9	0.2	10	0.2
Profit after all corporate taxes	2,091	38.8	2,031	36.6
Net income after all taxes	1,764	32.8	1,708	30.8
Net personal income	599	11.1	855	15.4
Retained earnings	1,165	21.7	853	15.4

[a]Including corporate property and wealth taxes.

Source: Arthur Andersen & Co. [a]; own calculations.

3. Differences in Regional Development Assistance

In the border regions under consideration, various types of regional development assistance are granted to enterprises:[90]

- In the Euregio Meuse-Rhine, measures for regional promotion are temporarily available in all three subregions. Enterprises in the Belgian subregion are granted an interest subsidy and an investment grant. In parts of the Aachen area (Aachen-Jülich), an investment grant and soft loans were on offer temporarily (1988–1991). In Zuid-Limburg an investment grant is awarded.
- In the Alsace-Baden border region, such assistance is only available for enterprises in Alsace, but not for those in Baden. In Alsace, in particular two measures are on offer: a business tax concession and an investment grant. The latter is only available for service and research companies.

All these measures clearly affect a firm's tax liabilities and profitability. As these measures increase profit by reducing investment costs or tax liabilities,[91] they enforce incentives for enterprises to move to the region where regional development assistance is on offer.

In the subsequent analysis it is asked, in what direction to what magnitude the incentives from differences between national tax systems are changed by regional assistance measures.[92] For technical reasons, only the tax exemption could be formally integrated into the tax comparison. The effects of interest subsidies and investment grants on incentives had to be covered analytically.

A tax exemption is granted only in *Alsace*. The tax liabilities and the profit of the French hypothetical company have been recalculated, assuming that the company is granted the maximum available tax concession, which is 100 per

[90] The following information is mainly taken from Yuill et al. [1990]. Smaller measures are not reported.

[91] In the long run, all public measures can be interpreted as to be equivalent to negative taxes. They reduce the net transfers of enterprises to public authorities. Technical differences between tax exemptions on the one hand and investment grants, interest subsidies or soft loans on the other hand can be neglected from this standpoint. Thus, we expect the latter to have affected tax incentives in a similar way than tax exemptions.

[92] For simplicity we generally assumed that regional assistance is only available in the border region, but not in the country of reference where the hypothetical enterprise is assumed to come from. The aim was to identify incentives for all enterprises within a neighbouring country (of reference) to move to the border region. Thus, we had to compare the tax burden and profitability of an enterprise in the border region under consideration with the respective indicators that result from national taxation in the neighbouring country.

cent of business tax liabilities.[93] As a result, the business tax concession reduces the French company's total tax liabilities (and increases its profit) by some 100,000 ecus (Table 37).[94] The relative tax burden is reduced to 39.2 per cent (without exemption 40.5 per cent). The net capital profitability increases to 21 per cent (19.7 per cent). Thus, the taxes and the overall (profitability) incentives for German enterprises to move to Alsace are higher than those resulting from differences in national taxation only. For service and research companies, in addition, the capital grant can be expected to increase both incentives further. Incentives for French enterprises to move to Baden are not affected because no regional assistance is available there.

Table 37 — Profit Distribution and Capital Profitability of the Hypothetical Company in France with Business Tax Exemption[a], 1989

	With exemption	Without exemption
	1,000 ecus	
Profit distribution		
Profit before all taxes	5,385	5,385
Total tax liabilities	3,504	3,621
Net income after all taxes	1,881	1,764
	per cent	
Capital profitability		
Relative tax burden[b]	39.2	40.5
Net capital profitability[c]	21.0	19.7

[a]Calculated under the assumption that the company was granted 100 per cent of its business tax liability. — [b]Total tax liabilities as per cent of equity capital (8.9 million ecus). — [c]Net income after all taxes as per cent of equity capital (8.9 million ecus).

Source: Arthur Andersen & Co. [a]; Yuill et al. [1990]; own calculations.

93 The business tax concession (exoneration de la taxe professionelle) is granted by regional and local authorities in Alsace for industrial setting-up, decentralization of enterprises from the Paris region, takeovers, conversions and certain service sector investments. As the business tax accrue to the communes, the *départements* (Bas-Rhin, Haut-Rhin), and the *région* Alsace, they together decide on the rate of exemption.

94 As the business tax is deductible from taxable profit, the gain from the tax exemption is subject to corporate and private income taxation. Thus, the net gain (100,000 ecus) was less than the normal business tax liability (230,000 ecus).

The final conclusion of comparing the national taxation and regional assistance in Alsace and Baden is that there are considerable tax-induced incentives for German enterprises to move to Alsace that result from a lower corporate tax burden in France (as compared with Germany) and from regional development assistance on offer in Alsace. Similar incentives result from differences in net capital profitability, which is higher in Alsace than in Germany. By contrast, there are disincentives for French enterprises to move to Baden, because the tax burden is higher in Baden than in France and because net profit is lower.

In all three subregions of the *Euregio*, regional assistance was available in the year under consideration (1989). Thus, in all subregions the effective tax liabilities (net of regional assistance) of the hypothetical company were somewhat smaller than those calculated from national tax systems. The net profits, in turn, were somewhat higher. Thus, tax- (and profitability-) induced incentives are generally enforced, while the respective disincentives are lowered:

— Overall (profitability-induced) incentives for German enterprises to move to the Belgian or the Dutch subregion of the Euregio are higher than those resulting from national taxation alone, because in both subregions regional development measures are available. As such measures were also available in the Aachen-Jülich area in 1989, the disincentives for Belgian and Dutch enterprises to move to the German subregion were temporarily lower in 1989, but presumably not completely removed.

— For movements across the Belgian-Dutch border, the situation is somewhat more difficult, as differences in taxation and net profits create countervailing incentives. From the comparison of national tax systems we concluded that tax-induced incentives to move to the Netherlands are not effective because they are outweighed by overall incentives to move to Belgium. If regional development measures are also taken into account, Belgian enterprises presumably would have higher tax-induced incentives to move to Zuid-Limburg and their profitability-induced disincentives are lower than those resulting from national taxation alone. For Dutch enterprises, in turn, tax-induced disincentives to move to the Liège-Limburg area are lower and profitability-induced incentives are higher. However, as the tax burdens from national taxation differ considerably between Belgium and the Netherlands, it is unlikely that regional measures change the broad conclusion on the direction of incentives.

To sum up, the unfavourable German tax system, particularly the business tax, creates incentives for Belgian and Dutch enterprises not to move to the

German subregion. These disincentives may have been reduced temporarily, but presumably not outweighed by regional development measures granted between 1988 and 1991 in the Aachen-Jülich area. The most favourable taxation conditions are in the Dutch subregion. However, these favourable conditions can not be expected to attract a large number of foreign enterprises because a comparatively low profitability of investment results from the low labour productivity in the Netherlands. Rather, the Belgian subregion can be expected to be the most favourable production location in the Euregio. German enterprises should prefer this subregion mainly because the labour productivity there is as high as in Germany, while the corporate tax burdens is lower. Dutch enterprises should prefer it in spite of less favourable taxation because the labour productivity in Belgium is much higher than in the Netherlands.

III. Extent and Structure of Cross-Border Movements of Enterprises

We determined the present distribution of cross-border settlements by approaching all sources, mainly official institutions that were supposed to be able to provide information on foreign enterprises currently situated in the border regions under consideration.[95] We took the characteristics of these firms mainly from replies to an survey carried out by questionnaires among all foreign enterprises in the border regions that could be identified (Table 38).[96] On the whole, the survey, which refers to the year 1991, yielded satisfactory results.[97] Nearly 28 per cent of all questionnaires were returned, 27.2 per cent in the Euregio and 28.1 per cent in the Alsace-Baden border region. These rates can be considered sufficient as a basis for the analysis.[98]

95 As information about the extent of cross-border movements of enterprises in the past (as a flow variable) is completely lacking, we chose the stock of foreign enterprises that are situated in the border regions as a basis for the analysis.

96 A version of the questionnaire, which was mailed in 11 versions depending on the location of the addressee and the country of origin, is added in the appendix.

97 However, as expected, results for the three Belgian companies in the German subregion of the Euregio Meuse-Rhine are not satisfactory. Thus, nothing can be said definitely about the characteristics of these enterprises.

98 More detailed information on the enquiry (methodology and results) can be obtained from the authors upon request.

Table 38 — Foreign Enterprises in the Euregio Meuse-Rhine and the Alsace-Baden Border Region, 1991

Region	Country of origin	All enterprises[a]	Enterprises covered by the enquiry		Responding enterprises		
		number	number	per cent of all enterprises[a]	number	per cent of enterprises in the survey	per cent of all enterprises[a]
Euregio Meuse-Rhine							
Total		298	278	93.3	81	29.1	27.2
Belgian subregion[b]	Germany	104	84	80.8	27	32.1	26.0
	Netherlands	123	123	100.0	31	25.2	25.2
German subregion	Netherlands	20	20	100.0	9	45.0	45.0
	Belgium	3	3	100.0	1	33.3	33.3
Dutch subregion	Belgium	12	12	100.0	4	33.3	33.3
	Germany	36	36	100.0	9	25.0	25.0
Alsace-Baden border region							
Total		499	499	100.0	140	28.1	28.1
Alsace	Germany	383	383	100.0	108	28.2	28.2
Baden	France	116	116	100.0	32	27.6	27.6
All regions		797	777	97.5	221	28.4	27.7

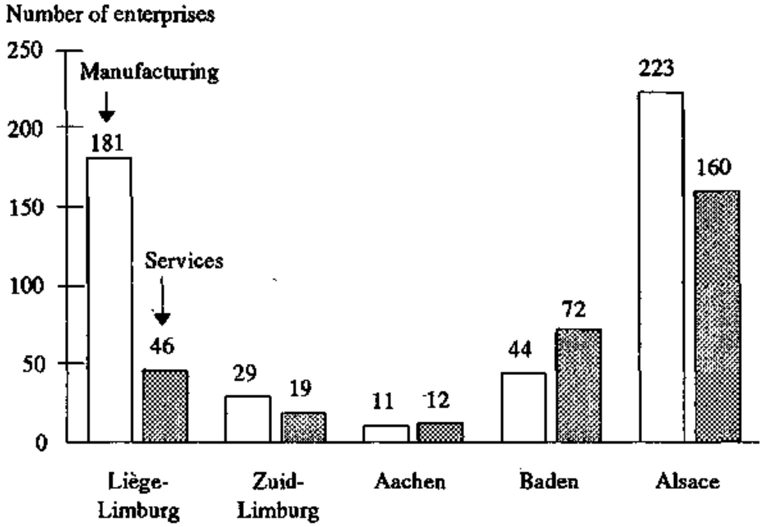
[a]Estimated. — [b]20 German enterprises were not identifiable physically.

Source: Own survey.

As Figure 18 indicates, there is a high concentration of enterprises from neighbouring countries in Liège-Limburg (Euregio Meuse-Rhine) and Alsace (French-German border region). In the two German subregions and in Zuid-Limburg the number of enterprises from neighbouring countries is much smaller. At the same time, foreign enterprises in the two German border regions Aachen and Baden are mostly service companies and sales subsidiaries of foreign manufacturing enterprises,[99] whereas in Liège-Limburg, Zuid-Limburg and Alsace manufacturing enterprises are a majority.

99 We classified sales subsidiaries of manufacturing enterprises that did not have own production facilities in the border region as service companies rather than manufacturing enterprises, because their cost structures (the relationship between turnover, value added and workforce) and their locational preferences can be expected to be more similar to those of trading companies than to those of manufacturing enterprises.

Figure 18 — Number of Enterprises from the Neighbouring Countries in the Euregio Meuse-Rhine and the Alsace-Baden Border Region, 1991



Source: Own survey.

1. Euregio Meuse-Rhine

According to the informations collected from various official institutions, in 1991: 227 German and Dutch enterprises were located in Liège-Limburg. In both other subregions ot the Euregio Meuse-Rhine, the number of foreign enterprises is considerably smaller (in 1991: 23 in the German subregion and 48 in the Dutch subregion).

In the *Belgian subregion*, most of the German enterprises (104 in 1991) are situated in the province of Liège, where French, and to some extent also German, is spoken.[100] Dutch enterprises, by contrast, are concentrated in the Dutch-speaking province Limburg. The main kind of activity of Dutch and German enterprises is production (Table 39). Most of them are small and medium-sized companies with a workforce of up to 250 employees. With a

[100] Dickmann [1988, p. 22] found that most of the subsidiaries of enterprises from the Aachen area in the province of Liège were situated in the German-speaking part. By contrast, only one third of the 67 enterprises from Germany as a whole identified by our survey in the province of Liège was located in the German speaking part. Another third was situated in or near Liège.

Table 39 — Characteristics of Enterprises from Neighbouring Countries in the Euregio Meuse-Rhine, 1991

	Belgian subregion		German subregion[a]	Dutch subregion	
	German enterprises	Dutch enterprises	Dutch enterprises	Belgian enterprises	German enterprises
Enterprises (number)	104	123	20	12	36
Subregional distribution (per cent)					
Manufacturing	85.6	74.8	50.0	75.0	55.6
Services[b]	14.4	25.2	50.0	25.0	44.4
Kind of activity (per cent)[c,d]					
Production	85.2	74.2	55.6	75.0	66.7
Sale	44.4	38.7	33.3	75.0	66.7
Trade	29.6	12,9	22.2	0.0	22.2
Size of enterprise (employees) per cent)[c]					
0 – 50	51.9	38.7	77.8	25.0	77.8
50 – 100	11.1	16.1	0.0	25.0	22.2
100 – 250	18.5	22.6	0.0	0.0	0.0
> 250	18.5	22.6	22.2	50.0	0.0
Date of establishment (per cent)[c,e]					
1990 or later	25.9	9.7	0.0	0.0	11.1
1980–1989	18.5	38.7	44.4	25.0	11.1
1970–1979	40.7	25.8	11.1	25.0	66.7
Before 1970	14.8	25.8	44.4	50.0	11.1

[a]The three Belgian enterprises in the German subregion are excluded from this analysis. — [b]Including sales subsidiaries of foreign manufacturing enterprises. — [c]Results of the survey. — [d]More than one answer possible. — [e]Date of establishment of a new firm or date when an existing firm received a foreign participation in share capital after being established at the present location.

Source: Own survey.

view to the date of establishment, it is apparent that one quarter of all (responding) German enterprises moved to the Belgian subregion in 1990 or later.

In the *German subregion*, we identified only 3 small Belgian enterprises and 20 Dutch enterprises. They are divided almost equally into manufacturing and service companies. In the past two decades, according to the survey, mostly small sales and trading subsidiaries moved from the Netherlands or Belgium to the German subregion of the Euregio. Among those enterprises that were established earlier, there are some large manufacturing enterprises with more than 1,000 employees.

With a view to the sectoral structure and the kinds of activity of the Belgian and German enterprises in the *Dutch subregion*, production and sales activities seem to be of equal importance.[101] Another similarity seems to be that Belgian as well as German enterprises moved only infrequently to the Dutch subregion in the past few years.

2. Alsace-Baden Border Region

Similar to the Euregio Meuse-Rhine, there is a high concentration of foreign enterprises in one subregion of the border region, namely Alsace, where nearly 400 German enterprises were situated in 1991 (Table 40). In Baden, there are considerably fewer French enterprises (totalling some 120 enterprises in 1991). Most of the German enterprises in Alsace (1991: about 60 per cent) are manufacturing enterprises. The remainder are service companies, mostly sales subsidiaries of German manufacturing enterprises without local production facilities.[102] By contrast, most French enterprises in Baden are service companies (1991: about 60 per cent). Here, manufacturing enterprises are the minority, at least with respect to their number. The service companies are mostly sales subsidiaries of French manufacturing enterprises.

