

Research Memorandum

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**Agricultural relationships between
Germany and The Netherlands**

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Contents:

1. Introduction	1
1.1 The line of approach	1
1.2 Aim and background of the study	3
1.3 Economic theory: some remarks on comparative advantages	4
2. Developments in bilateral trade	8
2.1 Introduction and outline	8
2.2 Agricultural trade: a global perspective	8
2.3 Dutch agricultural imports from Germany	13
2.4 German agricultural imports from the Netherlands	14
2.5 Trade in research-incorporated inputs	17
2.6 Trade in intermediate products	21
2.7 Summary	23
3. Economic structure and the composition of trade	25
3.1 Introduction	25
3.2 Agricultural history and policy from 1880 until 1990	25
3.3 Primary agricultural sectors	29
3.4 Food, beverage and tobacco industries	41
3.5 The structure of demand	46
3.6 Finally: the size and composition of trade	47
4. Markets: structure and development	51
4.1 Outline	51
4.2 Activities of cooperative organizations	51
4.3 The market for agricultural products	52
4.4 Changes in Dutch imports from Germany: 1986 - 1992	55
4.5 Changes in German imports from the Netherlands: 1986 - 1992	58

Contents:

5. The position of Dutch products on the German market	63
5.1 Aim and background	63
5.2 General outline	65
5.3 Meat and meat products	66
5.4 Cheese and eggs	73
5.5 Vegetables	76
5.6 Flowers and plants	84
5.7 Dutch agricultural exports after 1992	87
5.8 Summary and conclusions	88
6. Summary of past developments and expectations for the next decade	91
References	94
Annex: list of intermediate products	98

Abstract

Linkages between both countries are analyzed through their impact on bilateral trade. It appears that the Dutch bilateral trade surplus has increased from 1986 to 1992.

Government policy, historical developments and the speed of adoption of new technologies have had an important impact on the composition of trade. Mutations in trade flows are to a large extent induced by policy measures, changing consumer tastes and increasing competition from (notably) Eastern European countries. Finally, the German unification has had and will continue to have its impact on trade flows.

In the near future the speed and results of the transition process in East- Germany, the impact of the GATT agreement and the reactions of agricultural suppliers to changes in consumer preferences in a satiated market, seem to set the scene.

1. Introduction

1.1 The line of approach

This paper describes and analyzes agricultural relationships between Germany and the Netherlands. These linkages not only concern the primary agricultural activities, but also food processing, beverage and tobacco industry¹. One way to avoid an endless enumeration of all kind of topics which are, might be or should be of interest is to answer three questions in advance.

First: what is the use of investigating economic relations between *countries*? Geographic regions are not involved in economic activities: consumers and producers are the relevant economic actors (see e.g. Porter (1990)). Nevertheless, there are at least five reasons why it is worthwhile to pay attention to the geographic dimension. The first is the role of national governments. Economic policies, the tax system and all kind of regulations are generally country dependent. Although the in case of agriculture this may be less relevant, as both countries are involved in the Common Agricultural Policy (CAP) of the European Union (EU) differences in national policies still exist. The second reason is that each country has a national currency, the exchange rates of which may fluctuate and hence affect trade flows. The third factor of interest is that national history has had its impact on economic structure and development. For example, in the 16th century a central government already existed in the Netherlands, while in Germany the process of political unification was only completed in the 19th century. Fourthly, natural resources are unevenly distributed across countries, and are exploited by national governments. Other so called Ricardian factors² also play a role: climate, the nature and fertility of the soil, the position with respect to important supply channels (i.c. harbours) or distribution areas and so forth. Finally, there may be national and regional differences in consumer demand. For example, the German per capita consumption of beer (143 litres per year) is almost twice as high as in the Netherlands (88 litres per year). In summary: the role of national governments, the influence of economic and political history and a number of discriminating factors related to natural resources, climate, soil and consumer demand significantly affect the economic performance of companies within the region of interest and therefore make it meaningful to analyze economic relations between countries.

Considering the whole chain of agricultural production from extraction and cultivation of raw materials and primary products to the manufacturing and distribution

¹ Hereafter: FBT industry.

² For a discussion see e.g. Leamer (1992), Minne and Verbruggen (1989) and section 1.3 below.

of final goods the second question reads: "how do interrelations between countries manifest themselves in the various stages of this process?" The primary agricultural sectors (raising crops, livestock activities and horticulture) face the same policy and operate on a common market. Agricultural processing industries are linked through intermediate demand (imports and exports) and are increasingly internationally oriented. Distribution is also no longer a matter of national markets alone: concerns like Ahold (the Netherlands) and Aldi (Germany) realize an important share of their sales on international markets. *Trade* seems to capture most of these developments, and therefore relationships are analyzed from this point of view. So within this study the structure of primary sectors, the performance of the CAP, production technologies and so on are only discussed in relation to trade.

The third question to be addressed is the possible contribution of economic theory. What can generally be said about trade relations between a small and a large country? Unfortunately no integrated theory exists which can be used to analyze all types of trade flows. Several lines of approach co-exist, each with its own arguments and limitations. Nevertheless, it is worthwhile to investigate whether some general guidelines can be formulated to analyze trade flows between countries of different sizes.

What do these considerations imply for the line of approach? We study interrelations between the Dutch and German agricultural sectors in so far as they find expression in bilateral trade. Sometimes the country dimension will not be very informative, mainly in the case of large internationally operating processors and retailers. Since this study is part of a larger project that analyzes the relationships between Germany and the Netherlands section 1.2 discusses the aim and background of this more general study. In section 1.3 we briefly discuss the relevant economic theory. The size and composition of, and changes in trade flows are described and analyzed (chapter 2), taking into account the theoretical insights and country specific factors as discussed above. In chapter 3 we focus on historical and policy issues, which have their impact on the composition of trade flows. In chapter 4 we analyze changes in bilateral trade patterns. We focus on the Dutch position on the German import market in more detail in chapter 5, because recently there has been a lot of discussion about the international market position of the Dutch agribusiness. Market saturation, increased competition and more exacting consumers are supposed to be the sources of deterioration (see e.g. Ministry of Agriculture (1994)). Finally in chapter 6 we make some remarks on possible developments in the near future.

Before turning to these points, two technical notes should be made. First, in the analytical sections we will distinct primary from processing sectors. The reasons are threefold: (i) the CAP is mainly effective for primary products (cereals, sugar beet, milk, bovine meat); (ii) typically Ricardian factors like climate and soil fertility are generally more important in primary production than in processing or distribution; and (iii) the linkage between national primary agriculture and manufacturing industries is not

straightforward: a lot of raw materials are imported. The second technical note is that a meaningful comparison between both countries is hampered as since the German unification in 1990 a lot of things have changed and a number of these transformations have not yet been included in statistical publications. Therefore in a number of cases we are only able to compare the Netherlands with West-Germany. Another point to note is that the transition process in East-Germany has yet not come to an end. Therefore, if there are reasons to believe that the situation has changed or will change due to the inclusion of and developments in the former GDR we indicate to what extent our observations or conclusions should probably be modified.

1.2 Aim and background of the study

In July 1993 the CPB initiated a comparative study between Germany and the Netherlands. The strong mutual relatedness between both economies (e.g. in the monetary field and with respect to trade) and the vital importance of Germany for Dutch economic performance have motivated a close examination of the bilateral relationship. This project fits within the long term strategy of the Bureau, which aims at underlining the international comparative aspects in its research activities. Through longer term structural analyses more emphasis should be put on the economic implications of institutions and institutional arrangements.

The paramount goal of the study is to gain insight in the strengths and weaknesses of the German and Dutch economy. Therefore economic relations between both countries are analyzed from a wide perspective to see where these countries stand relative to each other and to possibly point out necessary (policy) adjustments to enhance future competitiveness.

Although production factors like natural resources, human and business capital and physical infrastructure have their impact on economic performance, these are not the only things that matter. The institutional framework (e.g. the location of agricultural production at family farms) is also of crucial importance as it influences both the utilisation and the creation of the production factors. Therefore the study not only contains descriptive elements, but is also endeavoured to go beyond mere observations through sketching backgrounds and interrelations.

Within this framework the importance of agricultural interrelations mainly lays in the bilateral trade. Therefore we may formulate the aim of our study more precisely as the analysis of trade in agricultural commodities between Germany and the Netherlands in relation to institutional settings in both countries. Before proceeding, it is reasonable to discuss possible guidelines from economic trade theory.

1.3 Economic theory: some remarks on comparative advantages

It is not the intention of this section to discuss or even summarize all relevant theories but merely to gain some insight in the dominant factors that govern sizes and directions of trade flows, especially those linked to structural differences between countries. Detailed discussions can be found in Jones and Keenen (1984), Krugman and Helpman (1988) and Leamer (1992).

Ricardo (see e.g. Leamer (op. cit.) and Kol and Mennes (1989)) already stressed that trade flows result from comparative advantages. The word 'comparative' indicates that relative, rather than absolute profitability determines the direction of trade. These advantages may be linked to a favourable geographic position, the availability of natural resources, but also to high skilled labour force. It is generally more efficient to allocate existing resources to activities for which comparative advantages exist, export the surplus and import other commodities than to use all production factors to primarily meet one's own national demand. Five sources of comparative advantage can be distinguished (Leamer (op. cit.)): (i) differences in technology, (ii) differences in factor supplies, (iii) economies of scale, (iv) differences in tastes and (v) barriers to trade.

In the view of Ricardo the unequal distribution of immobile production factors across countries leads to one country having a superior technology relative to others, which finds expression in trade between nations. This direct link between, say, natural resources and a superior production technique was increasingly seen as unsatisfactory. Germany does not import tomatoes from the Netherlands because the cultivation is a mystery to the Germans, nor do the Dutch import German automobiles because the required technological knowledge is unavailable to them.

Therefore in the well known Heckscher–Ohlin–Samuelson (HOS) model one of the assumptions is that in the absence of technological discrepancies and market imperfections the unequal distribution of production factors across countries itself is the cause of comparative advantages. A result of their approach is that relative factor availability determines trade: goods produced with the relative scarce factor are imported, and commodities, manufactured using the relatively abundant factor are exported. A major assumption of this model is that production factors are internationally untradeable. Why is this restriction imposed?

According to the standard neoclassical production theory permanent price differences between similar products cannot exist. When, say, a certain product is cheaper in the Netherlands than in Germany, trade will occur. The German demand for Dutch products will increase, and so will import prices. German producers, on the other hand, will cut their (domestic) prices to maintain the level of sales. This adjustment process continues until the price difference for the German consumer is reduced to zero. Of course, this

is possible because both production technologies and factor availabilities are the same in both countries.

Therefore in the HOS model the common assumption is that production factors are internationally immobile³. To manufacture a particular commodity, one needs a combination of (skilled) labour and capital goods and these factors are country specific. This is a sufficient condition to maintain price differences.

Is this international factor immobility a reasonable assumption when one wants to explain the trade in agricultural products? Important production factors like land and the climate are clearly internationally untradeable. These two resources are decisive in the selection of the most suitable agricultural activities. They both determine the variety of products that can be cultivated as well as physical yields per hectare. Of course, the size of the total land base also determines the quantity that can be produced. As a large share of primary products is cultivated at family farms, and most farmers own their holdings, agricultural labour is also rather immobile (see also 3.2).

On the other hand, this immobility assumption does certainly not hold for *all* production factors within agriculture or other sectors. Therefore the modern theory of international trade relaxes some of the principles of the neoclassical methodology. One of these concerns the well-known result that in a model with decreasing returns to capital (endogenous) growth in consumption per capita dissipates in the long run. This implies that models, which incorporate investment only in capital equipment seem ill-suited for analysis of long-run growth (Grossman and Helpman(1990)): the improvement in the capital to labour ratio accounts for considerably less than half of the last century's growth in per capita income. Therefore, the accumulation of *knowledge* should also be accounted for. In this view, trade is not induced by unequal distribution of immobile production factors, but by diverging efforts in Research and Development (R&D) activities to create new products. The argument is that R&D activities increase the variety of intermediate products and through this induce an improvement of factor productivity in the production of final goods. An example is the impact of the invention of the micro-chip on the supply of consumer electronics. Due to differences at the level of individual firms in the accumulation and application of knowledge, economies of scale or (temporary) increasing returns to capital may be realized (Grossman and Helpman(op. cit.)).

So far we have discussed three sources of comparative advantage out of the five listed at the beginning of this section: technology (Ricardo, but also Grossman and Helpman), factor supplies (HOS-model) and economies of scale (modern trade theories). All these sources of comparative advantage are supposed to be linked to the

³ Leamer (op. cit.), page 13.

supply side of the market. We now shortly turn to the impact of differences in demand and trade policies.

In case of the demand for agricultural products some typical features are of interest. Because the income elasticity of food demand is low, especially when quantities are expressed in calories, the corresponding share in total consumer expenditures steadily declines when income improves. So in the long run demand will not rise much faster than population⁴. However, shifts in consumer (and animal feed) demand actually occur. Butter is increasingly replaced by margarine, while the consumption of bovine meat declines in favour of pork and poultry meat. The sales of beer and wine have to cope with market satiation, and the repercussions of smoking on human health depress the demand for tobacco products and stimulate the sales of sugar confectionary. The general rule seems to be that in a satiated market demand can only be maintained when a large number of (marginally) different products is continuously introduced and renewed. A second aspect is that for a number of products, just like in the case of automobiles, there is a strong competition between similar products of different brands. In the view of producers, consumers should continue to buy their favourite brand of coffee, cigarettes, beer, wine, chocolate and so on. In a market where both producers and retailers are increasingly internationally operating, market penetration therefore mainly occurs through the acquisition of existing brands and expenditures on advertising and 'image building' are thought to be much more important than those related to R&D activities (see also section 4.3).

Finally, the impact of economic policy on the creation and reduction of comparative advantages should be stressed. At the very beginning of the CAP the Rome Treaty (1958) explicitly stated in article 38 that one of the purposes of a (future) Common Agricultural Policy should be the improvement of agricultural productivity through the stimulation of technological development, an efficient allocation of production factors (notably labour), stable prices and 'reasonable' farm incomes. This has led to a number of protective measures at the EU border and, together with productivity stimulating policies, to a significant increase of the intra-EU trade and an improvement of degree of self-sufficiency. Through this the CAP has affected the structure of agricultural production. For example, wheat production has significantly improved, while the introduction of a milk quota in 1984 has shifted production from dairy toward cattle and sheep. On the other hand, cheap feed imports from the USA and Thailand has changed the composition of animal diets. We will discuss these developments in more detail later on.

⁴ An increase of per capita income in developing countries will have a larger impact on food demand (see also Fischer et al. (1991)).

Do these considerations permit conclusions about the impact of country dimensions on the direction and size of trade? In the HOS model the size of the country is not relevant: it is the relative availability of production factors that matters. In the Ricardian view small countries may be in a less favourable position, as *in general* they will have less natural resources and hence a comparative advantage for only a limited number of products. One of the issues the modern trade theory stresses is the importance of economies of scale and the role of R&D activities. Both improve the market power of a firm and its capacity to rapidly adopt new technologies. Although no definite conclusions can be drawn with respect to the implication of the country size, small countries *may be* in a backward position due to lower spending on R&D activities and less firms operating at a sufficiently large scale. One of the results may be that small countries tend to specialize in low-tech bulk products. In that case they will have to compete with low-wage countries which offer the same products at a lower price⁵. Of course, an underlying assumption is that small countries are less attractive locations for large, innovative enterprises.

It should be stressed again that these are only general tendencies regarding the 'average' small and large countries. Nevertheless, it is useful to investigate whether actual trade between Germany and the Netherlands bears out these assumptions.

⁵ A more detailed discussion of this so called 'small country squeeze' can be found in Veraart (1992).

2. Developments in bilateral trade

2.1 Introduction and outline

Agricultural trade relations between both countries are considered, first from an international perspective (2.2). Here the expression 'agricultural trade' indicates total trade in products of agricultural origin, whether processed or not. Then changes in size and composition are discussed over the period 1986 – 1992. In this chapter the emphasis is on the description, rather than the analysis of trade flows.

Trade data can be based on exports or imports. This does make a difference, not only due to a distinct valuation (f.o.b. versus c.i.f.) but also due to differences in the way of registration. As our main purpose is to analyze the position of both countries on each others import markets, only data on imports have been used. It should be noted that the so called transit trade is not covered by the data.

Information about the Dutch imports from Germany (2.3) and German imports from the Netherlands (2.4) is obtained from OECD. Although the figures permit publication at 5 digit SITC⁶ level they have been aggregated to a 2 digit classification. German figures for 1992 relate to the unified country, whereas 1986 data are for West-Germany only. In sections 2.5 and 2.6 we try to estimate the trade in products that incorporate advanced technologies (2.5) and the size of intra-industrial trade flows (2.6). Some conclusions follow in section 2.7.

2.2 Agricultural trade: a global perspective

What is the importance of both countries for global trade in agricultural products? To answer this question, table 1 gives an overview of the ten major agricultural exporters.

The ten countries together account for about 56% of world agricultural exports. Note that these include forest products as well, which are significant for e.g. Canada.

⁶ Standard International Trade Classification, revision 2 (1986) and 3 (1992).

Table 1 Value of agricultural exports (billion US\$), share in total agricultural world trade and share in total world acreage, percentages, in 1991 for selected countries

Country	Export value	Net export value	Share in world acreage ^a
	billion US \$	billion US \$	%
1. USA	60.5	12.9	6.29
2. France	37.2	4.9	0.52
3. The Netherlands	34.8	11.7	0.03
4. Canada	29.8	19.9	5.01
5. Germany	24.2	-22.8	0.32
6. United Kingdom	16.2	-18.3	0.23
7. China	15.1	0.8	8.27
8. Belgium/Luxembourg	15.0	-2.5	0.03
9. Italy	14.1	-19.8	0.27
10. Denmark	11.2	5.1	0.04
Total 1 - 10	251.9	18.3	21.01

^a Arable land, permanent crops, permanent pasture, forest and woodland

Computed from: FAO (1993), Trade Yearbook 1992 and FAO (1993), Production Yearbook 1992.

Germany and the Netherlands are both important exporters of agricultural products. The position of the Netherlands is remarkable: not only total exports, but also net exports are high, while its relative cultivated area is almost negligible. On the other hand, Germany, despite its 5th position among the major exporters, is a large net importer of agricultural products. Another remarkable fact is that seven out of the ten countries listed in the table are members of the EU. This is a typical feature of the EU: member countries highly benefit from the Common Market, but flows within the EU are still registered as trade⁷.

Finally, from the table it can be computed that imports of the Netherlands are also relatively large: about half as large those of Germany or the USA. This indicates that the Dutch FBT industry is strongly internationally oriented: the domestic market is small, but imports and exports are substantial (see also 2.4).

⁷ The net agricultural imports of the EU-12 amount to 39696 million US\$ in 1991

Having investigated the sizes, we now focus on origins and destinations of the trade flows. Table 2 below summarizes the geographic decomposition of German and Dutch trade.

From all EU member states, Germany turns out to be the major supplier of the Netherlands (third column) and vice versa (first column). As to exports, the situation is somewhat more complex. It is quite clear that Germany is by far the most important destination of the Dutch export (last column). On the other hand, apart from the Netherlands, Italy and France are also main destinations of German trade. To a large extent this seems to be a matter of distance : exports to direct neighbours within the Common market are dominant. The size of the markets also matters: trade with small countries is less important than exports to large nations.

Table 2 Agricultural imports and exports of Germany and the Netherlands by origin and destination, shares, percentage, in 1991

Origin/destination	Germany		the Netherlands	
	Imports	Exports	Imports	Exports
	%	%	%	%
Belgium/Luxembourg	5.0	8.1	14.5	10.2
Denmark	4.8	3.7	2.1	1.5
France	12.0	12.6	13.7	12.3
Germany			17.6	30.6
Greece	1.1	2.3	0.7	2.4
Ireland	1.4	0.2	2.2	0.7
Italy	7.8	16.9	2.6	10.2
The Netherlands	20.8	14.9		
Portugal	0.1	0.7	4.2	0.6
Spain	3.3	1.6	2.7	2.3
United Kingdom	2.0	6.7	6.5	9.3
EU- 12	58.1	67.9	63.2	79.9
Other countries	41.9	32.1	36.8	20.1

Computed from: LEI/CBS (1993), Agricultural Statistics and FAO (1993), Trade Yearbook 1992.

Before investigating the direct trade flows we shortly discuss the composition of the agricultural exports of both countries. The commodity list has been based upon the

SITC, and follows the 2 digit aggregation level. Table 3 shows the results, which were obtained from data supplied by the Dutch CBS, LEI-DLO and OECD.

Table 3 Agricultural exports of Germany and the Netherlands in 1991, values million US\$ and shares, percentage

	Germany		the Netherlands	
	Value	Share	Value	Share
	million US\$	%	million US\$	%
00 Live animals	799	3.3	832	2.4
01 Meat and meat products	3073	12.7	5153	14.8
02 Dairy products and birds eggs	4182	17.3	4357	12.5
03 Fish products	770	3.2	1321	3.8
04 Cereals and cereal products	2307	9.5	1009	2.9
05 Vegetables and fruit	1682	7.0	5735	16.5
06 Sugar and honey	421	1.7	715	2.1
07 Coffee, tea, cocoa, spices	1278	5.3	1309	3.8
08 Animal feed	1241	5.1	1471	4.2
09 Miscellaneous edible products	394	1.6	1249	3.6
11 Beverages	1345	5.6	1147	3.3
12 Tobacco and tobacco manufactures	803	3.3	2024	5.8
29 Crude animal and vegetal materials, n.e.s.	875	3.6	4595	13.2
Other products	5006	20.7	3935	11.3
Total exports	24176	100.0	34792	100.0

Source: CBS/LEI, Agricultural Statistics (groups 00,01, 02,04,05,11,22,29,4) and OECD, Foreign Trade by Commodities.

