The competitive position of the European food and drink industry

Final report

Written by the ECSIP consortium
February 2016

EUROPEAN COMMISSION

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Directorate D — Consumer, Environmental and Health Technologies
Unit D.3 — Biotechnology and Food Supply Chain

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Final report

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Programme for the Competitiveness of Enterprises and small and medium-sized enterprises (COSME)

2016 EN

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The competitive position of the European food and drink industry

Final Report

Client: Executive Agency for small and medium sized enterprises (EASME)

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- Ecorys
- DTI
- Agricultural Economics Research Institute (LEI Wageningen UR) as subcontractor

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Preface

In 2005 the European Commission commissioned a study on the competitiveness of the food industry, which led to the publication of the report '*Competitiveness of the European Food Industry. An economic and legal assessment*' in 2007. The Executive Agency for Small and Medium-sized Enterprises (EASME) has requested the ECSIP consortium to conduct a follow-up study to the 2007 report on the competitiveness of the European food industry[1] (hereafter: the 2007 study). The objective of this study is to update the 2007 study, taking into account recent developments, and to put forward scenarios on potential future changes. Thus, this study provides a fresh assessment of the competitive position of the food and drink industry, with respect to certain benchmark countries, and how the industry can strengthen its position in the coming years. This work is expected to feed into policy debate on how industry actions as well as the EU regulatory and framework conditions could further support the competitiveness of the food and drink industry. In particular, the results of this study will help EASME and the European Commission prepare the ground for possible follow-up actions to the High Level Forum for a Better Functioning Food Supply Chain.

This *Study on the competitive position of the European food and drink industry* was awarded to the ECSIP consortium with Ecorys Netherlands as lead partner. Project management was in the hands of Patrick de Bas with support from Katelyn Price (Ecorys-Netherlands). Team members include: Jo Wijnands and David Verhoog (LEI Wageningen UR; competitiveness analysis); Olivier Chartier, Diletta Zonta, Jakub Gloser, Evelien Cronin (Ecorys-Brussels; interviews and market performance) and Veronika Brantova (Ecorys-Netherlands; literature review).

We would like to thank EASME and the European Commission for their constructive comments and excellent guidance and advice throughout the entire period of this study. We also thank the numerous stakeholders that actively supported the study, either through the provision of information in the interview process and/or participation in the stakeholder meetings organised in Brussels.

The opinions expressed in this Study are those of the authors and do not necessarily reflect the views of the European Commission and the EASME.

[1] LEI (2007), Competitiveness of the European Food Industry. An economic and legal assessment.

List of acronyms

ACP	African, Caribbean and Pacific countries
bn	Billion
BRICS	Brazil, Russia, India, China and South Africa
CXL	Brazil, Cuba, Australia, India.
DET	Differential Export Taxes
EAN	European Article Numbering bar code. Excluding promotions.
EASME	Executive Agency for Small and Medium-sized Enterprises
EFSA	European Food Safety Agency
EU	European Union
EU28	European Union at constant geographic scope (28 current Member States). Similarly, "EU27", "EU25" and "EU15" refer to the geographic scope of the EU respectively in 2007, in May 2004 and before.
FTA	Free Trade Agreement
GDP	Gross domestic product
GM	Genetically Modified
GMO	Genetically Modified Organism
HACCP	Hazard Analysis and Critical Control Points
LDC	Least developed countries
mn	Million
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne (Statistical Classification of Economic Activities in the European Community)
NAFTA	North American Free Trade Agreement
NCDs	Non-communicable diseases
NTBs	Non-tariff barriers
OECD	Organisation for Economic Cooperation and Development
PDO	Protected designation of origin
PET	Polyethylene terephthalate
PGI	Protected geographical indication
PPS	Purchasing power standard
R&D	Research & Development
RMA	Relative Import Advantage
RTA	Relative Trade Advantage
RXA	Relative Export Advantage
SBS	Structural Business Statistics (Eurostat)
SPS	Sanitary and phytosanitary measures
TBT	Technical barriers to trade
TTIP	Transatlantic Trade and Investment Partnership
USA	United States of America
WHO	World Health Organisation

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Abstract

The study provides an assessment of the competitive position of the European food and drink industry, benchmarking the European industry against its main trading partners: the USA; Australia; Brazil; and Canada, for two periods: 2003-2007; and 2008-2012.

The study finds that the EU food and drink industry achieved a more competitive position vis-à-vis the main trading partners on the international trade-related indicators. Meanwhile, the competitive performance measured by economic indicators weakened.

The study identifies as the main European regulations with a positive impact on the sector's competitiveness: harmonisation of key legislation under the General Food Law; and food safety regulation. As main barriers to competitiveness, the inconsistent implementation of European regulations among EU Member States, leading to trade barriers for the Internal Market, was identified.

Policy recommendations offered by the study include maintaining regulation supporting food quality and food safety, while addressing any remaining differences observed in the way Member States apply rules. For the industry, expansion of cooperation aimed for instance at the re-use of by-products and waste that might be transformed into fine-chemicals and natural macromolecules for the pharmaceutical or chemical industry should be explored.

Executive Summary

Background, aim and approach

In 2005 the Commission commissioned a study on the competitiveness of the food industry, which led to the publication of the report *'Competitiveness of the European Food Industry. An economic and legal assessment'* in 2007. That study provided an assessment of the competitive position of the food and drink industry and sub-sectors against a range of trade and economic indicators, as well as an analysis of the relevant regulatory and legal framework.

The purpose of the current study is to provide a fresh assessment of the competitive position of the food and drink industry, taking into account the recent economic crisis as well as EU policy and international developments that have occurred since the 2007 study. The current study also investigates how the food and drink industry can strengthen its position in the coming years.

This study consisted of five main tasks:

- Task 1: Literature review;
- Task 2: Data collection and analysis;
- Task 3: Assessment of industry competitiveness and market performance;
- Task 4: Analysis of regulatory and other framework conditions;
- Task 5: Scenario building and policy elements for policy making.

The competitiveness analysis

Various indicators for competitiveness are available. For this study, we use the indicators presented in Table 1.2 below. Further detail on the methodology of the indicators for Competitiveness Index is presented in annex 1.

Table 1 Indicators for Competitiveness Index

Indicator	Aim	Abbreviation
Annual growth in the share of added value of the sector in manufacturing industry	This reflects the competition for product factors between different industries within a country.	S
Relative Trade Advantage	Reflects the balance of import and export specialisation level in one category of goods from one country.	T
Difference world market share	Reflects the outcome of competitive process on a global scale.	M
Annual growth rate of labour productivity	Reflects the unit labour costs and thus the relative prices.	L
Annual growth rate of real added value	Reflects the industrial dynamism of the sector.	P

The competitive position of the European food and drink industry is benchmarked against the competitive performance of the EU's main trading partners: the USA, Australia, Brazil and Canada. The development over time in competitiveness is analysed by comparing performance in time periods 2003 – 2007 (Period 1) and 2008 – 2012 (Period 2).

Main findings

Industry competitiveness and market performance of the food and drink industry

The EU food and drink industry is the largest among the benchmark countries in turnover, enterprises and employment: 1.5 times the size of the industry in the USA. However, the average turnover per enterprise is the lowest: only 10% of the Brazilian per enterprise turnover and around 15% of the USA per enterprise turnover. This result is closely related to the difference in average size of enterprises, which is significantly smaller in the EU compared to the USA and Brazil. Table 2 provides an overview of key information on the industries in the benchmark countries.

Table 2 Structure of the food products and drink industry (C10-C11) in 2012 and growth 2008-2012

	Turnover (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed (1,000)	Growth persons employed (%)
EU28	1,061	1.5	288,655	-0.5	3.7	2.1	4,515	0.8
USA	652	6.7	25,974	1.0	25.1	5.6	1,550	-0.3
Australia	71	10.7	13,018	1.4	5.4	9.2	240	0.5
Brazil	186	13.6	4,959	5.2	37.5	8.0	1,615	5.9
Canada	73	7.5	8,318	-2.5	8.7	10.3	266	2.1

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

With respect to trade, EU28 exports grew at a faster rate than the export growth in all benchmark countries except the USA (as Table 4 shows). The EU's market share on the world market was, nevertheless, only a fraction above the level in 2007. A different development can be observed for growth in EU28 imports, with EU28 imports growing at a slower pace than imports in the benchmark countries. Overall, these two developments resulted in a more positive trade balance for Europe over time, with the trade balance improving from less than € 3 billion negative in 2003 to over € 10 billion positive in 2012.

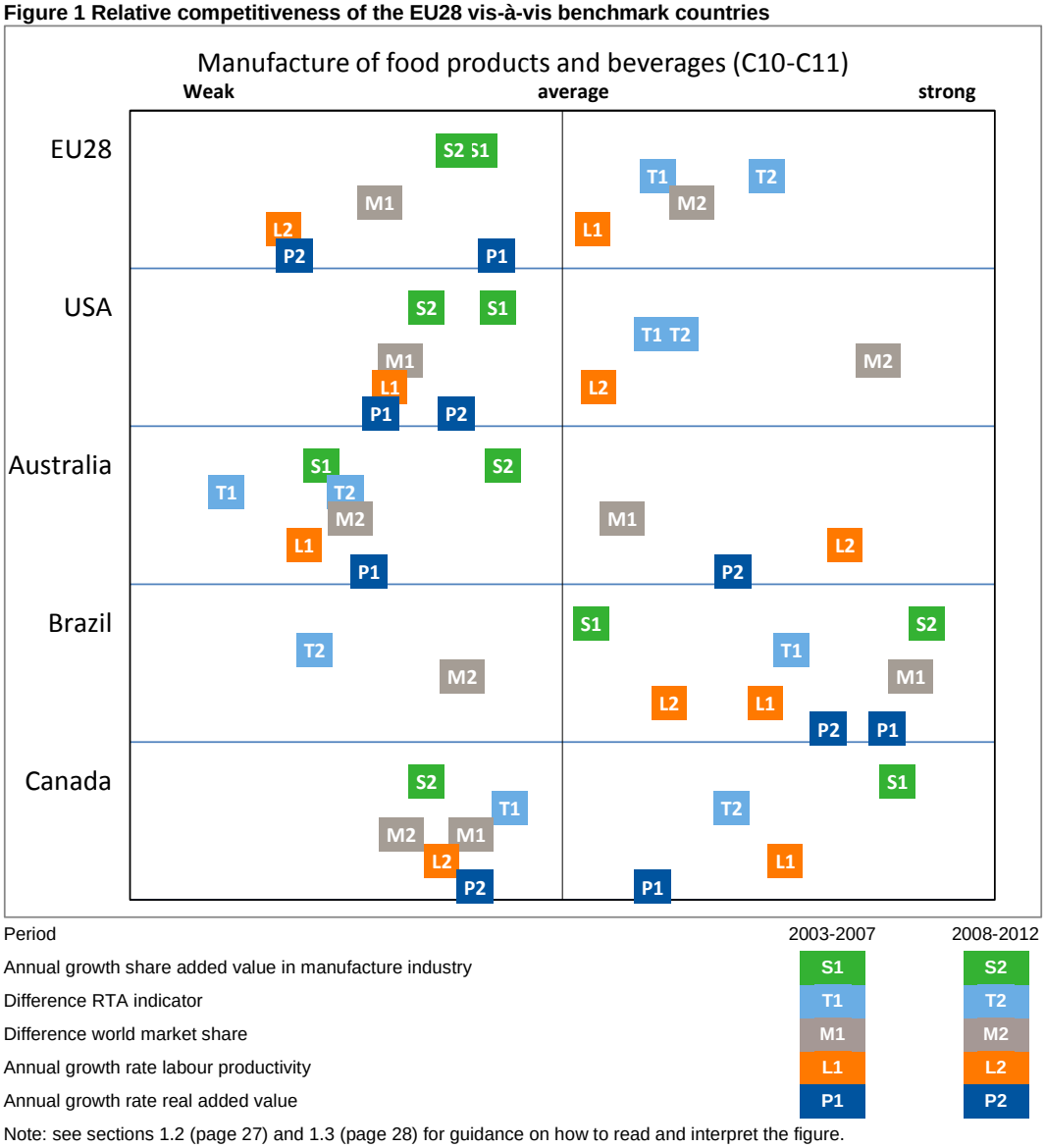
Table 3 Trade in food and drink products (C10-C11) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Value (€ mn)	Growth (%)	Market share (%)	Value (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	86,413	6.3	12.1	75,858	0.5	11.3	10,556
USA	59,429	8.3	8.3	70,637	6.1	10.5	-11,208
Australia	14,328	4.8	2.0	8,731	8.7	1.3	5,597
Brazil	35,278	6.2	4.9	5,711	12.6	0.9	29,566
Canada	21,346	5.8	3.0	20,039	7.3	3	1,307

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

Figure 1 shows that, compared to the benchmark countries, the competitiveness performance of the EU food and drink industry improved between period 1 (2003-2007) and period 2 (2008-2012) with respect to the trade-related indicators; relative trade advantage (T) and world market share (M). This indicates that Europe achieved a more competitive position globally vis-à-vis the main trading partners. Meanwhile, the competitive performance of Europe as measured by the economic indicators shows a weakening on industry share in total manufacturing (S), labour productivity (L) and value added (P) compared to the benchmark countries.

Figure 1 Relative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

The USA shows a strong positive development in labour productivity (L) and market share (M) between 2003-2007 and 2008-2012 compared to the other benchmark countries. Australia shows moderate improvement on all indicators, except for export share (M). Brazil remained rather strong, with most indicators being the strongest among the benchmark countries in both periods. Canada went from strong down to weak as all indicators became relatively weaker except for the Relative Trade Advantage (T).

Understanding the developments in competitiveness and market performance

It is noteworthy that Europe shows a positive development on the trade-related indicators (relative trade advantage and world market share) in the light of the weakening of the other indicators like value added and labour productivity. Usually improved trade positions are the result of improved added value and labour productivity, while worsening labour productivity is expected to lead to a worse international trade position.

The likely explanation why the European industry is able to realise this somewhat counter-intuitive result is the ability of the European industry to differentiate itself from other regions by offering higher quality next to differentiated products. By competing on quality, the impact of price

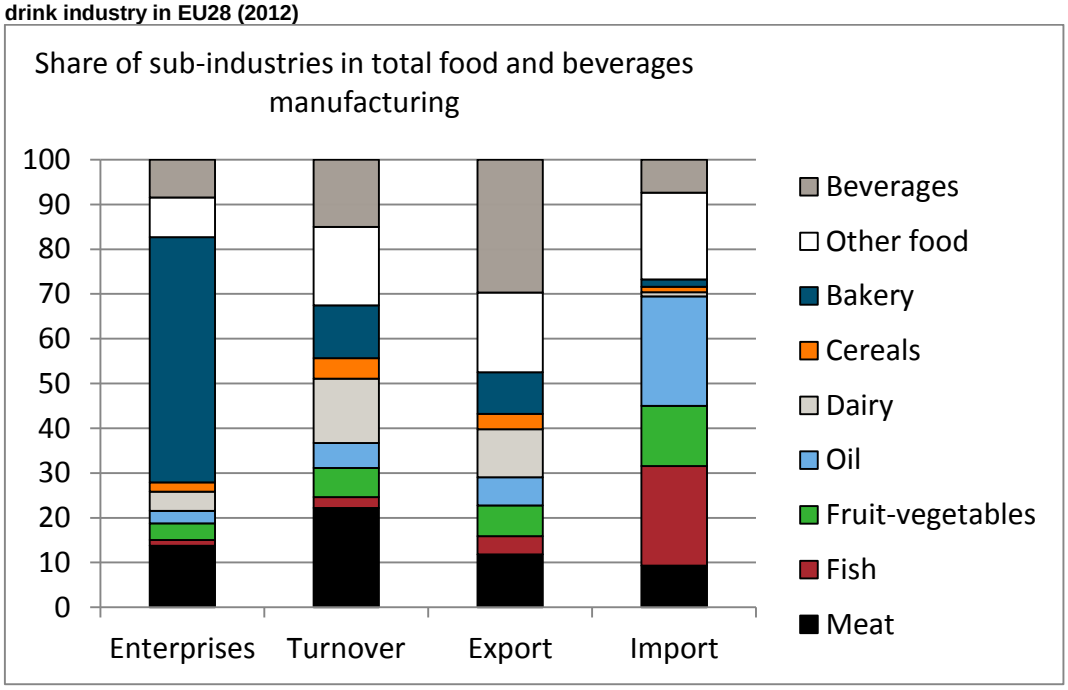
competition is reduced. In turn, reduced price competition means that the impact of developments in the cost base, like labour productivity, has less impact on the international competitive position.

The focus on high quality products is supported by the European regulations and the high food safety requirements set by EU Food law. Various stakeholders have underlined the view that the strict food safety requirements and the high quality of products provide a comparative advantage for EU manufacturers.

Industry competitiveness and market performance of the subsectors

The food industry represents almost 13% of the turnover of the manufacturing industry. As figure 2 shows, the top sub-sectors based on turnover are meat, "other food" products (see section 3.8 for definitions), beverages and in fourth position, dairy manufacturing. In terms of the number of enterprises, the manufacture of bakery and farinaceous products outnumbers the total of any other sub-sector. Fish processing is the smallest sector on most indicators, however the largest in imports. Beverages manufacturing is the largest exporter to third countries, while dairy has a very low import level.

Figure 2 Number of enterprises, turnover and external trade of selected sub-sectors of the food and drink industry in EU28 (2012)



Source: LEI Wageningen UR Eurostat SBS data and UNComtrade.

Figure 3 presents an overview of the relative competitiveness assessment for all sub-sectors. Many of the subsectors in the food and drink industry show a similar pattern as observed for the total industry. The main developments are:

- The Relative Trade Advantage (T) and the world market share (M) are for most sectors above average in 2012. Most sectors showed an improvement in period 2 (2008-2012) compared to period 1 (2003-2007). Only "Other food" showed a significantly weaker position on both indicators;
- The growth of value added (P) was below average for all sectors in period 2 (2008-2012) compared to the benchmark countries and below the scores of period 1 (2003-2007);
- The share of sub-sectors in the manufacture industry (S) was below average for most sectors. The dairy sector is above average for period 2 (2008-2012). The score improved for meat, dairy and beverages in period 2 (2008-2012) compared to period 1 (2003-2007);
- The labour productivity (L) weakened for almost all sectors, except for beverages.

Figure 3 Competitiveness of the food and drink sub-sectors in the EU28

Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

The various sub-sectors show a similarly strong position with respect to the trade-related competitiveness indicators, with all sectors around or above average, compared to the benchmark countries, and various sub-sectors showing a strong improvement over time. Similar to the overall industry, labour productivity and value added remained relatively weak in 2012 in most sectors.

Regulatory and framework conditions

The European food and drink industry is subject to various national and European regulations. These regulations concern, for example, food safety, food nutrition and health, food information, food innovation, export and import and environmental sustainability. These regulations may affect the industry positively or negatively.

From the literature review, the main European regulations with a positive impact on the sector's competitiveness appear to include:

- Establishing and harmonising key legislation under the General Food Law and adopting coherent horizontal approaches at EU level (for example “From Farm to Fork” on food safety);
- Regulation concerning voluntary geographic indicators and traceability;
- Food safety regulation supporting high quality levels of European food and drink products offer a strong international competitive position. With a growing middle class in emerging markets, the reputation of EU food and drink products for high quality will become increasingly important in taking advantage of export opportunities in new markets;
- Developments in free trade agreements and the EU Common Agricultural Policy.

The inconsistent implementation of European regulations among EU Member States was identified by representatives of the sector as a key major challenge with regard to the impact of the regulatory conditions on the competitiveness of European food and drink companies and the future development of the industry.

Issues related to the regulation on food information, as also mentioned by stakeholders, seems already addressed to a large extent with the introduction of new regulation (Regulation 1169/2011).

Complaints about the lengthy authorisation procedures and strict approval requirements relating to food innovation are mainly related to new food products with health attributes. In these specific cases, it is, according to industry claims, very often not sufficiently attractive to launch the commercialisation in Europe because of the regulatory constraints.

Some of the conditions impacting the competitiveness of the industry lie outside the regulatory framework. For the food and drink industry, these other framework conditions are mainly related to stimulating and increasing innovation, which is seen as a priority for the food and drink industry in realising growth and remaining internationally competitive. The following conditions are considered to be the key challenges for the sector:

- Innovation and R&D investment. Innovation research is dispersed, R&D investment is comparatively low and industry stakeholders report a general lack of innovation culture. A combination of factors including the framework conditions, industry dynamics and access to high-skilled labour need to be examined in order to provide a boost to innovation and act as a lever for increased competitiveness of the industry into the future;
- Labour force and skills. The industry faces a significant challenge in attracting staff with high-level skills that are not typical of the food sector (e.g. digital skills, behavioural science, genetics, etc.), and in transferring skills as existing workers age and move to retirement. Furthermore, access to high-skilled staff is critical for the industry to be able to increase innovation. Therefore, solutions to address both access to high-skilled labour and raising levels of innovation may prove to be self-reinforcing;
- Access to raw materials has been identified by various stakeholders as an important factor influencing competitiveness of the industry. The analysis in Chapter 3 suggests that in those sectors for which the processing industry enjoys a particularly good access to local high quality raw materials, for example the dairy sector, competitiveness has improved in the period reviewed in this study. In contrast, food sectors that rely largely on import of raw materials, for

example in the fish and oils sector, where access to raw materials seems to have become more difficult, strongly deteriorating competitiveness is observed in the period reviewed in this study.

Conclusion and recommendations

The food and drink industry and all its sub-sectors have a good international trade position with all sectors demonstrating improvement over the past years, despite weakening labour productivity and value added. This development can largely be attributed to the global perception of the high quality of European products and increasing incomes driving higher consumer demand for food and drinks products in emerging countries. The conclusion of a series of free trade agreements with non-EU countries in the last years has also contributed to increased market opportunities.

With other regions acknowledging the value of the high quality of EU products and adopting similar legal frameworks, this competitive edge may decline in the coming period if no further action is taken. Possible initiatives to maintain or strengthen the competitive edge of the European industry can be categorised into: strengthening the international trade position, supporting productivity, and improving the functioning of the supply chain.

Strengthening the international trade position and the internal market

The EU food industry's main competitive advantage lies in its high requirements for food safety, the quality of its products and its image. To maintain this position, the attention to food quality and food safety within the current legislative framework should at least be maintained. Where needed, for example following evolution of science or new views on risks, the food quality and safety regulations should be amended accordingly.

At the global level, opening up external markets, for example by means of Free Trade Agreements, strengthen the possibilities of industry to fully benefit from the international growth in food demand.

To further stimulate the internal market, any trade obstacles resulting from differences in the way Member States apply rules should be eliminated. The EU is encouraged to identify, in cooperation with the industry, any trade obstacles and address those obstacles.

Supporting productivity

An important point with respect to legislation is keeping the cost of compliance down and avoiding unnecessary costs. A distinction can be made between two types of cases. On the one hand, there are revisions of fundamental legislative requirements that need to be made at rather long intervals. Regulation 1169/2011 on the provision of food information on consumers is an example of such a fundamental legislative change. On the other hand, there are adaptations of technical-legal nature, which only require transitional period to ensure legal security and stability for businesses.

The current approach of the European Commission towards regulatory change seems quite suitable to minimising the cost of regulatory change. Also conducting Fitness Check exercises, like the one conducted for Regulation 178/2002, are good examples of initiatives to help minimise regulatory burden and should be continued.

For the industry, expansion of cooperation beyond the chain should be explored. First of all, one may think of cooperation, like strategic alliances and partnerships, between traditional food companies and digital technology companies may be in order in case the impact of digitalisation strongly increases in the next years. Such cooperation may boost the use of e-commerce, help to further optimise the production process and on-time delivery within the value chain and potentially provide other, currently undiscovered possibilities to strengthen the value chain.

Another area of cooperation that has come into attention is the re-use of resources, which also helps to reduce waste. The food industry generates high amounts of solid waste and by-products. While traditionally the use of food left-overs as feed is the key example of re-use of resources in the agri-food industry, other possibilities have been identified. Raw materials, co-products, by-products and waste might can be transformed into fine-chemicals and natural macromolecules, which are of high interest for the other sectors like the pharmaceutical or chemical industry.

Improving the functioning of the supply chain

The objective of the 2012-2014 High Level Forum for a Better Functioning Food Supply Chain was to develop a specific strand of industrial policy that supports the further development and growth of the sector in the future and values its specific features. The Commission decided in June 2015 to re-establish the High Level Forum for a Better Functioning Food Supply Chain.

To optimise the impact of the High Level Forum, the role of the High Level Forum should be extended to ensure a closer monitoring of the adoption of EU programmes and policies, like the CAP and research programmes.

Various bottlenecks in the sector can be linked to the relation between the sector and the general public. In particular, consumers' trust in the sector (an important factor influencing food choices), consumer stance on flavourings and nanomaterials (not embracing them), and the perception of the food and drink industry as an employer (not very attractive), may all be addressed by coordinated industry level campaigns and initiatives that provide the general public with information about the positive actions and value of the sector.

1 About this study

1.1 Purpose and scope of the study

The purpose of this study is to provide a fresh assessment of the competitive position of the food and drink industry, taking into account the recent economic crisis as well as EU policy and international developments that have occurred since 2006, and to give insight into how the food and drink industry can strengthen its position in the coming years.

For comparability purposes, the methodological framework is largely based on a previous study published by the European Commission in 2007 (hereafter: 'the 2007 study')[2].

The results of this study are expected to feed into policy debate on how industry actions as well as the EU regulatory and framework conditions could further support the competitiveness of the food and drink industry. In particular, the findings of this study will help the Commission prepare the ground for possible follow-up actions to the High Level Forum for a Better Functioning Food Supply Chain. This *Study on the competitive position of the European food and drink industry* was awarded to the ECSIP consortium with Ecorys Netherlands as lead partner and took place between December 2014 and December 2015.

Scope of the study - sectors

For the purpose of this study, the "food and drink industry" is defined by codes C10 and C11 within the statistical context of the NACE rev. 2 nomenclature. The scope of this study covers the food and drink manufacturing sectors (NACE 2 digit) and 12 specific sub-sectors (NACE 3 and NACE 4 digit), see Table 1.1.

Table 1.1 Food and drink industry; sector and sub-sectors

NACE rev 2	Short	Description
Industry		
C10&C11	Food & drinks	Total Food & Drink
Sub-sectors		
C101	Meat	Processing and preserving of meat and production of meat products
C102	Fish	Processing and preserving of fish, crustaceans and molluscs
C103	Fruit-vegetable	Processing and preserving of fruit and vegetables
C104	Oil	Manufacture of vegetable and animal oils and fats
C105	Dairy	Manufacture of dairy products
C106	Cereals	Manufacture of grain mill products, starches and starch products
C107	Bakery	Manufacture of bakery and farinaceous products
C108	Other food	Manufacture of other food products
C1081	Sugar	Manufacture of sugar
C1082	Confectionery	Manufacture of cocoa, chocolate and sugar confectionery
C11	Beverages	Manufacture of beverages
C1101	Spirits	Distilling, rectifying and blending of spirits

[2] In 2005 the Commission commissioned a study on the competitiveness of the food industry, which led to the publication of the report '*Competitiveness of the European Food Industry. An economic and legal assessment'* in 2007.

This list of sectors differs slightly from the sectors investigated in the 2007 study. These changes between the 2007 study and the current study are partly due to modifications to the NACE-classification, which changed from NACE v1.1 to NACE v2 between 2007 and 2015. Additionally, public attention has shifted to other sub-sectors. Due to these issues, as well as to accommodate slight modifications to the competitiveness indicators used in this study (see Annex 1), direct comparison to the 2007 study is not possible. To allow consistent review of development over time, the current study reconstructs the market performance and sector competitiveness analysis for the time period covered by the 2007 study.

Scope of the study – EU and the benchmark regions

The geographical scope of the study is the European Union and comparisons are made with the EU's main trading partners: the USA, Australia, Brazil and Canada. This approach is in line with the 2007 study, although the current study does not include additional countries in the analysis of specific sub-sectors, an approach that was used in the 2007 study.

In the current study we use EU28, despite the fact that Bulgaria, Romania and Croatia joined the EU after 2007 and were hence not a member during the full research period. For the analysis of the change in competitiveness, we used the EU25, that is, EU28 without Bulgaria, Romania and Croatia, as data availability for these countries for the full time period of analysis was limited. To the extent that data was available, we conducted a check on the impact of the selection of EU25 instead of EU28. The conclusion is that using EU28 or EU25 makes no difference for the food and drink industry as a whole: the impact on is below 2% for the EU and all benchmark countries. As the impact of the EU25 versus EU28 is negligible, we will not discuss this issue in the remainder of the report.

Scope of the study - competitiveness

For the purpose of this study, 'competitiveness' is defined as:

> The ability of a firm, sector and/or a nation to offer products and services that meet the quality standards of the local and world markets at prices that are competitive in relation to the offers of other firms or nations.

Various indicators for competitiveness are available. For this study, we used the indicators presented in Table 1.2 below.[3]

Table 1.2 Indicators for Competitiveness Index

Indicator	Category	Aim[4]
Annual growth in the share of added value of the sector in manufacturing industry	Performance	This reflects the competition for product factors between different industries within a country.
Relative Trade Advantage	Comparative advantage	Reflects the balance of import and export specialisation level in one category of goods from one country.

[3] The indicators used in the 2007 study formed the starting point for the indicators for this study in order to obtain a fair degree of comparability degree between the 2007 study and the current study. A review on the indicators was conducted to verify if any modification of these indicators should be considered desirable. In the end, one indicator, the relative export advantage (RXA or Balassa index), was replaced by another indicator closely related, the Relative Trade Advantage (RTA). The motivation behind this replacement was the more comprehensive view that the RTA provided over the RXA. See Annex 1 for a more detailed discussion of the methodology and the indicators.

[4] Taken directly from the explanation in the 2007 study.

Indicator	Category	Aim[4]
Difference world market share	Trade flows	Reflects the outcome of a competitive process on a global scale.
Annual growth rate of labour productivity	Performance	Reflects the unit labour costs and thus the relative prices.
Annual growth rate of real added value	Performance	Reflects the industrial dynamism of the sector.

1.2 Guideline for reading the figures with competitiveness results

In the figures on competitiveness presented in this report, we refer to the individual indicator with a letter, see Box 1.1. The methodology for the analysis of the indicators is presented in annex 1. In each figure, a number indicates which time period the indicator refers to. In Box 1.2 we present the periods that are used in this study.

Box 1.1 Competitiveness indicators

Trade related (trade from EU as a whole to outside EU):

M **Growth of the export share on the world market of a specific subsector of the food industry or the food industry as whole. The market share of one country is compare with the total world export of that (sub-) industry;**

T **The difference of the Relative Trade Advantage (RTA) index between 2 periods. A positive RTA indicates a competitive advantage: the exports exceed the imports. Negative values signify competitive disadvantages. In the report also the Relative Export Advantage (RXA) and Relative Import Advantage (RMA) will be presented, indicating whether the sign of the RTA difference is the result of higher export or lower imports.**

Economic performance:

S **Annual growth of the value added of a specific industry in the total manufacturing industry. This reflects the competition for product factors between different industries within a country;**

L **Annual growth of the value added per employer as indicator for labour productivity. This affects the unit labour costs and in this way the relative prices;**

P **Annual growth of value added reflects the performance of that specific (sub-) industry.**

Box 1.2 Periods and measurement

Periods:

1 = period 2003 – 2007

2 = period 2008 – 2012

Measurement:

Trade indicators: per period, the difference between the first and last year of that period is calculated.

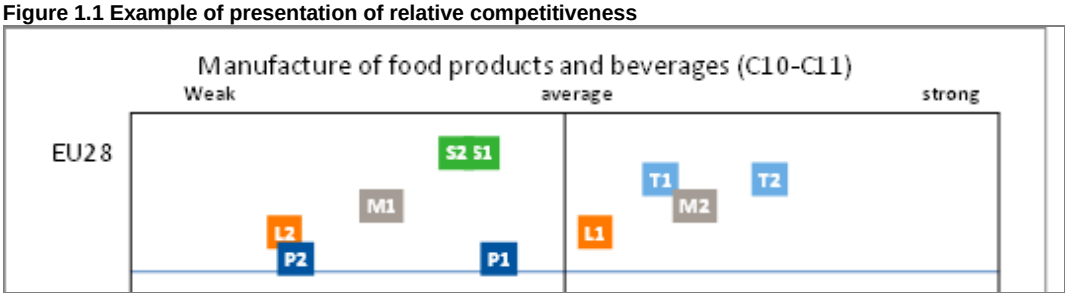
Economic indicators: per period, the annual growth rate between the first and last year of that period is calculated.

Metrics:

Indicators (including the average) are standardized in Z-scores: the average is 0 and the standard deviation 1. By doing this all indicators have the same scale enabling comparison.

Figure 1.1 shows how the results of analysis of relative competitiveness are presented.

Figure 1.1 Example of presentation of relative competitiveness



Period	2003-2007	2008-2012
Annual growth share added value in manufacture industry	S1	S2
Difference RTA indicator	T1	T2
Difference world market share	M1	M2
Annual growth rate labour productivity	L1	L2
Annual growth rate real added value	P1	P2

The figure shows that the EU28 'Difference world market share' competitiveness index for 2003-2007 (M1) was slightly below average compared to the benchmark countries, while the same indicator in 2008-2012 (M2) scores stronger than before compared to the benchmark countries.

In general, any competitiveness indicator that shows a shift to the left between period 1 and period 2 indicates a relative worsening of the position. Applying this concept, we observe also weakened labour productivity (L1 to L2) and value added (P1 to P2) for the EU28. Vice versa, a shift to the right, as observed for the RTA indicator (T1 to T2) shows an improvement in the relative position.

The timing of data releases by the various benchmark countries is such that the most recent years could not been taken into our comparative competitiveness indicators. Possible drawbacks are limited for value added and productivity indicators, as it is unlikely that major shifts would have occurred in comparative trends in 2013 and 2014. Trade-related indicators are more sensitive to quick changes in market conditions. For instance, for certain sectors, the closure of the Russian market in 2014 might impact the benchmarking. That possible drawback was mitigated by looking more closely at specific cases where such impact could be expected, namely for the meat, fish and dairy sectors.

1.3 On the interpretation of results

For the interpretation of the results, it is important to take into account the scope of this study.

First of all, competitiveness is analysed by benchmarking EU28 against four selected regions. In this analysis, relative developments are compared instead of absolute values. A positive score for EU28 means a *relative* improvement compared to the benchmark countries, irrespective of the development of the absolute value. Likewise, a negative score reflects a *relative* decrease, irrespective of the absolute value. Hence, increased labour productivity in absolute terms may still lead to a negative score if other benchmark countries managed a higher increase in labour productivity. The same applies to the other indicators for competitiveness.

Secondly, the trade figures used for the RTA are based on the trade from all European Member States to countries outside the EU, while intra-EU trade is not included. This approach leads to figures that are more comparable with other regions, as internal trade within those regions are also

excluded from the figures. However, the chosen approach means that figures on trade flows in this study may differ from alternative figures that do take intra-EU trade into account.

Thirdly, the analysis looks at the development over the past few years. A region with a high absolute level of performance in the first period that maintains that high level in the second period will show a poor relative performance compared to another region that starts with a lower level of performance, but shows an improvement in recent years. In order to partly compensate for these effects, we also show the development of key indicators for market performance to reflect the absolute level of performance.

Finally, the selection of regions only covers part of the world. Developments in regions other than those selected as benchmark countries are not included in the benchmark analysis of competiveness. Developments in EU28 competitiveness might show a different picture if other countries were included in the analysis. Hence, the results should be interpreted with a certain degree of caution, especially for certain sub-sectors that are less relevant in the benchmark countries.

1.4 Activities conducted

This study consisted of five main tasks:

- Task 1: Literature review;
- Task 2: Data collection and analysis;
- Task 3: Assessment of industry competitiveness and market performance;
- Task 4: Analysis of regulatory and other framework conditions;
- Task 5: Scenario building and policy elements for policy making.

Literature review

Task 1 of the study included a comprehensive literature review that aimed to identify relevant trends and developments in the food and drink industry since the 2007 LEI report. More than 100 documents, including academic literature, industry and institutional reports and studies were analysed in detail. The initial findings of the literature review were then used to inform Task 2 in terms of understanding the pertinent data that would be needed to fact check and verify identified trends and in illuminating the key issues to be discussed with stakeholders in interviews. The results of the data collection and interviews were then, in turn, incorporated into the findings of the literature review to enable a complete and well-founded discussion of the trends and developments influencing the food and drink industry.

Data collection and analysis

The data collection aimed at gathering qualitative and quantitative information on the size, structure, key characteristics and trends of the food and drink industry. The majority of the quantitative analysis was conducted using World Data Bank, OECD, Eurostat and national statistics of the benchmark countries. Qualitative information was gained through interviews with industry stakeholders. Interviews focused on industry dynamics, sector trends, and regulatory and other framework conditions. A total of 15 interviews were conducted with organisations representing manufacturers across a range of sectors as well as retailer and wholesalers, and consumers associations/organisations.

Assessment of industry competitiveness and market performance

The assessment of industry competitiveness and market performance is based on various indicators (as explained above). One of the objectives of the current study is to compare the competeveness assessment with that of the previous study (2007). Such a comparison is hampered by changes in the indicators, in the definition of the NACE classifications and in the composition of the EU.

For these reasons the competitive assessment uses two time frames of five years (2003-2007 and 2008-2012) and presents this comparison in the report, rather than a direct comparison with the 2007 study. The competitiveness assessment includes the 'present' period 2008-2012 and the 'past' period 2003-2007. In the 'present' period the developments are assessed by growth figures in 2012 compared to 2008. In the 'past' period the developments are assessed by growth figures in 2007 compared with 2003. The period 2008-2012 is based on data based on the NACE rev 2 and the period 2003-2007 on NACE Rev 1.1 with all classifications linked to the NACE rev 2 classifications. A full description of the methodology for the competitiveness assessment can be found in Annex 1.

Analysis of regulatory and other framework conditions

Task 4 involved analysing the specific regulatory and framework conditions that influence the performance of the food and drink industry. The regulatory and framework conditions analysis is based predominantly on interviews with food and drink industry stakeholders, supported by desk research.

Scenario building and policy elements for policy making

Finally, in task 5, scenarios for the industry's future development were constructed, assessing the impacts that the foreseeable trends may have on the industry`s strategy and the EU`s industrial policy. This has been done in a qualitative manner, making use of the results of the preceding tasks. The main implications of the analysis for the food and drink industry and recommendations for how to improve industry competitiveness are based on the conclusions of the scenarios.

1.5 Reading guide

This draft final report presents the results of the study as follows:

- Chapter 2: describes the market performance and competitiveness of the food and drink industry overall, including a detailed analysis of the trends influencing the industry. This combines information from the literature review, data collection and analysis and assessment of competitiveness (Task 1, Task 2 and Task 3);
- Chapter 3: describes the market performance and competitiveness of the food and drink industry sub-sectors (Task 3);
- Chapter 4: provides an analysis of the regulatory framework (Task 4);
- Chapter 5: presents the scenario analysis, conclusion and recommendations (Task 5);
- Annex 1: describes the methodology used for the competitiveness analysis (Task 3);
- Annex 2: reviews the scenario's described in LEI 2007 (Task 5).

2 Market performance and competitiveness of the food and drink industry

After a brief introduction to the food and drink industry, this chapter describes the market performance and competitiveness of the European food and drink industry. It includes:

- A review of the trends impacting the sector;
- A summary of the market performance;
- A comparison of the EU competitiveness against benchmark countries;
- A summary in the format of key discussion points.

2.1 Introduction to the sector

The manufacture of food products (C10) includes the processing of the products of agriculture, forestry and fishing into food for humans or animals, and includes the production of various intermediate products that are not directly food or feed products (e.g. hides). Manufacture of beverages (C11) includes the manufacture of beverages, such as non-alcoholic beverages and mineral water, and manufacture of alcoholic and distilled alcoholic beverages, but excludes manufacture of fruit and vegetable juices, of milk-based beverages and of coffee, tea and mate products[5].

The table below provides an overview of the importance of the EU food and drink industry compared to the total manufacturing sector. In 2012, the food and drink industry comprised 290,000 companies, employing 4.5 million people for an annual turnover of €1 062 billion. It is the largest manufacturing sector in the EU, representing 15% of total manufacturing turnover, 14% of the total number of companies and 15% of total employment.

Table 2.1 Turnover, number of enterprises and employment of the food and drink industry and the manufacturing industry

EU28	Food and Drink industry		Manufacturing industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	1,062	6.9%	7,080	-0.8%
Number of enterprises	288,655	7.4%	2,130,000	1.4%
Number of employees (1,000)	4,530	0.0%	30,000	-8.6%

Source: Eurostat Structural Business Statistics (SBS).

Between 2008 and 2012, the turnover of the food and drink industry grew by almost 7%, while turnover decreased by 0.8% in the manufacturing sector overall. The number of companies grew by more than 7% and employment remained stable.

[5] European Communities (2008). NACE Rev. 2: Statistical classification of economic activities in the European Communities. Accessed via http://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF on 1 June 2015.

In terms of turnover, the EU food and drink industry 90% of enterprises produce 10% of the total turnover[6], suggesting that the vast majority of total turnover is generated by a small number of enterprises (be they private firms or cooperatives).

In terms of employment, Figure 2.1 and 2.2 indicate, that although there are less micro enterprises in the food and drinks industry, compared to total manufacturing, there nevertheless is a slightly larger share of employment by the micro, small and medium enterprises compared to total manufacturing.

Figure 2.1 Composition of food and drink industry in 2012

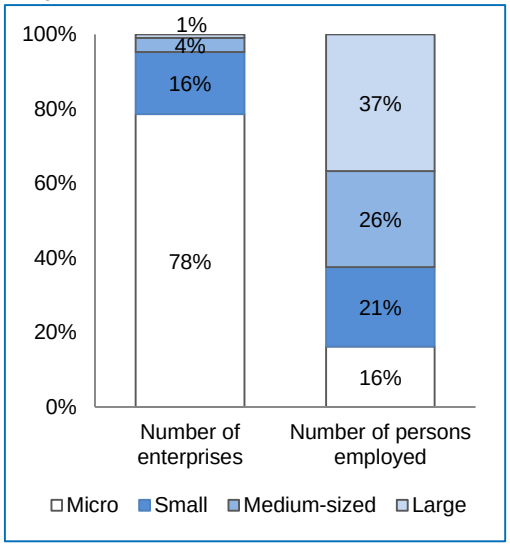
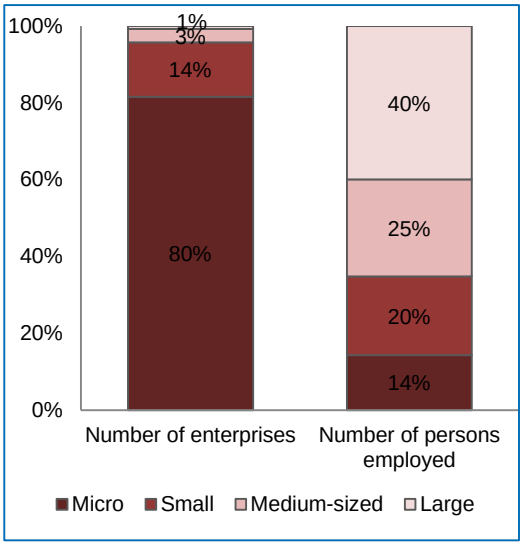


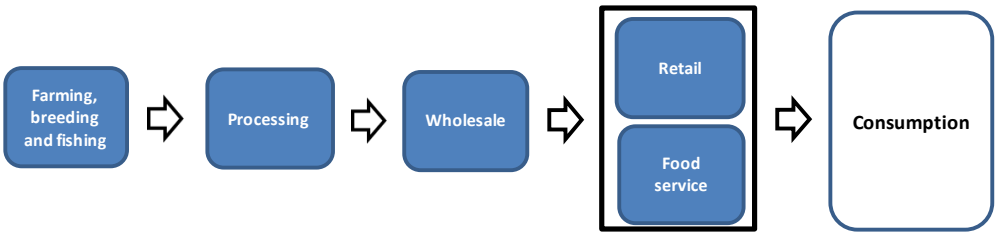
Figure 2.2 Composition of total manufacturing



Source: Eurostat.

Enterprises working in the EU food and drink manufacturing industry are an integral part of the broader food supply chain. Before reaching the final consumer products undergo a long way, from farms and fields to the sale of the final product to consumers or particular groups. The term "food (supply) chain (…) comprises all actors and activities from primary production (agriculture and inputs), food processing (all four stages from e.g. animal slaughter to ready-to-eat products, including industrial and craft-based enterprises), distribution and retailing (supermarkets and farmers' markets), and finally consumption by citizens/consumers[7]."

Figure 2.3 Schematic presentation of a food supply chain



Source: Ecorys.

6 Eurostat Structural Business Statistics SBS, Ecorys calculations.

7 COMMISSION STAFF WORKING DOCUMENT A FITNESS CHECK OF THE FOOD CHAIN State of play and next steps, SWD(2013) 516 final, p. 3.

There were almost 12 million farms in the EU in 2015 and around 300.000 enterprises in the EU food and drink manufacturing sector[8]. The food processors sell their products through the 2.8 million enterprises within the food distribution and food service industry, which deliver food to the EU's 500 million consumers[9].

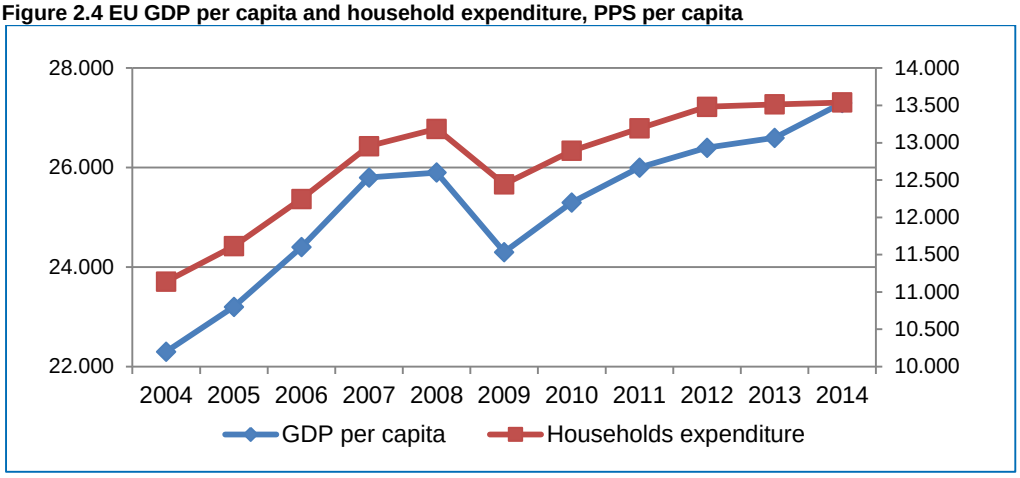
2.2 Trends affecting the sector

2.2.1 Income

EU Income

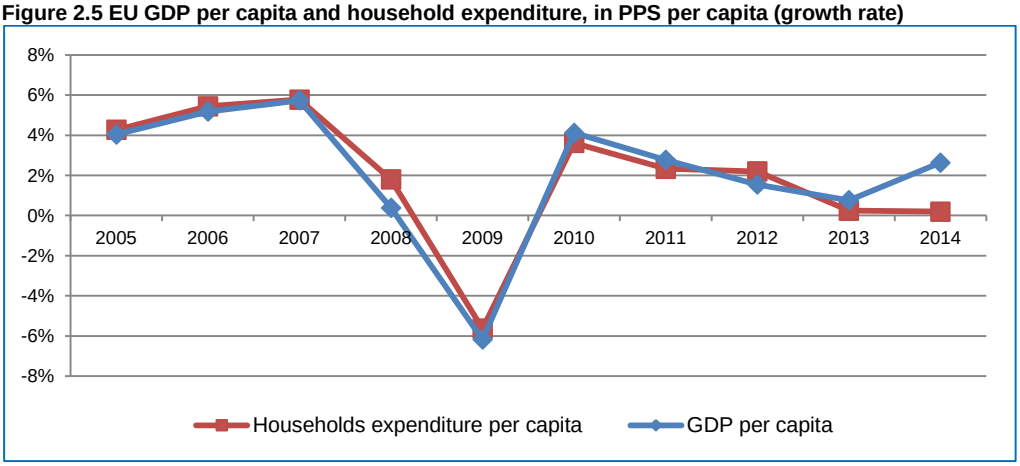
The most significant economic event in the recent period is the global financial crisis that began in the USA and unravelled into a banking crisis and double dip recession in Europe. Since 2009, when the financial crisis hit the real economy in Europe, the pace of growth of EU household expenditure per capita has slowed, reflecting the trend of GDP per capita (see Figure 2.4). GDP per capita and household expenditure returned in 2013 to pre-crisis levels in absolute terms, however growth rates remain below those of the pre-crisis period (see Figure 2.5). Indeed, Eurostat figures show that although EU families' wealth in 2014 increased on average by 2.63%, the expenditure per capita remained flat, recording an increase of only 0.2%.