The results of the survey indicate that the characteristics of German enterprises in Alsace differ considerably from those of French enterprises in Baden (Table 40), with respect to their main kind of activity and their relocation date. The share of enterprises that moved to the neighbouring country (or received a foreign participation in equity capital) before 1970 is higher in Baden (31 per cent) than in Alsace (24 per cent). Since 1990, in particular, there seems to be a continuous or even increasing flow of enterprises from Germany to Alsace, but not in the opposite direction: 3 per cent of the French enterprises in Baden and 14 per cent of the German enterprises in Alsace have been established since 1990. As concerns the size of the enterprises, more than one half of all foreign enterprises in Baden and Alsace are small, employing a workforce of up to 50 persons. Especially in Baden, however, there are some large companies with more than 500 employees each. These enterprises were established there already decades ago.

[101] It should be noted that not only manufacturing enterprises, but also some kinds of service companies such as transport companies or publishers have production activities.

[102] According to regional institutions, more than 100 of the manufacturing enterprises were German craftsmen who did not, on average, employ more than 6 persons each. There were, however, also some large companies with more than 1,000 employees.

Table 40 — Characteristics of Enterprises from the Neighbouring Country in the Alsace-Baden Border Region, 1991

	French subregions	German subregions
Enterprises (number)	383	116
Subregional distribution (per cent)		
Manufacturing	59.2	37.9
Services[a]	40.8	62.1
Kind of activity (per cent)[b,c]		
Production	59.3	31.3
Sale	58.3	59.4
Trade	34.3	37.5
Storage	14.8	18.8
Size of enterprise (employees) (per cent)[b]		
0 – 50	65.7	75.0
50 – 100	9.3	9.4
100 – 250	13.9	0.0
> 250	11.2	15.7
Date of establishment (per cent)[b,d]		
1990 or later	13.9	3.1
1980–1989	35.2	46.9
1970–1979	26.9	18.8
Before 1970	24.1	31.3

[a]Including sales subsidiaries of foreign manufacturing enterprises. — [b]Results of the survey. — [c]More than one answer possible. — [d]Date of establishment of a new firm or date when an existing firm received a foreign participation in share capital after being established at the present location.

Source: Own survey.

IV. Motives for Cross-Border Movements

Some similarities exist between the Belgian subregion of the Euregio and Alsace with respect to their attractiveness for enterprises from neighbouring countries. According to the tax comparison, in both subregions the net profit of the hypothetical company is higher than in the respective neighbouring countries. In each subregion a relatively large number of German (or Dutch, respectively) enterprises are situated. Moreover, both subregions are favoured mainly by manufacturing enterprises, and both seem to have become more attractive for such enterprises in the last few years.

By contrast, the two German regions and Zuid-Limburg seem to be less attractive for investors from neighbouring countries. The Aachen area and Baden, in particular, apparently do not offer favourable conditions for production. At least for independent manufacturing enterprises, the tax burden seems to be higher and the net profit seems to be lower than in the neighbouring border regions according to the tax comparison.[103] Both regions have been — at least in the last few years — favoured only by a few foreign enterprises, mainly small service companies and sales subsidiaries rather than manufacturing enterprises with own local production facilities.

These observations give rise to the hypothesis that there must be some incentives mainly for manufacturing enterprises from Germany (and the Netherlands) to move to Liège-Limburg or to Alsace.[104] In this section, we analyse whether this hypothesis is supported by the motives of enterprises from neighbouring countries for their relocation to the border regions under consideration.[105]

[103] Nothing, however, can be said about the tax-induced and profitability-induced incentives for service companies and sales subsidiaries as the tax comparison covers only manufacturing enterprises.

[104] It should be kept in mind that tax-induced incentives taken from the tax comparison are based on the tax legislation in 1989. Thus, they may not be representative for all movements of enterprises that took place during several decades. Changes in tax legislation before 1989, or thereafter, might have induced changes in the magnitude, or even in the direction of incentives that cannot be taken into consideration here.

[105] We took the information presented in the following subsections from results of the survey. The respective question was: "Which of the following factors were arguments in favour of and which against the current location of your company, when the location decision was made?". It should be noted that the analysis displays locational preferences of foreign enterprises in their actual location, as compared with a location elsewhere, but not necessarily in the opposing subregion of the border region. Thus, because the reference locations may have been different, there is not necessarily an inconsistence of responses even if the same locational factor (such as the supply of industrial sites or the wage level) was valued equally high on both sides of the border. It should be noted further that most of the enterprises that were established at the actual location already decades ago were not able to answer to the question because the decision was taken too long ago.

1. Enterprises from the Neighbouring Countries in the Euregio Meuse-Rhine

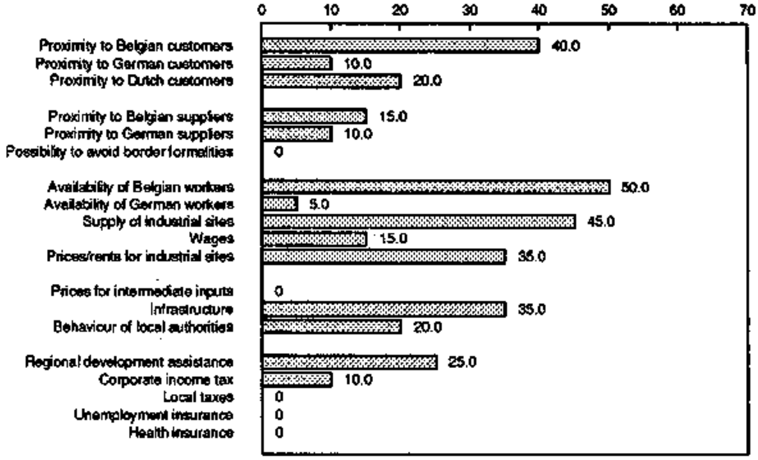
Among the enterprises that moved to the Euregio, only those in Liège-Limburg judged *taxation* to be a positive argument to move (Figures 19 to 20), whereas for enterprises in the two other subregions taxation did not matter at all (Figures 21 to 22). Some 10 per cent of the (responding) German enterprises in Liège-Limburg quoted direct corporate taxation to be an important reason to move.[106] This is in accordance with our tax comparison, which identified tax-induced incentives to move from Germany to Belgium. With respect to Dutch enterprises in this area, the result of the survey is quite surprising. Although the tax comparison reveals a higher tax burden for the Belgian than for the Dutch hypothetical company, three Dutch enterprises (two service companies and one manufacturing firm; 9.5 per cent of the responding enterprises) quoted direct corporate taxation to be an important motive for their relocation to the Belgian subregion. This contradiction might be because the tax comparison is based on manufacturing enterprises only and covers a single year. Another result of the survey is that Belgian and German enterprises in Zuid-Limburg did not move primarily in order to take advantage of a lower tax burden. This, in turn, indicates that differences in taxation are not too important. Summing up, differences in taxation between countries are at best one of several reasons for enterprises to move to the border region of the neighbouring country. The number of enterprises that moved mainly for this reason is very small.

Many foreign enterprises moved to the *Belgian subregion* mainly to enjoy favourable production conditions. Both German and Dutch enterprises very frequently mentioned *production-related factors*, such as sufficient supply of workers and availability of, as well as rents to be paid for, industrial sites as decisive arguments for their relocation (Figures 19 to 20). *Sales-related factors*, such as proximity to customers, are of minor importance; a few German enterprises that emphasized the proximity to customers in Belgium were the sole exception. Other important factors are the regional development assistance granted in the two Belgian provinces and the well developed infrastructure.[107]

[106] For one small service subsidiary, it was the sole reason of high priority.

[107] According to an 1985 survey of selected German enterprises in the Aachen region, which had a subsidiary in the Belgian or Dutch subregion of the Euregio, the foreign subsidiaries are mainly sales market oriented [Dickmann, 1988, pp. 22 ff.]. Dickmann explains this by emphasizing persisting obstacles to trade across the borders. Factors like the wage level and regional development assistance were found to be of low importance. Nothing is said about other production-related factors. Although a full comparison of Dickmann's results with ours is not possible, some important differences have to be stated.

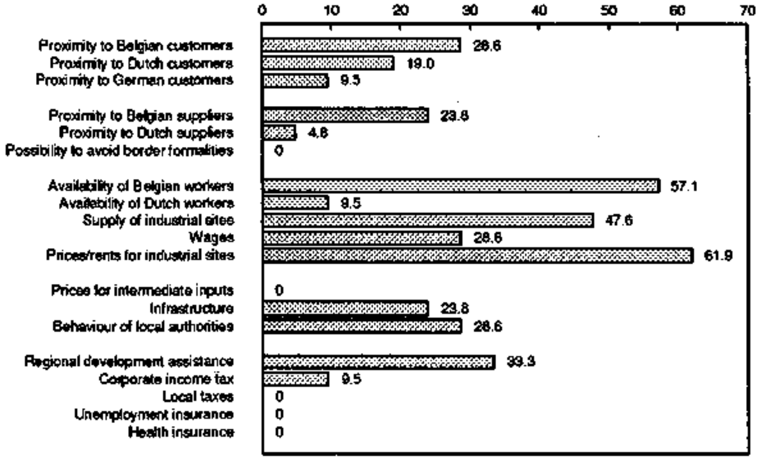
Figure 19 — Motives for German Enterprises to Move to the Belgian Sector of the Euregio (per cent of responding enterprises)[a]



[a]Responses to the survey that quoted the respective factors to be decisive arguments in favour of the current location.

Source: Own survey.

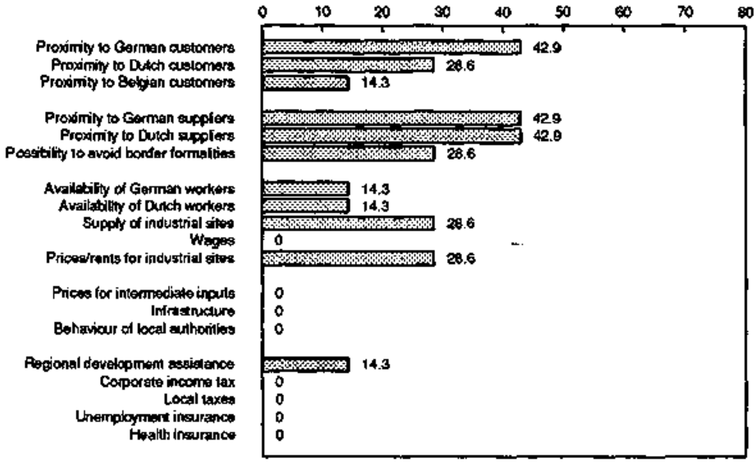
Figure 20 — Motives for Dutch Enterprises to Move to the Belgian Sector of the Euregio (per cent of responding enterprises)[a]



[a]Responses to the survey that quoted the respective factors to be decisive arguments in favour of the current location.

Source: Own survey.

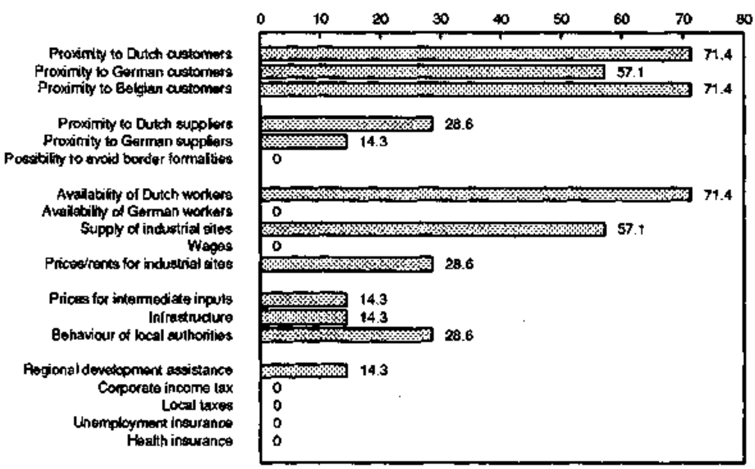
Figure 21 — Motives for Dutch Enterprises to Move to the German Sector of the Euregio (per cent of responding enterprises)[a]



[a]Responses to the survey that quoted the respective factors to be decisive arguments in favour of the current location.

Source: Own survey.

Figure 22 — Motives for German Enterprises to Move to Zuid-Limburg (per cent of responding enterprises)[a]



[a]Responses to the survey that quoted the respective factors to be decisive arguments in favour of the current location.

Source: Own survey.

According to the survey, Dutch enterprises in the *Aachen area* are market-oriented rather than production-oriented (Figure 21).[108] Proximity to customers in Germany and to suppliers in Germany and the Netherlands, and the desire to avoid border formalities were quoted most frequently.[109]

Dominant motives for many German enterprises to move to *Zuid-Limburg* in the Netherlands seem to be oriented to both the factor and the sales markets (Figure 22). We can conclude factor market orientation from the high percentage of enterprises emphasizing the availability of a local labour force and of industrial sites, without attaching much value to the proximity to suppliers and the possibility to avoid border formalities. Sales market orientation is indicated by a high valuation of proximity to customers — not only from the Netherlands, but also from Germany and Belgium.

2. Enterprises from the Neighbouring Country in Alsace and Baden

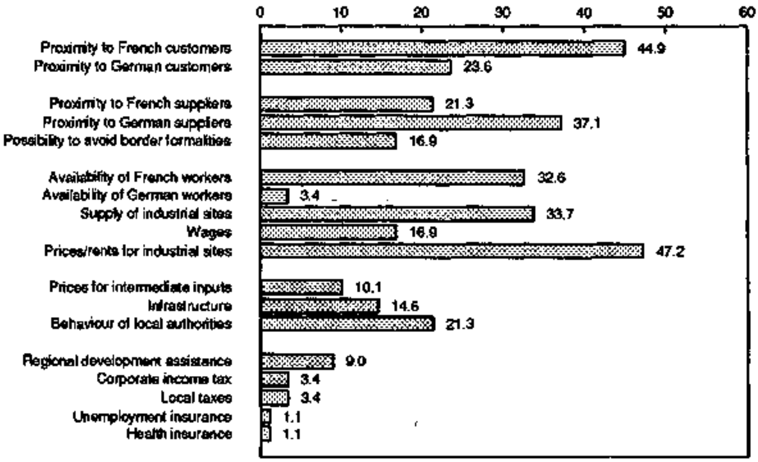
For German enterprises in Alsace as well as for French enterprises in Baden *taxation* was obviously not an important reason to move to the current location (Figures 23 to 24). Only a few (responding) German enterprises in Alsace (3 per cent) quoted taxes (corporate income taxes and local taxes) to be an important motive for their establishment. Regional development assistance in Alsace was important for 9 per cent of the German enterprises. For a few French enterprises in Baden (5 per cent), the German health insurance was an important reason to move. However, as nearly all of the German and French enterprises had other, presumably more important, reasons to move, the responses to our survey show that the number of tax-induced movements to Alsace and Baden was very small.

Among the other motives for German enterprises in *Alsace*, proximity to customers is prominent (Figure 23). The fact, however, that many enterprises are oriented not only towards the French, but also towards the German sales markets indicates that there were additional reasons apart from location close to customers. In fact, typical production-related factors such as availability of, and prices for, industrial sites, availability of qualified workers (from the local Alsatian labour market) and wage costs were also important reasons for many

[108] Note that those manufacturing enterprises that moved to the Aachen subregion several decades ago did not answer to the question on motives to move because the date of decision was too long ago.

[109] Other important reasons were the supply of, and price for, industrial sites. However, these factors alone should not be sufficient reasons to move across a border, but have the character of additional reasons.