Total trade is consistent with the FAO data, although some differences with other sources used are included in the item 'other commodities'⁸.

⁸ These discrepancies may arise from fluctuations in exchange rates, as FAO and OECD data are expressed in US\$, but others in ecu. Published values in ecu, obtained by CBS/LEI from national currency figures and an average ecu exchange rate, are again transferred to US\$ applying an average ecu-\$ exchange rate.

An important share (33.3%) of the German exports consists of livestock and related products (group 00, 01, and 02). Other important commodities are cereals and cereal products and beverages. The major items within the group 'other' are wood and fats and oils.

In the Dutch exports the share of livestock products is also large, but the main products are vegetables and fruits and flowers and plants (included in group 29). The importance of tobacco and tobacco products stands out, and the same holds for the export of beverages, in which the share of beer is almost 50%.

Although these figures throw some light on the distribution of imports and exports, they do not give information on bilateral trade flows. To indicate the importance of trade in agricultural products, table 4 not only supplies the bilateral agricultural trade balance but also the aggregate one. In addition, the situations in 1986 and 1992 are compared.

The figures also indicate an increase in both absolute and relative sizes of trade: the share of bilateral in total trade increases for all items. In 1992 about 25% of the German agricultural trade deficit is due to trade with the Netherlands. In the opposite case, this share is even 60%. Therefore it is worthwhile to examine trade flows in more detail. Anyhow, the statement that the bilateral trade balance of a small and a large country will generally indicate a deficit of the first and a surplus of the second does not hold in this case.

Table 4 Agricultural trade balances in 1986 and 1992 (billion US\$)

	1986 ^a			1992		
	Imports	Exports	Balance	Imports	Exports	Balance
Total:						
Germany	28.2	13.9	-14.3	59.7	31.6	-28.0
The Netherlands	13.3	20.0	6.7	25.7	37.6	11.9
Bilateral:						
West-Germany	5.8	1.7	-4.1	10.8	3.7	-7.1
The Netherlands	1.7	5.8	4.1	3.7	10.8	7.1

^a In 1986: West-Germany.

Source: Commission of the EC, the Agricultural Situation in the Community, 1989, 1992.

CBS/LEI: Landbouwcijfers (1988).

FAO(1993), Trade Yearbook 1992.

2.3 Dutch agricultural imports from Germany

Data, as supplied by the OECD at SITC3 5 digit level, contain both volumes and values. As noted earlier, for ease of survey they have been aggregated to a 2 digit classification. Table 5 summarizes import values in 1992 and shares of imports from Germany in total imports by product.

Table 5 Dutch agricultural imports from Germany: 1992 values (million US\$) and shares in Dutch import per product group, 1986 and 1992

SITC	Description	Value 1992	Share in Dutch import in 1986 ^a	Share in Dutch import in 1992
		million US\$	%	%
00	Live animals	204	35	36
01	Meat and meat preparations	167	14	15
02	Dairy products and birds eggs	950	21	26
03	Fish, crustaceans, etc.	131	16	17
04	Cereals and cereal preparations	389	13	21
05	Vegetables and fruits	332	11	9
07	Coffee, tea, cocoa, spices	190	11	14
08	Feeding stuff for animals	334	13	25
11	Beverages	114	9	10
12	Tobacco and tobacco manufactures	124	6	14
29	Crude animal and vegetal materials. N.E.S.	110	11	12
4	Animal and vegetal oils and fats	214	39	35
	Miscellaneous products ^b	449	11	11
	Total imports from Germany	3708	14	17

^a West-Germany.

^b Sum of: 06 (sugar and sugar products), 09 (misc. edible products), 21 (hides, skins, furskin), 22 (oilseeds and oleag. fruits), 231 (natural rubber) and 24 (cork and wood).

Source: OECD, International Trade Statistics.

LEI-DLO (1987).

Dairy products and birds eggs turn out to be the major commodity group. Other products of interest are cereals and cereal preparations, vegetables and fruits and animal feed. The

average share of Germany on the Dutch import market slightly increased from 14% in 1986 to 16.8% in 1992. This is the result of a rise in import shares of the 3 main product groups 02, 04 and 08 (7% on average), and an average decline of -0.6% with respect to the remaining commodities. The latter can be attributed to German exports of vegetables and fruits (05) and oils and fats (4).

Although a 2 digit classification is rather detailed, it may be interesting to examine what kind of products dominate trade within a group. A close investigation of the original 5 digit data shows that imports of dairy products and birds eggs (group 02) mainly consist of milk and cream (75%). This high share is partly caused by Dutch dairy cooperatives, which import milk from Germany and Belgium to compensate for the fall in Dutch supply due to the (reduction of) milk quotas. The main items in group 04 turn out to be cereals, rather than cereal products. Also, nonconsumable potatoes heavily dominate the imports of vegetables and fruits. Both products are used in the processing industry (respectively cereals and starch manufacturing). The import of feeding stuff for animals consists of byproducts of the processing industry: wheat and wheat manufactures and cakes of oilseeds. That is to say, these products are used by the Dutch primary agricultural sector.

2.4 German agricultural imports from the Netherlands

Table 6 gives an overview of the relevant imports. The classification is almost identical to the one of table 5. It is remarkable that almost all items show larger amounts than the corresponding Dutch imports. We restrict the discussion to five main products.

The first group contains *meat and meat preparations (01)*. Despite an average yearly increase of 9.5% from 1986 to 1992 in the value of the Dutch exports to Germany, the value share in total German imports of this commodity group declined from 37.0% to 29.5%. This is the result of a fall in the relative imports of pork and poultry meat. Shares of other meat products (mainly bovine and sheep) were rather stable. The spectacular rise of the value of imports from third countries, notably Brazil and Thailand (poultry meat) stands out: in 1986 this was slightly more than 8 million US\$ but in 1992 it was almost 120 million US\$.

Table 6 German agricultural imports from the Netherlands in 1992: values (million US\$) and shares in German import value per product group, 1986 and 1992

SITC	Description	Value	Share in German import value in 1986	Share in German import value in 1992
		million US\$	%	%
00	Live animals	369	57	52
01	Meat and meat preparations	1898	37	30
02	Dairy products and birds eggs	1692	48	45
03	Fish, crustaceans, etc.	218	11	11
04	Cereals and cereal preparations	280	9	12
05	Vegetables and fruits	2239	18	18
06	Sugar, sugar prep. and honey	219	19	24
07	Coffee, tea, cocoa, spices ^b	400	32	32
08	Feeding stuff for animals	525	20	26
09	Miscellaneous edible products	214	28	16
11	Beverages	142	7	5
12	Tobacco and tobacco manufactures	110	14	9
29	Crude animal and vegetal materials, n.e.s	1999	48	55
	Miscellaneous products ^c	364	4	10
	Total imports from the Netherlands	10669	22	24

^a West-Germany.

^b Excluding coffee, not roasted (0711-) and cocoa beans (0721-).

^c Includes: 21 (hides etc.), 22 (oilseeds and oleag. products), 231 (natural rubber), 24 (cork and wood) and 4 (animal and vegetal oils and fats).

Source: OECD

The import share of *dairy products and birds eggs (02)* slightly declined from 48.4% in 1986 to 45.1% in 1992. As distinct from the imports, the Dutch exports mainly contain eggs and processed products: butter, and, to a large extent, cheese. Losses for cheese and eggs were modest, but the relative import of butter sharply declined in favour of Ireland.

Table 7 illustrates how value shares on the German import market have changed during the period 1986–1992.

Table 7 Absolute differences in the value of import shares over the period 1986–1992 of some competing importers of dairy products on the German market

	Milk and cream	Butter	Cheese	Eggs
	%	%	%	%
Netherlands	-5.5	-15.0	-3.8	-2.8
Belgium/Luxembourg	6.0	1.3	1.8	-0.3
Denmark	5.0	-4.0	1.1	1.6
France	-2.9	-0.2	-0.6	2.3
Ireland	1.1	14.3	-0.4	x
Spain	1.7	x	0.1	x
United Kingdom	-11.0	2.3	0.5	-0.1
Italy	1.9	1.1	2.2	0.5
Other countries	4.0	0.2	-0.9	-1.2

x: no trade.

All Dutch value shares turn out to have fallen, in favour of Belgium/Luxembourg (milk, butter, cheese), Denmark (milk and eggs), Ireland and the United Kingdom (butter), and France (eggs). Data on imported volumes indicate that related import shares of cheese could be maintained, but obviously at the expense of a price decrease only. Changes in imports of other dairy products are linked to supply (restrictions) and CAP regulations rather than to, say, increased competition. The Dutch egg production slightly declines, and, as human consumption is rather stable, exports also fall. The impact of changes in the intervention regulation for butter is more important. In 1986, mainly Irish and British producers supplied part of their butter to Dutch intervention agencies, because they could take advantage of fluctuations in exchange rates. After a period of storage, this butter was exported by the Netherlands to, say, Germany. Nowadays producers are bound to sell their products to intervention bureaus in their own country, and consequently, these countries now directly export to Germany, rather than via the Netherlands.

From table 6 it follows that the developments within the group *vegetables and fruits (05)* diverge. The export can be subdivided into potatoes (5%), tomatoes (14%), other fresh vegetables (43%), prepared vegetables (27%) and fruit (11%). Generally exports expanded due to the favourable price development of this group relative to total German agricultural imports. Nevertheless the Dutch value share in total imports dropped from 18.2% to 17.3% in 1991, but rose again to 17.9% in 1992. This is the result of two positive developments. In the first place: the volume share of processed vegetables improved from 29% to 38% despite the small rise in prices relative to those of competing importers. Secondly, exports of potatoes in 1992 regained after a period of decline (until 1991). On the other hand, the exports of tomatoes have suffered from increased (price-)competition (Belgium, Spain, Morocco, France, Italy) and a shift in demand.

The share in the imports of *feeding stuff for animals (08)* grew, mainly due to an expanding demand and a relative favourable development of the Dutch export price. In section 3.4. we will see that a large share of this animal feed consists of so called cereals substitutes, which are imported via Rotterdam and re-exported to other countries, a.o. Germany. However, due to the sharp price cut of cereals under the MacSharry reform of the CAP, the rise in the use of cereals in animal feeding will continue in the near future and therefore both the Dutch imports and exports of cereals substitutes are likely to decline. Finally, imports from the Netherlands of *crude animal and vegetal materials (29)*, mainly consisting of plants and cut flowers, raised from 45 to 50%. The demand for this type of products shoot up relatively sharply and price developments were general in favour of Dutch exporters.

The overall result is that the share of the Netherlands in the value of agricultural imports of Germany has risen slightly from 21.6% in 1986 and 22.7% in 1991 to its 1992 value of 23.5%. The exports of traditional livestock products is somewhat falling behind, but the 1990 unification has induced an additional demand for vegetables. The rise in flower and plants exports has not yet come to an end.

2.5 Trade in research-incorporated inputs

The modern theory of economic trade stresses the importance of R&D activities in the creation and maintenance of comparative advantages. Therefore, one possibly would expect that the major, internationally operating firms tend to be located in the larger countries where also the total R&D budget of the government will be higher and that in general small countries are in a backward position. In this case these nations mainly have access to new technologies through imports, and they tend to specialize in goods which require far less research activities. The larger countries, on the other hand, will

show an export surplus of high tech products. The question is, of course: does the trade of the two countries of interest confirm these expectations?

To answer this question one should first realize that this requires the inspection of total trade flows of both countries: a narrowing down to bilateral flows may lead to misleading conclusions. Secondly, the usual classification of products into low-tech, medium-tech and high-tech (OECD(1986))⁹ can, notably in cases of detailed commodity groups, not be made objectively (see e.g. Van der Meer et al (1991)). Research activities are generally not directly linked to specific sectors or product groups and therefore the allocation of common activities to individual products may be rather arbitrary. Moreover, the time lag between R&D activities and their application into new products or technologies severs the connection between R&D outlays and sales *in the same period*. As even at an aggregate level this may be a serious problem, in a more detailed classification this time lag surely complicates the analysis.

Therefore, rather than trying to directly allocate R&D expenditures to individual products we apply an indirect method proposed by Van der Meer et al. (op. cit.). Their point of departure is that new technologies are incorporated in inputs, like machinery, pesticides, fertilizers, high yielding seed and animals, and the like. Therefore we do not compare R&D expenditures by product, but consider net trade in inputs, the development of which requires relatively large R&D expenditures. A net export indicates the importance of research activities for this type of inputs. Indeed, this is a rather indirect indicator of R&D activities and it requires a selection of suitable inputs, which is sometimes arbitrary or governed by data availability. Table 8 summarizes net trade for both countries in 1991.

The enumeration is necessarily incomplete as e.g. veterinary medicaments or climate regulating and controlling instruments (including software) for horticultural uses are not included, as they are not registered separately¹⁰. It appears that Germany is a net importer of almost all types of inputs. The Netherlands, on the other hand, is a major net exporter of high-tech vegetal inputs and a large net importer of agricultural machinery (much more than Germany¹¹).

⁹ The criterion is the ratio of total R&D expenditures to total sales. Products for which this exceeds 4.5% are characterized as high-tech. When this ratio falls below 1%, goods are qualified as low-tech.

¹⁰ They are part of the groups 542-- (medicaments) and 8746- (automatic regulating or controlling instruments). Similarly, seed of cereals, and pure bred breeding sheep, goat and horses are excluded. As seed-potatoes are an important export product of the Netherlands, the LEI-DLO data are used to estimate their share in the total group 0541.

¹¹ The ratio of exports over imports equals 0.38 for Germany and 0.16 for the Netherlands.

Keeping this general picture in mind it may be worthwhile to investigate the bilateral trade flows. Two measures are tabled below: the first and second column show the Dutch and German imports and trade balance of the relevant input, and the last the relative contribution to the total trade surplus or deficit.

Table 8 Net trade in high-tech inputs for agricultural use in 1991

SITC code	Description	German net export	Dutch net export
		million US\$	million US\$
00111	Pure bred breeding bovines	-6	-85
00131	Pure bred breeding pigs	-1	0
29194	Bovine semen	-2	4
2925-	Seeds, fruits etc. for sowing	10	467
29261	Bulbs, tubers, rhizomes, etc	-84	622
29269	Other live plants, cutting and slips	-621	1205
	Total animal and vegetal inputs	-704	2213
56---/272--	Fertilizers (incl. crude)	-779	84
5911-/5913-	Insecticides and similar products	-249	-508
	Total fertilizers and pesticides	-1028	-424
721--/722--	Agricultural machinery and tractors	-803	-2554
727--	Food processing machines	-220	472
	Total machinery	-1023	-2082
	Total trade in inputs	-2755	-293

Computed from OECD, Foreign Trade by Commodities and LEI-DLO (1992).

The figures indicate a German trade deficit for nearly all inputs. About 35% of the total German shortage (table 8) originates from trade with the Netherlands. Although for the latter country a small deficit in world trade exists, the bilateral trade balance indicates a substantial surplus. What are the reasons?

The bilateral net trade in animal and vegetal inputs is in line with total net trade. The same holds for food processing machines: a German deficit and a Dutch surplus¹². Therefore the main differences between tables 8 and 9 can be attributed to trade in (i) agricultural machinery and (ii) fertilizers and pesticides. This is a matter of logic, as the total input balance in table 8 indicates a deficit for both countries.

¹² At first sight this is remarkable, as Germany is highly specialized in machinery production. Obviously it is more profitable for German industry to expand production and exports of existing equipment than trying to meet the rather specialized demand of the food processing industry. In the Netherlands the situation is in some sense the opposite: the FBT industry is relatively more important, it plays a major role in agricultural (and hence: total) exports. This creates opportunities for supplying industries.

Table 9 Bilateral net trade in high-tech inputs and relative contributions of products to the total deficit or surplus in percentages, 1991

Input	German imports from the Netherlands	Dutch imports from Germany	Balance ^a (absolute)	Balance (%)
	million US\$	million US\$	million US\$	%
Pure bred breeding bovines	1	0	1	0
Pure bred breeding pigs	0	0	0	0
Bovine semen	0	0	-0	-0
Seeds, fruits etc for sowing	43	18	25	3
Bulbs, tubers, rhizomes, etc	111	1	109	11
Other live plants, cutting and slips	<u>537</u>	<u>51</u>	<u>486</u>	<u>50</u>
Total animal and vegetal inputs	692	70	622	65
Fertilizers	259	17	242	25
Pesticides	<u>2</u>	<u>28</u>	<u>-27</u>	<u>-3</u>
Total fertilizers and pesticides	261	46	215	22
Agricultural machinery, tractors	137	178	-41	-4
Food processing machines	<u>237</u>	<u>68</u>	<u>169</u>	<u>18</u>
Total machinery	374	246	128	13
Total trade in high-tech inputs	1327	363	965	100

^a This equals the net import of Germany from the Netherlands.

Computed from OECD, Foreign Trade by Commodities, and LEI-DLO (1992).

Although the Dutch agricultural machinery industry operates on a small scale, it offers a complete range of tools for a wide variety of applications, of which 70% is exported. About 28% of these exports are imported by Germany and this may be the reason why the Dutch deficit in table 9 is small (41 million US\$).

As to the second group, it appears bilateral trade in pesticides is not very important: about 6% of the Dutch import originates from Germany and in the opposite case this is only 0.5%. For fertilizers the situation is different. Although the imports of both countries are about 890 million US\$, Dutch exports are more than nine times as high as the German foreign sales. Furthermore, about 27% of the Dutch export is disposed off

in Germany, while the German import share is only 2%. Therefore excess in bilateral trade is larger than the total Dutch surplus for fertilizers.

So we may conclude that the general assessment of the modern trade theory that small countries will be more dependent on imported technology does not hold in this case. Why? Mainly because the composition of Dutch exports is biased toward agricultural products. This is not a matter of specialization in R&D extensive products, what would be suggested by economic theory. Apart from historical developments (see section 3.2), soil fertility and favourable weather conditions (3.6) the major reason is that agricultural research is a common activity. Both the organisation (mainly through government institutions) and the rapid adoption of new technologies by individual farms play a role (see sections 3.2 and 3.3 below). Finally, recall that we have limited the analysis to a *selection* of products of *agricultural* origin. Conclusions, based on total trade may be different¹³.

2.6 Trade in intermediate products

The German primary agricultural and processing sectors are linked to the Dutch farms and FBT industries through international intermediate deliveries. This is not a remarkable fact as such, as farmers in both countries envisage the same CAP, operate on a common market and FBT industries are increasingly internationally operating. The latter also finds expression in the location of different stages in the processing chain in more than one country. In this subsection we do not treat this so called inter-industry trade separately, but concentrate on the composition of total intermediate deliveries.

Although in statistical publications (for example: IO-tables) usually the primary and processing sectors are treated separately, these data sources do not supply very detailed information about the composition of intermediate input: at best intermediate demand by (sub)sector is split into domestic demand and imports. Therefore, to obtain some insight at product level, it would be better to use the same OECD trade figures as in previous sections.

The isolation of intermediate from total trade is not straightforward. For each commodity we have to decide whether an imported commodity is used in the primary or processing sectors or whether its use is only final. Even a classification on SITC 5 digit level is not always decisive. In case of vegetables and fruits (group 05) hardly any information is available about the different uses of trade. For example, the group 05410 (potatoes) contains seed-potatoes (see section 2.5), consumable and nonconsumable

¹³ In this case, however, the classification of commodities into low, medium and high tech may be even more cumbersome. See e.g. Minne and Verbruggen (1989) and CPB(1994).

potatoes. The first and third group are intermediate deliveries, the second is not. In the case of an important commodity like meat and meat products it is hardly possible to decide whether an import is intermediate (a delivery from the processing industry to foreign retailers) or final. Inspection of IO-tables for both countries indicates that final consumption of all products of the FBT industry by far exceeds intermediate deliveries to, say, processing retailers. Therefore we consider meat imports to be final consumption. Since the allocation of trade to primary agriculture, processing and consumption is in some cases arbitrary results should be interpreted with care. A list of all commodities classified as intermediate is given in the annex. Table 10 summarizes bilateral intermediate trade in 1992.

From tables 4, 5 and 10 it follows that 15% of German imports from the Netherlands and roughly 40% of the Dutch imports from Germany consists of intra-industrial deliveries.

A close examination of tables 5 and 10 shows that the Dutch imports of live animals (00) and animal feed (08) are inter-industrial deliveries. Also substantial shares of cereals (70%) and dairy products (41%) are used within agriculture and the processing industries. The contribution of other products is marginal.

Table 10 Bilateral trade in intermediate products in 1992

Code	Product	German Imports	Dutch Imports	German net Imports
		Million US\$		
00	Live animals	369	204	165
01	Meat and meat products	0	0	0
02	Dairy products and birds eggs	53	388	-335
03	Fish and fish products	27	1	25
04	Cereals and cereal preparations	27	277	-250
0541 ^a	Potatoes	25	32	-7
05487	Sugar beet	0	2	-2
0561	Vegetables, roots, tubers, cut, broken or in powder	8	7	1
0564	Flours, meals of potatoes, vegetables, fruits	17	0	17
06	Sugar and honey	128	49	79
07	Coffee, tea, cocoa	33	26	7
08	Feeding stuff for animals	525	334	191
09	Miscellaneous edible products	134	82	53
12	Tobacco and tobacco manufactures	0	11	-11
21	Hides, skins, furskin	8	69	-61
24	Cork and wood	40	92	-52
29	Crude animal and vege. mat. n.e.s.	64	32	32
41,43	Anim. and vege. oils, fats and waxes	119	130	-11
	Total intermediate trade	1594	1602	-142

^a Seed-potatoes and nonconsumable potatoes.

