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Dynamics in trade streams in international food supply networks.

The case of fresh produce, meat, and cereals

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Dynamics in trade streams in international food supply networks.

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Abstract— The identification of the most relevant agri-food trade streams serves as the foundation and shows the trading volume in selected countries on which the later research of project e-Trust is based, with particular consideration of the specific role of trust in these transactions and its transfer in e-commerce afterwards.

For the elaboration of the data collection, mainly the international statistical database of Food and Agriculture Organization of the United Nations (FAOSTAT) is used as a common basis of the comparison. The procedure has been applied to six European traders in agricultural products (Germany, Austria, Italy, Slovenia, Greece and Spain) and three non-European countries (USA, Brazil and Turkey). According to the statistical sources mentioned above, primary commodities are grouped into four categories: cereals, meat, fruit and vegetables, and olive oil.

The findings of the trade streams analysis shows that the trade structures in the selected countries are diverse, and there is a complex picture. Wheat and maize are major primary cereal commodities which are imported as well as exported. Most imports and exports of meat are of cattle, pigs or chickens. Overlapping trade streams could be identified between some countries, such as Germany, Austria, Italy and Spain.

The outcome of the trade streams analysis derives industry measures to enhance sustainable introduction of e-commerce.

The identification of the most relevant agri-food trade streams serves as the foundation and shows the trading volume in selected countries on which the later research of project e-Trust is based, with particular consideration of the specific role of trust in these transactions and its transfer in e-commerce afterwards. In this chapter, the

focus is on the size of trade streams regarding agri-food products in selected countries on a yearly basis and shows the potential for the introduction of e-commerce.

Keywords— trade streams, dynamics, e-commerce.

I. INTRODUCTION: DESCRIPTION OF DATA COLLECTION AND CRITERIA FOR TRADE STREAM ANALYSIS

On the one hand, exports are an important source of income for most countries. On the other hand, imports are necessary to compensate for a lack of national resources, to benefit from other countries' comparative advantages, to satisfy consumer demand for foreign products, et cetera. Hence, the analysis of international trade streams is necessary in order to show and to understand whether the country is dependent on resource imports from other countries and to what extent the domestic consumption depends on resources extracted domestically and imported from abroad.

The objective of this chapter is to identify food chains with trans-European cross-border exchange of food products (e.g. fresh vegetables, fresh fruits, meat, and grain) and international food chains from Brazil and the US to Europe with the support of statistical database and in order to classify potential opportunities for enhancing market development and introduction of e-commerce.

For the elaboration of the data collection, mainly the international statistical database of Food and Agriculture Organization of the United Nations (FAOSTAT) is used as a common basis of the comparison. The data of trade from 2005-2006, which

is the last year that information has been provided, are grouped by the following countries:

- Within the European Union: Germany, Austria, Slovenia, Italy, Greece, Spain;
- Trans-European cross-border: USA, Brazil and Turkey.

According to the statistical sources mentioned above, primary commodities are grouped into four categories: cereals, meat, fruit and vegetables, and olive oil.

For each of the previously mentioned countries and for the agri-food chains of the four product groups regarding the following criteria, the trade streams are to be identified:

- the two most relevant products for export at every level of the agri-food chain with the two most relevant destination countries;
- the two most relevant products for import at every level of the agri-food chain with the two most relevant countries of origin.

It is important to analyse the trading volume with respect to the imported or exported agri-food products not only on one chain level but rather on all levels. This allows the development of a completed picture in the agri-food supply networks and the potential sources for the introduction of e-commerce.

Figure 1 below presents an example of the international trade stream analysis. This schematic shows the procedure, which will be done for every selected country along the selected agri-food sectors. However, the international trade is determined by import and export volume. Thus, the depicted example is distinguished on the one hand by the **import** side and on the other by the **export** side of the respective country (the right side of Figure 1). The left side of the Figure 1 provides the issue that an information asymmetry and missing trust can occur between the traders and especially on the buyer side. Hence, the trust in the seller is a crucial element in particular in the international trade where cultural differences govern.

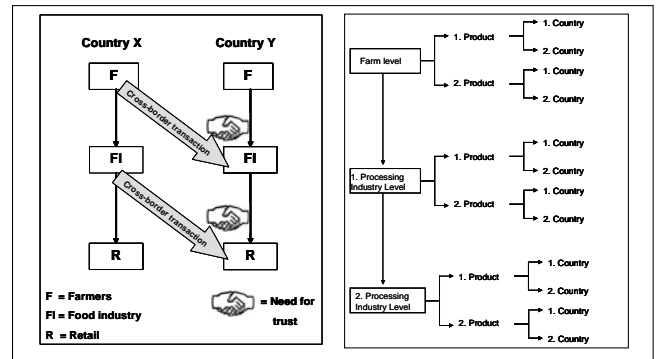


Fig. 1 Methodological schema of trade stream analysis

The in-depth analysis of the international trade streams is provided in the following section. In order to go deeper into the food trade stream analysis, the focus is on the selected countries, highlighting the main streams for each level in each chain (cereals – meat – fruit and vegetables – olive oil).

II. IDENTIFICATIO OF TRADE STREAMS

A. Trade streams to and from Germany

Trade streams in the cereal sector in Germany

The most relevant commodities of the cereal sector and trade countries for Germany are listed below and shown in the Appendix Table 1.

Raw cereals:

- Imports: maize and wheat.

While maize comes mostly from France and Hungary, wheat is mostly imported from the Czech Republic and France.

- Exports: wheat and barley.

The main destinations for wheat are the Netherlands and Belgium. The Netherlands and Saudi Arabia are the most relevant trade countries regarding barley.

Processed cereals:

- Imports/Exports at 1st processing-industry level: flour and malt

All countries from the European Union are relevant for the import and, except for the Netherlands, the exports' trade partners are from third countries, e.g., Russia, Japan and Libya.

- Imports/Exports at the 2nd processing-industry level: beer/pastries

Denmark, Belgium/Luxemburg, the Netherlands and Italy are depicted as essential import countries considering the commodities. France, Great Britain and Italy are identified on the export site.

Trade streams in the meat sector in Germany

The **meat** sector is the second largest section in Germany's agri-food imports and exports. The analysis of the meat sector consists of three parts: beef, pork and poultry subsectors. As in the cereal sector, the trade relationships within the meat segment are established on a long-term basis. The most relevant commodities of the meat sector and trade countries for Germany are listed below.

Livestock:

- Imports: cattle, pigs and chicken.

Main origins are: the Netherlands, Denmark and Belgium.

- Exports: cattle, pigs and chicken.

Mostly the exports go to the Netherlands, Italy, Austria and Poland.

Processed meat:

- Imports at the 1st processing-industry level: fresh and frozen beef, pork and poultry.

The Netherlands, France, Belgium, Denmark and Poland are identified for this aspect.

- Exports at the 1st processing-industry level: : fresh and frozen beef, pork and poultry.

The main destinations of the exported processed meat are: Italy, France, the Netherlands and Russia.

- Imports at the 2nd processing-industry level: processed beef, pork and poultry.

The most relevant origins are: Brazil, the Netherlands, Austria and Italy

- Exports at the 2nd processing-industry level: processed beef, pork and poultry.

The exports of the processed meat go mainly to France, the Netherlands, and Great Britain.

The products with their origins and destinations are supported by the appropriate percentage and shown in Appendix Table 2.

Trade streams in the fruit sector in Germany

According to foreign trade within the fruit sector, Germany is an importing country: The expert interviews with fruit and vegetable enterprises revealed that transactions are executed mostly with

well-known cross-border partners. In addition, they apply contracts which vary from short term to long term. The most relevant commodities of the fruit/vegetables sectors and trade countries for Germany are listed below (see Appendix Table 3).