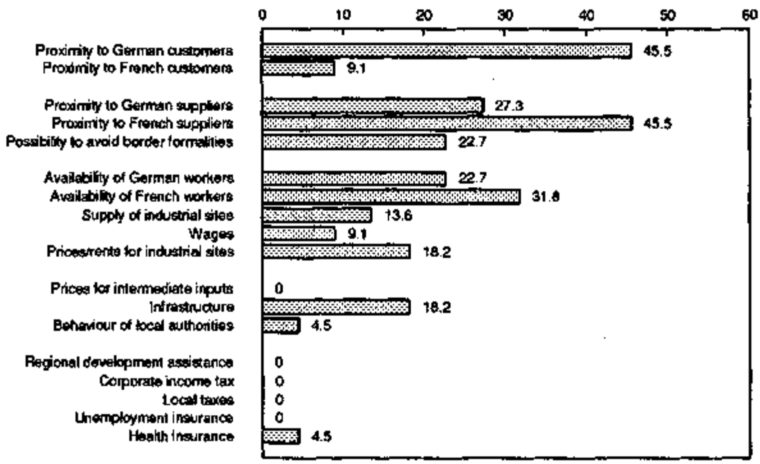
Figure 23 — Motives for German Enterprises to Move to Alsace (per cent of responding enterprises)[a]



[a]Responses to the survey that quoted the respective factors to be decisive arguments in favour of the current location.

Source: Own survey.

Figure 24 — Motives for French Enterprises to Move to Baden (per cent of responding enterprises)[a]



[a]Responses to the survey that quoted the respective factors to be decisive arguments in favour of the current location.

Source: Own survey.

enterprises.[110] Other important factors that were quoted frequently are proximity to French and particularly to German suppliers[111] and the attitudes of regional authorities in Alsace.

The motives for French enterprises to move to *Baden* seem to be broadly the same as those for Dutch enterprises to move to the Aachen area. Sales market orientation apparently dominates (Figure 24). Many enterprises mainly supply French goods to the German market, using a location near the French border. We can conclude this from the high valuation of (i) proximity to suppliers mainly in France and to customers mainly in Germany, (ii) the desire to avoid border formalities and (iii) the proximity to the Alsatian labour market. This can also be concluded from the low importance given to proximity to customers in France. Typical production-related factors were not as important for French enterprises in Baden as for German enterprises in Alsace.[112]

Thus, Baden apparently is not an attractive location for French production sites. Instead, Baden appears to be attractive mainly as a location for those French service companies and sales subsidiaries that serve the large German market, but do not want to be situated too far from their home country.

On the whole, the structure of motives for enterprises from neighbouring countries to move to the Euregio Meuse-Rhine and the French-German border region is highly consistent with the results derived in earlier parts of this section:

— There are no indications that cross-border movements are induced by differences in tax burdens and social security liabilities to any remarkable extent. Although the tax comparison shows tax-induced incentives for German enterprises to move to Zuid-Limburg and to Alsace and for Belgian enterprises to move to Zuid-Limburg, those enterprises that actually moved in these directions did not attach much weight to

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110 These findings are close in line with results of an earlier enquiry by Börkircher and Tiedtke [1981], who found the proximity to the sales market and to customers to be only slightly more important for sales subsidiaries than for production plants. Of minor importance for sales subsidiaries, but important for manufacturing enterprises, were production-related factors: mainly the availability of industrial sites and workers, and, to lesser degree, respective prices [ibid., p. 4].

111 As many enterprises were subsidiaries of German enterprises this result is not surprising.

112 Many of those enterprises that had own production sites were established in Baden several decades ago. Of course, these enterprises were not able to answer to the question analysed here.

taxation at all.[113] And the few enterprises in Alsace that felt taxation to be important had also other, presumably stronger, motives for their relocation. Moreover, for the Euregio as a whole, differences in taxation failed to explain the majority of the movements observed. The most favoured location within the Euregio was not Zuid-Limburg, but the Liège-Limburg area.

— Many manufacturing enterprises chose the Belgian subregion of the Euregio and Alsace as their location to take advantage of the favourable production conditions, especially with a view to the labour market, and industrial sites. We expected this from differences in net capital profitability identified by the tax comparison. These incentives appear to have become more relevant in the last few years.
— The second important reason to move was the desire of companies to be present in the vicinity of their sales markets. The German subregions were chosen as locations by Dutch and French enterprises primarily to exploit the large German market. The number of enterprises that moved mainly for this reason was, however, much smaller than that of manufacturing enterprises moving in the opposite direction, i.e. to the respective neighbouring regions in Belgium and France.

V. Economic and Fiscal Effects

The economic and fiscal effects had to be determined mainly by extrapolating the results of the survey of foreign enterprises to those who did not respond. Thus, the figures presented here are rough estimates rather than exact calculations.

1. Economic Effects

To assess the effects of foreign companies on the labour market of their host region, we established a relation between their estimated workforce and all persons employed in this region. In the same manner, we related the estimated

[113] As explained above, this may partly have been because the tax comparison covers only manufacturing enterprises and a single year (1989), whereas movements of various types of enterprises occurred over several decades.

value added of these companies to total regional value added. Both calculations were carried out separately for each of the border regions.[114]

Euregio Meuse-Rhine

In the *Belgian subregion*, 123 Dutch and 104 German enterprises employed about 34,000 persons, which was nearly 6 per cent of all persons employed in that region (Table 41). The share in regional value added was somewhat higher (7 per cent). According to the estimates, most of the German and Dutch enterprises belong to the manufacturing sector.[115] Their shares in employment and value added of the industry were approximately 15 per cent. In the *Aachen region*, the economic effects of foreign enterprises were smaller (less than 4 per cent of regional workforce and value added). These effects are mainly attributable to the few large Dutch manufacturing enterprises that have been situated in this region for more than half a century. They account for far more than half the employment and turnover of all foreign enterprises in the German subregion of the Euregio. By contrast, the 10 foreign service companies were very small.

Although in the *Dutch subregion* of the Euregio, there were twice as many foreign enterprises as in the German subregion, the number of employees was only one third (4,000 compared with 12,000 in the German subregion). Their economic weight was low — at most they accounted for 2 per cent of regional employment and value added.

114 From the survey and additional enterprise lists, made available by official institutions, employment and turnover figures of some of the foreign enterprises under consideration were known. We estimated the workforce and turnover of the remaining enterprises by using the available information on responding enterprises. The enterprises that did not respond were generally assumed to have — on average — the same size (number of employees per enterprise) and the same turnover per employee as the responding enterprises. We made the calculations separately for manufacturing enterprises and service companies, including sales subsidiaries. The value-added figures were estimated by multiplying the estimated number of employees of foreign enterprises by productivity (gross value added per employee), taken from official regional statistics. Again, a distinction was made between manufacturing and service companies. Since the economic effects of cross-border commuting (Chapter C) were measured by mainly the same indicators as those of cross-border movements of enterprises, a double-counting of economic effects might occur, if, for example, Dutch commuters to the Aachen area were employed by Dutch enterprises there. The survey of enterprises indicates that the share of frontier workers in the workforces of foreign enterprises was generally small in the Euregio (less than 5 per cent) and in Baden (slightly more than 5 per cent). Thus, indeed, there was some double counting. However, it did not change the results of the present investigation to a notable extent.

115 We had to estimate the kind of activity of several enterprises in the Liège-Limburg area and in Zuid-Limburg. We calculated the employment and value added figures presented here under the assumption that the subregional distribution of these enterprises equaled that of those enterprises whose kind of activity was known.

Table 41 — Contribution of Enterprises from Neighbouring Countries to the Regional Employment and Value Added in the Three Subregions of the Euregio Meuse-Rhine, 1991

	Enterprises	Employees		Gross value added	
		1,000	share in regional employment (per cent)[a]	mil. ecus	share in regional value added (per cent)[b]
Belgian subregion	227	34.2	5.6	1,578	7.0
German enterprises	104	16.7	2.7	783	3.5
Manufacturing	89	15.8	7.9	754	7.9
Services[c]	15	0.9	0.2	29	0.2
Dutch enterprises	123	17.6	2.9	795	3.5
Manufacturing	92	14.7	7.4	701	7.4
Services[d]	31	2.9	0.7	94	0.7
German subregion	23	12.4	3.8	622	3.5
Belgian enterprises[c]	3	0.1	0.0	3	0.0
Dutch enterprises	20	12.3	3.7	619	3.5
Manufacturing	10	12.2	8.9	611	8.9
Services[d]	10	0.1	0.1	8	0.1
Dutch subregion	48	4.1	1.6	163	1.7
Belgian enterprises	12	1.8	0.7	71	0.7
Manufacturing	9	1.7	1.8	66	1.8
Services[d]	3	0.1	0.1	5	0.1
German enterprises	36	2.3	0.9	92	1.0
Manufacturing	20	1.7	1.8	67	1.8
Services[d]	16	0.7	0.4	26	0.4

[a]Belgian and Dutch subregion: 1990; German subregion 1991; all estimated. — [b]At current prices; Belgian and Dutch subregion 1990: German subregion 1991; all estimated.— [c]Including sales subsidiaries of foreign manufacturing enterprises. — [d]Sectoral distribution cannot be published because of data protection requirements.

Source: Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Centraal Bureau voor de Statistiek [b]; Deutsche Bundesbank [1992b]; ETIL [1992b]; Institut National de la Statistique [b]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [a; e]; Statistisches Landesamt Baden-Württemberg [f]; own survey.

Alsace-Baden Border Region

According to the estimates, the economic importance of German enterprises in Alsace is considerably higher than that of French enterprises in Baden (Table 42): in 1991, the 383 German enterprises in Alsace employed some 35,000 employees and realized a value added of some 1.5 billion ecus, about 6 per cent of the Alsatian workforce and value added, respectively. In Baden, there were considerably fewer French enterprises (116), employing about 11,000 persons. The annual value added reached some 500 million ecus, which was only about 1 per cent of that of the whole regional economy.

Table 42 — Contribution of Enterprises from the Neighbouring Country to the Regional Employment and Value Added in Alsace and Baden, 1991

	Enterprises	Employees		Gross value added	
		1,000	share in regional employment (per cent)[a]	mil. ecus	share in regional value added (per cent)[b]
German enterprises in Alsace	383	34.8	5.7	1,540	5.9
Manufacturing	223	27.4	13.1	1,270	13.1
Services[c]	160	7.4	1.7	270	1.7
French enterprises in Baden	116	10.6	1.0	463	1.0
Manufacturing	44	7.3	1.7	340	1.7
Services[c]	72	3.3	0.5	122	0.5

[a]Alsace: 1990; Baden: 1991; both estimated. — [b]At current prices; Alsace: 1990; Baden: 1991; both estimated. — [c]Including sales subsidiaries of foreign manufacturing enterprises.

Source: Bayerisches Landesamt für Statistik und Datenverarbeitung [1992]; Deutsche Bundesbank [1992b]; Institut National de la Statistique et des Etudes Economiques [c]; Ministère de l'Industrie et du Commerce Extérieur [1991]; Statistisches Landesamt Baden-Württemberg [c; e; f]; Statistisches Landesamt Rheinland-Pfalz [b; c]; own survey.

As stated above, the German enterprises in Alsace are highly concentrated in the manufacturing sector. Accordingly, the share of manufacturing enterprises in the respective sectoral employment and value added was roughly 13 per cent, whereas the sectoral weight of German service companies and sales subsidiaries was comparatively small (less than 2 per cent). The number of French manufacturing enterprises in Baden is smaller than that of service companies. Nevertheless, in 1991, their share in sectoral employment and value added was clearly higher (1.7 per cent, against 0.5 per cent). This is mainly because of some large French manufacturing enterprises that were established in Baden several decades ago. They account for about one half of the total workforce and value added of all French enterprises in Baden.

2. Fiscal Effects

The fiscal effects were measured as shares of the enterprises' tax liabilities in total tax receipts of the public administration to which the respective taxes were due. Four different government levels were distinguished: local authorities (municipalities), regional authorities (provinces, regions), central authorities and social security institutions. We estimated tax liabilities separately for five taxes: corporate income tax, value-added tax, business tax, property tax and social-security contributions. In most of the cases, the corporate income taxes and value-added taxes accrue to the central government. The only exception is Germany, where the *Länder* receive 50 per cent of the income tax and 35 per cent of the value-added tax.[116] Business taxes (in Germany and France) and property taxes in all countries accrue to local administrations. The only exception is Alsace, where the revenue from the business tax (taxe professionelle) is divided between municipalities, the *département* and the *région* Alsace.[117] Social security contributions accrue solely to the social security institutions; no distinction could be made between different kinds of insurances.

As a basis for estimating tax liabilities of foreign enterprises, we applied the tax comparison made by Arthur Andersen & Co. [a] that was used to determine the incentives for cross-border movements (Section D.II).[118] Appropriate national statistics on the cost structures of enterprises were not available for the countries under consideration. The ratios of tax liabilities to turnover and of social-security liabilities per employee calculated for the hypothetical company were extrapolated to the enterprises in the respective regions, assuming that the hypothetical company for each country is an appropriate model of the average real foreign firm.[119] In order to take into account changes in tax legislation

[116] For details, see Section B.V.

[117] The *département* and the *région* Alsace were joined to regional authorities. As there is no fixed quota according to which business tax receipts are distributed between the three levels of administration, an estimate had to be made. From the distribution of business tax receipts in 1991, we estimated the municipalities to receive 54.5 per cent, the *départements* 33.2 per cent and the *région* 12.3 per cent of total business taxes. This is, of course, only a rough estimate, as differences in the rates between municipalities are neglected.

[118] The tax comparison of Arthur Andersen & Co. is the only source that provides consistent information about the cost structures of enterprises in the four countries that is sufficiently detailed with respect to different kinds of taxes.

[119] This assumption has the striking advantage that national tax systems are adequately reflected by the cost structure of the hypothetical company. However, a major disadvantage is that the hypothetical company was designed as a manufacturing enterprise only. Thus, the cost structures of service companies, which often have lower profit margins (gross profit to turnover; profit is the most important tax

between 1989 (the base year of the tax comparison) and 1991 (the base year of the enquiry), the direct corporate tax liabilities were recalculated with 1991 tax rates.[120]

Euregio Meuse-Rhine

According to the estimates (Table 43), tax payments of foreign enterprises in the *Belgian subregion* amounted to some 650 million ecus; that is much more than revenues from foreign enterprises in the German and the Dutch subregion (about 140 and 70 million ecus, respectively). The greater part of all tax receipts from German and Dutch enterprises in Liège-Limburg accrues to the Belgian government (1991: some 470 million ecus; nearly 2 per cent of total tax receipts) and to social-security institutions (170 million ecus; 0.7 per cent). The contribution to local and regional authorities was very low, mainly because municipalities and regional administrations have only limited authority to levy taxes from corporations.

The opposite holds for the *Aachen area*. Here, the contribution made by foreign (mainly Dutch) enterprises to the budgets of the regional and the federal government as well as to the social-security system is negligible. But the respective business tax receipts of municipalities accounts for a valuable share in their total tax receipts (5 per cent in 1991).[121] However, many Dutch enterprises in the Aachen area are sales subsidiaries, which are usually able to realize a high turnover with comparatively few employees and a low profit margin (profit/turnover). By assuming them to have the same profit margin as the hypothetical company, their gross profit and, thus, their tax base was presumably overestimated. These inaccuracies are, however, relatively unimportant because the tax revenues matter only for municipalities, but not for the *Länder*, nor for the federal government or the social security system.

Foreign enterprises in *Zuid-Limburg* do not contribute to a notable extent to the various budgets of local, regional or central authorities. As in Liège-Limburg, this is mainly the result of the national tax regime. Whereas all important corporate taxes accrue to the central governments, local expenses are financed

base) than manufacturing enterprises, may not be met correctly. Presumably, the tax liabilities of service companies and sales subsidiaries are overstated.