Figure 2.4 EU GDP per capita and household expenditure, PPS per capita



Source: Eurostat.

Figure 2.5 EU GDP per capita and household expenditure, in PPS per capita (growth rate)



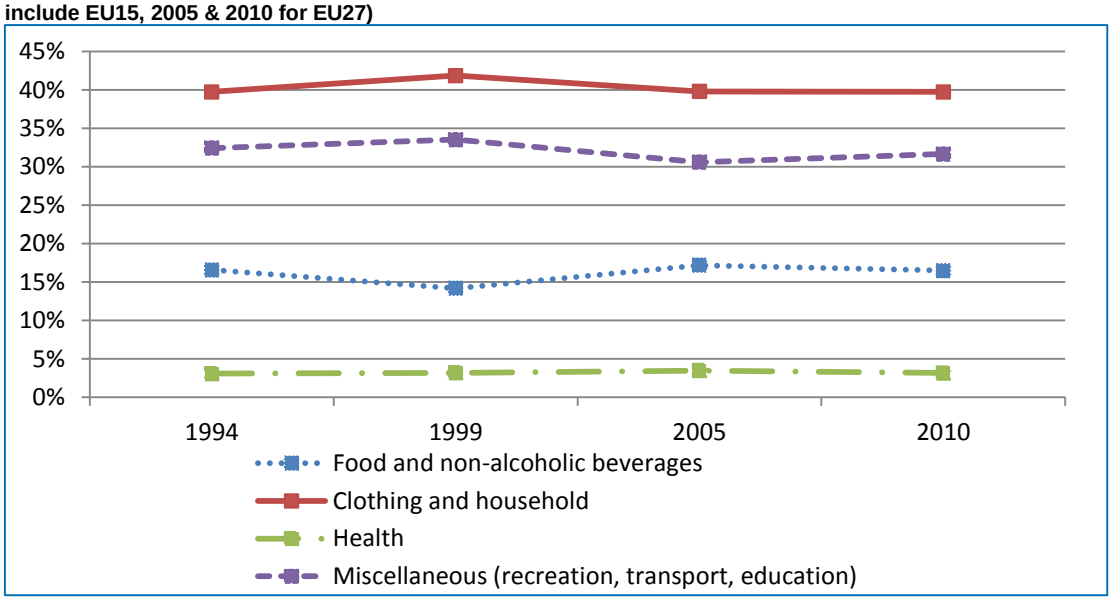
Source: Eurostat.

[8] EU Agricultural Markets Briefs, "You are part of the food chain: Key facts and figures on the food supply chain in the European Union", n°4, June 2015, p. 1.

[9] *Ibid.*

During the economic downturn, and especially from 2009 onwards, households' absolute expenditure on food and drinks has seen a slightly decreasing trend. In relative terms, expenditure on food and drinks has remained rather constant as indicated in Figure 2.6. Whereas growth in disposable income slowed down (growth between 2003 and 2007 was 17%, as opposed to 4% between 2008 and 2012[10]). This means that consumers spent less on food in absolute terms. The fact that consumers spent a constant share of their disposable income on food, yet in absolute terms growth in expenditure on food slowed, suggests changes in consumer purchasing behaviour, such as consumers switching to cheaper products.

Figure 2.6 Structure of consumption expenditure (percentage of total PPS spent, 1994 & 1999 only include EU15, 2005 & 2010 for EU27)



Source: Eurostat.

The European food and drink industry has been affected by the financial crisis and the ensuing recession primarily through the decreases in household expenditure on food and drink products. The exact effects however differed for various sub-sectors. For example in the soft drinks sector consumption levels stayed the same, yet the place of consumption shifted from outside of home, to home. Whilst in the beer sector, levels of beer consumption declined. In both cases, these effects led to lower profits.

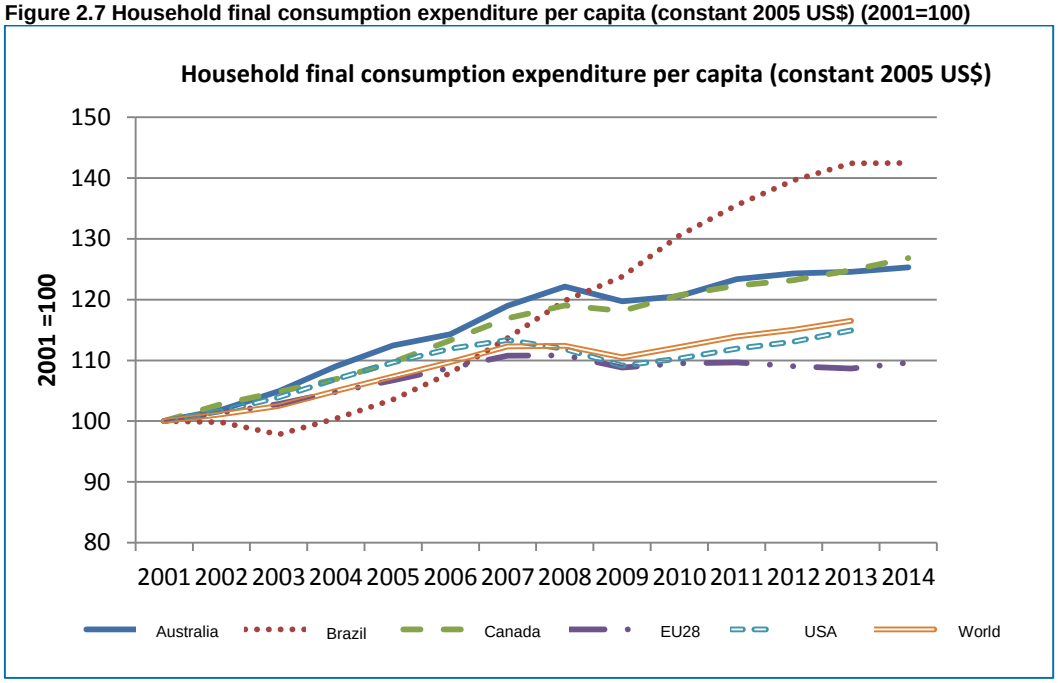
Global Income

Adopting a global perspective, the picture on income changes. Whilst the recession in Europe placed downward pressure on EU consumer purchasing power, average global incomes have risen and are expected to continue this trend in the coming years (see Figure 2.8). Rising incomes in markets outside of the EU present an important export opportunity for the food and drink industry as higher average incomes means more persons can afford high-quality products.[11]

[10] See Eurostat data: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=0&language=en&pcode=tec00113.

[11] Regmia, A.,Meadeb, B. (2013). Demand side drivers of global food security. Global Food Security. Volume 2, Issue 3, September 2013, Pages 166–171.

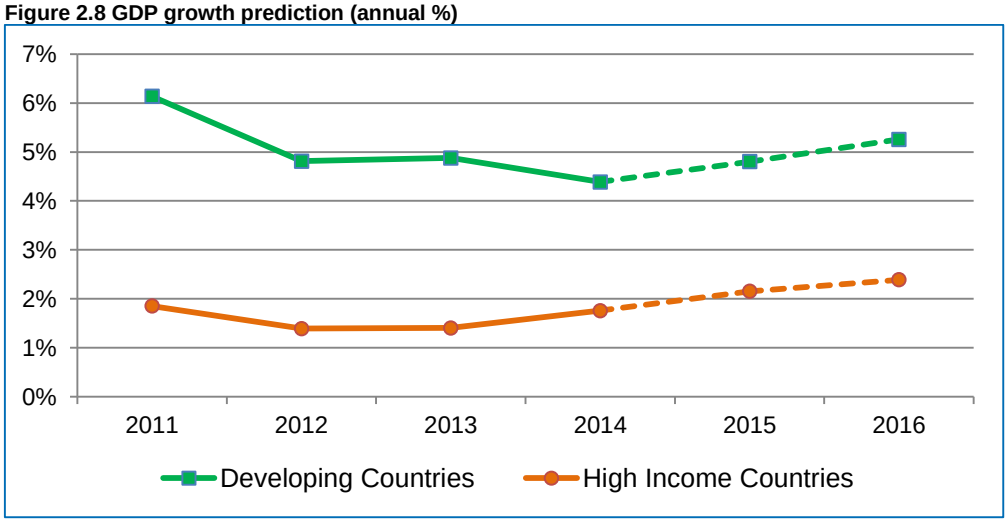
Figure 2.7 Household final consumption expenditure per capita (constant 2005 US$) (2001=100)



Source: World Bank and OECD National Accounts database.

At the same time, a notable development relates to the distribution of income. In the majority of OECD countries, household incomes of the top 10% have grown faster than those of the poorest 10%, leading to widening income inequality[12] and more low-income groups. This trend is likely to increase the demand for cheaper food.[13]

Figure 2.8 GDP growth prediction (annual %)



Source: World Bank.

[12] OECD (2011), Growing Income Inequality in OECD Countries: What Drives it and How Can Policy Tackle it?, Forum, Paris, 2 May 2011.

[13] European Parliament (2006) On the European Commission's Green Paper "Healthy Diets and Physical Activity" Briefing Note. Retrieved from: http://www.europarl.europa.eu/RegData/etudes/note/join/2006/373602/IPOL-ENVI_NT(2006)373602_EN.pdf.

2.2.2 *Socio-demographic developments*

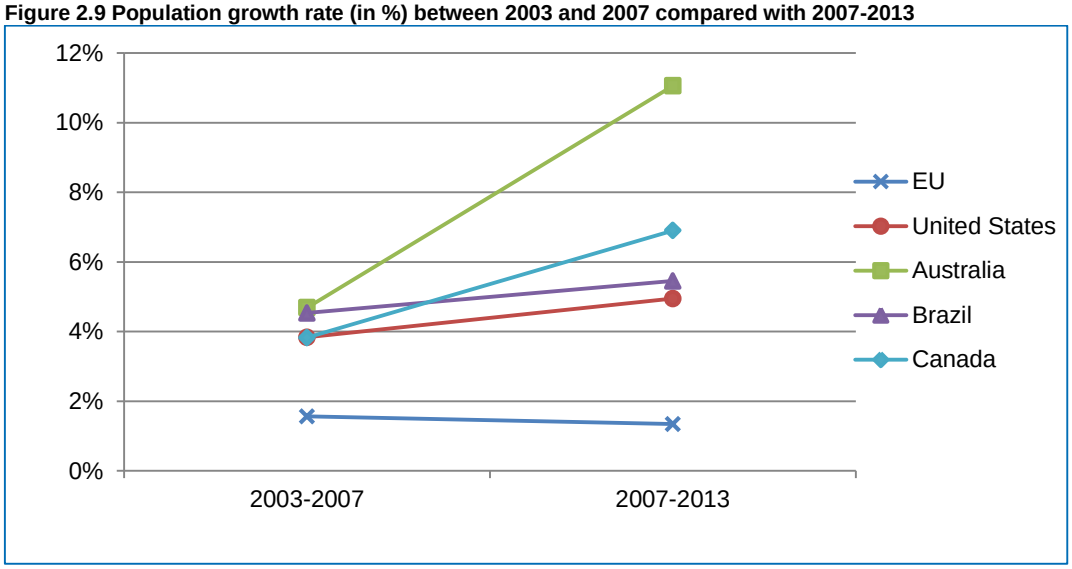
Socio-demographic phenomena, such as ageing population and the emergence of single person households, present fundamental societal challenges. Yet, such fundamental changes represent critical driving forces for changes in consumers' food and drink preferences and give opportunities for innovation in the food and drink industry. This section discusses the most significant socio-demographic developments impacting the food and drink industry.

Population growth

In mid-2015, the world population reached 7.3 billion[14] and is steadily rising with important consequences on the global demand for food. Population growth can be observed in all regions, including high-income countries, but to a lesser extent. In high-income countries, growth figures are significantly lower than in lower- or middle-income countries.

In the EU, the population growth rate has decreased in the past few years, whereas in other regions investigated in this study (the USA, Canada, Australia and Brazil) the growth in population has been increasing in the past decade (see Figure 2.9).

Figure 2.9 Population growth rate (in %) between 2003 and 2007 compared with 2007-2013



Source: World Bank.

Ageing population

In high-income regions like Europe, Japan and the USA, the share of elderly people in the total population is increasing. In the European Union, people aged 65 or over accounted for 17.9 % of the population in 2012 (an increase of 0.4 % compared with the previous year). An estimated 23.5% per cent of the total population will be 65 or older in 2030.[15]

Elderly people have distinct characteristics that impact their demands with respect to food and drinks. Loss of teeth and reduced sensory stimulation lead to a demand for foods with strong flavours and a suitable texture. Loss of appetite, muscle power and eye-sight mean that elderly people require food products in smaller quantities, packaged in smaller containers with easily removable lids and larger labels.[16] The proneness of elderly persons to non-communicable

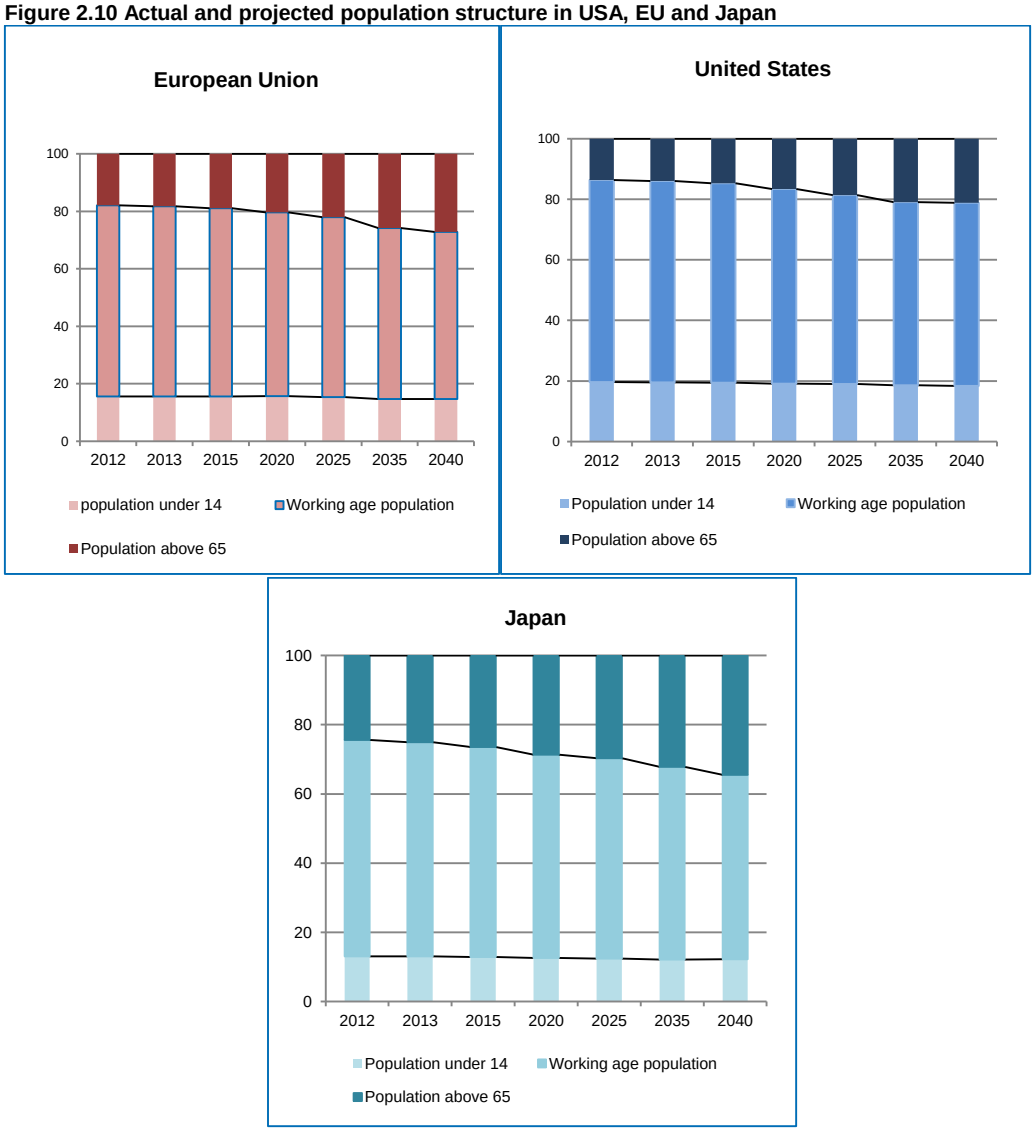
[14] United Nations, Department of Economic and Social Affairs, Population Division. (2015). World Population Prospects: The 2015 Revision.

[15] Statistical Office of the European Communities (1990). *EUROSTAT: Population structure and ageing*. Data from May 2014. Luxembourg: Eurostat.

[16] Duizer, L. M., Robertson, T., & Han, J. (2009). Requirements for packaging from an ageing consumer's perspective. *Packaging Technology and Science, 22*(4), 187-197.

diseases (NCDs), such as diabetes, cardiovascular diseases, osteoporosis and obesity, creates a demand for new approaches such as personalised nutrition (i.e. diets tailored specifically to an individual's characteristics) and for new products (products nutritionally enriched, as well as and 'functional' foods). The demand for functional foods (see definition in Box 2.1) has risen rapidly in the EU, USA and BRICS markets in the past few years.[17]

Figure 2.10 Actual and projected population structure in USA, EU and Japan



Source: World Bank.

Box 2.1 Functional foods

A functional food is "*a food that beneficially affects one or more target functions in the body beyond adequate nutritional effects in a way that is relevant to either an improved state of health and well-being and/or reduction of risk of disease. It is consumed as part of a normal food pattern. It is not a pill, a capsule or any form of dietary supplement*". (Working definition proposed by the European Commission Concrete Action on Functional Food Science in Europe - EUFOSE).

[17] Euromonitor (2012). "Fortified/Functional Packaged Food: Market Sizes." in London: Euromonitor International.

Urbanisation

Urbanisation, the shift of population from rural to urban areas, is a global trend. For Europe, this trend is less strong, as by 2014 73% of European citizens already lived in cities.[18]

Expected impacts of urbanisation on the food and drink industry include a growing role for supermarkets (and transnational corporations) in food sales[19] and a shift in employment within the food system with fewer people working in agriculture and more working in food processing, transport, wholesaling, retailing, and vending.[20]

2.2.3 Trends in consumer preferences and trust in the food supply chain

Consumer preferences with respect to food and drink are dependent on a wide range of factors, including:[21]

- Biological determinants (including hunger, appetite and taste);
- Economic determinants (such as cost, income, availability);
- Physical determinants (access, education, skills – for instance of cooking - and time);
- Social determinants (e.g. culture, family, peers and meal patterns);
- Psychological determinants that may include mood, stress, guilt, etc.;
- Attitudes, beliefs and knowledge about food.

Price remains the most important factor determining food choice.[22] However, for consumers with higher disposable income, factors other than price can influence their consumption patterns. The wealthier a person is, the more consumer behaviour is affected by factors like food safety, quality, long shelf life, non-GMO and expected health benefits[23]. For example, stakeholders indicate a growing trend amongst (higher income) consumers towards being attracted to niche and “out of the box” products. These consumers are willing to pay more for such products. One of the interviewees also observes an evolution towards more individualised consumption, while indicating individualisation of choices (i.e. access to products personalised to meet the needs of individuals) as one of the main drivers of change in the last five to eight years.

Apart from price, consumer preferences are shaped by factors related to health (allergies & intolerances, living a healthy life style, food safety), social responsibility (local products, animal welfare) and convenience. Each of these aspects is discussed in the following sub-sections.

Health

Consumer awareness of the links between food and health continues to rise as more information becomes available.[24] This can be considered as one of the most important social developments in recent years[25]. Growing attention to maintaining a healthy lifestyle as well as to actively prevent diseases is consciously linked to adopting healthy diets.[26]

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18 United Nations (2014). World Urbanization Prospects: 2014 Revision. Page 1.

19 Satterthwaite, McGranahan and Tacoli (2010) have discussed Urbanization and its implications for food and farming.

20 Cohen an Gareth (2009).

21 The European Food Information Council (2005). Determinants of food choice. EUFIC REVIEW 04/2005.

22 See for example: DiSantis et al, 2013; Steenhuis, 2011; French, 2003.

23 Hockmann, H., Levkovych, I., and Grau, A. 2013. Review of Recent Developments in the Agri-Food Sector: Working Paper. COMPETE Project. www.compete-project.eu.

24 Kearney, J. (2010). Food consumption trends and drivers. Phil. Trans. R. Soc., 365 2793-2807.

25 RECAPT (2011) Retailer and Consumer Acceptance of Promising Novel Technologies and Collaborative Innovation Management [Overview of Consumer Trends in Food Industry] Retrieved from: http://www.recapt.org/images/PDF/D2.1_public.pdf.

26 FoodDrinkEurope (2014). Data & Trends of the EU Food Industry 2013-2014; Kasriel-Alexander, D. (2013) Top 10 Global Consumer Trends For 2014. Euromonitor International.
Satterthwaite D., McGranahan G., Tacoli C. (2010) Urbanization and its implication for food and farming. Philosophycal Transactions of Royal Society B, 365, 2809–2820. Tudoran A. A., Fischer A. R. H., van Trijp H. C. M., Grunert K.,

Serious and life-threating food allergies and intolerances are also drivers for the increase in attention of consumers to food ingredients. 'Free-from' food (such as lactose-free, gluten-free, or wheat-free) is increasingly being consumed by people without (serious) food allergies and intolerances. In the United Kingdom, for example, the market for "free from" foods has doubled between 2009 and 2014.[27]

Food safety scares such as e-coli, the bovine spongiform encephalopathy (BSE), listeria and bird flu have made consumers more concerned with food safety.[28] In parallel, growing interest has been observed with regard to farming practices (organic, use of antibiotics and growth hormones in livestock or pesticides on crops) and processing practice (like the use of some specific food additives such as aspartame).[29]

Social responsibility

There is increasing emphasis by consumers on responsible consumption, i.e. taking responsibility for the wider repercussions on climate change, public health, social and economic inequality, biodiversity, animal welfare and the use of scarce resources of certain consumption choices. A number of indicators mentioned by Kristallis et al. (2011) demonstrate this development: (1) growing sales of organic food products in many western countries; (2) efforts to develop alternative channels of distribution for locally and regionally produced food products[30]; and (3) major retailers taking actions to become more socially responsible.[31] Indicators may not be limited to only these factors, but also manufacturers, as mentioned by FoodDrinkEurope, are actively integrating Corporate Social Responsibility (CSR) into their daily business.[32] This shift is further apparent with the establishment and work of the European Food Sustainable Consumption and Production (SCP) Round Table[33]. In this Roundtable, various stakeholders are involved in developing and promoting a science-based approach to SCP with interaction across the entire food chain. [34]

Consumers pay increasing attention to the sustainability of the products they consume, often considering the consequences of their consumption habits notably with regard to climate change, bio-diversity or animal welfare[35]. A 2009 Eurobarometer survey showed that slightly more than 8

Krystallis A., Esbjerg L. (2012). Overview of consumer trends in food industry. Aaarhus University, School of Business and Social Sciences, MAPP Centre.

Orden, D. and Roberts, D. (2007): Food Regulation and Trade under the WTO: Ten Years in Perspective, Agricultural Economics 37, pp. 103-118.

27 The Telegraph (2014). Worried well: half of shoppers now buy 'free from' produce for food intolerance. Retrieved from: http://www.telegraph.co.uk/news/health/news/10968226/Worried-well-half-of-shoppers-now-buy-free-from-produce-for-food-intolerance.html.

28 Turi, A.,Goncalves, G., Mocan, M. (2014). Challenges and competitiveness indicators for the sustainable development of the supply chain in food industry. Elsevire. Procedia - Social and Behavioural Sciences, 124, 133 – 141.

Newell D.G., Koopmans M, Verhoef L, et al. (2010). Food-borne diseases— the challenges of 20 years ago still persist while new ones continue to emerge. Int J Food Microbiol; 139 (suppl 1): S3–15.

29 Turi, A.,Goncalves, G., Mocan, M. (2014). Challenges and competitiveness indicators for the sustainable development of the supply chain in food industry. Elsevire. Procedia - Social and Behavioural Sciences, 124, 133 – 141.

30 Such as the study on Short Food Supply Chain conducted by the Joint Research Center of the European Commission. See Kneafsey, M., Venn, L., Schmutz, U., Balázs, B., Trenchard, L., Eyden-Wood, T., Bos, E., Sutton, G., Blackett, B., (2013) Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics, JRC Scientific and Policy Reports.

31 Krystallis A., Scholderer J., Brunsø K., Grunert K.G., Esbjerg L., Lahteenmaki L., Bech-Larsen T. (2011). Trends in the food sector 2010-2015, MAPP Report.Cited in RECAPT (2011). Retailer and Consumer Acceptance of Promising Novel Technologies and Collaborative Innovation Management [Overview of Consumer Trends in Food Industry] Retrieved from: http://www.recapt.org/images/PDF/D2.1_public.pdf.

32 For further information please refer to http://www.fooddrinkeurope.eu/priorities/detail/responsible-business-conduct/.

33 European Food Sustainable Consumption and Production (SCP) Round Table is an initiative that is co-chaired by the European Commission and food supply chain partners and supported by the UN Environment Programme (UNEP) and European Environment Agency.

34 For further information refer to http://www.food-scp.eu/.

35 Menrad, K. and Feigl, S. (2008): Innovation activities in the food industry in selected European countries, Project report "Traditional United Food Europe" (TRUEFOOD) (WP 7.5: Traditional products and the economic impact of innovation), pp. 1-36.

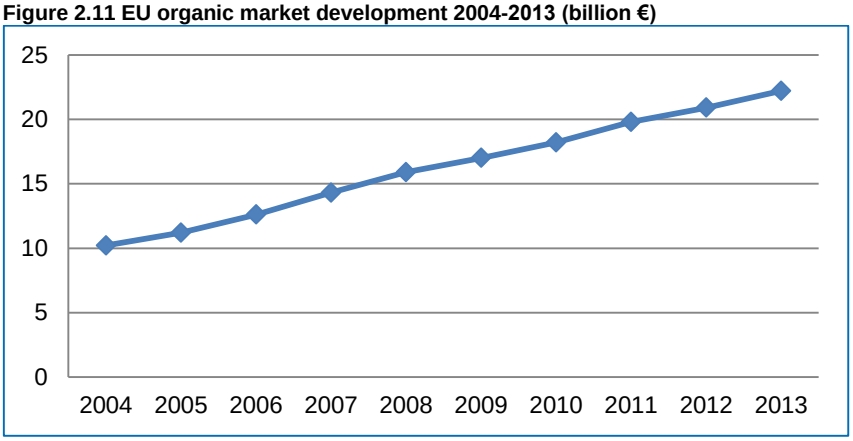
out of every 10 EU citizens felt that a product's impact on the environment is an important element when deciding on which products to buy[36]. For some consumers, food purchased should have the smallest possible ecological impact and therefore not be transported over long distances[37]. Animal welfare is also an increasingly important factor taken into account by consumers when making food choices[38].

The approach by EU consumers towards the use of genetically modified (GM) organisms in foods is closely related to this trend in increased consumer awareness and concerns with sustainability. Unlike in the United States, where consumers exhibit a more favourable and trusting attitude towards GM technology[39], European consumers are more cautious. In a 2010 Eurobarometer study, 54% of EU consumers considered that GM food was not good for them or their family, with 57% of respondents arguing that GM food benefits some people but puts others at risk[40]. EU rules establish the mandatory labelling of the food and feed which consist, contain or are produced from GMOs[41,42]. In Canada and in the USA, labelling of GM is mostly done on a voluntary basis[43].

Organic food

According to the Research Institute of Organic Agriculture (FiBL) and the International Federation of Organic Agriculture Movements (IFOAM), the demand for organic food is mainly concentrated in the United States (approximately 44% of the world market), followed by the European Union (41%)[44]. The European organic market experienced steady growth in the past decade. Between 2004 and 2013, the EU organic market increased from € 10 to 22 billion, representing an annual growth above 13%[45].

Figure 2.11 EU organic market development 2004-2013 (billion €)



Source: FiBL-AMI surveys 2006-2012, OrganicDataNetwork.

36 Eurobarometer (2009) Europeans attitudes towards the issue of sustainable consumption and production.

37 Hockmann H., Levkovych I., Graua A.(2013). Review of recent developments in the agri-food sector. Complete: N1, December 2013. Woring paper.

38 Grimshaw K et al (2014) Consumer Perception of Beef, Pork, Lamb, Chicken, and Fish, Meat Science, Vol. 96 (Jan. 2014), pp. 443-444; Day C, (2011) Cattle Welfare Perceptions, Feedstuffs FoodLink, Sept. 11, 2014. http://feedstuffsfoodlink.com/story-cattle-welfare-perceptions-0-117598; Napolitano, F., Girolami, A. and Braghieri, A. (2010) Consumer liking and willingness to pay for high welfare animal-based products, *Trends in Food Science and Technology*, **21**: 537-543.

39 Costa-Font, M., Gil, J. M., & Traill, B.W. (2008). Consumer acceptance, valuation of and attitudes towards genetically modified food: review and implications for food policy. Food Policy, 33, 99e111.

40 Special Eurobarometer 341 (2010). Study on public attitudes to various aspects of biotechnology.

41 Except where presence of GM material in the food or the feed is an adventitious or technically unavoidable and does not exceed 0.9% of each of the ingredients.

42 Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC.

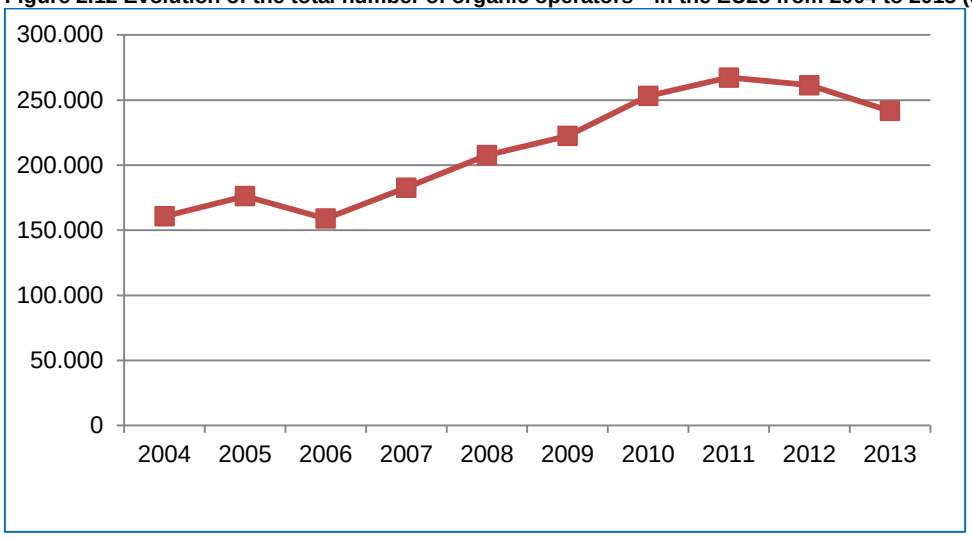
43 Vermont is the only US State to have adopted a law requiring the labelling of GM food.

44 Ibid. Page 127.

45 FiBL-AMI Surveys 2006-2012, OrganicDataNetwork.

Corresponding to the rising demand, the supply of organic food has grown globally[46]. The number of EU organic food operators including agricultural holdings, processors and importers/exporters increased from 140,446 in 2004 to 210,051 in 2013 (see Figure 2.12). Despite this increase in the supply of organic products, the rise in demand for organic products outpaces supply considerably[47].

Figure 2.12 Evolution of the total number of organic operators[48] in the EU28 from 2004 to 2013 (units)



Source: EUROSTAT and Ecorys calculations.

Although European markets for organic products have been growing rapidly, sales of organic food still accounted for less than 7% of total food sales in all Member States in 2013.

Consumers pay a premium for organic food compared to conventional products. A number of studies have investigated if consumers are willing to pay (WTP) for organic products. In a study conducted by Francisco et al. (2010) on the willingness of Spanish consumers to pay for organic tomatoes, a relationship was shown between consumers' levels of knowledge and consumption of organic foods as well as their willingness to pay a premium for these products.[49] Health, availability and education have been observed as other factors that positively influence consumer attitudes towards buying organic food.[50]

Changing Lifestyles

Convenience is one attribute of a food product for which demand is increasing[51]. With the lifestyle of consumers becoming increasingly mobile and faster paced, availability of convenient products,

[46] Willer, H., Lernoud, J. (2014). The World of Organic Agriculture. Statistics and Emerging Trends 2014. FiBL-IFOAM Report. Research Institute of Organic Agriculture (FiBL), Frick, and International Federation of Organic Agriculture Movements (IFOAM), Bonn. Revised version of February 24, 2014. Schaack, D., Willer, H., (2010): Development of the Organic Market in Europe. In: Willer, H.and Kilcher, L. (eds.): The World of Organic Agriculture. Statistics and Emerging Trends 2010. IFOAM, Bonn and FiBL, Frick, pp. 141-144. Tudoran A. A., Fischer A. R. H., van Trijp H. C. M., Grunert K., Krystallis A., Esbjerg L. (2012) Overview of consumer trends in food industry. Aaarhus University, School of Business and Social Sciences, MAPP Centre.

[47] Hockmann, H., Levkovych, I., and Grau, A. (2013). Review of Recent Developments in the Agri-Food Sector: Working Paper. COMPETE Project. www.compete-project.eu.

[48] According to Eurostat definition, an organic operator is '*any natural or legal person who produces, prepares, imports, exports or deals with organic products.*

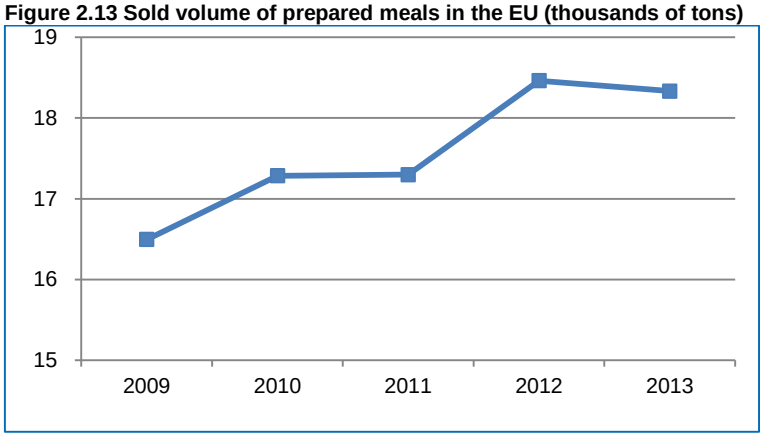
[49] Francisco J. Mesías Díaz Federico Martínez-Carrasco Pleite Jose Miguel Martínez Paz Paula Gaspar García, (2012),"Consumer knowledge, consumption, and willingness to pay for organic tomatoes", British Food Journal, Vol. 114 Iss 3 pp. 318 – 334.

[50] Justin Paul, Jyoti Rana (2012). Consumer behaviour and purchase intention for organic food, Journal of Consumer Marketing, Vol. 29 Iss: 6, pp.412 – 422.

[51] RECAPT (2011). Retailer and Consumer Acceptance of Promising Novel Technologies and Collaborative Innovation Management [Overview of Consumer Trends in Food Industry] Retrieved from:

such as full meals 'on-the-go', have become a key need.[52] There is in particular a growing demand for healthy convenience food.

Figure 2.13 Sold volume of prepared meals in the EU (thousands of tons)



Source: Ecorys calculation from Eurostat Prodcom statistics.

The changing patterns in lifestyle also impact food preparation at home. Primarily in urban areas of developed and even developing countries, a decreasing amount of time is spent on the preparation of meals and consumption at home[53]. Shifts towards more processed, easily packed and pre-prepared foods are seen in part to be a response to long working hours[54]. Consequently, demand for food in the form of ready-to-eat commodities such as frozen or fresh meals, premade sauces, pre-sliced vegetables, or fast-food, has increased in recent years.

Consumption of functional food (see Box 2.1 for the definition of functional food on page 37) is increasing in almost all industrialised countries, not only as a result of an ageing population as already discussed on page 36, but also as a result of busier lifestyles that make it harder to meet nutritional requirements[55]. Even so, a 2010 report raised the issue that consumers remain cautious about health-related claims on food and drink products and emphasised that the success of the functional food market is "increasingly dependent on establishing a relationship of trust with the consumer" [56]. Since the time of publication of that report, the implementation of the EU health claim regulation (discussed more fully in Chapter 4 on page 127) may have had an impact on consumer perception and increased trust.

Consumer's trust in the food sector

An important factor influencing food choices is the perception of consumers vis-à-vis the food chain. According to the Edelman Trust Barometer 2015, the trust in the food and drink industry declined in 2015 compared to 2014[57,58]. The same study indicates that trust has declined in 70% of countries since 2014[59]. Within the European Union, the greatest decrease in trust in the industry was in the

http://www.recapt.org/images/PDF/D2.1_public.pdf. Buckley, M., Cowan, C., McCarthy M. & O'Sullivan, C. (2005): The convenience consumer and food-related lifestyles in Great Britain, Journal of Food Products Marketing, 11, 3-25. Buckley, M., Cowan, C., McCarthy, M. (2007): The Convenience Food Market in Great Britain: Convenience food lifestyle (CFL) segments. Appetite, 49, 600-617.

52 Kasriel-Alexander, D., (2013). Top 10 Global Consumer Trends For 2014. Euromonitor International.

53 Satterthwaite D., McGranahan G., Tacoli C. (2010) Urbanization and its implication for food and farming. Philosophycal Transactions of Royal Society B, 365, 2809–2820.

54 A. Krystallis, K.G. Grunert, M.D. de Barcellos, T. Perrea, W. Verbeke (2014). Consumer attitudes towards sustainability aspects of food production: insights from three continents Journal of Marketing Management. Volume 28, Issue 3-4, 2012.

55 Kearney, J. (2010). Food consumption trends and drivers. Phil. Trans. R. Soc. B 365, 2793–2807.

56 Ibid.

57 In 2015, the percentage of countries in trust decreased was 59% in 2015 compared to 57% in 2014.

58 The study is based on online survey launched in 27 countries, 33.000 responses of college-educated public in the age between 25 and 64.

59 Trust increased in 8 countries while it decreased in 19. In some countries (e.g. Spain) trust level remained the same.

Netherlands (from 65% to 59%) while Poland showed the greatest increase in trust (by nine percentage points from 42% to 51%) between 2014 and 2015. Trust was an important topic raised by various stakeholders. They stated that overall, there is a negative perception of the processed food sector which can be explained by several factors, the most important one being food fraud with the 2013 horse meat scandal as a recent example. The more recent food fraud scandals relate to food quality, which is different to earlier incidents of food safety such as the E.coli outbreak (in 2011) or the Salmonella case (in 2008), which had far greater consequences on consumers' trust. While consumers understand these as being one-off events, food fraud and food safety incidents have revealed the complexity of the food supply chain while challenging consumers' trust in the food industry. The market for meat and meat products suffered the most from the horse meat scandal: the EU consumer survey of 2014 revealed that compared with results from 2012, the largest drop in performance has been noted in the market for meat[60]. The scandal is considered to have reinforced the consumer shift towards buying local products at local shops.

Among the other factors that can negatively affect the image of the food industry, the interviewees cited concerns related to the use of antibiotics in animal production and the possible development of antibiotic resistance.

2.2.4 Trends downstream in the supply chain

Modern retail sector

A recent study on the impact of modern retail on consumer choice[61] reported that competition among retailers has strengthened, notably with the development of discount retailers. The sector might further consolidate to ensure quality and volumes while reducing the number of intermediaries. An interesting development amongst major independent retailers is an increasing tendency to be associated with wholesale or commodity suppliers, and the increased presence of purchase cooperatives that represent their trade or interest and facilitate supply. These cooperatives have had to face two main challenges in the past decade: firstly a need to cut costs in response to the discount retailers and market conditions; and secondly a need to control the production process of final food products due both to increased food safety and labelling regulations and consumer demands. The latter has led to further vertical integration with retailer cooperatives purchasing slaughterhouses, processing plants, etc. to ensure full control of the process and contracting of raw materials in order to guarantee a steady supply and high quality of primary products. A view expressed by one interviewee is that consolidation within the farming sector should be further encouraged as a means to support competitiveness, for example through industry organisations providing value added services to farmers, which are currently supported through the CAP reform.

Many interviewed stakeholders see the increasing importance of the retailing sector translated into gains in bargaining power in negotiations with the food processing industry, especially in relation to SMEs. According to stakeholders, the fierce competition among supermarket chains and other businesses drives down the price of products and drives consolidation. Some stakeholders have observed important consolidation in the meat and dairy industries since the 2007 study, while others reported that the number of small and medium primary manufacturers has fallen in recent years and fewer manufacturers are supplying fewer larger buyers. Research conducted in Spain

[60] European Commission (2014). Consumer Markets Scoreboard: Making markets work for consumers http://ec.europa.eu/consumers/consumer_evidence/consumer_scoreboards/10_edition/docs/consumer_market_brochure_141027_en.pdf.

[61] Final report on *The economic impact of modern retail on choice and innovation in the EU food sector*, November 2014. Modern grocery retail accounts for 54% of the edible grocery (2012) and is defined as hypermarkets (>= 2 500m²), supermarkets (400 - 2 499m²) and discount shops (all sales area sizes). The following are excluded: independent and traditional shops, e-commerce, frozen food shops, organic food shops, fresh product shops, small supermarkets (<400m).

has indicated that the share of suppliers with revenues to which one retailer contributed more than 10% increased from 65.5% to 83% between 2003 and 2010[62]. As Spain has only a moderate concentration of modern retail (see Table 2.2), it is reasonable to assume that suppliers in other member states with similar or higher concentrations of modern retail are faced with similar issues.

Table 2.2 Market share of top 5 retail groups[63] for respectively edible grocery[64] and modern retail

	Edible grocery			Modern retail		
	2006	2010	2012	2006	2010	2012
Belgium	55%	58%	59%	94%	93%	94%
Czech Republic	32%	41%	44%	69%	85%	85%
France	57%	59%	60%	79%	78%	78%
Germany	57%	60%	61%	85%	90%	90%
Italy	19%	21%	21%	70%	69%	68%
Netherlands	51%	53%	58%	88%	84%	91%
Poland	16%	28%	32%	59%	72%	74%
Portugal	38%	49%	54%	85%	85%	85%
Spain	38%	45%	46%	70%	75%	72%
United Kingdom	44%	42%	39%	83%	85%	85%

Source: Planet Retail data.

Private labels

The increased market penetration of private labels is a key trend indicated in literature[65] and identified by both manufacturers and farmers during face-to-face interviews. According to stakeholders, private labelling currently accounts on average for 30% of the market. As shown in the table below and confirmed by stakeholder consultations, the development of private labels differs substantially between type of products and EU countries. As seen in Table 2.3, it has been most significant in Germany where their presence has increased up to 40% on average. Part of the increase in private label development is due to cost consciousness arising from the economic crisis and the need to differentiate from other retailers[66].

The effects of this increase in private labels on the food and drink industry remain unclear. A study from 2011[67] concluded that private labels do not undermine the performance or profitability of manufacturer SMEs and both private labels and industrial brands contributed to the increase in product variety. A more recent study[68] however found that high private label penetration could negatively impact the product range. Not addressed in that study, but brought up by stakeholders, is the indirect impact of private label penetration in sectors where innovation is driven by brand manufacturers. In general, leading brand manufacturers increased their innovation rate in response to the challenge of private labels, while strengthening their marketing strategies and promotional activities.

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62 Comisión Nacional de la Competencia (2011). Report on the relations between manufacturers and retailers in the food sector. Accessed via http://ec.europa.eu/internal_market/consultations/2013/unfair-trading-practices/docs/contributions/public-authorities/spain-comision-nacional-de-la-competencia-2-report_en.pdf.

63 *C(5)* concentration index.

64 Edible grocery includes all edible assortment, excluding durable, non-durable goods, service markets.

65 E.g. Nielsen (2014). *The state of private labels around the world*. Accessed via http://www.nielsen.com/content/dam/nielsenglobal/kr/docs/global-report/2014/Nielsen%20Global%20Private%20Label%20Report%20November%202014.pdf or Final report on *The economic impact of modern retail on choice and innovation in the EU food sector*, November 2014.

66 Final report on *The economic impact of modern retail on choice and innovation in the EU food sector*, November 2014.

67 LEI(2011). The impact of private labels on the competitiveness of the European food supply chain, study carried out for the European Commission DG Enterprise and Industry.

68 Final report on *The economic impact of modern retail on choice and innovation in the EU food sector*, November 2014.

Table 2.3 Percentage of private labels per product category

	Biscuits		Cereals		Ham		Milk		Soft drinks	
	2008	2012	2008	2012	2008	2012	2008	2012	2008	2012
Belgium	43.0	46.9	26.4	30.1	69.8	65.8	62.4	62.2	15.1	14.0
Czech Republic	6.4	8.5	11.3	13.2	11.0	15.0	24.0	26.2	7.2	7.6
France	26.1	21.4	18.5	13.5	35.1	38.3	40.9	42.3	9.6	9.0
Germany	37.4	36.9	34.9	31.2	69.5	71.4	65.5	66.8	19.6	18.0
Italy	15.4	16.7	5.8	6.1	24.8	28.2	14.5	20.2	5.7	7.8
Netherlands	31.5	33.2	12.0	12.3	87	88.3	38.2	43.2	14.2	15.4
Poland	4.3	12.7	7.9	16.1	7.5	7.4	10.3	22.7	6.2	8.3
Portugal	36.4	41.5	19.6	25.5	33.1	43.6	20.3	29.1	17.8	29.6
Spain	24.5	34.4	25.5	37.8	27.0	52.9	32.9	46.2	5.6	11.1
United Kingdom	21.9	21.3	20.7	21.8	58.0	62.7	66.4	66.5	10.9	8.9

Source: Planet Retail data.