Fresh fruit:

- Imports: bananas and apples.

Bananas come from Ecuador and Colombia and apples from Italy and the Netherlands.

- Exports: bananas and apples.

The bananas are identified as the most exported fresh fruit and in this case are concerned primarily with re-exports. The exported apples go to the Netherlands and Denmark.

Processed fruit/vegetables:

- Imports: orange and apple concentrate.

Brazil, Switzerland, Poland and China are identified for the section.

- Exports: orange and apple juice.

The Netherlands, France and Great Britain are the most relevant destinations of the above mentioned exported commodities.

Trade streams in the vegetable sector in Germany

Concerning foreign trade within the vegetable sector, Germany is an importing country: The expert interviews with fruit and vegetable enterprises revealed that transactions are executed mostly with well-known cross-border partners. In addition, they employ contracts which vary from short term to long term. The most relevant commodities of the fruit/vegetable sectors and trade countries for Germany are listed below (see Appendix Table 4).

Fresh vegetables:

- Imports: tomatoes and cucumbers.

Together with Spain, the Netherlands delivers tomatoes and cucumbers into Germany.

- Exports: white and red cabbage, and onion.

Sweden and the Czech Republic receive white and red cabbage from Germany and the Netherlands and Austria as well as onions.

Processed vegetables:

- Imports: tomato purée and tomatoes (prepared without vinegar).

Italy is the most essential trade partner for processed vegetables and distributes more than 70

percent. The second important country for the imported processed vegetables into Germany is Spain.

- Exports: pasteurised cucumbers and dried peas.

Both commodities go to the Netherlands, and Denmark is in the second place regarding dried peas. France is the second destination of pasteurised cucumbers.

B. Trade streams to and from Austria

Trade streams in the cereal sector in Austria

The production of cereals is of high importance in Austria. The export and import trade streams of raw materials are influenced by geographical distances and historical roots. Therefore, Hungary, Germany and Italy are the most important trading partners in the supply chain of cereals. On the farm level and the level of the raw-products trade sector, Austria mainly imports maize and wheat from Hungary. It is noticeable that Austria imports these products more cheaply than it exports them. The main export partner on a farm level is Italy. The first level of processing imports and exports of commodities is only of marginal importance for the processing industry, only small quantities are traded. One reason may be the fact that the majority of bakeries in Austria are small companies – these bakeries still purchase on a regional level. Furthermore, products on the first level of processing are low-priced products. Longer transport distances are therefore avoided. In addition, purchase decisions are influenced by a trend towards regionalization, a trend primarily initiated by the market-dominating retail chains. Wheat flour and malt flour are mainly imported from Germany; the two most important exported products are malt flour and wheat flour, which are exported respectively to Italy and Bulgaria, and also to Hungary and Germany (see Appendix Table 5).

Trade streams in the meat sector in Austria

Meat is the most important agricultural product in Austria, and especially cattle meat is exported mainly to Germany and Italy. Particularly trade with the new EU member states is developing very positively. Due to the fact that there are still a lot of slaughter houses in Austria, companies import a considerable quantity of livestock. A high number of pigs in particular is imported and slaughtered in Austria, and then

exported again. As for poultry meat, Austria imports these products on the second processing level. Italy and Germany are main trading partners on both sides – import and export as well. The details of the statistical data are provided in Appendix Table 6.

Trade streams in the fruit sector in Austria

Compared to the meat and cereals sectors, fruit and vegetables are of lesser importance in Austria when compared with production. Within the fruit sector, imports from Germany, China, Italy and Belgium are of importance. The most essential export partner in the fruit sector aside from Germany (for apples and grapes) is Italy (orange juice). Table 7 in the Appendix shows the percentage spread of the trade streams and the appropriate trade partners.

Trade streams in the vegetable sector in Austria

On the imported side, the main origins are Italy, Spain, the Netherlands and Germany. On the exported side, Germany, Hungary and the Czech Republic are of big importance.

C. Trade streams to and from Italy

Trade streams in the cereal sector Italy

Considering the cereals supply chain, Italian supplies for raw materials depend mainly on European countries (France and Hungary), but also on extra-EU partners (Canada is the most important country for the Italian import of durum wheat). As for first-level processed products in the cereal supply chain, wheat flour and maize flour are the most imported raw goods from respectively Spain and France, and Austria and France. Germany plays an important role in the second-level processed products with their imports of pastry and beer into Italy. On the export side rice, wheat, wheat flour and maize, pasta and pastry are the most essential products of all chain levels. Relevant destinations are France and Germany. More details are provided in Appendix Table 9.

Trade streams in the meat sector in Italy

Table 10 in the Appendix shows that import and export streams in the meat sector in Italy occur between European partners at each link in the chain. If France and Spain are the most important partners at the production level, Germany is the most relevant

business partner at the processing level, both for import and for export.

Trade streams in the fruit sector in Italy

For the Italian fruit supply chain, the analysis shows that exchanges take place with extra-EU partners in the case of fresh products (e.g., bananas and peaches). The processed-fruit products come mainly from EU countries like Germany, Austria, Spain and Greece. Italy exports mainly apples, grapes and processed fruit to EU countries like Spain, Great Britain, Germany and France. The appropriate percentage depiction is given in Appendix Table 11.

Trade streams in the vegetable sector in Italy

The Italian vegetable supply chain shows a similar scenario, with few EU countries as main trade partners: France, Spain and the Netherlands are the countries of origin of the most imported products (potatoes, tomatoes and processed vegetables), and the UK and Germany are the destinations of the most exported products at each level of the supply chain (lettuce, tomatoes and processed vegetables). Further trading export partners of Italy are the extra-EU countries like China and Australia (see Appendix Table 12).

Trade streams in the olive oil sector in Italy

The trade streams concerning the olive oil supply chain show that Italy is a net importer of olive oil. Olives and high-quality olive oil are imported mainly from mediterranean countries (Spain, Greece), while export (both at production and at processing level) involves not only EU countries like Germany and France but also extra-EU partners (the USA are an important destination for Italian olive oil supply chain products). The percentages and quantities of the Italian exports and imports are shown in Appendix Table 13.

D. Trade streams to and from Slovenia

Trade streams in the cereal sector Slovenia

The largest proportion of imports to Slovenia goes to maize from Hungary and Macedonia and to wheat from Hungary and Austria. The geographic conditions play an essential role in the import of processed products, which means that the largest quantities are

from Italy and Austria. Italy is an important trading partner of Slovenia from the export side as well, and the largest quantities of maize and barley go there. Export products of the first and second processing level are not relevant on the quantity side; therefore, they are not considered in this analysis. The detailed statistical data is shown in Appendix Table 14.

Trade streams in the meat sector in Slovenia

Meat production is the most important branch of Slovenian agriculture. Imports are coming mainly from Austria, Italy and Hungary. Exports are mainly driven by big companies themselves or by agents. These countries are very essential trading partners on the export side as well. The in-depth analysis of the statistical data of the most relevant products and their origins and destinations is given in Appendix Table 15

Trade streams in the fruit sector in Slovenia

Fruit is mainly imported to Slovenia from Ecuador and Colombia (bananas) and Italy and Egypt (oranges). Apples are one of the most important fruits in Slovenian production and trade. The most important trading partners are Croatia and Austria. Regarding the exports of bananas, these are mainly re-exported and go to Italy. The quantity of exported processed fruit is not relevant and therefore not under consideration (see Appendix Table 16).

Trade streams in the vegetable sector in Slovenia

In the vegetable sector the most important trading partners on the import side are Italy, Turkey, Austria and Netherlands. Most vegetables from Slovenia are exported to Germany. A detailed analysis of the quantity and the countries is given in Appendix Table 17.