[120] In Belgium, France, and Germany corporate income tax rates were reduced between 1989 and 1991. Additional changes in tax legislation were made in Germany, for example, by reducing depreciation allowances in order to limit the reduction of the government tax receipts. Such additional changes were neglected in the present analysis.

[121] As in all other border regions, land taxes paid by enterprises are almost unimportant, measured in absolute magnitude and in their share in local tax receipts.

Table 43 — Contribution of Enterprises from Neighbouring Countries in the Euregio Meuse-Rhine to Tax Receipts of Various Levels of Governmental Budgets, 1991[a]

	Tax liabilities (mil. ecus)	Share in total tax receipts (per cent) of			
		local authorities	regional authorities[b]	central government	social security institutions
Belgian subregion	645	na[c]	0.00	1.86	0.71
German enterprises thereof:	314	na[c]	0.00	0.90	0.34
Direct corporate taxes	222	–	–	0.88	–
Dutch enterprises thereof:	331	na[c]	0.00	0.95	0.36
Direct corporate taxes	234	–	–	0.93	–
German subregion	146	5.11	0.13	0.02	0.01
Belgian enterprises	1	0.03	0.00	0.00	0.00
Dutch enterprises thereof:	145	5.08	0.13	0.02	0.01
Direct corporate taxes[d]	68	–	0.12	0.02	–
Business tax	35	5.06	–	–	–
Dutch subregion	72	0.05	0.86	0.07	0.05
Belgian enterprises thereof:	30	0.03	0.46	0.03	0.02
Direct corporate taxes	22	–	–	0.03	–
Real estate tax	0	0.03	0.46	–	–
German enterprises thereof:	42	0.02	0.40	0.04	0.03
Direct corporate taxes	31	–	–	0.04	–
Real estate tax	0	0.02	0.40	–	–

[a]Tax liabilities are estimated applying the coefficient of respective tax liabilities to turnover of the hypothetical company in the tax comparison. Direct corporate tax liabilities are recalculated using 1991 tax rates. Social security contributions are estimated by applying the relationship of respective social security contributions to the number of employees of the hypothetical company. — [b]Belgian subregion: provinces Liège and Limburg; German subregion: *Land* North Rhine-Westphalia; Dutch subregion: *provincie* Limburg. — [c]No data available on tax receipts of municipalities in Liège-Limburg. — [d]50 per cent goes with the federal government, 50 per cent goes with the *Land*.

Source: Arthur Andersen & Co. [a]; Bundesstelle für Außenhandelsinformation [1993]; Deutsche Bundesbank [1992a; 1992b]; ETIL [1992b]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [d]; OECD [b]; Provincie Limburg [1993]; Sociale Verzekeringsraad [1993]; Statistisches Bundesamt [1992]; own survey.

mainly by land taxes, taxation of private households and transfers from the central government.

Alsace-Baden Border Region

According to the estimates, the tax liabilities of German enterprises in *Alsace* amounted to some 450 million ecus in 1991 (Table 44). Most payments (about 410 million ecus in 1991) accrue to the central government and to social security institutions. These payments, however, constitute only a small share of total tax receipts. The opposite holds for regional and local budgets, although the amount of taxes paid to these is rather small (totalling some 40 million ecus in 1991). According to our estimates, about 6 per cent of all tax receipts of

Table 44 — Contribution of Enterprises from the Neighbouring Country in the Alsace-Baden Border Region to Tax Receipts of Various Levels of Governmental Budgets, 1991[a]

	Tax liabilities (mil. ecus)	Share in total tax receipts (per cent) of			
		local authorities	regional authorities[b]	central government	social security institutions
German enterprises in Alsace	444	5.75	6.03	0.13	0.10
thereof:					
Direct corporate taxes	214	–	–	0.12	–
Business tax	34	5.06	6.03	–	–
Social security contributions	179	–	–	–	0.10
French enterprises in Baden	391	8.43	0.54	0.08	0.01
thereof:					
Direct corporate taxes[c]	229	–	0.52	0,07	–
Business tax	118	8.39	–	–	–

[a]Tax liabilities are estimated by applying the coefficient of respective tax liabilities to turnover of the hypothetical company in the tax comparison. Direct corporate tax liabilities are recalculated using 1991 tax rates. Social security contributions are estimated by applying the relationship of respective social security contributions to the number of employees of the hypothetical company. — [b]Alsace: *départements* Bas-Rhin, Haut-Rhin and *région* Alsace; Baden: *Länder* Baden-Württemberg and Rheinland-Pfalz. — [c]50 per cent federal government, 50 per cent *Länder*.

Source: Arthur Andersen & Co. [a]; Bundesstelle für Außenhandelsinformation [1993]; Deutsche Bundesbank [1992a; 1992b]; Direction des Services Fiscaux du Bas-Rhin [1993]; Direction des Services Fiscaux du Haut-Rhin [1993]; OECD [b]; Statistisches Bundesamt [1992]; Statistisches Landesamt Baden-Württemberg [b]; Statistisches Landesamt Rheinland-Pfalz [a]; own survey.

municipalities, the two *départements* and the *région* Alsace stemmed mainly from business tax payments made by German firms. If regional development assistance were granted frequently as business tax exemptions, this share would be somewhat smaller.

Total tax liabilities of French enterprises in *Baden* were approximately 400 million ecus in 1991. Surprisingly, this amount is only slightly smaller than that paid by German enterprises in Alsace. However, as mentioned above for foreign enterprises in the Aachen area, the contribution to local budgets may be overestimated.

As a result, it can be concluded that tax payments by foreign enterprises in the border regions generally are of little importance for central governments, regional authorities and the social security systems. The only exceptions are the Belgian state and Alsatian regional authorities. In the Belgian and the Dutch subregions of the Euregio, even local authorities do not receive a notable share of their tax receipts from foreign enterprises. At best the municipalities in Alsace and the two German border regions receive a notable amount of business taxes from foreign enterprises on their territory.

VI. The Effects of the Single Market on Cross-Border Movements of Enterprises

The implementation of the common market for goods, services, labour and capital in the EU has changed the framework for economic activity. As a result, the pattern of cross-border movements of enterprises can also be expected to change. Enterprises could be forced to rethink their location decision because new market or production conditions require a new evaluation of relevant factors of location.

1. Measures of the Single Market Programme Affecting Cross-Border Movements of Enterprises

The locational preferences of enterprises are affected at least by four components of the Single Market programme:

(i) the reduction of differences in technical standards that prevent goods from entering markets in other member states,
(ii) the removal of trade restrictions at the borders,

(iii) the liberalization of public procurement and
(iv) the removal of restrictions on the establishment of foreign enterprises.[122]

Differences in *technical standards* between member states were the most important barriers to trade in the EU.[123] Enterprises that wanted to supply their products to several national markets were forced to produce different variants in order to meet the respective standards in each country. The Single Market programme largely succeeded in reducing such trade restrictions [COM, 1992, pp. 23 ff.]. Goods that meet the standards in one member state have, in general, to be given access to all other member states' markets as well (country of origin principle). The liberalization of technical standards is supposed to increase production efficiency, rendering the possibility to realize greater economies of scale in mass production. As the relevant market for a formerly domestic supplier is extended to other member states, competition between producers all over the EU should be enforced.

Trade restrictions mainly resulted in bureaucratic procedures for exporters and importers, and in time-consuming border controls of persons and goods, which were necessary because of differences between countries in security and health standards, adjustments for differences in indirect taxation and for statistical reasons [Cecchini, 1988, p. 29]. In the meantime, with regard to technical standards, in general the country of origin principle applies. Adjustments for differences in indirect taxation have been shifted from the borders to the administration of the enterprises.[124] The remaining differences do no longer justify general border controls [COM, 1992, pp. 14 f.]. However, most of the bureaucratic procedures have not been removed. On the contrary, as the new tax adjustment induces higher bureaucratic costs than the former system, especially for small and medium-sized companies [Stehn, 1992, p. 290; Stihl,

[122] Another change in the conditions of economic activity that can currently be observed is the tendency towards a reduction of corporate taxes. This is a worldwide process that began already in the early 1980s, when the Reagan administration substantially reduced taxes in the USA. In subsequent years, many countries followed by reducing their taxes as well. Presumably, one of the most important reasons for the worldwide tax reduction is the increasing international mobility of capital, not only in the EU, but all over the world. Thus, although all countries in the present study reduced their corporate tax rates in the past decade, this can not be directly and exclusively attributed to the Single Market programme, but has to be seen in a broader context.

[123] The Cecchini report estimated the losses for European producers from different technical standards to be some 4.8 billion ecus [Cecchini, 1988, p. 49].

[124] Since 1993, exports have had to be reported to national taxing authorities; the reports have had to contain — inter alia — a VAT-ID of the respective importer abroad. For details see, for example, Stehn [1992, pp. 288 ff.].

1993, p. 11], it is a non-tariff barrier to trade. Nonetheless, waiting-time for carriers at the borders has been abolished. Thus, although transborder trade in the EU is not completely free from restrictions, it can be expected to be somewhat cheaper than before.[125] As a result of the Single Market programme, transportation costs should diminish, which, in turn, should create some additional transborder trade.

Public procurement has been another important trade barrier in the EU. In the past, public authorities strongly preferred domestic suppliers. The Single Market programme largely succeeded in liberalizing this market segment, at least formally [COM, 1992, pp. 23, 29 f.]. However, the actual success of this initiative cannot yet be determined because it might be difficult to change the preference of public administrations for domestic suppliers. Nevertheless, trade volume can be expected to increase, as a result of the liberalization of public procurement.

Restrictions on the establishment of foreign enterprises have been most striking with respect to service companies. Markets for services are already or will be liberalized in the EU [see, for example, Scharrer, 1993, p. 13; COM, 1992, pp. 32 f.]. Currently, an increasing EU-wide engagement of banks and insurance companies can be observed, mainly by acquisition of or in co-operation with, foreign companies rather than by establishing new subsidiaries.

These elements of liberalization will reduce (or have already reduced) the segmentation of markets into national units. Access to markets of other member states is easier today than a couple of years ago. New markets have been developed for producers who formerly supplied only domestic customers. The additional exploitation of foreign markets can be expected to result in a higher intra-EU trade volume and in more competition among producers all over the EU, thereby increasing the efficiency of production. Enlarged international trade volume and competition might force enterprises to rethink their location decision, taking into consideration the new framework for economic activity. At the same time, the restrictions on establishing of enterprises in other member states are reduced. Thus, for enterprises it might be easier today than some years ago to move to the border regions of a neighbouring country that offers more favourable conditions for economic activity.

It is, however, not immediately clear what the effect of the Single Market on the pattern of cross-border movements to border regions will finally be: incentives to move abroad might be reduced or increased.

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125 According to Cecchini [1988], the gains for exporters and importers from the removal of physical border controls amount to 415–830 million ecus. These gains, however, are rather small, compared with the potential gains from abolishing the burocratic procedures (7.5 billion ecus). Thus, we might expect that substantial barriers to trade have remained in effect even after 1 January 1993.

On the one hand, a reduction of cross-border movements could be expected for those enterprises whose main task is to circumvent trade restrictions or to serve as a "bridge" across a border with trade restrictions. Since trade restrictions such as differing technical standards and border formalities are largely removed in the Single Market, this type of enterprise may have become obsolete. This applies to

— foreign manufacturing enterprises that produced exclusively for the host country's market in order to meet the national technical standards, to
— some sales subsidiaries that were intended to relieve foreign customers of necessary border formalities and to
— service companies specialized in transborder trade assistance.

On the other hand, there are reasons for an acceleration of cross-border movements:

— Enterprises that face higher competition in the Single Market can be induced to move to a location abroad in order to reduce production costs, including tax liabilities. Under the rule of the Single Market, cost-related locational preferences of enterprises may generally gain in importance. In particular, regions where prices for immobile factors (including taxation) are low should have become more attractive because mobility restrictions for mobile factors were reduced. The new location could be situated in a neighbouring border region, especially if that border region is located geographically close to or between important sales markets.
— If the Single Market leads to an increasing volume of international trade, some exporters may be better off in the long run with an additional plant in the neighbouring country, if the costs of its establishment are lower than transportation costs in transborder trade. The optimum location of such a plant will be inside a border region only if the most important customers are domiciled nearby.
— After the liberalization of service markets, local service companies, for example, regional banks or insurance companies, may expand to the neighbouring country's border region by establishing new affiliates there. The same could hold for producers of local goods whose products could, in the past, be supplied to the neighbouring border region only by cross-border shopping because technical or health standards differed or trade was subject to other restrictions.[126]

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126 This, in turn, might reduce cross-border shopping that was induced, for example, by differences in tastes. After border restrictions have been removed, specialities

2. The Effects on the Border Regions

Empirical evidence from the survey indicates that there has been an acceleration of cross-border movements to those subregions of the border regions that offer the most favourable production conditions to manufacturing enterprises. As the analysis of the structure and the motives of cross-border movements in the preceding sections shows, the Belgian subregion of the Euregio and Alsace have experienced an accelerating inflow of foreign manufacturing enterprises in the last few years. Moreover, at least for German enterprises in Alsace that have moved since the mid-eighties, when the Single Market programme was officially announced (June 1985), the motives seem to differ from motives of movements in preceding years.[127] These differences can be characterized as follows: As compared with the reasons for cross-border movements in earlier years, German enterprises that recently moved to Alsace seem to

- — consider the availability of industrial sites, of domestic workers and particularly of the prices or rents paid for industrial sites to be more important, on average, to
- — judge differences in taxation to be slightly more important, to
- — emphasize the proximity to German customers and suppliers more frequently, to
- — attach lower importance to the proximity to French suppliers and to
- — emphasize the possibility to avoid border formalities less frequently.

Thus, on the one hand, enterprises that moved recently give higher importance to favourable production conditions, including taxation.[128] On the other hand, markets, at least at the Alsace-Baden border, became more integrated in the last few years. The barriers to trade across the border have apparently been reduced — presumably by the Single Market programme that was realized stepwise in the preceding years. If this interpretation is correct, the Single Market induced the acceleration of cross-border movements of enterprises wishing (or being forced by competition) to take advantage of lower production costs and more favourable conditions of the factor markets by mov-

from one country might more easily be produced and supplied in the neighbouring country as well.

127 Such an analysis yields satisfactory results only for Alsace because only in this region the number of responses is sufficiently high.

128 Taxation as a cost factor obviously gained in importance. However, it is still not a decisive motive for most of the enterprises. The number of purely tax-induced movements of enterprises is low, both with and without the Single Market.

ing or expanding to Alsace, while maintaining their commercial relationships to German suppliers and customers.

By contrast, there is almost no indication that the Single Market will induce a deceleration of cross-border movements of enterprises. To ascertain the possible effects, enterprises were asked whether they intend to relocate as a reaction to the Single Market (Table 45). The result is that only one German enterprise in Alsace has decided to relocate. More than 80 per cent of the German enterprises in Liège-Limburg and Alsace, about two thirds of the Dutch enterprises in Liège-Limburg and of the French enterprises in Baden, and some 50 per cent of the foreign enterprises in the German and the Dutch subregions of the Euregio have definitely decided to remain at their current location. Indeed, these differences may indicate that the uncertainty of enterprises with respect to their future location is higher for foreign enterprises in the two German subregions and in Zuid-Limburg than in Liège-Limburg and Alsace, where enterprises have more favourable production conditions.

The findings give rise to the conclusion, although only of a tentative nature, that in regions like Alsace and Liège-Limburg comparative locational advantages in production conditions do not only attract additional investment from abroad, but also confirm the location decision of many enterprises that were established there in the past. In the other regions, where such comparative advantages do not exist, only a few enterprises have moved in from neighbouring countries in recent years, and enterprises are more uncertain with respect to their future location. The Single Market seems to induce an acceleration rather than deceleration of cross-border movements of enterprises — at least to those regions that offer favourable production conditions. Relatively "expensive" regions like the Aachen area, Zuid-Limburg and Baden experience only a few in-movements of enterprises from neighbouring countries, whereas the available information gives no indication for any out-movements of foreign enterprises.