Computed from: OECD and LEI-DLO trade figures

Similarly, from table 6 it can be seen that the same remarks apply to the German imports of the groups 00 and 08. Imports of vegetables and fruits are largely dominated by consumer demand. As less than 10% of total imports of cereal products is used within the sector itself, it follows that Germany exports cereals to the Netherlands and imports cereal products. To a lesser extent, this also holds for the German trade in dairy products: milk and yoghurt are supplied, and cheese and butter demanded.

Do these results confirm the theoretical point of view that, generally spoken, the small country exports homogenous bulk products and imports processed commodities? For a number of commodities exported by the Netherlands, like fresh vegetables, this is certainly true. On the other hand, in the case of cereal products, dairy and e.g. cocoa and tobacco manufactures it is not.

Finally, we again stress the arbitrary element and possibly incomplete decomposition of trade in an intermediate and final part. So the conclusion that intermediate trade flows bottom out (net trade is almost zero) may be premature.

2.7 Summary

Although both countries are dominant agricultural exporters from a global point of view, the net trade positions are quite different: the Netherlands is a major net exporter and the agricultural trade balance of Germany indicates a substantial deficit. These positions are also reflected in the bilateral trade balance which shows an increasing surplus in favour of the Netherlands.

As can be expected, Germany is, both in absolute and relative terms, a more important destination for Dutch exports than vice versa. Market shares of both countries on the relevant import markets have slightly improved until 1992. This growth is due to dairy, cereal products and feeding stuff for animals on the Dutch import market and an increase of the share of Dutch horticultural products in Germany.

The bilateral trade in technological advanced products, as indicated through net exports of high-tech agricultural inputs does not confirm the theoretical assertion with respect to country sizes: the smallest country shows the smallest total deficit and even has a surplus on the relevant bilateral trade balance.

It would be interesting to examine whether the figures presented so far indicate a deterioration of the positions of both countries on each others import market. The general answer should be no. From tables 5 and 6 it follows that value shares of both countries on the relevant import markets have risen from 1986 to 1992. Of course this is the 'average' result of diverging developments at the individual product level. Some

of these indeed indicate declining market shares, but this is more than compensated by a rise in relative imports of other products. A more detailed analysis probably would be able to explain these changes.

Before doing so (see chapter 4) we now turn to an investigation of underlying developments which possibly contribute to the explanation of some of the 'counter intuitive' results regarding net trade positions listed above. The next chapter tries to link these findings to historical developments and government policies.

3. Economic structure and the composition of trade

3.1 Introduction

To better understand the size and composition of bilateral trade this chapter investigates the role of differences in economic structure. As these are strongly linked to the agricultural history of both countries and also to government policies, section 3.2 gives a brief overview of the major developments in the period from the mid-eighties of the nineteenth century until today.

In subsequent sections we highlight structural similarities and differences between the traditional crop, livestock and horticultural sectors (3.3) and the FBT industries (3.4). Finally, in 3.5 we investigate the impact of the economic structure on trade. In chapter 4 *changes* in trade flows are at the core of the business.

3.2 Agricultural history and policy from 1880 until 1990

In the previous century two economic and social developments have dominated the agricultural sectors in Western Europe. First, the important rise of industry that not only has led to a deterioration of the relative position of agriculture, but also to the use of industrial methods in agriculture and food processing. An important side-effect was the large flow of migrants from rural to urban areas. The second fact of agricultural relevance is the increasing role of the United States as an agricultural exporter from, say 1870 onwards. We will now briefly examine how these changes have influenced agricultural development in both countries.

The history of German agriculture shows a slow emergence from feudal servitude. The reforms, which were completed in 1848 essentially concerned peasant freedoms and their right to own land. In return for their freedom peasants had to cede to the landlord between one third and a half of the value of their holdings. The financial burden of purchasing ownership of the land they farmed proved too much for many peasants (Tracy (1989)). This resulted in a small number of very large farms (still owned by the landlords) and many holdings with hardly any land. The smaller farms could not profitably cultivate grain for sale, and practised more intensive lines of farming: cows, pigs and poultry. The large estates in the east mainly produced grain (barley and rye), which was exported in large quantities. At this time (1850 to 1870) the agricultural opinion in Germany was strongly in favour of free trade. The industrial view, however, was quite the opposite. German industry was not yet able to challenge the dominant position of the UK manufacturing and therefore was shielded from international competition. This 'infant industry' argument is still present in the modern strategic trade theories (see e.g. Kol and Mennes (op. cit.), Krugman (1986)).

In the years thereafter, the agricultural export position of Germany weakened because increasing USA exports caused a fall in international cereal prices. Moreover, trade was hampered by British countermeasures induced by the protection of German industry. Therefore farmers organisations (led by the Prussian landlords) opted for protective measures. But on the home market the situation was also changing. A gradual welfare improvement induced a shift in human consumption away from barley and rye toward wheat. Due to the relatively cold climate this could not be produced in sufficient quantities and had to be imported. In the absence of protection this would expose the agricultural population to vicissitudes of the world market. Wagner (cited by Tracy (op. cit.)) therefore considered protection as "a basic long-term need."

The situation in the Netherlands was quite different. Due to its favourable geographical situation a long tradition in international trade existed. For example, already in the 17th century (the golden age) cocoa beans were imported from Surinam. Trade in tropical products like coffee and tobacco originated from other overseas settlements (e.g. Indonesia). This has led to trade relations with other suppliers of these products and to the development of processing activities.

Therefore the trade policy of the Dutch government was guided by the 'laissez faire' principle. Until 1880, virtually no agricultural policy existed (Knibbe (1993)). When world market prices for cereals kept on falling the government came to the conviction that a fundamental restructuring was the only possibility to survive for Dutch agriculture. In cooperation with agricultural societies, export companies and agricultural industries the government established and subsidized a large number of services aimed at educating farmers, at generating practical knowledge on agricultural matters¹⁴, controlling the quality of agricultural inputs and outputs and supplying funds to finance investments. Contemporaries largely ascribed the modernity which characterized Dutch agriculture around 1930 to the success of this system of cooperation, education and research.

The rise in production after the mid 1880-s led to a number of bottle-necks on agricultural input and output markets. First, industrial developments induced a growing concentration of the food processing industry (e.g. sugar and potato-starch). So industry could take advantage of competition amongst suppliers and it was increasingly difficult for the individual farmer to conclude contracts with reasonable high prices. Second, the rapid expansion of production induced a jump in the demand for off-farm inputs, mainly animal feed and fertilizers. This automatically created a demand for credit facilities. These bottle-necks were solved by the establishment of cooperative selling and purchasing operations, factories, banks and auctions. Around

¹⁴ The improvement of the educational system has almost naturally led to the foundation of the agricultural university of Wageningen in 1918.

The present structure of agricultural research

In the Netherlands all institutions passing into the control of the Dutch Council of Agricultural Research (NRLO) make researches into the field of agriculture. About 5500 persons work together in various organizations, which can be subdivided into 4 groups. The first covers the so-called Regional Research Centra (ROC's): about 50 experimental farms where scientific results are applied and demonstrated. The next group contains 9 experimental stations which focus on the rapid solution of urgent problems in a specific activity (horticulture, pig breeding etc.). Thirdly, 17 institutions are concerned with strategic and applied agricultural research in the field of soil science, vegetal diseases, mechanisation, animal and vegetal upgrading and so on. The Agricultural University of Wageningen and the faculty of veterinary sciences at the Utrecht University significantly contribute to fundamental research. Finally, the Agricultural Economics Research Institute (LEI-DLO) is concerned with all economic aspects of agricultural activities.

In Germany about 3000 persons are involved in Agricultural research activities. One third of them works at government institutions, and more than 800 are engaged in research activities at agricultural faculties located at various Universities. Since the unification an additional 200 are employed at institutions of the 'Blaue Liste', which try to continue the activities of the important research organizations in the former GDR. Finally, another 1000 people work at regional research centra, which aim at the scientific assistance of the region to achieve its goal. The total yearly amount spent on R&D activities is about 500 million DM.

In a recent article Koester and von Cramon-Taubadel (1994) argued that "zur Zeit zu wenig über die Struktur staatlicher Agrarforschung in Deutschland nachgedacht wird." Current research activities are biased toward the regional institutions and agricultural faculties at universities suffer from a diminishing number of students and therefore run the risk of gradually being absorbed by their parent disciplines.

Discussions in the Netherlands are concerned with the improvement of international competitiveness, and a more effective allocation of R&D efforts. Government increasingly realizes that R&D is a necessary rather than a sufficient requirement to achieve success.

Sources: Van der Meer et al (1991)

Koester and Cramon-Taubadel (1994)

1910 many sectors of trade and production were dominated by these cooperative organizations. These improved the countervailing power of farmers, supplied additional funds to invest in new technologies and strongly promoted distribution and exports of products.

In Germany however, the set of protective measures introduced at the end of the 19th century hampered structural adjustment. For example, the livestock sector could not benefit from low priced cereals from the US. Moreover, the German industry became increasingly competitive and from 1890 onward its exports were much more important than those of the agricultural sector. Consequently, until 1933 the protective policy remained basically unchanged. Under the nazi regime the agricultural sector was reorganized. A comprehensive organisation of production, marketing and trade was introduced, based on ideas which were already present in a majority of countries: the social importance of the farm population, the desire to shield them from market fluctuations and the aim for self-sufficiency in food. One could say that "the extreme way the policy was effected only makes sense in the context of a single nation aiming to reinforce its power and that it was geared to the expectation of war if not the desire for it. Nevertheless, much of their thinking on agricultural matters has persisted and the methods of market division they devised to carry out their policy were the predecessors of those which were widely adopted after the Second World War" (Tracy, op. cit., page 201).

After the second world war income support to farmers has been generally accepted. Within the common EU market for agricultural products¹⁵ farm income is supported through a system of variable levies and refunds at the border. This maintains the wedge between high internal prices and low external prices and shields farmers from fluctuations in world market prices¹⁶. While in the Netherlands and West-Germany the CAP has been established step-by-step, in the GDR agriculture was reformed through the introduction of "industrial production methods". This has led to a small number of large farms and a strict (and consequently inefficient) separation of crop and livestock activities.

¹⁵ These are merely unprocessed products, including wine, butter and sugar.

¹⁶ From the early beginning production quota for sugar was established. In 1984, when subsidized exports of dairy products caused budgetary problems, a production quota for milk was introduced. Today, supply of cereals, oilseeds and sheep meat is also more or less restricted. The MacSharry reform, which has become effective in 1993 has led to a cut in internal prices for a number of products. A consequence of the GATT agreement is that all non-tariff border protection measures are to be converted into customs tariffs, and that all tariffs have to be reduced by 36% relative to the average tariff in 1986-1988 over a period of six years (see Folmer et al.(1995)).

One may conclude that the agricultural history of Germany can shortly be characterized by the word "protection" while in the Netherlands, where the agricultural sector was relatively more important with respect to industry, the word "innovation" can be applied. The introduction of the CAP has changed market conditions and economic performance of the Dutch agricultural sector, but education and research have continued to be cornerstones of agricultural development. This investment in research and development activities does not lead to significant lower costs per unit of output, but, as we will see below, results in labour saving, an improvement of productivity (production per unit of land and per animal) and a rapid adoption of new technologies. This continuing innovation is an important reason why agriculture in the Netherlands is relatively modern and innovative as compared to Germany, and why farmers are less dependent on off-farm sources of income.

It is interesting to see, however, that after the unification of Germany political preferences are shifting away from protectionism to free trade. Obviously this is the consequence of the present dual nature of German agriculture: due to the large farm sizes in East Germany it is no longer merely the interest of the small (Bavarian) farmer that matters.

3.3 Primary agricultural sectors

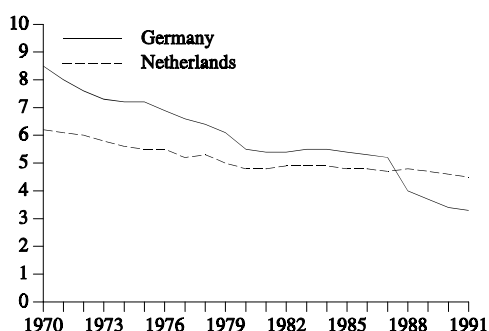
In both countries agricultural production is located at family farms. Farmers may own their agricultural holdings or be tenants, but in any case they are self-employed and the number of wage-workers is relatively low. Market conditions are shaped through the CAP, which has supported incomes by introducing minimum prices for a number of products, created stable markets through government stock intervention and has improved agricultural productivity. Obviously this is not the case in East-Germany, where until 1990 a small number of large cooperative farms dominated production. Since the unification these holdings are privatized, but farm sizes are still large as compared to the Western part of Germany. Of course, the CAP now also applies to this part of the country.

Despite similarity in institutional settings (the common market organization and a similar way of production), there are some important differences between the primary agricultural sectors in both countries which have their impact on trade. We confine ourselves to four topics: (i) labour supply and farm income, (ii) farm sizes and technological innovation, (iii) farm types and their contribution to value added and finally (iv) East-German agriculture. Some conclusions follow in (v).

(i) Employment and farm income

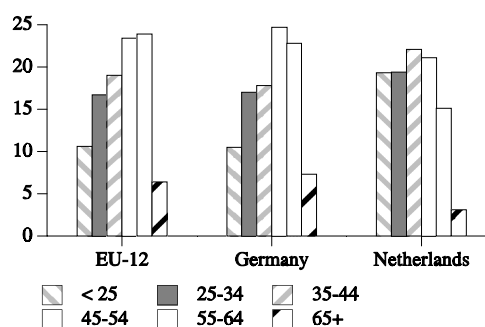
The first point of interest is agricultural employment. Figures 1 and 2 below illustrate two important characteristics.

Figure 1 Share (in %) of agriculture in total employment 1970 - 1991



Source: Eurostat, Employment and Unemployment, several years

Figure 2 Age structure of agricultural employment in 1990 in %



Source: Commission of the EC(1993), the Agricultural Situation in the Community

The first diagram shows the declining share of agriculture in the total working population. In 1970 more than 8% of the working population in West-Germany was employed in agriculture, but in 1991 this share has declined to slightly more than 3%¹⁷. The development in the Netherlands was far less pronounced, mainly due to the strong expansion of the horticultural sector (see below).

Differences in the age structure of employment stand out, as can be seen from figure 2. The age composition of West-German farmers is very similar to the EU total, but that of the Dutch is not. The age of the European (and German) farmer is 45 on average, while in the Netherlands it is 'only' 40. As the average lifetime of persons employed outside agriculture is 39 in Germany and 36 in the Netherlands (EU average: 38) one may conclude that the share of relatively old farmers in the working population is large, even in the Netherlands.

A consequence of the location of production at family farms is that labour is mainly supplied by the farm-manager, his or her spouse and children and eventually regular and casual workers. If we define the activity rate of the farm population as the ratio of employment (expressed in full time equivalents) and the number of persons (regularly) employed then from data published by the European Commission (1993) it follows that

¹⁷ An important side-effect of the reduction in the labour force is the outflow of capital due to inheritance.

in 1987 the average activity rates in Germany and the Netherlands are 0.5 and 0.8 respectively. This implies that in Germany part-time farming is much more important than in the Netherlands. For all types of agricultural labour¹⁸ West-German activity rates are lower than the corresponding Dutch ones.

Consequently West-German farmers earn a larger share of their total income outside agriculture. It appears that in 1987 the agricultural income of only 62% of all West-German farm managers was higher than their earnings outside agriculture (European Commission (op. cit.)). In the Netherlands this fraction is 85%. Differences in the share of income earned outside agriculture are linked to past developments. Recall from section 3.2. that since the end of the 19th century in Germany industry has been of greater importance than agriculture and government policy has much more been oriented toward protection than in the Netherlands. Although due to the CAP developments in both countries converge, time has left its marks on the structure of agriculture: in Germany the average age of the farmers is relatively high and they are more dependent on non-agricultural sources of income. These two characteristics are mutually dependent: when the income position is unfavourable, young farmers will leave agriculture to find employment in other sectors (figure 1) and others seek for additional sources of income and continue business as long as possible. In the Netherlands agricultural employment is rather stable since 1980. As will be explained below, this is the result of the dominant position of the horticultural sector.

(ii) *Farm size and technical innovation*

The net trade positions of both countries suggest that the primary sector in the Netherlands is more efficient and productive than in Germany. These characteristics are usually tied up with economies of scale and the speed of technological diffusion. New technologies can be introduced in two ways: an application of own R&D activities or by direct imports. The results of section 2.5 indicate that import is a major source of technological innovation in Germany while the Netherlands are more self supporting in this respect. So one would expect that conditions which affect the rate of adaption to new technologies are more optimal in the Netherlands. In this section we investigate the veracity of this statement.

As most production units are family farms, which are not directly involved in R&D activities, an important condition for a rapid innovation is the willingness to cooperate between producers, supplying and processing industries, marketing organizations and government research institutions. An additional requirement is that results of R&D activities should be accessible to everyone (van der Meer et al. (op. cit.)). One could say

¹⁸ Farm managers, spouses, other family members, non-family workers

that in the Netherlands the institutional requirements which should be satisfied to guarantee a rapid adoption of new technologies are fulfilled. Farmers work together in cooperative organisations that constitute purchasing, buying and auction activities¹⁹. The strong export position of the sector has motivated farmers to bundle their activities and further rationalize production and marketing activities. In 3.2 we have seen that the differences between Germany and the Netherlands have their roots in the previous century already.

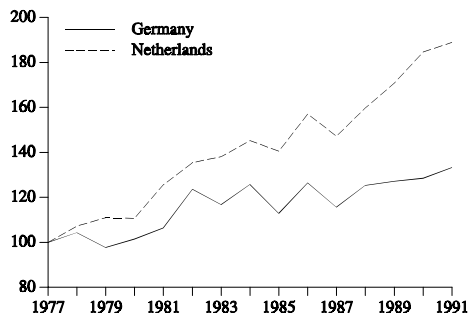
However, this is not the whole story. The speed of technological diffusion depends on a lot of factors (Stoneman (1983)). Generally spoken, there must be some stimulus, which must be 'strong enough' to initiate the innovation process. It will therefore be obvious that large improvements (due to superior techniques) are more rapidly adopted than marginal innovations. The speed of adoption is also linked to the nature of the modernisation. Technical innovations can be separated into labour saving and yield improving methods (Stolwijk (1992), chapter 3). The introduction of the latter is not directly linked to the scale of the farm, but use of the first type requires a minimum efficient scale (MES) of operation (see also Folmer et al. (op. cit.), chapter 7). For example, the buying of a milking machine doesn't make sense, if the associated rise in production costs per litre more than offsets the save in labour costs and the benefits from a rise in labour productivity. Consequently, the more labour saving techniques have been introduced, the larger the required MES for additional improvements will be.

The impact of this innovation process is illustrated by examining three economic indicators: (i) the volume of agricultural gross value added, (ii) labour productivity improvements and (iii) possible scale enlargements.

Figures 3 and 4 illustrate the developments in gross value added and labour productivity.

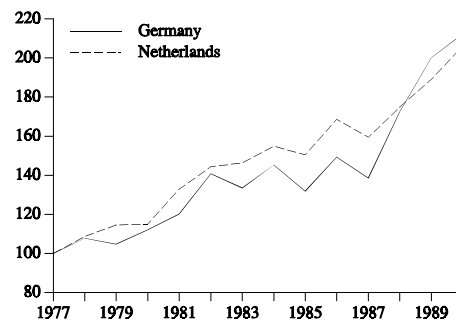
¹⁹ This also holds for German farmers (see section 4.2). Hence this is not a sufficient condition.

Figure 3 Gross value added at market prices, primary agriculture, volume index, 1977 = 100



Source: COMmission of the EC(1993), the Agricultural Situation in the Community

Figure 4 labour productivity index, primary agriculture, 1977 = 100



Sources: see figures 2 and 3.

Growth rates in the volume of Gross Value Added at market prices diverge: the annual average in West-Germany (1.9%) is lower than in the Netherlands (4.7%). As labour productivity is defined here as the ratio of the volume of value added and employment, figure 4 is the combined result of figures 2 (employment) and 3. The cumulated growth in labour productivity in West-Germany slightly exceeds the Dutch. Annual growth rates are about 5% for both countries. Relative to all firms in their own countries, the volume increase of agricultural gross value added in Germany (2.2%) is close to the average, but in the Netherlands it is substantially higher: 4.6% in agriculture and 1.9% on average. Growth rates of agricultural labour productivity stand out in both countries. The average figures for all firms together are 1% in the Netherlands and 1.7% in Germany, respectively²⁰.

Have these improvements also led to an increase in the scale of operation? Table 11, which shows the distribution of farms by size classes, tries to answer this question.

²⁰ See Van der Wiel (1994). The reference period slightly differs: 1980-1990.

Table 11 Number of agricultural holdings by size class, 1975 and 1990, thousands and average annual rate of change, percentage

Size class	West-Germany			The Netherlands		
	number (1000)	number (1000)	growth(%)	number (1000)	number (1000)	growth(%)
less than 5 ha	319	217	-2.5	55	40	-2.0
5 - < 20 ha	384	243	-3.0	75	47	-3.1
20 - < 50 ha	1796	160	-0.7	30	32	0.3
50 - < 100 ha	23	39	3.7	3	5	4.1
100 ha and more	4	7	3.9	0	1	3.8
Total number	908	665	-2.0	163	125	-1.8
Average size (ha)	14	18	1.8	13	16	1.7

Computed from: Eurostat (1994), Statistical Yearbook Agriculture.

The number of holdings has declined in both countries by some 2% per year. The distribution of farm sizes also changed: the number of farms with less than 20 ha of land has fallen in favour of larger enterprises. The average area per holding has also risen²¹, despite a small reduction in the agricultural land base. Due to the heterogeneity of the various activities and the variability in the required minimum efficient scales of operation²² it would be premature to expect that farm sizes in Germany are on average smaller than in the Netherlands, or that the position of large scale farms is less dominant. On the contrary, we observe that German farms are somewhat larger on average, and that the fraction of holdings larger than 50 hectares is larger than in the Netherlands (6.9%, as compared to 4.8%).