It is also considered that the development of private labels has supported the internationalisation of the industry by granting access to a wider network and a wider reach. One of the stakeholders raised the concern that an increase in private labels challenges the control and overall organisation of the sector and the ability to self-regulate because the less control, the more likely non-compliance with self-regulation occurs.

2.2.5 Innovation

Technological advances in the food industry receive attention from stakeholders involved in the food supply chain as well as marketers, media, and public policy makers[69] because of the potential to facilitate food safety management, provide healthier foods, improve efficiency and make operations more environmentally sustainable[70].

This section firstly considers general innovation and R&D investments in the food industry, and secondly focusses on innovation in packaging, and concludes with innovation in distribution channels.

Innovation in the food industry

Innovation can be defined as the implementation of a new or significantly improved product, or process, a new marketing method, or a new organisational method in business practice, workplace organisation or external relations[71]. In the context of the food sector, innovation can include new products, new types of packaging (including the physical packaging but also the provision of information to consumers on the packaging), new formulation (new types of conservation, new additives, new flavours), range extension, relaunch, new marketing methods and implementation of a new or significantly improved logistical process[72]. Next to the well-established product and

[69] Baourakis, G., Kalogeras, N. & Mattas, K. (2011): Introduction to the Special Issue on Recent Trends in the Food Industry and Food Chain. Journal of Food Products, Marketing, 17,111-113.

[70] RECAPT (2011). Retailer and Consumer Acceptance of Promising Novel Technologies and Collaborative Innovation Management [Overview of Consumer Trends in Food Industry] Retrieved from: http://www.recapt.org/images/PDF/D2.1_public.pdf.

[71] OECD (2005). Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data. OECD/European Communities.

[72] Nielsen, R.N. (2008). Feeding Food Producers with (Regional) Knowledge for Innovation?, Working Paper Series, Department of Business Studies. Christensen, J.L., Dahl, M.S., Eliasen, S.Q., Nielsen, R.N., Østergaard, C.R. (2008). Innovation in Agriculture, Forest and Fishery: knowledge sourcing and innovative capabilities, DRUID 25th celebration conference on entrepreneurship and innovation. CBS, Copenhagen.

process innovation, marketing innovation has been particularly important for the food and drink industry through developments in the area of product packaging. Marketing innovations can improve the success of new products and contact with customers, whether business customers, final customer or both, can play a crucial role in product and process development through demand-led innovation[73].

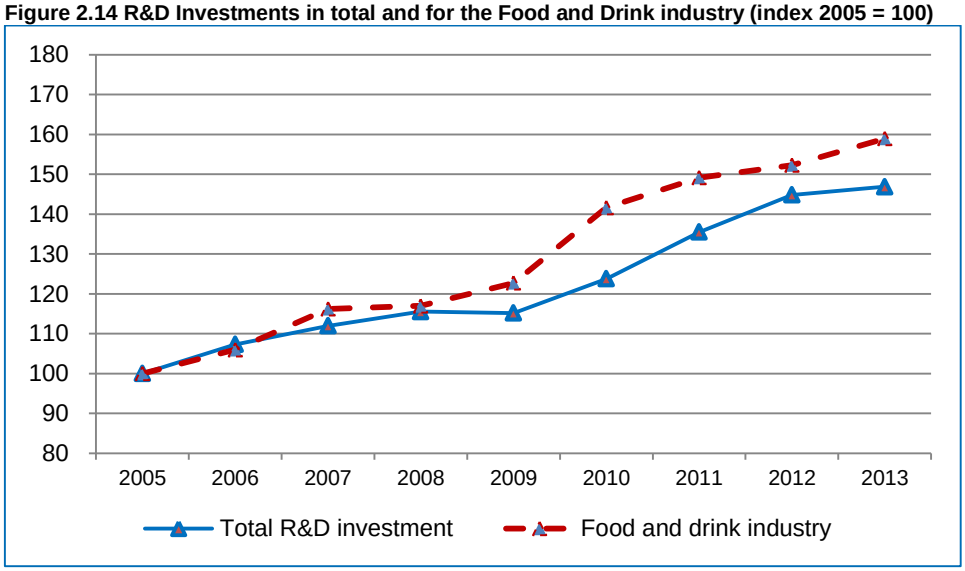
The Europe 2020 strategy sees investment in research and innovation as a key driver of growth and innovative ideas. As such, one of the five targets for the EU in 2020 is for 3% of the EU's GDP to be invested in R&D. The EU is reportedly making good progress towards achieving its R&D target but growth in R&D investment by EU companies has slowed in 2013 (2.3%) compared to 2012 (6.8%) and is lower than the world average and the companies in the USA and Japan[74],[75].

As illustrated in the next figure, R&D investments in the food and drink manufacturing sector increased in a pace similar to other industrial sectors. According to the 2014 Investment Scoreboard, the food and beverage manufacturers are still among the sectors with medium-low R&D intensity (between 1% and 2%) while food retailers fall into the category of sectors with low R&D intensity (less than 1%).[76]

The 2014 EU R&D Scoreboard shows the food and drink industry as belonging to the group of medium-low R&D intensity sectors, i.e. those with R&D intensity between 1% and 2% (R&D intensity calculated as R&D as a % of net sales, based on a sample of 2500 companies)[77]. Figures on total R&D investment per sector (worldwide) show that Food Producers rank 16th, dropping from 15th after being overtaken by the Construction and Materials sector which made large increases in R&D investment[78]. Despite R&D investment being low compared to other sectors, one industry association observed that large players have optimised their operations by concentrating R&D and production in a limited number of sites while maintaining distribution networks in many countries.

[73] OECD (2005). Oslo Manual. Guidelines for collecting and interpreting innovation data. Page 12.
[74] European Commission. (2013). Innovation Union Competitiveness Report 2013.
[75] IRI (2014). The 2014 EU Industrial R&D Investment Scoreboard. Retrieved from http://iri.jrc.ec.europa.eu/scoreboard14.html.
[76] IRI (2014). *The 2014 EU Industrial R&D Investment Scoreboard*. Accessed via http://iri.jrc.ec.europa.eu/scoreboard14.html.
[77] IRI (2014). The 2014 EU Industrial R&D Investment Scoreboard. Retrieved from http://iri.jrc.ec.europa.eu/scoreboard14.html.
[78] IRI (2014). The 2014 EU Industrial R&D Investment Scoreboard. Retrieved from http://iri.jrc.ec.europa.eu/scoreboard14.html.

Figure 2.14 R&D Investments in total and for the Food and Drink industry (index 2005 = 100)



Source: European Commission Research and Development Investment scoreboard.

R&D investments have been particularly sustained by the world's leading food and drink companies. A steady growth in R&D investments by large companies is reported between 2005 and 2012[79]. In absolute terms, EU leading enterprises in the food and drink manufacturing sector invest significantly in R&D activities (with the highest by Unilever investing over a €1bn in 2013 into R&D, or 2.1% in terms of R&D intensity to the firm's turnover)[80].

In terms of the number of innovations, measured by the share of new European Article Numbering bar codes in the total number of EAN bar codes available on the shelves of retailers, an increase of 3.8% was observed between 2006 and 2008 but decreased between 2008 and 2010 (-1.2%) and between 2010 and 2012 (-5.3%) according to a 2014 study[81]. This study also showed that innovations focused on packaging have become increasingly common whereby "on average across all Member State in the sample, new packaging innovations represented approximately 30% of total innovations in 2012 compared to approximately 6% in 2004"[82].

With respect to the character of innovations taking place in the food industry, most product innovations can be characterised as "incremental innovations or imitations", according to Menrad and Feigl (2008)[83]. Because of that, they note, only around 3% of all newly introduced food products can be regarded as truly innovative[84]. Innovation relevant for the food industry takes place also outside of it e.g. within suppliers as well as related industries (including chemicals and packaging sectors)[85].

79 IRI (2013). *The 2013 EU Industrial R&D Investment Scoreboard*. Accessed via http://iri.jrc.ec.europa.eu/scoreboard13.html on 2 July 2015.

80 IRI (2014). *The 2014 EU Industrial R&D Investment Scoreboard*. Accessed via http://iri.jrc.ec.europa.eu/scoreboard14.html.

81 European Commission (2014). Study on the economic impact of modern retail on choice and innovation in the EU, p. 36. Retrieved from: http://ec.europa.eu/competition/publications/KD0214955ENN.pdf.

82 Ibid, p.29.

83 Menrad and Feigl (2008). p.11.

84 Ibid.

85 European Commission (2014) Study on the economic impact of modern retail on choice and innovation in the EU.

The innovation process itself differs greatly from sector to sector in terms of development, rate of technological change, linkages and access to knowledge, organisational structures and institutional factors[86]. According to one study, the most innovative European food sectors in 2013 and 2014 were the dairy, soft drinks and ready-made meals[87]. If the focus is restricted to products packaging, innovation was particularly strong for cereals, baby food and starters/pizzas, according to another study[88].

Customer needs are a powerful driver for invention and innovation[89]. According to a study conducted by FoodDrinkEurope in 2014, consumers' expectations are the main driving forces for product innovation in the industry[90]. The association has clustered the drivers of innovation into five axes, corresponding to general consumer expectations: pleasure, health, physical, convenience and ethics. The leading axis in the study is pleasure with a 57% share in 2013, representing an increase compared to the 52.2% share in 2010. Dairy products have been identified as leaders in innovation, followed by ready-made meals which surpassed soft drinks and ranked second in 2013. In a 2013 study by FoodDrinkEurope, frozen products were the leaders in innovation[91].

Given the interlinkages between innovation and consumer preferences, the ability for the food and drink industry to pioneer in innovation in response to changing consumers preferences is crucial[92]. For example, one association explained that in the meat processing industry, where scope for product innovation is limited given the traditional nature of the products and recipes, innovation has mainly occurred in packaging (enhancing of shelf life, re-sealing of packages, smaller portions) and nutritional content (decreased content of salt and saturated fats for example). This is also one of the outcomes of the recent study on *The economic impact of modern retail on choice and innovation in the EU food sector*[93]. While consumer preferences have provided new scope for innovation, the industry has undergone specialisation to adapt to specific target groups on the basis of e.g. religion, population, or social or environmentally sustainable preferences (halal, organic, healthy, etc.).

Regarding process innovation and organisational innovations, important drivers mentioned by stakeholders are the reduction of water and energy consumption as well as the reduction of food waste. These trends are related to the growing attention given by processors to environmental concerns, which is driven by consumer demand, the desire for cost reductions and regulation (environmental regulation as a driver for innovation is discussed in section 4.1.4).

Innovation in packaging

In the literature, various factors have been emphasized as drivers of packaging innovation. These include business dynamics[94], distribution and retail[95], consumption[96], legislation[97] as well as cost-effectiveness[98,99].

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86 Hockmann H., Levkovych I., Graua A.(2013). Review of recent developments in the agri-food sector. Compete project: International comparison of product supply chains in the agri-food sector: determinants of their competitiveness and performance on EU and international markets.

87 Oxford Intelligence (2015). *The Food Technologies Report 2015: International Investment Strategies and Key Investors Study.*

88 European Commission (2014). Study on the economic impact of modern retail on choice and innovation in the EU.

89 Dainelli, D., Gontard, N., Spyropoulos, D., Zondervan-van den Beuken, E., & Tobback, P. (2008). Active and intelligent food packaging: legal aspects and safety concerns. Trends in Food Science & Technology 19, S103-S112.

90 FoodDrinkEurope (2014). Data & Trends of the EU Food Industry 2013-2014.

91 FoodDrinkEurope (2013). Data & Trends of the European Food and Drink Industry 2012.

92 Tudoran A. A., Fischer A. R. H., van Trijp H. C. M., Grunert K., Krystallis A., Esbjerg L. (2012) Overview of consumer trends In food industry. Aaarhus University, School of Business and Social Sciences, MAPP Centre.
FoodDrinkEurope (2014). Data & Trends of the EU Food Industry 2013-2014.

93 European Commission (2014). Study on the economic impact of modern retail on choice and innovation in the EU. Retrieved from: http://ec.europa.eu/competition/publications/KD0214955ENN.pdf.

94 The main affecting factors are business acquisitions and mergers, chain integration and globalisation, but also developments in the material domain, such as technology development or commodity prices.

As mentioned earlier, of these drivers, most literature refers to consumption as the leading driver for innovation. For instance, fast-changing social trends and changing consumer demands are main drivers behind food packaging innovation[100].

Packaging plays an important role in enabling convenient food. For instance, it can contribute to saving time and effort during food preparation.[101] Attributes considered convenient by consumers include: ease of accessing a package, handling and disposal of the packaging, reseal ability, ability to warm it up in the microwave. These aspects have a major influence on package innovation[102]. For instance, the 'self-doing' movement in food packaging has been a response to the consumers' increasing preference for convenient food[103]. Self-doing refers to packaging with options such as self-opening, self-sealing, self-dosing, or self-heating, etc.

Attention to the environmental impacts of packaging is another development in evolving consumer requirements. Consumers increasingly want to know that the environmental impacts of packaging are limited and that recycling is possible. Another development mentioned by stakeholders is a PET (polyethylene terephthalate) bottle containing bio-based material which was successfully put on the market as the first plant-based bottle, which is not biodegradable but can be recycled together with any PET bottle.

Other trends observed in the field of packaging are the introduction of 'intelligent packaging', which allows monitoring the freshness of the food, and 'active packaging' aimed to extend the shelf-life of the food as well as to improve its quality. New concepts of active and intelligent packaging are predicted to play an increasingly important role in the upcoming years.[104]

Innovation in distribution

Digitalisation is a driver for growth in distribution of food and drinks yet the food and drink industry is lagging behind in e-commerce.[105] One food manufacturer commented that e-commerce creates new opportunities for market entrance of single focus businesses (pure-players) because digital communication technology advances allow for more direct communication with customers. Some of the stakeholders consulted consider that technological developments, digitalisation and e-commerce are major drivers for change that brought critical transformations and highlighted the need for the supply chain to evolve. An example is the trend towards the 'individualisation of products', which has also developed through the increasing use of social media.

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95 The distribution and retail chains are continuing to internationalise (globalisation) and are constantly developing new consumer product logistics, processes and trends.

96 Not only demographic changes but also different preferences and tastes across the world. Different markets mean different perceptions, different consumption habits, different cultural and social values.

97 Health and safety are two of the major drivers that determine trends in the food and drink market in industrialised countries. Laws, standards and regulations will continue to play an important role in future packaging development. Another major driver of innovation in packaging is environmental legislation.

98 The reduction in costs as well as more efficient use of (scarce) resources and reductions in the weight of packaging are a major driver of packaging innovation.

99 Sonneveld K. (2000). What drives (food) packaging innovation? Packag Technol Sci 13(1):29-35; Canadean (2013) Innovation In Food Packaging.

100 See for instance Robertson, 2012; Mahalik and Nambiar, 2010 or Dainelli et al, 2008.

101 Marsh, K. S. & Bugusu, B. (2007): 'Food packaging – roles, materials, and environmental issues', Journal of Food Science, vol. 72 (3), pp. 39-55.

102 Ibid.

103 Noted in the FoodEngineering magazine http://www.foodengineeringmag.com/articles/92549-the-latest-food-packaging-trends.

104 Gontard, N. (2006). Tailor made food packaging concept. In: IUFoST, 13th World Congress of Food Science and Technology, Food is Life,17e21 September 2006, Nantes, France; C.E. Realini, B. Marcos. (2014) Active and intelligent packaging systems for a modern society Meat Science, 98, pp. 404–419.

105 Noted by FoodDrinkEurope.

Stakeholders consider that competition in the retail and wholesale sectors has increased as a result of digitalisation: it has impacted the way the retail sector operates and interacts with consumers, while increasing opportunities for both consumers and manufacturers. The upcoming trend of online labelling, where consumer information is provided via smart phones, has the potential to enable consumers to make informed choices, but also implies effort from the consumer side: being a consumer should not be a “full time job”.

It should be noted, however, that EU Regulation 1169/2011 encourages the development of innovative ways of providing information to consumers[106]. It does so by fostering a broad definition of food information and by encouraging the presentation of such information by other means than labels or on packaging. Stakeholders affirmed that major changes can still be expected from on-line shopping. In their view on-line shopping will benefit from the ongoing trend of individualisation of consumer choices. Consequently, understanding consumers' behaviour will require more cooperation between all actors of the supply chain.

Table 2.4 overleaf indicated the estimated possibilities for innovation in the food and drink manufacturing sectors, broken down to each of the subsectors investigated in this study.

[106] Regulation (EU) No 1169/2011 Of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004, art. 12, paragraph 4.

Table 2.4 Possibilities for innovation in the food and drink subsectors

Sectors		Meat	Fish	Fruits-vegetable	Oil	Dairy	Cereals	Bakery	Vegetable Proteins	Other food	Sugar	Confectionery	Beverages	Wine	Spirits
Innova-tion and R&D invest-ment	*1. New products*	2	2	2	1	2	1	1	1	1	0	1	1	2	1
	2. New packaging[1]	2	2	2	0	2	1	1	1	1	0	0	1	0	0
	3. New formulation[2]	2	2	2	0	2	2	1	1	2	0	1	1	0	0
	4. Range extension	2	2	1	1	2	2	1	1	1	0	1	1	0	1
	5. Relaunch	1						2			0	1		1	1
	6. New marketing methods	2	2	2	1	2	2	1	1	2	0	2	1	1	1
	7. New food processing systems[3]	2	2	2	1	2	2	1	1	1	0	1	1	2	0
	8. New management systems[4]	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	9. New distribution systems	2	1	2	0	2	2	2	1	2	0	2	2	2	2
Labor force and skills		2	2	1	1	1	1	1	1	1	1	2	1	1	2
Access to raw materials		1	2	2	1	1	1	2	1	0	0	2	1	1	1

[1] Including the physical packaging but also the provision of information to consumers on the packaging.

[2] New ingredients and new types of conservation, new additives as well as new flavours.

[3] Including the automation of production and improved technologies to conduct quality control in the chain.

[4] Including waste management systems.

2.2.6 *Conclusion*

The economic, social and technological trends discussed in the above sections provide the context for understanding what factors may be underlying drivers of positive or negative developments in the competitive performance of the EU food and drink industry and various food and drink manufacturing sectors. In the subsequent sections on industry market performance (section 2.3) and market performance in specific sectors (Chapter 3, the main trends are drawn upon in order to understand and explain the results. For example, the impact of the global financial crisis and broader macro-economic trends for the food and drink industry is considered in the analysis on industry and sector profitability, turnover, input costs and growth.

Trends are also critical in anticipating future challenges and opportunities, and thereby considering proactive policy and industry initiatives that could further support the competitiveness of food and drink industry in the forthcoming period. Hence, the main trends discussed in this section provide input for the scenarios and policy recommendations presented in chapter 5.

2.3 Market performance

One way to measure the performance of an industry is to consider the matter from the business point of view and look in particular at profit margins. For the EU food and drink industry profit margins have been decreasing over time (2.3.3).

This was largely caused by two factors: prices (2.3.1) and value added[107] (2.3.2).

2.3.1 *Agricultural commodity prices and consumer prices*

The food and drink industry is very highly influenced by agricultural commodity prices on the one hand and consumer prices on the other. Agricultural commodity prices determine to a large extent production costs (i.e. input prices). Consumer prices influence the turnover. If consumer prices do not increase in parallel with agricultural commodity prices, this puts downward pressure on margins in the food and drink industry. An analysis of the evolution of agricultural commodity prices and consumer prices is thus necessary for understanding the underlying forces driving developments in profit margins over time. The interaction of these elements can be illustrated with a cost/turnover ratio, which in turn sheds light on the ultimate profit margins of the industry as a whole and therefore its performance.

Agricultural commodity prices

Since mid-2007 the volatility of agricultural commodity prices in the EU for grains and vegetable oil has increased significantly[108], with a peak price in the third quarter of 2012[109]. Overall there has been a structural increase in agricultural commodity prices, directly impacting the cost base for food and drink manufacturing.

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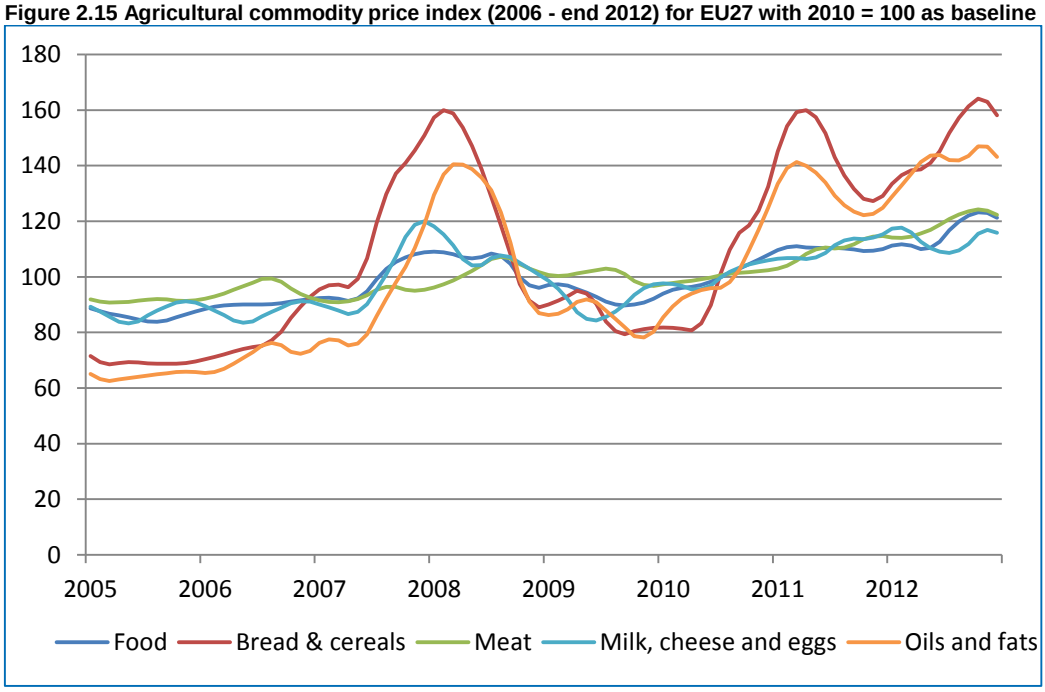
[107] Value added is calculated by subtracting production costs from the sales price and taking into account depreciation. This is a measure of how a firm is operating (the nature of its products, cost overheads and strategy), which in turn has an impact on the performance of the firm (in this case measured by profit margins).

[108] For additional information about the underlying causes of some commodity price volatility see DG AGRI's Agricultural Markets Brief (June 2011): http://ec.europa.eu/agriculture/analysis/tradepol/commodityprices/market-briefs/01_en.pdf.

[109] Report on competition law enforcement and market monitoring activities by European competition authorities in the food sector.

Figure 2.15 Agricultural commodity price index (2006 - end 2012) for EU27 with 2010 = 100 as baseline



Source: Eurostat – Food Price Monitoring tool, Agricultural Commodity Price 1.

It is expected that agricultural commodity prices will continue to rise as demand for food and food-producing resources continues to outpace supply, with supply being restricted by the limited availability of suitable land and water, climate-related problems, and the growing demands for bio-fuel production[110].

Consumer prices

Consumer prices have steadily increased between 2005 and 2012. The period 2009-2010 represents an exception in the sense that prices initially decreased and then remained stable. This deviation from the overall trend can be attributed to the global financial crisis and the associated dramatic economic adjustments for consumers[111].

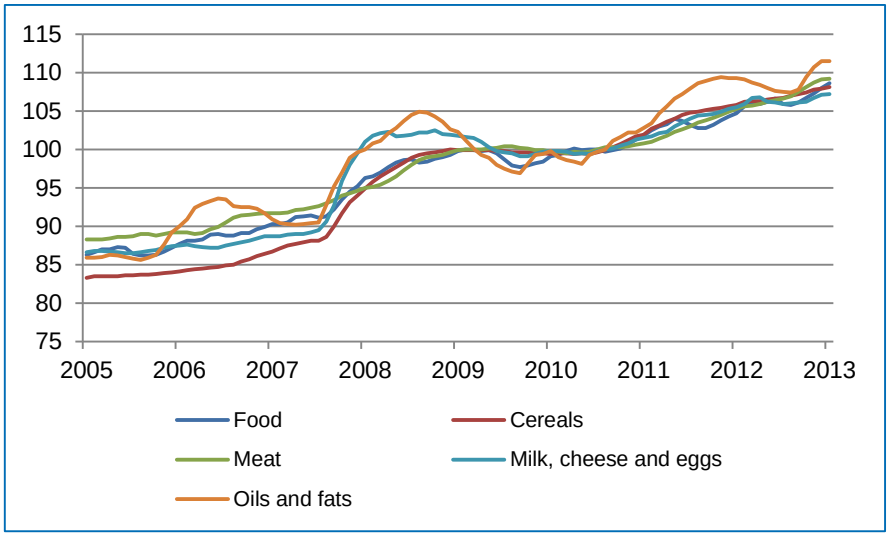
While consumer prices increased, they did so at a slower pace than agricultural commodity prices and were less volatile. This suggests that increased input costs were passed on to consumers in a limited way, while volatility was absorbed by the industry.

Opinions gathered through interviews suggest that the industry has been forced to do so because of the economic crisis which has made consumers highly price sensitive. This contributed to changes in the structure of the market with more discount retailers and private labels, putting yet more price pressure on food manufacturers.

[110] Hockmann H., Levkovych I., Graua A.(2013). Review of recent developments in the agri-food sector. Complete: N1, December 2013. Working paper.

[111] Firm have experienced the financial crisis earlier on, but from 2009, when employment started to be affected, consumers started to feel the impacts of the financial crisis on their own disposable income as the economic and sovereign debt crisis set in. This put pressure on product prices.

Figure 2.16 Consumer prices for selected food manufacturing sectors of the EU28 (2005 - end of 2012) with 2010 = 100 as baseline



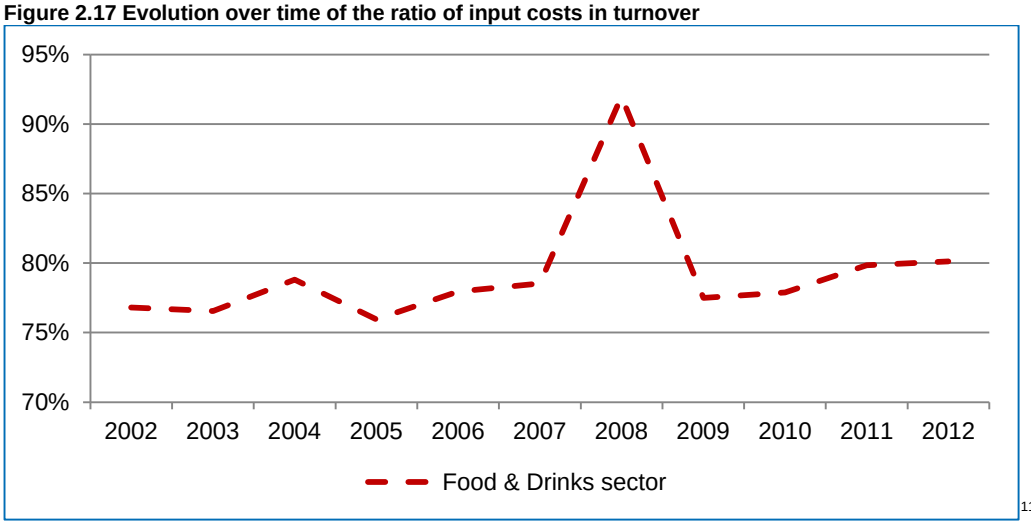
Source: Eurostat – Food Price Monitoring tool, Harmonised Indices of Consumer Prices[112].

Input costs/turnover ratio

The input cost/turnover ratio provides an indication of the cost structure of the industry: the higher the share of costs compared to turnover, the less room there is for creating value added or keeping healthy profit margins.

From the figure below it can be seen that only a small change in the ratio has occurred over the full reference period (from about 77% in 2002 to just over 80% in 2012[113]).

Figure 2.17 Evolution over time of the ratio of input costs in turnover



[114]

Source: Eurostat Structural Business Statistics.

The slightly increasing input prices (Figure 2.15) seem to have been internalised by the industry given that, the overall industry ratio of input costs to turnover has increased since 2010 (Figure 2.17). This development suggests a decrease of profit margins in the food and drink industry, indeed shown to be the case in Figure 2.20.

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[112] The prices used in the HICP should be the prices paid by households to purchase individual goods and services in monetary transactions. The purchaser's price is the price actually paid at the time of purchase.

[113] Excluding the spike in 2008, which can be attributed to the spike in commodity prices of that year.

[114] It should be noted that due to the change in classification codes in 2007 there are some data gaps in the earlier years.

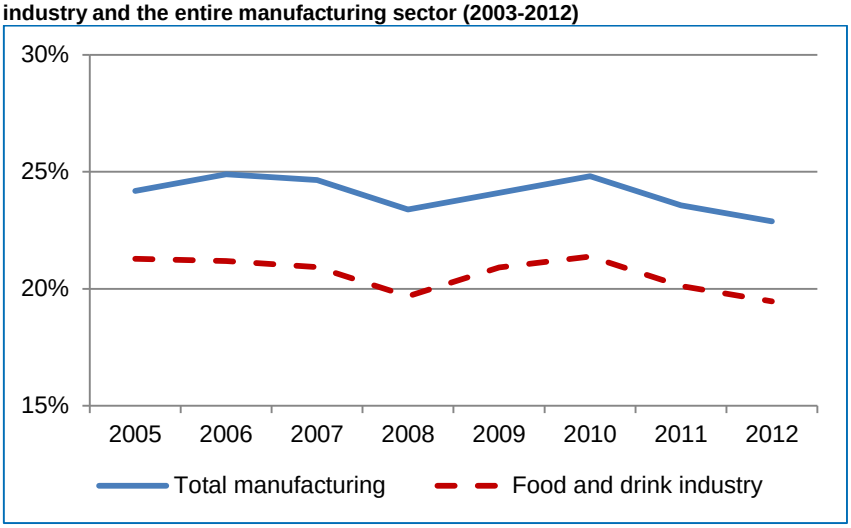
2.3.2 *Value added*

In a mature industry and market (such as the EU food and drink industry), the driving force in the profit generating capacities of that industry corresponds to its ability to generate value added. Value added is essentially a measure of a company's productivity and can be measured using two ratios: value added in turnover and value added per employee (apparent labour productivity).

Value added/turnover ratio

When looking at the proportion of value added compared to turnover (figure below), it becomes apparent that the food and drink industry is below that of total manufacturing (19% compared to 23%). Furthermore, the ratio is decreasing (from around 22% in 2005 to around 19% in 2012) for the food and drink industry. This trend is similar to the entire manufacturing industry, where a slow decrease in the proportion of value added compared to turnover can be observed.

Figure 2.18 Evolution of the share (in %) between value added and turnover of the food and drink industry and the entire manufacturing sector (2003-2012)



Source: Eurostat SBS.

The value added/turnover ratio is a useful way to compare the productivity of industries. If value added grows at a slower rate than turnover (as is the case for the food and drink industry), the industry is becoming more resource-based and therefore more dependent on input prices (as explained in 2.3.1). This can have a negative impact on profit margins (3.2.3.) when higher input prices cannot be passed through to consumers in the form of higher prices.

Apparent labour productivity

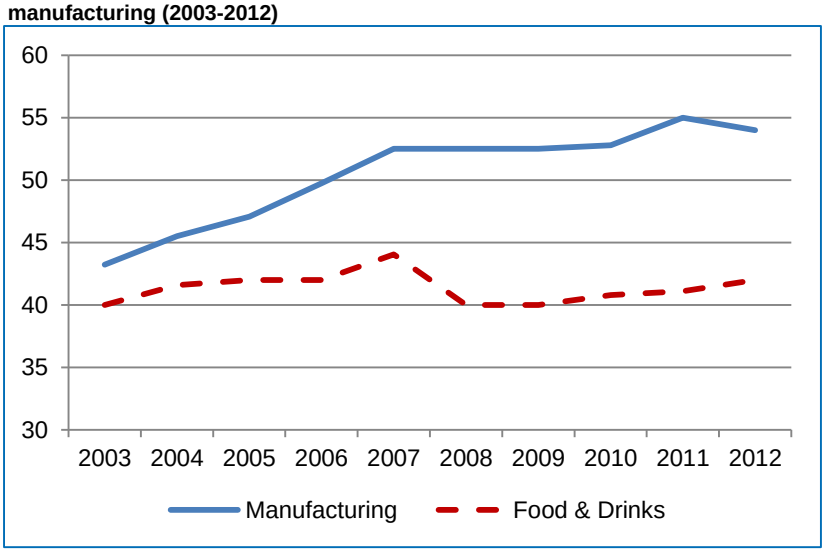
Apparent labour productivity[115] in the food and drink industry is below that of the manufacturing industry as a whole, reflecting a lower value added per employee on average[116]. Figure 2.19 shows a drop in labour productivity between 2007 and 2008 for the food and drink industry, while the overall manufacturing industry experienced a stabilisation in labour productivity since 2007. That suggests that the EU food and drink industry is not using its labour as effectively as manufacturing. This is also reflected in the fact that the food and drink industry failed to increase labour productivity in the period 2004-2006 when significant improvements were realised in total manufacturing. Since

[115] Apparent labour productivity is defined as value added at factor cost divided by the number of employees. This ratio is represented as thousands of euros per employee. (Eurostat (n.d.), *Apparent Labour Productivity*. Accessed via http://ec.europa.eu/eurostat/en/web/products-datasets/-/TIN00152 on 1 July 2015).

[116] It is to be expected that the food and drinks industry does not produce as much Value Added as for example advanced manufacturing.

2008, labour productivity in the food and drink industry has grown incrementally, reaching the 2004 level (42%) in 2012.

Figure 2.19 Evolution of apparent labour productivity of the Food and drink industry and the entire manufacturing (2003-2012)



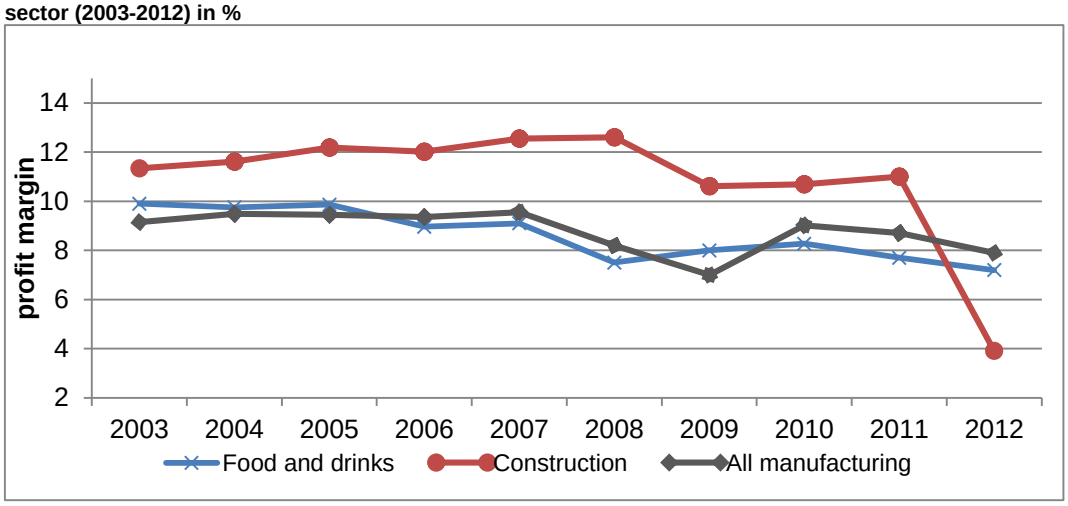
Source: Eurostat SBS.

The increase in labour productivity in the food and drink industry from 2008 can be explained by a slow but steady growth of value added since 2009 and a constant number of employees.

2.3.3 Profit margin

As a result of the input costs rising faster for the industry than its turnover, combined with a gradual decline in value added, the EU's food and drink industry has experienced a structural decline in its profit margins (with a cyclical shock in 2008 due to the spike in prices of raw materials).

Figure 2.20 Evolution of profit margins of the food and drink industry and the entire manufacturing sector (2003-2012) in %



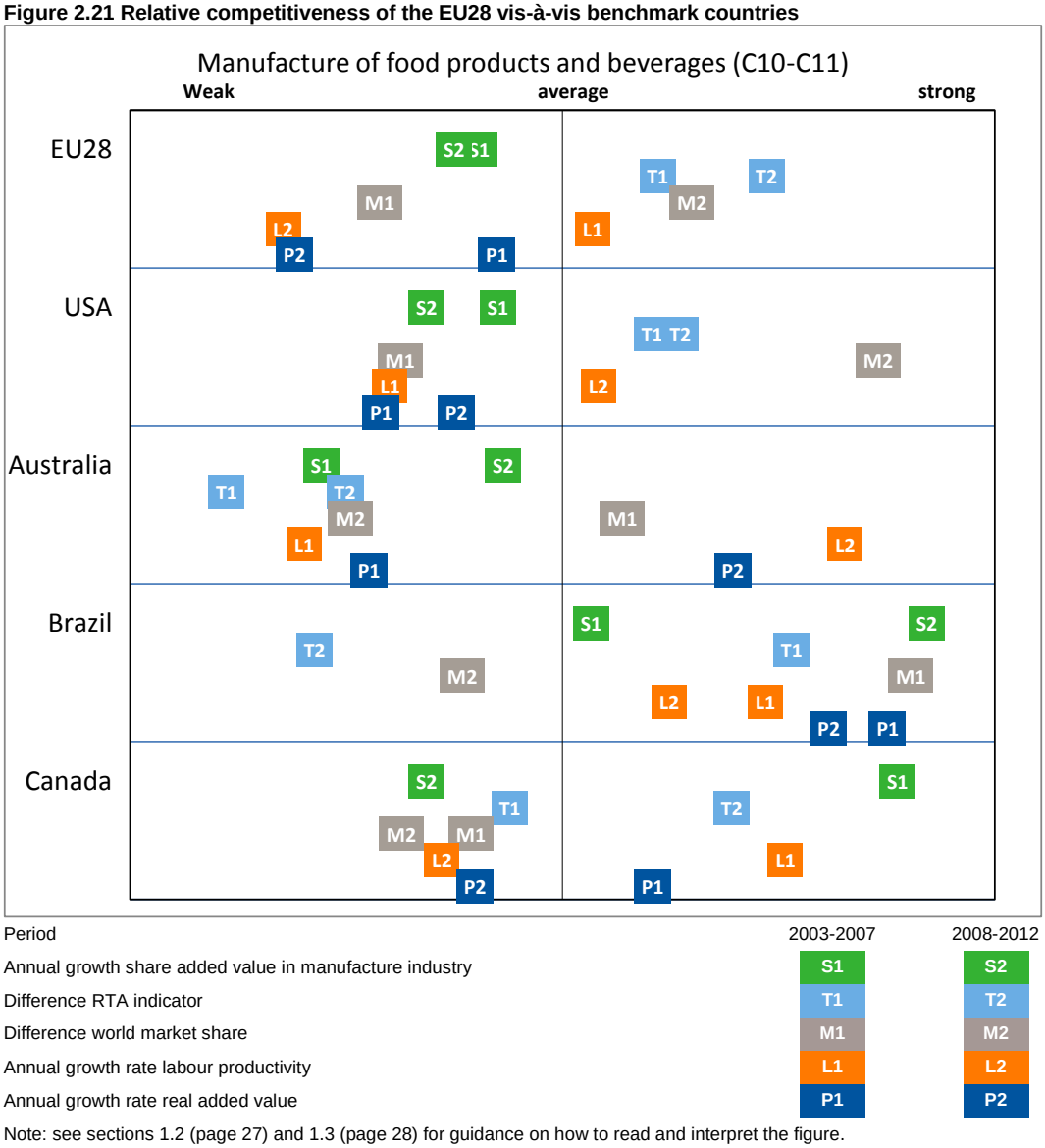
Source: Eurostat SBS.

2.4 Competitiveness of the food and drink manufacturing sector vis-à-vis benchmark countries

2.4.1 Overview: EU28 competitiveness versus benchmark countries

Figure 2.21 shows that, compared to the benchmark countries, the competitiveness performance of the EU food and drink industry weakened on the three economic indicators (S, L, P) and improved on trade-related indicators (T and M in period 2 (2008-2012) compared to period 1 (2003-2007). The USA improved their weak position to strong among the other benchmark for labour productivity (L) and world market share (M). Australia became less weak, as all indicators improved, except for export share (M). Furthermore, Brazil remained rather strong: in both periods, most indicators are among the strongest. Canada weakened from strong to weak: all indicators became relatively weaker except for the Relative Trade Advantage (T).

Figure 2.21 Relative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

2.4.2 *Structure of the EU industry compared to benchmark countries*

The EU food and drink industry is the largest in turnover, enterprises and employment of the selected regions: 1.5 times the size of the industry in the USA. However, the average turnover per enterprise is the lowest: only 10% of the Brazilian enterprises and around 15% of the USA per enterprise turnover. This is closely related to the difference in average size of enterprises, which is a lot smaller in the EU compared to the USA and Brazil. In addition, EU growth is among the lowest. In the period 2003-2007, the growth of turnover was the largest for Brazil, yet other parameters were more or less the same.

Table 2.5 Structure of the food products and drink industry (C10-C11) in 2012 and growth 2008-2012

	Turnover (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed (1,000)	Growth persons employed (%)
EU28	1,061	1.5	288,655	-0.5	3.7	2.1	4,515	0.8
USA	652	6.7	25,974	1.0	25.1	5.6	1,550	-0.3
Australia	71	10.7	13,018	1.4	5.4	9.2	240	0.5
Brazil	186	13.6	4,959	5.2	37.5	8.0	1,615	5.9
Canada	73	7.5	8,318	-2.5	8.7	10.3	266	2.1

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

The number of enterprises within the EU is large compared to the USA. One of the reasons for this gap can lie in the definitions of firms/enterprises used by both statistical agencies. The USA has the definition for the coverage of the census: *"Manufacturing establishments with one or more paid employees or non-employers that use leased employees for manufacturing*[117]*".* The coverage for Eurostat is: *"To constitute the enterprise unit, use is made of legal units that exercise, wholly or partially, a productive activity. Legal units include legal persons whose existence is recognized by law independently of the individuals or institutions which may own them or are members of them, or natural persons who are engaged in an economic activity in their own right".* In the EU, also private persons without employees are included, whereas the definition of the USA excludes such entities. Due to this difference in definition, the average number of employees per enterprise will have a slight flaw. The available statistics do not allow the exclusion of enterprises without employees. Yet, the scale of the average food and drink enterprise in the USA and Brazil especially is far larger than in the EU28. Furthermore, small-scaled enterprises are large in numbers but contribute only a very small share to the industries employment and turnover. There will be no impact on the competitiveness assessment, as no indicators based on enterprise sizes are included.

The size distribution of the EU food and drink industry is uneven; 90% of the enterprises produce 10% of the total turnover. In addition, around 80% of the enterprises represent less than 20% of the employees both in the EU as in the USA. Large-scaled enterprises thus determine the main contribution to countries' economy.

2.4.3 *Trade and market shares*

EU28 exports grew by 6.3%, a faster rate than the export growth in most other benchmark countries except the USA. The EU's market share on the world market was nevertheless just a fraction (0.03%) above the level in 2007. A different development can be observed for the import: growth in the EU, which had a slower pace than in other countries and the EU's market share of

[117] United States Census Bureau, Annual Survey of Manufactures (ASM), About the Surveys. http://www.census.gov/manufacturing/asm/about_the_surveys/index.html.

imports dropped from 12.8% in 2003 to 11.3% in 2012. These two developments resulted in a more positive trade balance: from less than € 3 billion negative in 2003 to over € 10 billion positive in 2012. The net trade balance also improved for the USA, but the strongest increase was seen in Brazil, were imports are relatively low in absolute terms. Brazilian net exports were € 16 billion in 2007 and € 29 billion in 2012.

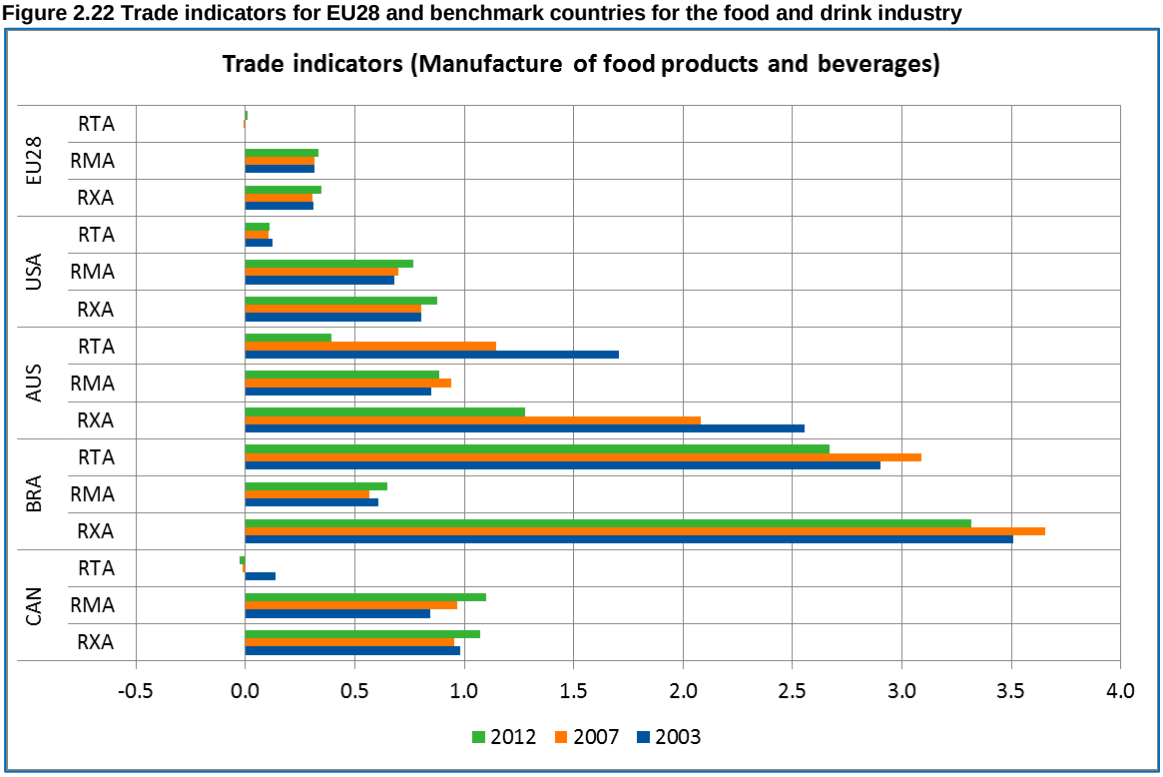
Table 2.6 Trade in food and drink products (C10-C11) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	86,413	6.3	12.1	75,858	0.5	11.3	10,556
USA	59,429	8.3	8.3	70,637	6.1	10.5	-11,208
Australia	14,328	4.8	2.0	8,731	8.7	1.3	5,597
Brazil	35,278	6.2	4.9	5,712	12.6	0.9	29,566
Canada	21,346	5.8	3.0	20,039	7.3	3.0	1,307
China	37,528	12.2	5.3	33,660	15.4	5.0	3,867
New Zealand	14,443	7.1	2.0	2,650	6.2	0.4	11,794
India	17,343	21.0	2.4	11,901	29.4	1.8	5,442
Thailand	20,198	11.7	2.8	7,342	9.5	1.1	12,857
Argentina	21,337	4.1	3.0	1,006	7.6	0.1	20,331
Russian Federation	7,192	19.9	1.0	20,274	3.0	3.0	-13,082
Malaysia	20,133	5.4	2.8	9,424	12.8	1.4	10,708

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

These trade developments are reflected in relative trade indicators. Brazil has the highest Relative Export Advantage (RXA) of all countries followed by Australia, combined with low Relative Import Advantage (RMA) indicators, resulting in high Relative net Trade Advantage (RTA) indicators. In the EU28 the imports are almost on par with the exports, the RTA is rather small: just below zero in the period between 2003 and 2007 and just positive in 2012. The RTA development in Australia and Canada is decreasing, while in the USA the RTA remains small.