Trade streams in the olive oil sector in Slovenia

Slovenia is a net importer of olive oil. More than half of all olive oil is imported, mainly from the EU (Italy, Greece and Spain). Slovenia exports mainly to Croatia and Bosnia-Herzegovina (see Appendix Table 18).

E. Trade streams to and from Greece

Trade streams in the cereal sector Greece

Regarding the cereal sector, Greece is an import-dependent country. More specifically, in the cereal

sector Greece is importing mainly from Russia, France, Hungary, Italy and Germany. On the export side, Italy remains a very relevant trading partner. For more details see Appendix Table 19.

Trade streams in the meat sector in Greece

Concerning the meat sector, Greece is an import-dependent country. Table 20 in the Appendix shows that pork and beef and also pigs and cattle are primarily imported from the Netherlands, France, Germany, Hungary and Italy. A relevant product volume is distributed through a central meat market, while meat-processing companies are importing directly from suppliers abroad.

Trade streams in the fruit sector in Greece

Greece is export-oriented regarding fruit products. In particular, major Greek exports include grapes and oranges for destinations such as Germany, the UK and Romania. On the other hand, imports are mainly bananas and lemons from Ecuador, Argentina, Turkey and Italy. The results of the statistical database are presented in Appendix Table 21.

Trade streams in the vegetable sector in Greece

For vegetables, overall Greece is exporting more than importing. In particular, major Greek exports include asparagus and cucumbers to destinations such as Germany, Austria and the USA (see Appendix Table 22).

Trade streams in the olive oil sector in Greece

In the olive oil sector Greece is clearly an exporting country. Most exports are to Italy but also to Germany and Spain as EU countries, and outside the EU to the USA (see Appendix Table 23).

F. Trade streams to and from Spain

Trade streams in the cereal sector Spain

Spain is a country dependent on cereal imports of wheat and maize. The major imports come from the Ukraine and France. The statistical data shows a dependency of Spain on France and Portugal on products of the first and second processing level regarding their imports. On the export side, France and Portugal are identified as very relevant destinations as well. An overview of the other imported and exported

products and their origins and destinations is presented in Appendix Table 24.

Trade streams in the meat sector in Spain

Pork sector in Spain is a relevant sub sector within the meat sector. The Netherlands is the most active partner in livestock trade with the 73% of the pork livestock sector. More than the imported quantity of pigs is delivered on the export side, and Portugal receives about 71%. Further statistical data of the Spanish trade streams is presented in Table 25.

Trade streams in the fruit sector in Spain

The fruit sector represents a major sector in Spain. The main fresh-fruit exports are oranges and apples that go to Germany, France and Portugal. The processed-fruit sector shows that mostly orange and grape juice are exported to France and Germany, and Italy and France. The Spanish results of the trade streams regarding the fruit sector are shown in Table 26.

Trade streams in the vegetable sector in Spain

Spain is an export-oriented country like Greece regarding vegetable products. The main Spanish fresh vegetables are exported to Germany and the UK (tomatoes and lettuce). In addition to the export side, the quantities of vegetables imported to Spain are shown in Appendix Table 27.

Trade streams in the olive oil sector in Spain

Olive trees and the olive oil sector in Spain are a part of Spanish culture. The most dominant import partners are also olive oil producers (Portugal and Italy), and the exports of canned or bottled olive oil go to France and Portugal. Table 28 in the Appendix highlights the results of the Spanish quantities and percentages in the olive oil sector.

G. Trade streams to and from USA

Trade streams in the cereal sector USA

When evaluating US agricultural exports, the EU is no longer the number-one trading partner, but remains a primary market for several products produced in the US (FRITZ ET AL. 2008).

Cereal exports to the EU represent 13 percent of total US exports to the EU. Note that cereals to the EU

are not as dominant as those found within the world market, but it is still a relevant export market for US cereals. The main cereals exported are wheat and grain sorghum, and Spain can be identified as the main destination (see Appendix Table 29).

Trade streams in the meat sector in USA

U.S. exports of meat to the EU are nearly non-existent. This is a direct result of the trade restrictions mentioned earlier due to disease outbreaks and production practices. This statement can be confirmed by the statistical data which is given in Appendix Table 29.

Trade streams in the fruit sector in USA

The top two fresh-fruit products being exported into the EU are grapefruit and apples. Within the processed-fruit sector the top products are prunes and raisins. The quantities of these exported fruit products are shown in Appendix Table 29.

Trade streams in the vegetable sector in the USA

Potatoes are identified as the most exported vegetable for Europe. In particular, Great Britain and the Netherlands are identified as the most essential destinations and the respective quantities are presented in Appendix Table 29.

H. Trade streams to and from Brazil

Trade streams in the cereal sector Brazil

The estimated grain crop area in Brazil is about 47 million hectares. Regarding the statistical database, the exports to Europe's countries are essential only with respect to maize and wheat, and Portugal and Spain are identified as destinations (see Appendix Table 30).

Trade streams in the meat sector in Brazil

The meat sector is the second largest complex in Brazilian agri-business exports, gaining more importance over the last few years. Brazil has the world's largest commercial cattle herds, which are mainly raised in pastures. The main destinations of cattle exports to Europe are Great Britain and Italy. While cattle and chicken are essential as fresh-meat exports, pork and chicken are the most relevant products as processed meat and go to the Netherlands

and Great Britain, and to France and Germany, respectively (see Appendix Table 30).

Trade streams in the fruit sector in Brazil

Although Brazil is the third largest fruit producer in the world, its export volume is not as important as the grain or meat sector to the Brazilian export balance, with the exception of orange juice. Fresh-fruit exports represent only 1% of the total (FRITZ ET AL. 2008). Bananas and mangos are exported the most, to Great Britain and Italy, respectively, and also to the Netherlands and the USA. The exports of orange juice in concentrated and non-concentrated form are identified as processed-fruit products. The largest amounts go to Belgium and the Netherlands (see Appendix Table 30).

I. Trade streams to and from Turkey

Trade streams in the cereal sector Turkey

Cereals are the most important part of Turkish plant production in terms of sown land and production volume. Wheat is the main product that is produced and exported the most. The wheat flour, macaroni and pastry industries are well developed in parallel with a wheat production advantage. Germany and Italy are very important destinations for Turkish cereal products. The identification of the appropriate destinations and quantity is provided in Appendix Table 31.

Trade streams in the meat sector in Turkey

The red-meat sector is not as developed in terms of foreign trade. In spite of a high number of livestock and slaughter quantities, high domestic consumption and an import-export ban restrain development of foreign trade. Unlike the red-meat sector, poultry is well developed in all stages of production. Export activities are generally limited by poultry. While chickens are exported to Romania and Bulgaria, chicken meat is exported to Bulgaria and Cyprus (see Appendix Table 31).

Trade streams in the fruit sector in Turkey

Fruit and vegetables are one of the most advantageous agricultural sub-sectors of Turkey in terms of production and foreign trade. Lemons and fruit juice are the most exported products. The main

importers of these two products are Greece and Romania as well as Germany and Cyprus, respectively. The identified quantities are provided in Appendix Table 31).

Trade streams in the vegetable sector in Turkey

As mentioned in the section on the fruit sector, Turkey has an important role in the production and foreign trade of fruit and vegetables. The most exported vegetables are shown as follows (see Appendix Table 31). Tomatoes are the most exported fresh vegetable. Their main importers are Romania and Germany. Frozen vegetables and peeled tomatoes are identified as processed vegetables in the statistical database. Frozen vegetables are mainly exported to Germany and Belgium. Peeled tomatoes are mainly exported to Germany as well as Ireland.