Should we therefore conclude that the scale of operation is not a decisive factor in technical innovation? The answer is 'no' for two reasons. From table 11 it clearly follows

²¹ Yet the size is rather small. Zachariasse (1990) concludes that many farms in the Netherlands still operate at a level where unit costs are falling with scale, that is to say: at an inefficient production level. On the other hand Schmitt (1988) argues that the scale of operation of West-German farms is optimal. His basic premise is that agricultural labour is sufficiently mobile to be optimally allocated. However, then it is not easy to explain why at a farm size in the Eastern part of Germany of 1000 ha still economies of scale are possible (for a discussion see Balmann (1994)).

²² Note that in this table the scale of operation is indicated by the total land use.

that the scale of operation, as indicated by total utilized area per holding, is expanding. Absolute figures indicate that the number of firms, smaller than 20 hectares declines in both countries, in favour of larger holdings. May be more important is the so called 'foot lose' character of some production activities, notably intensive livestock farming and horticulture under glass. In these sectors production is less dependent on land availability and therefore, apart from the application of yield improving innovations, production can increase without a proportional expansion of the land base: there are increasing returns to scale with respect to the production factor land. Another important factor is the very small land base used in the horticulture under glass sector, which is nevertheless highly productive.

Therefore it would be useful to compare the 'economic sizes' of different farm holdings. Usually such measures are based on some concept of standardized value added. Here we use the European Size Unit (esu), based on the standard gross margin (sgm) to indicate the economic scale of operation. In Eurostat (1994) the sgm of a farm is defined as "the difference between the standardised monetary value of gross production and the standardised monetary value of certain special costs". This measure has four major characteristics. First, it refers to the production under 'normal circumstances'. Erratic movements in e.g. yields per hectare or per animal, or product prices are corrected for. A second aspect is that calculations are based on efficiently operating farms. For these holdings the reduction in costs per unit of output through scale enlargement is marginal. A third property is that only direct, variable costs, excluding fuel and maintenance expenditures are subtracted from the standardized production value (Poppe(1987)). Finally, as this measure is usually based on country averages, it is not suitable to estimate net value added for a specific firm or region. The main advantage of this size indicator is, that it enables both international comparison and the classification of holdings into main activities. Other size indicators are possible, e.g. to account for the number of livestock units per hectare, labour input, capital stock or total sales. Generally, one should use "different measures of farm size for different purposes" (Poppe(op. cit.), page 119).

The sgm and the esu are both expressed in ecu. Their values are linked through a conversion factor. This complicates their application, as the size of the sgm changes over time, depending on the type of activity considered. Therefore the conversion factor from sgm's to esu should be time dependent to guarantee a meaningful comparison of economic sizes over time. Consequently, the value of the esu depends on the reference period: in 1975 1 esu equals 1000 ecu, and the corresponding value in 1990 is 1200 ecu. This adjustment in the conversion factor from sgm to esu leads to a change in the number of esu's within the EU that roughly reflects the growth in the volume of gross value added (Poppe(op. cit.), page 122).

Table 12 below displays the classification of agricultural holdings according to economic size in 1975 and 1990. The first row shows the fraction of the total number

of farms with an economic size smaller than 6 esu, and so on. Given the way the esu has been constructed, conclusions about differences in distributions between countries are more reliable than deductions on exact changes of cohort sizes over time.

In both years the median economic size in Germany is substantially smaller than in the Netherlands. For example, in the latter country 49.3% of all holdings has an economic size of at least 40 esu in 1990, while in Germany this share is only 11.3%. The average economic size per holding in 1990 amounts to 18 esu in Germany and 52 esu in the Netherlands²³. Secondly, even when we keep in mind the reservation we had to make about the intertemporal comparison of the distributions, a shift toward larger economic sizes seems to be realized in both countries. Changes in the Netherlands are most pronounced.

Table 12 Classification of holdings by economic size, 1975 and 1990

Size class	West-Germany		the Netherlands	
	1975	1990	1975	1990
	%	%	%	%
less than 6 esu	55.8	39.9	23.1	9.4
from 6 - < 12 esu	21.9	15.7	19.1	12.8
from 12 - < 40 esu	20.8	33.2	51.2	28.7
from 40 - < 100 esu	1.3	10.2	6.2	38.1
100 esu and more	0.2	1.1	0.4	11.2

Computed from: Eurostat (1994), Statistical Yearbook Agriculture.

So the tentative conclusion is in the first place that scale enlargement has not only been realized through enlargement of the utilized area per holding, but also through an expansion of the economic size. On the other hand, although total acreage per farm in Germany is on average somewhat larger than that in the Netherlands, the economic size of the latter by far exceeds that of the former. This is in line with the observation that on average the West-German farmer is more dependent on non-agricultural sources of income than his Dutch colleague.

²³ The average economic size in 1990 of holdings in Denmark and United Kingdom is about 35 esu, in France 21 and the EU-12 average is about 11 esu.

One may expect that the distribution of the sgms is even more skewed than the classification of holdings. The figures in table 13 confirm this expectation: in 1990, 83.1% of the total Dutch sgm is realized by holdings larger than 40 esu, which account for 49% of the number of farms. In Germany, corresponding enterprises constitute 11.3% of the total number and earn 43.6% of the overall sgm. So in the Netherlands the economic size of farm holdings is much larger than in West-Germany and this may very well have a major positive impact on the speed of technical innovation.

Table 13 Distribution of standard gross margins by size class, 1975 and 1990

Size class	West-Germany		The Netherlands	
	1975	1990	1975	1990
	%	%	%	%
less than 6 esu	16.3	5.3	4.5	0.8
from 6 - < 12 esu	23.1	7.6	9.6	2.1
from 12 - < 40 esu	48.0	43.5	63.6	13.9
from 40 - < 100 esu	8.7	32.0	18.5	46.9
100 esu and more	3.9	11.6	4.0	36.2

Computed from: Eurostat (1994), Statistical Yearbook Agriculture.

(iii) Standard gross margins by type of activity

The classification of holdings by economic size, although useful, does not provide information on the relative economic importance of the various agricultural production activities. To investigate the contribution of each production activity to total agricultural value added we need information on the activities of farms. In practice, a one to one correspondence between farm types and various agricultural activities does not exist. Most farms are involved in more than one production process (e.g. a combination of livestock and crop raising) and this hampers the computation of the value added per activity. Some farm inputs (e.g. fuel, labour) cannot easily be attributed to one activity and moreover, a number of intermediate deliveries is not traded on the market and hence the choice of an appropriate input price is not straightforward (e.g. for animal feed grown on the farm). As noted above, the sgm concept enables the classification of holdings into various production processes. Therefore, rather than applying some arbitrary method to estimate value added by activity, we will use the sgm measure to

indicate the relative economic importance of the various production activities²⁴. Although this measure is commonly used, it should be noted that it is an imperfect indicator of value added due to the standardization procedure and its incomplete coverage of production costs.

Table 14 shows the relative contributions to the number of holdings and to the total sgm of the sector.

Table 14 Number of holdings and distribution of standard gross margins by farm type in 1990, percentages

Farm types	Distribution of holdings		Average sgm per holding	
	West-Germany	the Netherlands	West-Germany	the Netherlands
	%	%	1000 ecu	1000 ecu
Field crops	20.2	13.1	15.6	49.5
Horticulture	2.0	14.4	55.3	96.2
Permanent crops ^a	7.9	4.6	22.8	45.0
Grazing livestock	41.0	46.7	16.1	41.7
Granivores ^b	1.4	9.5	19.9	49.5
Mixed cropping	4.1	2.2	16.6	48.4
Mixed livestock	5.9	4.9	19.5	47.0
Livestock/cropping	17.4	4.6	17.5	35.7
Total	100.0	100.0	17.9	51.6
Total number ('000) and sgm (mln ecu)	665.1	124.8	36.8	64.4

^a Vineyards and acreage under fruit-culture

^b Livestock, other than grazing

Computed from: Eurostat (1994), Statistical Yearbook Agriculture.

²⁴ The Community system of typology classification of farms distinguishes eight main categories, that can be subdivided into two groups. The first contains specialised farms, for which more than two thirds of the total sgm origins from one of the main categories field crops, horticulture, permanent crops, grazing livestock and granivores (livestock that uses other feed types also). The second group covers the non specialised farms, for which more than two thirds of the total sgm originates from two or more of the main categories.

The latter amounts to about 95% of the gross value added at factor cost. In both countries most holdings are involved in the crop and livestock activities: 90.1% in West-Germany and 81% in the Netherlands. The livestock sector is dominant. Deviations between both countries in average sgm per holding stand out. The most striking difference is the position of the Dutch horticultural sector: its contribution to the total sgm of the primary agricultural sector is more than 25%.

Computations of Stolwijk (1992) indicate that more than 40% of agricultural value added is produced in the horticultural sector, which uses less than 1% of the total land base. This dominant position of the Dutch horticultural sector also finds expression in its contribution to total agricultural exports (see 3.3). Flowers, plants and vegetables are the products of interest. Also an important share of the Dutch export of animal and vegetal inputs qualified as high-tech (see table 8 in section 2.5) is of horticultural origin.

Country differences seem quite large. Therefore it would be interesting to examine the relative positions of both countries with respect to other EU members.

Table 15 Standard gross margins per holding by farm type and member country in 1990

Country	All types	Field crops	Grazing livestock	Granivores ^a	Horticulture
Belgium/Luxembourg	28.3	25.9	21.8	37.1	43.3
Denmark	37.3	23.2	44.9	83.9	92.8
France	21.2	32.0	14.4	41.1	45.3
Germany	17.9	15.6	16.1	19.9	55.3
Greece	4.2	5.0	6.7	28.4	9.4
Ireland	11.6	24.2	10.7	39.9	22.8
Italy	7.6	7.1	10.7	47.1	34.3
The Netherlands	51.6	49.5	41.7	49.5	96.2
Portugal	3.9	4.2	5.4	9.6	9.8
Spain	5.6	7.5	5.8	24.1	10.8
United Kingdom	35.6	71.6	21.4	38.8	44.7
EU-12	11.2	12.7	13.7	34.1	31.9

^a Intensive livestock farming (pigs and poultry).

Computed from: Eurostat, Statistical yearbook Agriculture.

Table 15 summarizes average sgm's for a number of farm types by member state of the EU-12 in 1990.

Differences are quite large, both between country averages as well as between various activities in one country. Generally, sgms per holding in Southern countries (Greece, Spain, Portugal, Italy) are much smaller than in Northern member states. The position of Germany is somewhere in the middle of the road, while the Netherlands, together with Denmark and the United Kingdom leads the field. Compared to its neighbouring countries, the score of West-German agriculture seems relatively bad. Note however, that the sgm indicates the economic size of the farm rather than value added.

(iv) *Agriculture in East-Germany*

The process of restructuring of East-German agriculture has not yet come to an end. In 1990 about 10% of the working population in East-Germany was employed on agricultural holdings, which amounts to an average number of 190 per holding (in West-Germany: 2). However, in 1990 only 60% of all people employed at large agricultural cooperative enterprises was engaged in agricultural activities. Since that time, a number of the very large cooperative holdings has been taken over by previous workers, and a lot of land has been sold, or restored to families who had been dispossessed by the nazi regime. Only a few years after the unification agricultural employment was reduced by 675.000 people, a decline of 73%.

It would be unrealistic to expect that in the short term enterprises could compete with those in Western countries. Today it is still not quite clear what type of firms will successfully pass the transition to the market economy. Conditions for cereal and dairy farms look more promising than for holdings in the pig and poultry sector, mainly due to the protective measures of the CAP. Pig and poultry farms suffer from low prices, while investments needed to restructure the sector are postponed due to a lack of funds (Loenen (1993)). Consequently, in these sectors the number of holdings is sharply declining (Agra-Europe (1993)).

Nevertheless, the present structure of German agriculture will create new opportunities to improve efficiency in the medium and long run. It is interesting to see that after the unification of Germany political preferences are shifting away from protectionism to free trade. Obviously this is the consequence of the present dichotomous nature of German agriculture: it is no longer merely the interest of the small (Bavarian) farmer that matters.

(v) *Summary*

Which conclusions can be drawn from the discussion in the subsections (i) to (iv)? Clearly two facts account for the dynamic behaviour of the primary sectors: the steady outflow of labour and technical improvements.

An important part of agricultural labour is supplied by the self-employed and hence labour outflow has a demographic dimension (children who find employment outside agriculture and old farmers who retire without having a successor) and an economic aspect (part-time farming or even bankruptcy). This outflow of labour, which has been induced by the industrial revolution requires a continuous investment in labour saving and yield improving techniques²⁵ to maintain or even expand agricultural production. Of course, this outflow is a continuing process since there is also a feedback: the ongoing use of labour saving techniques leads to a declining labour demand.

The introduction of yield improving innovations finds expression in better seeds, fertilizers, pesticides and is incorporated in animal stocks. This new technology is, at least in principle, available to every farmer. On the other hand, the adoption of labour saving techniques requires a minimum scale of operation, expressed both in terms of acreage and value added. As to the latter, the Dutch farmers seem to be better off, as the average economic size per holding is about 3 times as high as in West-Germany. Of course, this is also the result of improvements in the past. Note however, that as the economic MES widely differs between production activities (compare: grazing livestock and horticulture under glass) conclusions about differences between Germany and the Netherlands by farm type should be drawn with care.

Finally, whenever the transition process in East-Germany comes to an end a number of large scale holdings may be competitive and substantial economies of scale may be realized. At this moment it is too early to foresee which farm types will survive and which will vanish.

3.4 Food, beverage and tobacco industries

Although the primary agricultural sectors in both countries face the same policy and, to a certain extent, produce under the same economic circumstances, they hardly interact directly. Interrelations mainly exist for intermediate and final products (see also 2.6). Therefore we now turn to a short description of the FBT industries in both countries. The discussion is limited to two main topics: (i) structure and activities of the various sub-industries and (ii) the relations with interacting sectors, both national and international.

Little information is available about processing industries in the Eastern part of Germany. In the Statistical yearbook of 1991 the Statistisches Bundesamt published an overview of the manufacturing industry in the Eastern part of the country at the time of

²⁵ Folmer (1991) estimates elasticities of substitution between capital and labour of between 1.6 and 2 for both West-Germany and the Netherlands.

the unification (4th quarter 1990). The number of firms, employment, sales and compensation of employees were given separately for the food processing and the tobacco industries. But at that time the production capacity was, due to negative investments during the ten years before fully outdated. Therefore we do not use this information here.

(i) Structure and activity

The FBT industry covers an important stage within the whole operation from extraction and cultivation of raw materials (crop/livestock production), to processing into intermediate and final products, and finally wholesale and retail activities²⁶. This does not imply, that those industries are dependent on their national primary sectors only. As we have seen, an important share of bilateral trade consists of intermediate exchange between the FBT industries in both countries (table 10). Furthermore, goods imported from third countries are manufactured as well.

In comparing the structure and activity of some industrial sector in two countries two lines of approach are possible: one may use a classification of firms according to activity (e.g. meat processing, tobacco) or a grouping of enterprises into size classes, where size is usually measured in terms of average employment per firm. Just like in the case of the primary agricultural sectors, the data do not admit a combination of both classifications²⁷. Therefore in this subsection firms are classified by activity, but included information about the number of enterprises and employment permits some conclusions about average firm sizes.

Before proceeding the concept of 'enterprise' should be properly defined. In Eurostat publications, an enterprise is the smallest combination of legal units that is an organisational unit, and that benefits a certain degree of autonomy in decision making, especially for the allocation of its current resources. An enterprise carries out one or more production activities at possibly more than one location²⁸. This definition implies that e.g. breweries and bakeries are enterprises, but butchers or greengrocers are not. We will refer to enterprises also as firms or companies.

²⁶ Strictly spoken cork, wood and natural rubber are also products of agricultural origin. The related manufacturing industries are not discussed here.

²⁷ The main problem is that data sources, used to generate the distribution of firms over size classes and sources which supply the composition of the FBT industry by type of activity are not mutually consistent. From both the number of firms in, and total employment of, the FBT industry can be computed but these results may differ up to 25%.

²⁸ Council regulation (EEC) no 636/93 of 15 march 1993, Official Journal of the European Communities, series L 76/1.

Can anything be said in advance about the number of enterprises within a certain class of activities? If we restrict ourselves to economic variables, this number is likely to depend on economies of scale and the size and composition of demand. When demand is large and regionally diversified (cereal products, beverages) there will be many firms. Of course, this is only a rough characterization. Sometimes non-economic characteristics are dominant, or a combination of factors will do the job. To account for this, results for both countries are presented and discussed separately, and compared thereafter. Table 16 summarizes the West-German classification in 1989.

Table 16 Structure and activity of the West-German FBT industry, 1989

	Number of firms ^a	Employment (1000)	Employment per firm	Compensation per employee (1000 US\$)	Gross value added ^b (mln US\$)
Meat processing	387	58.5	151	23.6	1716
Dairy processing	240	36.8	153	29.6	1571
Fruit, vegetables and fish	218	33.2	152	23.0	1122
Grain milling and feed	184	16.5	90	34.1	848
Bread and flour confectionary	1158	99.3	86	17.0	2123
Sugar manufacturing	21	10.0	476	33.3	592
Cocoa, chocolate and sugar confectionary	143	44.6	312	24.2	1563
Beverages	709	86.1	121	33.3	4581
Tobacco products	30	15.9	530	39.4	922
Oils, fats and other	249	62.4	251	31.2	2850
Total FBT industry	3339	463.2	139	26.6	17888

^a Minimum employment: 20 persons

^b Valued at factor costs

Source: Eurostat (1994), Structure and activity of industry 1987/1988/1989

Firms are unequally distributed across activities. As to the number, bread and flour confectionary and beverages dominate, and on the other hand only a small fraction of the firms is engaged in sugar and tobacco manufacturing. For cereal products this can easily be explained as demand is large and diversified and an important part of the products will not keep. Although large, the number of firms may very well be

underestimated as many small bakeries employ less than 20 persons. The same demand argument applies to breweries. The opposite holds for sugar: a rather homogeneous product, of which input supply is concentrated in the period immediately after the harvest (august). Therefore economies of scale play an important role, just like in tobacco manufacturing. Here the production of cigarettes dominates, which is also a rather uniform product manufactured from imported tobacco.

It will therefore be no surprise that employment per firm is the negative of the above picture: relative large enterprises in the sugar and tobacco processing industry, and small firms in the sectors cereals and beverages. The total position, as indicated by gross value added at market prices, is a mixture: the relevance of bread and flour confectionary and beverages is evident, but the contribution of sugar and tobacco industries is small. The position of other processing sectors is more or less in the middle of the road, although the chocolate industry is more concentrated than meat, dairy and vegetable processing. May be economies of scale can more easily be realized in case of imported, non-perishable products.

We now turn to the Dutch situation. Table 17 summarizes. The situation is in some sense identical to the German, although Dutch firms are smaller on average. The same sub sectors dominate the number of firms, and this also applies to the activities of the largest enterprises, expressed in employment per firm. However, there are also some remarkable differences. The first is the concentration in the sugar industry: only 3 firms with an average employment of 900 persons. Also dairy processing is dominated by large cooperative enterprises²⁹. Finally, beverage industries in Holland are about twice as large as in West-Germany. Apart from composition differences in total output (no wine, less mineral waters) this is also a matter of concentration³⁰.

Table 17 Structure and activity of the Dutch FBT industry, 1989

	Number of	Employment	Employment	Compensation	Gross value
Meat processing	226	20.1	89	24.4	733
Dairy processing	53	18.7	353	32.7	835
Fruit, vegetables and fish	130	9.6	74	25.1	386
Grain milling and feed	171	12.6	74	30.8	511
Bread and flour	661	23.0	35	27.1	951
Sugar manufacturing	3	2.7	900	37.4	270

²⁹ More recently, in one dairy industry the common ownership has been transformed into a structure in which farmers are shareholders.

³⁰ The Dutch beer production is dominated by a few large scale enterprises, while in Germany each regional or even local market has its own brewery.

Cocoa, chocolate and sugar	63	7.0	111	31.6	384
Beverages	50	11.3	226	35.6	776
Tobacco products	21	6.7	319	34.2	655
Oils, fats and other	162	21.5	133	29.7	763
Total FBT industry	1540	133.2	87	29.6	6264

^a Minimum employment: 20 persons

^b Valued at factor costs

Source: CBS, maandstatistiek van de industrie, december 1990

CBS, National Accounts 1991, annex 2.4

(ii) *National and international relations*

The relative positions within both countries can be clarified looking at economic relations between agriculture, the FBT industries and other companies. Then it appears that the importance of both agriculture and the FBT industry for other sectors is limited: the share of both sectors together in the value of total production is only 15% in the Netherlands, which is yet about twice as high as in West-Germany. The composition of intermediate demand by origin is given in table 18, separately for the primary and processing sectors.

Table 18 Input shares of agriculture and FBT industries including imports, 1988, percentages

Origin:	West-Germany		the Netherlands	
	Agriculture	FBT industries	Agriculture	FBT industries
Agriculture	21.2	36.5	10.2	49.4
FBT industries	20.0	26.2	61.3	20.7
Other sectors	58.8	37.4	28.5	29.9
Total input value (mln US\$)	39661	97599	11013	20277

Source: St. Bundesamt, Statistisches Jahrbuch 1991, table 24.26 (West-Germany)

CBS, National Accounts 1988 (the Netherlands)

The most striking deviations between the two countries are the relatively high intermediate deliveries from the FBT industry to agriculture in the Netherlands (61.3%) and vice versa (49.4%).