Figure 2.22 Trade indicators for EU28 and benchmark countries for the food and drink industry

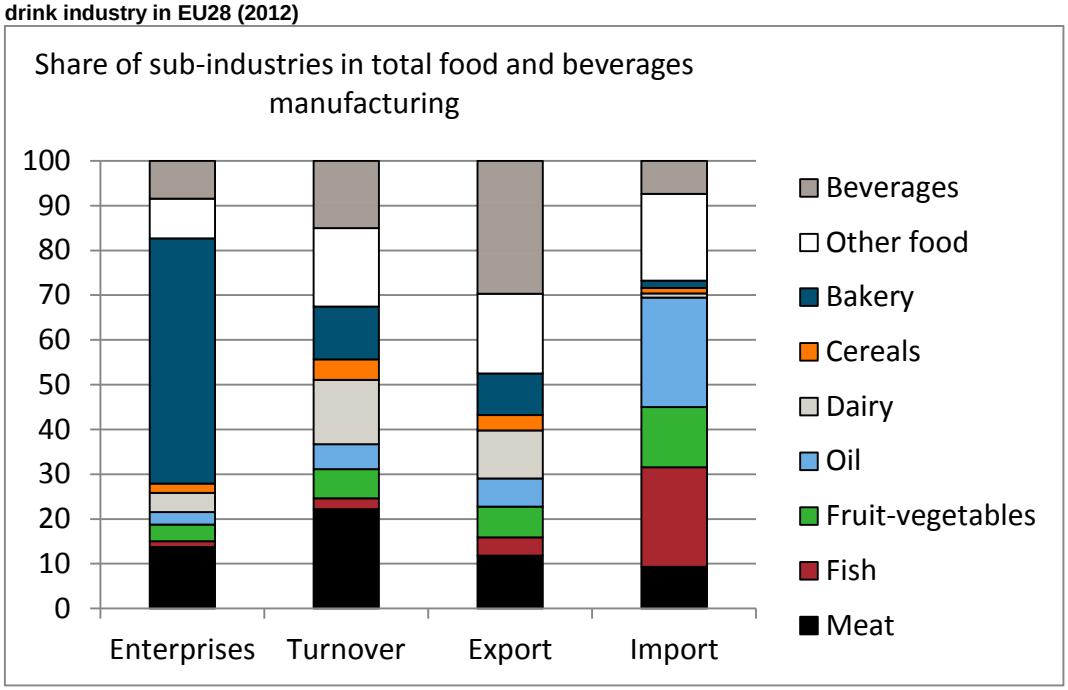


Source: Calculations by LEI-Wageningen UR based on UNComtrade data.

2.4.4 Overview of sub-sectors

The food industry represents almost 13% of the turnover of the manufacturing industry. The top sub-sectors based on turnover are meat, “other food” products (see section 3.8 for definitions), beverages and in the fourth position dairy manufacturing. However, in terms of number of enterprises, the manufacture of bakery and farinaceous products outnumbers the total of all other sub-sectors. Fish processing is the smallest sector on most indicators, however the largest in imports. Beverages manufacturing is the largest exporter to third countries, and dairy has a very low import level.

Figure 2.23 Number of enterprises, turnover and external trade of selected sub-sectors of the food and drink industry in EU28 (2012)



Source: LEI Wageningen UR Eurostat SBS data and UNComtrade.

Figure 2.24 presents an overview of the relative competitiveness assessment for all sub-sectors. The main developments are:

- The Net Trade Advantage (T) and the export market share (M) are for most sectors above average in 2012. Most sectors showed an improvement in period 2 (2008-2012) compared to period 1 (2003-2007). “Other food” lost significantly on both indicators;
- The growth of value added (P) was below average for all sectors in period 2 (2008-2012) compared to the benchmark countries and below the scores of period 1 (2003-2007);
- The share of sub-sectors in the manufacturing industry (S) was below average for most sectors. The sector dairy is above average for period 2 (2008-2012). The score improved for meat, dairy and beverages in period 2 (2008-2012) compared to period 1 (2003-2007);
- The labour productivity (L) weakened for almost all sectors, except for beverages.

Figure 2.24 Competitiveness of the food and drink sub-sectors in the EU28 (based on Z-scores with benchmark countries)

Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

2.5 Summary of the key findings:

- The European industry showed a strong increase on the trade related indicators for competitiveness, meaning that it improved its international competitive position. The EU external trade grew by a 6.3%, far outweighing the growth of imports (0.8%);
- The EU food and drink industry is hence performing rather well on the world market in terms of market share and relative trade advantage compared to benchmark countries;
- Still, in terms of labour productivity and value added, the relative competitiveness of the EU food and drink industry dramatically declined in the second period (2008-2012). An increase in input cost has led to profit margins decreasing from 2008 to 2012.

3 Market performance and competitiveness of selected sub-sectors

3.1 The European Meat Industry

3.1.1 Introduction of the meat sector

The meat sector includes processing and preserving of meat and production of meat products (frozen, cuts, dried or smoked) from all kinds of animals including processing of hides, feathers and down (NACE code C10.1). It excludes packaging of meat[118].

It is the largest sector in the EU food industry accounting for 20.5% of the total turnover of the food and drink industry in 2012. The sector comprises almost 40,000 companies, representing 14% of the total in the overall food and drink industry.

In the period 2008-2012, the growth of turnover was twice the level of the food and drink industry. The number of enterprises grew faster than the food and drink industry. During the same period, the number of persons employed in the meat manufacturing sector remained stable.

Table 3.1 Overview of the meat sector vs. the overall food and drink industry

EU28	Meat sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn €)	217	9.4%	1,062	6.9%
Number of enterprises	39,016	8.2%	288,655	7.4%
Number of employees (1,000)	936.6	-0.2%	4,530	0.0%

Source: Eurostat Structural Business Statistics (SBS).

More than 65% of the meat processing companies employ less than 10 persons. In total more than 930,000 persons are employed in the sector. A large majority (89% in 2012) of employees works in large companies (more than 250 employees).

3.1.2 Overview of the market for meat products

Within the EU in 2012, the largest meat manufacturers were Germany, France, United Kingdom, Spain and Poland. Germany and Spain are the largest European pig meat manufacturers (40.6%). France, the United Kingdom, Poland and Germany represent each 10-14% of the total EU production of poultry meat[119]. France, Germany and the United Kingdom make up about half (49.2 %) of all beef production. For sheep and goat meat, the United Kingdom and Spain represent more than half (53.5%) of the total European production.

[118] European Communities (2008). NACE Rev. 2: Statistical Classification of economic activities in the European Communities. Accessed via http://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF on 1 June 2015.

[119] Eurostat (2013). Agriculture, Forestry and Fishery statistics – 2013 Edition. Accessed via http://ec.europa.eu/eurostat/documents/3930297/5968754/KS-FK-13-001-EN.PDF/ef39caf7-60b9-4ab3-b9dc-3175b15feaa6 on 1 June 2015.

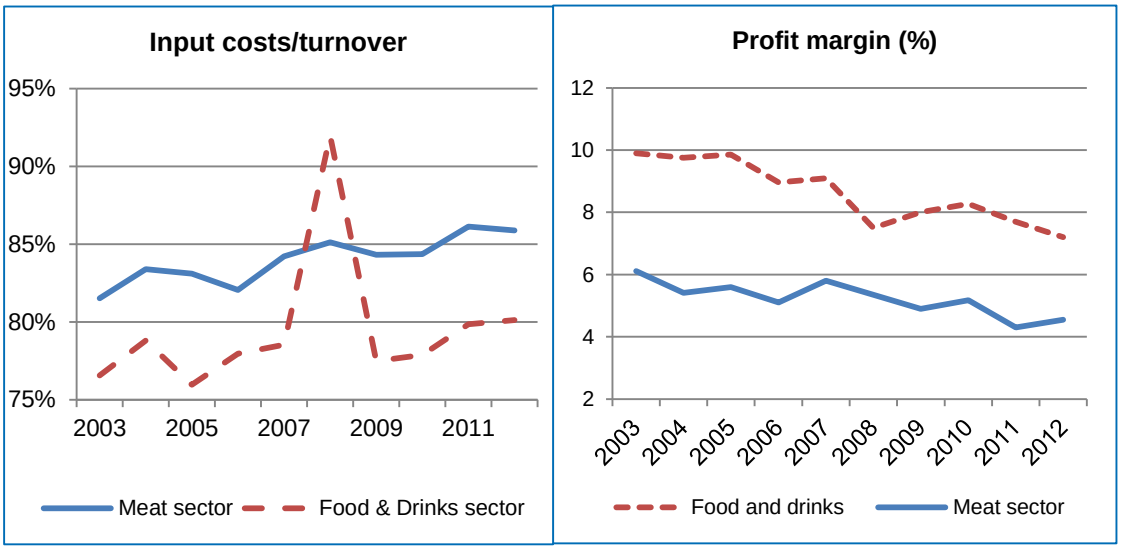
Worldwide, China is the largest meat manufacturer. In terms of competitors on the international market, for beef this comprises Brazil, the USA and Australia, whereas for poultry Brazil and Thailand. In terms of pig meat, Brazil, the USA and Canada have strengthened their market position. However, the EU remains the largest exporter of pig meat and the second largest manufacturer after China[120].

In terms of trade in meat products, the EU is a net exporter except for sheep and goat meat. Pig, sheep and goat meat is mainly exported to the Far East. Hong Kong, Lebanon, Ivory Coast and Ghana are the most important export markets for European beef and veal. The main export destinations for EU poultry meat are South Africa, Benin, Hong Kong, Saudi Arabia and Ukraine[121]. The EU sources its meat mainly from Brazil (beef and poultry), Thailand (poultry), New Zealand & Australia (sheep and goat).

3.1.3 Market performance of the meat sector

The profitability of the meat sector has been in a steady decline (in line with the food and drink industry) since 2003. Throughout the industry, pressure on pricing affected manufacturers' profit margins. The fall in profit margins corresponds to an overall gradual rise of the input costs in turnover ratio, while in general remaining about 5% above the industry average. The two trends, in opposite directions, suggest that cost issues are one possible explanation of the fall in profitability in the meat sector.

Figure 3.1 Profit margins and input costs/turnover for the meat



Source: Eurostat Structural Business Statistics (SBS).

One additional explanation for the lower profit margins in the meat sector is its much lower value added per employee (apparent labour productivity) compared to other industries. This is to be expected given the nature of the sector's products, which are often process of fresh meat products, rather than complicated production processes (such as cheeses, or confectionary). The meat sector has been growing at much slower pace compared to the food and drink industry as a whole with an increase of only 0.3% in its apparent labour productivity compared to 3.0% of the food industry.

[120] DG AGRI (2015). *Market sectors*. Accessed via http://ec.europa.eu/agriculture/beef-veal/index_en.htm on 1 June 2015.
[121] DG AGRI, *op. cit.*

Such a slow growth can also be found in the overall value added, where the meat sector has grown only at 2.3% compared to 5.8% for the overall food and drink industry (see Table 3.2). The share of value added compared to the sector's turnover (14%) is also below the industry's average (19%).

Table 3.2 Overview of market performance indicators for the meat sector

	Meat sector	Food industry	Drink industry	Manufacturing industry
Apparent labour productivity	33	42	89	54
Growth (2010-2012)	0.3%	3.0%	n/a	2.3%
Value added (bn€)	30.7	206.7		1,620.0
Growth (2008-2012)	2.3%	5.8%		-3.0%
Value added / turnover (2012)	14%	19%		23%

Source: Eurostat Structural Business Statistics.

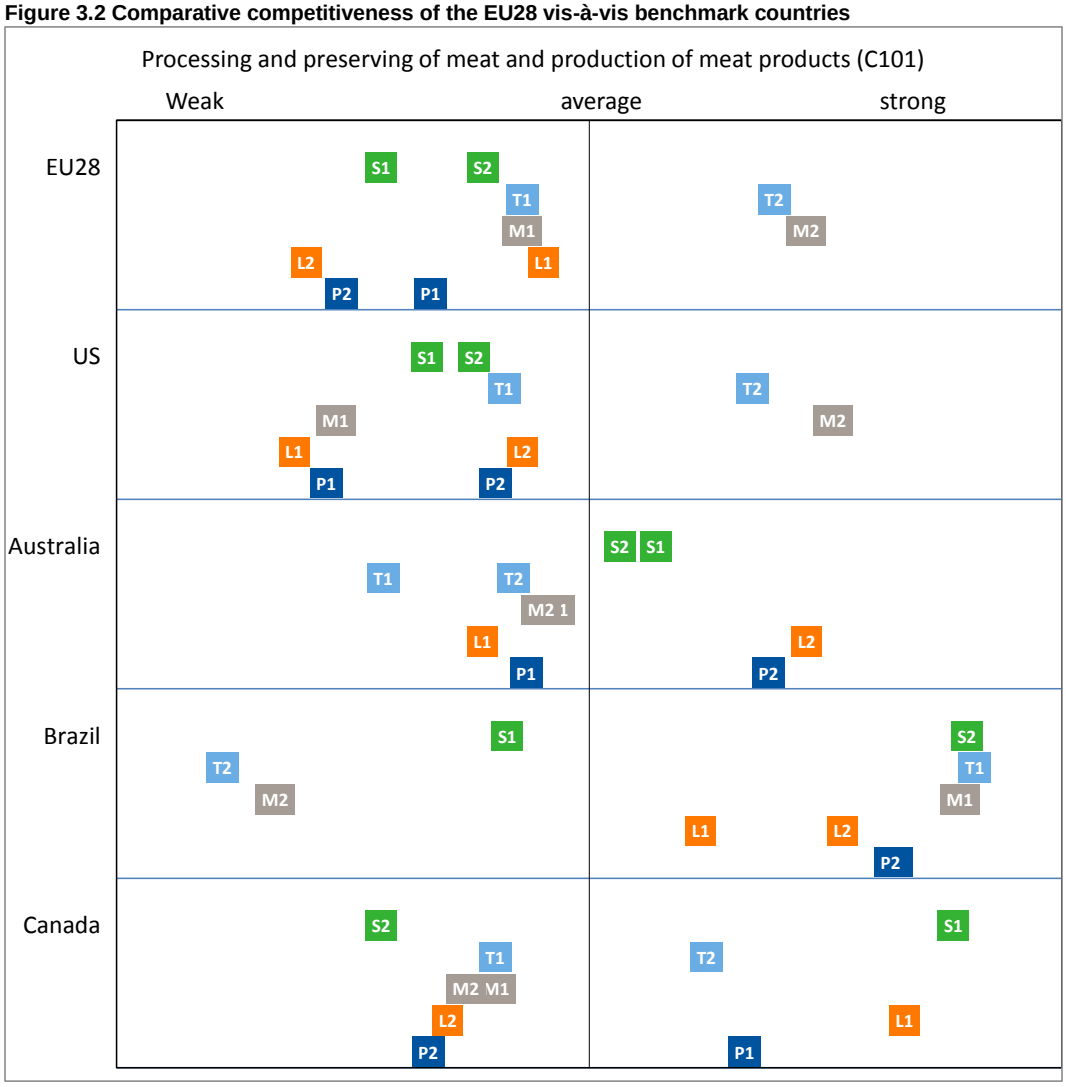
3.1.4 Competitiveness of the meat sector vis-à-vis benchmark countries

Overview

The competitiveness performance of the EU meat processing sector improved on the Relative Trade Advantage (T) and export market share (M) indicator and remained weak on the three economic indicators in period 2 (2008-2012) compared to period 1 (2003-2007).The position of the economic indicators in period 2 was even weaker than the relatively weak position in period 1. The USA improved its position on the trade indicators and Australia on the economic indicators. Brazil became less strong on the trade indicators. For Canada, all indicators, except the Relative Trade Advantage (T), became relatively weaker.

Should we have considered a different period of time, the Russian bans introduced in 2014 might have affected the meat sector's trade indicators. The ban introduced on sanitary grounds in February 2014 applies only to the EU. The ban introduced in August 2014 as a response to the international sanctions against Russia does not apply to Brazil. The reorganisation of meat export markets after those two bans might have affected the EU's RTA and market share indicators negatively, compared to the other benchmark countries. These hypotheses could not be tested due to lack of available data (see also section 1.2).

Figure 3.2 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Structure of the industry

The EU meat industry is the largest in turnover, number of enterprises and employment of the selected regions. However, the average turnover per enterprise is the lowest: only 10% of the level of those in the USA and Brazil. In addition, the growth of the turnover is the lowest for the overall sector as well as per enterprise. Brazil and Australia are the fastest growers.

Table 3.3 Structure of the meat industry (C101) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU28	217	3.2	39,016	-1.6	5.6	4.9	936,602	-1.0
USA	156	7.7	3,000	-1.1	52.1	9.0	486,478	-1.0
Australia	18	12.1	1,096	0.4	16.6	11.6	59,748	0.5
Brazil	51	13.7	826	3.9	62.0	9.5	479,245	3.0
Canada	17	6.3	1,003	-2.6	17.4	9.2	64,570	-1.4

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

Trade

EU exports to third countries grew by 8.7% in 2008-2012, faster than the export growth in all other presented countries. The EU's market share on the world market improved 1.3% from 7.5% in 2007 to 8.9% in 2012. The import share showed the opposite development from 8.6% to 7.2%. These two developments resulted in a positive trade balance. For all other countries, the net trade balance deteriorated due to a higher import growth compared to the export growth. However, for Australia and Brazil the exports are 10 to 30 times the import levels.

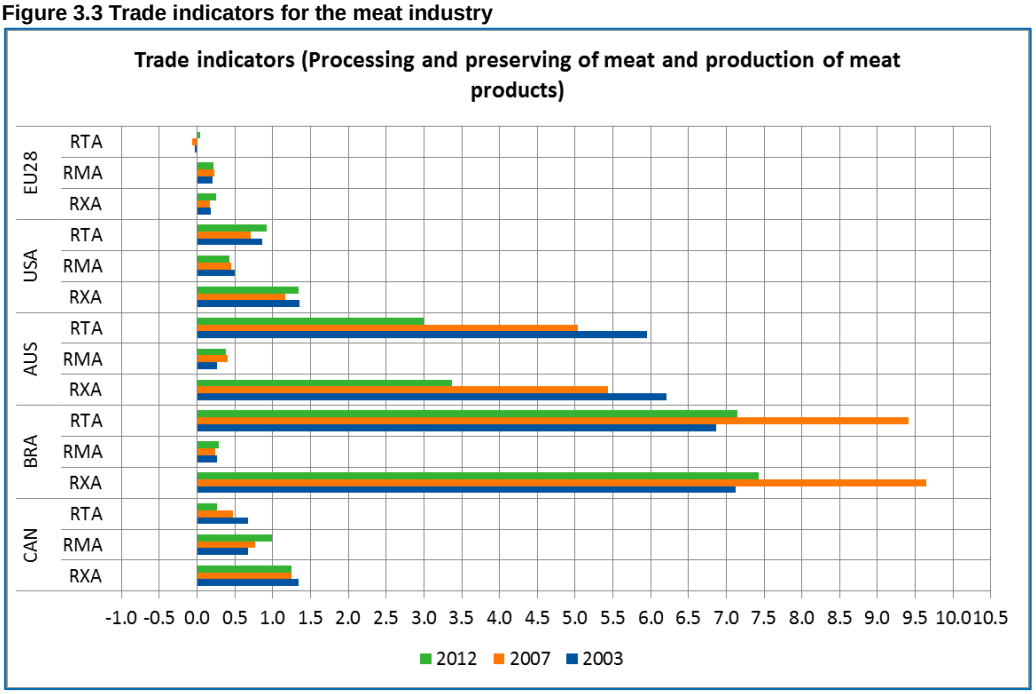
Table 3.4 Trade in meat products (C101) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	9,881	8.7	8.9	7,003	-1.9	7.2	2,879
USA	14,198	7.6	12.7	5,629	5.3	5.8	8,569
Australia	5,902	5.5	5.3	540	11.3	0.6	5,362
Brazil	12,315	1.9	11.1	362	13.0	0.4	11,953
Canada	3,870	3.2	3.5	2,598	11.5	2.7	1,272
China	3,910	13.0	3.5	3,498	15.3	3.6	413
New Zealand	3,615	4.1	3.2	137	3.1	0.1	3,478
India	2,480	27.1	2.2	11	26.5	0.0	2,469
Russian Federation	149	9.4	0.1	6,103	1.4	6.3	-5,954

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

These trade developments are also reflected in relative trade indicators. Brazil and Australia have the highest Relative Export Advantage (RXA), combined with low Relative Import Advantage (RMA) indicators, resulting in high Relative net Trade Advantage (RTA) indicators. In the EU, imports are almost on par with exports and the RTA is rather small: just below zero in 2003 - 2007 and just positive in 2012. The developments in the USA vary and the net trade balance for Canada declined.

Figure 3.3 Trade indicators for the meat industry



Source: Calculations by LEI-Wageningen UR based on UNComtrade data.

3.1.5 *Summary of key findings:*

- The meat sector has experienced a slight but steady decline of profit margins from 2003 onwards. This has gone hand in hand with an increase in the input costs/turnover ratio, which reached its highest point since 2003 in 2011;
- In terms of trade position, the EU has improved its world market share and is the only one amongst the other benchmark countries who has been able to increase its export share. However, export shares of USA and Brazil are significantly higher than that of the EU. More recently, the sanitary ban introduced by Russia in 2014 might have affected the sector's trade position;
- Despite the good performance on the export markets in 2008-2012, EU competitiveness in terms of labour productivity and value added remained weak compared to the benchmark countries;
- The structure of the European meat industry can explain some of these findings: compared to the other countries, the EU meat industry has a smaller scale as illustrated by the higher number of companies and the lower turnover per enterprise.

3.2 The European Fish Industry

3.2.1 *Introduction of the fish processing sector*

Processing and preserving of fish, crustaceans and molluscs (C102) include preparation and preservation of fish, crustaceans and molluscs and their products by freezing, deep-freezing, drying, cooking, smoking, salting, immersing in brine, canning etc. for human consumption or animal feed. It includes also vessels with only purpose of processing fish and also the activity of processing of seaweed. It does exclude all activities on fishing vessels, processing whales, production of fish oils and fats as well as manufacture of fish dishes or soups[122].

[122] European Communities (2008) – *op.cit.*

The fish processing sector has the smallest share in terms of turnover in the food and drink industry in 2012. The sector comprises 3,570 companies, representing 0.01% of the total number of companies in the food sector.

In the period 2008-2012, the average turnover per enterprise and its growth was larger than that of the overall food and drink industry. The number of enterprises and accordingly, the number of employees decreased for the fish sector.

Table 3.5 Overview of the fish processing sector vs. the overall food and drink industry

EU28	Fish sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	24.6	9.8%	1,062	6.9%
Number of enterprises	3,570	-2.7%	288,655	7.4%
Number of employees (1,000)	113.6	-5.2%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

Of the fish processing companies, 57% employ less than 10 persons. In total more than 110,000 persons are employed in the sector. The majority of employees works in medium-sized (50 to 249 employees) to large companies (more than 250 employees), this accounts for 39% and 34% of total employment respectively.

3.2.2 *Overview of the market for processed fish*

Within the EU, the largest manufacturers of fish are Spain (19%), the United Kingdom and France (both 13%)[123]. Italy possesses the largest fish processing industry in terms of number of enterprises (16% of total). In the United Kingdom the fish processing sector employs the most people[124]. Worldwide the largest fish processors are China and Norway. Norway has a slightly larger sector than Spain (in 2012 the production value of Norway was 4.7% higher), yet its production value is lower than the aggregate production value of the EU.

In terms of exports in fishery products, the EU is a net importer. European fish processors thus rely heavily on imports. Major trade partners are Norway, China, Ecuador, the USA, Viet Nam, Morocco and Peru. Some fish is exported (e.g. pelagic fish such as herring and mackerel) mainly to Ukraine, Nigeria, Japan and China. Russia was also an important market for EU exports until the ban was introduced in 2014.

3.2.3 *Market performance of the fish processing sector*

The profitability of the fish sector remained rather stable around 6%-7% while profit margins of the food and drink industry overall declined since 2003 (see Figure 3.4).

Despite overall increases in input costs, the overall turnover also increased significantly (9.8%). Nevertheless, the increase in input costs has clearly been larger which lead to an increasing cost/turnover ratio. In 2010, there was a noticeable spike as the ratio increased by 3% from around

[123] Source: Eurostat SBS Statistics 2012.
[124] Source Eurostat SBS Statistics 2012.

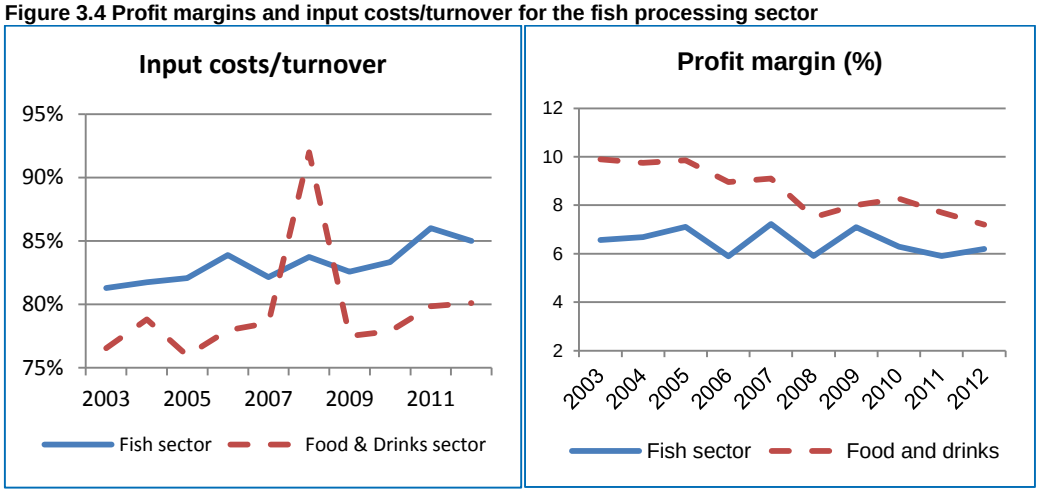
83% to 86%. The ratio remains over a long time above the industry's average by about 5 % (much like the meat sector).

However, it appears that such trends in input costs are not directly represented in the profit margins[125], thus it would appear that costs are not the main driving force behind the profitability of the fish sector. A possible explanation can be that the fish processors are more able than other sectors to translate increased input costs into increased consumer prices. When looking at the CPI the prices for fish have the same evolution as the overall food prices.

An explanation for the lower profit margins in the fish sector, compared to the overall food and drink industry, is the much lower value added per employee (apparent labour productivity) in the fish sector compared to the overall manufacturing industry. Additionally the sector also creates less value added compared to its turnover and compared to the overall industries, although the difference is less pronounced.

The fish sector has also been growing at much slower pace compared to the food and drink industry as a whole with an increase of only 0.9% in its apparent labour productivity compared to 3.0% of the food industry. This slower growth can be also seen in Value added, which grew by 3.7% for the fish sector, compared to 5.8% for the food and drink industry as a whole.

Figure 3.4 Profit margins and input costs/turnover for the fish processing sector



Source: Eurostat Structural Business Statistics.

However, when compared to the meat sector (growth of 0.3%) the fish sector has performed better, which is also apparent by its higher profit margins (6% compared to 4%). This is comparison is particularly relevant, since both sectors have a similar apparent labour productivity (35, compared to 33 for meat sector) as well as operate with similar products (mostly fresh fish/meat products).

Table 3.6 Overview of the fish processing sector vs. the food, beverages and manufacturing industry

	Fish sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	35	42	89	54
Growth (2010-2012)	0.9%	3.0%	n/a	2.3%
Value added (bn€)	4.0	206.7		1,620.0
Growth (2008-2012)	3.7%	5.8%		-3.0%
Value added / turnover (2012)	17%	19%		23%

Source: Eurostat Structural Business Statistics.

[125] For example 2010 saw an increase in profit margins, while also an increase in the cost/turnover ratio.

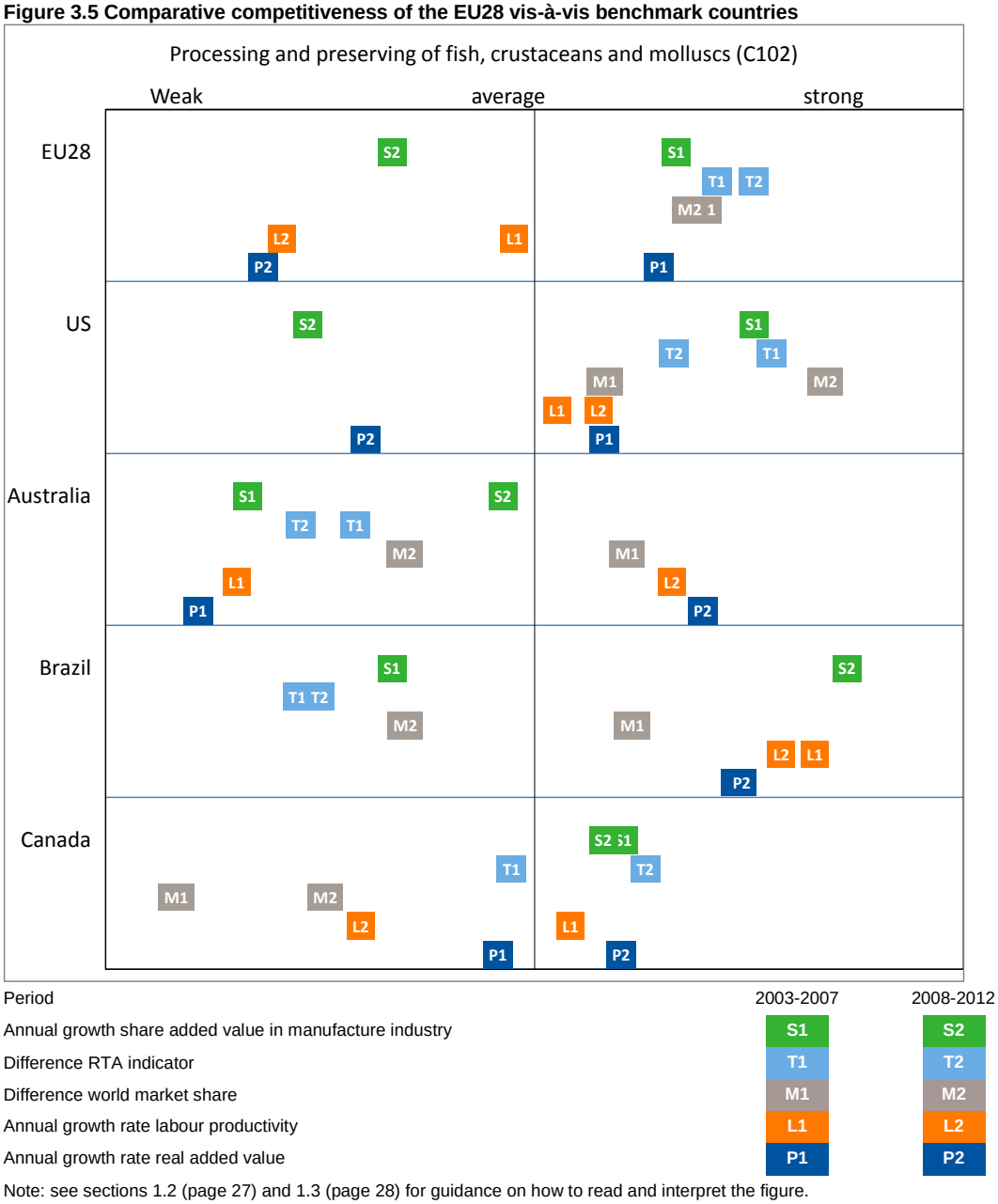
3.2.4 *Competitiveness of the fish processing sector vis-à-vis benchmark countries*

Overview

The competitiveness performance of the EU became weak on the three economic indicators (S, L, P), improved slightly on the Relative Trade Advantage (T) and remained stable on the export market share (M) indicator in period 2 (2008-2012) compared to period 1 (2003-2007). Australia shows improvement on the economic indicators, but the trade indicators weakened. The USA shows roughly a similar pattern, although the country is still on the stronger side in the benchmark. For Brazil, the economic indicators improved strongly, the trade indicator weakened. Canada's position remained around the middle of the benchmark with indicators showing modest change over the periods.

Should we have considered a different period of time, the Russian ban introduced in August 2014 might have affected the fish sector's trade indicators. However, that ban applies equally to the EU, the USA, Canada and Australia, and Brazil is not a major fish exporter. Thus, the comparative indicators analysed here have probably not been significantly affected. These hypotheses could not be tested due to lack of available data (see also section 1.2).

Figure 3.5 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Structure of the industry

In terms of turnover, number of enterprises and employment, the fish processing industry is larger in the EU than in the selected benchmark regions. The average turnover per enterprise is 40% of the level in the USA, but on par with the other countries. Brazil and to a lesser extent Canada are the fastest growers in turnover, the EU growth is the lowest. The fish sector has the smallest share in the food and drink industry; however, the average turnover per enterprise and its growth is above that of the whole food and drink industry.

Table 3.7 Structure of fish industry (C102) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU28.	24	2.4	3,568	-2.1	6.7	4.6	109,487	-2.6
USA	8	5.4	497	-3.3	17.0	9.0	30,988	-4.5
Australia	1	6.7	252	-4.7	3.5	12.0	3,314	1.9
Brazil	1	14.6	95	7.2	9.8	6.9	12,425	1.0
Canada	3	9.0	732	-7.8	4.6	18.2	33,034	4.6

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

Trade

The external trade of the EU grew by 6.1% and of the USA with 6.9% far faster than in all other presented countries. The EU market share on the world market improved slightly from 4.4% in 2007 to 4.6% in 2012. The import share showed the opposite development from 24.1 to 21.2%. In the end the trade balance remained negative although it improved. The sector has the largest share (22%) in the total imports of the food and drink industry.

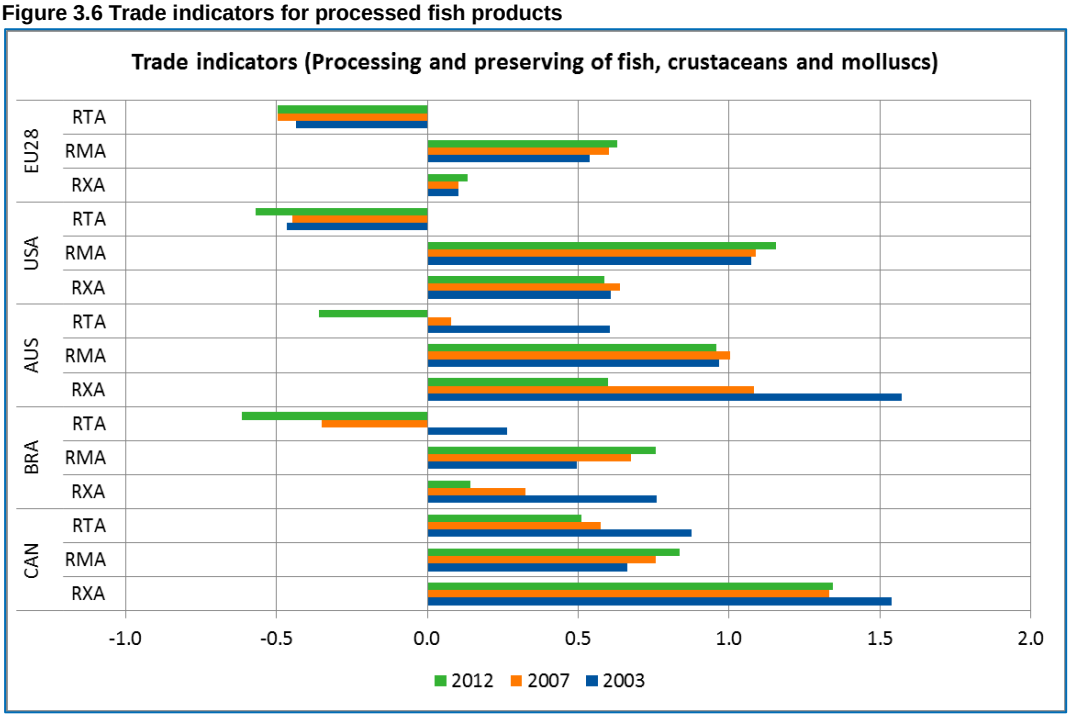
Table 3.8 Trade of fish products (C102) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	3,373	6.1	4.6	16,634	0.4	21.2	-13,261
USA	4,057	6.9	5.6	12,449	4.2	15.9	-8,392
Australia	688	2.0	0.9	1,107	9.1	1.4	-419
Brazil	154	-5.6	0.2	778	14.8	1.0	-624
Canada	2,729	3.4	3.7	1,781	7.7	2.3	948
China	13,592	16.2	18.6	4,268	10.5	5.4	9,324
Thailand	6,210	5.7	8.5	2,354	7.1	3.0	3,856
Viet Nam*	5,159	10.3	7.1	566	24.6	0.7	4,593
Norway	3,324	2.9	4.6	357	-1.5	0.5	2,968
Chili	2,726	2.4	3.7	153	13.0	0.2	2,573
Indonesia	2,593	10.7	3.6	176	17.5	0.2	2,417
India	2,563	20.8	3.5	26	18.9	0.0	2,537
Russian Federation	2,017	46.1	2.8	1,373	-1.1	1.7	644
Iceland	1,408	3.5	1.9	62	-6.4	0.1	1,346

Source: Calculations by LEI-Wageningen UR based on UNcomtrade.

These trade developments are also reflected in the trade indicators. All countries have a negative Relative net Trade Advantage (RTA) indicator in 2012, except Canada. In Brazil and Australia the RTA changed from positive in 2003 to negative in 2012.

Figure 3.6 Trade indicators for processed fish products



Source: Calculations by LEI-Wageningen UR based on UNcomtrade data.

3.2.5 *Summary of the key findings:*

- The fish processing sector is the smallest sector in the European food and drink industry. The EU is a net importer of both raw materials and processed products. Processed and preserved fish products represent the largest share in the total imports of the food and drink products in the EU;
- The profit margin in the EU fish processing sector experienced a slight decrease, less pronounced than in the other food sectors;
- Compared to the benchmark countries, the EU competitiveness showed a strong decline in the competitiveness indicators for labour productivity and value added between 2003-2007 and 2008-2012. The trade-related competitiveness indicators remained stable compared to the benchmark countries.

3.3 Fruit and Vegetable Industry

3.3.1 *Introduction of the fruit and vegetable sector*

Manufacture of fruit and vegetable products includes:

- Processing and preserving of potatoes;
- Manufacture of fruit and vegetable juice;
- Other processing and preserving of fruit, nuts and vegetables consisting chiefly of fruit or vegetables, except ready-made dishes in frozen or canned form;
- Manufacture of jams, marmalades, table jellies, roasting of nuts, nut pastes;

- Manufacture of perishable prepared foods of fruit and vegetables, such as peeled, mixed or packaged salads; mixed salads, packaged[126].

The fruit and vegetable processing sector the third smallest sector, after the fish and oil processing, accounting for only 6% of the total turnover of the food and drink industry in 2012. The sector comprises 10,500 enterprises representing almost 4% of the total number of companies in the industry.

In the period 2008-2012, the average turnover per enterprise is almost twice the level of the food and drink industry overall. The growth of turnover was also higher. The number of enterprises only grew slightly. The number of employees employed in the fruit and vegetable sector however decreased marginally.

Table 3.9 Overview of the fruit and vegetable sector vs. the overall food and drink industry

EU28	Fruit and vegetable sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	64.1	9.6%	1,062	6.9%
Number of enterprises	10,500	3.8%	288,655	7.4%
Number of employees (1,000)	257.8	-1.6%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

The fruit and vegetable sector employs almost 260,000 people. 40% of them work in medium-sized (50 to 249 employees) and large companies (more than 250 employees).

3.3.2 *Overview of the market for fruit and vegetable products*

Within the EU, the largest manufacturers of fruit and vegetable products are Germany, Italy, Spain, the United Kingdom and France. They each represent between 12-15% of total EU production. The United Kingdom (22%), the Netherlands (19%) and Belgium (15%) closely followed by Germany (14%) are the largest in the processing and preserving of potatoes in terms of production value. For the manufacture of fruit and vegetable juices, Germany (25%), Spain (19%), Italy (13%), closely followed by Poland (11%) are the largest countries in production value[127]. The EU and the USA are the largest manufacturers worldwide. In terms of trade in fruit and vegetable products, the EU is a net importer.

3.3.3 *Market performance of the fruit and vegetable sector*

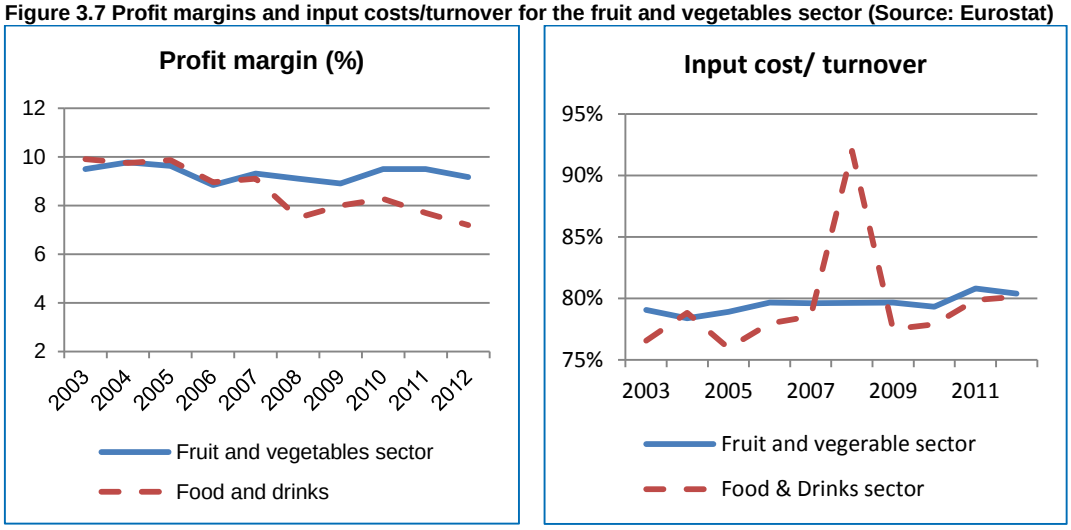
The profitability of the fruits and vegetable sector has been stable (around 9%) compared to the overall food and drink industry, which has experienced a contraction (see Figure 3.7).

One potential explanation may be the relative stability in the input costs at around 80% of turnover. Yet the nominal increases have been very small with a 2% boundary and have consistently stayed at the level (also mainly above the industry average).

[126] European Communities (2008) – *op.cit.*

[127] Source: Eurostat SBS 2012.

Figure 3.7 Profit margins and input costs/turnover for the fruit and vegetables sector (Source: Eurostat)



Source: Eurostat Structural Business Statistics.

On the one hand, apparent labour productivity in the fruit and vegetables processing vegetable sector is high compared to other food industries and although it grew at a slower pace (2% rather than 3% for food industry), it is well within the overall manufacturing trend.

On the other hand, value added grew significantly in the fruit and vegetables sector, compared to the food and drink industry (6.7% compared to 5.8%), which is also represented in the higher value added compared to its turnover (20%) as opposed to the overall food and drink industry. This suggests that the impact on profitability is not only a result relative internal efficiencies (for being able to keep the input cost/turnover ratio stable), but also productivity (for keeping a sizable apparent labour productivity as well as value added/turnover). In combination the sector has shown resilience, stability and overall fair performance.

Table 3.10 Overview of the fruit and vegetables processing sector vs. the food, beverages and manufacturing industry

	Fruit and veg sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	50	42	89	54
Growth (2010-2012)	2.0%	3.0%	n/a	2.3%
Value added (bn€)	12.9	206.7		1,620.0
Growth (2008-2012)	6.7%	5.8%		-3.0%
Value added / turnover (2012)	20%	19%		23%

Source: Eurostat Structural Business Statistics.

3.3.4 Competitiveness of the fruit and vegetable sector vis-à-vis benchmark countries

Overview

The competitiveness performance of the EU weakened on the three economic indicators: all three were weak in the second period (2008-2012). The Relative Trade Advantage (T) remained relatively strong and the export market share (M) indicator relatively weak. The USA improved his position on all indicators, except the Relative Trade Advantage (T). Australia improved on all indicators. Brazil shows the strongest position on the economic indicators. For Canada, all indicators became weaker and score below the average of the benchmark.

Figure 3.8 Comparative competitiveness of the EU28 vis-à-vis benchmark countries

Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Should we have considered a different period of time, the Russian ban introduced in August 2014 might have affected the fruit & vegetable sector's trade indicators. That ban applies equally to the EU, the USA, Canada and Australia, but not to Brazil or other major exporting regions for fruit and vegetable products, like China and India. Hence, it is likely that the ban might have affected the EU's RTA and market share indicators negatively, compared to the other (benchmark) countries. These hypotheses could not be tested due to lack of available data (see also section 1.2).

Structure of the industry

Among the selected countries, the EU has the largest fruit and vegetable industry in turnover, number of enterprises and employment. However, the average turnover per enterprise is the lowest: only 15% to 30% of the levels in the USA and Brazil. In addition, the growth of the turnover is the lowest in total as per enterprise. Brazil and Australia are the fastest growers. Fruit and vegetable processing has the fourth smallest share (6%) of turnover, after fish, oil and cereals processing, in the total food and drink industry. The average turnover per enterprise is almost twice the level of the food and drink.

Table 3.11 Structure of the fruit and vegetable industry (C103) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU28	64	2.1	10,529	0.7	6.1	1.4	258,121	-1.1
USA	53	5.2	1,339	1.5	39.6	3.7	152,540	-2.3
Australia	5	11.1	536	1.1	8.4	9.9	14,971	4.4
Brazil	7	20.7	324	3.0	22.8	17.2	82,527	2.3
Canada	5	6.6	491	-0.9	9.8	7.6	20,107	-0.2

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

Trade

Exports from the EU grew by 4.2% while total export at world level increased by 5.3%[128]. The EU export world market share declined. Australia is a fast grower. The EU import share also grew at a slower pace than total world imports (3.8%)[129]. These two developments resulted still in a negative trade balance. For the USA, Brazil and Canada, the net trade balance deteriorated due to higher import growth compared to the export growth.