Trade streams in the olive oil sector in Turkey

Turkey is one of the most important olive-oil-producing countries in the world. However, export is generally limited to Italy and Spain in bulk packages mainly due to high import tax rates in European Countries.

III. FUTURE OPPORTUNITIES AND SUGGESTIONS

In this chapter, the international trade streams in different agri-food sectors are identified. These agri-food trade streams are identified, referring to the volume of exchanged goods, as an important potential on which to focus attention and study for the introduction of e-commerce.

In this identification process the focus was mainly on four agri-food supply chains: cereals, meat, fruit and vegetables, and olive oil. Additionally, an investigation of all tiers of the supply chain – production, consumption and import/export – was carried out.

The procedure has been applied to six European traders in agricultural products (Germany, Austria, Italy, Slovenia, Greece and Spain) and three non-European countries (USA, Brazil and Turkey).

Fig. 2 Overlapping of the trade streams between Italy and Germany in the cereal sector

The trade structures in the selected countries are diverse, and there is a complex picture. Wheat and maize are major primary cereal commodities which are imported as well as exported. Most imports and exports of meat are of cattle, pigs or chickens. Overlapping trade streams could be identified between some countries, such as Germany, Austria, Italy and Spain. An example of overlapping between two countries is shown in Figure 2 regarding the traded cereal products between Italy and Germany.

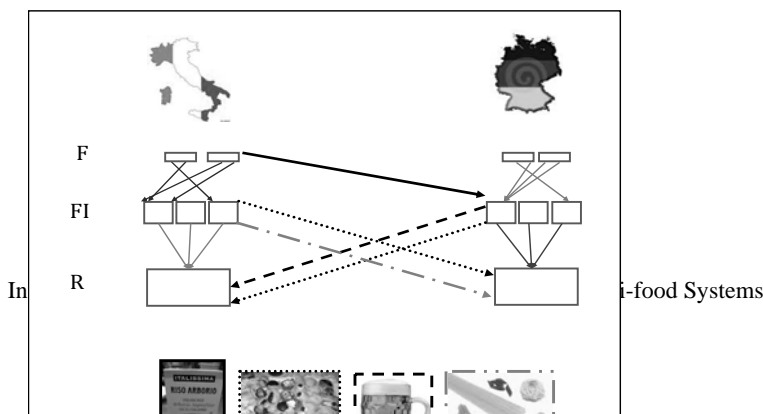


Table 32: Most imported and exported agri-food products to and from the selected countries

Country	Most imported agri-food product	Most exported agri-food product
Germany	Maize (from FR)	Soft wheat (to NL)
	Fresh pork (from BE)	Fresh pork (to IT)
	Bananas (from EC)	Orange juice (to FR)
	Tomatoes (from NL)	Dried peas (to NL)
Austria	Soft wheat (from HU)	Soft wheat (to IT)
	Pigs (from DE)	Cattle (to IT)
	Bananas (from DE)	Apples (to DE)
	Tomatoes (from IT)	Not relevant
Italy	Wheat (from FR)	Pasta (to DE)
	Cattle (from FR)	Pigs (to HU)
	Bananas (from EC)	Grapes (to DE)
	Potatoes (from FR)	Tomatoes preserves (to UK)
Slovenia	Virgin olive oil (from ES)	Virgin olive oil (to USA)
	Maize (from HU)	Maize (to IT)
	Pigs (from AT)	Pigs (to HR)
	Bananas (from EC)	Bananas (to IT)
Greece	Potatoes (from IL)	Potatoes (to DE)
	Olive oil (from ES)	Olive oil (to RS + ME)
	Maize (from HU)	Maize (to ES)
	Cattle (from HU)	Chicken (to IT)
Spain	Bananas (from EC)	Oranges (to RO)
	Potatoes (from EG)	Vegetables in vinegar (to USA)
	Olive oil (from IT)	Olive oil (to IT)
	Maize (from FR)	Wheat flour (to LY)
USA	Pigs (from NL)	Pigs (to PT)
	Apples (from FR)	Oranges (to DE)
	Potatoes (from FR)	Tomatoes (to DE)
	Olive oil (from IT)	Olive oil (to FR)
Brazil	Not relevant	Wheat (to ES)
	Not relevant	Chicken (to RO)
	Not relevant	Apples (to UK)
	Not relevant	Maize (to ES)
Turkey	Not relevant	Cattle (to UK)
	Not relevant	Mango (to NL)
	Not relevant	Wheat (to IT)
	Not relevant	Chickens (to RO)
Turkey	Not relevant	Olive oil (to IT)
	Not relevant	Lemon (to GR)
	Not relevant	Tomatoes (to RO)
	Not relevant	Tomatoes (to RO)

The outcome of the trade streams analysis derives industry measures to enhance sustainable introduction of e-commerce. With the findings of the statistical databases the enterprises can obtain an assessment of the goodness of traded volume and products. The following table 32 shows the results that the business can expect to obtain when searching for a new potential for the introduction of e-commerce. They give a clear depiction of where the different countries stand with regard to most traded agri-food products relative to the cross-border exchanges.

REFERENCES

1. Schalenfrüchte, Kartoffeln sowie Mostobst". Available at:

1. http://www.bmelvstatistik.de/fileadmin/sites/070_Garten/BerichtOG2006.pdf.
2. BMELV (2006a). Statistical database about Import of meat 2005. Available at: http://www.bmelvstatistik.de/fileadmin/sites/040_AHST/Fleisch_E_2006endg.pdf.
3. BMELV (2006b). Statistical database about Export of meat 2005. Available at: http://www.bmelvstatistik.de/fileadmin/sites/040_AHST/Fleisch_A_2006endg_01.pdf.
4. BMELV (2007). Statistical database about Import/Export of cereal 2005. Available at: http://www.bmelvstatistik.de/fileadmin/sites/040_AHST/t02_gesamt2007.pdf.
5. DBB (2007). Die deutsche Brauwirtschaft in Zahlen 2006. Berlin.
6. FAOSTAT (2005). Detailed World Agricultural Trade Flows. Available at: <http://faostat.fao.org/site/535/default.aspx#ancor>.
7. FAOSTAT (2007). Detailed World Agricultural Trade Flows. Available at: <http://faostat.fao.org/DesktopModules/Faostat/WATFDetailed2/watf.aspx?PageID=536>.
8. FAOSTAT (2008a). Detailed World Agricultural Trade Flows. Available at: <http://faostat.fao.org/site/535/DesktopDefault.aspx?PageID=535>.
9. FAOSTAT (2008b). Detailed World Agricultural Trade Flows. Available at: <http://faostat.fao.org/site/537/DesktopDefault.aspx?PageID=537>.
10. FAOSTAT (2008c). Detailed World Agricultural Trade Flows. Available at: <http://faostat.fao.org/DesktopModules/Faostat/WATFDetailed2/watf.aspx?PageID=536>.
11. Freitag, C. (2006). Annual report 2005/2006 Bundesverband der obst-, gemüse-und Kartoffelverarbeitenden Industrie e.V. Bonn, Juni 30.
12. Fritz, M., Deiters, J., Schiefer, G. (Eds). (2008). Report on food value chains with risks. Deliverable of EU FP6 project e-Trust.
13. Janorschke, B. (2007). Agrarmärkte 2006. Available at: http://www.lfl.bayern.de/publikationen/daten/schriftenreihe/p_24089.pdf.
14. SBA (2008). Statistical database. Available at: http://www.statistik-portal.de/Statistik-Portal/de_jb01_jahrta1.asp.
15. VdF (2007). Daten und Fakten zur deutschen Fruchtsaftindustrie 2006. Available at: http://cms3.fruchtsaft.net/downloads/produkte/Daten_Fakten06_DE.pdf.