The high input share of the Dutch FBT industry from agriculture is, apart from domestic inputs like milk and meat, due to imported products. Among these, feeding stuff for animals plays a dominant role. Roughly three types of animal feed can be distinguished: grass and other so called greenfodder, cereals, and cereal substitutes. The latter consist of protein feeds, like oilmeals and residues of cereals, and carbohydrates, like tapioca. Imports of these substitutes, which are not subject to levies under the CAP, mainly enter the EU via Rotterdam³¹. These feeding stuffs are partly processed by the Dutch feed industry to meet national feed demand and partly reexported to other users, a.o. the German livestock sector. The opposite also holds: Germany exports animal feed to Dutch agriculture, mainly residues and byproducts of cereal processing (compare table 10, row 08). Secondly, imported products like cocoa beans, coffee, tea, tobacco and oilseeds are important inputs of the processing industries. Part of these products is reexported: it appears that about 7% of the German demand for cocoa beans is imported via Amsterdam³².

The figures in table 18 not only indicate linkages between production sectors in the same country: imports are included as well. The Dutch IO-tables permit a decomposition by origin: domestic and import. They indicate that about 27% of the aggregate intermediate input of Dutch agriculture and the FBT industry is imported. The German data do not permit a further decomposition into deliveries of domestic origin and intermediate trade. Nevertheless, it is possible to get some very rough idea about the size this trade flow. It appears that about 12% is imported³³. This is substantially lower than the corresponding Dutch share.

Now, what about exports? From the Statistisches Jahrbuch 1991, table 9.6 it follows that about 30% of the sales of the West-German manufacturing industry is disposed off abroad. In this light the export ratio³⁴ of the FBT industry (9%) is rather low. In case of the Netherlands the corresponding ratios are 48% and 39%, respectively³⁵. Unfortu-

³¹ Hence this levy-free import is often referred to as the Rotterdam gap ("het gat van Rotterdam").

³² International Cocoa Organization (1994), Quarterly bulletin of cocoa statistics, no 3, London.

³³ In section 2.6, table 10 bilateral intermediate trade was shown, following the classification of the annex. It is possible to construct a similar table for *total* intermediate imports in 1992. Confronting the total amount with total import value relating to all products of agricultural origin (from table 4: agricultural trade balances) shows that about 14.4% of the 1992 German agricultural imports can be seen as intermediate. If one assumes that the same ratio applies to 1988, then, using the agricultural import value from the IO-table, the share of imports in total intermediate demand can roughly be estimated.

³⁴ Defined as the share of exports in total sales

³⁵ CBS, Monthly Industrial Statistics, december 1990.

nately, the German data do not permit a detailed classification like in tables 14 and 15. Only export ratios of the tobacco industries can be compared: 6.4% and 52%, respectively. Nevertheless, the conclusion will be clear: the West-German FBT industry mainly produces for the home market, while in the Dutch case almost half of the output is exported.

3.5 The structure of demand

Intermediate and final demand affect production and trade patterns. As to the first, some general remarks have already been made in the previous section. Here we will briefly consider two items: differences in animal diets and deviations in consumption per capita. This implies that we leave non-edible products out of account (tobacco products, flowers, plants and so on)³⁶.

Variations in feed demand may have two sources: the size and structure of the herds and the composition of the diet per animal type. What matters here is the use of so called compound feeds³⁷: cereals and cereals substitutes. As was noted earlier, the latter can freely and cheaply be imported, and as Rotterdam is a major supply channel, in the Netherlands animal diets contain less cereals and more grain substitutes than in Germany. Hence intermediate demand for cereals in the Netherlands is low, and, as the climate does not permit to cultivate sufficient amounts of wheat to meet human consumption³⁸, imports are large. Even byproducts of cereal processing are imported as animal feed.

Differences in human consumption also have their impact on trade. Both economic and demographic sources of variation exist. The influence of the latter seems to be of minor importance due to both the low income elasticity of food demand and the high level of per capita income. The impact of mutations in the age structure or composition of the population (more immigrants or migrant workers) may even be more important. When population hardly grows and is ageing, or when activity rates increase or the average size of households declines this will induce a shift in food demand.

Apart from these reasons, there may be regional dissimilarities in consumption per capita, which can be quite large. For example, in Germany the per capita consumption

³⁶ We also disregard from the alternative use of agricultural products for industrial purposes (e.g. bio ethanol).

³⁷ Other feed types, like cow milk, pasture grass and greenmaize are usually grown by the farmer himself and often even no market prices exist.

³⁸ Only 8% of total acreage is used to grow cereals, as compared to 40% in West-Germany.

of meat is almost 25% higher than in the Netherlands. In the introduction (section 1.1) we already referred to differences in beer consumption per head of population.

3.6 Finally: the size and composition of trade

Having discussed structural similarities and divergencies between both countries, we may now try to clarify the size and composition of their trade flows. Subsequently we attempt to answer seven questions, all linked to the presentation in chapter 2. Recall that changes in trade flows are out of scope here: they are analyzed in the next chapter.

(i) Why are both countries dominant agricultural exporters?

The first reason is linked to natural resources. Both countries enjoy a temperate climate, have a fertile soil, without the need to irrigate or the threat of inundation. Moreover, most of the land is flat and therefore easy to cultivate. Although the last argument does not perfectly hold for Germany, agricultural circumstances are generally favourable. A large share of total cultivable area accrues to grassland, which make it suitable for livestock activities.

There is also major economic argument: the common market for agricultural products within the EU. The CAP has created a situation of stable, guaranteed prices and this, together with subsidies on production, has stimulated investments and induced a substantial rise in productivity. The demand in surrounding countries is sufficiently high and therefore an important share of the exports of both countries is disposed off within the EU (table 2). A statistical reason is that sales on the common market are still registered as export.

(ii) Why is Germany a net agricultural importer?

Time has left its marks on the structure of German agriculture. Only during the industrial revolution the feudal system was fully set aside (see 3.2). The dominant position of the industry and the power of the Prussian landlords have led to a situation in which agriculture was protected against cheap imports to assure inland food supply and to slow down the steady migration to urban areas. Many farmers were poor and lack of funds hampered a complete adjustment to modern developments. The situation has substantially improved since the establishment of the CAP, but the number of holdings continues to decline and non-agricultural activities are an important source of income (see 3.3(i)). Food processing is still mainly oriented toward the home market, rather than toward export possibilities.

(iii) Why are the Netherlands a net agricultural exporter?

Apart from reasons mentioned in (i) (that also apply to Germany) the favourable geographic position is an important source of comparative advantage in trade. Therefore, trade with overseas countries has always been of a major importance. During the crisis in the last quarter of the 19th century due to falling world market prices for cereals, restructuring rather than protection was seen as a permanent solution. The resulting rise in production, notably livestock and horticulture, and the success of the triptych research, development and instruction has led to a modern and highly productive agricultural sector, which rapidly adopts new technologies. This is also an important settlement motive for processing industries.

(iv) *How can the composition of trade be explained?*

The German specialisation in meat and dairy products has in the first place its roots in the past. Recall from section 3.2 that at the end of the 19th century small German farmers could not profitably cultivate cereals to export and started livestock production. The CAP is the second factor of interest. The common market, guaranteed prices for bovine meat and dairy products have strongly stimulated livestock production.

Essentially the same arguments apply to cereals. Due to the protection of the German market against cheap imports of US cereals at the end of the previous century the large cereal farms could maintain their position. Although after the second world war the country was divided up into East and West, cereal production in West-Germany has been stimulated under the CAP. Linked to this emphasis on cereals is the export of animal feed, as this to a large extent concerns byproducts of cereal processing (see 3.4.(ii)).

Finally, the exports of beverages (mineral waters, wine) and wood products (included in other products, see table 3) is mainly a matter of natural circumstances and resources.

In the Netherlands the contribution of animal products to total exports is also significant. The developments in history are in some sense the opposite of the German. The cereal crisis in the 19th century led to low domestic feed prices and this directly stimulated livestock production. The strong emphasis on research and education further improved the position of the sector. Protective measures under the CAP have pushed up exports to (mainly) the common market (see also table 2 in section 2.2). The free import of cereals substitutes, mainly residues from grain and oilseed manufacturing (from the USA) and tapioca (from Thailand) not only induced a change in, and a rationalization of the composition of animal diets but also increased processing and exports of feeding stuffs.

The second major factor which heavily dominates export composition is the central position of the horticultural sector. The large export shares of vegetables and fruits on the one hand and flowers and plants on the other can be attributed directly to this highly productive and innovative sector (see also 3.3.(ii) and (iii)).

Finally, origin of the relevance of coffee and chocolate products and tobacco manufactures can be found both in the favourable geographic position and in the colonial history.

(v) *What about the structure of bilateral trade?*

The Dutch imports from Germany (table 5, section 2.2) are dominated by dairy products. In section 2.3 we already noted that this mainly concerns inputs of the Dutch food industry. From 3.4(i) it can be seen that on average, dairy processing industries in the Netherlands are larger than in Germany and are more oriented toward export (see also 3.4.(ii)). Therefore the cooperative enterprises try to compensate a reduction in the Dutch milk quota by increasing their imports to maintain the position on export markets. Cereals are imported by the Dutch processing industry because inland production is low. The share in animal feed is relatively small and the wheat produced is not suitable for human consumption. Feed imports have already been discussed in (iv) above.

The German imports from the Netherlands (table 6) mainly concern meat and dairy, vegetables and fruits and finally flowers and plants. Meat consumption per capita in West-Germany is higher than production (97 and 88 kg per head, respectively) while in the Netherlands the opposite holds (78 and 192 kg/head). This Dutch surplus is partly exported to Germany.

Dairy exports to Germany are dominated by cheese, butter and eggs (see 2.4). Note that the composition differs from the Dutch imports. Cheese has, due to its relatively good keeping quality, always been an important export commodity of the Netherlands. Of course, the same argument holds for butter. The German import of eggs is not a matter of supply: differences in productivity between livestock sectors in both countries hardly exist and numbers of animals are about the same. The net trade is a matter of demand which is about proportional to the size of population.

The keeping qualities of a number of products, like vegetables and fruit have their impact on the spread of exports over destinations. As demand in Germany is large, and the distance from the Dutch producers to the German consumer can relatively fast be covered, exports are significant. The same reasoning applies to flowers and plants, which have the additional advantage that, unlike for food products, consumption per head is not biologically limited and hence income elasticities are higher than those for food products.

(vi) *What determines the trade in high-tech inputs?*

Three types of high-tech inputs can be distinguished (see table 8): inputs of animal and vegetal origin, fertilizers and pesticides and agricultural machinery. In section 2.5 it was already noted that the Dutch imports of the third group are large relative to the German, despite the net exports of food processing machinery. Of course this is linked to the

more dominant position of German industry. By the same token, the large Dutch surplus of (mainly) vegetal inputs originates from the contribution of the horticultural sector. The trade in fertilizers and pesticides has been analyzed in section 2.6.

(vii) *What affects intermediate trade?*

Due to the arbitrary procedure applied in section 2.5 definite conclusions cannot be drawn. The importance of bilateral feed deliveries and cereals imports of the Netherlands are already noted (see also section 3.4.(ii)) .

So far we have only investigated the impact of specific circumstances (policy, history, economic structure, and so on) on the size and composition of trade flows. Nothing has been said about changes and market positions. Chapter 4 focuses on these issues.

4. Markets: structure and development

4.1 Outline

In this chapter we focus on market conditions and dynamics: how can *changes* in trade flows be explained? We will see that the situation is not so unambiguous in advantage of the Netherlands as chapter 3 may have suggested.

The outline is as follows. First market organization needs our attention: the role of cooperative organizations in sale activities (4.2) and the market behaviour of processors and retailers (4.3). Recent changes in consumer preferences are also at the core of the business. After that, sections 4.3 and 4.4 try to analyze the observed mutations in trade values and market shares, as discussed in chapter 2. Section 4.5 concludes.

4.2 Activities of cooperative organizations

In 3.2. we reported the foundation of cooperative selling and auction organizations in the Netherlands at the end of the 19th century. Today in most of the EU member states such organizations are involved in market activities. Table 19 summarizes the situation in 1991.

The relative importance of the organisations varies between countries and markets, but their impact on total sales is significant. Denmark appears to be the most 'cooperative' country, followed by France and the Netherlands. But also in West-Germany these institutions play a role, mainly for dairy and vegetables.

A single producer has hardly any influence on prices, and by joining a cooperative organization his market power improves. The profits of these organizations are therefore realized on the output side, and not, like most enterprises, by also minimizing input costs: profits recede to farmers through higher input prices³⁹. This structure implies that activities are oriented toward sales: market research and product development have to be financed from realized profits, and in this case farmers may receive less. This dual characteristic may reduce alertness when the market requires a change in product strategy. In short: to ensure supply, cooperative organizations should pay farmers sufficiently high prices, while on the other hand profits are also needed to finance product development and market research. This dichotomy need not hamper a rapid adjustment to changing consumer preferences. The lesson that can be learned from

³⁹ Dutch milk imports from Germany (see table 6) can be realized by offering German farmers higher prices than their own cooperatives are willing to pay.

history is that a common effort will be far more effective than a multitude of individual actions.

Table 19 Share of cooperative organizations in the sales of major agricultural products in 1991 for some members of the EU, percentage

	Belgium	Denmark	Germany ^a	France	Netherlands	Un. Kingdom
Pork	15	97	23	80	24	20
Bovine meat	1	53	25	30	16	5
Poultry meat	-	0	n.a.	30	21	0
Eggs	-	60	n.a.	25	18	18
Milk	65	92	56	50	84	4
Sugar beet	-	0	n.a.	16	63	0
Cereals	25 - 30	50	-	70	65	21
Fruit	60 - 65	90	20 - 40	45	78	30
Vegetables	70 - 75	90	55 - 65	35	69	19

^a West-Germany

Declarations: - : zero; 0: less than 0.5; n.a. not available

Source: European Commission (1994), *The Agricultural Situation in the Community 1993*, table 3.5.6.1.

4.3 The market for agricultural products

Until now the agricultural processing chain has been analyzed from the production point of view, but market conditions also need our attention. Two typical features of food products are in order here. First, consumption per capita, expressed in calories, is limited by physical needs, and so in the long run, in the absence of expanding export markets, the aggregate demand for food products can not grow faster than population. The second characteristic is the low income elasticity of demand: an increase in wealth leads to a fall in the share of food products in total consumer expenditures. Of course, within food consumption substitution may occur from, say, basic ingredients to fast food products.

Food processing is increasingly a matter of international business. The market has been segmented into a large number of sub sectors corresponding to rather homogeneous commodity groups. Examples are: (alcoholic) beverages, tobacco products, dairy and meat. Because differences between products within sub sectors are often marginal, many of these markets are dominated by name brands and 'image building'⁴⁰. Consequently, promotion and advertising are much more important than research and development activities: from the point of view of the consumer, there should be a clear difference between those similar products: he has to go on buying his favourite brand. Price differences between top brands are usually marginal and markets are penetrated through acquisition of existing local brands by large international enterprises like Nestlé, Philip Morris and Unilever. However, this wave of 'brand milking' recently seems to have come to an end. One reason is that increased acquisition activities have significantly pushed up the associated costs. Another important factor is the reaction of the retailers: a growing number has adopted the same strategy of taking over existing distribution chains and they are becoming more and more internationally operating trade partners of food processors. Examples of this way of work are the Dutch Ahold and the German Aldi concerns. Moreover, they offer a number of "own label" brands which are highly substitutable for existing name brands, but at a substantial lower price. On april 2nd 1993, later to be dubbed as "Marlboro Friday", Philip Morris slashed the price of its Marlboro cigarettes, one of the worlds most strongest and valuable brands, because they had been losing sales to cheaper smokes. Investors concluded that the "brand bubble" had finally burst and this resulted in a drop of share prices of the food sector. Although food shares have recovered some of their poise, the period of steady growth has come to an end. "The principal causes of this bout of indigestion are a morose food market, more demanding consumers and newly rebellious retailers." (The Economist (1993)).

Where does this 'morose food market' come from? In the first place from a stagnation in population growth within the EU. Consequently, demand becomes increasingly satiated and the nature of the food market is changing from a sellers to a buyers market, in which preferences of consumers, rather than activities of producers will determine sales.

The second reason is that consumers become more exacting. These requirements may concern quality, an environmentally friendly way of production and what the French call the 'esthétique': the colour, taste, in short, the impression at first sight.

Through concentration in the retail sector this rapidly leads to a change in demand. For example, at 13.00h a large retailer in Germany already knows the sales of the day in each of his, say, 8000 stores, by product. He can analyze regional differences and

⁴⁰ This is not the case for bread, milk, sugar and meat. But also in these sectors a large number of products which only differ marginally has been introduced during the last decade.

adjust supply. Therefore producers must be able to immediately react on changes in size and composition of demand. According to some they are found not to be able to translate market signals to individual producers (see e.g. Ministry of Agriculture (op. cit.)). This report suggests that especially auction organizations in the Netherlands, which work well in situations with many suppliers and many buyers, fall short in a situation of high concentration on the retailers side. We will turn to this point in chapter 5.

Finally, regional differences between consumers increasingly require a large, diversified supply of products. The German consumer attaches importance to wholesome products, their way of production, taste, quality and nutritional value. Products sold in the Netherlands should be fresh and cultivated in a 'natural' way. Moreover, opinions about wholesome and health risk are rather traditional, in stead of based on actual information. In other countries different criteria are used and therefore one could say that despite the existence of a Common Market the 'European Consumer' still not exists.

4.4 Changes in Dutch imports from Germany: 1986 - 1992

Fluctuations in bilateral trade flows are analyzed via mutations in shares on import markets. This implies that sales of Germany and the Netherlands on each others import market are compared to those of competing countries. It does not imply, however, that only movements in relative prices and exchange rates are important. The size of the market also matters: are total imports expanding, declining or is the market satiated? Possible consequences of an enlargement of the German market after the unification are also taken into account. Finally, the behaviour of competing importers also needs our attention. How do they react on changing conditions?

First of all we investigate the impact of changes in exchange rates, as these affect the trade in all products simultaneously.

The tabled values should be interpreted as the mutations in national export prices, expressed in Dutch guilders, due to fluctuating exchange rates. So a negative sign indicates a fall in prices, relative to the Netherlands. It appears that differences between Germany and the Netherlands are negligible, but that the Dutch (and the German) loss relative to southern European countries can be substantially. The crash in the European Monetary System in november 1992 has substantially affected the relative prices with respect to Ireland, Italy, Spain and the United Kingdom. The bottom row of the table measures the impact of fluctuations in the US\$ exchange rate, expressed in Dutch guilders.

Table 20 Average percentage price changes due to movements in exchange rates relative to the Dutch guilder

Country	1986/1991	1991/1992	1986/1992
Relative to the Dutch guilder:			
Belgium/Luxembourg (BFR)	-0.0	-0.1	-0.0
Denmark (DKR)	-0.7	-0.3	-0.6
France (FF)	-1.3	0.2	-1.0
Germany (DM)	-0.0	-0.1	-0.0
Greece (DRA)	-10.1	-10.1	-10.1
Ireland (IRL)	-1.7	-0.7	-1.5
Italy (LIT)	-1.7	-5.4	-2.3
Portugal (ESC)	-4.6	0.7	-3.7
Spain (PTA)	0.6	-4.5	-0.3
United Kingdom (UKL)	-1.7	-6.4	-2.5
EC- 12 (ECU)	-0.8	-1.5	-0.9
Relative to the US \$:			
Netherlands (HFL)	5.5	6.3	5.7

Computed from: IMF, International Financial Statistics.

In section 2.3, table 5 we have seen that the value share of Germany in Dutch imports has risen from 14% in 1986 to 16.8% in 1992. We will try to locate this increase by discussing changes in five main commodity groups.

The German share on the Dutch import market of *dairy products and birds eggs* grew from 21% to 25.5% in the period of interest. Recall that imports to a large extent consist of milk and that they are mainly the result of actions of dairy cooperatives that compensate the fall in inland supply.

This expansion of German milk exports implied a loss for Belgium/Luxembourg, the relevant competitor. It is reasonable that these two countries compete on the Dutch market, as fresh milk will not keep very long. Table 21 gives a brief overview of the major changes.

Table 21 Market shares and prices of selected countries on the Dutch import market for milk, cream and milk products (group 022--) in 1986 and 1992

	1986			1992		
	volume	value	price	volume	value	price
	%	%	\$/kg	%	%	\$/kg
Germany	40.3	27.3	0.41	50.7	45.8	0.95
Belgium/Luxembourg	28.9	18.4	0.39	18.3	20.6	0.76
Other countries	30.8	54.3	1.08	21.0	33.6	1.68
Total	100.0	100.0	0.61	100.0	100.0	1.05

Computed from: LEI-DLO (1987) and OECD (1992).

In 1986 28.9% of the Dutch imports of milk and milk products originated from Belgium/Luxembourg and 40.3% from Germany. Within the group 'other' the position of France is dominant. The composition of the exports to the Netherlands differs from that of the other two countries, and prices are generally higher. In 1992, the situation has changed: the share of Germany in imported volume has grown to 50.7% and the Belgian has declined to 18.3%. This change is, apart from reasons, referred to above, linked to the average import price of fresh milk (02211 and 02212) per kilogram: the price gap has widened to 9.2 \$ct per litre in favour of Germany.

The relative magnitude of the group *cereals and cereal products* almost doubled from 1986 to 1992. This is the result of the spectacular rise of German wheat exports: about 25% per year on average, expressed in volumes. On the other hand, annual exports of the USA to the Netherlands plummeted by 25% on average. These changes may be induced by an interplay of developments. First, the demand of the Dutch processing industry has grown faster than production, and this has pushed up imports. Secondly, in the same period total production in the EU has risen by 3.9% per year, while the growth rate in total use was only 0.6%. This has substantially increased the self-sufficiency ratio of the EU and hence imports from third countries (a.o. USA) have sharply gone down. Furthermore, the German unification caused a jump in wheat production of almost 33%, which has led to an increase in stocks and hence to a rise in exports. Finally, although German export prices are still somewhat above the French ones, the average price difference halved, despite the annual French price advantage of 1.2% due to fluctuating exchange rates. The reason may be the relative decrease in farm gate prices in Germany (European Commission (1994), table 4.1.5.1). This follows from the

reduction of the so called Monetary Compensating Amounts⁴¹. The result of these various changes has been a raise in imports from Germany, at the expense of third countries (mainly USA) and competing EU members (France).