Table 3.12 Trade in fruit and vegetable products (C103) in 2012 and growth 2008-2012

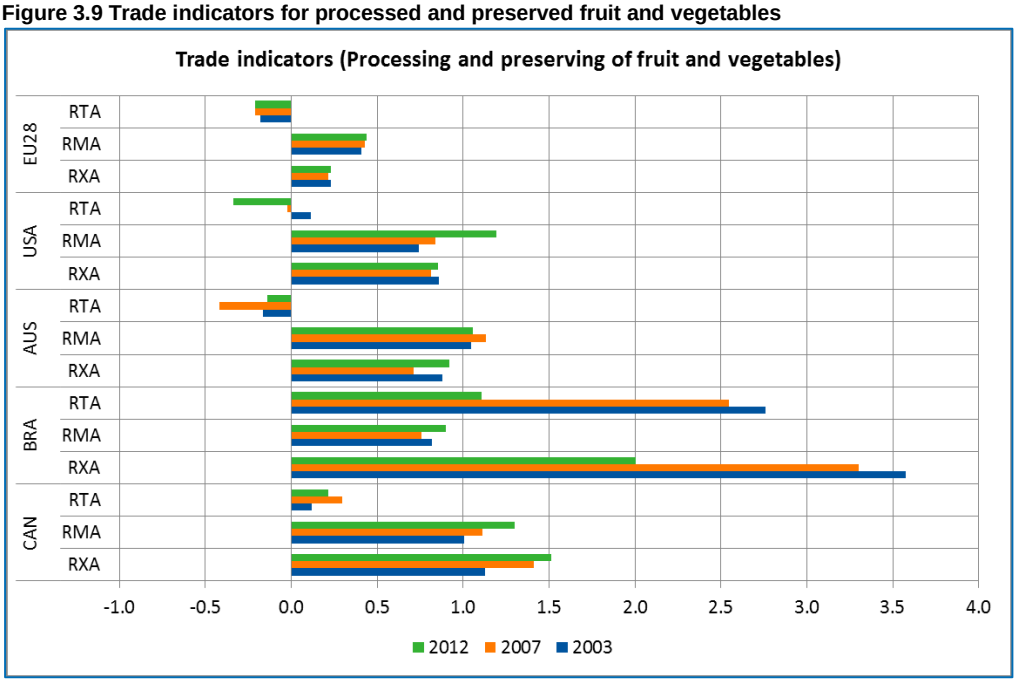
	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	5,740	4.2	7.9	10,103	-0.5	14.7	-4,363
USA	5,859	6.5	8.1	11,213	11.4	16.3	-5,354
Australia	1,042	22.7	1.4	1,066	7.4	1.6	-24
Brazil	2,155	3.0	3.0	808	8.6	1.2	1,347
Canada	3,036	1.9	4.2	2,420	7.6	3.5	616
China	10,473	7.8	14.5	2,845	31.3	4.1	7,628
India	5,625	66.8	7.8	1,888	12.0	2.8	3,737
Thailand	2,824	10.5	3.9	512	17.2	0.7	2,313
Argentina	1,577	7.0	2.2	155	4.8	0.2	1,422
Russian Federation	419	34.0	0.6	1,619	2.1	2.4	-1,200

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

These trade developments are also reflected in the trade indicators. Brazil has the highest Relative Export Advantage (RXA), combined with lower Relative Import Advantage (RMA) indicators, resulting in high Relative net Trade Advantage (RTA) indicators. In the EU28, imports exceed exports and the RTA is rather stable but negative. In the USA, increasing reliance on imports resulted in the RTA indicator moving from positive in 2003 to negative in 2012.

[128] Number based on UNComtrade data calculated by LEI Wageningen UR.
[129] Number based on UNComtrade data calculated by LEI Wageningen UR.

Figure 3.9 Trade indicators for processed and preserved fruit and vegetables



Source: Calculations by LEI-Wageningen UR based on UNComtrade data.

3.3.5 *Summary of the key findings:*

- The profitability of the fruits and vegetable processing industry has been relatively stable over the period under review and is higher than the profit margin of the food and drink industry overall;
- The EU28 is a net importer of processed fruit and vegetables. The market share on the world market declined slightly as a result of a slower growth in exports than other countries;
- The EU competitiveness in term of Labour Productivity (L) and Value Added (P) weakened significantly from the period 2003-2007 to 2008-2012.

3.4 Vegetable and animals oils and fats

3.4.1 *Introduction of the vegetable and animal oils and fats sector*

Manufacture of vegetable and animal oils and fats (C104) includes the processing of crude and refined oils and fats from vegetable or animal materials, except rendering or refining of lard and other edible animal fats[130].

The vegetable and animal oils sector is the second smallest sector, after the fish processing sector, accounting for only 5% of the total turnover of the food and drink industry in 2012. The sector comprises around 8,100 companies, representing less than 3% of the total number of companies in the food and drink industry.

In the period 2008-2012, the growth of turnover was twice the level of the food and drink industry. During the same period however, the number of enterprises dropped drastically[131] but the number of employees remained stable.

[130] European Communities (2008) – *op.cit.*

[131] From interviews with stakeholders, indications were given that this is mainly due to consolidation in the biofuel supply chain where many small manufacturers disappeared.

Table 3.13 Overview of the vegetable and animal oils and fats processing sector vs. the overall food and drink industry

EU28	Oil and fats sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	55.5	13.1%	1,062	6.9%
Number of enterprises	8,100	-10.0%	288,655	7.4%
Number of employees (1,000)	62,8	-0.6%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

More than 90% of the vegetable and animal oil companies employ less than 10 persons. In total more than 60.000 persons are employed in the sector. Employees are distributed evenly over all size classes of companies.

3.4.2 Overview of the market for vegetable and animal oils and fats

The largest manufacturers in the EU of vegetable and animal oils and fats in terms of production value are Spain (21%), Italy (14%), the Netherlands, Germany and France (12% each). In terms of volume in vegetable and animal oils and fats, Germany was the largest manufacturer in 2012 followed by France, Spain and the Netherlands[132].

In terms of trade in vegetable and animal oils and fats, the EU is the largest importer after mainland China[133]. The largest exporters are Indonesia, Malaysia and Argentina whom are mainly exporting palm oil and oil derived from soybeans. As the EU doesn't produce these oils, the competitive position for these products and the position of Indonesia, Malaysia and Argentina are not explored further.

3.4.3 Market performance of the vegetable and animal oils and fats sector

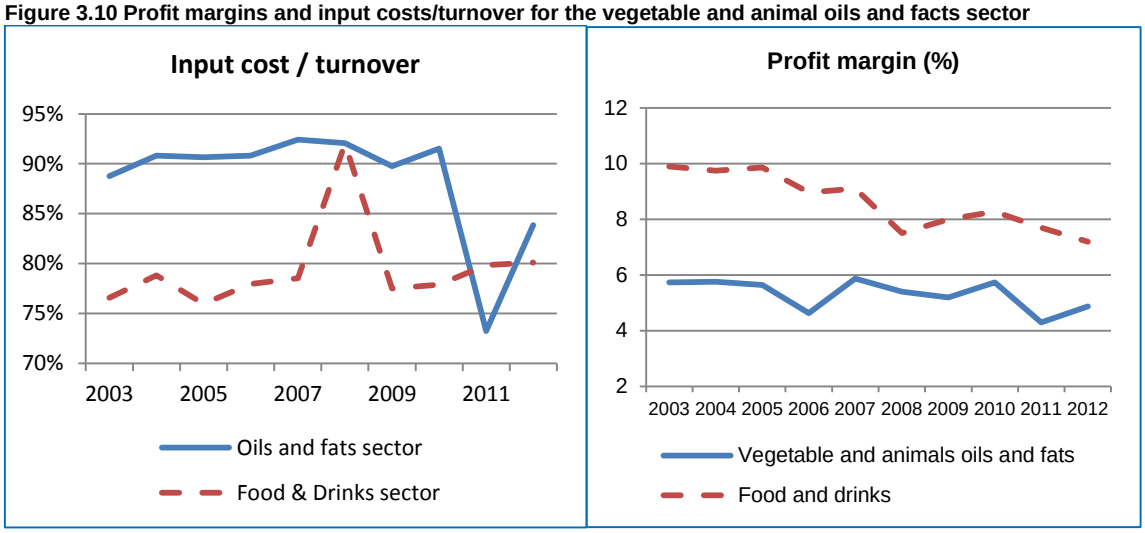
The profitability of the vegetable and animal oils and fats sector has been relatively stable at around 5%, with two noticeable sector-specific dips below that level in 2006 and 2011. This is in contrast to a consistently declining profit margin for the food and drink industry as a whole, with however less pronounced dips in those two specific years.

Given the very large share of input costs in turnover (up to 2011 above 90%), the 2011 significant drop seems to have a limited impact on the minor profit fluctuation (in 2012 the ratio seems to be climbing back up towards its long term trend at well above the industry's average). Furthermore the high level would also explain the consistently low profit margins when comparing to the food & drinks industry as a whole.

[132] Fediol (2012). 2012 Statistics on vegetable oils production, imports and exports and consumption. Accessed via http://www.fediol.be/data/1376905766Stat%20oils%202012.pdf on 1 July 2015.

[133] Source: FAOSTAT (2015). All data is for 2012, based on the category of 'Animal Vegetable Oil'.

Figure 3.10 Profit margins and input costs/turnover for the vegetable and animal oils and facts sector



Source: Eurostat Structural Business Statistics.

Apparent labour productivity in the oil and fats sector is high, exceeding both the food industry as well as manufacturing overall. However, the sector also has a low level of employment (third lowest compared to the other sectors at only 62,800 employees) compared to a substantial turnover, thus possibly increasing the indicator.

Nevertheless the apparent labour productivity and value added fell dramatically over the period under study, although turnover increased. One possible explanation suggests that the very small value added (only 7% compared to the sector's turnover) does not allow the growth of productivity, since the sector produces relatively "raw" products. Thus the industry performance is determined by costs and volume, rather than added value or productivity, which has been falling.

Table 3.14 Overview of the vegetable and animal oils and fats processing sector vs. the food, beverages and manufacturing sectors

	Oil & fats sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	62	42	89	54
Growth (2010-2012)	-10.1%	3.0%	n/a	2.3%
Value added (bn€)	4.0	206.7		1,620.0
Growth (2008-2012)	-4.9%	5.8%		-3.0%
Value added / turnover (2012)	7%	19%		23%

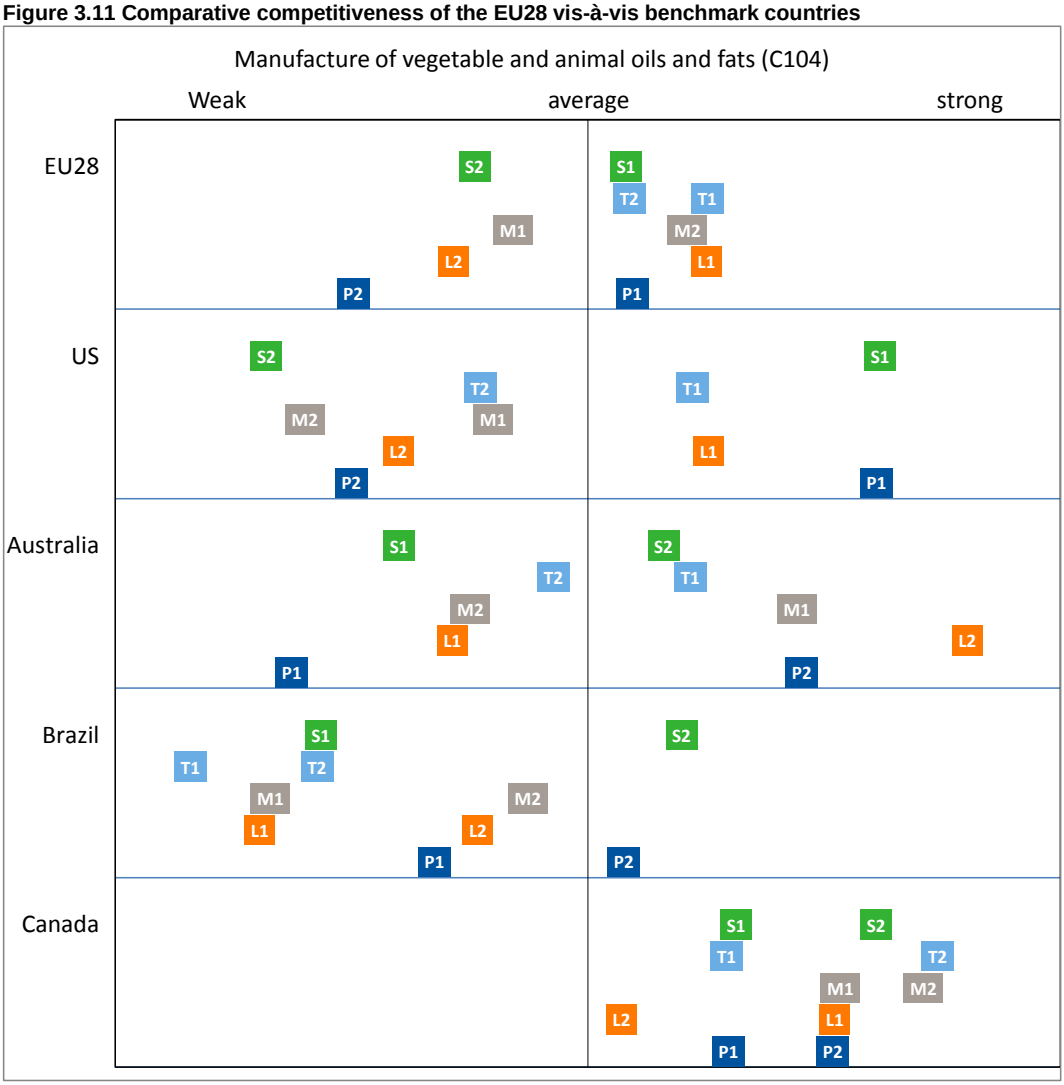
Source: Eurostat Structural Business Statistics.

3.4.4 Competitiveness of the vegetable and animal oils and fats sector vis-à-vis benchmark countries

Overview

The competitiveness performance of the EU weakened slightly on all indicators except for the world market share (M) that improved considerably. Together with the Relative Trade Advantage (T) these remained above average. Australia improved its position on the three economic competitiveness indicators. Canada already has a strong position on all indicators and managed to improve four indicators. However, these figures should be interpreted cautiously, as both Australia and Canada have a small turnover (respectively €1 billion for Australia and € 5 billion for Canada, or 2% and 10% of the EU level). The USA scored worse on all indicators in the second period. Brazil shows improvement on various indicators, but remains weak compared to the benchmark.

Figure 3.11 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

3.4.5 *Structure of the industry*

In comparison to the benchmark countries, the EU edible oil manufacturing industry is the largest in turnover: twice the level of Brazil and larger than the aggregated total of the four benchmark countries. The EU also outnumbers the number of enterprises and employment of the selected regions. However, the average turnover per enterprise is among the lowest: only 3% of the level in Brazil and 5% of the USA. The EU turnover growth (3.3%) is in the range of the second largest manufacturer Brazil (3.6%) and far above the USA (-1.1%). Canada is the fastest grower, but the turnover is a mere 10% of the EU level. Edible oil processing has a small share (5%) in the total EU food and drink industry turnover and is smaller than the fruit and vegetable processing sector. However, the average turnover per enterprise is almost twice the level of the overall food and drink enterprises.

Table 3.15 Structure of the edible oil industry (C104) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU	55	3.3	8,070	-2.5	6.8	6.0	60,359	0.9
USA	12	-1.1	90	4.7	138.1	-5.5	10,104	3.2
Australia	1	-1.0	221	-3.2	6.0	2.3	1,447	-5.8
Brazil	23	3.6	95	-2.0	243.0	5.7	45,982	6.3
Canada*	5	9.8	66	0.0	76.6	9.8	3,064	7.8

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).
* For Canada, the number of enterprises is for year 2010.

Trade

Exports from the EU grew by 8%, faster than the export growth in the large producing countries except for Canada. The EU's world market share grew as total world exports expanded at a slower pace (4.9%). The import share remained stable. These two developments resulted in an improvement of the EU's negative trade balance. The external market has gained importance.

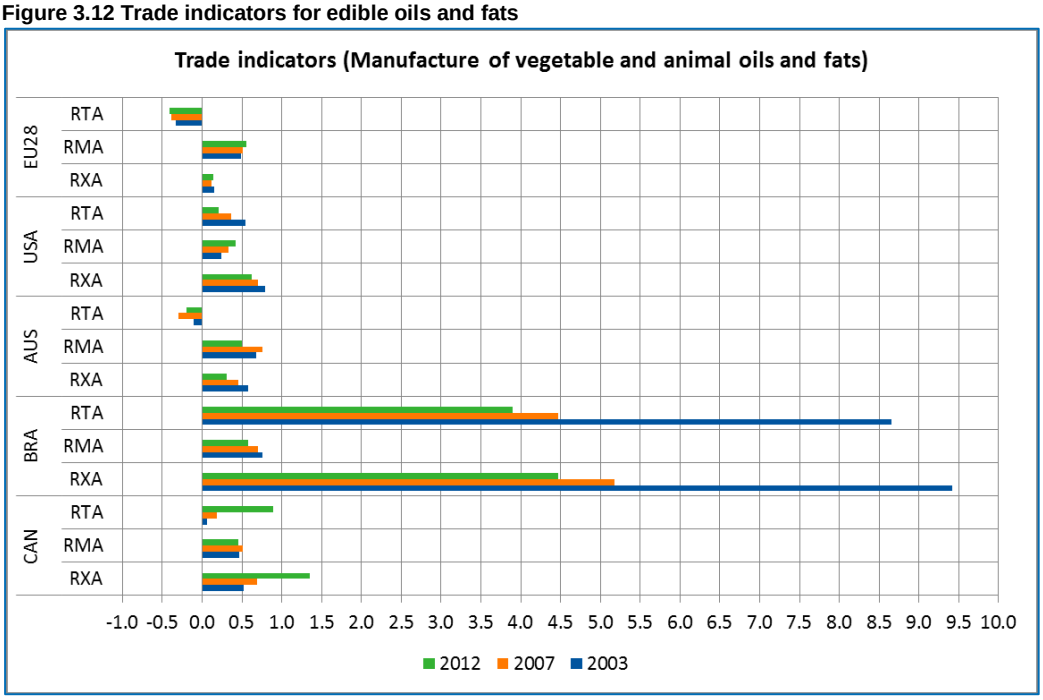
Table 3.16 Trade in edible oils and fats (C104) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	5,213	8.0	4.9	18,358	0.2	18.6	-13,145
USA	6,356	2.4	5.9	5,656	5.5	5.7	699
Australia	511	3.5	0.5	721	4.9	0.7	-210
Brazil	7,110	5.6	6.7	747	5.3	0.8	6,363
Canada	4,004	17.2	3.7	1,221	2.3	1.2	2,783
Indonesia	16,970	8.1	15.9	1,632	14.0	1.7	15,338
Malaysia	15,429	4.3	14.4	2,776	15.9	2.8	12,654
Argentina	12,955	3.8	12.1	63	2.6	0.1	12,892
Ukraine	3,837	22.0	3.6	320	-12.2	0.3	3,517
India	2,659	1.1	2.5	8,589	36.5	8.7	-5,930
Russian Federation	2,113	26.1	2.0	1,244	-5.6	1.3	869
China	1,035	9.7	1.0	10,352	4.8	10.5	-9,317

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

The trade indicators reflected these trade developments. Brazil has the highest Relative Export Advantage (RXA), combined with lower Relative Import Advantage (RMA) indicators, resulting in high Relative net Trade Advantage (RTA) indicators. In the EU28 and Australia, the imports are larger than the exports and the RTA is declining. The RTA-indicator of the USA declined, but remained positive in all years.

Figure 3.12 Trade indicators for edible oils and fats



Source: Calculations by LEI-Wageningen UR based on UNcomtrade data.

3.4.6 Overview of the sector:

- The vegetable and animal oils and fats sector is characterised by a high share of input costs in the turnover (above 90%). The profitability of sector has remained roughly stable around 5%;
- The EU is a net importer and has the largest market shares on the world trade market (18.5% of the world import in 2012). The EU has improved its world market share on the export market;
- The competitiveness performance of the EU weakened slightly on all indicators except for the world market export share (M).

3.5 Dairy

3.5.1 Introduction of the dairy sector

Manufacture of dairy (C105) includes the processing of all products based on milk (e.g. liquid or dried milk, yoghurts, butter, cheese, lactose) including all edible ice-creams (e.g. sorbets) but excludes the production of raw milk and retail activities[134].

The dairy sector accounts for 13.6% of the total turnover of the food and drink industry in 2012. The sector comprises almost 12,000 companies, representing 4% of the total number of companies in the food and drink industry.

In the period 2008-2012, the growth of turnover was lower than the level of the whole food and drink industry. The number of enterprises and the number of persons employed remained stable.

[134] European Communities (2008) – *op.cit.*

Table 3.17 Overview of the dairy processing sector vs. the overall food and drink industry

EU28	Dairy sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	145.6	4.4%	1,062	6.9%
Number of enterprises	11,998	2.0%	288,655	7.4%
Number of employees (1,000)	364,1	1.6%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

Almost 73% of the dairy companies employ less than 10 persons. In total more than 360,000 persons are employed in the sector. 80% of employees work in medium-sized (50 to 249 employees, 27%) or large companies (more than 250 employees, 53%).

3.5.2 Overview of the market for dairy products

Within the EU28 in 2012, the largest dairy manufacturers are France and Germany, covering 21.2% and 17.3% of all cow's milk respectively[135]. Other significant manufacturers are the United Kingdom, Poland, the Netherlands and Italy. EU dairies collected very little milk of other animals (ewe, goat, buffalo). Worldwide, the largest dairy manufacturers in 2012 were the USA, India, China and Brazil[136].

In terms of trade in dairy products, the EU28 provides around 20% of the global production and is a net exporter. For whey, skimmed milk powder (SMP) and cheese, the EU holds a significant share in world exports. However, only 11% of the EU production is exported, mostly in the form of powders (around 50% of production is exported). Main destinations for butter are Russia, Singapore and Turkey. For SMP, these are Algeria, China and Indonesia. Whole milk powder (WMP) exports mainly go to Oman, Nigeria and Algeria. Cheese is mainly exported to Russia, the USA and Switzerland. Dairy imports in the EU are mainly sourced from New Zealand (butter, WMP), Norway (SMP) and Switzerland (cheese)[137].

Worldwide, New Zealand and the EU are the largest exporters. New Zealand is the world's top dairy exporter, accounting for around 40% of the international dairy trade in terms of volume (the EU with over 26%[138] and the USA with 16%)[139]. In December 2013, New Zealand's exports valued at NZ$13.4 billion (€7.6 billion)[140], representing around 18 million tons of milk equivalent[141]. While the EU's exports valued at almost € 10 billion[142], representing around 15 billion tons of milk equivalent[143], yet this accounts for only 11% of total EU dairy production[144]. China and the Russian Federation are the largest milk importers.

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135 Eurostat (2013). Agriculture, Forestry and Fishery statistics – 2013 Edition. Accessed via http://ec.europa.eu/eurostat/documents/3930297/5968754/KS-FK-13-001-EN.PDF/ef39caf7-60b9-4ab3-b9dc-3175b15feaa6 on 1 June 2015.

136 AHDB Dairy (2015). World Milk Production based on UN FAO data. Accessed via http://dairy.ahdb.org.uk/market-information/supply-production/milk-production/world-milk-production/ on 25 August 2015.

137 European Union, *op. cit.*

138 But excluding intra EU trade.

139 http://www.agweb.com/blog/Know_Your_Market_281/why_foreign_exchange_rates_matter_to_the_us_dairy_industry_/.

140 https://www.nzte.govt.nz/en/buy/our-sectors/food-and-beverage/dairy/.

141 http://www.idfa.org/docs/default-source/d-news/wds2014teaser.pdf?sfvrsn=2.

142 http://ec.europa.eu/eurostat/statistics-explained/index.php/Extra-EU_trade_in_agricultural_goods.

143 http://www.idfa.org/docs/default-source/d-news/wds2014teaser.pdf?sfvrsn=2.

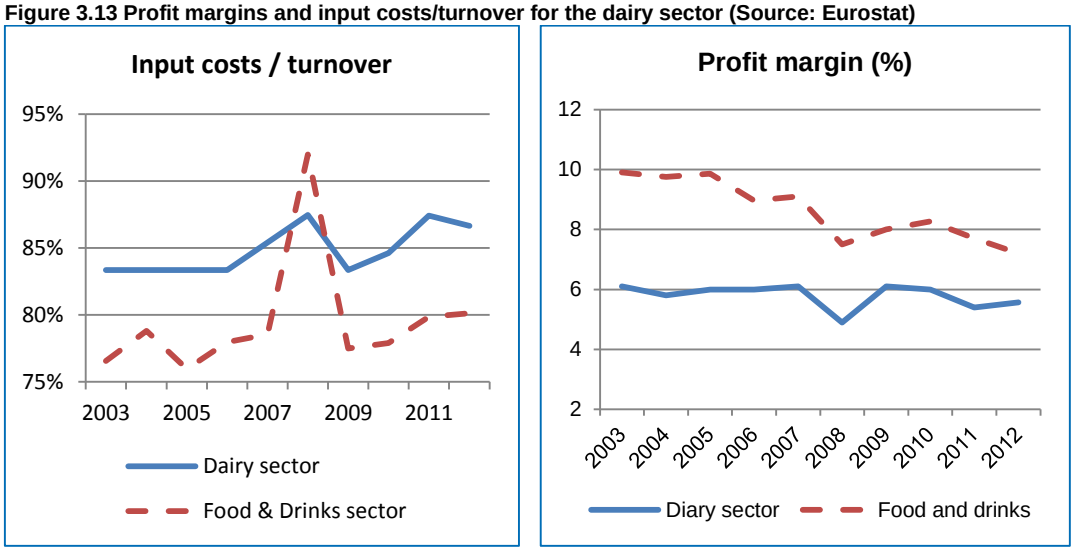
144 http://ec.europa.eu/agriculture/russian-import-ban/pdf/dairy-production_en.pdf.

3.5.3 *Market performance of the dairy sector*

The profitability of the dairy sector has been very stable at close to 6% with the exception of 2008, which (as mentioned in 2.3.1.) was a year of record spikes in commodity prices (milk especially).

Given that milk prices are one of the main determinants of input costs and that after 2009 these have been increasing (in line with the global commodity prices), the fact that profit margins have remained relatively stable is a possible example of internal operational efficiencies of the sector (since they could internalise the higher prices without having profit margins impacted).

Figure 3.13 Profit margins and input costs/turnover for the dairy sector (Source: Eurostat)



Source: Eurostat Structural Business Statistics.

Apparent labour productivity for the dairy sector is high compared to the food industry, and on par with the overall manufacturing industry.

Additionally value added grew significantly in the dairy sector, compared to the food and drink industry (8.7% compared to 5.8%), while overall the share of value added in turnover was below the industry's average. Suggesting that the stability of the profit margins, in light of the increasing input costs, has potentially been achieved with growth in value added. Yet the dairy sector still has much to improve to achieve a higher value added/ turnover ratio in order to increase its profit margins.

Table 3.18 Overview of the dairy processing sector vs. the food, beverages and manufacturing sectors

	Dairy sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	53	42	89	54
Growth (2010-2012)	n/a	3.0%	n/a	2.3%
Value added (bn€)	20.0	206.7		1,620.0
Growth (2008-2012)	8.7%	5.8%		-3.0%
Value added / turnover (2012)	14%	19%		23%

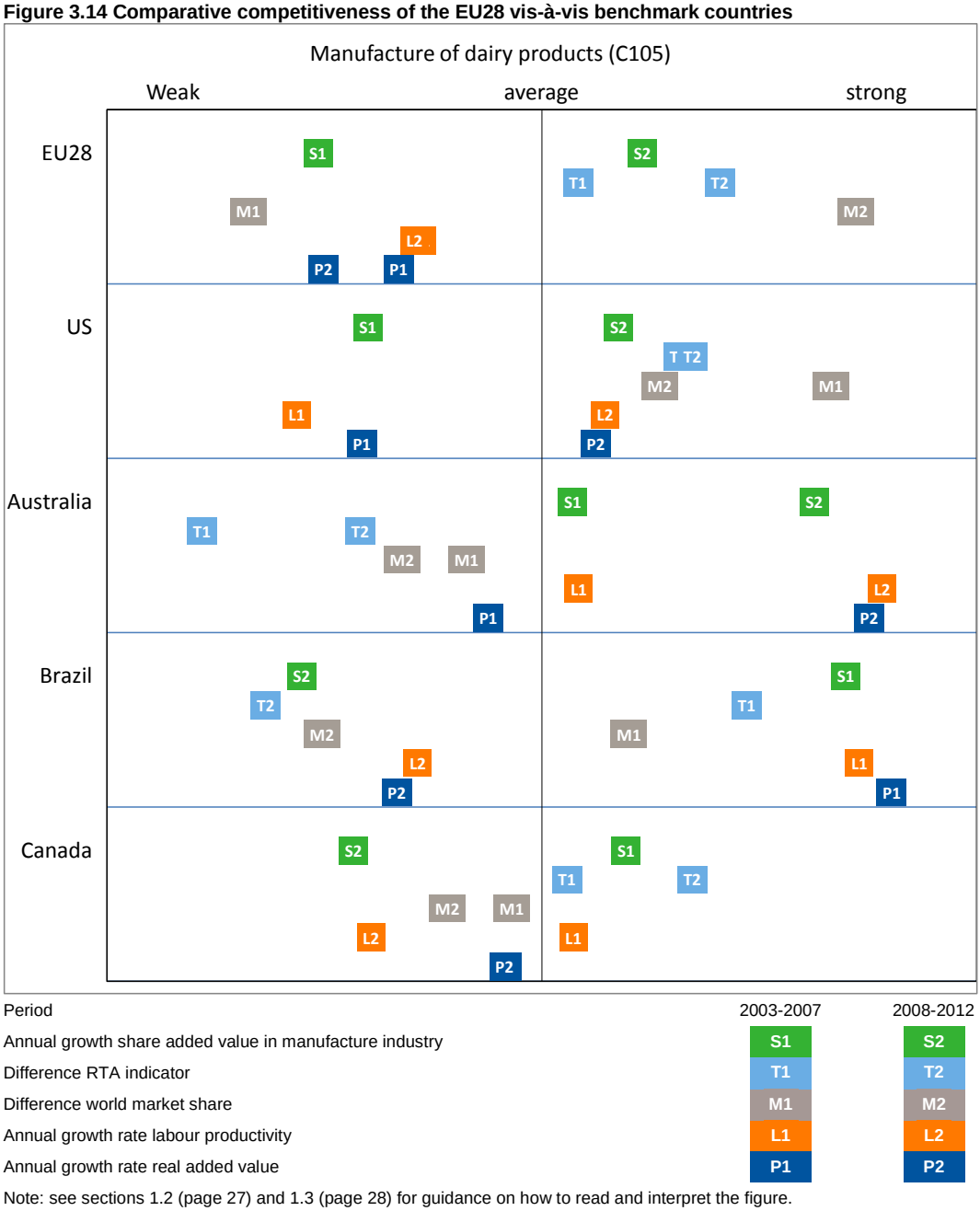
Source: Eurostat Structural Business Statistics.

3.5.4 *Competitiveness of the dairy sector vis-à-vis benchmark countries*

Overview

The competitiveness performance of the EU28 improved strongly on the trade indicators and the share in the manufacturing industry. The USA showed improvement on all indicators. The other 3 countries have a turnover of round 10% of the EU level. Noticeably, Brazil lost ground significantly on all indicators.

Figure 3.14 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Should we have considered a more recent period of time, the Russian ban introduced in August 2014 and the slowdown in China's demand might have affected the dairy sector's trade indicators. However, that ban applies equally to the EU, the USA, Canada, Australia and major dairy exporting region New Zealand. Brazil, benchmark country but not targeted by the ban, is not a major dairy exporter. Thus, the comparative indicators for EU competitiveness analysed here have most likely not been significantly affected. These hypotheses could not be tested due to lack of available data (see also section 1.2).

Structure of the industry

The EU28 dairy manufacturing is the largest in turnover: 165% of the USA level, whereas all the other three countries as even smaller in turnover. Australia showed the strongest growth in turnover, but also the other countries grew fast compared to the EU. The EU grew with a mere 0.8%, which is a result of the dairy quota system. The EU outnumbers also the number of enterprises and employment of the selected regions. However, the average turnover per enterprise is the lowest: only 15% of the USA level. Dairy processing is with a share of 13.3% the fourth largest sector in turnover.

Table 3.19 Structure of the dairy industry (C105) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU28	140	0.8	11,988	0.0	11.7	0.8	364,772	-0.5
USA	85	6.2	1,093	0.5	77.6	5.7	133,670	0.3
Australia	11	10.4	399	3.0	27.1	7.1	17,552	-0.8
Brazil	15	6.5	629	4.4	23.7	2.0	98,555	0.8
Canada	11	7.1	737	-11.3	14.3	20.7	25,280	3.9

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

Trade

EU28 exports grew with 5.1%, slightly below the level of the USA. The EU was by far the largest exporter: three times the level of the USA. Also the trade balance is the largest. Australia has a significant positive trade balance (round 15% of the EU's and 75% of the USA's) relative to the turnover Brazil and Canada are small traders on the world market with a small negative trade balance. The EU export market share grew as total world exports grew at a slower pace (2.1%) than the EU's. The import share showed a similar development: negative import growths in the EU, whereas world imports grew with 0.7%. These two developments increased the EU's positive trade balance.

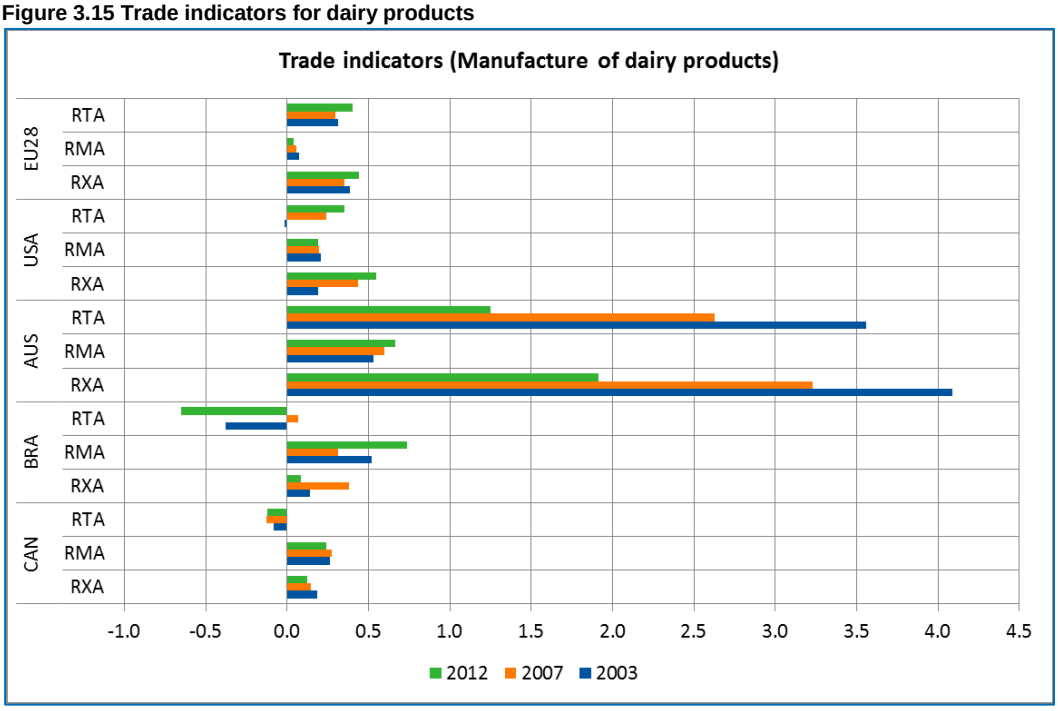
Table 3.20 Trade in dairy products (C105) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	8,970	5.1	15.4	670	-9.1	1.3	8,299
USA	3,020	6.1	5.2	1,368	0.5	2.6	1,652
Australia	1,747	0.1	3.0	505	3.4	1.0	1,242
Brazil	72	-34.7	0.1	499	30.4	1.0	-427
Canada	199	0.3	0.3	339	-0.7	0.7	-140
New Zealand	7,194	8.8	12.4	123	14.2	0.2	7,071
Belarus	1,401	13.3	2.4	32	-3.3	0.1	1,369
Argentina	1,016	12.2	1.7	27	13.8	0.1	989
Russian Federation	242	-0.1	0.4	2,424	19.9	4.7	-2,182
China	89	-22.7	0.2	2,534	38.8	4.9	-2,446

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

These trade developments are also reflected in the trade indicators. In the EU28, imports are significant smaller than exports and the RTA is slightly improving. In Australia, the RTA indicator fell significantly since 2003 but remained the highest in 2012. Brazil has fluctuating trade indicators.

Figure 3.15 Trade indicators for dairy products



Source: Calculations by LEI-Wageningen UR based on UNcomtrade data.

3.5.5 *Summary of the key findings:*

- The profit margin of the dairy sector did not experience significant changes despite a drop in 2008;
- The EU is a net exporter of dairy products and improved its market share on the world market;
- The competitiveness performance of the EU28 improved strongly on the trade indicators and the share in the manufacturing industry. The USA showed an improvement on all indicators;
- Several factors can explain the good performance of the European dairy industry including the access to milk of good quality or the presence of large companies that can invest in new processing facilities. The EU dairy industry has been in a position to benefit from the growing demand in third countries, especially in China.

3.6 Cereal products

3.6.1 *Introduction of the cereal products sector*

The manufacture of grain mill products, starches and starch products -hereafter “cereal products” (C106) includes the milling of flour or meal from grains or vegetables, the milling, cleaning and polishing of rice, as well as the manufacture of flour mixes or dough from these products. Also included in this group are the wet milling of corn and vegetables and the manufacture of starch and starch products[145]. This sector produces, among other things, ingredients for the bakery sector (C107).

[145] European Communities (2008) – *op.cit.*

The cereal products sector accounts for 4% of the total turnover of the food and drink industry in 2012. The sector comprises 6,000 companies, representing 2% of the total number of companies in the food and drink industry.

In the period 2008-2012, the growth of turnover was significantly lower than the level of the whole food and drink industry. The number of enterprises and the number of persons decreased considerably.

Table 3.21 Overview of the cereal products sector vs. the overall food and drink industry

EU28	Cereals sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	45.7	1.1%	1,062	6.9%
Number of enterprises	6,000	-14.3%	288,655	7.4%
Number of employees (1,000)	107.4	-5.3%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

Around 76% of the companies in the cereals sector employ less than 10 persons. In total more than 107,000 persons are employed in the sector. Employees are relatively evenly distributed over the different sizes of companies (micro, small, medium-sized and large).

3.6.2 Overview of the market for cereal products

Within the EU28, in terms of production value the largest cereal products manufacturers are the United Kingdom (18%), France (16%), Italy (14%) and Germany (14%)[146]. Worldwide, the USA is the largest manufacturer and exporter of cereal products, however the EU is not far behind. Both the EU and the USA are net exporters of cereal products.

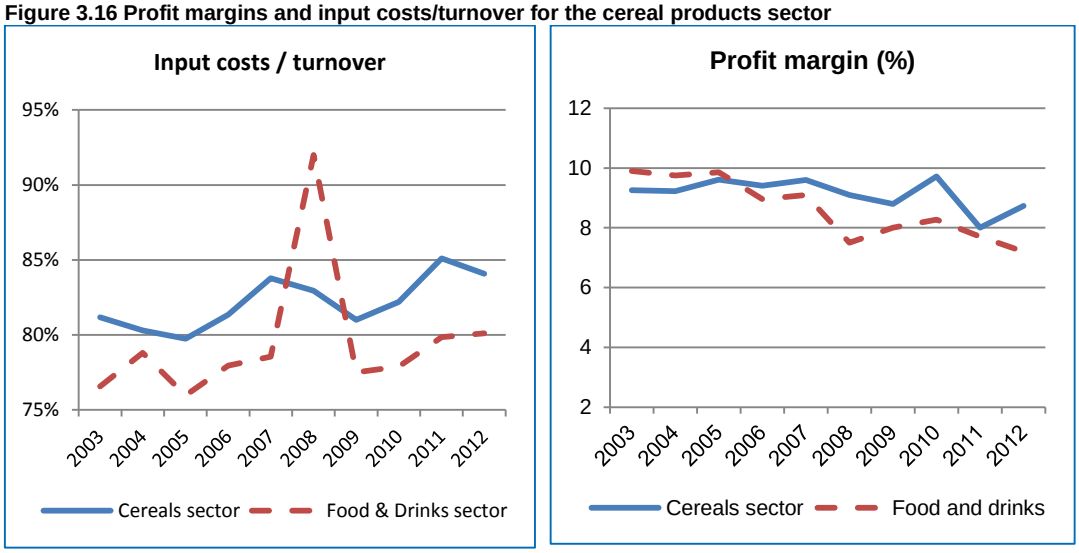
3.6.3 Market performance of the cereal products sector

Profit margins in the cereal products sector have been stable around 9% until 2010, which begun to see volatility in the profit margins. Meanwhile, the profit margins of the food and drink industry steadily declined from a peak of 10% in 2003 to around 7% in 2012.

The trends in the input costs/turnover ratio are linked to the commodity price of cereal products (as illustrated in 2.3.1.). However, the variation of the ratio is not represented in the variation of the profit margin, suggesting that there are also other effects impacting the profit margin.

[146] Source: Eurostat 2012.

Figure 3.16 Profit margins and input costs/turnover for the cereal products sector



Source: Eurostat Structural Business Statistics.

The apparent labour productivity for the cereal products sector is very high, exceeding both the food industry as well as manufacturing. Over the period under review, labour productivity increased by 7.4%.

However, such efficiencies have not resulted in greater value added. Value added has decreased during the period, suggesting that it is an increase in the quantity of products sold (represented by turnover), rather than products with higher value added, or profit margins. This conclusion is supported by the value added to turnover ratio, which has declined over the period from a maximum of 19% in 2005 to 16% in 2012 (similar trend as with the sector's profit margins).

Table 3.22 Overview of the cereals processing sector vs. the overall food and beverages sector

	Cereals sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	67	42	89	54
Growth (2010-2012)	7.4%	3.0%	n/a	2.3%
Value added (bn€)	7.2	206.7		1,620.0
Growth (2008-2012)	-5.3%	5.8%		-3.0%
Value added / turnover (2012)	16%	19%		23%

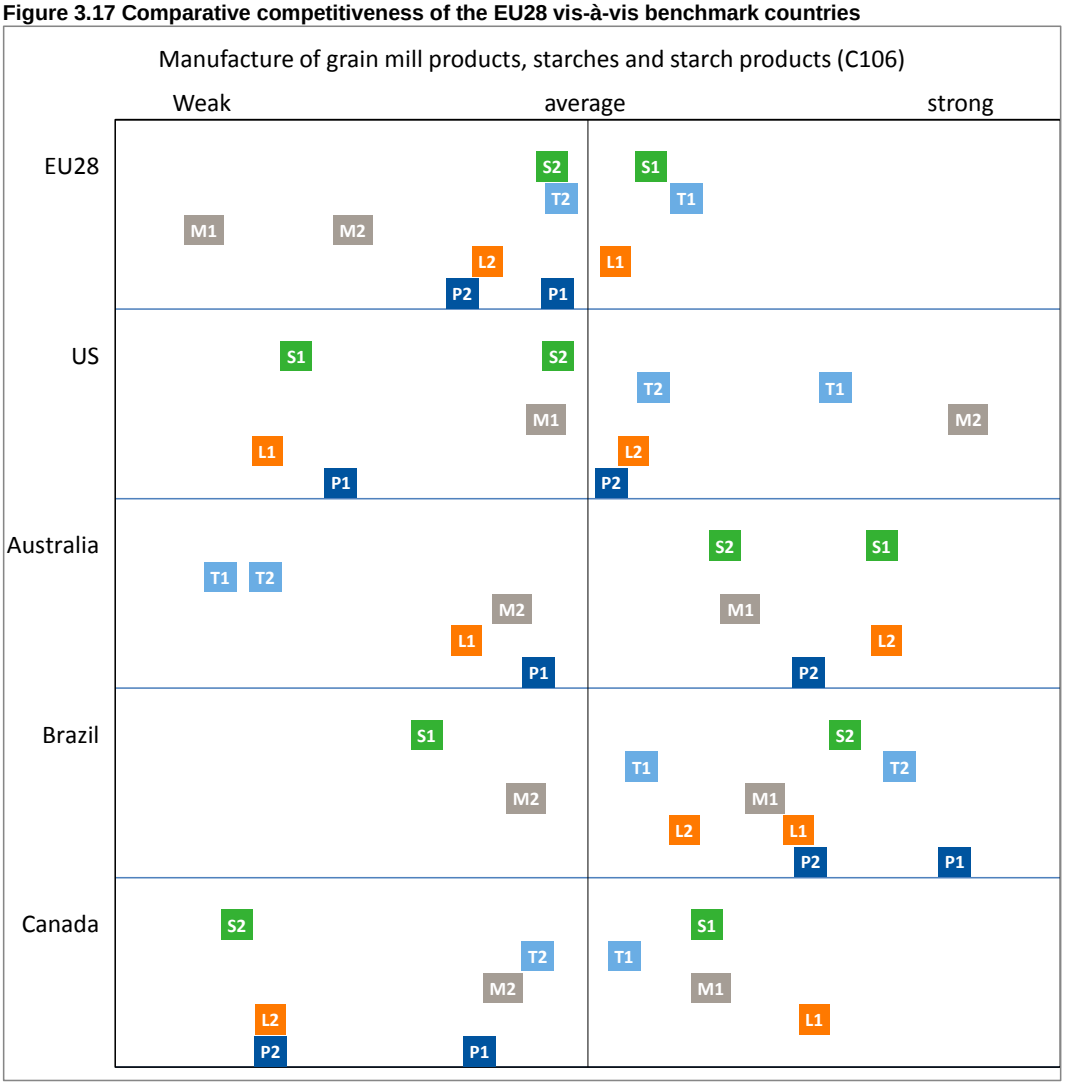
Source: Eurostat Structural Business Statistics.

3.6.4 *Competitiveness of the cereal products sector vis-à-vis benchmark countries*

Overview

The competitiveness performance of the EU in comparison to benchmark countries was slightly weak. All indicators score below average in the second period. The USA, with the largest turnover for this sector, improved his position on four out of five indicators. Brazil scored very well amongst benchmark countries although three indicators are slightly weaker in period 2 than in the period 1. Australia improved strongly on the Labour Productivity and Value added indicators. Canada showed a strong worsening on all indicators.

Figure 3.17 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Structure of the industry

Cereal products manufacturing is one of the few sectors whose turnover is not larger in the EU than in the selected benchmark countries. The USA's turnover is 50% higher. In number of employees the Brazilian sector is larger, although the turnover in Brazil is less than half of the EU turnover. Turnover has not grown in the EU which is in in stark contrast to the high growth in Australia and Brazil (12-13%).

Cereal products processing has a small share (4%) in the total turnover of the EU food and drink industry and is after fish the smallest sector in terms of turnover. The average turnover per enterprise is almost twice the level of the overall food and drink enterprises.

Table 3.23 Structure of the "cereal products" industry (C106) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU28	45	0.0	6,026	-4.1	7.5	4.3	106,791	-2.0
USA	77	4.6	461	-0.7	166.8	5.4	52,955	-0.2
Australia	4	12.8	316	0.6	14.2	12.1	9,207	1.2
Brazil	17	12.2	621	3.4	27.5	8.5	112,390	7.6
Canada*	1	-15.3	140	0.2	6.5	-15.5	3,469	-4.8

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).
* For Canada the 2012 level of number of enterprises is that of 2010 due to data availability.