16. ZMP (2005). Marktstudie Warenstromanalyse Obst, Gemüse und Kartoffeln. Bonn: ZMP Zentrale Markt- und Preisberichtsstelle GmbH.
17. ZMP (2006b). Marktstudie Warenstromanalyse Fleisch. Bonn: ZMP Zentrale Markt- und Preisberichtsstelle GmbH, July 2007.
18. ZMP (2007). Marktbilanz Getreide-Ölsaaten-Futtermittel 2007. Deutschland, Europäische Union, Weltmarkt. Bonn: ZMP Zentrale Markt- und Preisberichtsstelle GmbH.
19. ZMP (2007b). Obst- und Gemüsebranche entdeckt den Export, no. Fruchthandel 46. Bonn: ZMP Zentrale Markt- und Preisberichtsstelle GmbH.

APPENDIX

Table 1: Trade streams in the cereal sector to and from Germany, 2005 (Source: SBA 2008, ZMP 2007, FAOSTAT 2008a/b/c, DBB 2007, BMELV 2007)

IMPORT					EXPORT				
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total	
Farm-level products	1. Maize	1. FR	755.607	48	1. Soft wheat	1. NL	1.465.718	25	
		2. HU	380.552	24		2. BE	620.753	11	
	2. Soft wheat	1. CZ	455.454	38	2. Barley	1. SA	687.967	26	
2. FR		247.038	21	2. NL		429.970	16		
1. Processing-Industry Level	1. Flour	1. FR	23.989	41	1. Flour	1. NL	122.772	25	
		2. BE	21.115	36		2. LY	120.225	24	
	2. Malt	1. FR	137.939	67	2. Malt	1. RU	46.410	12	
2. NL		38.336	19	2. CH		41.186	11		
2. Processing-Industry Level	1. Pastries	1. NL	66.815	18	1. Pastries	1. FR	113.138	18	
		2. IT	59.546	16		2. UK	75.307	12	
	2. Beer (in hl)	2. DK	2.410	44	2. Beer (in hl)	1. IT	3.205	24	
3. BE/LU		1.105	20	2. FR		1.842	13		

Table 2: Trade streams in the meat sector to and from Germany, 2005 (Source: BMELV 2006a, BMELV 2006b and ZMP 2006b)

IMPORT					EXPORT				
	Two most relevant Origins	most	Tons	% of total	Two most relevant Destinations	most	Tons	% of total	
Livestock (beef and veal)	1. NL		3.269	23	1. NL		6.658	44	
	2. BE		2.614	19	2. IT		3.045	20	
Livestock (pork)	1. NL		231.852	75	1. AT		36.697	77	
	2. DK		50.213	16	2. IT		2.707	6	
Livestock (poultry)	1. NL		40.138	68	1. NL		181.593	97	
	2. DK		10.450	18	2. PL		3.742	2	
Fresh (beef and veal)	1. NL		55.194	31	1. IT		95.176	29	
	2. FR		27.718	16	2. NL		62.193	19	
Frozen (beef and veal)	1. NL		12.200	30	1. RU		17.436	32	
	2. BR		4.013	10	2. NL		13.254	24	
Fresh (pork)	1. BE		309.022	35	1. IT		259.776	37	
	2. DK		269.363	31	2. NL		101.527	14	
Frozen (pork)	1. ES		13.362	20	1. RU		47.227	24	
	2. DK		12.927	19	2. RO		25.213	13	
Fresh and Frozen (poultry)	1. NL		134.283	34	1. NL		63.887	22	
	2. PL		68.297	17	2. RU		59.066	20	
Processed (canned goods from beef)	1. BR		5.262	27	1. FR		10.719	28	
	2. NL		2.590	13	2. NL		6.026	16	
Processed (sausage products from pork)	1. AT		13.735	28	1. FR		16.082	14	
	2. IT		11.482	24	2. UK		15.936	14	
Processed (offal, cans from poultry)	1. BR		93.914	48	1. NL		28.924	23	
	2. NL		25.279	13	2. FR		16.477	13	

Table 3: Trade streams in the fruit sector to and from Germany, 2005 (Source: JANORSCHKE 2007, ZMP 2005, BLE 2006, FAOSTAT 2007, VdF 2007)

IMPORT					EXPORT			
		Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh Fruit	1. Bananas	1. EC	447.230	38	1. Bananas (re-exports)	1. AT	50.895	19
		2. CO	302.369	25		2. SE	44.097	17
	2. Apples	1. IT	327.878	39	2. Apples	1. NL	14.954	16
		2. NL	117.761	14		2. DK	11.285	12
Processed Fruit	1. Orange concentrate	1. BR	305.539	65	1. Orange juice	1. FR	140.873	34
		2. CH	63.226	13		2. NL	82.216	20
	2. Apple concentrate	1. PL	113.443	38	2. Apple juice	1. UK	50.392	19
		2. CN	70.054	24		2. NL	42.094	17

Table 4: Trade streams in the vegetable sector to and from Germany, 2005 (Source: ZMP 2005, ZMP 2007b, BLE 2006, FAOSTAT 2007, FREITAG 2006)

IMPORT					EXPORT				
		Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh Vegetables	1. Tomatoes		1. NL	319.341	47	1. White and red cabbage	1. SE	17.408	30
			2. ES	198.784	29		2. CZ	7.348	13
	2. Cucumbers		1. NL	248.644	56	2. Onions	1. NL	10.669	22
			2. ES	145.104	33		2. AT	6.917	14
Processed Vegetables	1. Tomato purée		1. IT	150.960	70	1. Pasteurised cucumbers	1. NL	12.869	19
			2. ES	45.763	21		2. FR	6.759	10
	2. Processed tomatoes		1. IT	177.144	92	2. Dried peas	1. NL	61.458	80
			2. ES	3.275	2		2. DK	3.890	5

Table 5: Trade streams in the cereal sector to and from Austria, 2005 (Source: FAO 2005)

IMPORT					EXPORT				
		Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Farm-level products	1. Soft wheat		1. HU	133.624	53	1. Soft wheat	1. IT	413.817	83
			2. DE	51.060	20		2. DE	37.229	7
	2. Maize		1. HU	329.940	84	2. Maize	1. IT	348.808	90
			2. DE	19.197	5		2. DE	27.840	7
1. Processing-industry level	1. Wheat flour		1. DE	39.878	80	1. Malt flour	1. IT	13.414	23
			2. HU	6.468	13		2. BG	9.657	16
	2. Malt flour		1. DE	21.378	43	2. Wheat flour	1. HU	9.691	18
			2. SK	19.530	39		2. DE	7.438	15
2. Processing-industry level	1. Beer		1. DE	38.998	65	1. Beer	1. DE	12.111	15
			2. IT	626	18		2. IT	10.215	12
	2. Bakery products		1. DE	41.841	79	2. Pasta	1. DE	19.897	58
			2. IT	2.875	5		2. IT	5.406	16

Table 6: Trade streams in the meat sector to and from Austria, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Farm-level products	1. Pigs	1. DE	710.025	99	1. Cattle	1. IT	81.261	63
		2. HU	4.160	0,5		2. DE	24.235	19
	2. Cattle	1. CZ	21516	38	2. Pigs	1. DE	52.210	51
		2. DE	19613	35		2. SI	22.457	22
1. Processing-industry level	1. Pigs (complete or half)	1. DE	36.367	92	1. Cattle parts	1. IT	23.825	43
		2. PO	1.160	3		2. DE	9.490	17
	2. Ham (unprocessed)	1. DE	11.489	81	2. Ham (unprocessed)	1. IT	17.083	67
		2. IT	1.684	11		2. CZ	3.895	15
2. Processing-industry level	1. Chicken meat products	1. DE	4.140	34	1. Chicken meat products	1. DE	9.271	81
		2. SI	1.827	15		2. IT	174	1
	2. Raw sausages	1. DE	6.003	73	2. Raw sausages	1. DE	20.742	70
		2. IT	1.622	20		2. IT	886	3