The German share in the Dutch imports of *vegetables and fruits* declined from 10.6% to 8.6%. This fall is mainly the result of the dip in the exports of potatoes and fruit juices, which together constitute about 40% of German exports. The disposal of juices suffered from increased competition: the enlargement of the Common market (Spain), Eastern European countries and third countries (mainly Brazil). The decline in the foreign disposal of potatoes is likely the result of the German unification. The rise in total production has been more than offset by the increase in national demand. Both industrial use and human consumption per capita expanded. Therefore the rise in Dutch import demand could not be met proportionally.

Finally we shortly consider *feeding stuff for animals and tobacco and tobacco manufactures*. The major suppliers of animal feed are Germany, the USA, Brazil and Argentina. It appears that import prices of the first and third countries have steadily declined, while USA prices have only marginally fallen. About 81% of the Dutch import of tobacco products from Germany consists of cigarettes. The export package of the other major supplier, Belgium/Luxembourg mainly involves cigars (44%) and cigarettes (53%). The value share of this country in imported tobacco manufactures sharply declined from 72% to 56%. This is not likely to be a price effect, but, as total imported volume is rather stable, a matter of changes in taste or demand composition.

In summary, changes in German exports to the Netherlands are induced by a variety of factors: EU policy (cereals), price developments (animal feed), an increased demand (cereals), a growth in domestic use due to the unification and increased competition from third countries (vegetables and fruits).

4.5 Changes in German imports from the Netherlands: 1986 - 1992

We will follow the line of approach of section 4.4 and therefore discuss changes in five main commodity groups. A more elaborate discussion, which explicitly aims at the analysis of changes in market shares at a more detailed level is the subject of chapter 5. Table 22 shows the main developments in detail.

⁴¹ These are payments required to compensate farmers for the sluggish adjustment of common EU prices to changes in exchange rates relative to the ecu.

Table 22 Dutch shares (in %) on the German import market in 1986 and 1992: a detailed classification

Commodity	1986		1992	
	Volume share	Value share	Volume share	Value share
Bovine meat	19.9	16.7	19.7	18.9
Pig meat	60.4	54.4	42.0	37.6
Poultry meat	63.9	62.0	50.5	44.5
Other meat	21.0	14.7	23.1	15.7
Butter	61.8	62.2	47.7	47.2
Cheese	53.5	46.2	46.7	42.3
Eggs	87.4	85.4	85.9	82.6
Other dairy	26.7	31.4	21.7	27.1
Potatoes	66.5	45.1	57.2	40.9
Tomatoes	58.0	68.3	50.3	51.2
Other vegetables, incl. prepared	22.8	30.4	28.0	34.6
Cigars	61.6	58.7	64.9	61.4
Cigarettes	14.7	11.3	13.8	23.7
Other tobacco products	29.9	41.4	22.0	36.8
Bulbs and tubers	89.9	91.2	90.0	92.0
Flowers and plants	76.3	76.3	79.0	79.2

Computed from: OECD.

The enlargement of the German territory since the unification is of crucial interest. Both production and consumption are pushed up, and the impact on trade is significant. Changes within the group *meat and meat preparations* are diverse. A common factor is the impact of the unification: a substantial jump in supply and human consumption, resulting in an increase of both imports and exports.

As the increase in domestic supply of *bovine meat* was the largest of all (almost 40%, expressed in volumes) the imported quantity 'only' rose with 15%. Two of the main foreign suppliers, France and the Netherlands, were successful in the expansion of their market shares from 1986 onwards, while the third, Argentina, incurred a small loss of

0.3%⁴². The wedge between the Dutch export price and the average price of other countries has declined from 16% in 1986 to 4% in 1992, and therefore the Dutch market share can be maintained in the future only by improving the meat quality.

The situation is less favourable for *pig and poultry meat*. Despite the relatively low price, the value share of the Netherlands in German imports of *pig meat* has steadily declined from 54.4% in 1986 to 37.6% in 1992. Belgium/Luxembourg, and recently Denmark have strongly improved their market positions. It is suggested (see Ministry of Agriculture (op. cit.)) that this may be linked to the insufficient quality control in the Dutch meat processing industry. Developments for *poultry meat* are similar. Despite falling prices, the Dutch share in the import value has declined from 62% to 44% in favour of France, Eastern European countries and newcomers like Brazil and Thailand. Since 1991 however, the market share of whole animals recovers. The market position of *other meat* has lightly improved since 1986.

The second group of commodities which needs our attention contains *dairy products and birds eggs*. All Dutch shares have declined, and the change for butter is most pronounced: -15%. Is this a matter of Dutch supply? A change in the composition of German demand? Or increased competition? Let's first take a look at *butter and butterfat*. Three things should be noted. First, in food consumption animal fats are increasingly replaced by fats of vegetal origin, and in most countries human consumption per head steadily declines. Secondly, the CAP plays a role. Declining consumption has led to a jump in the size of EU intervention stocks. In the period after 1986 these stocks were flushed off, both by dumping on the world market, but also through subsidized sales within the EU. Therefore it's not always possible to trace changes in trade flows back to market developments. Finally, the Dutch butter production marginally declines, while its consumption still rises, and exports stabilize: the total exported volume in 1992 equals about that of 1986. As a larger share is exported to third countries, foreign sales to EU member states reduce. These developments, together with changes in CAP regulations (see section 2.4) may be the reason why Ireland, rather than the Netherlands, strongly benefitted from an increased demand for butter after the unification, thereby realizing an increase in its market share of about 7%. As the price of Irish butter is still higher than, say the Dutch, this is not likely the result of increased competitiveness.

The import share of *Eggs* slightly decreased due to a fall in demand after 1991, which was fully absorbed by the Netherlands. France and the Netherlands benefitted from a rise in *cheese* imports, but due to a shift in demand toward other tastes the Dutch share

⁴² Value shares in 1986: France: 25.4% and Argentina: 18.4%. Corresponding values in 1992 are: 28.3% and 18.1%

declined. Finally, the Dutch production of *other dairy products* (mainly milk powder) decreases, and, at a marginally improving national demand, exports somewhat fall back.

We now turn to the trade in *vegetables and fruits*. Within this group we'll pay attention to several products. The first of these is the import of *potatoes*. Both Germany and the Netherlands are major exporters of this product. The second country is oriented toward seed and consumable potatoes and processed products (both for starch manufacturing and human consumption), while Germany mainly exports consumable potatoes. The Dutch import share falls down from 66% in 1986 to 53% in 1991, and rises again to 57% in 1992. The first development is linked to the size of the harvest in both country and the demand for early potatoes (Morocco, Israel, Spain, Egypt, Syria). After the unification the import demand dropped by some 7%, and the loss was fully incurred by other countries; the imports from the Netherlands even rose.

The import of *tomatoes* is quite another thing. The Dutch value share dropped from 68% in 1986 to 51% in 1992. Simultaneously relative prices were cut by some 18%. Despite this fact consumer demand for Dutch tomatoes declined. Apart from growing competition from countries like Spain (including Canary Islands), Belgium and Morocco one of the reasons is thought to be relative bad image, due to the (presupposed) widely use of pesticides in production (falsified thereafter) and the quality and taste of the product ("nur Wasserbomben"). Moreover the industrial production methods could no longer charm the German consumer, who increasingly preferred the varieties cultivated "under the beautiful French sun, and in fresh, clean air" (Ministry of Agriculture, nature Conservation and Fishery (1994)). Recently, Dutch tomato growers switched to other types which should improve both the taste and the image of their product. Nevertheless, the share on the German import market is still large.

The position of *other vegetables* improved: the market share of the prepared variety has risen from 29% to 38%, and fresh vegetables have also grown weightier: from 21% to 24%. The price of the latter, relative to the average competitor dropped by some 8%, and as demand still increases, the position on the import market has strengthened. It should be noted that the unification induced a rise in imported fresh vegetables in 1992.

The foreign sales of *crude and vegetal materials, n.e.s* significantly contribute to the exports to Germany. Of course, *bulbs, tubers, flowers and plants* are of most relevant. It is important to note that this group does not contain edible products, and consequently market satiation is not likely to occur. Although there is some competition from third countries (Israel, Colombia) the position of the flower and plants sector is strong. The variety is large, and research and development result in new attractive products⁴³.

⁴³ Like the black tulip (Dutch) and the blue rose (combined Australian/Dutch).

The German import of *tobacco and tobacco manufactures* consists of two components: unmanufactured and processed tobacco. In 1986 the value share of the first group was about 59%, and this fraction has risen to 76% in 1994. This explains why the Dutch value share in German imports has fallen from 13.7% in 1986 to 9.1% in 1992⁴⁴: all exports of the Netherlands are manufactured products. It appears that the market position of cigars has slightly improved from 59% to 61%, the share of cigarettes has shot up from 11% to 24% while the fraction of other smoking tobacco somewhat deteriorated from 41% to 37%. This shift is reflected in the composition of Dutch exports: much more cigarettes at the expense of other processed tobacco. What is the reason? Imports of cigarettes mainly originate from four countries: Belgium, Denmark, France and the Netherlands. The combined market share (in values) of the first two countries declined from 70% in 1986 to 54% in 1992, in favour of the other exporters. French and Dutch cigarettes are relatively cheap⁴⁵, and the average yearly price increase is lower than that of the Belgian and Danish products. Demand in the Netherlands is satiated and even declines, and its exports rise. Two major changes in German demand also matter. First, the rise in the import volume of cigarettes by far exceeds the increase in the foreign demand of other manufactured tobacco⁴⁶. Moreover, the inclusion of East-Germany has led to a jump of 80% in the imported volume, which has almost totally been met by France: a drastic price cut has improved the volume share from 15% to 61% within one year.

Finally, we pay some attention to the rise in the import share of animal feed. Recall from section 3.4 that in the animal diets cereals are replaced by substitutes, mainly imported via Rotterdam and distributed to other countries. Although an unfavourable depreciation of the US\$ has led to an increase of the Dutch price, relative to the average competitor (see table 18, bottom row), an expanding demand has pushed up the Dutch exports.

The conclusion is that, although changes in Dutch exports are induced by the same factors as the German foreign sales, two of them stand out: an increased demand, due to the unification, and a much more critical attitude of the German consumer (meat and tomato exports), linked to both product quality, image building and demand diversification.

⁴⁴ See table 6 in section 2.4.

⁴⁵ Recall from table 18 that French export prices decline when expressed in D mark by some 1.2% per year.

⁴⁶ Until 1991: 9%, as compared to 2.8%.

5. The position of Dutch products on the German market

5.1 Aim and background

The general conclusion from the previous chapters was in fact that the Dutch position on the German market seems rather strong and stable. Yet not everything in the garden was lovely: an increasing number of competitors enters the market, consumer demand for some products tends to be saturated, and the industrial cultivation methods of the Dutch horticultural sector are supposed to yield tasteless and unhealthy bulk products. Is this just a little (technical) problem that will soon be overcome or is it merely the tip of the iceberg?

This question gains in importance when we take into account the recent discussion in the Netherlands on the future of agriculture. The technological lead has promoted specialization in horticulture under glass and has strongly pushed up production, which has trended down prices and incomes. Low incomes are also a problem in the crop sector, especially as a result of the sharp price cut under the so called MacSharry reform (see also section 3.2). The livestock sector has its own difficulties, as the intensive way of farming is seen as a main source of environmental damage. This forces government to introduce new and to sharpen existing rules on the use of manure, which limit production and push up costs. Has the agricultural sector fallen victim to its own success?

It is beyond the scope of this study to extensively answer this question. On the other hand, it will be clear that the problems touched on above will also affect the position on other foreign markets. Therefore it may be worthwhile to investigate the Dutch position on the German market in more detail than in the previous chapter. Before we proceed it may be interesting to summarize the results of a recent survey, conducted by A.T. Kearney management consultants by order of the Dutch ministry of Agriculture. This report focuses on the international market position of the Dutch agribusiness⁴⁷. Its conclusions can be summarized as follows:

- (i) Food markets are increasingly satiated;
- (ii) Consumers are more exacting;
- (iii) Food retailers are well organized, internationally operating enterprises that immediately translate market changes into requirements about product quality and diversification;

⁴⁷ Ministry of Agriculture, Nature Conservation and Fishery (1994). Hereafter to be referred to as the Kearney report, or simply: the report.

- (iv) Cooperatives continue their policy of maximization of the sales of bulk products, and, as these organizations only care about the financial interest of producers, they do not react to signals from the market;

Consequently, if no action is undertaken:

- (v) For almost all products, Dutch shares on import markets will continue to decline, or will at best be stable;
- (vi) Dutch products will increasingly fall short to meet quality requirements and therefore within a few years sales will be fully dependent on large discount markets for bulk products;
- (vii) Results of the GATT agreement will further deteriorate the export position of the Netherlands: subsidized exports are to be reduced, and the Common market is no longer shielded from foreign competition.

To interpret these conclusions well one should keep in mind that the research underlying the report is limited in two ways. First, only (part of) the European market is taken into account, and, secondly, the number of products analyzed is also necessarily incomplete⁴⁸. Moreover, for all products at most three competitors are selected, which are, apart from the trade in flowers and plants, all European countries⁴⁹.

Is the report in line with our conclusions from earlier chapters? In a number of cases it surely is. Items (i) to (iii) above roughly confirm the conclusions from section 4.3. Food markets are more and more satiated, and consumer preferences have changed since, say, 1986. It is also a matter of fact that the distribution of food products is far more internationally organized than a number of years ago, and retailers have improved their countervailing power relative to processors. In the remainder of this chapter we will see that in a number of specific cases our conclusions point in the same direction. Nevertheless, we do not agree that *the* cause of the decline (if realized) in Dutch market shares should be found in the structure and short sighted policy of *the* cooperative organizations.

⁴⁸ The analysis is restricted to 7 product groups: cut flowers, high tech vegetal inputs, fish, vegetables, consumable potatoes, dairy and pork.

⁴⁹ Denmark, France, Spain, Germany, Belgium and Poland. Four of these are large agricultural exporters (see table 1 in section 2.2).

5.2 General outline of the chapter

The scope of our analysis is limited as we only focus on the exports of the Netherlands to Germany and the most recent year we are able to analyze is 1992. Yet, compared with the report, our scope is more general in some respect. While the report suggests that the decline in import shares of the Netherlands is mainly the result of changes on the demand side of the market (consumer preferences, actions of the 'rebellious retailers' (section 4.3) and policy changes) we also take agricultural supply into account. The reason is obvious: exports are the consequence of a surplus of production over internal demand, and imports are necessary when own supply falls short to meet demand. Therefore a decline of import shares *may be* the result of developments within the exporting country itself rather than, say, increased competition or incomplete reactions to changes on import markets. In the discussion we will focus on point (vi) of the conclusions, as this is the main 'message' of the report: "the news about a bad image of Dutch products on foreign markets has become common coin for a number of sectors. The gravity of the situation, the extent of the damage of the Dutch image and the fact that previous actions have hardly had any impact on consumer behaviour should give food for thought" (page 38/39 of the report). To draw such a peremptory and general conclusion one should be sure of his ground.

The investigation of the market position of all products will lead to an ill-digested enumeration. Therefore we will confine ourselves to 11 main commodities or commodity groups. To decide whether it is worthwhile to include a specific good in our analysis, two criteria have been used. The first is the share of a particular commodity(group) in total Dutch agricultural exports, and the second the fraction of the total export of the product that is disposed off in Germany. As total agricultural exports of the Netherlands by commodity for the year 1992 are not (yet) available the *selection* of suited products has been made on the basis of data for 1991. Of course, the analysis will be based on 1992 data. Table 23 summarizes the results.

The groups selected contribute for about 44% to the agricultural exports of the Netherlands in 1991. On average 30.5% of the foreign sales of these commodities were exported to Germany. From table 2 in section 2.2 it follows that Germany accounted for about 30.6% of the Dutch agricultural exports in 1991. In this respect the selection of table 22 is rather representative. For some products this export share exceeds 50%: poultry meat, eggs and cut flowers.

The outline of this chapter is as follows: meat exports (bovine, pork, poultry) are the subject of section 5.3. In 5.4 we discuss cheese and eggs, and vegetables (fresh and prepared) will be investigated in section 5.5. Finally, we focus on the market position of flowers and plants (5.6) and end up with some remarks about developments after 1992 (5.7). Some concluding remarks follow in section 5.8. In sub-sections 5.3 to 5.6

we follow the same procedure: first we give an overview of changes on the import market, separately for volumes, values and prices and then the evolution of Dutch market shares is analyzed. Also here we show values and volumes, together with relative prices. Then major changes are singled out and discussed.

Table 23 Dutch agricultural exports to Germany in 1991: selected commodities

SITC3 code	Description	Share in total Dutch agricultural exports	Share exported to Germany by commodity
011	Bovine meat	4.6	13.8
0122 ^a	Pigmeat	5.6	38.8
0123	Poultry meat	2.1	69.3
02499	Cheese	5.5	47.0
025	Eggs	1.9	64.4
05410	Potatoes	1.6	22.1
05440	Tomatoes	2.4	43.0
054/--	Other fresh vegetables	5.6	47.3
056	Prepared vegetables	3.6	46.0
29269	Live plants	4.2	39.1
29271	Flowers	6.3	50.8
	Total share	43.6	30.5

^a Also including prepared products: 01254 (edible offal), and 0161- (ham, bacon and the like).

Source: LEI-DLO (1992).

5.3 Meat and meat products

In this section we will successively discuss exports of (i) bovine meat, (ii) pig meat and (iii) poultry meat.

(i) Bovine meat

Germany imports four types of cattle meat, depending on whether it's frozen or fresh, or whether it's boneless or with bone in. The distinction may be important as import prices may differ up to a factor 3. It will also be clear that fresh meat will be imported

from neighbouring countries, like France, the Netherlands and Belgium while, say, imports from Argentina consist of frozen meat only.

Germany turns out to be the major exporter of bovine meat among members of the EU: in 1991 German exports accounted for more than 72% of total foreign trade of all member states, and for 75% of all imports⁵⁰. Therefore it is worthwhile to investigate situation on the German import market. Table 24 summarizes.

Table 24 German imports of bovine meat 1986 – 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	4.9	13.3	8.0
1991/1992	19.7	28.5	7.3
1986/1992	7.2	15.7	7.9
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	19.9	16.7	0.78
1991	18.3	16.6	0.84
1992	19.7	18.9	0.83

^a Ratio of the Dutch price and the average competing import price.

Source: OECD.

We observe that until 1991 the volume growth of imports from the Netherlands was less than the average increase in total imported volume (4.9%): the Dutch volume share declined from 19.9% to 18.3%. The value share was rather stable, and consequently the average Dutch export price has risen relatively to the average competing import price. After 1991 volume and value shares regained. The mutation in the average german import price (7.9%) seems quite large, but, when expressed in D-mark, average inflation amounts to 2.2% only (cf table 20, section 4.4).

⁵⁰ Including intra-EU trade.

To better understand the situation it's useful to investigate whether these changes in shares and relative prices have occurred for all types of meat distinguished above. Because 1986 data obey the SITC2 classification it is possible to compare two types of bovine meat only: boneless and with bone in. Table 25 gives a detailed overview of the expansion of the German import market, the evolution of Dutch market shares and relevant prices by type of meat.

The diverse developments of the two import markets stand out. The demand for meat with bone in declined until 1991 and has sharply shot up as soon as effects of the unification were included⁵¹. The imports of boneless meat showed a substantial increase until 1991, and have even doubled thereafter. Expressed in volumes, imports of boneless meat accounted for about 44% of the total in 1986. In 1992 this share has risen to 58.5%.

The Dutch exports to Germany mainly concern bovine meat with bone in, but the ongoing substitution by boneless meat on the German import market is also reflected in their composition. The market share steadily grows from 3% in 1986 to 10% in 1992. From table 24 it also follows that the relative increase of the average Dutch import price is mainly the result of a change in composition of the exports to Germany. It appears that prices for boneless meat do not diverge much across exporters, but that in case of the other type the price gap between the Dutch and the average import price of its competitors is widening. What is the reason?

It is important to keep in mind that trade with third countries is to a large extent dominated by the CAP. Bilateral and multilateral agreements of the EU with ACP⁵² and Eastern European nations allow these countries to export to the EU, and it appears that Germany accounts for about 36% of the total import quota. As this meat is boneless and frozen, and has to be transported over large distances (from Argentina, Africa) its price is relatively high. So when in this case the Dutch export price is of about the same magnitude, it is also high. Therefore the widening gap between prices of meat with bone in seems to indicate that Dutch exporters are no longer able to lower their prices sufficiently to maintain or create a competitive advantage. This surmise is in line with the present discussion which stresses the need to improve the quality as there is little room for further price cuts.

⁵¹ Recall that in the published statistics the unification was included in 1992, but in reality the impact has already become manifest in 1991.

⁵² Countries in the African, Caribbean and Pacific regions.

Table 25 Average yearly growth of the German import market and shares and prices in 1986, 1991 and 1992 by type of product

	Bovine meat with bone in	Boneless bovine meat
	%	%
Market expansion (volume): 1986/1991	-0.8	10.7
Market expansion (volume): 1991/1992	17.6	28.1
Market expansion (volume): 1986/1992	2.0	11.1
Dutch market shares, volume	%	%
1986	33.1	3.2
1991	32.7	7.7
1992	31.1	10.3
Dutch market shares, value	%	%
1986	38.8	3.1
1991	32.7	7.7
1992	39.9	10.3
Dutch prices	\$/kg	\$/kg
1986	2.5	4.2
1991	3.7	5.5
1992	4.2	5.7
Competitors prices		
1986	1.9	4.3
1991	3.0	5.5
1992	3.1	5.8
German market prices ^a		
1986	2.5	n.a.
1991	2.7	n.a.
1992	3.0	n.a.