Trade

EU28 exports grew by 2%, at a slower pace than total world exports (4.7%). USA's export grew far above the world market level. The EU imports grew at higher pace than global import (3.4%). The trade balance of the EU is positive, despite its loss of world export market share and growth of imports.

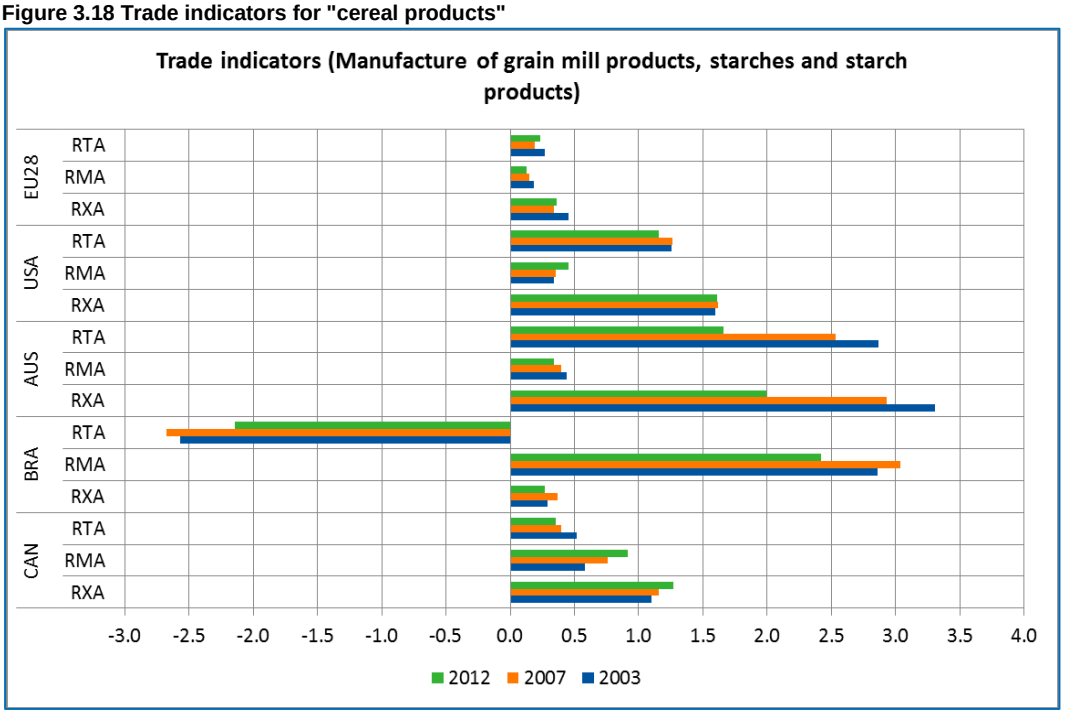
Table 3.24 Trade in "cereals products" (C106) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	2,857	1.9	12.5	897	5.1	4.2	1,960
USA	3,482	9.5	15.3	1,337	5.2	6.3	2,145
Australia	715	2.3	3.1	107	2.3	0.5	608
Brazil	92	-5.2	0.4	676	0.2	3.2	-584
Canada	803	2.2	3.5	532	6.0	2.5	272
China	688	0.7	3.0	2,447	17.0	11.5	-1,758
Thailand	1,062	19.9	4.7	458	6.8	2.1	604
Argentina	885	3.9	3.9	25	4.2	0.1	860
Chili	417	-3.6	1.8	317	11.8	1.5	101
Russian Federation	326	5.3	1.4	252	-0.1	1.2	74

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

The Relative Import Advantage (RMA) is rather high in Brazil, resulting also in negative Relative net Trade Advantage (RTA) indicators. In the EU28 the imports are smaller than the exports, the RTA is positive with little fluctuation. The EU trade indicators are rather stable and the RTA's remained positive. Developments were positive in Australia with increasing RXA and RTA indicators.

Figure 3.18 Trade indicators for "cereal products"



Source: Calculations by LEI-Wageningen UR based on UNComtrade data.

3.6.5 *Summary of the key findings:*

- The "cereal products" sector represents less than 5% of the total food and drink turnover: it is the second smallest food and drink industry after the fish processing sector;
- The profit margin of the cereal processing industry is slightly higher than the profitability of the overall food and drink industry. Profitability has been stable around 9% until 2010 and slightly under 9% until 2012;
- Compared to the benchmark countries, the EU is the largest exporter and has a positive trade balance. The growth on export market has been stronger in the USA than in the EU;
- There is no significant evolution of the competitive position of the EU industry whit below-average performance on all indicators.

3.7 Bakery products

3.7.1 *Introduction of the bakery sector*

Manufacture of bakery and farinaceous products (C107) includes the production of bakery products, macaroni, noodles and similar products[147].

The bakery sector accounts for 10.7% of the total turnover of the food and drink industry in 2012.The sector comprises more than 150,000 companies, representing 54% of the total number of companies in the food and drink industry.

In the period 2008-2012 the growth of turnover was one third the level of the food and drink industry. The number of enterprises and employees stayed more or less stable.

[147] European Communities (2008) – *op.cit.*

Table 3.25 Overview of the bakery products processing sector vs. the overall food and drink industry

EU28	Bakery sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	114.5	2.3%	1,062	6.9%
Number of enterprises	155,219	-1.6%	288,655	7.4%
Number of employees (1,000)	1,532.5	1.1%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

More than 80% of all bakeries employ less than 10 persons. In total more than 1.5 million persons are employed in the sector. Employees are evenly distributed over micro, medium-sized and large companies.

3.7.2 Overview of the market for bakery products

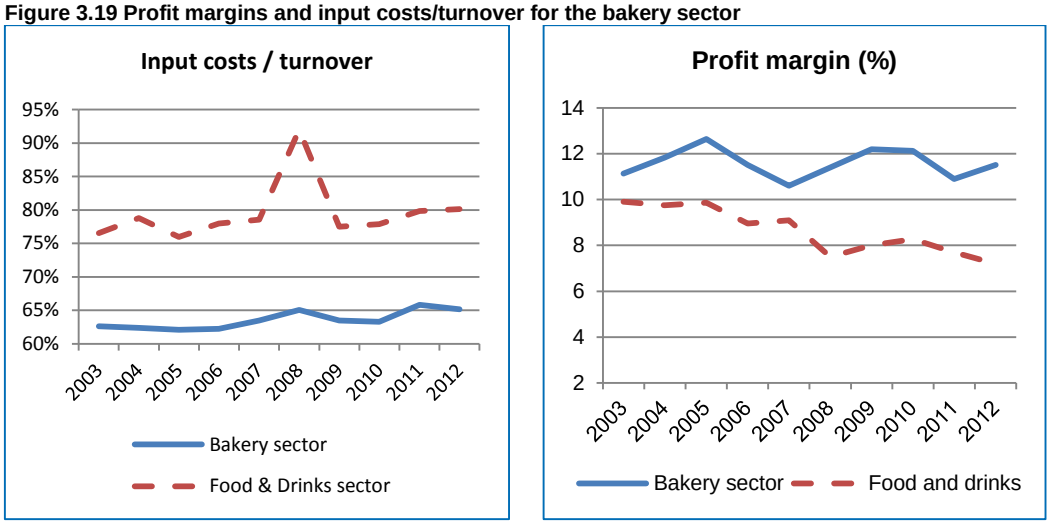
The European bakery industry is very diverse and unevenly distributed among Member States. In terms of value, the largest market in 2012 was Germany (20% of total value), closely followed by France (18%), Italy (16%) and the United Kingdom (11%)[148]. When looking at the size of the bakery products industry (number of enterprises), France has the largest bakery industry (27%) followed by Italy (23%) and Germany (9%).

3.7.3 Market performance of the bakery sector

The profitability of the bakery sector has been significantly higher than the average of the food and drink industry, oscillating between 11% to over 12%.

The bakery sector is strongly reliant on the input of grain and cereals, the global commodity price of which has been volatile since 2008 (see 2.3.1.). As a result the input cost/turnover ratio is aligned with that trend. The input cost/turnover ratio for the bakery sector is very low compared to other sector, never exceeding 66%. This helps to explain the high profit margin, that is consistently above the food and drink average.

Figure 3.19 Profit margins and input costs/turnover for the bakery sector



Source: Eurostat Structural Business Statistics.

[148] Eurostat Structural Business Statistics (2012).

However, the apparent labour productivity is very low (compared to the overall industries) and decreasing. However, this is strongly influenced by the very high level of employment in the sector, which is still growing and thus influencing the negative growth rate.

The bakery sector provides a large value added (35% value added/turnover) compared to the overall industries, but over the period studied has displayed slow growth (0.8%) in comparison to the food and drink industry. Nevertheless such large size of the value added helps to also explain the consistently high profit margins.

Table 3.26 Overview of the bakery products processing sector vs. the overall food and beverages sector

	Bakery sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	26	42	89	54
Growth (2010-2012)	-2.4%	3.0%	n/a	2.3%
Value added (bn€)	39.5	206.7		1,620.0
Growth (2008-2012)	0.8%	5.8%		-3.0%
Value added / turnover (2012)	35%	19%		23%

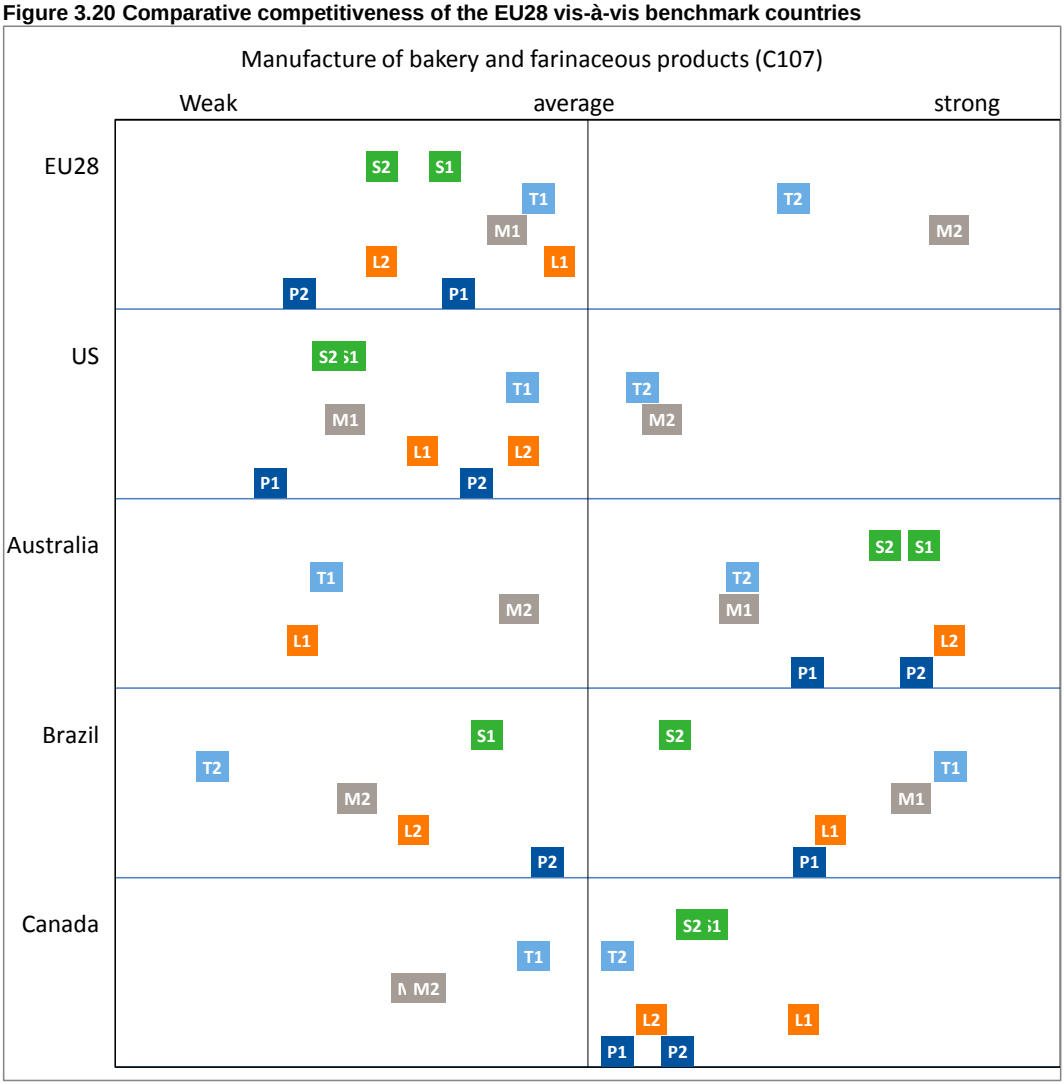
Source: Eurostat Structural Business Statistics.

3.7.4 Competitiveness of the bakery sector vis-à-vis benchmark countries

Overview

The competitiveness performance of the EU28 strongly improved on the trade indicators (M and T), but weakened on all economic indicators (S, L, P). The USA also improved its trade position but remained weaker than the EU. For Brazil, all indicators weakened in the second period except the growth of the value added. Australia showed improvement on various indicators, in particular on the Labour Productivity indicator (L).

Figure 3.20 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Structure of the industry

The EU28 bakery manufacturing is the fifth largest sector in turnover (share 11%) and has the highest share in the number of enterprises (54%) in total of food and drink industry. The growth of the turnover is low: compared to several other sectors (meat, fish or fruit and vegetables) but also compared to the benchmark countries. The EU growth was a mere 0.4% annually whereas the benchmark countries grew between 5.4 and 10.6%. The average turnover per enterprise (€ 0.7 million) is very low around 20% of the food and drink manufacturing and significant smaller than the level on Brazil (€ 5.3 million) and the USA level (€ 5.0 million).

Table 3.27 Structure of the bakery products industry (C107) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed (1,000)	Growth persons employed (%)
EU28.	114	0.4	155,221	-0.7	0.7	1.1	1,531	-0.5
USA	50	5.4	9,898	0.6	5.0	4.8	274	0.3
Australia	6	10.6	6,011	2.3	1.1	8.2	68	0.4
Brazil	6	8.6	1,071	8.3	5.3	0.3	117	4.5
Canada*	6	8.6	2,182	-1.0	2.9	9.7	39	1.8

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

Trade

The external trade of the EU28 grew with 8.6% faster than the world exports resulting in an increasing export market share. The imports by the EU are relatively small at around 17% of the export value and growing at a slower pace than the world imports. The EU has a strongly positive trade balance and is the largest exporter. The trade balance of the USA, Australia and Canada are negative. The export of Brazil is almost on a par with the imports, but less than 2% of the EU's exports.

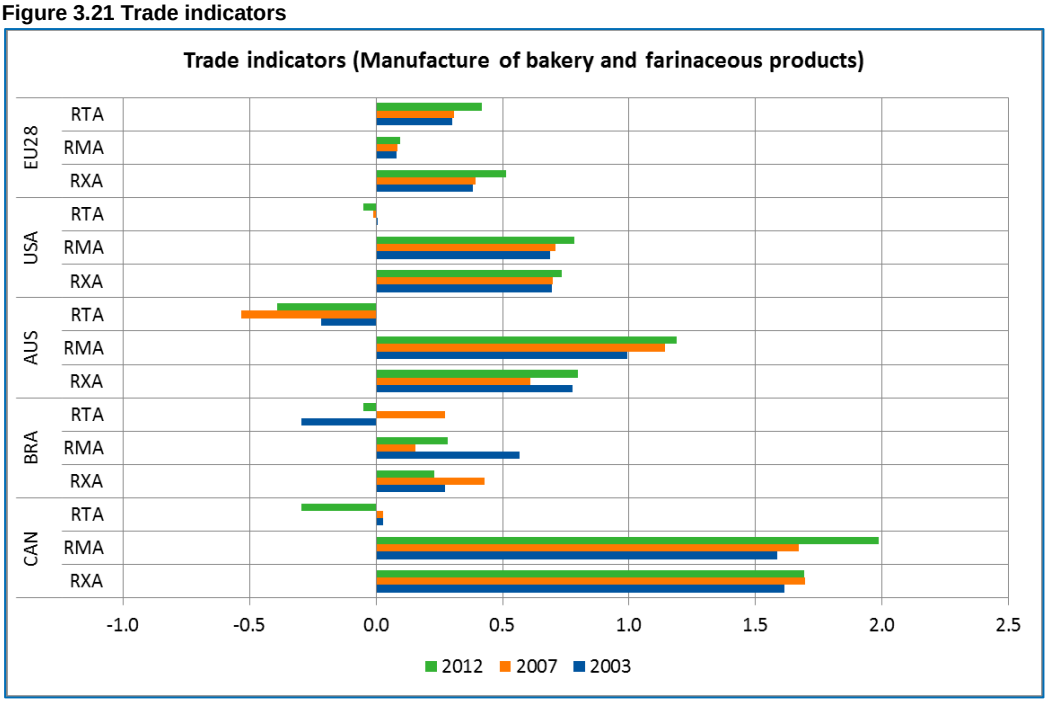
Table 3.28 Trade in bakery products (C107) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	7,765	8.6	18.0	1,263	2.3	3.2	6,502
USA	3,009	8.6	7.0	4,173	6.2	10.7	-1,164
Australia	541	17.3	1.3	679	10.6	1.7	-138
Brazil	148	-13.4	0.3	143	27.7	0.4	5
Canada	2,032	4.6	4.7	2,097	7.0	5.4	-66
China	1,160	10.9	2.7	1,509	28.3	3.9	-349
Russian Federation	338	3.2	0.8	781	13.5	2.0	-443
Malaysia	885	12.8	2.0	511	11.4	1.3	373

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

These trade developments are also reflected in the trade indicators. The EU has positive values for the Relative Net Trade Advantage (RTA) indicators. In the EU28 the imports are smaller than the exports, the RTA is improving. The developments in the USA showed a negative development, with a negative RTA indicator in 2007 and 2012 compared to positive in 2003. The RTA indicators for all other countries were negative in the second year.

Figure 3.21 Trade indicators



Source: Calculations by LEI-Wageningen UR based on UNcomtrade data.

3.7.5 *Summary of the key findings:*

- The bakery products sector has a high profit margin compared to the overall industry, which has remained rather stable in the 2003-2012 period. The share of input costs in turnover is low when compared to the overall food and drink industry, yet the ratio has seen significant fluctuations and has remained above pre-crisis levels. The sector has the highest number of enterprises which are small scaled compared to enterprises in benchmark countries;
- The EU is a net exporter and has the largest world market share of all benchmark countries (18.0%) and is still growing;
- The competitiveness performance of the EU improved significantly for the trade indicators, while the economic indicators for the EU diminished;
- The apparent labour productivity is low compared to the overall food and drink industry and is the lowest of all discussed sectors and sub-sectors and is further deteriorating. Compared to benchmark countries, the EU has the lowest growth in labour productivity in the 2008-2012 period which was not the case in the 2003-2007 period;
- A low and declining labour productivity combined with higher input costs and stagnation in turnover growth carries the risk of future weakening of the competitive position of the EU vis-à-vis benchmark countries.

3.8 Other food products

3.8.1 *Introduction of the "other foods" sector*

Manufacture of other food products (C108) includes the production of sugar and confectionery, prepared meals and dishes, coffee, tea and spices, as well as perishable and specialty food products. This class is quite diverse and counts seven subclasses[149]. In the next sections, we discuss the subclasses sugar and confectionery.

[149] European Communities (2008) – *op.cit.*

The other food sector accounts for 16% of the total turnover of the food and drink industry in 2012. The sector comprises more than 25,100 companies, representing 9% of the total number of companies in the food and drink industry.

In the period 2008-2012, the growth in turnover was similar to the level of the food and drink industry. The number of enterprises grew at the same rate as the entire industry. The number of employees increased slightly.

Table 3.29 Overview of the "other foods" processing sector vs. the overall food and drink industry

EU28	Other food sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	171.9	6.6%	1,062	6.9%
Number of enterprises	25,100	8.9%	288,655	7.4%
Number of employees (1,000)	600.1	3.1%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

Almost 80% of the companies in the other food sector employ less than 10 persons. In total more than 600,000 persons are employed by the sector. Half of all employees work in a large company (more than 250 employees).

3.8.2 Overview of the market for "other foods" products

The largest manufacturers of products falling under the category of other food in the EU28 in terms of production value are Germany (19%), France (15%), the United Kingdom (12%) and Italy (12%)[150]. The trade characteristics of products falling under this category vary considerably between the different sub-sectors. Therefore, this is only dealt with on a sub-sector basis for sugar and confectionery under sections 3.9.2 and 3.10.2.

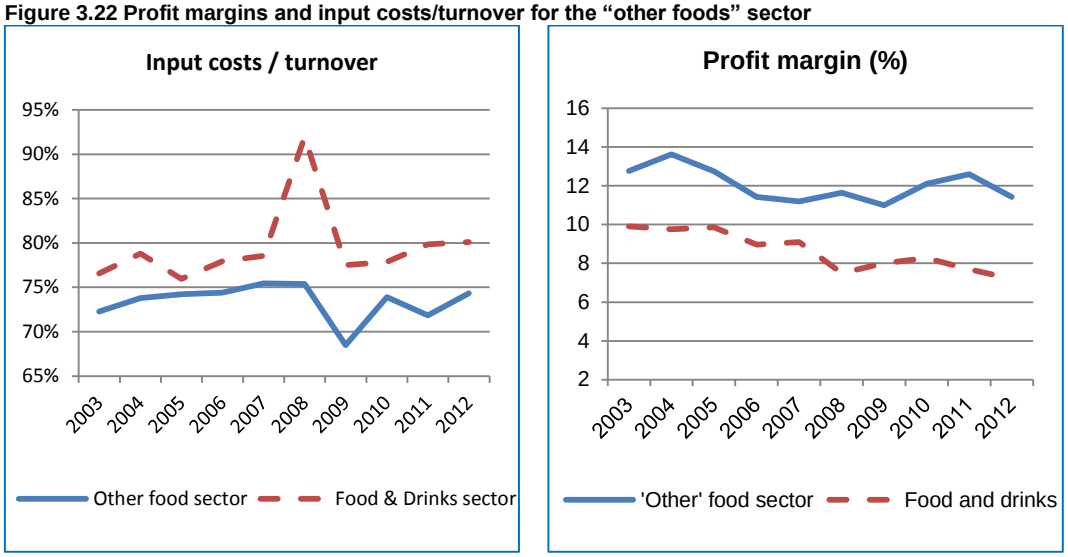
3.8.3 Market performance of the "other foods" sector

In terms of is turnover, employment, number of enterprises the "other foods" sector is growing, but profit margins are slowly decreasing (despite a recover in 2010 and 2011). Still, the profit margins have been significantly above the food and drink industry average, throughout the period studied.

Between 2008 and 2012, there has been a dramatic increase in the input costs. However, given the varied nature of the sector it is difficult to distinguish the effects behind the increase.

[150] Eurostat Structural Business Statistics 2012. Retrieved 30 June 2015.

Figure 3.22 Profit margins and input costs/turnover for the "other foods" sector



Source: Eurostat Structural Business Statistics.

The apparent labour productivity is very high (compared to the overall industries) and increasing at a very fast speed. The share of value added in the other food sector is also large (25%) and higher than any of the other industrial averages. On top of that it is growing still at a much higher speed than the manufacturing industry overall. This would suggest that it is the value added that is keeping the profit margins of the sector high, despite increasing input costs.

Table 3.30 Overview of the "other foods" processing sector vs. the food, beverages and manufacturing sectors

	Other food sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	71	42	89	54
Growth of labour productivity (2010-2012)	6.8%	3.0%	n/a	2.3%
Value added (bn€)	42.5	206.7		1,620.0
Growth of added value (2008-2012)	6.3%	5.8%		-3.0%
Value added / turnover (2012)	25%	19%		23%

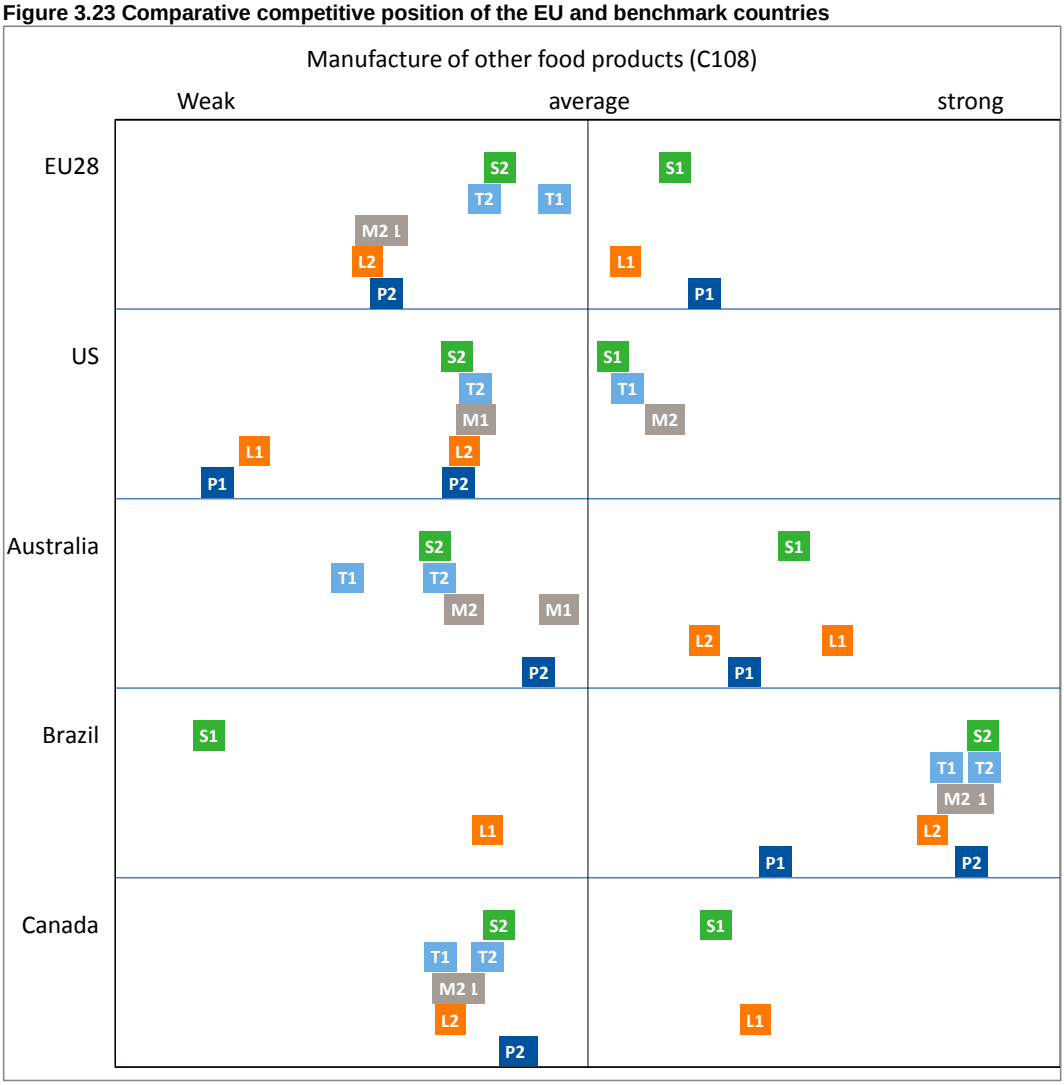
Source: Eurostat Structural Business Statistics.

3.8.4 *Competitiveness of the "other foods" sector vis-à-vis benchmark countries*

Overview

The competitiveness performance of the EU28 in period 2 was below average on all indicators compared to the benchmark countries. Brazil is by far the strongest of the benchmark countries with all indicators considered as strong and many indicators improving between period 1 and period 2. Due to this very strong position of Brazil, all other regions are below average in period 2 on many or all indicators.

Figure 3.23 Comparative competitive position of the EU and benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Structure of the industry

The EU28 “other food” manufacturing is the second largest sector after meat with a share of 16% in the total turnover of the food and drink industry. The growth of the turnover in EU is low (2%) and much below the high level of Brazil (26%). In addition, the turnover per enterprise is amongst the lowest: the average turnover in the USA is three times the level of the EU and in Brazil 7 times. The growth of the turnover per enterprise is negligible in the EU and over 17% in Brazil.

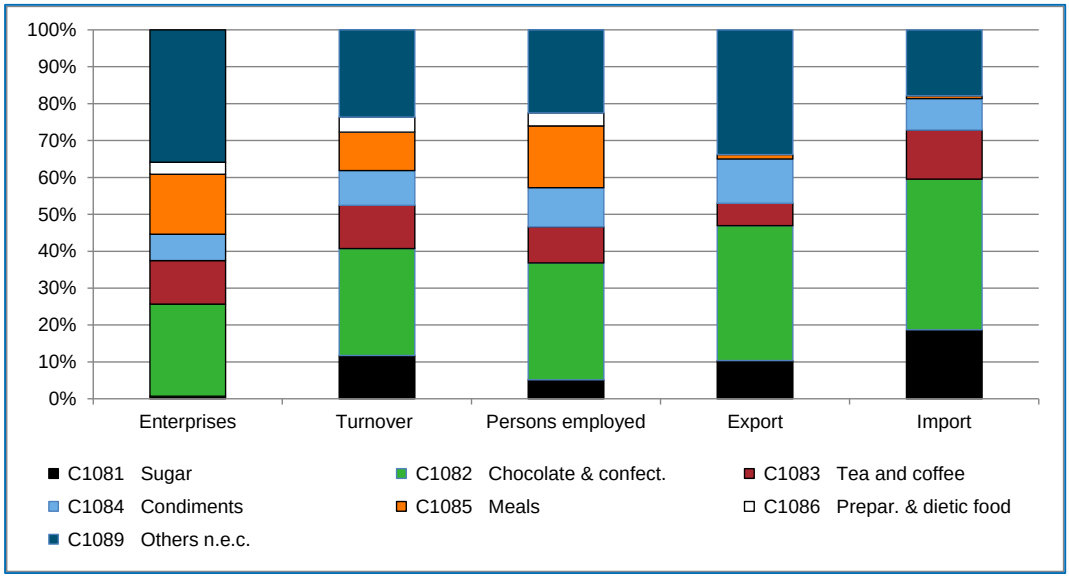
Table 3.31 Structure of the "other food" industry (C108) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU	172	1.9	25,171	1.9	6.8	0.0	600,061	0.6
USA	99	7.9	4,565	0.5	21.7	7.4	238,427	1.6
Australia	12	12.3	1,322	2.0	8.8	10.1	31,821	1.4
Brazil	41	26.0	841	7.3	48.8	17.4	520,704	11.3
Canada	9	9.4	1,454	3.1	6.1	6.2	35,307	3.9

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

The "other food" industry is quite diverse, ranging from commodity production like sugar to highly specialised production for the health sector. Manufacturing of chocolate and confectionery is the largest on several indicators as is shown in the figure below. Second is the group "not elsewhere classified" which is the largest in the number of enterprises. Sugar production has the lowest number of enterprises but is relatively important for imports and exports. The group 'manufacturing of meals and dishes' is relatively important, but especially on the domestic market. In the following sections, we will discuss the subclasses sugar and chocolate & confectionery manufacturing separately.

Figure 3.24 Structure of subclasses of "other food" industry in 2012 in % of total "other food" (C108) of EU28



Source: Eurostat Structural Business Statistics and UNComtrade.

Trade

The EU28 market shares on the world market declined as the import and export growth were below the world market levels. The imports by the EU grew at a slower pace than the exports: the positive trade balance in 2012 was half the level of 2007. Brazil doubled its positive trade balance in that period: the country realised high export and import growth in line with the high growth of turnover. The trade balance of the other countries remained negative.

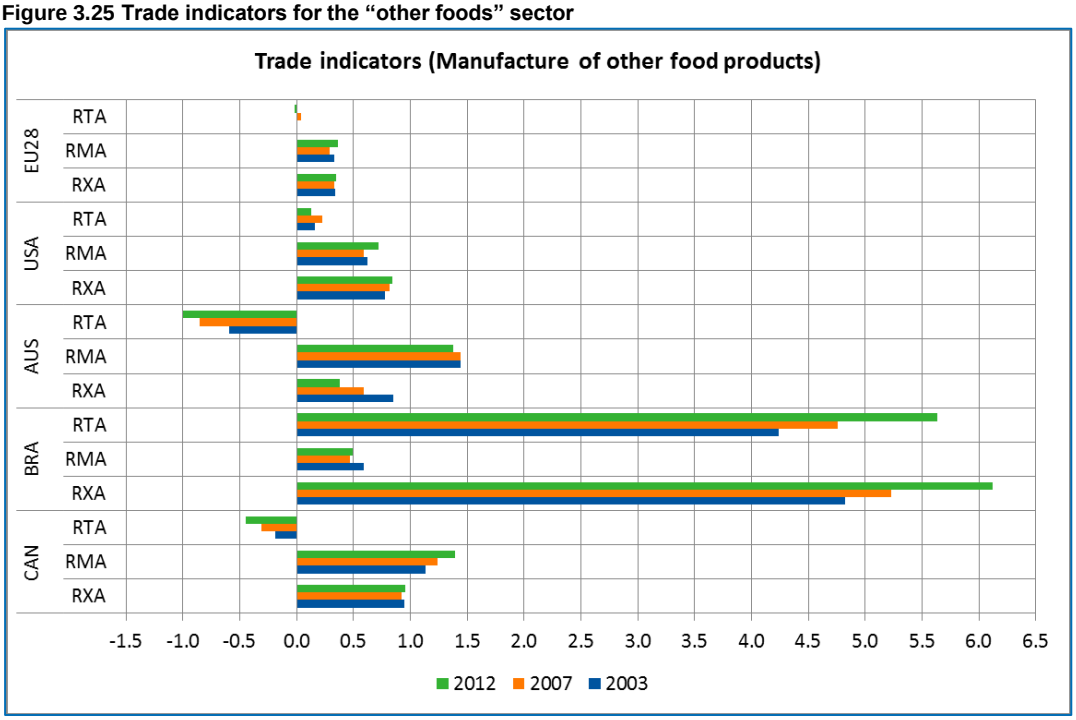
Table 3.32 Trade in "other foods" products (C108) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	14,858	6.1	12.0	14,543	5.0	12.2	315
USA	9,867	11.2	8.0	11,669	8.4	9.8	-1,802
Australia	733	7.2	0.6	2,407	11.5	2.0	-1,675
Brazil	11,297	18.9	9.1	766	16.0	0.6	10,531
Canada	3,279	6.6	2.6	4,510	7.6	3.8	-1,231
China	4,054	15.2	3.3	3,472	35.4	2.9	582
India	2,992	9.8	2.4	775	32.7	0.7	2,216
Thailand	4,753	22.3	3.8	969	18.1	0.8	3,784
Russian Federation	1,092	9.5	0.9	3,480	0.8	2.9	-2,387

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

In the EU28 the imports are almost equal to the exports, the RTA is round zero. Brazil has the highest Relative Export Advantage (RXA), combined with the low Relative Import Advantage (RMA) indicators, resulting in high Relative net Trade Advantage (RTA) indicators. The developments in Australia and Canada showed a negative development, with growing negative RTA indicators.

Figure 3.25 Trade indicators for the "other foods" sector



Source: Calculations by LEI-Wageningen UR based on UNComtrade data.

3.8.5 *Summary of key findings:*

- The profit margin of the "other food" sector, even though higher than the overall food and drink industry, shows an overall downward trend since 2004. In 2009 profitability was at its lowest point since 2003;
- The competitiveness performance of the EU28 has weakened considerably during the period, as all indicators deteriorated;

- The EU is still a net exporter of “other foods” products, but the positive trade balance has been shrinking considerably since 2008;
- Several factors can explain the poor performance of the European other food industry. Even though labour productivity has grown in the EU, it is still the lowest of all benchmark countries. The growth in value added has decreased considerably compared to the 2003-2007 period and is as well the lowest of all benchmark countries. Especially Brazil has gained a strong competitive position in the other food sector with a significant growth in turnover;
- It is important to take into account that this sector contains many sub-sectors, each having very distinct characteristics.

3.9 “Other foods”: Sugar

3.9.1 Introduction to the sugar manufacturing sector

This sub-industry (C1081) includes manufacturing or refining of sugar (sucrose), sugar products and sugar substitutes from the juice of cane, beet, maple and palm. This class excludes manufacture of glucose, glucose syrup, maltose that is part of cereals manufacturing (C106)[151].

The sector comprises 177 companies, representing only a very small share of the total number of companies in the food and drink industry. However, this industry knows a rather large scale compared to the other sub-sectors: the average turnover per enterprise is above €90 million compared to €3.7 million for the food and drink industry as a whole or the €6.8 million of the other food sector to which the sugar manufacturing industry belongs. In addition, the turnover growth per enterprise is 14% which is above the average of the food industry as well as the “other foods” sector. With a total turnover of €15 billion the sector is rather small comprising 1.4% of the turnover of the entire food and drink industry.

In the period of 2008-2012, the growth in total turnover has been thrice the level of the food and drink industry. On the other hand, the number of enterprises and the number of persons employed has declined significantly.

Table 3.33 Overview of the sugar manufacturing sector vs. the overall food and drink industry

EU28	Sugar sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	20.2	28.8%	1,062	6.9%
Number of enterprises	177	-22.4%	288,655	7.4%
Number of employees (1,000)	31	-16.7%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

The sugar sector employs 31,000 persons representing less than 1% of the whole food and drink industry.

[151] European Communities (2008) – *op.cit.*

3.9.2 *Overview of the market for sugar*

The largest sugar manufacturers in the EU28 in terms of production value are France (23%), Germany (20%), Poland (9%) and Spain (6%)[152]. Worldwide, Brazil is the largest sugar producing country.

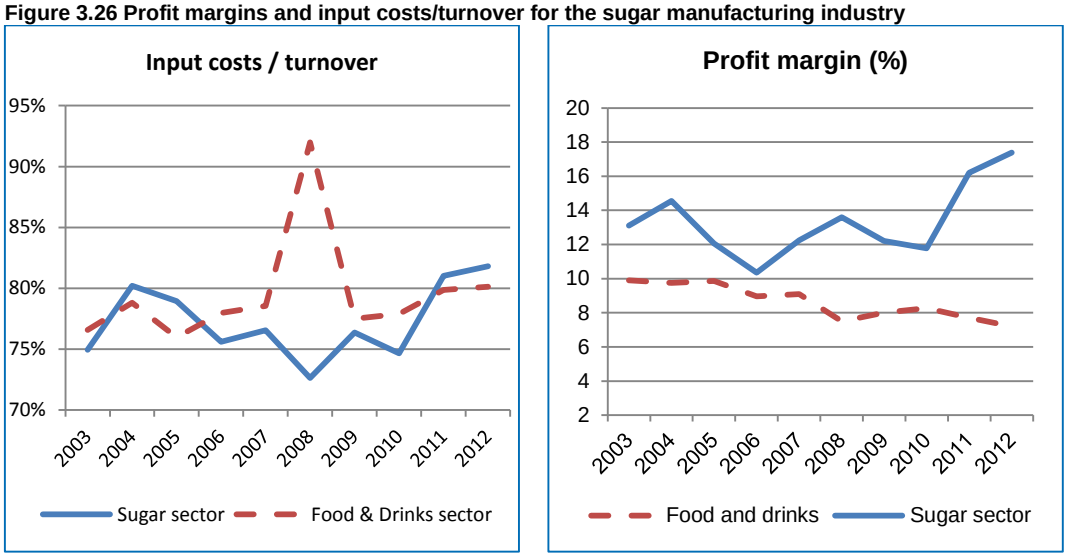
Imports of sugar have been strictly regulated under the sugar regime. Since the 2006 reform, preferential sugar imports can also contain white sugar next to raw sugar. The African, Caribbean and Pacific countries (ACP) and Least Developed Countries (LDC) took advantage of that reform; especially Mauritius increased its exports. Since 2009, imports of sugar have increased. In 2011/2012 they rose to record levels. The main imports are sourced from ACP, LDC and Brazil, Cuba, Australia, India (jointly referred to as CXL countries). White sugar (processed) accounts for 31% of these imports. From 2012/13 onwards, additional market access concessions have been granted to Central America, Colombia and Peru[153] in the recent Free trade Agreements with the EU. The effects of these agreements are still to be evaluated.

3.9.3 *Market performance of the sugar manufacturing sector*

In terms of profit margins the sugar sector is booming with experiencing a new peak of almost 18% in 2012. This not only outperforms the industry as whole, but has done so since 2003, despite the sugar sectors volatility.

Such volatility is also represented in the input costs/turnover ratio. The sugar sector paradoxically experienced a low in this ratio in 2008, while in comparison all other commodity prices that year experienced a peak. However, possible explanations are that the trend was offset by a large turnover expansion, as well as improvements in internal efficiencies (less employees while turnover, value added and profit margins grew) and market concentration (decline in the number of companies).

Figure 3.26 Profit margins and input costs/turnover for the sugar manufacturing industry



Source: Eurostat Structural Business Statistics.

The apparent labour productivity is very high (compared to the manufacturing industry) and increasing at an astonishingly fast speed.

[152] Eurostat Structural Business Statistics 2012. Retrieved 30 June 2015.

[153] COM (2013) 323 Final. *Evolution of the sugar imports in the European Union from LDC and ACP countries*.

The share of value added per turnover is also high in the sugar sector (26%) and higher than any of the overall industrial averages. On top of that value added is growing still at a much higher speed than the industrial averages.

Table 3.34 Overview of the sugar manufacturing sector vs. the overall food and beverages sector

	Sugar sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	167	42	89	54
Growth (2010-2012)	68.9%	3.0%	n/a	2.3%
Value added (bn€)	5.2	206.7		1,620.0
Growth (2008-2012)	42.5%	5.8%		-3.0%
Value added / turnover (2012)	26%	19%		23%

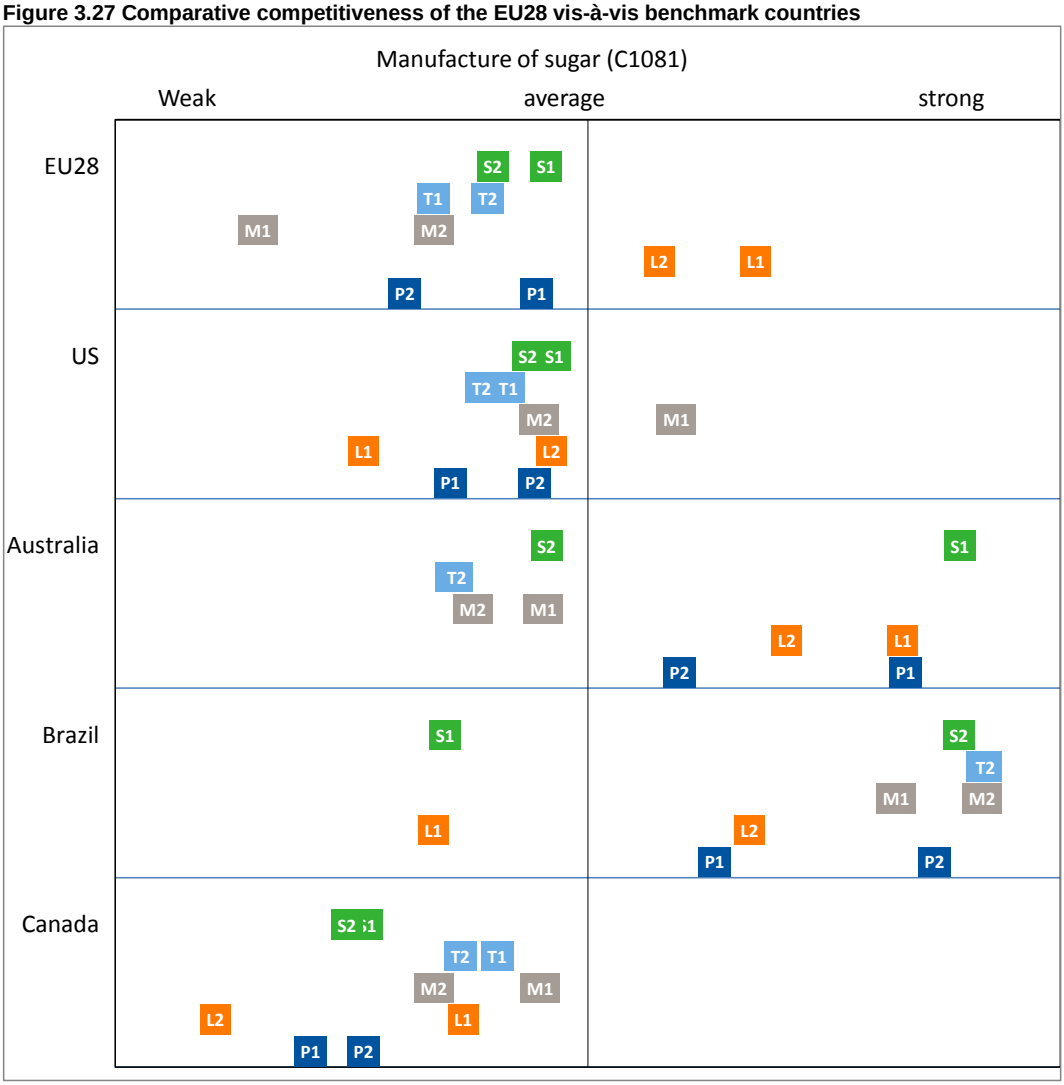
Source: Eurostat Structural Business Statistics.

The numbers therefore point towards a very viable EU sugar sector.

3.9.4 Competitiveness of the sugar manufacturing sector vis-à-vis benchmark countries

The competitiveness performance of the EU in 'other food' remained weak with almost all indicators being weak in the second period, except for Labour Productivity (L) which still scored slightly above average despite a weakening in period 2 compared to period 1. Brazil, having the largest turnover for this sector (€24 billion), scored strong on all indicators in period 2. USA (turnover of €8 billion) weakened on the trade indicators and showed improvement on the economic indicators. Australia (€2 billion in turnover) and Canada (€1 billion in turnover) are small players. Within the EU, the sugar industry in France (turnover of €4.5 billion) and Germany (€4.1 billion) are considerably larger than in these two benchmark countries.

Figure 3.27 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

The EU net trade balance was increasingly negative in the period from 2007 to 2012. Brazil has a positive trade balance which is strongly growing. Australia has a small positive trade balance. All other benchmark countries have a negative trade balance.

3.9.5 *Summary of key findings:*

- The profitability of the sugar manufacturing industry has been booming especially since 2010. Profit margins are the highest since 2003. Even though the input costs/turnover ratio has increased considerably since 2010, growth in value added and turnover has been substantial as well;
- The EU28 is a net importer of sugar and the trade balance further decreased. However, trade indicators improved compared to benchmark countries;
- The EU competitiveness was weak with most of the indicators scoring below average. Brazil is the largest player and in the most competitive position in this market;

- The performance of the sugar industry shows very positive signs, with growth in profit margins, value added and turnover. It has the highest labour productivity of all studied sectors of the food and drink industry. Yet, when compared to the benchmark countries, competitiveness remains weak which is most probably due to the strong performance of the largest player, Brazil.

3.10 "Other foods": Confectionery

3.10.1 Introduction to the confectionery products sector

The sub-industry cocoa, chocolate and sugar confectionery (C1082) includes manufacture of cocoa, cocoa butter, cocoa fat, cocoa oil, chocolate, chocolate confectionery, sugar confectionery, chewing gum, confectionery lozenges, pastilles and furthermore preserving in sugar of fruit, nuts, fruit peels and other parts of plants. Manufacture of sucrose sugar (C1081) is excluded[154].