The effects of the Single Market on tax-induced cross-border movements of enterprises to the border regions and thus the effects of tax-induced cross-border movements on the regional economies and the fiscal budgets is negligible because tax-induced movements themselves are negligible, both before and after the completion of the Single Market. Although in the preceding years, differences in taxation might have become a slightly more important reason to move, they are still almost unimportant, as compared with other locational factors, for example, the supply of and the prices for factors of production. The economic and fiscal effects of movements that are induced by these latter factors may be positive for the Belgian subregion of the Euregio and for Alsace. In the other regions, namely Baden, the Aachen area and Zuid-Limburg, the effect of the Single Market on the economies and on the fiscal budgets cannot be determined. But even if some of the foreign enterprises that are currently situ-

Table 45 — Effects of the Single Market on Location Decisions of Enterprises from Neighbouring Countries in the Euregio Meuse-Rhine and the Alsace-Baden Border Region — Responses to the Survey (per cent)[a]

	The question was: do you intend to relocate your company as a reaction on the EU Single Market?				
	yes	yes, probably	no, probably not	no	undecided
Euregio Meuse-Rhine					
Belgian subregion					
German enterprises	0.0	0.0	11.1	85.2	3.7
Dutch enterprises	0.0	0.0	22.6	67.7	9.7
German subregion					
Dutch enterprises	0.0	0.0	11.1	55.6	33.3
Dutch subregion					
Belgian enterprises	0.0	0.0	25.0	50.0	25.0
German enterprises	0.0	0.0	33.3	55.6	11.1
Alsace-Baden border region					
German enterprises in Alsace	0.9	0.9	14.8	80.6	2.8
French enterprises in Baden	0.0	0.0	31.3	65.6	3.1

[a]Answers in per cent of all responses.

Source: Own survey.

ated in these regions were induced by the Single Market to move to different locations or to close down, the regions would not suffer seriously because foreign enterprises are of a comparatively low economic importance.

This may support tendencies towards an economic convergence rather than a divergence of the border regions, as mainly those regions that currently have the highest unemployment rates (Liège-Limburg, Alsace) are favoured by foreign enterprises.

VII. Summary

According to the comparison of corporate tax liabilities of a hypothetical company in each of the border regions (for the year 1989), there are substantial tax-induced incentives for enterprises to move from Germany and (to a lesser extent) from Belgium to the Dutch subregion of the Euregio, where the corporate tax burden is found to be lowest; moreover, there are incentives for German companies to move to Liège-Limburg or to Alsace.

A supplementary comparison of net capital profitability of the hypothetical company in each of the border regions shows a somewhat different picture. As the Belgian, rather than the Dutch, hypothetical company shows highest profitability, it may be concluded for the Euregio that tax-induced incentives for enterprises to move to the Netherlands are overcompensated by countervailing profitability-induced incentives to move to Liège-Limburg. For the Alsace-Baden border region, however, profitability incentives point to the same direction as tax incentives.

The present distribution of cross-border settlements of enterprises in the border regions can be characterized as follows:

- In the Euregio, most of the foreign enterprises are situated in the Belgian subregion, whereas the number of such enterprises is much smaller in Zuid-Limburg and in the Aachen area. The Belgian subregion was favoured mainly by manufacturing enterprises, their main motive was to benefit from more favourable production conditions, namely a plentiful supply of workers and industrial sites at low prices. Foreign enterprises in the German subregion, by contrast, aimed mainly at supplying foreign products to the large German market, many of them without local production facilities. Since the mid-eighties, a comparatively large number of German and Dutch enterprises have moved to Liège-Limburg, whereas the flows of enterprises to the German and the Dutch subregion have been low.
- Alsace has been chosen as a location by a large number of German enterprises, mostly manufacturing enterprises, because this region seems to offer more favourable production conditions than Germany. In Baden, by contrast, a smaller number of French enterprises, mostly sales subsidiaries, have been established mainly to supply French goods to the German market. As in the Euregio, German enterprises have frequently moved to the neighbouring border region since the mid-eighties, whereas movements in the opposite direction have been much smaller in number.

This pattern of cross-border movements is perfectly in line with incentives resulting from differences in net capital profitability, but not with those resulting from differences in corporate tax burdens. Indeed, only very few enterprises responding to the enquiry quoted taxation to be an important reason for their relocation. And most of these enterprises had other, presumably more important reasons. Thus, differences in corporate taxation do not seem to be decisive for the overwhelming majority of the cross-border movements of enterprises.

The contribution of foreign enterprises to the regional labour market, value added and fiscal budgets is higher in Liège-Limburg and in Alsace than in the two German border regions.[129] In Zuid-Limburg, the economic and fiscal effects of Belgian and German enterprises are very small.

With the completion of the Single Market, restrictions to trade and to cross-border movements of enterprises in the EU have been reduced, whereas corporate taxation is left unaffected. Although trade barriers have not yet been removed completely and the freedom of the establishment of enterprises in other member states is not yet fully materialized, intra-EU trade and competition among enterprises can be expected to increase. This might, on the one hand, accelerate cross-border movements of those enterprises that are forced by competition to reduce production costs by moving to a location with more favourable production conditions, including a lower corporate tax burden. On the other hand, the number of those establishments that were caused by border restrictions and other barriers to trade may diminish. Some empirical evidence from the enquiry indicates that — on balance — the Single Market may accelerate rather than decelerate movements. Indeed, in the years since 1986, a large number of German and Dutch enterprises moved to those regions that offer the most favourable production conditions among the regions, namely the Belgian subregion of the Euregio and Alsace.[130] These movements may be a reaction to the Single Market programme, which has been realized stepwise since the mid-eighties. By contrast, no support can be found for the thesis of a deceleration of cross-border movements.

Thus, neither before nor after the completion of the Single Market differences in taxation between member states have been decisive determinants of cross-border movements of enterprises to the border regions. Most movements of enterprises are induced by regional differences in the availability of, and the prices for, factors of production, such as workers and industrial sites. By moving to regions with comparatively high unemployment, enterprises contribute to a reduction of economic differences and, thus, to economic convergence of border regions in the EU.

129 In the two German subregions, the contribution to these economic indicators stemed mainly from a few large foreign manufacturing enterprises that were established decades ago.

130 Differences in corporate taxation seem to have gained in importance for these movements, compared with earlier movements. However, taxation is yet unimportant, compared with other motives.

E. General Conclusions

Between the three cross-border activities cross-border shopping, cross-border commuting and cross-border movements of enterprises, there are differences with respect to their determining factors and to their effects on regional economies and fiscal budgets. However, the completion of the European Single Market may induce them to work broadly into the same direction, namely to enforce tendencies towards an economic convergence of neighbouring border regions:

(1) Whereas cross-border shopping is highly induced by differences in national taxation, the most important determining factors of cross-border commuting and movements of enterprises are region-specific economic conditions of labour and real-estate markets, and differences in respective relative prices.

In general, these economic factors and differences in taxation affect cross-border activities. However, economic factors that might determine the pattern of cross-border shopping, such as differences in pre-tax prices of commodities, are of lower importance in most cases because pre-tax prices for most commodities tend to be equalized internationally by trade and competition. Thus, differences in indirect taxation are the main reason for differences in retail prices. Although there are differences in corporate and labour income taxation between member states as well, they do not play that important role as motives for cross-border movements of enterprises and commuting do. The market incentives are stronger than the incentives from differences in taxation.

(2) Cross-border shopping, indeed, affects the retail branch. However, cross-border shopping is almost unimportant for the regional economies as a whole and for public budgets. By contrast, commuting and movements of enterprises affect some of the regional economies to a considerable degree.

Even in the Danish-German border region, where indirect tax differentials are highest and cross-border shopping by Danes in Südschleswig is most extensive among the regions under consideration, the economic and fiscal effects are very low. This holds for additional employment and value added in the region where purchases are made, and for foregone employment opportunities and value added in regions where the purchasers come from. By contrast, unemployment in Liège-Limburg is reduced by some 8 percentage points because of the large number of commuters to neighbouring countries and the enterprises from Germany or the Netherlands employing domestic workers. In Alsace, this share is with about 10 percentage points even higher.

(3) Cross-border commuting and movements of enterprises contribute to economic convergence of regions at borders.

An equalization of supply, demand and prices at regional labour and real-estate markets may come about for a relocation of factors of production. This is exactly what happens by cross-border commuting and movements of enterprises. Indeed, by far the most cross-border commuters come from those regions that have high unemployment rates or low wages, as compared with neighbouring regions, namely from Liège-Limburg in Belgium and Alsace. Most of the enterprises move to those region with the most plentiful supply of workers and industrial sites at lowest prices. Thus, commuting and movements of enterprises tend to reduce economic differences between regions, rather than to enforce them.

(4) The reduction of barriers to trade and the mobility of factors of production brought about by implementing of the Single Market tend to support rather than to obstruct forces towards an economic convergence of border regions.

Stronger competition may force enterprises from countries with comparatively high production costs (including taxation) to move to regions that offer more favourable production conditions — in the first line a plentiful supply of workers and industrial sites at low prices. Indeed, since the late 1980s there has been an acceleration of movements mainly of German enterprises to Liège-Limburg and to Alsace. Additional employment opportunities for workers in these regions are created and regional unemployment tends to diminish. This, in turn, creates a tendency towards increasing wages and regional income. The necessity and the incentives for workers to look for a job abroad might be reduced.

Cross-border shopping in general, tax-induced cross-border shopping in particular, is expected to increase after border restrictions are removed under the rule of the Single Market, while tax incentives persist. In the short run, thus, differences in national indirect taxation can be expected to make cross-border shopping more unbalanced. This, however, can be expected to reinforce political pressure by interest groups on national governments to reduce differences in taxation. In the long run, hence, tax-induced shopping and the concentration of expenditures on one side of a border can be expected to diminish. If differences in indirect taxation were not reduced, cross-border shopping, indeed, would remain a subregional problem of retailing. However, as it cannot be expected to affect regional economies seriously, it would not be a severe obstacle to economic convergence of regions at borders.

Appendix

Tables

Table A1 — Population and Population Density in the Danish-German Border Region, 1991

	Sønderjylland	Südschleswig
Population[a] (persons; 31.12.1991)	250,872	422,334
Area (km²)	3,938.3	4,176.4
Population density (persons/km²)	63.7	101.1

Source: Danmarks Statistik [1992b; 1992d]; Statistisches Landesamt Schleswig-Holstein [b; c].

Table A2 — Population and Population Density in the Euregio Meuse-Rhine, 1991

	Belgian subregion	German subregion	Dutch subregion
Population (persons)	1,743,247[a]	1,187,239[b]	785,495[c]
Area (km²)	6,284.0	3,525.5	942.2
Population density (persons/km²)	277.4[a]	336.8[b]	833.7[c]

[a]1.1.1990. — [b]31.12.1990. — [c]1.1.1992.

Source: Centraal Bureau voor de Statistiek [a]; Institut National de la Statistique [a; b]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [f].

Table A3 — Population and Population Density in the Border Region Alsace-Baden, 1991

	Alsace	Baden
Population (persons)	1,624,553[a]	2,281,464[b]
Area (km²)	8,280.2	8,203.0
Population density (persons/km²)	196.2[a]	278.1[b]

[a]31.3.1990. — [b]1.1.1991.

Source: Institut National de la Statistique et des Etudes Economiques [c]; Statistisches Landesamt Baden-Württemberg [a]; Statistisches Landesamt Rheinland-Pfalz [a; d].

Table A4 — Value-Added Taxes in Denmark, Germany, Belgium and the Netherlands (per cent)

	Denmark		Germany		Belgium		Netherlands	
	until Dec. 1991[a]	since Jan. 1992	until Dec. 1992	since Jan. 1993	until March 1992	since April 1992	until Sept. 1992	since Oct. 1992
Most foodstuff	22	25	7	7	6	12	6	6
Luxury foodstuff	22	25	7	7	25	19.5	18.5	17.5
Beer	22	25	14	15	19	19.5	18.5	17.5
Wine	22	25	14	15	25	19.5	18.5	17.5
Spirits	22	25	14	15	25	19.5	18.5	17.5
Tobacco	22	25	14	15	6	12	18.5	17.5
Cigarettes	22	25	14	15	6	12	18.5	17.5
Soap and detergent	22	25	14	15	6	19.5	6	6
Cosmetic products	22	25	14	15	25[b]	19.5	18.5	17.5
Pharmaceuticals	22	25	14	15	6	6	6	6
Clothing, textiles	22	25	14	15	19	19.5	18.5	17.5
Shoes	22	25	14	15	17	19.5	18.5	17.5
Leather goods	22	25	14	15	25[b]	19.5	18.5	17.5
Jewellery	22	25	14	15	25	19.5	18.5	17.5
Arms	22	25	14	15	25	19.5	18.5	17.5
Radio, television, video sets, cameras, etc.	22	25	14	15	25	19.5	18.5	17.5
Printed material	22	25	7	7	6	12	6	6
Washing machines, etc.	22	25	14	15	19	19.5	18.5	17.5
Lawn-mowers, electrical tools	22	25	14	15	25	19.5	18.5	17.5
Furniture	22	25	14	15	19	19.5	18.5	17.5
Vehicles	22	25	14	15	25[b]	19.5	18.5	17.5
Repair of vehicles	22	25	14	15	19	19.5	18.5	17.5
Fuels, etc.	22	25	14	15	25	19.5	18.5	17.5
Cleaning of clothing	22	25	14	15	17	19.5	18.5	17.5

[a]Before 1992, an additional *arbejdsmarkedsbidrag* of 2,5 per cent was levied before taxation with value-added tax. — [b]33 per cent for certain luxury items.

Source: COM [1991]; Mennel [1991]; own supplements.

Table A5 — Excise Duties in Denmark, Germany, Belgium and the Netherlands, 1991[a]

	Denmark		Germany	
	quantity rate	ad valorem rate	quantity rate	ad valorem rate
	ecus	per cent	ecus	per cent
Sugar (kg)	–	–	0.03[b]	–
Sweets (kg)	1.58	–	–	–
Salt (kg)	–	–	0.06[b]	–
Coffee (kg)	0.66	–	2.10	–
Tea (kg)	0.63	–	2.02[b]	–
Non–alcoholic beverages (hl)	10.11 (20.23)[c]	–	–	–
Beer (hl)	– (5.29)[c,e] 52.85–82.24(60.94–90.33)[c,d]	–	2.93–10.97[d]	–
Wine (hl)	89.40–211.16 (103.05–295.88)[c,f]	–	–	–
Sparkling wine (hl)	162.36–284.12 (234.56–427.38)[c,f]	–	129.71	–
Spirits (hl alc.)	1808.16	37.5	1,243.44	–
Perfumes (hl alc.)	–	– (34.0)[c]	292.57	–
Tobacco (kg)	16.30	–	2.68	22.0
Cigarettes (100)	7.67	21.22	3.01	31.5
Cigars (100)	2.50	10.00	1.51	13.0
Fuel (hl)	28.45–36.67 (34.14–1.73)[c,g]	–	40.0–44.9 (29.26–32.67)[c,g]	–
Diesel oil (hl)	22.25	–	26.82 (21.94)[c]	–
Motor vehicles	–	105.0 180.0[h]	–	–

Table A5 continued

	Belgium		Netherlands	
	quantity rate	ad valorem rate	quantity rate	ad valorem rate
	ecus	per cent	ecus	per cent
Sugar (kg)	0.01	–	0.04	–
Sweets (kg)	–	–	–	–
Salt (kg)	–	–	–	–
Coffee (kg)	0.24	–	–	–
Tea (kg)	–	–	–	–
Non–alcoholic beverages (hl)	4.74–7.11	–	3.76–10.04	–
Beer (hl)	1.61–2.54[i]	–	10.95–24.25[i]	–
Wine (hl)	34.83–71.06[f]	–	35.81–86.54[f]	–
Sparkling wine (hl)	121.95–153.94	–	125.33–173.09	–
Spirits (hl alc.)	1,338.12	–	1,375.17	–
Perfumes (hl alc.)	–	–	450.03	–
Tobacco (kg)	–	37.55	8.65	10.6
Cigarettes (100)	0.46	60.53	2.63	19.06
Cigars (100)	–	16.5	–	2.93
Fuel (hl)	30.23–35.11	–	44.37–50.22	–
Diesel oil (hl)	21.0	–	21.46	–
Motor vehicles	–	–	–	8.0–27.5[j]

[a]On selected tradable consumer goods. — [b]Will be abolished. — [c]Since July 1991 (in parenthesis: January to June 1991). — [d]Depending on degree of wort and annual output. — [e]Light beers only. — [f]Depending on alcoholic degree. — [g]Depending on lead content. — [h]Tax rate as far as the price exceeds 2,500 ecus. — [i]Per degree of wort, depending on annual output. — [j]Depending on type (motor bicycle or car) and price.