^a Heifers, price per kilogram carcass weight.

Sources: OECD and Commission of the EC, the Agricultural Situation in the Community, various issues

The Germans (and others) however, have had bad experiences with bovine meat (mainly from the United Kingdom) that was infected with the so called mad cow disease. Therefore Dutch exporters should be able to guarantee that this disease is fully under control and no meat from the UK is reexported. Another issue that cannot be neglected with impunity is a growing resistance among consumers against the use of hormones that stimulate meat production. Therefore recently a quality control system has been introduced to redeem the good reputation. An obvious advantage of such a programme is that farmers who refuse to cooperate are automatically under suspicion.

(ii) Pig meat

We start the discussion with two facts, then give the conclusions from the Kearney report and investigate whether these are confirmed by our data.

The first fact is that the intensive way of pig breeding in the Netherlands is increasingly seen as a main source of environmental damage. Until now, a satisfactory solution to the manure problem has not been found and a reduction of the herd sizes seems to be inevitable. On the other hand, animal diseases can hardly be brought definitely under control. Of course, this is not only a Dutch problem: Belgian and German farmers face the same difficulty. The market system in the Netherlands allows farmers to sell their meat to the slaughter which offers the highest price. This implies that most meat processors have no regular suppliers and therefore exporters cannot always guarantee that their product is free of any disease.

The second fact concerns the position of Dutch pig meat on the German import market. Table 26 below summarizes developments since 1986.

From the figures it clearly follows that although the German import has substantially increased from 1986 onwards, the Dutch market share, expressed in volumes, has plummeted from 60.4% in 1986 to 42% in 1992. What are the reasons?

Table 26 German imports of pigmeat in 1986 - 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	8.9	16.0	6.5
1991/1992	18.2	28.4	8.6
1986/1992	10.4	17.9	6.8
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	60.4	54.4	0.90
1991	45.2	41.0	0.91
1992	42.0	37.6	0.89

^a Ratio of the Dutch price and the average competing import price
Source: OECD.

In line with the scope of its analysis, the Kearney report strongly suggests that the deterioration of the Dutch position is caused by demand effects: a general dislike of the consumer for pig meat from the Netherlands due to its low quality, and the lack of control of animal diseases (page 85/86)⁵³. Consequently Dutch pigmeat is cheaper than cheap, which is nevertheless far from sufficient to maintain its market position. Suppose that this is indeed the case, is it the whole story? We think it is not.

In the introduction to this chapter we already noted that a change in market position is not a matter of demand alone. Let's therefore examine the evolution of supply in the Netherlands in some detail. From the commodity balances published by CBS/LEI it follows that since 1985 the situation has not changed much. Despite some irregular movements, production and use slightly decline while exports have been rather stable. This is reasonable, as since 1986 Dutch market prices have declined by some 2.5% yearly (expressed in Dutch guilders) while production costs per animal on average did not change. This has led to a further reduction of the number of farms and to an increase in the scale of operation.

Given the fair growth in German imports (see table 25) the question arises whether the increased demand could be met anyhow. Of course, this also depends on the share of total exports, disposed off in Germany (38.8%, see table 22). Combination of all relevant data leads to the overview of table 27.

Table 27 Supply and foreign demand of Dutch pig meat: 1986 - 1992

Item	Size	Unit of measurement
Total increase in German import, 1986- 1991	232.7	million kg
Dutch market share in 1986	60.4	%
Required increase in Dutch exports to maintain market share	140.6	million kg
Total increase in Dutch export 1986-1991	221	million kg

Source: OECD and Eurostat, Animal production.

The conclusion will be clear: the market share could have been maintained only if the share of Germany in total foreign sales of pigmeat would be at least 63.6%, which is far more than the realized 38.8%. In fact, the share exported to Germany has even risen recently, despite the total fall in export volume since 1990.

⁵³ Based on a survey of the German market, too.

Now two questions remain: table 26 indicates that despite the stability of the Dutch export price relative to the average competing price Dutch pork still is relatively cheap: does this indicate a permanent position in the pure bulk segment of the market? And, second, has the situation changed since 1992? To answer the first question, in table 28 export prices of the Netherlands are compared to those of the two main competitors: Belgium and Denmark. Due to differences between the SITC 2 and 3 classification for 1986 only total prices can be analyzed.

Table 28 *Relative export prices for pork in 1986, 1991 and 1992, Dutch price = 1*

	1986	1991		1992	
	total	fresh	frozen	fresh	frozen
Belgium	1.38	1.22	1.22	1.23	1.15
Denmark	1.37	1.21	1.17	1.19	1.06

Source: OECD.

It follows that Dutch prices have been relatively low since the beginning of our sample, but differences with respect to the main competitors have declined. Now the second question gains in importance: has this situation continued since 1992? Figures are scarce and, due to the introduction of the Common market, not comparable with observations on earlier years. Yet the data do not indicate a plummeting of the Dutch pork exports to Germany. Publications of the Commodity Board for Meat products even show an increase in the exported volume of 20% in 1993 relative to 1992. This seems rather high. Anyhow, the overall disgust of the German consumer for Dutch pig meat has not yet become manifest, if ever.

(iii) Poultry meat

The Dutch exports of poultry meat to Germany are characterized by two developments: declining market shares, both in volume and value and a drop in relative prices. Table 29 below summarizes.

German imports of poultry meat have risen by 10.4% per year on average from 1986 to 1992, while global exports of poultry meat of the Netherlands have grown by 6.4% 'only'. Together this implies a drop in the market share as illustrated in the table: from 64% in 1986 to 50.5% in 1992. So in this case the supply effect accounts for the observed changes. Yet there is more to say.

Table 29 German imports of poultry meat in 1986 – 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	11.5	18.2	6.0
1991/1992	5.5	13.9	8.0
1986/1992	10.4	17.4	6.3
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	64.0	62.0	0.92
1991	51.9	47.2	0.83
1992	50.5	44.5	0.79

^a Ratio of the Dutch price and the average competing import price.

Source: OECD.

The price ratio has fallen from 0.92 to 0.79. Is this a matter of changes in export composition, for example mutations in the proportions of fresh and frozen meat? Indeed, the Dutch exports mainly contain fresh meat while those of its major competitor, France, are biased toward frozen meat. Nevertheless, this is not likely to be the source as the composition of German imports was rather stable since 1986. It appears that for all types of poultry meat the Dutch price is lower than the corresponding French one: the ratio in 1992 varies between 0.69 and 0.88. This seems to justify the conclusion that Dutch exporters continue to operate at the cheap segments of the markets.

5.4 Cheese and eggs

(i) Cheese

This dairy product is a composite commodity: it consists of five different types. Unfortunately, the decomposition has not been applied to the 1986 data. Table 30 summarizes the developments for the aggregate product.

Table 30 German imports of cheese in 1986 – 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	6.3	13.5	6.8
1991/1992	9.6	15.5	5.3
1986/1992	6.8	13.9	6.6
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	53.5	46.1	0.75
1991	48.7	44.1	0.83
1992	46.7	42.3	0.84

^a Ratio of the Dutch price and the average competing import price.

Export shares have fallen, both expressed in volume and value, while relative prices have regained. It appears that the decline in shares from 1991 to 1992 is fully the result of changes in the composition of German exports: for all types of cheese, Dutch shares have risen. The demand for typically Dutch cheese (code 02499⁵⁴) only marginally increased since the unification. The upward shift in the price ratio is linked to the rather low dairy prices in The Netherlands in 1986⁵⁵. In 1988 the price ratio turned out to be 0.85, which is about the same as in later years.

May be the deterioration of the market position since 1986 is caused by both the change in import composition and the rapid increase in import demand. Indeed, this is also suggested by the Kearney report: market expansion should be realized through diversification rather than ongoing promotion of existing products. Of course, an alternative would be to shift exports toward markets that are less satiated. A first attempt in this direction can be observed, as the share of exports, disposed off within the EU has slightly declined from 83% in 1986 to 81% in 1992. However, exports of dairy products to third countries are subsidized via the CAP and hence expansion possibilities depend

⁵⁴ This group accounts for 96.5% of the Dutch export volume of cheese to Germany in 1992.

⁵⁵ CBS/LEI-DLO, Landbouwcijfers, table 73-e.

on economic policy. In 1992, restitutions for cheese amounted to 672 million US\$, of which about 25% accrued to the Netherlands (Commission of the EC(1993)).

The GATT agreement will not only induce more competition on the Common market, but will also lead to more exports to, say, the United States. As the present US import quota almost fully consists of Dutch cheese, some further expansion will be possible.

(ii) *Eggs*

Table 31 below illustrates the changes in German imports of birds eggs.

Table 31 German imports of eggs in 1986 - 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	1.7	9.7	8.0
1991/1992	-5.5	-10.6	-5.4
1986/1992	0.5	6.1	5.6
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	87.4	85.4	0.85
1991	87.5	84.3	0.77
1992	85.9	82.6	0.78

^a Ratio of the Dutch price and the average competing import price

Until 1991 import growth had been marginal, and since the unification a decline can be observed. The cause of this decline, a jump in production, cannot fully be attributed to the inclusion of the former GDR. The Eurostat commodity accounts (Animal Production) already indicate a substantial rise in the production of West-Germany of about 33% in 1991. The decline in imports actually happened in 1992. In fact, exports of competing countries to Germany (Belgium/Luxembourg, Denmark) have also decreased, in favour of third countries (the Czech republic, USA).

5.5 Vegetables

(i) Potatoes and related products

In the Kearney report the potato sector is characterized as highly innovative with a large logistic capacity. There is one weak point: the taste is too much that of the average consumer. The Dutch position is especially strong in seed potatoes and processed products, while Germany, an important competitor, concentrates on unprocessed consumable potatoes. It is beyond the scope of our survey to analyze the market positions of both countries within, say, the EU: we have limited the analysis to the German import market.

The Dutch potato exports to Germany consist of four components: (i) nonconsumable potatoes, (ii) seed potatoes, (iii) consumable potatoes and (iv) processed products. Unfortunately, the OECD trade figures do not completely match this subdivision. From 1988 onward, (i) to (iii) are included in the group 05410 and (iv) is covered by four separate items⁵⁶. In 1986 however, (iv) is included in other commodity groups and the share of potato products cannot easily be determined. Therefore we will proceed as follows: first we only consider unprocessed potatoes, as for this product 1986 figures are also available. Finally we briefly look at changes in market shares from 1991 to 1992 for all distinct processed products.

A meaningful discussion of the German potato imports requires that we should take into account two peculiarities of the potato market. The first is that although we speak about potatoes, the product is not homogeneous. Recall from the discussion above that three types should be distinguished: seed potatoes, consumable potatoes and finally the nonconsumable species. Finally, supply depends on the season. This implies that the group of consumable potatoes contains both the early and late varieties so that, say, potatoes from Malta do not compete with those from the Netherlands or Belgium.

The composition of the German potato imports has changed: the share of early potatoes increased from 27% in 1986 to 39% in 1991 and has declined to 34% in 1992. As the Netherlands only produces the late variety, its share in total imports will be affected by these fluctuations in import composition. Therefore we will exclude early potatoes from our analysis. To proceed successfully, we have to decide which countries compete with the Netherlands. The supply balance sheets published by Eurostat (Crop

⁵⁶ 05611 (pieces), 05641 (flours and meals), 05661 (products, frozen) and 05676 (products, not frozen). See also (iv) below.

Production) indicate that Belgium/Luxembourg, Denmark and France only or mainly export this late variety⁵⁷. Relevant developments are summarized in table 32.

The table illustrates that, expressed in volumes, both German imports and the Dutch market shares have declined 'on average'. It appears that French and Danish products are more expensive than the Dutch ones, while Belgian potatoes are cheapest. Nevertheless the rise in French market shares was largest. Is this a possible consequence of the declining demand for a rather tasteless Dutch product, as is suggested in the Kearney report? Of course this question cannot be answered looking at statistical observations only. Yet it may be worthwhile to do so to get a rough idea about the economic background. We will confine ourselves to the supply balance sheet of the Netherlands and changes in the composition of Dutch exports.

Table 32 German imports of potatoes (excl. early variety) in 1986 - 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	-1.2	13.6	15.0
1991/1992	1.3	-9.1	-10.5
1986/1992	-0.8	9.5	10.3
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	91.2	91.9	1.20
1991	86.6	82.2	0.74
1992	86.5	83.7	0.82

^a Ratio of the Dutch price and the average competing import price

Sources: OECD, LEI-DLO (1987, 1992) and Eurostat, Crop production.

⁵⁷ The share of early potatoes in *total* exports of Belgium/Luxembourg and France is about 4% and 8%, respectively. On the other hand, in case of Italy this proportion amounts to 76%. Therefore the selection is only a rough approximation.

The commodity balance published by CBS/LEI (1994) indicates a gradual decline of total production in the Netherlands. This fall can fully be attributed to the nonconsumable varieties. The annual increase in the supply of seed potatoes is largest: about 5.5% on average. As from 1989 onward production of the consumable species is stable an increasing domestic demand has led to a fall in exports. Table 33 gives a detailed overview.

Table 33 Average annual changes in Dutch exports of potatoes and potato products, 1986 - 1991

Destination	Seed potatoes	Other varieties	Processed	Total
	%	%	%	%
Germany	2.6	-2.4	7.9	0.8
Other EU countries	8.0	1.0	12.1	6.0
Third countries	6.4	1.7	14.6	5.3
Total	6.8	-0.3	10.7	4.1

Source: LEI-DLO(1987, 1992).

Three developments stand out. First, the growth in exports of 'other (consumable and nonconsumable) varieties' is lowest, whatever the destination and, secondly, growth figures on the German market are for all types of products lower than those relating to other export regions. Finally, the increase in foreign sales of processed products exceeds that of other commodities, independent of the destination. Note that the first and third point are in line with the Kearney report: a strong market position for processed products and a lagging behind of consumable potatoes. These two characteristics have also become manifest on the German market. Table 31 already indicated a (slightly) deterioration of the market share of consumable potatoes. It is at least doubtful whether this shift from consumable potatoes toward seed potatoes (a high tech input, see table 9) and processed products can be attributed to a decline in demand for "a tasteless product" (Ministry of Agriculture (1994)). From the OECD data it can be computed that the position of Dutch processed potatoes on the German market is very strong: from 1991 to 1992 the market share increased from 91.3% to 94.8%, expressed in volumes and from 89% to 93.7% measured in values.

(ii) *Tomatoes*

In section 4.5 we have seen that the share of Dutch tomatoes in the value of German imports has sharply declined from 68% in 1986 to 51% in 1992. We briefly discussed two possible reasons: increased competition and a decline in demand for the Dutch variety, that may be linked to the industrial production method. Here we will analyze competition from third countries in more detail and also pay attention to supply balance sheets. The discussion excludes processed products as due to changes in classification only changes from 1991 to 1992 can be analyzed. Table 34 summarizes the market position for fresh tomatoes.

Table 34 German imports of fresh tomatoes in 1986 - 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	6.4	13.4	6.6
1991/1992	7.5	0.6	-6.4
1986/1992	6.5	11.2	4.3
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	58.0	68.3	1.56
1991	54.7	56.0	1.04
1992	50.3	51.2	1.04

^a Ratio of the Dutch price and the average competing import price.

The fall in the import share after 1991 equals the one of the whole period before. While German imports have increased by 7.5% from 1991 to 1992 the volume of Dutch exports has even declined by 1.3%. Is this a matter of increased competition or a decline in demand for the Dutch product?

To answer this question, we will first consider the time span until 1991. In 1986 about 82% of the volume of imported tomatoes originated from Spain (24.1%) and the Netherlands (58%). In 1991 this common share had reduced to 75% in favour of Belgium/Luxembourg (from 6.8% to 12.1%) and France (from 3.2% to 4.7%). Simultaneously Spanish prices rose about 7.8% faster than the average import price, while the Dutch prices relatively declined by some 3% per year. So while the drop in the

market share of Spain can be attributed to a relatively unfavourable price development, the fall in the Dutch share can certainly not. On the contrary, despite a substantial price cut the Dutch position has deteriorated. This may be the result of two distinct developments. In the first place, from the Eurostat supply balance sheet for fresh tomatoes it follows that the average yearly growth rate of the Dutch exports over the period 1986/91 (4.6%) was smaller than the annual increase of the German import (6.4%). Consequently, if we assume that the distribution of Dutch exports over destinations has not changed, this automatically would lead to a dip in the market share: from 58% in 1986 to 53.8% in 1991. As this estimated decline is larger than the realized fall, there must be a second effect, that accounts for the residual improvement of 0.9%⁵⁸. This is likely to be the cut in the Dutch relative export prices.

After 1991 the situation has changed. In 1992 the supply effect accounted for a decline in the market share of about 2.5%, as Dutch exports rose by some 5% and German imports by 7.5%. As the relative price did not change, the residual fall of 2% is possibly the result of a demand effect. It appears that especially Spain has benefited from this development: its market share increased by almost 5%.

Therefore our conclusion is that until 1991 the fall in the Dutch share on the German import market can be attributed to a supply effect, but in more recent years a demand effect becomes manifest. This can be attributed to increased competition (especially the early varieties from the Canary Islands) and also to the bad image of the Dutch tomato: it was supposed to be an industrially produced, unaesthetic and tasteless product. This image problem, together with low prices has led to a more diversified cultivation pattern in 1994.

(iii) *Fresh vegetables*

Although this is a rather heterogenous group, and the analysis is restricted by different classifications (SITC 2 and 3) we will pay some attention to it. The main reason is that the market position has significantly improved after the unification, despite a decline in total German imports.

The composition of Dutch exports to Germany in 1992 is roughly as follows: leguminous vegetables, dried or shelled 1.1% (group 0542-), other⁵⁹ fresh vegetables 91% (group 0545-) and frozen vegetables 8% (group 0546). Therefore we only analyze the commodity group 0545-. Table 35 below summarizes mutations in German imports

⁵⁸ Consequently, the share exported to Germany should have risen. This is in line with published statistics, which indicate a rise in the share exported to Germany from 50% in 1986 to 54.3% in 1991.

⁵⁹ The indication other refers to the exclusion of potatoes (0541-), leguminous vegetables (0542-) and tomatoes (0544-).

and the Dutch market position by subgroup. Due to the use of different classifications in 1986 and later years a complete decomposition at 5 digit level is not possible.

Table 35 German imports of other fresh vegetables (group 0545-) in 1986 - 1992: average yearly changes and Dutch market shares by subgroup

	volume			price		
	05451/2	05453/9	0545-	05451/2	05453/9	0545-
German imports	%	%	%	%	%	%
1986/1991	0.6	6.4	5.0	12.8	9.3	10.1
1991/1992	-10.9	7.2	3.5	4.1	-1.0	1.4
1986/1992	-1.4	6.6	4.8	11.3	7.6	9.0
Dutch market shares	volume			price ratio ^a		
	05451/2	05353/9	0545-	05451/2	05453/9	0545-
	%	%	%			
1986	34.5	38.7	37.6	1.14	0.63	0.79
1991	30.6	41.6	39.3	0.88	0.96	0.99
1992	38.6	42.8	42.1	0.70	1.03	0.98

^a Ratio of the Dutch price and the average competing import price.

Source: OECD.

Columns:

05451: onions and shallots

05452: garlic, leeks etc

05453: cabbage and brassicas

05454: lettuce and chigory

05455: carrots, turnips, radishes and other edible roots

05456: cucumbers, gherkins

05457: leguminous vegetables

05458: mushrooms and truffles

05459: other vegetables

05451/2: sum of 05451 and 05452

0545-: sum of 05451 to 05459

The import volume of commodity group 05451/2 was characterized by a modest expansion from 1986 to 1991 while prices, on the other hand, sharply rose. From 1991 onward imports have declined. The relative price ratio in the 5th column of the table already indicates what has happened. Until 1991 the Dutch import share declined, despite a relative reduction in prices. The reason can be found in increased competition from non-EU countries like Poland and Chile. The import shares of other EU members, like Spain, Italy and France also fell down. After the inclusion of East Germany imports have dropped, while the Dutch market share has significantly improved, possibly due to an additional cut in relative prices.

The developments in the imports of the remaining group 05453/9 contrasted with those sketched above. The Netherlands have benefited from a fair market expansion (6.6% on average): their market share improved from 38.7 to 42.8%. In the same period the relative price has sharply gone up. What could be the reason? It appears that the Italian share dropped from 22% in 1986 to 15% in 1992 in favour of two countries: Spain (+3%) and the Netherlands (+4%). The improvement of the Spanish market position can fully be attributed to a substantial price reduction: its price ratio declined from 2.3 to 1.1. To see whether the market share of the Netherlands also increased one should keep in mind that its export package of fresh vegetables to Germany is well balanced. From detailed data on 1991 and 1992 it can be seen that at 5 digit level market shares, expressed in volumes are all between 30% and 70%, while its competitors are far more specialized. Therefore one of the reasons may be that Spain was not able to immediately fill the gap for all products and therefore the Netherlands, unless the rise in its relative price also has expanded its market share.

Recent figures however, indicate that Dutch market shares have declined in 1993 in favour of Spain and other southern countries.

(iv) *Prepared vegetables*

Just like the group 'other fresh vegetables' this item covers a large number of different products. A meaningful analysis therefore requires a rather detailed decomposition. To some extent this is possible, but commodity classifications in 1986 and 1991/2 do so poorly match that an analysis at individual product level is hardly possible⁶⁰. Nevertheless, some conclusions can be drawn. We start with the familiar overview, that is summarized in table 36.

⁶⁰ Therefore commodity groups like processed potatoes and tomatoes could not be singled out.