Table 7: Trade streams in the fruit sector to and from Austria, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh Fruit	1. Bananas	1. DE	68.492	67	1. Apples	1. DE	37.222	52
		2. BE	19.541	19		2. HR	5.699	8
	2. Apples	1. IT	40.616	40	2. Grapes	1. DE	22.068	75
		2. HU	28.559	28		2. NL	5.163	16
Processed Fruit	1. Apple juice, single strength	1. CH	26.477	21	1. Orange juice, single strength	1. IT	12.388	25
		2. DE	25.896	20		2. DE	11.498	23
	2. Orange juice, single strength	1. CH	25.738	36	2. Apple juice, single strength	1. DE	22.276	50
		2. DE	20.548	29		2. JP	6.768	15

Table 8: Trade streams in the vegetable sector to and from Austria, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh vegetables	1. Tomatoes	1. IT	20.097	42	1. Onions	1. DE	6.352	16
		2. ES	16.850	36		2. HU	4.701	12
	2. Cucumbers	1. ES	8.669	42	2. Carrots	1. DE	9.235	48
		2. NL	2.862	14		2. CZ	1.972	10
Processed Vegetables	1. Vegetables in Vinegar	1. DE	10.163	60	not relevant			
		2. TR	1.260	7				
	2. Paste of Tomatoes	1. IT	7.405	55				
		2. CN	2.159	16				

Table 9: Trade streams in the cereal sector to and from Italy, 2005 (Source: FAO 2005)

		IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total	
Farm-level products	1. Maize	1. FR	430.800	34	1. Rice milled	1. FR	119.604	19	
		2. HU	242.841	19		2. DE	84.985	13	
	2. Durum wheat	1. FR	1.730.844	26	2. Wheat	1. DZ	46.714	33	
		2. CA	815.185	12		2. TN	19.834	14	
1. Processing levels	1. Wheat Flour	1. ES	5.157	31	1. Wheat Flour	1. LY	241.207	46	
		2. FR	4.226	26		2. CU	147977	28	
	2. Maize Flour	1. AT	909	46	2. Maize Flour	1. IL	25.840	15	
		2. FR	707	36		2. EG	23.543	14	
2. Processing levels	1. Pastry	1. DE	51.264	40	1. Pasta	1. DE	330.255	22	
		2. FR	21.275	17		2. FR	202.844	14	
	2. Beer of barley	1. DE	295.493	56	2. Pastry	1. DE	57.090	20	
		2. DK	49.631	9		2. FR	54.129	19	

Table 10: Trade streams in the meat sector to and from Italy, 2005 (Source: FAO 2005)

		IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total	
Farm-level products	1. Cattle	1. FR	880.123	65	1. Pigs	1. HU	48985	32	
		2. PL	188608	14		2. DE	13989	25	
	2. Pigs	1. NL	235.453	41	2. Cattle	1. ES	23.708	53	
		2. ES	141.662	25		2. NL	18068	40	
1. Processing level	1. Beef meat (fresh & frozen)	1. NL	60.771	22	1. Chicken meat (fresh & frozen)	1. GR	11926	19	
		2. DE	58.022	21		2. DE	6629	11	
	2. Pork meat (fresh & frozen)	1. DE	61.446	29	2. Pork meat	1. DE	8722	23	
		2. FR	60.528	29		2. RO	6829	18	
2. Processing level	1. Sausages of Pig Meat	1. DE	9818	78	1. Sausages of Pig Meat	1. DE	9392	27	
		2. ES	1520	12		2. ES	3067	9	

Table 11: Trade streams in the fruit sector to and from Italy, 2005 (Source: FAO 2005)

		IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total	
Fresh Fruit	1. Bananas	1. EC	276002	49	1. Apples	1. ES	52406	7	
		2. CO	74855	13		2. UK	43098	6	
	2. Peaches	1. ES	47639	80	2. Grapes	1. DE	154978	31	
		2. FR	8050	14		2. FR	80807	16	
Processed Fruit	1. Fruit juice	1. AT	13880	27	1. Fruit juice	1. DE	22459	27	
		2. DE	12296	24		2. FR	12315	15	
	2. Dried fruit	1. ES	851	35	2. Prepared fruit	1. DE	4353	26	
		2. GR	415	17		2. FR	3904	24	

Table 12: Trade streams in the vegetable sector to and from Italy, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh Vegetables	1. Potatoes	1. FR	266.281	47	1. Lettuces, chicories	1. DE	43.897	45
		2. NL	80.066	14		2. CH	8.200	8
	2. Tomatoes	1. NL	34.714	35	2. Tomatoes	1. DE	43.871	48
		2. ES	34.213	34		2. AT	11.306	12
Processed Vegetables	1. Vegetable Frozen	1. BE	53.164	34	1. Tomatoes preserves and peeled	1. UK	193.659	23
		2. FR	22.837	15		2. DE	135.643	16
	2. Vegetables Preserved	1. FR	33.607	49	2. Veg. and legumes prepared or conserved	1. DE	34.049	38
		2. ES	10.206	15		2. AU	9.144	10

Table 13: Trade streams in olive oil sector to and from Italy, 2005 (Source: FAO 2005)

	IMPORT			EXPORT		
	Two most relevant Origins	Tons	% of total	Two most relevant Destinations	Tons	% of total
Olives	1. GR	2.412	60	1. FR	228	29
	2. ES	1.238	31	2. DE	152	20
Virgin olive oil	1. ES	216.795	38	1. USA	190.795	44
	2. GR	92.013	16	2. DE	47.008	11

Table 14: Trade streams in the cereal sector to and from Slovenia, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Farm-level products	1. Maize	1. HU	122.122	88	1. Maize	1. IT	26.712	99
		2. MK	8.053	6		2. HR	443	2
	2. Wheat	1. HU	97.340	82	2. Barley	1. IT	1.710	99
		2. AT	8.898	7		2. RS	13	0,75
1. Processing-industry level	1. Maize Flour	1. RS	5.106	58				
		2. IT	3.603	41				
	2. Wheat Flour	1. IT	8.268	40				
		2. AT	8.220	40				
2. Processing-industry level	1. Pastry	1. IT	2.966	18				
		2. HR	2.848	17				
	2. Beer of barley	1. DE	8.635	45				
		2. AT	4.565	24				

Table 15: Trade streams in the meat sector to and from Slovenia, 2005 (Source: FAO 2005)

	IMPORT					EXPORT						
	Two most relevant Products	most	Two most relevant Origins	most	Tons	% of total	Two most relevant Products	most	Two most relevant Destinations	most	Tons	% of total
Farm-level products	1. Cattle		1. HU		11.102	43	1. Cattle		1. AT		4.275	54
			2. CZ		7.920	31			2. IT		2.895	37
	2. Pigs		1. AT		17.357	74	Pigs		1. HR		5.780	8
			2. HU		2.977	13			2. HU		1.278	18
1. Processing-industry level	1. Pig meat		1. AT		5.356	26	1. Chicken meat		1. AT		2.288	31
			2. NL		4.359	21			2. HR		851	12
	2. Chicken meat		1. IT		3.123	73	2. Beef meat		1. IT		1.981	83
			2. AT		602	14			2. NL		381	16
2. Processing-industry level	1. Meat of Chicken Canned		1. HU		336	8	1. Sausages of Pig Meat		1. BA		2.143	25
			2. AT		215	28			2. MK		2.036	24
	2. Sausages of Pig Meat		1. IT		337	43	2. Meat of Chicken Canned		1. BA		1.802	22
			2. AT		142	23			2. AT		1.625	2