Source: COM [1991]; Mennel [1991]; own supplements.

Table A6 — Tax Burdens on Selected Goods in Denmark, Germany, Belgium and the Netherlands, 1991

	Pre-tax bench mark price[a] in ecus	Total indirect taxation in per cent in					
		Denmark[b]		Germany[b]		Belgium	Netherlands
Sugar (kg)	0.83	25.1		10.8		7.2	10.8
Sweets (kg)	4.88	65.6		7.0		6.2	18.5
Salt (kg)	0.41	25.1		22.0		6.0	6.0
Other food	–[c]	25.1		7.0		6.0	6.0
Coffee (kg)	4.51	43.5		67.0		11.6	6.0
Tea (kg)	16.41	30.0		28.1		6.0	6.0
Non-alcoholic beverages (l)	0.61	45.9	(67.2)	14.0		32.8	41.0
Beer (l)[d]	0.79	132.9	(145.6)	25.3		60.8	89.9
Wine (l)	2.96	83.4	(92.2)	14.0		39.9	32.8
Sparkling wine (l)[e]	2.57	128.0	(168.9)	71.6		84.4	59.9
Spirits (l)[f]	2.94	354.8		196.9		268.0	229.3
Perfumes (100 ml)[g]	7.64	25.1	(67.5)	16.6		25.0	23.4
	50.00	25.1	(67.5)	14.5		25.0	19.4
Tobacco (kg)	312.00	90.4		65.1		76.1	73.0
Cigarettes (100)	3.15	484.8		248.3		239.0	181.0
Soap and detergent	–[c]	25.1		14.0		6.0	6.0
Cosmetic products	–[c]	25.1		14.0		25.0/33.0[h]	18.5
Pharmaceuticals	–[c]	25.1		14.0		6.0	6.0
Clothing, textiles	–[c]	25.1		14.0		19.0	18.5
Shoes	–[c]	25.1		14.0		17.0	18.5
Leather goods	–[c]	25.1		14.0		25.0/33.0[h]	18.5
Jewellery	–[c]	25.1		14.0		25.0/33.0[h]	18.5
Printed material	–[c]	25.1		14.0		6.0	6.0
Home entertainment equipment	–[c]	25.1		14.0		25.0/33.0[h]	18.5
Washing machines, etc.	–[c]	25.1		14.0		19.0	18.5
Lawn mowers, electrical tools	–[c]	25.1		14.0		25.0	18.5
Furniture	–[c]	25.1		14.0		19.0	18.5
Domestic articles	–[c]	25.1		14.0		19.0	18.5
Fuel (hl)	20.02[i]	202.7	(240.7)	241.7	(182.4)	215.6	283.4
Diesel (hl)	20.69[j]	161.2	(150.7)	161.8	(127.0)	144.6	134.5

Table A6 continued

	Pre-tax bench mark price[a] in ecus	Total indirect taxation in per cent in			
		Denmark[b]	Germany[b]	Belgium	Netherlands
Cars[k]	8,500	222.6	14.0	25.0	45.5
	11,000	228.8	14.0	25.0	46.5
	17,000	236.4	14.0	33.0	48.3
Car repair	–[c]	25.1	14.0	19.0	18.5
Unweighted average	-	87.9	42.6	47.3	46.6

[a]In parentheses: diverging rates before July 1991. — [b]Assumed bench-mark price for all four countries, derived from consumer prices in Germany. — [c]Not relevant, as no quantity rates are applied. — [d]Assumed content of wort: 12 per cent; output of a medium brewery. — [e]Assumed alcoholic content 12 per cent — [f]"Doppelkorn", assumed alcoholic content: 38 per cent — [g]Different qualities; upper line: "Eau de Cologne", assumed alcoholic content: 60 per cent; lower line: "Eau de Parfum", assumed alcoholic content: 80 per cent — [h]According to kind of good. — [i]Since July 1991; 19.80 ecus until June 1991. — [j]Since July 1991; 22.15 ecus until June 1991. — [k]Different qualities.

Source: Tables A4 to A5; own calculations.

Table A7 — Characteristics of the Survey on Cross-Border Shopping

	Danish-German border region		Euregio Meuse-Rhine		
	German subregion	Danish subregion	German subregion	Dutch subregion	Belgian subregion
Number of questionnaires mailed	500	400	1,300	800	2,000
of which:					
Returned undelivered to sender (per cent)	1.2	0.0	0.7	0.9	2.2
Replies (per cent)	26.6	23.8	20.4	19.3	11.4
Sample[a] (persons)	341	234	719	423	667
Share in total population (per cent)	0.08	0.09	0.06	0.06	0.04

[a]Sample includes all members of answering households.

Source: Own survey.

Table A8 — Expenditures on Cross-Border Shopping in the Danish-German Border Region, 1991 (million ecus)

	Expenditures by			
	Germans in the Danish subregion		Danes in the German subregion	
	own estimates	IfGf estimates[a]	own estimates	IfGf estimates[a]
	June 1991 to May 1992	1991	June1991 to May 1992	1991
Total	116	114	273	330
From inside the border region	83	.	73	100
From outside the border region	33	.	200	230

[a]Estimates by the Institut for Grænseregionsforskning, Åbenrå (IfGf).

Source: Own survey; Bygvrå [1992b].

Table A9 — Expenditures on Cross-Border Shopping in the Euregio Meuse-Rhine, 1991 (million ecus)[a]

	Dutch-German border		Belgian-German border		Belgian-Dutch border	
	expenditures by					
	Germans in the Dutch subregion	Dutch in the German subregion	Germans in the Belgian subregion	Belgians in the German subregion	Dutch in the Belgian subregion	Belgians in the Dutch subregion
Total	160	378	129	89	154	136
From inside the border region	144	378	118	86	101	135[b]
From outside the border region	16	–	11	3	53	1

[a]June 1991 to May 1992. — [b]Moreover, expenditures of 37 million ecus by residents of the Belgian sector in the Dutch Eindhoven area have been observed. The Eindhoven area also borders on Liège-Limburg, but does not yet belong to the Euregio.

Source: Own survey.

Table A10 — Gross and Net Income of Workers in the Dutch and the German Subregion of the Euregio Meuse-Rhine, 1992 (ecus)

Place of residence	Place of work	Family status	Gross income	Tax liability on labour income	Social security contribution	Children's allowance	Net income
Netherlands	Netherlands	Unmarried	1,7753	4,285	1,836	–	11,631
Netherlands	Netherlands	Married, two children	1,7753	3,480	1,649	1,480	14,103
Netherlands	Germany	Unmarried	2,3852	4,568	4,759	–	14,526
Netherlands	Germany	Married, two children	2,3852	1,949	4,759	1,170	18,315
Germany	Germany	Unmarried	2,3852	4,964	4,759	–	14,130
Germany	Germany	Married, two children	2,3852	2,092	4,759	1,170	18,172
Germany	Netherlands	Unmarried	1,7753	4,285	1,836	–	11,631
Germany	Netherlands	Married, two children	1,7753	3,480	1,649	1,480	14,103

Source: Calculated by the Steuerberatungsbüro Groten; own calculations.

Table A11 — Gross and Net Income of Workers in the Belgian and the Dutch Subregion of the Euregio Meuse-Rhine, 1992 (ecus)

Place of residence	Place of work	Family status	Gross income	Tax liability on labour income	Social security contribution	Children's allowance	Net income
Belgium	Belgium	Unmarried	18,924	4,319	2,473	–	12,131
Belgium	Belgium	Married, two children	18,924	2,154	2,473	2,519	16,816
Belgium Both inside the specified areas	Netherlands	Unmarried	17,753	4,070	1,836	–	11,846
Belgium Both inside the specified areas	Netherlands	Married, two children	17,753	2,025	1,649	1,480	15,558
Belgium One or both outside the specified areas	Netherlands	Unmarried	17,753	4,285	1,836	–	11,631
Belgium One or both outside the specified areas	Netherlands	Married, two children	17,753	3,480	1,649	1,480	14,103
Netherlands	Netherlands	Unmarried	17,753	4,285	1,836	–	11,631
Netherlands	Netherlands	Married, two children	17,753	3,480	1,649	1,480	14,103
Netherlands Both inside the specified areas	Belgium	Unmarried	18,924	4,568	2,473	–	11,882
Netherlands Both inside the specified areas	Belgium	Married, two children	18,924	4,568	2,473	2,519	14,402
Netherlands One or both outside the specified areas	Belgium	Unmarried	18,924	4,319	2,473	–	12,131
Netherlands One or both outside the specified areas	Belgium	Married, two children	18,924	2,154	2,473	2,519	16,816

Source: Calculated by the Steuerberatungsbüro Groten; own calculations.

Table A12 — Gross and Net Income of Workers in the Belgian and the German Subregion of the Euregio Meuse-Rhine, 1992 (ecus)

Place of residence	Place of work	Family status	Gross income	Tax liability on labour income	Social security contribution	Children's allowance	Net income
Belgium	Belgium	Unmarried	18,924	4,319	2,473	–	12,131
Belgium	Belgium	Married, two children	18,924	2,154	2,473	2,519	16,816
Belgium Both inside the specified areas	Germany	Unmarried	23,852	5,540	4,759	–	13,553
Belgium Both inside the specified areas	Germany	Married, two children	23,852	3,184	4,759	1,170	17,080
Belgium One or both outside the specified areas	Germany	Unmarried	23,852	4,568	4,759	–	14,526
Belgium One or both outside the specified areas	Germany	Married, two children	23,852	3,387	4,759	1,170	16,877
Germany	Germany	Unmarried	23,852	4,964	4,759	–	14,129
Germany	Germany	Married, two children	23,852	2,092	4,759	1,170	18,172
Germany Both inside the specified areas	Belgium	Unmarried	18,924	3,407	2,473	–	13,044
Germany Both inside the specified areas	Belgium	Married, two children	18,924	1,044	2,473	2,519	17,926
Germany One or both outside the specified areas	Belgium	Unmarried	18,924	5,424	2,473	–	11,027
Germany One or both outside the specified areas	Belgium	Married, two children	18,924	5,424	2,473	2,519	13,546

Source: Calculated by the Steuerberatungsbüro Groten; own calculations.

Table A13 — Gross and Net Income of Workers in the French and the German Subregion of the Border Region Alsace-Baden, 1992 (ecus)

Place of residence	Place of work	Family status	Gross income	Tax liability on labour income	Social security contribution	Children's allowance	Net income
France	France	Unmarried	14,855	956	2,971	–	10,929
France	France	Married, two children	14,855	0	2,971	1,048	12,932
France Both inside the specified areas	Germany	Unmarried	24,604	2,650	4,674	–	17,280
France Both inside the specified areas	Germany	Married, two children	24,604	689	4,674	1,170	20,412
France One or both outside the specified areas	Germany	Unmarried	24,604	4,804	4,674	–	15,126
France One or both outside the specified areas	Germany	Married, two children	24,604	4,804	4,674	1,170	16,296
Germany	Germany	Unmarried	24,604	5,189	4,674	–	14,741
Germany	Germany	Married, two children	24,604	2,218	4,674	1,170	18,883
Germany Both inside the specified areas	France	Unmarried	14,855	2,178	2,971	–	9,706
Germany Both inside the specified areas	France	Married, two children	14,855	284	2,971	1,048	12,648
Germany One or both outside the specified areas	France	Unmarried	14,855	2,970	2,971	–	8,915
Germany One or both outside the specified areas	France	Married, two children	14,855	1,208	2,971	1,048	11,724

Source: Calculated by the Steuerberatungsbüro Hinkelbein; own calculations.

Table A14 — Frontier Workers in the Euregio Meuse-Rhine, 1991

	Belgian subregion	German subregion	Dutch subregion	Total
In-commuting workers	820–1,050	8,200–8,750	7,050–7,150	16,070–16,950
From the Euregio	720–820	7,700–8,200	6,750	15,170–15,770
From the Belgian subregion	x	3,200	6,300	9,700
From the German subregion	120	x	450	570
From the Dutch subregion	600–700	4,500–5,000	x	5,100–5,700
From regions outside the Euregio	100–230	500–550	300–400	900–1,180
From Belgium	x	0–50	250	250–300
From Germany	0–30	x	50–150	50–180
From the Netherlands	100–200	500	x	600–700
Out-commuting workers	13,260	650–750	7,180–8,380	21,090–22,390
To the Euregio	9,500	570	5,100–5,700	15,170–15,770
To the Belgian subregion	x	120	600–700	720–820
To the German subregion	3,200	x	4,500–5,000	7,700–8,200
To the Dutch subregion	6,300	450	x	6,750
To regions outside the Euregio	3,760	80–180	2,080–2,680	5,920–6,620
To Belgium	x	80–130	80–180	160–310
To Germany	60	x	2,000–2,500	2,060–2,560
To the Netherlands	3,700	0–50	x	3,700–3,750

Source: Bundesanstalt für Arbeit [1992]; Centraal Bureau voor de Statistiek [b; d]; ETIL [1992a]; Institut National de la Statistique [a]; Landesamt für Datenverarbeitung und Statistik Nordrhein-Westfalen [b; c; h]; Statistisches Landesamt Niedersachsen [1992]; Statistisches Landesamt Rheinland-Pfalz [e]; own calculations.

Table A15 — Frontier Workers in Alsace-Baden, 1991

	Alsace	Baden
In-commuting workers	850–950	23,300
From inside the border region		
From Alsace	x	23,000
From Baden	850–900	x
From outside the border region		
From France outside Alsace	x	300
From Germany outside Baden	0–50	x
Out-commuting workers	24,300	850–950
To the neighbouring border region		
To Alsace	x	850–900
To Baden	23,000	x
To other regions in the neighbouring country		
To France outside Alsace	x	0–50
To Germany outside Baden	1,300	x

Source: Bundesanstalt für Arbeit [1992]; Institut National de la Statistique et des Etudes Economiques [a; b]; Statistisches Landesamt Baden-Württemberg [d]; Statistisches Landesamt Rheinland-Pfalz [e]; Statistisches Landesamt Saarland [1992].