The confectionery products sector accounts for 4.7% of the total turnover of the food and drink industry in 2012. The sector comprises 6,279 companies, representing only a small share of the total number of companies in the food and drink industry.

In the period of 2008-2012, the growth in total turnover has been just below the level of the food and drink industry. On the other hand, the number of enterprises has grown just above the level of the overall industry. The number of persons employed has slightly declined.

Table 3.35 Overview of the confectionery products sector vs. the overall food and drink industry

EU28	Confectionery sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	49.8	4.0%	1,062	6.9%
Number of enterprises	6,279	8.9%	288,655	7.4%
Number of employees (1,000)	190.3	-1.0%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

The confectionery products sector employs 190,300 persons representing 4% of the overall food and drink industry.

3.10.2 Overview of the market for confectionary products sector

The largest manufacturers of confectionary products within the EU28 are Germany (20%), France (15%), Italy (15%) & Belgium (10%). Worldwide the largest confectionery producing companies are based in the USA[155].

The EU28 is a net exporter of confectionary products[156]. The main export markets are the USA, Switzerland, Russia and Norway. EU imports confectionary goods mainly from Switzerland, Turkey, China and the USA.

154 European Communities (2008) – *op.cit.*

155 Source: Eurostat Structural Business Statistics 2012.

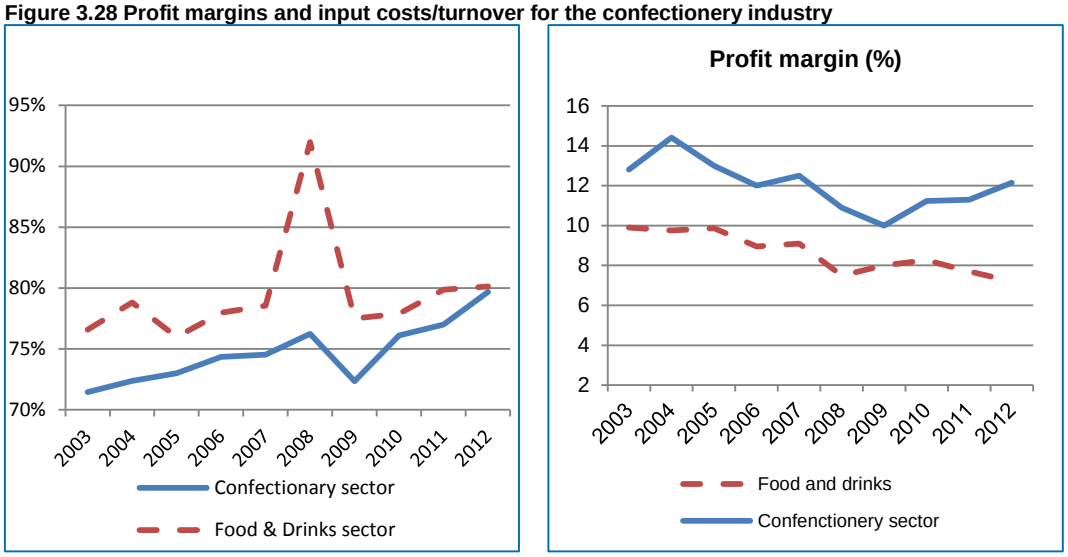
156 CAOBISCO (2013). *Annual Report 2013*. Accessed via http://caobisco.eu/public/images/page/caobisco-28052014144036-2013-Caobisco-Annual-Report-V6-WEB.pdf on 7 July 2015.

3.10.3 Market performance of the confectionery sector

The profitability of the confectionery sector has been consistently higher than that of the overall food and drink industry. However, it had the lowest point in 2009, after which, the profit margins began to recover.

This is despite a 9% increase and consistent (except for a brief drop in 2009) in the input cost/turnover ratio. Given that turnover has increase by 4% during this period, the increase is clearly been driven by the input costs. Nevertheless as is apparent the confectionary sector is still below the industry's average in terms of input costs/ turnover.

Figure 3.28 Profit margins and input costs/turnover for the confectionery industry



Source: Eurostat Structural Business Statistics.

Although the overall size of value added of the sector, compared to its turnover is on par with the manufacturing industry as a whole and higher than the food and drink industry. The nominal value added has been falling (unlike for the food and drink industry, which grew at 5.8%).

Such a decline is even more worrying, when combined with stagnation of the apparent labour productivity, when all other sectors (except cereals) have been growing steadily.

Table 3.36 Overview of the confectionery processing sector vs. the overall food and beverages sector

	Confectionery sector	Food industry	Beverages industry	Manufacturing industry
Apparent labour productivity	60	42	89	54
Growth (2010-2012)	0.0%	3.0%	n/a	2.3%
Value added (bn€)	11.4	206.7		1,620.0
Growth (2008-2012)	-0.7%	5.8%		-3.0%
Value added / turnover (2012)	23%	19%		23%

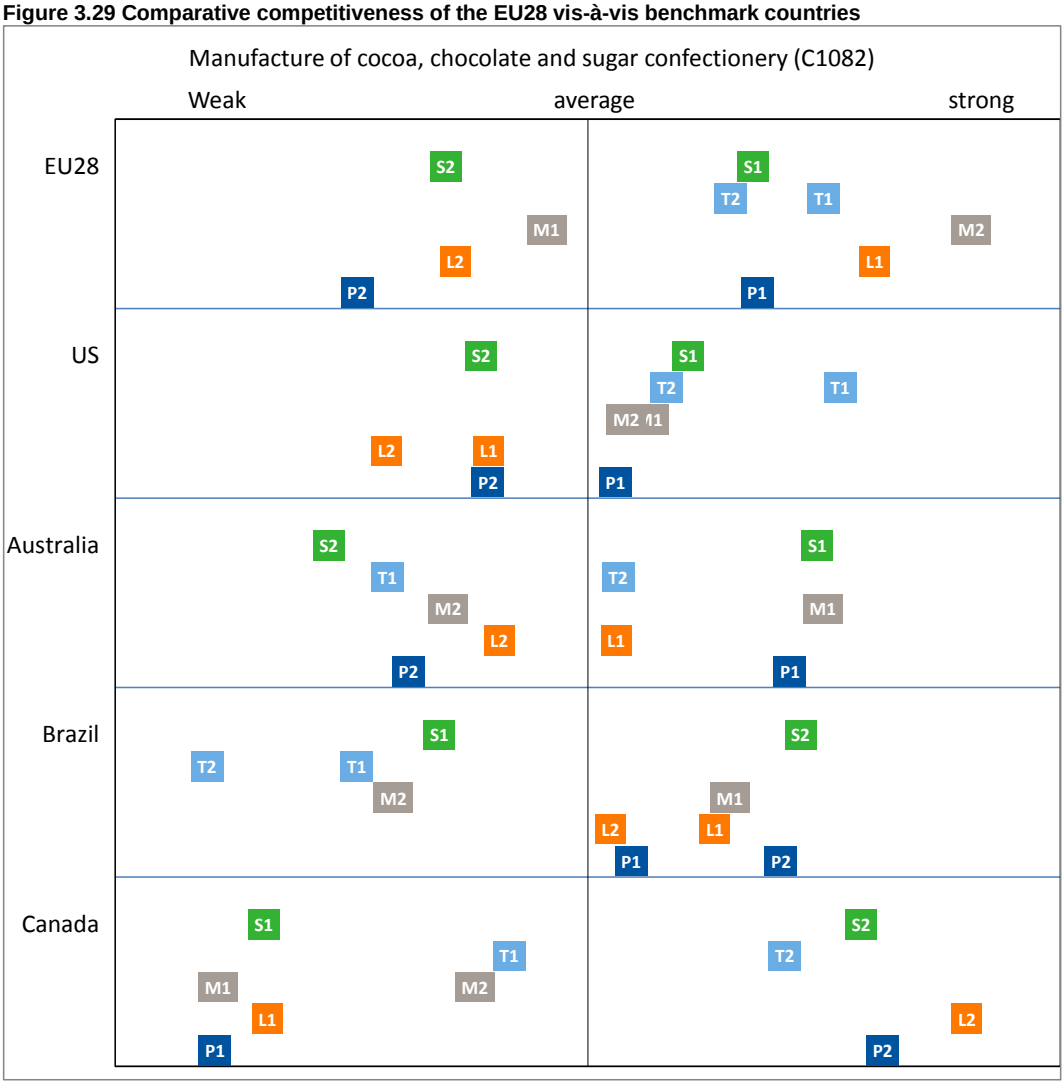
Source: Eurostat Structural Business Statistics.

This industry is average scaled: the average turnover per enterprise is above €7.9 million compared to €3.7 million for the food and drink industry as a whole. In addition, the turnover growth per enterprise is 7.9%, which is above the average of the food industry as well as of the other food sector. With a total turnover of €49 billion the sub-sector is in the same range as fruit& vegetable processing (C103), oil (C104) and cereals (C106). The confectionery sector accounts for 4.6% of total turnover in the overall food and drink industry.

3.10.4 Competitiveness of the confectionery products sector vis-à-vis benchmark countries

The competitiveness performance of the sub-sector in EU (turnover of €49 billion) shows almost all indicators weakening in the second period, except for the growth of market share. Canada, having the smallest turnover for this sector (€1 billion), improved his position on all indicators. USA (turnover €18 billion) and Australia (€4 billion) was a weakening of all or almost all indicators. For Brazil (turnover €10 billion), the picture is mixed. Within the EU, the confectionery industry in the three largest producing countries Germany (turnover €9.6 billion), France (€8 billion) and Italy (€6.7billion) is strong compared to other top-10 producing EU countries. These 3 countries account for around 50% of the total EU turnover.

Figure 3.29 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

The EU net trade balance became less negative in the period from 2007 to 2012. In contrast, the USA moved in the opposite direction.

3.10.5 Summary of key findings:

- The confectionery goods sector has high profit margins compared to the overall food and drink industry. Since 2009, the confectionary goods sector has been able to increase its profit margins again, while the share of input costs in turnover has been increasing. As value added has remained stable and the turnover growth is rather on the low side, an explaining factor can be internal efficiency gains as a decrease in the number of employees is recorded;
- The EU exports and world market share increased, yet the trade balance remained negative;
- The competitiveness performance of the EU weakened on all indicators except for the world market export share;
- Despite the decrease observed in many of the competitiveness indicators, the overall analysis points into a positive direction for the EU confectionary goods sector.

3.11 Beverages

3.11.1 Introduction to the beverages sector

Manufacture beverages includes production and processing of beverages, such as non-alcoholic beverages and mineral water, alcoholic beverages mainly through fermentation, beer and wine, and the manufacture of distilled alcoholic beverages. This division excludes production of fruit and vegetable juices (C103), of milk-based beverages (C105) and of coffee, tea and mate products (C108). This class is quite diverse and counts seven subclasses[157].

The beverages sector is the third largest sub-sector accounting for 14% of the total turnover of the food and drink industry in 2012. The sector comprises almost 24,000 companies, representing 8% of the total number of companies in the food and drink industry.

In the period 2008-2012, the growth in turnover was significantly smaller than the level of the food and drink industry. The number of enterprises on the other hand increased.

Table 3.37 Overview of the beverages sector vs. the overall food and drink industry

EU28	Beverages sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	148	1.2%	1,062	6.9%
Number of enterprises	23,956	7.9%	288,655	7.4%
Number of employees (1,000)	No data	No data	4,530	0.0%

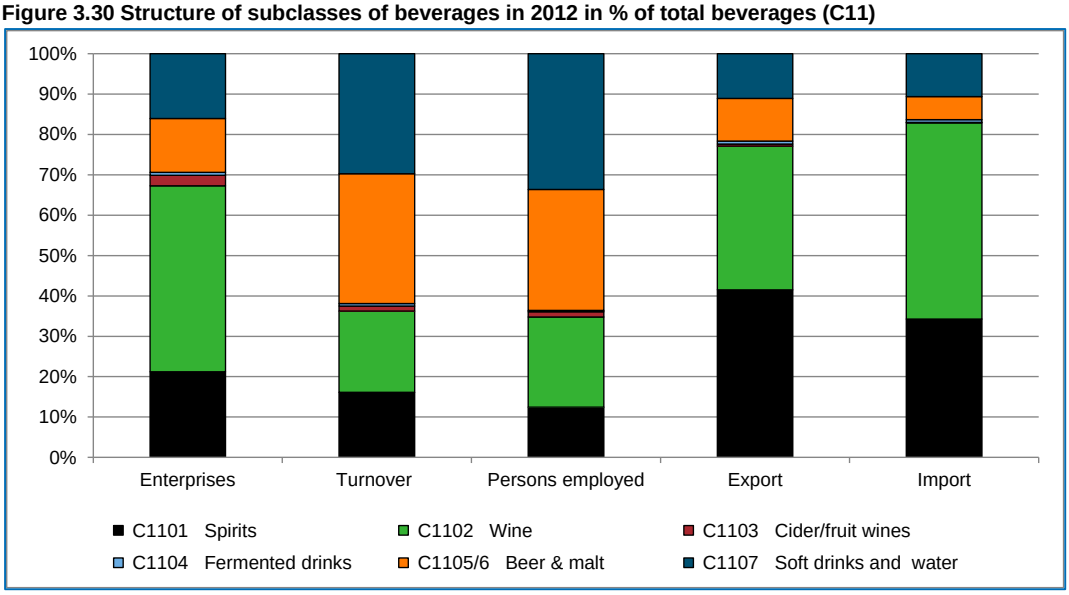
Source: Eurostat Structural Business Statistics.

More than 80% of the companies in the beverages sector employ less than 10 persons.

The beverages industry consists of several sub-sectors. Manufacturing of beer is the largest in turnover (47 bn€) followed by soft drinks (44 bn€) as is shown in the figure below. The spirits sub-sector is the largest exporter (42% of the total EU external export of beverages) directly followed by the wine sector (36%).

[157] European Communities (2008) – *op.cit.*

Figure 3.30 Structure of subclasses of beverages in 2012 in % of total beverages (C11)



Source: Calculations made by LEI Wageningen UR based on Eurostat Structural Business Statistics.

3.11.2 Overview of the market for beverages

The largest beverage manufacturers in the EU28 in terms of production value are France (17%), Germany (14%), Italy (12%) and Spain (11%).

The exports of the EU28 in beverages account for 30.7% of the world market share. The EU28 is a net exporter of beverages. The main export markets for beverages are the USA, Switzerland, Russia and Canada[158]. The EU28 mainly imports beverages from Switzerland, USA, Australia and South Africa.

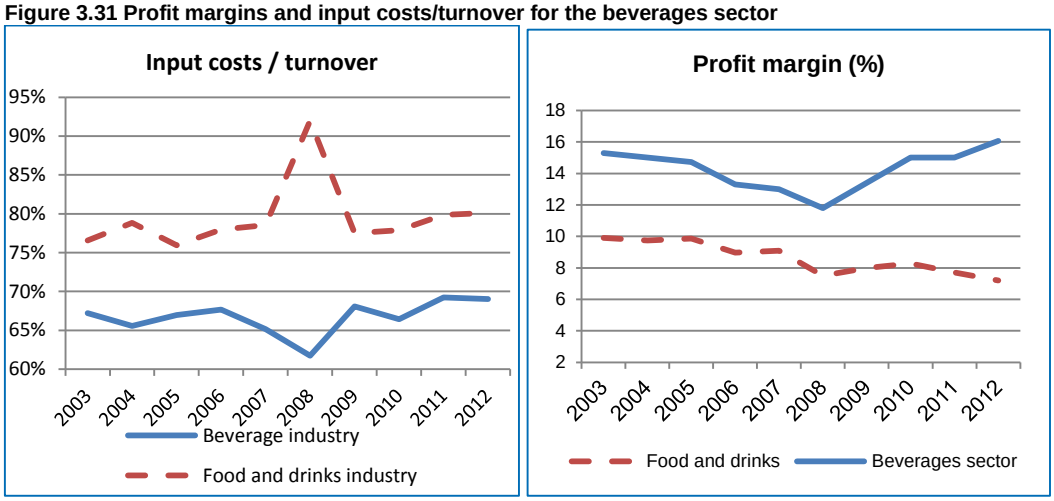
3.11.3 Market performance of the beverages sector

The beverages sector is one of the most profitable and best performing sectors in the food and drink industry. The profit margins of the beverages sector increased dramatically in the period after 2008, concurrent with an overall decline in profit margins in the food and drink industry overall.

This coincided with a dramatic fall in the input costs/turnover ratio of the industry in 2007 and 2008, compared to the overall industry that saw this ratio increase. The ratio has been volatile since then, reaching a new height in 2011. Nevertheless, the patterns of increasing input costs/turnover ratio has not had a visible impact on the profit margin, suggesting that other effects play a larger role.

[158] Source: Eurostat Comext 2012.

Figure 3.31 Profit margins and input costs/turnover for the beverages sector



Source: Eurostat Structural Business Statistics.

The beverage sector has a large share of value added compared to its turnover (25%) as well as one of the largest apparent labour productivity at 89 (far higher than the food industry at 42, or the overall manufacturing industry at 54). The labour productivity is growing at a high rate (12.6%) as is the overall nominal value added (8.3%).

Such positive signs, on top of the very strong financial performance of the sector, give great encouragement to the future competitive position of the beverage sector.

Table 3.38 Overview of the beverage sector vs. the food and manufacturing sectors

	Beverages sector	Food industry	Manufacturing industry
Apparent labour productivity	89	42	54
Growth (2010-2012)	12.6%	3.0%	2.3%
Value added (bn€)	36.7	206.7	1,620.0
Growth (2008-2012)	8.3%	5.8%	-3.0%
Value added / turnover (2012)	25%	19%	23%

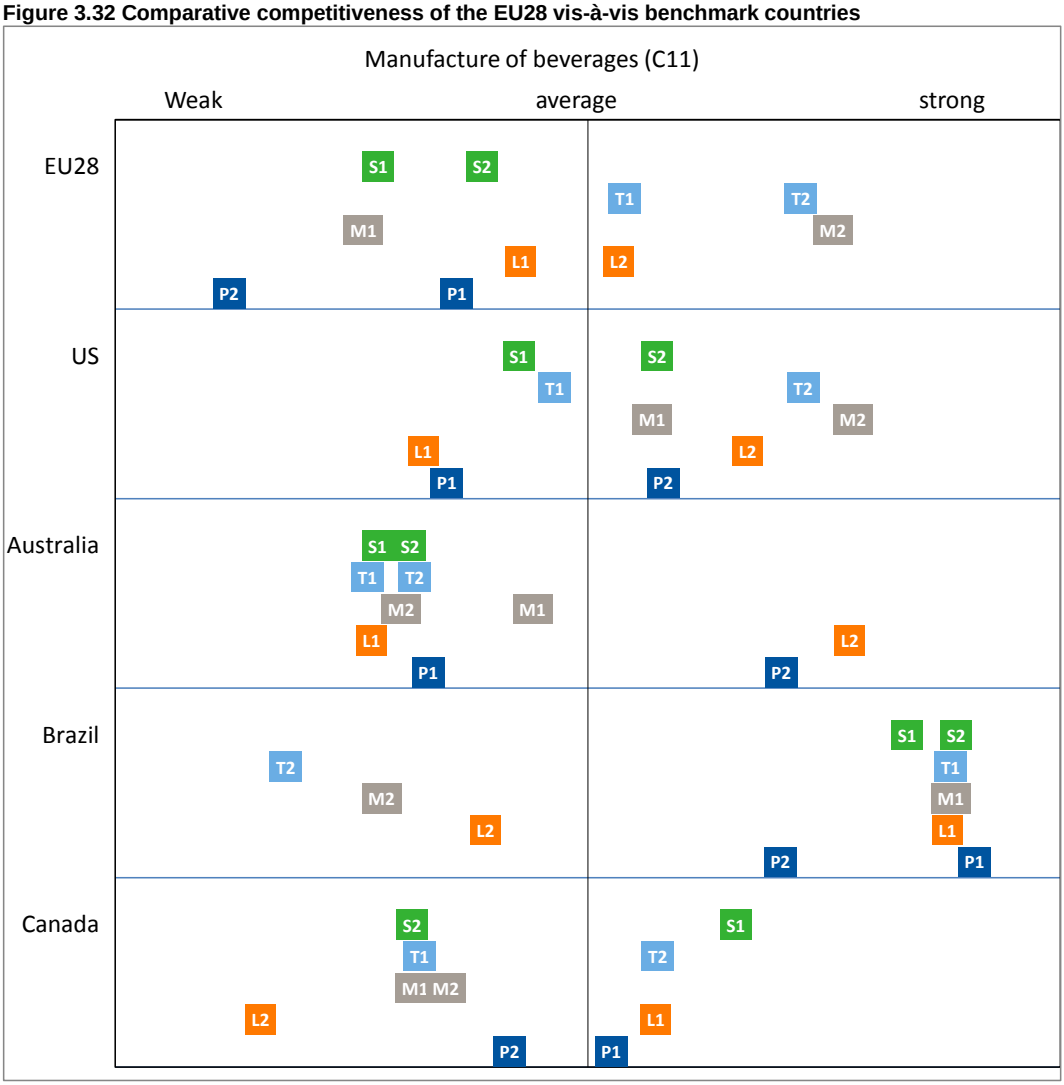
Source: Eurostat Structural Business Statistics.

3.11.4 Competitiveness of the beverages sector vis-à-vis benchmark countries

Overview

The competitiveness performance of the EU28 was below average for most of the indicators compared to the four benchmark countries in period 1. Both trade indicators (T, M) and Labour Productivity (L) strengthened in period 2 to an above-average score. USA is by far the most competitive of the benchmark countries, scoring above average on all indicators. All other countries are below average due to the strong indicators of the USA.

Figure 3.32 Comparative competitiveness of the EU28 vis-à-vis benchmark countries



Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

Structure of the industry

The EU beverages manufacturing is the third largest sector after meat and “other food” with a share of 14% in the total turnover of the food and drink industry. The negative growth of the turnover in EU (-0.3%) is quite different from the very high level of Brazil (15%). In addition, the turnover per enterprise is among the lowest: the average turnover in the USA is three times the level of the EU and in Brazil 8 times. The growth of the turnover per enterprises is negative in the EU and over 10% in Brazil.

Table 3.39 Structure of the beverages industry (C110) in 2012 and growth 2008-2012

	Turn-over (€ bn)	Growth turnover (%)	Number of enterprises	Growth enter-prises (%)	Turnover per enter-prise (€ mn)	Growth turnover per enter-prise (%)	Persons employed	Growth persons employed (%)
EU28	148	-0.3	23,956	0.5	6.2	-0.8	417,042	-3.2
USA	80	7.5	4,353	5.8	18.3	1.6	136,139	0.5
Australia	9	7.7	2,536	0.8	3.5	6.8	29,382	0.5
Brazil	24	14.9	459	3.8	53.3	10.6	146,177	5.9
Canada	9	6.3	1,056	1.8	8.2	4.4	31,004	6.5

Sources: Based on Eurostat (EU), AUSSTATS (Australia), CANSIM (Canada), CENSUS (USA) and IBGE (Brazil).

Trade

The EU market shares on the world market declined as the export and import growth where below the world market levels (3.6 viz. 3.0%). The imports by the EU declined: the positive trade balance increased. The EU is the largest exporter and the USA the largest importer. The latter has a negative trade balance. The strong growth of the Brazilian turnover is not reflected in the trade performance: the export declined whereas the imports grew in the period 2008-2012.

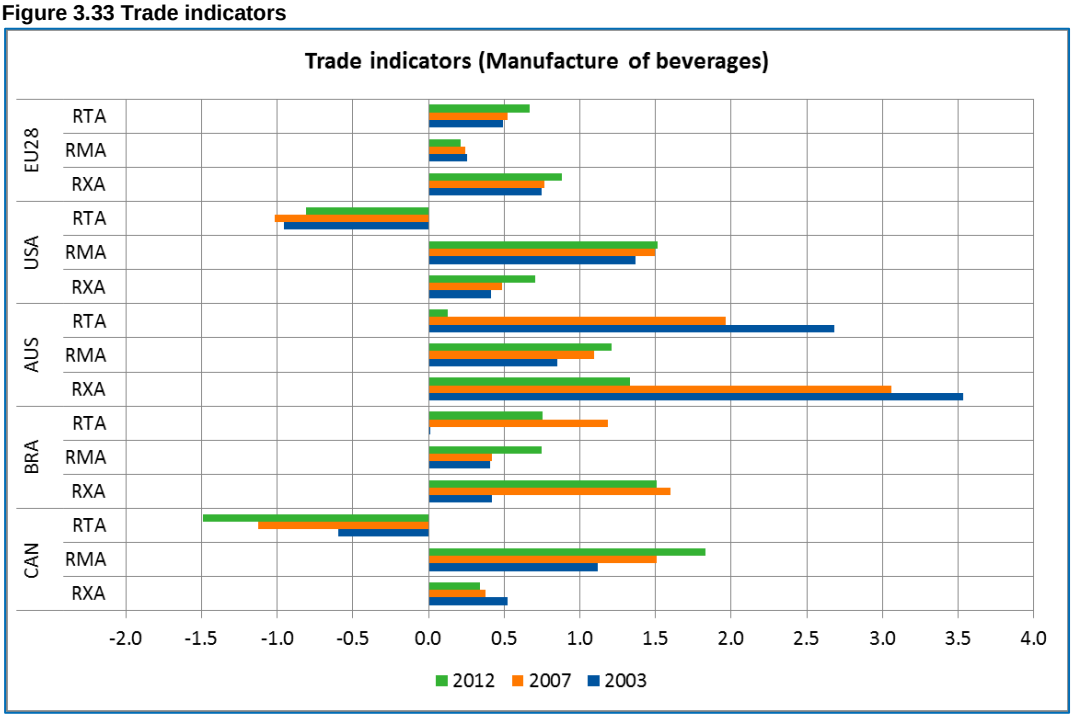
Table 3.40 Trade in beverages (C110) in 2012 and growth 2008-2012

	Export			Import			Trade balance
	Export (€ mn)	Growth (%)	Market share (%)	Import (€ mn)	Growth (%)	Market share (%)	(€ mn)
EU28	24,727	5.7	30.7	5,508	-3.9	7.1	19,219
USA	5,380	16.2	6.7	16,053	3.5	20.8	-10,672
Australia	1,687	-0.8	2.1	1,372	8.4	1.8	315
Brazil	1,803	-1.8	2.2	758	32.2	1.0	1,044
Canada	766	1.6	1.0	3,843	7.3	5.0	-3,077
China	1,070	12.7	1.3	2,411	28.6	3.1	-1,341
Russian Federation	414	3.7	0.5	2,401	4.3	3.1	-1,987

Source: Calculations by LEI-Wageningen UR based on UNComtrade.

EU's Relative Exports Advantage (RXA) indicator improved combined with lower Relative Import Advantage (RMA) indicators, the EU's Relative net Trade Advantage (RTA) indicators increased. The USA as a net importer has negative RTA indicators. Brazil had a strong export growth in the first period (2004-2007) resulting in a higher RTA in 2007, that declined slightly in 2012. The developments in Canada showed a negative development, with growing negative RTA indicators. Australia has a similar development but the RTA remained positive.

Figure 3.33 Trade indicators



Source: Calculations by LEI-Wageningen UR based on UNComtrade data.

3.11.5 Summary of key findings:

- The beverages sector has experienced an increase of profit margins after reaching the lowest point of the past 10 years in 2008. The input costs/turnover ratio has been increasing at the same time since it reached its lowest point since 2003 in 2008 as turnover growth has been low. Explanatory factors can be a strong growth in value added and a steady decline in the number of employees in the sector (internal efficiency gains);
- The EU is a net exporter of beverages and has improved its trade position in the period 2008-2012;
- The competitive position of the EU improved, with only the USA performing better in terms of the number of above-average indicators. However, the USA is a net importer;
- A strong growth in labour productivity combined with an increase of world market share has contributed to the improvement of the competitive position of the EU compared to the benchmark countries;
- The EU has seen a growth in value added higher than the food industry. This could probably be related to on the one hand the increasing share of niche products e.g. in specialty beers and the soft drinks and bottled water market segments which have strong growth potential.

3.12 Spirits

3.12.1 Introduction to the spirits sector

This sub-industry (C1101) “distilling, rectifying and blending of spirits” includes manufacture of distilled, potable, alcoholic beverages (whisky, brandy, gin, liqueurs etc.) and neutral spirits and furthermore mixing or blending these beverages[159].

[159] European Communities (2008) – *op.cit.*

The spirits sector accounts for 2.2% of the total turnover of the food and drink industry in 2012. The sector comprises just over 5,000 companies, representing less than 2% of the overall food and drink industry.

In the period 2008-2012 the growth of turnover was at the same level as the food and drink industry. The number of enterprises grew faster than the food and drink industry. During the same period, the number of persons employed in the spirits sector declined significantly.

Table 3.41 Overview of the spirits sector vs. the overall food and drink industry

EU28	Spirits sector		Food and Drink industry	
	2012	Growth 2008 – 2012 (%)	2012	Growth 2008 – 2012 (%)
Turnover (bn€)	23.8	6.0%	1,062	6.9%
Number of enterprises	5,077	9.1%	288,655	7.4%
Number of employees (1,000)	55.2	-9.2%	4,530	0.0%

Source: Eurostat Structural Business Statistics.

In total more than 55,000 persons are employed in the sector.

3.12.2 Overview of the market for spirits

The largest manufacturers of spirits in the EU28 in terms of production value are the United Kingdom (25%), France (20%), Germany (13%) and Italy (11%).

The EU28 is the largest exporter of spirits. The largest and still expanding export market is the USA, yet export to growth markets such as China, India and Russia is increasing[160].

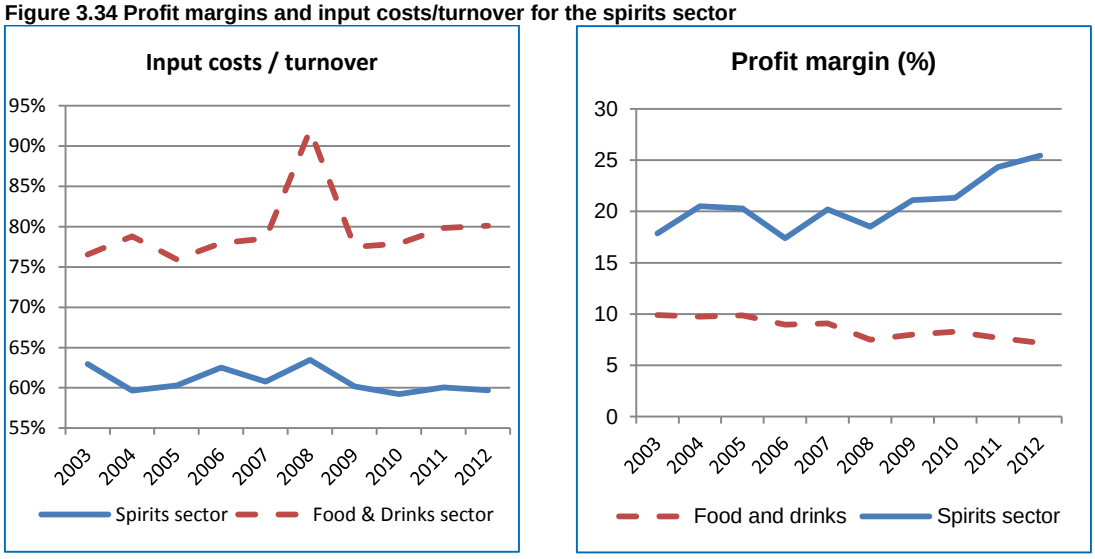
3.12.3 Market performance of the spirits sector

The spirits sector is one of the most profitable and best performing sectors in the food and drink industry. Profit margins show a significant upward trend especially since 2008 at a time where the overall industry and other sub-sectors of the food and drink industry have experienced a decline in profit margins.

This growth in profit margins goes hand in hand with a decrease in the input costs/turnover ratio (starting in 2009). Although turnover in the spirits sector grew, it did at the same pace as that of the overall industry. Given that at the same time the input costs / turnover ratio has remained relatively stable the growth of the profit margin must be attributed to other influences.

[160] Spirits Europe (2015). *Export markets*. Accessed via http://spirits.eu/page.php?id=30&parent_id=6 on 7 July 2015.

Figure 3.34 Profit margins and input costs/turnover for the spirits sector



Source: Eurostat Structural Business Statistics.

The spirits sector has a large share of value added compared to its turnover (30%) as well as on of the largest apparent labour productivity at 128 (far higher than both the entire beverage sector at 89, the food industry at 42, or the overall manufacturing industry at 54). The labour productivity is growing at a high rate (21.9% between 2008 and 2012) as is the value added (11.4% between 2008 and 2012). It can therefore be concluded that it is the productivity and value added that has mainly influenced the growth of the profit margin in the spirits sector.

Table 3.42 Overview of the spirits sector vs. the food and manufacturing sectors

	Spirits sector	Food industry	Manufacturing industry
Apparent labour productivity	128	42	54
Growth (2010-2012)	1.1%	3.0%	2.3%
Value added (bn€)	7.1	206.7	1,620.0
Growth (2008-2012)	11.4%	5.8%	-3.0%
Value added / turnover (2012)	30%	19%	23%

Source: Eurostat Structural Business Statistics.

3.12.4 Competitiveness of the spirits sector vis-à-vis benchmark countries

With a total turnover of €21 billion, the European spirits sector is rather small with a share of 2% in the turnover of the total European food and drink industry. The turnover of the EU is by far the largest of all selected countries: three times the level of the USA (€ 7 billion). Brazil and Canada are small manufacturers (both a turnover of €1 billion). Structural business data of Australia are lacking.

The competitiveness performance of the EU was below average compared to the benchmark countries due to weaker economic competitiveness indicators (S, L, P). However, the trade indicators (T, M) improved. The USA improved his position and became by far the strongest: a (strong) improvement on all indicators. The EU net trade balance became more positive in period 2 (2007 to 2012) and the USA less negative.

Figure 3.35 Comparative competitiveness of the EU28 vis-à-vis benchmark countries

Note: see sections 1.2 (page 27) and 1.3 (page 28) for guidance on how to read and interpret the figure.

3.12.5 Summary of key findings:

- The spirits sector has experienced an increase of profit margins since 2008 after being more or less stagnant. The input costs/turnover ratio shows the opposite as it significantly decreased between 2008 and 2010;
- The EU is a net exporter of spirits and has improved its trade position in the period 2008-2012;
- The EU, being the largest manufacturing region, performs well on the trade indicators, but scored poorly on the economic indicators 'annual growth rate of labour productivity', 'annual share of growth in added value of the manufacturing industry' and 'the annual growth rate of real added value';
- The apparent labour productivity for the EU spirits sector is amongst the highest of all studied sectors but its growth is low compared to benchmark countries.

4 Regulatory and other framework conditions

This chapter discusses the main developments in regulatory and other framework conditions relevant for the food and drink industry. The analysis is based on desk research and interviews with sector representatives. We conclude the chapter by summarising and drawing attention to the most important regulatory and other framework conditions.

4.1 Regulatory conditions

European regulations concerning for instance food safety, food innovation and trade are an important aspect of the development of the internal market for food and drink products as well as drivers of change in the food and drink industry. However, compliance with regulations may constitute a burden for companies, with particular concerns for burdens on SMEs. Thus, it is important to understand the recent regulatory developments impacting the food and drink industry and to identify both improvements that have decreased administrative burdens as well as potential areas for reform where regulations place undue costs on the industry.

4.1.1 Industry Specific Legislation

The General Food Law (GFL) was officially enacted in 2002[161] with the main objective of pursuing a high level of protection of human life and health while taking into account the animal health and welfare, plant health and the environment[162]. The GFL established the fundamental principles, requirements, objectives and definitions of food and feed policy. It also set up the European Food Safety Authority (EFSA), the independent agency responsible for scientific advice. It created the main tools for food safety and the management of food alerts (Rapid Alert System for Food and Feed 'RASFF'), emergencies and crises. The GFL underpins all food safety measures taken at EU and national level.

Since 2002, the principles, requirements and procedures of the GFL have been further detailed through several sector-specific "vertical" measures. These have strengthened the legislative clarity with respect to food safety and traceability measures, which have been tailor-made to the characteristics of specific products. Specific issues relating to the GFL are discussed in the subsequent paragraphs.

Food safety

Under the General Food Law, EU Food legislation has responded to consumers' concerns about food safety.

For example, the EU legislation regarding food ingredients (i.e. food additives, food enzymes and flavourings – also called "food improvement agents") has been consolidated into four simplified regulations[163]. Further EU legislation, adopted after the GFL, introduced rules on hygiene (HACCP) and set up pre-approval procedures to ensure that specific food ingredients or foodstuffs are subject to a safety evaluation by the European Food Safety Agency (EFSA) before being

[161] Regulation (EC) No 178/2002.

[162] Van der Meulen, B.M.J. (2013) The Structure of European Food Law. *Laws, 2*, pp 69-98. Retrieved from: http://edepot.wur.nl/291343.

[163] Regulations (EC) No 1331/2008 to 1334/2008. Retrieved from: http://ec.europa.eu/food/food/fAEF/index_en.htm.

authorised at EU level. This applies in particular to novel foods[164], food additives, flavourings, enzymes, certain food packaging and genetically modified organisms[165]. To legalise a food product or ingredient in the above-mentioned categories, a company must apply for an authorisation, which will only be granted authorization if the scientific risk assessment performed by EFSA confirms that the product or ingredient meets the relevant safety criteria. Nutrition and health claims are also regulated and subject to a scientific assessment by EFSA.

A number of food industry manufacturers consider food safety requirements and the high product quality as comparative advantages for EU manufacturers within the EU market. One industry association observed that for many countries, in particular in Asia, the European regulations and requirements related to food safety are being increasingly copied. Another industry association expressed the view that the labelling and traceability systems are improving food safety as well as consumer confidence in certain products, thus favouring the positive perception of EU products on the domestic market and abroad, and supporting competitiveness. In addition, this association expects legislation on the promotion and quality of agricultural products in the near future to favour EU exports. One food manufacturer viewed the EU as leading in food safety management systems and from the consumer perspective, a consumer association stated that the EU food sector generally has a good food safety and information image for the consumer compared to other continents. They remarked that in terms of safety and quality, the EU is at the forefront.

A retailers' association asserted that an increase in food safety regulation has increased responsibility for retailers as it is the retailer that is liable if the foodstuff that it sells does not comply with the regulation. They express the view that this has effectively made retailers the enforcer of the regulation, placing significant cost strains on the retailers, especially the small ones. As a direct consequence, vertical integration of the supply chain has increased.

Strict food safety legislation and requirements of course require more testing. Industry representatives highlight that in order to have efficient testing, rules need to be clear. A number of industry associations raised the challenging of EFSA's positions by Member States as a problem. They stated that even where EFSA has taken a clear position on food safety, Member States take the freedom to decide differently. This undermines the food safety legislation and the internal market. Aspartame was cited as a recent example. According to one industry association, the substance has been tested many times by EFSA and found safe for consumption but the French authorities continue to challenge the outcomes of this research.

Food nutrition and health

Combatting obesity and overweight has become increasingly important in the European policy agenda and focus on the food and drink industry through a health lens has heightened significantly in the last decade. In 2007 a white paper was published in which the European Commission formulated a strategy for Europe on nutrition, overweight and obesity related health issues.[166] Based on the approach to develop partnerships for action at European level and strengthening local networks for action, the strategy aims to stimulate better informed consumers, making the healthy option available, and encouraging physical activity. To optimise effectiveness, the strategy also includes actions to developing the evidence base to support policy making and developing monitoring systems.

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164 European Commission (2014). *Novel foods and novel food ingredients*. Retrieved on 17-03-2015, from http://ec.europa.eu/food/food/biotechnology/novelfood/index_en.htm.

165 Regulation (EC) 1829/2003 on GM food & feed.

166 Commission of the European Communities (2007) White Paper on A Strategy for Europe on Nutrition, Overweight and Obesity related health issues. Retrieved from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0279:FIN:EN:PDF.

World Health Organisation and Global Diet Priorities

The World Health Organisation (WHO) has been a key leader in policy development related to improving global diet patterns. Government attention and intervention in this area has risen in response to the increasing prevalence and growing burden of non-communicable diseases (NCDs), with diet being one of the main risk factors of NCDs.

The growing burden of NCDs in both developed and developing countries, and the unsustainability of the associated costs of healthcare needed to address them, has driven the WHO to move from a position of advocacy to a position of multi-sector action.[167] In 2012, the WHO released a report on the prevention of childhood obesity which provided a set of tools for member states to determine and identify priority areas for action.[168] In 2013, the WHO developed the *Global Action Plan for the Prevention and Control of NCDs 2013-2020* which aims to strengthen national efforts to address prevention and control and NCDs. To stress their importance even further, NCDs now feature as one of the six leadership priorities in the WHO's 2014-2019 General Program of Work.[169]

With unhealthy diet cited as one of the major risk factors for NCDs, the food environment and the food industry are a central part of the WHO's agenda. In their more recent wave of actions during the period 2012 – 2015, the WHO is strongly urging governments to ensure that food and nutrition policy is consistent with protecting and promoting public health. The WHO suggests a broad range of policy measures encompassing individuals, the community, the health and education systems, government and industry. Relevant for the food and drink industry are calls for stricter regulation around food marketing and food labelling as well as fiscal (e.g. taxes and subsidies) and agricultural policy measures. The WHO is also prescribing guidelines for, among other things, food labelling and reference values for nutrients. With such worldwide focus and national government commitment to tackling the issues of NCDs and the associated risk factors, the food industry can expect continued regulatory reform and scrutiny.

Taxes on food high in fat, sugar and salt

Taxes on high in fat, sugar or salt foods (including non-alcoholic beverages) received much interest in recent years, both within the EU and globally. The motivation for food taxes as advocated by the WHO is to reduce consumption of high in fat, sugar or salt foods in an effort to improve health against the backdrop of rising obesity prevalence. Several EU Member States (Denmark, Finland, France and Hungary) have introduced taxes on specific food categories and food ingredients such as confectionery, ice cream, soft drinks, sugar, fat, artificial sweeteners and salt. However, such taxes have not always been introduced with health related considerations as the primary rationale. The Ministry of Finance in France for example stated that the health rationale behind the soft drink tax was secondary to the need to raise income for the state.

Such taxes are generally passed through to consumers with the increase in price being associated with a decline in average consumption of the taxed product.[170] However, while consumption of the taxed product may have been affected, both product substitution (consumers move to less-taxed or non-taxed but similar products) and brand substitution (consumers move to cheaper versions of the taxed product) has been observed, leading to a smaller-than-anticipated decrease of intake of the targeted ingredient (fat, sugar or salt).[171]

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167 WHO (2014) Twelfth General Programme of Work: not merely the absence of disease.

168 WHO (2012) Prioritising areas for action in the field of population-based prevention of Childhood Obesity: A set of tools for member states to determine and identify priority areas for action. WHO, Switzerland.

169 WHO (2014) Twelfth General Programme of Work: not merely the absence of disease.

170 Ecorys (2014). Food taxes and their impact on competitiveness in the agri-food sector: Final report. European Commission.

171 Ecorys (2014). Food taxes and their impact on competitiveness in the agri-food sector: Final report. European Commission.

The impacts of food taxes on the food industry were found to relate mainly to increased production costs through administrative burden and product reformulation, with the impact for SMEs relatively larger, and to changing competitive positions of firms with the competitiveness of premium brand manufacturers reduced compared to the non-premium brand manufacturers.[172]

While the proposed food taxes in Ireland and Italy of a few years back did not gain traction and the Danish fat tax was abolished in 2012, it appears that food taxes may remain popular in some countries outside the EU. Mexico introduced a tax on junk food in 2013 and in the USA in early 2015, an advisory committee that was tasked with informing the US Federal Government on current scientific evidence on diet, nutrition and health to help inform the development of national nutrition policy, recommended to tax sugary foods, especially sugary beverages.

Food information to consumers

For the reporting period of this study, 2003-2012, the applicable European rules on food labelling applicable to all foods were laid down in Directive 2000/13/EC[173]. The requirements related to food labelling were based on the wish to allow the consumer to make a choice in full knowledge of the exact nature and characteristics of the product. To offer this opportunity of fully-informed choice, the Directive initiated the drawing of a list with all information that should in principle be included in the labelling of all foodstuffs.

However, the nature of the Directive required the rules to be implemented in the national legal legislation. In addition, the Directive did not offer a complete list of all the compulsory indications that had to be included. Combined, this left room for Member States to adopt additional labelling requirements which led to a certain fragmentation of the requirements across Europe. This lack of harmonisation in regulation across Member States, based on differences in interpretation, was flagged by industry stakeholders during interviews as leading to administrative burdens and, as a result, a negatively impact on industry competitiveness.

To address these issues, the European Parliament and Council adopted Regulation 1169/2011 on the Provision of Food Information to consumers. This regulation entered into force in 2011, and is effective since 13 December 2014, with the exception of the provisions concerning the nutrition declaration which shall apply from 13 December 2016[174].

The Regulation aims to simplify and modernise the rules to ensure, inter alia, easier compliance and greater clarity for stakeholders by ensuring legal certainty and reducing administrative burden. As the Regulation is directly applicable to all Member States without requiring further implementing measures and offer only limited room for Member States to adopt additional mandatory labelling requirements, disparities in national regulation with respect to the provision of food information to consumers should be significantly reduced soon.

Among other measures, the regulation introduced a minimum font size and rules on nutrition labelling. Whilst food information is not primarily related to safety, the new regulation does include mandatory labelling of the country of origin or place of provenance for certain pre-packed fresh meat.

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172 Ecorys (2014). Food taxes and their impact on competitiveness in the agri-food sector: Final report. European Commission.

173 Directive 2000/13/EC of the European Parliament and of the Council of 20 March 2000 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs.

174 Official Journal of the European Union (2011) Regulation (EU) No 1169/2011 of the European Parliament and the council of 25 October 2011 on the provision of food information on consumers. Retrieved from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:304:0018:0063:EN:PDF.

From a point of reduction of administrative burden, it's interesting to observe that the Regulation opens the possibility to use symbols to express mandatory food information[175]. The Regulation provides the Commission will the right to establish the criteria for the use of pictograms or symbols instead of words or numbers. Use of pictograms will allow manufacturers to potentially reduce cost of translation when serving multiple countries. Similarly, mandatory food information may be provided by means other than on the package or on the label, which could offer room for cost savings in the future.

To further reduce the administrative burdens and allow the sector time to adapt, the Regulation provides long transition periods for adaptation to the new rules: 3 years for the general requirements and 5 years for nutritional labelling. The long transition periods allow manufacturers to incorporate the labelling changes into the usual life-cycle of a label and therefore minimise their potential financial impact.

As the Regulation has just entered into application and is not yet fully applied, as there are still products on the market complying with the old requirements until exhaustion of stocks; and nutritional labelling will become mandatory only on 13 December 2016. As a result, its impact on the administrative burden cannot yet fully be assessed.

A consumers' association views the changes to the food information regulation as the most important event for consumers in recent years due to a main objective of the regulation being to enable consumers to make informed choices.

Regulations linked to food innovation

In relation to food innovation, a 2006 study found that in comparison with the markets of the United States and Japan in the area of functional foods, the European market could benefit from a less strict regulation stimulating more food innovation.[176] An update of the EU Novel Food Regulation is currently being discussed in the Council and the European Parliament. The main changes proposed include (i) the removal of the former novel food categories, (ii) a centralised authorisation process by EFSA, (iii) the introduction of generic authorisations and (iv) a simplified procedure for traditional foods imported from third countries[177].