Table 16: Trade streams in the fruit sector to and from Slovenia, 2005 (Source: FAO 2005)

	IMPORT					EXPORT						
	Two most relevant Products	most	Two most relevant Origins	most	Tons	% of total	Two most relevant Products	most	Two most relevant Destinations	most	Tons	% of total
Fresh Fruit	1. Bananas		1. EC		22.894	45	1. Apples		1. HR		8.277	32
			2. CO		19.296	38			2. AT		7.078	27
	2. Oranges		1. IT		4.651	23	2. Bananas		1. IT		15.243	83
			2. EG		3.004	15			2. HU		1.415	8
Processed Fruit	1. Fruit Prp Nes		1. ES		1.891	16	not relevant export					
			2. IT		1.745	15						
	2. Orange juice, single strength		1. BE		1.568	34						
			2. DE		1.004	22						

Table 17: Trade streams in the vegetable sector to and from Slovenia, 2005 (Source: FAO 2005)

	IMPORT					EXPORT						
	Two most relevant Products	most	Two most relevant Origins	most	Tons	% of total	Two most relevant Products	most	Two most relevant Destinations	most	Tons	% of total
Fresh Vegetables	1. Potatoes		1. IL		5.406	22	1. Potatoes		1. DE		11.787	84
			2. NL		4.126	17			2. HR		858	6
	2. Tomatoes		1. IT		5.302	37	2. Tomatoes		1. DE		241	35
			2. TR		4.931	35			2. IT		141	20
Processed Vegetables	1. Onions, dry		1. AT		4.205	35	1. Onions, dry		1. ES		1.171	68
			2. NL		3.378	28			2. HU		206	12
	2. Vegetables preserved Nes		1. IT		5.011	61	2. Vegetables preserved Nes		1. RS		432	31
			2. AT		619	7			2. DE		318	23

Table 18: Trade streams in the olive oil sector to and from Slovenia, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two relevant Origins	most	Tons	% of total	Two relevant Destinations	most	Tons	% of total
Olives preserved	1. IT		289	44	1. RS + ME		26	30
	2. GR		136	21	2. HR		24	28
Olive oil	1. ES		556	54	1. BA		4	33
	2. IT		354	34	2. HR		3	25

Table 19: Trade streams in the cereal sector to and from Greece, 2005 (Source: FAO 2005)

	IMPORT						EXPORT					
	Two relevant Products	most	Two relevant Origins	most	Tons	% of total	Two relevant Products	most	Two relevant Destinations	most	Tons	% of total
Farm-level products	1. Soft wheat		1. RU		295.861	33	1. Hard wheat		1. IT		122.844	62
			2. FR		136.600	15			2. DZ		18.241	1
	2. Maize		1. HU		524.002	82	2. Maize		1. ES		211.094	50
			2. FR		31.715	0,05			2. CY		110.328	26
1. Processing-industry level	1. Wheat Flour		1. IT		7.112	44	1. Wheat Flour		1. LY		10.000	40
			2. DE		4.464	27			2. BG		6.112	25
	2. Maize Flour		1. IT		215	42	2. Maize Flour		1. MK		1.017	45
			2. USA		87	17			2. RO		924	40
2. Processing-industry level	1. Beer		1. DE		21.846	45	1. Macaroni		1. IT		18.873	40
			2. NL		14.119	29			2. AL		8.260	17
	2. Pastry		1. IT		9.442	29	2. Pastry		1. IT		3.990	20
			2. DE		7.598	23			2. UK		2.903	14

Table 20: Trade streams in the meat sector to and from Greece, 2005 (Source: FAO 2005)

	IMPORT						EXPORT						
	Two relevant Products	most	Two relevant Origins	most	Tons	% of total	Two relevant Products	most	Two relevant Destinations	most	Tons	% of total	
Farm-level products	1. Cattle		1. HU		100.900	41	Despite the high production of goat meat in Greece, exports are not relevant due to very high local consumption.						
			2. FR		62.456	25							
	2. Pigs		1. NL		71.047	84							
			2. FR		4.191	0,04							
1. Processing-industry level	1. Pork		1. NL		67.265	43	1. Chicken		1. IT		2.571	35	
			2. FR		48.669	32			2. MK		1.453	20	
	2. Beef meat		1. FR		56.140	72	2. Pork		1. FR		1.134	58	
			2. DE		7.765	1			2. BG		312	16	
2. Processing-industry level	1. Sausages of pig meat		1. DE		4.839	64	1. Sausages of pig meat		1. CY		575	59	
			2. IT		1.075	14			2. AL		195	20	
	2. Meat of Chicken Canned		1. DE		1.888	36	2. Meat of Chicken Canned		1. AL		302	33	
			2. IT		1.785	34			2. MK		257	28	

Table 21: Trade streams in the fruit sector to and from Greece, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh Fruit	1. Bananas	1. EC	40.747	49	1. Grapes	1. DE	33.522	37
		2. IT	37.598	45		2. UK	21.854	24
	2. Lemons & Limes	1. AR	27.351	44	2. Oranges	1. RO	38.146	18
		2. TR	25.807	41		2. DE	31.521	15
Processed Fruit	1. Orange juice (single strength)	1. DE	6.008	30	1. Grape juice	1. IT	12.027	98
		2. BE	4.621	23		2. TR	208	2
	2. Apple juice (concentrated)	1. DE	7.467	93	2. Orange juice (single strength)	1. UK	665	15
		2. IT	556	7		2. MK	590	14

Table 22: Trade streams in the vegetable sector to and from Greece, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh Vegetables	1. Potatoes	1. EG	49.527	43	1. Cucumbers and gherkins	1. DE	9.235	64
		2. FR	20.949	18		2. AT	1.663	11
	2. Tomatoes	1. TR	5.267	33	2. Asparagus	1. DE	7.914	81
		2. MK	4.473	28		2. AT	976	10
Processed Vegetables	1. Vegetables Frozen	1. BE	7.615	31	1. Vegetables in Vinegar	1. USA	10.611	73
		2. BG	3.384	14		2. DE	1.201	8
	2. Vegetables Preserved Nes	1. TR	3.554	25	2. Vegetables Preserved Nes	1. DE	4.294	36
		2. CY	2.127	15		2. SE	1.012	8

Table 23: Trade streams in the olive oil sector to and from Greece, 2005 (Source: FAO 2005)

	IMPORT			EXPORT		
	Two most relevant Origins	Tons	% of total	Two most relevant Destinations	Tons	% of total
Olives	1. IT	446	89	1. IT	3.683	59
	2. BE	29	6	2. DE	618	10
Olives (preserved)	1. EG	1.092	27	1. USA	17.277	24
	2. DE	857	22	2. IT	13.143	18
Olive oil	1. IT	2.213	59	1. IT	79.012	80
	2. ES	1.061	28	2. ES	3.999	4

Table 24: Trade streams in the cereal sector to and from Spain, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Farm-level products	1. Wheat	1. FR	1.997.240	27	1. Wheat	1. DZ	59.660	26
		2. UA	1.433.975	19		2. PT	56.590	25
	2. Maize	1. FR	2.144.470	50	2. Rice milled	1. UK	18.692	15
		2. UA	322.489	8		2. UAE	15.726	13
1. Processing-industry level	1. Maize Flour	1. FR	90.113	92	1. Wheat Flour	1. LY	91.654	37
		2. PT	3.489	4		2. FR	43.233	18
	2. Wheat Flour	1. FR	19.596	45	2. Forage products	1. PT	64.279	39
		2. PT	16.113	37		2. FR	49.940	31
		1. FR	37.273	25		1. PT	48.278	29
		1. Pastry	2. IT	35.852	24	1. Pastry	2. FR	31.778
2. Processing-industry level	2. Macaroni	1. IT	13.360	64		1. FR	20.627	59
		2. PT	3.279	16	2. Macaroni	2. PT	6.165	18