Table A16 — Frontier Workers with German Nationality in the Euregio Meuse-Rhine and in Alsace-Baden, 1991

Place of residence	Place of work	Number of frontier workers with German nationality	Frontier workers with German nationality in per cent of all frontier workers
		Euregio Meuse-Rhine	
Netherlands	Germany	5,871[a]/4,070[b,c]	46.0/31.4
Netherlands	German subregion	2,681[a]	53.0
Belgium	Germany	2,339[a]	61.2
Belgium	German subregion	2,011[a]/1,903[b,c]	61.9/49.8
		Alsace-Baden	
France	Germany	13,357[a]/4,034[b,c]	35.1/10.6
France	Baden	8,227[a]	35.3
Alsace	Germany	1,500[c,d]	6.1

[a]Bundesanstalt für Arbeit. — [b]Own calculations according to Verband Deutscher Rentenversicherungsträger. — [c]1990. — [d]French population census.

Source: Bundesanstalt für Arbeit [1992]; Institut National de la Statistique et des Etudes Economiques [b]; Verband Deutscher Rentenversicherungsträger [1992]; own calculations.

Table A17 — Taxation of the Hypothetical Company in Belgium, Germany and the Netherlands, 1989

	Belgium				Germany		Netherlands	
	including penalty tax		excluding penalty tax					
	1,000 ecus	per cent	1,000 ecus	per cent	1,000 ecus	per cent	1,000 ecus	per cent
Conventional profit & loss account								
Turnover	27,225	100.0	27,225	100.0	27,675	100.0	23,850	100.0
Payroll costs	4,948	18.2	4,948	18.2	5,408	19.5	4,672	19.6
Depreciation	543	2.0	543	2.0	543	2.0	543	2.3
Other costs	17,518	64.3	17,518	64.3	17,012	61.5	14,906	62.5
Book profit before direct corporate taxes	4,218	15.5	4,218	15.5	4,713	17.0	3,730	15.6
Profit after corporate taxes	2,108	7.7	2,430	8.9	2,031	7.3	2,413	10.1
Standard template[a]								
Turnover	27,225	100.0	27,225	100.0	27,675	100.0	23,850	100.0
Salaries[b]	3,720	13.7	3,720	13.7	4,614	16.7	3,520	14.8
Depreciation	543	2.0	543	2.0	543	2.0	543	2.3
Other costs[c]	17,473	64.2	17,473	64.2	16,968	61.3	14,889	62.4
Profit before all taxes	5,490	20.2	5,490	20.2	5,552	20.1	4,899	20.5
Total corporate taxes	3,383	12.4	3,061	11.3	3,521	12.7	2,486	10.4
Direct corporate taxes	2,110	7.8	1,788	6.6	2,649	9.6	1,317	5.5
Corporate income tax	2,110	7.8	1,788	6.6	1,790	6.5	1,317	5.5
Business tax	–	–	–	–	859	3.1	–	–
Indirect taxes[d]	45	0.2	45	0.2	78	0.3	17	0.1
Social liabilities	1,228	4.5	1,228	4.5	795	2.9	1,152	4.8
Net profit	2,108	7.7	2,430	8.9	2,031	7.3	2,413	10.1
Proposed dividend	1,373	5.0	1,055	3.9	1,178	4.3	933	3.9
Retained earnings	735	2.7	1,375	5.0	853	3.1	1,481	6.2

[a]The standard template shows costs excluding all kinds of taxes, whereas the conventional profit & loss account displays costs including taxes. Net profit is the same in both accounts. —[b]Excluding social liabilities. —[c]Excluding indirect taxes. —[d]Including corporate wealth taxes.

Source: Arthur Andersen & Co. [a]; own calculations.

Table A18 — Taxation of the Hypothetical Owner in Belgium, Germany and the Netherlands, 1990 (1,000 ecus)

	Belgium	Germany	Netherlands
Owner's income taxation			
Proposed dividend	1,055	1,178	933
– Withholding tax	264[a]	295	0[b]
= Paid dividend	791	884	933
+ Income tax credit		663	0
+ Withholding tax		295	0
= Taxable income from dividends	264	1,841	933
Gross personal income tax liability[c]	21	976	560
– Withholding tax	0	295	0
– Income tax credit	0	663	0
= Net personal income tax liability	285	313	560
Owner's wealth taxation			
Gross wealth	2,000	2,000	2,000
– Deductions		39	39
= Taxable wealth		1,961	1,961
Wealth tax liability[d]	0	10	16
Total personal taxes	285	323	576
Personal income after all taxes	770	855	357

[a]Final withholding tax. — [b]If the owner's sector in total share capital is more than 25 per cent, withholding taxes are not levied. — [c]Tax rates: 8 per cent in Belgium (local income tax, calculated as a mark-up on state income tax liability); 53 per cent in Germany; 60 per cent in the Netherlands. — [d]Tax rates: 0.5 per cent in Germany; 0.8 per cent in the Netherlands.

Source: Table A17.

Table A19 — Taxation of the Hypothetical Company in France and Germany, 1989

	France				Germany	
	excluding regional incentives[a]		including regional incentives[a]			
	1,000 ecus	per cent	1,000 ecus	per cent	1,000 ecus	per cent
Conventional profit & loss account						
Turnover	27,225	100.0	27,225	100.0	27,675	100.0
Payroll costs	4,585	16.8	4,585	16.8	5,408	19.5
Depreciation	793	2.9	793	2.9	543	2.0
Other costs	18,145	66.6	17,915	65.8	17,012	61.5
Book profit before direct corporate taxes	3,703	13.6	3,933	14.4	4,713	17.0
Standard template[b]						
Turnover	27,225	100.0	27,225	100.0	27,675	100.0
Salaries[c]	3,232	11.9	3,232	11.9	4,614	16.7
Depreciation	793	2.9	793	2.9	543	2.0
Other costs[d]	17,816	65.4	17,816	65.4	16,968	61.3
Profit before all taxes	5,385	19.8	5,385	19.8	5,552	20.1

Table A19 continued

	France				Germany	
	excluding regional incentives[a]		including regional incentives[a]			
	1,000 ecus	per cent	1,000 ecus	per cent	1,000 ecus	per cent
Total corporate taxes	3,294	12.1	3,157	11.6	3,521	12.7
Direct corporate taxes	1,842	6.8	1,705	6.3	2,649	9.6
Corporate income tax	1,612	5.9	1,705	6.3	1,790	6.5
Business tax	230	0.8	–	–	859	3.1
Indirect taxes[e]	99	0.4	99	0.4	78	0.3
Social liabilities	1,353	5.0	1,353	5.0	795	2.9
Net profit	2,091	7.7	2,228	8.2	2,031	7.3
Proposed dividend	926	3.4	983	3.6	1,178	4.3
Retained earnings	1,165	4.3	1,245	4.6	853	3.1

[a]100 per cent business tax exemption. — [b]The standard template shows costs excluding all kinds of taxes, whereas the conventional profit & loss account displays costs including taxes. Net profit is the same in both accounts. — [c]Excluding social liabilities. — [d]Excluding indirect taxes. — [e]Including corporate wealth taxes.

Source: Table A17.

Table A20 — Taxation of the Hypothetical Owner in France and Germany, 1990 (1,000 ecus)

	France		Germany
	including regional incentives[a]	excluding regional incentives[a]	
Owner's income taxation			
Proposed dividend	983	926	1,178
– Withholding tax	0	0	295
= Paid dividend	983	926	884
+ Income tax credit	492	463	663
+ Withholding tax	0	0	295
= Taxable income from dividends	1,475	1,389	1,841
Gross personal income tax liability[b]	830	781	976
– Withholding tax	0	0	295
– Income tax credit	492	463	663
= Net personal income tax liability	338	318	313
Owner's wealth taxation			
Gross wealth	2,000	2,000	2,000
– Deductions	616	616	39
= Taxable wealth	1,384	1,384	1,961
Wealth tax liability[c]	9	9	10
Total personal taxes	347	327	323
Personal income after all taxes	636	599	855

[a]100 per cent business tax exemption. — [b]Tax rates: 56.8 per cent in France; 53 per cent in Germany. — [c]Tax rates: 0.5 to 0.9 per cent in France; 0.5 per cent in Germany.

Source: Table A17.

Synoptical Table A1 — Regional Administrative Units of the Danish-German Border Region, the Euregio Meuse-Rhine and the Border Region Alsace-Baden

Subregion in	Regional administrative unit
	Danish-German border region
Germany (Südschleswig)	Kreisfreie Stadt Flensburg, Landkreise Nordfriesland and Schleswig-Flensburg
Denmark (Sønderjylland)	Sønderjyllands Amt
	Euregio Meuse-Rhine
Belgium (Liège-Limburg)	Provinces Limburg and Liège
Germany (Aachen area)	Stadt Aachen, Landkreise Aachen, Düren, Euskirchen and Heinsberg
Netherlands (Zuid-Limburg)	Herstructureringsgebied Zuid-Limburg (Zuid-Limburg and the southern part of Midden-Limburg)
	Border region Alsace-Baden
Germany (Baden)	Kreisfreie Städte Freiburg im Breisgau, Baden-Baden, Karlsruhe and Landau in der Pfalz, Landkreise Lörrach, Breisgau-Hochschwarzwald, Emmendingen, Ortenau-Kreis, Rastatt, Karlsruhe, Germersheim and Südliche Weinstraße
France (Alsace)	Départements Bas-Rhin and Haut-Rhin

Source: Own compilation.

Figures

Figure A1 — The Danish-German Border Region

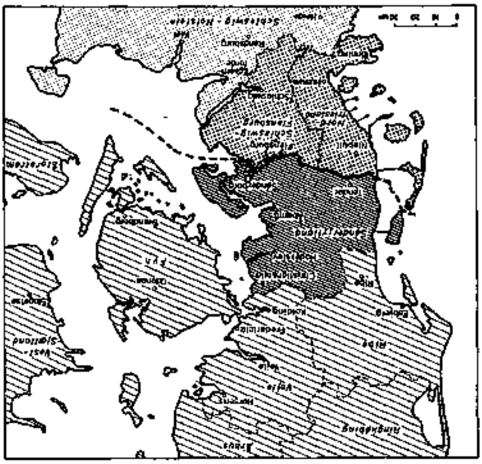


Figure A2 — The Euregio Meuse-Rhine

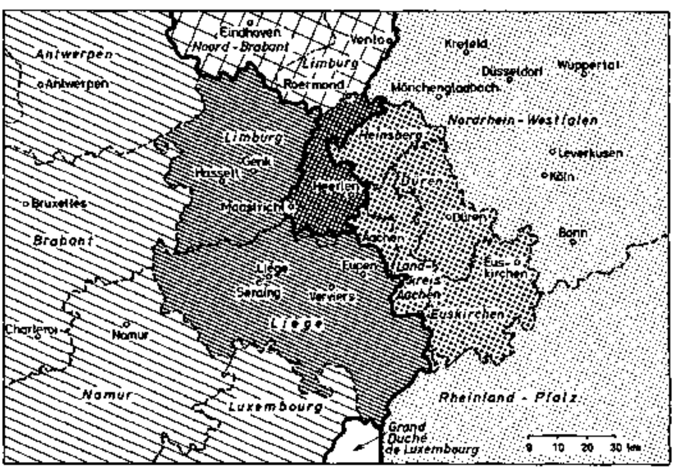
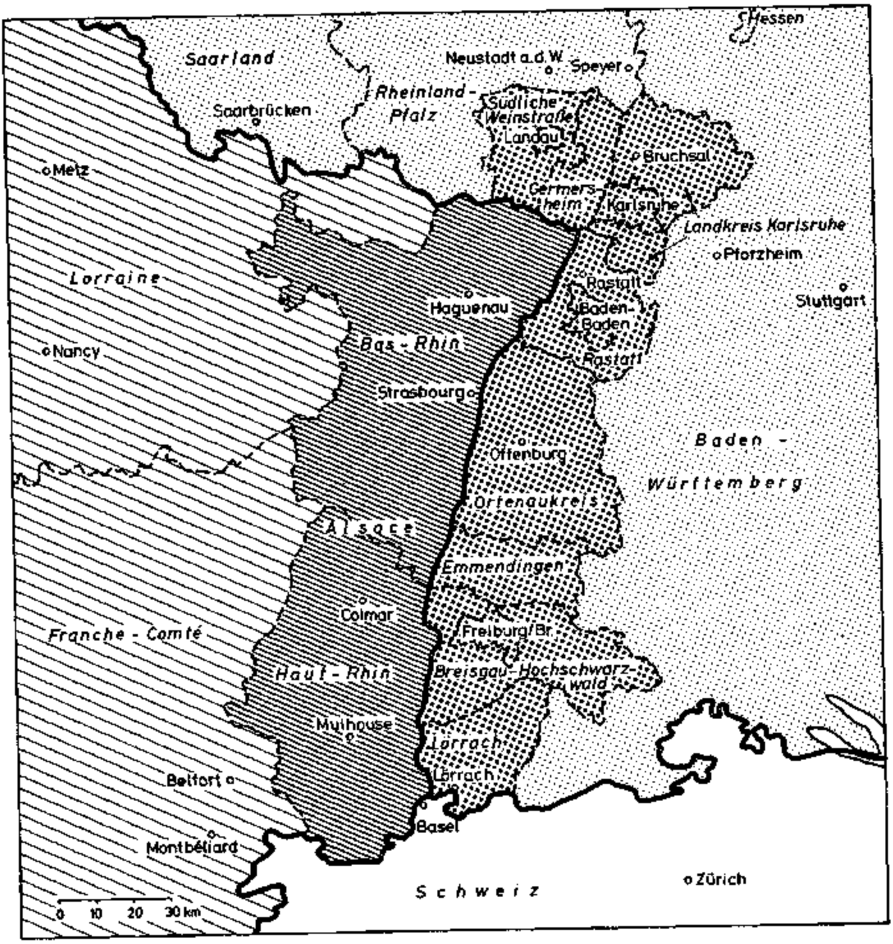


Figure A3 — The Border Region Alsace-Baden



Questionnaires

INSTITUT FÜR WELTWIRTSCHAFT
an der Universität Kiel

Düsternbrooker Weg 120
D-2300 Kiel

Fragebogenerhebung zum grenzüberschreitenden Einkauf in der Euregio Maas-Rhein

(für Haushalte im deutschen Teil)

Vorab einige Erläuterungen: Unsere Fragen beziehen sich auf **Ihre Einkäufe nahe der Grenze in den Niederlanden und in Belgien** (nicht weiter als 70 km landeinwärts; Lüttich und Maastricht sind eingeschlossen), und zwar insoweit Sie die gekauften Waren **mit nach Hause gebracht**, und nicht gleich dort verbraucht haben. Alle Ihre Angaben werden selbstverständlich **streng vertraulich** behandelt und nur **anonym** ausgewertet. Wenn Sie auf die eine oder andere der gestellten Fragen nicht antworten können oder möchten, bitten wir Sie, **die übrigen Fragen dennoch zu beantworten!**

Zunächst bitten wir Sie um einige allgemeine persönliche Auskünfte.

1. Wo wohnen Sie (Gemeinde, Kreis)? . . . .

   Entfernung zur Grenze: etwa . . . . km

2. Wieviele Personen leben in Ihrem Haushalt?

   Über 60 Jahre alt: männl. . . . . weibl. . . . .

   30 bis 59 Jahre alt: männl. . . . . weibl. . . . .

   18 bis 29 Jahre alt: männl. . . . . weibl. . . . .

   Unter 18 Jahre alt: männl. . . . . weibl. . . . .

Bitte, beantworten Sie nun einige Fragen zum Einkauf in den Niederlanden (Fragen 3. - 9.); Fragen zum Einkauf in Belgien schließen sich an (Fragen 10. - 16.).

3. Haben Mitglieder Ihres Haushalts **in den letzten 12 Monaten** in den Niederlanden eingekauft?

   ☐ Nein. (Bitte, fahren Sie mit Frage 4 fort.)