Table 36 German imports of prepared vegetables in 1986 – 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	10.4	16.9	5.9
1991/1992	2.2	4.7	2.4
1986/1992	9.0	14.8	5.3
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	29.4	27.7	0.92
1991	37.5	35.1	0.90
1992	37.6	36.6	0.95

^a Ratio of the Dutch price and the average competing import price

Source: OECD

The market position significantly improved during the period until 1991. Given the growth rate of the German imports, it can be calculated that Dutch exports to Germany must have increased by about 17% on average. Inspection of the underlying 1986 data shows that this growth could be realized at the expense of almost all competing exporters, notably Belgium (-12%), France (-5%) and Italy (-2%). This rise can be attributed to the sub groups 0566- (frozen vegetables) and 0567- (otherwise prepared). From 1988⁶¹ data it follows that this expansion can be equally attributed to potato products (groups 05661 and 05676), prepared mushrooms and truffles (05674) and 'other' prepared vegetables (05679). After 1991 market shares for potato products have further improved toward about 95% (see also (i) above). Exports of mushrooms and truffles have fallen down, and therefore market shares have declined from 61% to 56%, in favour of France. The position of the miscellaneous products (05679) has strengthened, which is expressed by a rise of the market share from 26.2 to 27.3%. The position of the major competitor, France, has stabilized.

⁶¹ This is the first year for which a classification following SITC3 was published.

(v) *General developments after 1992*

The completion of the Common Market in 1993 has changed the registration methods of intra-EU trade. Therefore, although (incomplete) data on 1993 and 1994 are available it is not useful to compare the 1992 figures with those of later years. From recent figures on 1993 and 1994 four conclusions can be drawn. First, although the value of the total Dutch exports of vegetables and fruit increased from 3 to 3.3 billion US\$ the volume decreased by 3%. Second, exports to 'traditional' countries like Germany, France and Belgium declined, while on the other hand market shares in the United Kingdom, Finland and the CIS improved. Third, the value of the so called re-exports has risen to about one third of total exports. This concerns products which are first imported by The Netherlands and exported again to other countries. Roughly one third of these re-exports are disposed off outside the EU (mainly in CIS countries). Finally, Dutch exports suffer from the recent devaluation of currencies of Southern EU member states which has led to a comparative price advantage of these countries.

5.6 Flowers and plants

(i) *Live plants*

In section 4.5 we already noted that the position of Dutch flowers and plants on the world market is strong. This was also one of the conclusions of the A.T. Kearney report that qualified the sector as highly competitive and innovative. The discussion of the position on the German market is subdivided into two sections, live plants and cut flowers, mainly because, apart from the Netherlands, both markets are supplied by distinct country groups. Table 37 lists the familiar indicators.

Table 37 German imports of live plants in 1986 – 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	11.1	16.1	4.4
1991/1992	7.6	11.8	3.9
1986/1992	10.5	15.4	4.4
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	69.8	66.9	0.88
1991	71.1	66.8	0.81
1992	73.0	68.4	0.80

^a Ratio of Dutch price and the average competing import price

Source: OECD

Market shares have increased from 1986 until 1992, and relative prices have fallen. Apart from the Netherlands, there are four competing export countries on the German market: Denmark, Belgium/Luxembourg, Italy and France. Expressed in volumes, their total market share has declined from 27% in 1986 to 24.5% in 1992. Only Italy has succeeded in improving its market share. If we take a look at import prices, it appears that Denmark and France are more expensive, while Italy and Belgium are cheaper than the Netherlands. Moreover, the rise in Dutch prices has been smaller than the corresponding growth rates of this competing exporters. As it may be expected that the price elasticity for this commodity group is higher than in case of edible products, it is worthwhile to investigate the impact of exchange rate fluctuations on export prices. From table 19, section 4.4 it follows that changes have been in favour all competitors of the Netherlands: all countries envisaged a advantageous price development relative to the Dutch guilder, varying from 0.3% for Belgium/Luxembourg to even 8% in case of Italy. Therefore the Dutch producers seem to have overcome this disadvantage, except relative to their Italian competitors.

(ii) Cut flowers

The Dutch position in the trade of flowers is even more dominant than in live plants: about 95% of total OECD exports in 1992 originates from the Netherlands⁶². Table 38 summarizes the situation on the German market.

Table 38 German imports of cut flowers in 1986 – 1992: average yearly changes and Dutch market shares

	volume	value	price
Total German imports	%	%	%
1986/1991	7.8	13.7	5.5
1991/1992	5.8	6.1	0.3
1986/1992	7.5	12.4	4.6
Dutch market shares	volume	value	price ratio ^a
	%	%	
1986	84.6	81.7	0.81
1991	86.9	85.2	0.86
1992	87.9	86.7	0.90

^a Ratio of the Dutch price and the average competing import price
Source: OECD.

Other exporting countries are of minor importance, although some of them have grown weightier. Italy has maintained its position (volume share: about 3.5%), possibly due to a favourable price development (see also above). The market position of Israel has deteriorated, while Colombia and Kenya have improved their positions. It should be noted that part of their products enter the German market via the Dutch auction system. This is illustrated by the spectacular rise in Dutch imports of cut flowers: about 23% yearly⁶³. Consequently not all flowers exported to Germany may be cultivated in the Netherlands.

⁶² See Nagtegaal (1994).

⁶³ Yet exports in 1992 are still about seven times as high as imports.

A consequence of the Dutch market position in Germany is that there is little room for ongoing improvement of market shares. Therefore we shortly investigate the geographic distribution of Dutch exports. The share of total volume disposed off in Germany has reduced from 36% in 1986 to 27% in 1992. In the same period the fraction exported to Belgium/Luxembourg, has grown from 48% to 52%. Other destinations have also grown weightier, like Denmark, Eastern Europe (notably Russia) and Asia. The Kearney report expects total demand to surge by 50% until the end of the century. So demand will not be a problem. However, one could ask whether such a relatively small country like the Netherlands could ever meet such an accelerating demand. There will be room enough for other exporting countries.

5.7 Dutch agricultural exports after 1992

A limitation of the discussion in the previous sections is that OECD trade data for years after 1992 are not (yet) available. Obviously, one of the reasons is the change in the trade registration system since the completion of the Common market. This change implies that data concerning the period until 1992 are not compatible with figures for later years. Therefore we restrict the discussion in this section to the situation in 1994 as compared to 1993. However, to additional problems narrow the scope of the analysis. First, as figures on German agricultural imports are not available, we are bound to use data on Dutch agricultural exports. Second, published data for 1994 only cover the period until 1 December. Consequently we compare the Dutch agricultural exports to Germany in the first 11 months of 1994 with 1993 data concerning the same time span.⁶⁴ Finally, we stress that conclusions about changes in market shares cannot be drawn and that the share of exports that is uncovered may diverge both between years and products⁶⁵.

The exported volume of *bovine meat* to Germany showed a small decline (-1.9%). The relative fall in total exports (all countries) was quite substantial (-7.4%), mainly because exports to Italy took a plunge (-20%). Exports of *pig meat* indicated a dichotomous development: a dramatic decrease for unprocessed meat (-17%) and a substantial growth for processed meat (10%). About 78% of the decline in the exported volume of unprocessed pork (whole animals or pieces) can be attributed to the exports

⁶⁴ The assistance of Mrs Geertjes (LEI-DLO) in obtaining export data by country of destination is gratefully acknowledged.

⁶⁵ The average share of the value of total (agricultural and non-agricultural) exports to member states that is covered by the Central Bureau of Statistics is 92%. Percentages for individual commodities and relating to volumes may widely differ.

to Germany. The developments for *poultry meat* were rather favourable: an increase in volume of 4.2% which was more than the growth rate of total poultry exports (2.7%).

The volume of foreign sales of *cheese* leaped upward. The growth rate for Germany (5.6%) slightly exceeded the total increase (5.2%). Although exports of *eggs* declined (total: -15.8%, Germany: -9.8%) it is doubtful whether these data are reliable: an increase in production in The Netherlands, a stable Dutch consumption and growing Dutch imports are not compatible with falling exports.

The volume of *fresh vegetables* exported to Germany marginally increased (0.6%), which was the result of a decline in tomato exports (-4.1%) and an upward move for other fresh vegetables. In the opinion of main exporters, this stagnation can to a large extent be attributed to relatively low prices of products from Southern European countries (mainly Spain) due to favourable exchange rate developments. The exports of *prepared vegetables* to Germany moved slightly upward (.3%), which was substantially less than growth rates to remaining EU countries (13.2%) and the rest of the world (48.6%). Finally, the exported volumes of *flowers and plants* to Germany considerably improved (12.5%), which was even more than the rise in global exports (9.3%).

In summary: the main developments sketched in previous sections still set the scene until 1994: a persistence of the problems regarding to pork exports, a slight deterioration or a stagnation for bovine meat and fresh vegetables, positive developments for cheese and processed vegetables and a flourishing trade in flowers and plants.

5.8 Summary and conclusions

In the previous sections we have seen that the position of Dutch products on the German import market is not one-sided hopeless or glorious. Rather than summarizing and discussing again all results of our investigation, we will focus on the question whether there is a general move toward the bulk segment of the market. In addition, we make some remarks about the role of cooperatives in product innovation⁶⁶.

The major characteristic of the discount sector is that prices are relatively low, and quality requirements are less important. So one might reason as follows: when the ratio of Dutch export prices and the average competing import price declines, this indicates a move toward the bulk segment. However, this would be a premature conclusion⁶⁷. In the first place, in a shrinking market (see e.g. tables 32 and 35) it is hardly possible to maintain market shares without lowering relative prices. Therefore in this case a price

⁶⁶ Recall from section 5.1 that the Kearney report suggests that cooperative structures hamper adjustments to changing market conditions.

⁶⁷ The same holds for the opposite price movement!

cut may be an indication of high competitiveness rather than the result of a 'low price low quality' strategy. On the other hand, when shares are stable and relative prices rise in an expanding market (like in the case of bovine meat) this may very well indicate a reduction of competitiveness rather than a general quality improvement.

These various sources of relative price movements have been illustrated in our analysis. We have observed that relative prices for bovine meat, cheese, other fresh and processed vegetables and cut flowers have risen. Underlying developments however, were found to be different, varying from increasing competitiveness (flowers) to waning market power (bovine meat) and from a wide variety of commodities (vegetables) to a specialization in only one homogeneous product (cheese).

An important fact we have stressed is that mutations in market shares do not depend on demand only, but also on supply. Developments of total production in the Netherlands were found to be an important factor in the explanation of mutations in the market position of the pig and poultry sector, but also for butter and tomatoes. Especially in case of a relative small country with a dominant position on the import market of a large importing nation it is very well possible that the growth in import demand cannot be kept up. In such situations one could imagine that the exporting country stresses mass production rather than quality improvement and an ongoing increase in yields rather than the prevention of environmental damage. Of course, such a strategy may force government to introduce regulations that prevent environmental damage through say, restrictions on production.

For tomatoes it also plays a role that investments in climate control equipment and glass houses require specialization in a few profitable products which automatically pushes up production. We think these developments have had a negative impact on the willingness and capacity to rapidly adjust to changing market conditions.

The conclusion may be that, as far as the German market is concerned, the trade figures do not support the hypothesis of a *general* deterioration of the Dutch position, nor do they give rise to a general tendency toward the discount sectors of the market. However, in a number of cases problems surely exist. Whether these problems can be overcome in the near future depends on a lot of issues. We will briefly address one: product innovation and the possible role cooperative organizations.

The Dutch agro-food industry is currently involved in a process of structural innovation. This change from a product oriented strategy toward a market driven policy is radical and time consuming. Sneep (1994) analyses the innovation management in the Dutch agro-food industry. He distinguishes 3 different levels: (i) manageable environment, (ii) general management and (iii) project management. The possible difference between cooperative and non-cooperative organizations enters the analysis in (i): the manageable environment, which stands for all factors outside the firm that influence innovation management at firm level but which are not fully exogenous. He

finds some support for the assertion that managers of cooperative organizations attach more importance to 'institutional networking', that is to say, to relations with government, research institutions and other enterprises (Sneep(op. cit.), section 4.3.3.). That this need not be a stumbling block in the innovation process is clearly illustrated by the Dutch flowers and plant sector, where cooperative organisations dominate the market, and by the Danish pork sector. In the Kearney report the way producers of pig meat in Denmark have improved their position on the German market is admonished the Dutch suppliers as a shining example of a successful market strategy. But, as can be seen from table 18 in section 4.2, the market position of cooperatives in Denmark is much more dominant than in the Netherlands. This stresses the need for the stimulating role of cooperatives in the reorganisation of the production sectors (pig breeding, bovine meat) rather than their incapability *ex ante* to successfully react on changing market conditions.

Therefore we may conclude that it is increasingly important to pick up signals from the market, but a change in market policy is time consuming. Nevertheless, one thing will be clear: a strategy that has proven to be successful in the past, does not guarantee a further improvement in the future. It therefore requires more than a one-sided look at technology, product prices and sales to adequately react to changing circumstances.

6. Summary of past developments and expectations for the next decade

In chapter 1 we have seen that there are at least five reasons to compare economic relationships between countries, rather than between other economic actors: economic policies (i), national currencies (ii), economic and social history (iii), sources of comparative advantage linked to geographic position, climate, and other natural resources (iv) and finally differences in demand (v). Before examining possible developments in the near future, we will briefly evaluate the contribution of these factors to the explanation of trade flows between the two countries of interest.

In chapter 2 we have seen that both countries are dominant exporters of agricultural products. Both the climate and the quality and fertility of the soil are examples of Ricardian sources of *comparative advantages* (see also 1.2). Despite these common natural circumstances, only the Netherlands is a net exporter. This is also reflected in the bilateral trade balance, which indicates an increasing deficit at the expense of Germany (table 4). Indeed, as was suggested in chapter 1, the distinct reactions of national governments on *developments in the second half of the 19th century* significantly contributed to this difference (section 3.2). Apart from that, the *colonial history* as well as the favourable *geographic location* of the Netherlands still have their impact on the size of imports and exports (see also 3.4(ii)).

The *Common Agricultural Policy* has strongly promoted the productivity of the primary agricultural sectors (3.3) and, through the creation of a common market for agricultural products, the intra-EU trade significantly contributes to total exports (2.2). The net trade position of the Netherlands is dominated by horticultural products. The export position could be maintained and improved through a dynamic innovation strategy and related enlargement of the economic scale of farm holdings (3.2, 3.3). This highly productive primary sector also attracts processing industries and related manufacturing industries, like agricultural machinery (2.5). Also meat and dairy still account for a substantial share in the total exports of both countries (table 3). In both countries cooperative selling organizations play an important role in exports, but their position in the Netherlands is somewhat more dominant (4.2).

Food processing industries are increasingly internationally interwoven. Penetration on foreign food markets is realized through acquisition of existing production units and distribution channels rather than, say via price competition (4.3). As bilateral *exchange rates* are stable, fluctuations only play a role in relation to other foreign competitors as they induce changes in the composition of German and Dutch imports. Finally, *consumer and feed demand* contribute to the size of and variations in bilateral trade. Human consumption per capita and animal diets actually differ between both countries (3.5). As markets are increasingly satiated the need to react appropriately to shifts in preferences will become more pressing (4.3).

The position of the Netherlands on the German import market has been analyzed in detail in chapter 5. A steady movement toward the discount segments of the market, as was suggested in the Kearney report, is not supported by the data. However, the adjustment from product to market oriented management is still going, and for some sectors a drastic reorganization seems inevitable.

What should we conclude? At the end of chapter 2 we observed that in the period 1986 to 1992 both countries have improved their positions on each other's import market. The discussion so far has indicated that this has been the result of an interplay of demographic, political and market forces, which can to a large extent not be controlled by individual farmers or even by large international enterprises. All factors mentioned above have played their own role, and they are likely to also set the scene for future developments. We now briefly discuss three of them: (i) the transition in East-Germany, (ii) the international market and (iii) changes on national markets.

The developments in the former GDR will have important impacts on medium term prospects. Large subsidies of the German government⁶⁸ and the EU have promoted structural adjustment, which gradually proceeds. Firms which are, apart from factor availability (esp. land), comparable with Western holdings in productivity, efficiency and organisation will probably benefit most from structural adjustments (Schmitt (1993), Langbehn (1994)). These large estates mainly produce cereals, oilseeds or dairy products. Therefore, if the reform is successful, Germany will be a net exporter of cereals and more self-sufficient in dairy products. Large and efficient cereal farms may be more competitive on the world market than smaller Western holdings and probably will even undermine the strong French export position within the EU. This expected increase of self-sufficiency finds expression in the point of view of the German government regarding international trade, which is already much more in favour of free trade than say, five years ago. However, the lack of processing capacity is considered to be an important bottle-neck in the development of agricultural production in East-Germany (Commission of the EC (1991)). Although the present situation is still far from ideal, some modern processing factories have been established (pig slaughtering) or are going to be initiated (cheese factory).

The results of the Uruguay round of the GATT will have their impact on *international trade*. Here the point of interest is that all non-tariff border protection measures, created by the CAP to separate the Common Market for agricultural products (high prices) from the international market (low prices) will be transformed from nominal levies into customs tariffs. Furthermore import tariffs in nominal terms are constrained, without indexation to compensate for international (ecu) inflation. If this principle is adhered to in the years to come, the EU will probably have to allow foreign competitors to enter its market, as it will not be in a position to raise the wedge between the internal

⁶⁸ Subsidies of the ministry of Agriculture during 1990-1993 amounted to 14 billion DM.

price and the world price above the agreed tariff (Folmer et al. (op. cit.)). As we have seen in the previous chapter, this also opens new export opportunities as other countries face the same requirements on relaxation of import quotas.

In the short term, increasing competition from Eastern European countries is of interest. Agricultural reforms in Poland, the Czech republic and Hungary have resulted in higher supplies and exports, and through special allowances they have some access to the Common Market already. However, their trade balances with EU countries indicate an increasing deficit, and therefore export possibilities to EU countries should be enlarged. This also implies that some help from abroad (notably the EU) will be needed to successfully pass the required structural reforms. A possibility is of course to join the Common market. May be this can be realized within, say ten or fifteen years. In this case these countries will gradually improve their positions on the German market. Apart from possible price differences, they have a comparative advantage relative to the Netherlands due to a more favourable geographic position with respect to the South or East German market. This implies that Dutch market shares will not easily be maintained.

The international orientation of the Food, Beverage and Tobacco industry and the acquisition of processing or distribution chains to obtain access to foreign markets will affect trade flows. An example is the Dutch Grolsch brewery which has, as noted earlier, access to the distribution channel of the German Brau und Brunnen company. Another consequence is that factors that determine the choice of plant location will play a more dominant role in the future. When, say, Unilever decides to move an ice-cream factory from the Netherlands to Germany, the trade flow reverses.

Changes on *national markets* also matter. It is important to note that the size of German population is expected to decline in the mid-term (Eurostat(1992)). This implies that the Dutch export can only increase if consumption per capita grows or if shifts in demand are in favour of the Dutch export package. As to the latter, prospects are not very promising. Consumer preferences are shifting toward commodities that are cultivated in a natural, environmental friendly way, while products from the Netherlands have, due to the steady adoption of modern production techniques, a rather industrial image.

However, these remarks mainly apply to primary agricultural food commodities. For processed and non-food products the situation may be different. Recall from sections 5.4 and 5.5 that Dutch import shares for processed vegetables and flowers and plants are rising. For the second group, market satiation is not likely to occur.

Finally, *which lessons can the Netherlands learn from Germany?* Pay more attention to the consumer, his preferences and tastes, without neglecting product quality. *Which lessons can Germany learn from the Netherlands?* A highly productive, innovative primary sector is of crucial importance for the processing industry. An essential

requirement is the enlargement of the economic scale of operation, which facilitates the rapid adoption of new technologies and improves farm income.

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Annex: list of intermediate products

Table A1 *List of intermediate products*

Code	Description
00	Live animals
0221	Milk and cream
0224	Whey, products of natural milk constituents
0345	Fish fillets and other fish meat, fresh or chilled
0353	Fish, including fillets, smoked
0354	Fish liver and roes, dried, smoked, salted
0355	Fish meal, fit for human consumption
041	Wheat, unmilled
0421	Rice in the husk
0422	Rice, husked, not further prepared
043	Barley, unmilled
044	Maize (excl. sweet corn), unmilled
045	Other cereals, unmilled
046	Meal and flour of wheat, flour of meslin
047	Other cereal meals and flour
0485	Mixes and doughs for the preparation of bakers' ware
0541 ^a	Nonconsumable potatoes
05487	Sugar beet, fresh or dried
0561	Vegetables, dried, whole, cut, broken, or in powder
0564	Flours, meal of potatoes, vegetables, fruits, n.e.s
061, excl. 0611	Sugar, molasses and honey, excl. raw sugar
0711	Coffee, not roasted
07131	Extracts, concentrates of coffee and preparations
0721	Cocoa beans, whole or broken, raw or roasted
0722	Cocoa powder without added sweetening matter
0725	Cocoa shells, husks, skins and other cocoa waste
0731	Cocoa powder containing added sweetening matter
08	Feeding stuff for animals
09109	Animal and vegetable fats, excl. margarine

Table A1 List of intra-industry products (cont.)

Code	Description
0981	Homogenized food preparations
0986	Yeasts, other single-cell micro-organisms
0989, excl. 09893	Other food preparations, excl. for children
11211	Grape must in fermentation
121	Unmanufactured tobacco
21	Hides, skins and furskin, raw
24	Cork and wood
291-	Crude animal materials, n.e.s
2922	Lac, natural gums, resins, gum-resins and balsams
2923	vegetable materials used mainly for plaiting
2924	Plants and parts of plants perf., insecticides, fung.
2929	Materials of vegetal origins, n.e.s

^a Nonconsumable potatoes are included in the group 0541 (potatoes). details about composition of the group 0541 have been obtained using LEI-DLO (1992).