Table 25: Trade streams in the meat sector to and from Spain, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Farm-level products	1. Pigs	1. NL	689.698	73	1. Pigs	1. PT	1.036.350	71
		2. DE	129.094	14		2. FR	135.749	9
	2. Cattle	1. FR	259.009	30	2. Cattle	1. IT	59.884	46
		2. PT	229.767	27		2. FR	56.407	43
1. Processing-industry level	1. Chicken meat	1. BR	34.920	43	1. Pig meat	1. FR	63.815	12
		2. UK	11.658	14		2. PT	55.589	19
	2. Pig meat	1. FR	10.215	45	2. Cattle meat	1. FR	35.206	32
		2. DE	2.247	10		2. PT	31.393	32
2. Processing-industry level	1. Meat of Chicken Canned	1. FR	5.565	31	1. Sausages of Pig Meat	1. FR	7.985	29
		2. BR	5.174	29		2. PT	4.380	16
	2. Sausages of Pig Meat	1. DE	6.043	46	2. Meat of Chicken Canned	1. PT	3.725	55
		2. DK	1.919	15		2. FR	1.255	19

Table 26: Trade streams in the fruit sector to and from Spain, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	Two most relevant Origins	Tons	% of total	Two most relevant Products	Two most relevant Destinations	Tons	% of total
Fresh Fruit	1. Apples	1. FR	73.817	33	1. Oranges	1. DE	308.333	28
		2. IT	37.395	17		2. FR	290.419	26
	2. Pears	1. BE	18.256	34	2. Apples	1. FR	26.185	29
		2. NL	8.644	16		2. PT	24.650	27
Processed Fruit	1. Orange juice, single strength	1. BE	22.247	21	1. Orange juice, single strength	1. FR	106.656	72
		2. NL	15.118	21		2. DE	22.825	15
	2. Orange juice, concentrated	1. NL	4.088	39	2. Grape juice	1. IT	31.623	27
		2. FR	2.543	24		2. FR	13.440	12

Table 27: Trade streams in the vegetable sector to and from Spain, 2005 (Source: FAO 2005)

	IMPORT				EXPORT			
	Two most relevant Products	most relevant Origins	Tons	% of total	Two most relevant Products	most relevant Destinations	Tons	% of total
Fresh Vegetables	1. Potatoes	1. FR	507.851	68	1. Tomatoes	1. DE	198.893	22
		2. UK	79.373	11		2. UK	183.845	20
	2. Tomatoes	1. PT	41.287	57	2. Lettuce and chicory	1. DE	155.531	29
		2. MA	13.840	19		2. UK	131.074	24
Processed Vegetables	1. Vegetables Preserved	1. CN	45.201	23	1. Vegetable Frozen	1. FR	51.744	27
		2. PE	39.741	18		2. DE	33.599	18
	2. Vegetable Frozen	1. BE	31.208	37	2. Vegetables Preserved	1. FR	40.420	30
		2. FR	24.643	29		2. USA	38.503	29

Table 28: Trade streams in the olive oil sector to and from Spain, 2005 (Source: FAO 2005)

	IMPORT			EXPORT		
	Two most relevant Origins	most Tons	% of total	Two most relevant Destinations	most Tons	% of total
Olives	1. PT	583	76	1. DE	3.386	60
	2. FR	92	12	2. IT	582	10
Olive oil	1. IT	17.526	26	1. FR	53.712	17
	2. MA	11.727	17	2. PT	34.599	11

Table 29: Trade streams in the cereal, meat, fruit and vegetable sector from the USA, 2005 (Source: Fritz et al. 2008)

CEREAL EXPORT				MEAT EXPORT			
Two most significant Products	Two most significant Destinations	Tons	% of total	Two most significant Products	Two most significant Destinations	Tons	% of total
Wheat (not durum)	1. ES	257 779	1.07	Chicken	1. RO	90 193	3.87
	2. BE	106 337	0.44		2. LT	78 495	3.37
Grain Sorghum	1. ES	152 524	3.36	Pork	1. RO	25 294	3.1
	2. FR	696	0.02		2. UK	2 872	0.35
FRUITS EXPORT				VEGETABLES EXPORT			
Two most significant Products	Two most significant Destinations	Tons	% of total	Two most significant Products	Two most significant Destinations	Tons	% of total
Apples	1. UK	34 274	5.08	Potatoes	1. UK	7 446	2.58
	2. FI	1 968	0.29		2. NL	5	0
Grapefruit	1. NL	15 399	7.02	not relevant export			
	2. FR	20 266	9.24				
Plums, dried	1. DE	5 376	11.78				
	2. IT	3 473	7.61				
Fruits, dried	1. UK	1 743	7.52				
	2. DE	540	2.33				

Table 30: Trade streams in the cereal, meat and fruit sector from Brazil, 2005 (Source: Fritz et al. 2008)

CEREAL EXPORT				MEAT EXPORT			FRUITS EXPORT		
Two most significant Products	Two most significant Destinations	Tons	% of total	Two most significant Products	Two most significant Destinations	% of total	Two most significant Products	Two most significant Destinations	% of total
Maize	1. ES	66.460	6.21	Cattle	1. UK	4	Banana	1. UK	28
	2. PT	32.554	3.04		2. IT	3		2. IT	9
Wheat	1. ES	56.950	37.21	Chickens	1. NL	4	Mango	1. NL	50
	2. IT	146	0.1		2. DE	2		2. USA	23
not relevant export				Chicken meat	1. NL	0.3	Orange juice (concentrated)	1. BE	50
					2. UK	0.3		2. NL	4
				Pork	1. FR	1.5	Orange juice (non-concentrated)	1. NL	44
					2. DE	1.4		2. BE	31

Table 31: Trade streams in the cereal, meat, fruit, vegetable and olive oil sector from Turkey, 2005 (Source: Fritz et al. 2008)

CEREAL EXPORT				MEAT EXPORT			
Two most significant Products	Two most significant Destinations	Tons	% of total	Two most significant Products	Two most significant Destinations	Tons	% of total
Wheat	1. IT	58 380	22.99	Chickens	1. RO	3 378	65.3
	2. PT	25 750	10.14		2. BG	568	10.98
Maize	1. CY	5 680	2.24	Chicken meat	1. BG	1 473	28.47
	2. IT	1 735	0.68		2. CY	630	12.18
Flour of wheat	1. CY	6 814	2.68	OLIVE OIL EXPORT			
	2. DE	794	0.31	OLIVE OIL	Two most significant Destinations	Tons	% of total
Pastry	1. DE	9 495	3.74		1. IT	40 609	73.6
	2. BG	4 476	1.76	2. ES	20 039	36.31	
Macaroni	1. DE	3 980	1.57	VEGETABLES EXPORT			
	2. NL	1 044	0.41	Two most significant Products	Two most significant Destinations	Tons	% of total
FRUITS EXPORT				Tomatoes	1. RO	28 070	11.59
Two most significant Products	Two most significant Destinations	Tons	% of total		2. DE	7 002	2.89
Lemon	1. GR	25 503	8.64	Frozen vegetables	1. DE	12 431	5.13
	2. RO	22 688	7.69		2. BE	10 676	4.41
Fruit juice	1. DE	5 463	1.85	Tomato peeled	1. DE	1 036	0.43
	2. CY	1 736	0.59		2. IE	830	0.34