   ☐ Ja. (Bitte, fahren Sie mit Frage 5 fort.)

4. Wenn Sie nicht in den Niederlanden eingekauft haben, weshalb nicht (bitte ankreuzen, mehrere Kreuze möglich)?

   ☐ zu teuer
   ☐ Qualitäten schlechter
   ☐ Einkaufsatmosphäre weniger angenehm
   ☐ weiß nicht
   ☐ Öffnungszeiten ungünstig
   ☐ Anreise zu weit
   ☐ keine Gelegenheit

   (Bitte, fahren Sie mit Frage 10 fort.)

5. Wenn Mitglieder Ihres Haushalts in den letzten 12 Monaten die Niederlande besucht **und dabei eingekauft** haben, wie häufig taten sie dies?

	1-2mal	3mal und mehr	mind. 1mal monatl.	mind. 1mal wöchentl.	nahezu täglich
1. Person	☐	☐	☐	☐	☐
2. Person	☐	☐	☐	☐	☐
3. Person	☐	☐	☐	☐	☐
4. Person	☐	☐	☐	☐	☐

Weitere Personen:

6. Wenn Haushaltsmitglieder in den Niederlanden eingekauft haben, wie war das dann **meistens**?

☐ Sie sind extra zum Einkaufen über die Grenze gefahren.

☐ Sie fuhren sowieso zur Arbeit oder aus sonstigen beruflichen Gründen über die Grenze.

☐ Sie befanden sich in einem Urlaub, auf Erholungsausflug, auf Privatbesuch oder auf der Durchreise.

7. Welche Waren sind von Ihrem Haushalt **in den letzten 12 Monaten** in den Niederlanden eingekauft worden, und wo? Können Sie ungefähr den Wert dieser Einkäufe einschätzen? Können Sie angeben, inwieweit diese Einkäufe steuerfrei waren?

a. <u>Waren des täglichen Bedarfs</u>

Durchschnittlich monatlich etwa . . . . DM

darunter: (bitte ankreuzen)	Einkaufsort meistens	Monatl. Warenwert ca.
☐ Lebensmittel	. . . .	. . . . DM
☐ Bier, Wein	. . . .	. . . . DM
☐ Spirituosen	. . . .	. . . . DM
☐ Tabak, Zigaretten	. . . .	. . . . DM
☐ Benzin, Diesel, Autogas	. . . .	. . . . DM

b. Sonstige Waren

Insgesamt in den letzten 12 Monaten etwa .... DM

darunter: (bitte ankreuzen)	Einkaufsort	Warenwert **insgesamt**	davon steuerfrei
☐ Bekleidung	....	.... DM	........%
☐ Schmuck, Uhren	....	.... DM	........%
☐ Fernseher, Video-, Stereogeräte, Radios, Computer, Kameras u.ä.	....	.... DM	........%
☐ Waschmaschinen, Kühlschränke, Kochherde u.ä.	....	.... DM	........%
☐ Möbel	....	.... DM	........%
☐ Pkw	....	.... DM	........%
☐ Kfz-Reparaturen, -Service	....	.... DM	........%
☐ Sonstiges (bitte nennen)			
....	....	.... DM	........%

8. Weshalb haben Sie in den Niederlanden eingekauft (bitte ankreuzen, mehrere Kreuze möglich)?

	billiger	Qualität besser	niederländ. Spezialitäten	angenehmere Einkaufsatmosphäre	Öffnungszeiten günstig	spontaner Einfall
Lebensmittel	☐	☐	☐	☐	☐	☐
Bier, Wein	☐	☐	☐	☐	☐	☐
Spirituosen	☐	☐	☐	☐	☐	☐
Tabak, Zigaretten	☐	☐	☐	☐	☐	☐
Benzin, Diesel usw.	☐	☐	☐	☐	☐	☐
Bekleidung	☐	☐	☐	☐	☐	☐
Schmuck, Uhren	☐	☐	☐	☐	☐	☐
Fernseher usw.	☐	☐	☐	☐	☐	☐
Waschmaschinen usw.	☐	☐	☐	☐	☐	☐
Möbel	☐	☐	☐	☐	☐	☐
Pkw	☐	☐	☐	☐	☐	☐
Kfz-Reparaturen	☐	☐	☐	☐	☐	☐
Sonstiges:						
....	☐	☐	☐	☐	☐	☐

9. Hätten Sie gern mehr gekauft als von den festgelegten Zollfreigrenzen her erlaubt war?

☐ Ja. ☐ Nein.

Wenn ja, welche Waren? . . . .

Nun folgen einige Fragen zum Einkauf in Belgien.

10. Haben Mitglieder Ihres Haushalts **in den letzten 12 Monaten** in Belgien eingekauft?

☐ Nein. (Bitte, fahren Sie mit Frage 11 fort.)

☐ Ja. (Bitte, fahren Sie mit Frage 12 fort.)

11. Wenn Sie nicht in Belgien eingekauft haben, weshalb nicht?

☐ zu teuer
☐ Qualitäten schlechter
☐ Einkaufsatmosphäre weniger angenehm
☐ weiß nicht
☐ Öffnungszeiten ungünstig
☐ Anreise zu weit
☐ keine Gelegenheit

(Sie können die weiteren Fragen überspringen.)

12. Wenn Mitglieder Ihres Haushalts in den letzten 12 Monaten Belgien besucht **und dabei eingekauft** haben, wie häufig taten sie dies?

	1-2mal	3mal und mehr	mind. 1mal monatl.	mind. 1mal wöchentl.	nahezu täglich
1. Person	☐	☐	☐	☐	☐
2. Person	☐	☐	☐	☐	☐
3. Person	☐	☐	☐	☐	☐
4. Person	☐	☐	☐	☐	☐

Weitere Personen:

13. Wenn Haushaltsmitglieder in Belgien eingekauft haben, wie war das dann **meistens**?

☐ Sie sind extra zum Einkaufen über die Grenze gefahren.

☐ Sie fuhren sowieso zur Arbeit oder aus sonstigen beruflichen Gründen über die Grenze.

☐ Sie befanden sich in einem Urlaub, auf Erholungsausflug, auf Privatbesuch oder auf der Durchreise.

14. Welche Waren sind von Ihrem Haushalt in Belgien **in den letzten 12 Monaten** gekauft worden, und wo? Können Sie ungefähr den Wert dieser Einkäufe einschätzen? Können Sie angeben, inwieweit diese Einkäufe steuerfrei waren?

a. Waren des täglichen Bedarfs

Durchschnittlich monatlich etwa .... DM

darunter: (bitte ankreuzen)	Einkaufsort meistens	Monatl. Warenwert ca.
☐ Lebensmittel	....	.... DM
☐ Bier, Wein	....	.... DM
☐ Spirituosen	....	.... DM
☐ Tabak, Zigaretten	....	.... DM
☐ Benzin, Diesel, Autogas	....	.... DM

b. Sonstige Waren

Insgesamt in den letzten 12 Monaten etwa .... DM

darunter: (bitte ankreuzen)	Einkaufsort	Warenwert **insgesamt**	davon steuerfrei
☐ Bekleidung	....	.... DM	........%
☐ Schmuck, Uhren	....	.... DM	........%
☐ Fernseher, Video-, Stereogeräte, Radios, Computer, Kameras u.ä.	....	.... DM	........%
☐ Waschmaschinen, Kühlschränke, Kochherde u.ä.	....	.... DM	........%
☐ Möbel	....	.... DM	........%
☐ Pkw	....	.... DM	........%
☐ Kfz-Reparaturen, -Service	....	.... DM	........%
☐ Sonstiges (bitte nennen)			
....	....	.... DM	........%

15. Weshalb haben Sie in Belgien eingekauft (bitte ankreuzen, mehrere Kreuze möglich)?

	billiger	Qualität besser	belgische Spezialitäten	angenehmere Einkaufsatmosphäre	Öffnungszeiten günstig	spontaner Einfall
Lebensmittel	☐	☐	☐	☐	☐	☐
Bier, Wein	☐	☐	☐	☐	☐	☐
Spirituosen	☐	☐	☐	☐	☐	☐
Tabak, Zigaretten	☐	☐	☐	☐	☐	☐
Benzin, Diesel usw.	☐	☐	☐	☐	☐	☐
Bekleidung	☐	☐	☐	☐	☐	☐
Schmuck, Uhren	☐	☐	☐	☐	☐	☐
Fernseher usw.	☐	☐	☐	☐	☐	☐
Waschmaschinen usw.	☐	☐	☐	☐	☐	☐
Möbel	☐	☐	☐	☐	☐	☐
Pkw	☐	☐	☐	☐	☐	☐
Kfz-Reparaturen	☐	☐	☐	☐	☐	☐
Sonstiges:						
. . . .	☐	☐	☐	☐	☐	☐

16. Hätten Sie gern mehr gekauft als von den festgelegten Zollfreigrenzen her erlaubt war?

☐ Ja. ☐ Nein.

Wenn ja, welche Waren? . . . .

Damit endet unser Fragebogen. Für Ihre Mithilfe bedanken wir uns ganz herzlich!

INSTITUT FÜR WELTWIRTSCHAFT
an der Universität Kiel

Düsternbrooker Weg 120
D-2300 Kiel
September 1992

F R A G E B O G E N

zum Gutachten
PROBLEME DER BESTEUERUNG UND DER BELASTUNG MIT SOZIALVERSICHERUNGSBEITRÄGEN IN GRENZGEBIETEN DER EG

Erläuterungen zum Fragebogen

Die folgenden Fragen beziehen sich ausschließlich auf **Ihr** Unternehmen bzw. **Ihren** Betrieb. Nicht angesprochen sind Ihre französische Muttergesellschaft (bzw. das französische Unternehmen, das an Ihrem Eigen-, Stamm- oder Grundkapital beteiligt ist) und mögliche andere Unternehmen in der Bundesrepublik, an denen Ihr Unternehmen oder Ihre Muttergesellschaft (bzw. Ihr Anteilseigner) beteiligt ist!

Wir versichern Ihnen, daß Ihre Angaben streng vertraulich behandelt werden. Daten, anhand derer auf einzelne Unternehmen geschlossen werden könnte, werden weder an unseren Auftraggeber weitergegeben noch veröffentlicht. Um eventuelle Rückfragen des Instituts zu ermöglichen, bitten wir Sie, die Namen des Unternehmens und des Bearbeiters anzugeben. Diese gehen nicht in die Auswertung des Fragebogens ein.

Falls Sie auf einige Fragen nicht antworten möchten oder können, bitten wir Sie, die übrigen Fragen dennoch zu beantworten!

Für Rückfragen an das Institut steht Ihnen Herr Dipl.Volksw. Eckhardt Bode (Tel.: 0431/8814462) jederzeit gern zur Verfügung.

Eventuelle Rückfragen des Instituts sind zu richten an:

Firma: . . . .

Bearbeiter: . . . .

Telefon: . . . .

A. Allgemeine Fragen zu Ihrem Unternehmen

1. Welcher Industrie- oder Dienstleistungsbranche gehört Ihr Unternehmen an?

   . . . . (Branche)

2. Welchem Zweck dient Ihr Unternehmen vornehmlich? (Mehrfachnennungen möglich)

Einkauf . . . . ☐	Handel . . . . ☐
Vertrieb . . . . ☐	Lagerung . . . . ☐
Produktion . . . . ☐	Verwaltung . . . . ☐
Forschung und Entwicklung . . . . . . ☐	. . . . ☐ (Sonstiger)

3. Wie hoch waren die Umsatzerlöse Ihres Unternehmens im Kalenderjahr 1991 in etwa?

   . . . . DM

4. Wieviele Mitarbeiter beschäftigte Ihr Unternehmen am 31.12.1991 (einschl. Teilzeitbeschäftigte)?

   . . . . Mitarbeiter

5. Wie hoch war der Anteil französischer Staatsbürger an Ihren Mitarbeitern am 31.12.1991?

   . . . . % französische Staatsbürger

6. Seit wann ist Ihr Unternehmen am jetzigen Standort ansässig?

   . . . . (Jahr)

7. Wenn Ihr Unternehmen erst nach seiner Gründung eine französische Kapitalbeteiligung erhielt:
   Seit wann besteht eine solche Beteiligung?

   . . . . (Jahr)

B. Fragen zur Wahl Ihres Unternehmensstandorts

8. Welche der folgenden Faktoren sprachen für, welche eher gegen den jetzigen Standort Ihres Unternehmens, als die Standortentscheidung gefällt wurde?

Faktor	war ein ausschlaggebendes Argument dafür	war ein weniger wichtiges Argument dafür	war eher ein Argument dagegen	war ein schwerwiegendes Argument dagegen	spielte keine Rolle
Körperschaft- oder Einkommensteuerbelastung	☐	☐	☐	☐	☐
Belastung durch kommunale Steuern	☐	☐	☐	☐	☐
Belastung durch sonstige Steuern .... Welche?	☐	☐	☐	☐	☐
....					
Belastung durch Sozialversicherungsbeiträge					
Rentenversicherung	☐	☐	☐	☐	☐
Arbeitslosenversicherung	☐	☐	☐	☐	☐
Krankenversicherung	☐	☐	☐	☐	☐
Belastung durch sonstige Lohnnebenkosten ..	☐	☐	☐	☐	☐
Lohnniveau	☐	☐	☐	☐	☐
Bodenpreise, Mieten oder Pachten	☐	☐	☐	☐	☐
Einkaufspreise für Vorprodukte oder Dienstleistungen	☐	☐	☐	☐	☐
Angebot an staatlicher Regionalförderung ..	☐	☐	☐	☐	☐
Verhalten der kommunalen Behörden	☐	☐	☐	☐	☐
Angebot an geeigneten Arbeitskräften					
– aus der Bundesrepublik	☐	☐	☐	☐	☐
– aus Frankreich	☐	☐	☐	☐	☐
Angebot an Gewerbeflächen	☐	☐	☐	☐	☐
Räumliche Nähe zu bedeutenden Lieferanten oder Anbietern von Dienstleistungen					
– aus der Bundesrepublik	☐	☐	☐	☐	☐
– aus Frankreich	☐	☐	☐	☐	☐
Räumliche Nähe zu bedeutenden Abnehmern					
– aus der Bundesrepublik	☐	☐	☐	☐	☐
– aus Frankreich	☐	☐	☐	☐	☐
Vermeidung von Grenzformalitäten beim Im- oder Export	☐	☐	☐	☐	☐
Räumliche Nähe zu Unternehmen der gleichen Branche	☐	☐	☐	☐	☐
Räumliche Nähe zu wissenschaftlichen Einrichtungen	☐	☐	☐	☐	☐
Infrastrukturausstattung	☐	☐	☐	☐	☐
Sozialer Konsens	☐	☐	☐	☐	☐
Freizeitwert oder kulturelles Angebot	☐	☐	☐	☐	☐
.... (Sonstige Faktoren)	☐	☐	☐	☐	☐
Die Standortentscheidung ist zu lange her; Gründe sind nicht mehr nachvollziehbar ..	☐				

9. Beabsichtigen Sie, als Reaktion auf die Vollendung des EG-Binnenmarkts den Standort Ihres Unternehmens zu verlegen?

   Ja! . . . . ❐

   Ja, wahrscheinlich . . . . ❐

   Nein, wahrscheinlich nicht . . . . ❐

   Nein! . . . . ❐

   Unentschieden . . . . ❐

10. Sofern Sie Frage 9 mit "Ja!" oder "Ja, wahrscheinlich" beantwortet haben:

    a) Wohin werden Sie den Standort Ihres Unternehmens voraussichtlich verlegen?

    . . . .

    b) Bitte erläutern Sie kurz die ausschlaggebenden Gründe für diese Entscheidung oder Erwägung!

Wir danken Ihnen herzlich für Ihre Mühe!

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