The speed of the update of the legislation is of concern for the food and drink processing industry. Interviewees indicated that the adoption of the novel food regulation is taking a long time, during which innovation is stifled and uncertainty for the sector is high. Whilst the update to the Novel Food Regulation remains underway, other regulatory initiatives have been implemented in the meantime, which have simplified the regulatory environment of certain functional foods, such as the new legislation on food for specific groups. This new legislation abolishes the concept of dietetic food, repeals obsolete legislation in this area and replaces it with specific rules only for those food categories that need them.

The view of the food and drink processing industry expressed through the interviews is that the novel food legislation has the potential to be a real innovation driver, but that cumbersome approval procedures and uncertainty of return on investment are an impediment to investment in research and innovation, and thereby stifle competitiveness of the industry. Industry associations call for a

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175 Ibid., art. 9, section 3.

176 Bech-Larsen, T. & Scholderer, J. (2006).Functional Foods in Europe: consumer reach, market experiences and regulatory aspects. *Elsevier 18*(4), 231-234.

177 European Parliament (2015) Briefing "Updating rules on novel foods to keep up with scientific advances" http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/564383/EPRS_BRI(2015)564383_EN.pdf.

better dialogue between applicants for authorisation and EFSA and improvement of the EFSA guidance for applicants.[178] EFSA is currently proposing ways to address these issues.[179]

The issue of health claims related to food innovation is particularly important for the food and drink processing industry. Interviewees stated that food and drink companies developing new products with health attributes are often not launching these products in Europe because of regulatory constraints. Indeed, the EU legislation requires that health claims are authorised on the basis of their scientific substantiation and therefore it is more complicated to use a health claim in the EU compared to some other countries. However, this can also be considered a benefit in the sense that stricter requirements provide a higher marketing value when health claims are only approved on the basis of scientific grounds. The legislation thus may provide longer term consumer confidence, especially if false claims occur in other markets and undermine consumers' trust in the food and drink industry.

Organic Food

In 2014 the European Commission tabled a proposal for a new regulation on rules for the production and import of organic products[180]. The objective of this proposal is to reduce administrative burden that manufacturers of organic food face. In this way the proposal aims to support "sustainable sourcing" and local organic manufacturers, thus increasing organic production in the long term. Until now, shifting to organic production implied high costs for manufacturers, also the imports of organic products has not been straightforward. The proposal is currently being discussed by the Council and the European Parliament.

Industry self-and co-regulation

In addition to formal legislation, the food and drink industry also undertakes co- and self-regulation. Co- and self-regulation is seen by industry representatives as important for competitiveness as it provides the industry with flexibility and the opportunity to drive rapid innovation. One industry association highlights as examples the initiatives to develop and implement responsible advertising rules, especially advertisement directed towards children, and voluntary commitments in partnership with different groups of stakeholders with respect to nutrition and healthy diets.

A consumers' association points out that the retail sector has an important role to play in influencing consumers on the one side and, on the other side, influencing the entire food supply chain. With regard to consumers' associations, they see retailers as having the role of "choice architects" given that the choice architecture within the supermarket has an impact on consumers' choices. For example on the topic of food choices that support a healthy lifestyle, retailers can play an important role in supporting healthy diets by looking at possibilities related to the check-out counters displaying foods high in fat, sugar and salt, as well as opportunities for information provision via private labels. With regard to the supply chain, the consumers' association asserts that retailers can establish initiatives where legislation is falling short and by doing so give important signals to the entire supply chain. One example is the decision of United Kingdom retailers to put traffic light labelling schemes in place, which were adopted and supported by food and drink companies. Another is a German supermarket chain deciding to no longer sell products containing glycophosate, due to take effect later this year.

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178 http://www.efsa.europa.eu/en/141002/docs/141002-letter.pdf.

179 Open EFSA public consultation: http://www.efsa.europa.eu/en/consultationsclosed/call/140717.htm.

180 Proposal for a Regulation of the European Parliament and of the Council on organic production and labelling of organic products, amending Regulation (EU) No XXX/XXX of the European Parliament and of the Council [Official controls Regulation] and repealing Council Regulation (EC) No 834/2007. COM(2014)180.

The topic of unfair trading practices was not mentioned during the interviews conducted with industry stakeholders. According to a Commission Communication, stakeholders throughout the supply chain agree that unfair trading practices do exist, with especially SMEs indicating that they relatively frequently encounter these unfair trading practices[181]. To tackle these practices, the Communication identifies a 'mixed approach', consisting of voluntary schemes complemented with credible and effective enforcement, as the appropriate method to combat unfair trading practices. For the voluntary schemes, the Communication calls on the Supply Chain Initiative[182] and its national platforms to develop such schemes. For the enforcement, the primary role is allocated to national enforcement mechanisms. In January 2016, the Commission suggested possible ways to improve the effectiveness of the Supply Chain Initiative[183].

Administrative burdens for small and medium-sized enterprises

Given the importance of SMEs in the food and drink industry in term of employment, the industry-specific regulatory and administrative environment for small and medium-sized food and drink enterprises is very relevant. One of the key issues repeatedly raised by SMEs is the administrative burden and legislative demands.

Also in the interviews, a number of industry associations did raise concerns over the provision of information to SMEs, specifically a lack of information regarding which measures have been taken at EU level to support SMEs in the industry, difficulties for SMEs in finding the right information on the European Commission website and that guidance documents are often too complex, not adapted to the reality of the business owner and not in a language that can be easily understood. Thus, SMEs may not be utilising the possibilities available to them to their full extent, according to interviewed stakeholders. In order to address this issue, the industry seeks better dissemination of information on SME focused initiatives and regulatory changes.

EC initiatives

To reduce the administrative burden on SMEs, the European Union has introduced several programmes in recent years. For example the Small Business Act for Europe (SBA) was introduced in 2008 and puts a comprehensive SME policy framework into place.[184] Furthermore, the Regulatory Fitness and Performance Programme (REFIT) introduces stronger means to ensure the input of micro-enterprises and SMEs to the formulation of new EU initiatives.[185] Other more general measures include size-related exemptions, reduced and simplified obligations, privileged treatment, administrative coordination and more[186]. These programmes aim to enhance the competitiveness of SMEs within the food and drink industry by lowering regulatory and administrative burdens.

Administrative burdens for SMEs related to traceability

The basic traceability requirement is governed by Regulation (EC) No 178/2002. This Regulation requires food business operators to be able to identify from whom and to whom a product has been supplied. However, food/feed business operators do not have to identify the immediate customers

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181 European Commission (2014). Tackling unfair trading practices in the business-to-business food supply chain, COM/2014/0472.

182 The Supply Chain Initiative is a joint initiative launched by 7 EU level associations with the aim to increase fairness in commercial relations along the food supply chain. For more information, see: http://www.supplychaininitiative.eu/.

183 European Commission (2016). Report from the Commission to the European Parliament and the Council on unfair business-to-business trading practices in the food supply chain. COM(2016) 32 final.

184 European Commission (2008). "Think Small First". A "Small Business Act" for Europe. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0394:FIN:EN:PDF.

185 European Commission (2014) Regulatory Fitness and Performance Programme (REFIT): State of Play and Outlook. Retrieved from: http://ec.europa.eu/smart-regulation/docs/com2014_368_en.pdf.

186 European Commission, Enterprise and Industry (2007). Models to reduce the disproportionate regulatory burden on SMEs. Retrieved from: http://ec.europa.eu/DocsRoom/documents/10037/attachments/1/translations/en/renditions/native&usg=AFQjCNFe3Y8ZcvjNjyMBPXyx1FbP5-h6KA.

when they are final consumers. In addition, they are required to have systems and procedures in place that allow for this information to be made available to the competent authorities, upon request.

Regulation 178/2002 does not compel food/feed business operators to establish a link between incoming and outgoing products, the so-called internal traceability. Nor is there any requirement for records to be kept identifying how batches are split and combined within a business to create particular products or new batches.

An SME-focused survey conducted by DG SANTE in May-June 2015 was carried out in the context of the Fitness Check exercise of Regulation 178/2002 on general food law. In the main findings of the SME survey, food business operators have noted the following:

- Around 75% of the respondents have an "internal traceability system" within the organisation (i.e. a system establishing a link between incoming and outgoing products which may also include records identifying how batches are split and combined to create particular products or new batches);
- For nearly half of the respondents, the "one step back-one step forward traceability" requirement goes beyond a normal book-keeping exercise;
- A vast majority of the respondents indicate clear benefits of the traceability system:
  - it makes it easier to manage risk in food/feed safety incidents (85% of respondents);
  - helps identify which products need to be withdrawn from the market (83%); and
  - maintains consumer trust by providing accurate information on products affected by a food safety incident (75%).
- A smaller majority of respondents indicated that the system prevents unnecessary disruption to trade (54%) and improves business management (60%), although a relatively important share of respondents do not know whether the traceability system has these particular benefits (23% and 13% respectively).

It is interesting to observe that 75% of the respondents have opted for internal traceability system, thus accepting higher burdens that required by the legislation. Furthermore, more than two-thirds of those SMEs with traceability systems in place, did so as an own initiative.

The motivation to do so seems to be driven by the benefits of the traceability system outweighing the costs. As for the benefits, an industry association elaborated that the traceability legislation is a must for the food and drink industry because it provides a safeguard for EU food and drink companies and therefore is very much in the interests of competitiveness.

As for the costs, respondents ranked the costs of complying with traceability, labelling, authorisation, registration and certification as the most costly of all EU food/feed law requirements. For over a quarter of respondents, costs of EU food/feed law account for 0-5% of total administrative costs, for nearly one fifth around 5-10%, for one tenth between 10-15% and for another tenth for 20% or more, while nearly 30% of respondents indicated that they do not know.

4.1.2 Common Agricultural Policy (CAP)

Europe's Common Agricultural Policy (CAP) is one of the oldest policies of the European Union and has undergone numerous, significant waves of reform since its beginnings in 1962. The original goal of the CAP, to enable Europe to become self-sufficient in terms of food supply, saw the early

years of the policy feature price support, productivity improvement and market stabilisation[187]. During the crisis years of the 1970's and 1980's, the CAP led to massive over-production and exploding expenditure due to costs of both export subsidies and the purchase, storage and disposal of food surpluses[188]. From the early 1980's, supply controls began to be introduced and the 1992 reform formalised these measures with a focus on price cuts, surplus reduction and budget stabilisation. At this point in time the goal of the CAP was extended beyond food security with the addition of competitiveness as a key objective. The Agenda 2000 and the 2003 reform further expanded the focus to encompass sustainability and cohesion goals. These goals marked a reform period of rural development, cross compliance, market orientation and decoupling of direct payments from production, as well as consumer, environmental and EU enlargement considerations. Policy efficiency was a new target introduced as part of the 2008 Health Check that focused on reinforcing the 2003 reforms and agreed to an abolishing of milk quotas in 2015. Most recent is the CAP post-2013, entering into force on 1 January 2014.

The CAP post-2013 adopted significant reforms with the aim of preparing CAP for the 2014-2020 period. CAP post-2013 was preceded by an intensive review and debate process from 2010 where, for the first time, the entire policy was reviewed. The European Commission stated a desire to continue the review path of the 1992 reforms but to shift from a manufacturer support focus to an approach that addresses economic and environmental challenges facing the agriculture industry (e.g. Food security and globalisation, price volatility, market power in the food supply chain, soil and water quality and rising input prices).[189] Whilst previous CAP reforms have encouraged decreases in agricultural prices, this will not necessarily be the case with this new edition of the CAP. The budget of the CAP will be limited and remain at the 2013 level (nominal terms) for the full period with the result that spending will decrease overall, but greater flexibility for Member States in allocation between policy instruments is designed to stimulate more effective and targeted spending[190].

Through the objective of providing more targeted and efficient policy instruments, CAP post-2013 aims to improve the competitiveness and sustainability of the European agricultural sector. Changes to market mechanisms in the form of abolished production constraints (e.g. milk and sugar quotas), as well as abolishment of some commodity schemes and modernising of other schemes, directly address competitiveness. The removal of production constraints for milk and sugar are viewed positively by a number of interviewed food and drink manufacturers. The reforms are expected to bring more stable and secure supply in the dairy and sugar sectors. With respect to the dairy industry, one industry association confirmed that the end of the EU milk quotas has led to the milk prices now being set globally and an alignment of the industry irrespective of hemispheres has taken place. Together with consistent lowering of trade tariffs, they stated that this represents significant opportunities to be realised in export of dairy products given that the EU domestic market is quite saturated and highly stable. With respect to sugar, a number of manufacturers that source sugar as a key raw material for their production are positive about the removal of the sugar quotas and see this as a promising development. The lack of flexibility with regard to sourcing of sugar and the higher prices of imported sugar are seen as current barriers to profitability that the reform is expected to remove.

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187 European Commission. 2015. The History of the CAP. European Commission Agricultural and Rural Development. http://ec.europa.eu/agriculture/cap-history/index_en.htm.

188 Hockmann H., Levkovych I., Graua A.(2013) Review of recent developments in the agri-food sector. Compete project: International comparison of product supply chains in the agri-food sector: determinants of their competitiveness and performance on EU and international markets.

189 European Commission (2013). Overview of CAP Reforms 2014-2020. Agricultural Policy Perspectives Brief No.5. etrieved from: http://ec.europa.eu/agriculture/policy-perspectives/policy-briefs/05_en.pdf.

190 Hockmann, H., Levkovych, I., and Grau, A. (2013).

In addition, improvement in competitiveness is encouraged by CAP post-2013 through improved functioning and shortening of the supply chain with measures to facilitate manufacturer cooperation, reduce costs and improve access to credit for farmers. Measures designed to support sustainability include the new 'greening' instrument under pillar 1 which allows direct payments to farmers who provide environmental goods (farmland biodiversity, landscapes and climate stability), as well as under pillar 2 new budget rules for Rural Development programmes that include investment requirements to benefit the environment or climate change. A retailers' association expects that the new CAP will reinforce industry organisations and considered this a positive development where industry organisations are able to support their members with value added services.

4.1.3 International trade liberalisation and intra-EU trade

A long-term competitiveness issue concerns market access and fair competition in markets in and outside Europe, linked to the impact of both tariff and non-tariff measures. The food and drink industry is one of the most protected sectors in the EU and across the world, i.e. tariffs for basic and processed foods are the highest tariffs in place.

A significant recent event is the Russian embargo imposed on specific products of the EU agri-food sector. In August 2014, Russia, the EU's food and drink industries' second largest export market (after the USA), introduced a ban on agri-food products from the EU and a number of other countries. The ban which is still in place covers meat products, milk and dairy products, fruits and vegetables, fish and seafood products, and some processed agricultural products. An industry association advised that the ban came on top of many other sanitary and phytosanitary (SPS) measures and put additional pressure on exporters of EU agri-food products to find new market outlets. Above all, it hit those member states and sectors for which Russia is a key export market[191]. According to an industry association, this situation has given additional impetus to the EU and stakeholders to prioritise the opening of alternative markets and to increase efforts to reduce non-tariff barriers in third country markets.

Non-tariff barriers to market access remain an issue in many third countries. Regarding regulatory developments in third countries, one industry association sees the introduction of Differential Export Taxes (DET) as an important barrier in the oil sector. Such mechanisms have been introduced in the oil industry by many countries (like Ukraine, Argentina, Malaysia and Indonesia) to support the development of their local processing industry.

For the past two decades, multilateral trade liberalisation has been championed by the World Trade Organisation (WTO) which, since 1995, has pursued goals of decreasing trade discrimination and creating free access to markets[192]. In the Doha round of multi-lateral negotiations that started in 2001, further liberalisation of trade in still restricted economic sectors such as agriculture, fisheries and industry has been attempted. However, progress to date has been slow, including on the most significant issues, and disagreement persists on almost all aspects on the agenda[193].

[191] According to Eurostat, the top five European exporters to Russia before the embargo were Germany, the Netherlands, Lithuania, Poland and Spain.

[192] Understanding the WTO (2011) World Trade Organization. http://www.wto.org/english/thewto_e/whatis_e/tif_e/understanding_e.pdf.

[193] Fergusson, I. (2011): World Trade Organization Negotiations: The Doha Development Agenda, Congressional Research Service, Library of Congress (CRS report for Congress, RL32060), pp. 1-24.

Free Trade Agreements

The EU is very active in improving trade opportunities by negotiating free trade agreements with third countries. Free trade agreements can have positive and negative consequences for the competitiveness of the food and drink industry and may impact firms in various sub-sectors differently, depending on the level of complementarity and competition with the partner country and comparative advantages. Agreements have recently been concluded with Korea, Canada, Peru, Columbia, Ecuador, Central American countries, Singapore, Georgia, Moldova, Ukraine and most African countries. An Agreement 'in principle' has been concluded also with Vietnam in 2015. Negotiations are in progress with, inter alia, India, Japan, Mercosur, the USA, Malaysia and Thailand. These free trade agreements aim to stimulate economic growth and create more jobs.[194]

The entry into force of several FTAs has been positively welcomed by the food and drink industry stakeholders interviewed as part of this study. Stakeholders were generally of the view that the EU's trade policy, paired with its efforts through free trade agreements to tackle tariff and non-tariff trade barriers, has been a key to supporting the EU industry in an increasingly globalised marketplace. Further positive effects are expected for those FTAs still under negotiation. One industry association emphasised that EU legislative provisions governing FTAs allow also for competitive access to raw material and, despite the uncertainty which trade negotiations sometimes entail, have positive effects on competitiveness. Given growing interests in export markets across many sectors, solving hurdles to trade with third countries was particularly welcomed.

Non-tariff barriers (NTBs) were specifically mentioned by industry stakeholders as an important priority for trade policy in the future. One industry association raised the issue that European exports of agricultural products and foodstuffs remain restricted by NTBs in many cases (e.g. in Russia, Turkey, Ukraine, India, USA, China, Japan). This may include sanitary and phyto-sanitary (SPS) measures and other technical barriers to trade (TBT). A number of industry associations highlighted that specific programmes could contribute to enhancing competitiveness, such as the Promotion Policy for supporting the exports of agri-food product to third countries.

Transatlantic Trade and Investment Partnership (TTIP)

One of the most important free trade agreements currently under negotiation is the Transatlantic Trade and Investment Partnership (TTIP) with the USA. The aim of this agreement is to create growth and jobs for both parties by reducing trade barriers. The EU has a positive trade balance in bilateral trade with the USA. Given that alcoholic beverages, soft drinks, cheeses, confectionary and bakery products represents about 60% of EU agricultural exports to the USA, food is one of the topics being discussed with both non-tariff and tariff measures under negotiation. The main divergences in food related non-tariff measures (NTMs) between the EU and USA relate to protective legislation, food safety legislation and differences in intellectual rights including protected geographical indications. FoodDrinkEurope has openly expressed support for NTM negotiation and developed, in cooperation with Copa-Cogeca (European farmers' and agri-cooperatives' association), a list of non-tariff measures hampering EU exports of agri-food products to the USA.[195]

In addition to NTMs, the Directive for the negotiation on TTIP states that "the goal will be to eliminate all duties on bilateral trade with the shared objective to achieve substantial elimination on tariffs upon entry into force and a phasing out of all but the most sensitive tariffs in a short time frame". While on average agricultural tariffs are higher in the EU than in the USA, the USA applies

[194] European Commission (2015). Agreements. Retrieved from: http://ec.europa.eu/trade/policy/countries-and-regions/agreements/.

[195] http://www.fooddrinkeurope.eu/S=0/news/statement/agri-food-chain-reps-call-on-negotiators-to-resolve-non-tariff-measures-in/.

rather high tariffs on food products currently exported from the EU to the USA including for example high quality cheeses, chocolate and confectionery and other processed foodstuffs.

Intra-EU Trade

A recent development is a slowing down in the growth of intra-EU28 trade. Figures from our own analysis show that for EU food and drink companies, EU domestic demand accounts for around 92% of total demand with the remaining 8% of demand coming from outside the EU. Therefore the EU internal market is highly important for EU food and drink companies. One industry association pointed to differences in national legislation creating barriers to trade in the EU internal market and raised the concern that such national legislation could hamper the overall EU objectives of creating growth and jobs and competitiveness of the industry. The slow-down in growth of intra-EU trade is however likely to be primarily attributable to the impacts of the recession on GDP and incomes in Europe, which caused a fall in absolute levels of household expenditure on food and drink products, as discuss in section 2.2.1.

Excise duties

For the manufacturers of alcoholic beverages, excise duties are of importance, especially the inconsistencies across Member States. Industry associations provide as examples the United Kingdom, which is lowering excise tax for the second year in a row and Italy on the other hand which has increased taxes several times in one year. Another industry association highlights the level of taxation on spirits as a main concern after having observed continual increases in taxes.

4.1.4 Environmental regulations

In recent years, the European Union has adopted a range of environmental regulations affecting the food and drink industry. On the one hand, the need to comply with environmental regulation is a driver for improvements in energy efficiency, particularly with respect to process optimisation. On the other hand, more regulation can be associated with higher production costs due to more expensive procedures and materials. This section highlights some environmental regulations that are among those that have the biggest impact on the competitiveness of the European food and drink industry.

The revised Waste Framework Directive[196], adopted by the European Commission in 2008 and applied from 2010, aims to increase waste prevention and recycling and introduces a priority order of what constitutes the best overall approach in environmental waste legislation and policy. For example waste prevention ranks higher than recycling, which in turn ranks higher than other types of recovery (e.g. energy recovery) and least preferred is disposal. Industry representatives within the food and drink industry in both retail and manufacturing have observed that increasing attention is being paid to innovations in waste management to reduce costs and increase efficiency. For example, new technologies such as big data, smart stocking and other smart systems, are working to reduce waste in the retail sector, and closer links in the supply chain is bringing environmental benefits as well as commercial optimisations in such areas as logistics and waste management. Similarly, the growing attention to circular economy through the Waste Framework Directive is stimulating innovation whereby products that used to enter the waste stream are now transformed into high value food products. A number of the food and drink sub-sectors are already quite advanced in the valorisation of co-products, by-products or the reduction of waste whilst others are continually progressing.

[196] Directive 2008/98/EC on waste.

The Packaging and Packaging Waste Directive[197] was established in 1994 to harmonise the various member state packaging legislation and by doing so facilitate functioning of the internal market by reducing barriers to trade. Alongside this goal, the legislation has the objective of preventing and reducing the environmental impact caused by packaging and packaging waste[198]. Packaging is of course a critical element in the processed food and drink industry. Over the last decade innovations focused on packaging have become increasingly common representing 30% of innovations in 2012 compared to just 6% in 2004[199]. As discussed in Section 2.2.5 of this report, most packaging innovations are driven by consumer preferences, however environmental legislations also plays a role. Examples of packaging innovation that bring environmental benefits include innovations in terms of reducing the weight and increasing the recyclability of packaging. Additionally, recent packaging innovations of 'intelligent packaging', which allows monitoring the freshness of the food, and 'active packaging', which aims to extend the shelf-life of the food as well as to improve its quality, bring benefits in terms of reducing waste.

The Renewable Energy Directive[200] of April 2009 included an objective to reach 10% of biofuel in the consumption of energy in transport by 2020. This regulation affected the vegetable oils and fats industry due to the fact that biofuel represents over one third (35%) of the oil market (human consumption accounts for more than half (55%), animal feed and technical uses such as cosmetics, bio-plastics etc. account for 6% and the remainder is used for direct energy production)[201]. An industry association stated that driven by this EU target, vegetable oils and fats production steadily increased and forecasted increases in demand led to investments from the industry to develop the production capacity. The association conveyed the view that the setting up of a policy on biofuels had a positive effect on the industry as it provided a direction for the market. However, the investment and production growth trend stopped in 2011 when discussion started on the potential impact of the biofuel production on indirect land use change (ILUC). Three years after the setting of the biofuel target, in October 2012, the EC proposed to amend the Renewable Energy Directive by capping the food crop-based biofuels at 5%[202,203]. The proposal is currently under discussion in the Parliament and the Council. The industry association expects that the final target will be set at 7%. They highlighted that there are some concerns that the current production capacity already exceeds this production target.

The importance of environmental considerations such as energy efficiency, circular economy and zero waste will likely increase into the future given that resource depletion is worsening. This is expected to bring the various members of the supply chain even closer together, working towards process optimisation and efficiency. Additionally, cooperation between the food and drink industry and the research community is necessary for developing environmentally friendly solutions related to products and packaging.

197 Directive 94/62/EC on packaging and packaging waste.

198 Arcadis. (2009). A Survey on compliance with the Essential Requirements in the Member States. European Commission.

199 European Commission (2014) Study on the economic impact of modern retail on choice and innovation in the EU. Page 36. Retrieved from: http://ec.europa.eu/competition/publications/KD0214955ENN.pdf.

200 Directive 2009/28/EC on the promotion of the use of energy from renewable sources http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0028&from=en.

201 Figures provided by a manufacturers association during an interview conducted as part of this study.

202 Share of energy from biofuels produced from cereal and other starch rich crops, sugars and oil crops.

203 COM(2012) 595. Retrieved from: http://ec.europa.eu/clima/policies/transport/fuel/docs/com_2012_595_en.pdf.

4.2 Other framework conditions

This section analyses the impact of non-regulatory framework conditions on the competitiveness of the European food and drink industry. It specifically analyses the impact of the most significant conditions identified. These are: economic developments and the financial crisis; innovation, R&D and product development; levels of skills and access to labour; developments in world markets, access to third countries and access to the EU market; and finally, the cost of energy and raw materials.

4.2.1 Economic developments and the financial crisis

The economic and financial crisis and the subsequent slow recovery experienced in the European Union has been the most significant economic event in the recent period. More specifically, the banking crisis in the EU created a risk-averse investment climate impacting access to finance, especially for SMEs. One industry association remarked that difficulties in accessing credit have caused investments to decline or stagnate, while another industry association highlighted the lack of funding for investments as a key restriction for SMEs. Meanwhile one manufacturer noted that an effect of the Eurozone instability was very cheap finance for highly rated companies. Not only have economic developments affected investment by industry, it has also had an impact on public budgets for research, development and investment.

4.2.2 Innovation, R&D and Product Development

Innovation policy in the EU is coordinated through the Innovation Union, one of the seven flagship initiatives of Europe's 2020 strategy for smart, sustainable and inclusive growth. Established in 2010, the Innovation Union's three priorities are to make Europe a world-class science performer, remove barriers to innovation and stimulate innovation partnerships in order to close "Europe's gap in innovation"[204]. The Innovation Union commits the EU and Member States to put in place framework conditions to make the business environment more conducive to innovation. It also combines all EU research and innovation funding under a single strategic framework: Horizon 2020. While the identification of EU priorities for innovation and Horizon 2020 are viewed positively by food and drink industry stakeholders interviewed as part of this study, these stakeholders expressed concerns that at the EU level, a real innovation culture is lacking and that the EU is lagging behind international peers in innovation implementation.

As discussed in section 2.2.5 of this report, research and innovation has made positive progress but is lagging behind international peers, particularly Japan but also USA and China. According to the latest Innovation Union Competitiveness Report (2013), the EU innovation efforts are scattered and the EU thus risks not being able to dominate in any one particular field[205]. According to the latest Innovation Union Competitiveness Report (2013), the EU innovation efforts are scattered and the EU thus risks not being able to dominate in any one particular field[206]. A number of possible explanations for the low investment levels were given by food and drink industry stakeholders.

One problem identified by industry stakeholders is that research in Europe is dispersed compared to that of global competitors. One manufacturer suggests that a potential solution is the creation of a large-scale innovation hub and development of a well-functioning regulatory framework. Furthermore, this manufacturer holds the view that innovation, in order to be effective, has to

[204] European Commission (2011). Innovation Union Competitiveness Report 2011.
[205] European Commission (2013). Innovation Union Competitiveness Report 2013.
[206] European Commission (2013). Innovation Union Competitiveness Report 2013.

involve the entire value-chain, embedding streams to other sectors within the food industry. They reported that integration along the food chain is at an early stage, and research priorities should be better aligned across the food supply chain. They feel that there is now in the EU a critical mass that allows companies to innovate because there are good universities and good networks between the industry and universities.

Another barrier to innovation mentioned by one industry association, specifically with respect to innovation pertaining to food ingredients, is that EU consumers appear not to trust the use of new technologies (for example, GMO, flavourings and nanomaterials). In this sense, this industry association sees consumer behaviour research as key to the industry, noting also that innovation in ingredients typically comes from multinational companies. That said, innovation in the food and drink industry is already mainly consumer focused, but with recent innovations focused on packaging and product conservation. As discussed above in relation to the influence of environmental regulation on packaging innovation, innovations focused on packaging have become increasingly common representing 30% of innovations in 2012 (compared to 6% in 2004), whereas innovation in the shares of new varieties and range extensions decreased from 40% in 2004 to 30% in 2012[207].

A further possible explanation for why innovation in the food and drink industry is lacking is the combination of difficulties experienced in attracting high-skilled labour and low R&D investment. The Innovation Union Competitiveness Report (2013) notes that *"Knowledge-intensive activities rely on the performance of scientific and technological R&D and the exploitation of its outcomes, which requires a highly skilled labour force and capital investments"*[208]. As the subsequent section of this report discusses in detail the problem of attracting high-skilled labour to the food and drink industry, only the point regarding R&D investment will be addressed in this section.

4.2.3 Level of skills and access to labour

A report by the Innovation Union remarks that employment in services is growing and decreasing in manufacturing. This can be seen by comparing the shares of the EU's employment in manufacturing (20.1%) and services (62.9%) in 1995 to those in 2011 (14.4% and 71.5%, respectively)[209]. A similar trend is seen in Japan and the USA. However, the EU has been able to maintain a larger share of manufacturing employment than the USA. Furthermore, the 2014 EU R&D Scoreboard reports that employment in high R&D-intensive sectors rose more than in medium- or low-R&D intensive sectors. Thus, employment appears to be growing in the service sector and high R&D-intensive sectors.

The access to labour situation within the food manufacturing industry has not changed dramatically over recent years with the key difficulties continuing to be that of attracting highly skilled labour and maintaining and transferring the skills of an ageing workforce. With respect to the former issue, especially problematic is attracting those high-level skills that are not typical of the food sector, such as digital skills, behavioural science and genetics. The latter, the need to maintain skills, is a key issue for maintaining the competitiveness of the industry. The work force is ageing and there is a great need not only to attract new talent, but also to keep and transfer vital skills.

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207 European Commission (2014). Study on the economic impact of modern retail on choice and innovation in the EU. Page 36. Retrieved from: http://ec.europa.eu/competition/publications/KD0214955ENN.pdf.

208 European Commission (2013). Innovation Union Competitiveness Report 2013.

209 European Commission (2013). Innovation Union Competitiveness Report 2013.

It is unknown to what extend other regions than the EU, in particular the benchmark countries used in this study, suffer from similar difficulties. Most likely, the difficulties observed in the EU are similar in Australia, Canada and the USA, countries where a similar movement towards services and R&D-intensive sectors is expected. For Brazil and other non-Western countries, it is considered likely that the difficulties experienced in the EU are less strong.

According to industry representatives, one important barrier to attracting labour staff with high-level skills that are not typical of the food sector (e.g. digital skills, behavioural science, genetics, etc.) is the negative perception of the food and drink industry, with people opting to work in better-perceived industries. Similarly, the food and drink industry is not considered attractive by younger generations. An industry association adds that some food processing sectors are very traditional sectors linked to the local and regional environments where companies are based and this contributes to the lower attractiveness of these industries for workers of all ages. Companies are therefore facing a problem of accessing the right skills, especially at medium-high job levels.

Industry stakeholders add that whilst employers are currently less likely to employ new, inexperienced staff, public resources are also constrained across Europe meaning that there are fewer resources available for youth employment and employability measures. Food manufacturers highlight the need for governments to play the main role by introducing curriculum-based solutions in early education that support employment in food and drink industries. They propose a well-implemented scheme of apprenticeship and vocational education and training, as well as greater labour mobility, as possible solution to the skills mismatch and in reverting the perceptions of the food industry. This, as they point out, has the additional potential benefits of fighting youth unemployment, a particular problem currently in the EU. One industry association remarks that promising examples come from the United Kingdom, France, Italy and Germany where dairy schools have been set up. Students in these schools not only acquire technical knowledge about machinery, theoretical knowledge about the animals, processes and finances, but also practical knowledge of making the products and dealing with the animals.

One industry association in the beer industry shared that its members have enjoyed positive changes in labour skills mainly driven by the necessity to develop competencies to comply with the sustainability of sourcing. Also, the beer industry has experienced positive changes in labour force and skills as a result of EU policy initiatives. An industry association gives the European Skills Competencies and Occupations taxonomy, designed to help people applying for a job, as an example of a very useful process helping people to be equipped with the appropriate vocabulary for their interview. They feel this success is closely linked to the process of recognising certain diplomas across the EU. They find that the taxonomy helps other people understand what is necessary to become a qualified employee in Europe and supports the working of the internal market.

4.2.4 Developments in food and drink world markets

As the European market is relatively saturated, the European food and drink industry considers trade with both traditional and emerging non-EU countries as playing a growing role. While the USA and Russia[210] remained the top recipients of EU food and drink exports in 2013 in value terms, export destinations such as China, Hong Kong, Singapore, the United Arab Emirates, and emerging markets in Asia and South America are of growing importance. Regarding specific regions, NAFTA has continued to be the most prominent region[211].

[210] Although this is no longer the case since the Russian embargo on EU agri-food products from 2014.

[211] FoodDrinkEurope, *op.cit.*

In developing countries, the growing number of consumers with middle and higher incomes is increasing the demand for meat and dairy products, fruits, vegetables, as well as processed and fast foods.[212] The emergence of middle classes with increased purchasing powers is changing consumption patterns worldwide and increasing global demand for European food and drink products given their reputation for high quality. One industry association gives the meat processing industry as an example whereby they expect global demand of processed meat to increase in the next 4 years mainly due to the emergence of middle classes in some developing countries, particularly in the Asia Pacific such as India, Indonesia, Vietnam and China.

Despite our analysis showing that the European food and drink industry is managing to maintain an as good as stable market share on the world market (see section 2.4.3.), interviewed industry representatives indicate the European food and drink industry is facing growing competition from third country markets, with China and other Asian countries cited by as key competitors for processed food.

Additionally, a number of industry associations referred to changes in investment patterns towards Eastern Europe. For example, in the brewery sector, quite a number of large breweries decided to further invest instead of disinvesting after the economic downturn. Bearing in mind the EU enlargement in 2007, a lot of this investment was located in Central and Eastern Europe.

Also delocalisation outside Europe was observed. Another association witnessed a change in investment patterns in the vegetable oils and fats production industry in the Ukraine and Russia. They explained that up until 2004, the EU used to import oilseeds (mostly sunflower seeds) from Russia and Ukraine. Following investments in production facilities, oilseeds are now processed locally, eliminating a source of import for EU processors, in particular for sunflowers, now being replaced by the import of sunflower oil.

The role of China

Many industry representatives interviewed as part of this study identified the growth of demand in China as a key recent trend. One industry association cited the vegetable oils and fats industry, where a substantial increase in Chinese processing capacity has been witnessed. While Europe used to be the most important outlet for the American exports of oilseeds, Europe is now surpassed by China. Similarly in the beer sector, China has been the largest beer producing region since 2012 in terms of volume. One industry association explained that this is related to the ongoing consolidation in the European market and market entry of new players. They expect global companies to continue investing in China as well as other emerging markets such as India. A recent development in the last two years is food companies starting to enter the EU market by buying food processing companies. For example, international businesses, mainly Argentinian and Chinese, have been buying European dairy companies and facilities.

Another industry association pointed out that the increased growth in China is both an opportunity and a threat. The increasing demand creates market opportunities for food processors, and at the same time it leads to an increased competition for access to raw materials. In the fish processing industries for example, a key challenge is whether the EU remains a competitive and attractive market in which global suppliers want to trade their fish when alternative markets such as China offer consistently high prices in high end products such as lobster and shrimp.

[212] Ibid.

It was highlighted by an industry association that increasing demand in China resulted in a weakening of the EU position, not only resulting in economic impacts but also regulatory implications. The major implication is a decrease of the EU position in driving regulatory changes on world markets. Major manufacturers used to follow EU requirement regarding for example the use of GMO, but that this is no longer the case. In their view, the regulatory environment is very difficult to cope with and slows down the expansion of economic activities (in terms of both exports and investments).

4.2.5 Access to energy and raw materials

An important EU trend observed by food and drink industry associations is the development of sustainable sourcing of raw materials. This trend is driven by the EU legislation and by market demand.

One industry association viewed this trend as having a positive impact as it stimulates the industry to develop sustainable sourcing. It is considered a competitive advantage although it may also lead to additional costs as the necessity to differentiate between the different streams increases the logistics costs. In the beer industry, for example, sustainable production and sourcing of inputs is of high importance. Brewers are stimulating R&D into new barley varieties that, for example, need less water or have thinner haulms.

Access to raw materials is a particular concern for the industries where a high percentage of the costs of raw material compared to the overall costs in this sector. One industry association expects prices of raw materials to only increase in the future. The strong price increases observed during the 2007-2008 food crisis may be considered as an example what may (more often) recur in the future. The increased costs of raw materials are not expected to be offset by the improvements in efficiency (e.g. via innovations).

One industry association points out that the low availability of raw materials can lead to higher volatility in input prices. The supply of raw materials is, according to the interviewed association, an illustration on how climate change, and the increasing occurrence of droughts it brings, may impact the competitiveness of the food industry.

Validation of the impact of climate change on the food and drink industry is far from clear-cut. Studies on the relation between climate change and the agricultural sector have been conducted[213]. From these studies, the relation between climate change and food prices also seems clear-cut. The more challenging step is the identification of volatility of food prices on competitiveness. On this point, no hard evidence is available. However, hypothesis on the potential impact may be developed.

Most importantly, in the competition between regions that both rely on the world market for the sourcing of their raw materials, both face equal prices for input. With input prices being equal, the relative advantage will likely rest with the party that offers the highest value added to the raw materials and may potentially have a higher willingness to pay.

[213] See, for example: Climate Council of Australia (2015), Feeding a Hungry Nation: Climate change, Food and Farming in Australia.

For competition between regions where one does have local sourcing and another doesn't, the main question will be if the local sourcing can be protected, either by means of national regulation of by means of vertical cooperation or integration, against the access of 'foreigners'. If such a protection is possible, the competitive advantage may shift to the region with the local sourcing.

4.3 Conclusions

From the above analysis of the regulatory and other framework conditions, we present the following conclusions as the most important in relation to the competitiveness of the food and drink industry.

4.3.1 Regulatory conditions

The European food and drink industry is subject to various national and European regulatory requirements concerning food safety, food nutrition and health, food information, food innovation, export and import and environmental sustainability. These requirements and can be costly for companies in the industry, particularly in terms of administration.

Representatives of the sector identify the **inconsistent implementation of European regulations** among EU Member States as key major challenges with regard to the impact of the regulatory conditions on the competitiveness of European food and drink companies and the future development of the industry. Different interpretation of EU legislation resulting in different enforcement conditions among Member States and the tendency of Member States to implement national legislations are particular problems negatively impacting on competitiveness by creating additional costs and barriers rather than removing them. In addition, the risk of inconsistent application creates uncertainty, adding to the uncertainty problem raised above related to regulatory change, further negatively impacting investment;

Issues mentioned in relation to the **regulation on food information** seems already addressed to a large extent. There was concern over the impact of previous food information regulation with respect to labelling requirements and its implementation resulted in unnecessary administrative burden on the industry. With the introduction of new regulation (Regulation 1169/2011), these issues are most likely now addressed to a large extent.

There is also concern of stakeholder over the lengthy **authorisation procedures** and strict approval requirements relating to food innovation, with the result that the industry feels innovation is being stifled. These concerns seem to be mainly related to new food products with health attributes. In these specific cases, it is, according to industry claims, very often not sufficiently attractive to launch the commercialisation in Europe because of the regulatory constraints.

At the same time, the EU regulatory environment has many aspects that provide a comparative advantage for the food and drink industry and support competitiveness. These include:

- Establishing and harmonising of key legislation under the General Food Law and adopting coherent horizontal approaches at EU level (for example "From Farm to Fork" on food safety);
- In particular, regulation concerning voluntary geographic indications and traceability are important positive developments supporting industry competitiveness;
- Food safety regulation supporting the high quality levels of the food and drink produced in Europe offer a strong international competitive position. Especially with a growing middle class in emerging markets, the reputation of EU food and drink products as being high quality will become increasingly important in taking advantage of export opportunities in new markets.

Finally, regulatory developments in trade and CAP have been beneficial for the competitiveness of the food and drink industry in the recent period. With respect to trade, food and drink industry stakeholders emphasise that future priorities should focus on removing non-tariff trade barriers. With regard to CAP, more involvement of the food sector in future agricultural policy debates is welcomed to prevent a too agriculture-focused CAP leading to a disconnect between supply and demand needs on research priorities, sustainability and quality.

4.3.2 Other framework conditions

Increasing innovation is a priority for the food and drink industry in realising growth and remaining internationally competitive. Access to skills, technology and raw materials are also expected to have a significant impact on the future development and competitiveness of the sector. The following are considered to be the key challenges for the sector:

- **Innovation and R&D investment**: Most importantly, innovation research is dispersed, R&D investment is comparatively low and industry stakeholders report a general lack of innovation culture. A combination of factors including the framework conditions, industry dynamics and access to high-skilled labour need to be examined in order to provide a boost to innovation and act as a lever for increased competitiveness of the industry in the future;
- **Labour force and skills**: The industry faces a significant challenge in attracting high-skilled staff and transferring skills as existing workers age and move to retirement. A number of successful initiatives, for example classification of labour force skills to the European Skills Competencies and Occupations taxonomy, have helped address access to labour issues in some sectors. However, an ageing workforce and a less favourable industry reputation remain as barriers to overcome. Furthermore, access to high-skilled staff is critical for the industry to be able to increase innovation. Therefore, solutions to address both access to high-skilled labour and raising levels of innovation may prove to be self-reinforcing;
- **Access to raw materials**: Access to raw materials has been identified by various stakeholders as an important factor influencing competitiveness of the industry. The analysis in Chapter 3 shows that in those sectors for which the processing industry enjoys a particularly good access to local high quality raw materials, for example the dairy sector where access to milk is very good, competitiveness has improved in the period reviewed in this study. In contrast, food sectors that rely largely on import of raw materials, for example in the fish and oils sector where access to raw materials seems to have become more difficult, strongly deteriorating competitiveness is observed in the period reviewed in this study. Attention on improving access to raw materials, for example by reducing trade barriers and considering the impact of sustainability policies on raw material supply, is needed.

5 Scenario analysis, conclusions and recommendations

This chapter assesses the impacts that the foreseeable trends may have on the food and drink industry and considers the potential implications for future industry strategy and EU policy. The chapter begins with a look back at the scenarios analysis undertaken in the 2007 LEI study and a validation of these scenarios with what has actually occurred. Following this, a number of scenarios are presented which describe possible developments both within the food and drink industry and external to the industry. The scenarios represent a culmination of the findings of the analyses on the trends, market performance, competitiveness and regulatory & framework conditions conducted in this study, described in the preceding chapters of this report. The objective of the scenarios is not to predict exactly the future situation, but rather to stimulate a thought experiment that focuses attention on those factors most relevant for industry competitiveness in the future. Guided by the priority areas and challenges identified in the scenario analysis, the chapter will conclude with recommendations on how to improve the competeveness of the food and drink industry.

5.1 Review of past scenarios

The 2007 LEI study developed three scenarios, plus a number of sub-scenarios, that focused on developments in policy-related drivers in order to examine impacts on competitiveness of the food and drink industry. The 2007 study identified that the EU had a lower labour productivity than the USA and that the CAP restricted the supply of raw materials. With this in mind, the 2007 study developed three policy scenarios: "continued reform", "enhanced productivity" and "liberalise". Those scenarios were simulated in a model using GTAP data.[214]

The "continued reform" scenario of the 2007 study is the one that best fits the changes actually observed since 2007. For that scenario, the 2007 study predicted a decline in competitiveness which actually took place as anticipated if defined based on the competitiveness performance indicators used in the competitiveness assessment in the current study.

However, contrary to the expectations of the continued reform scenario, the European exports did not show a decline, but rather an improvement. This trend can also be observed for most of the sub-sectors that have been analysed.

The main question is why the export position remained relatively strong and much better than expected.

5.2 Main conclusions of the current study

Between 2008 and 2012, the European food and drink industry improved its international competitive position. EU28 exports grew by a faster rate than exports of most other benchmark countries. On the world market, a small increase of the EU market share was also observed. The growth in exports has, in combination with a decline in imports, resulted in an increasingly positive trade balance for the EU: from a little less than € 8 billion in 2008 to over € 10 billion positive in

[214] A detailed review of the scenario analysed in the 2007 study is available in annex 2.

2012. The improvement is even larger when compared to 2003, when the net trade balance was around € 3 billion negative.

This improvement of the international competitive position of the European industry was not foreseen in the projections made in the 2007 study, which predicted a decline in competitiveness (see section 5.1 and Annex 2).

On the other hand, in terms of relative gains in value added, the predictions of the 2007 study can be considered correct. The European industry showed a clear weakening on this indicator compared to the benchmark countries. However, this weakening in value added did not result in a weakening of the international competitive position. The main question is why the international competitive position remained relatively strong and much better than expected.

The annual growth rate of labour productivity of the sector also weakened in the EU in comparison to the benchmark countries. Hence, labour productivity cannot be considered a reason for the EU's improved international competitiveness.

The attention of the European food and drink industry to food safety and quality has been mentioned by stakeholders as a major driver for the improved international competitiveness. Global demand for high-quality products has strongly increased in the past period, due to consumer trends like growing middle class incomes in emerging markets, ageing population and increased attention of consumers to health and social responsibility issues.

The European industry, as key producer of these high-quality products, has benefitted from these developments. The focus on product quality allowed some of the European products to avoid the market segment where price competition is dominant and where high labour productivity and a low cost base are necessary to compete.

The EU regulatory framework has supported the European industry to focus on high levels of food safety and quality. Examples of regulatory conditions supporting the industry include the establishment and harmonisation of key legislation under the General Food Law, the introduction of regulations concerning voluntary geographic indications and traceability and food safety regulations.

Despite the overall positive impact of the European regulatory framework, further room for improvement of the framework and its implementation at national level exists. Most notably, there is inconsistent implementation of European regulations across Member States. This is a result of both a different interpretation of EU legislation and of additional national regulations applied. This inconsistent implementation leads to different enforcement conditions in Member States, resulting in additional costs for the industry and barriers to trade in the internal market.

5.3 Future outlook

In order to sketch the future outlook for the food and drink industry, we determine the most likely developments for the upcoming years (towards approximately 2020-2025). These developments can be driven by changes originating from outside the food and drink industry (exogenous factors), changes in the supply chain (vertical factors), and changes in regulatory and framework conditions related to the industry itself (horizontal factors). Contrary to the previous LEI 2007 report on the

competitiveness of the food and drink industry, the outlook is of a qualitative nature rather than a quantitative nature.[215]

5.3.1 *Exogenous factors*

The main exogenous factors discussed are:

- Global population growth;
- Rising incomes in developing countries;
- Economic recovery in Europe;
- Technological advances;
- Digitalisation.

Global population growth

World population is expected to continue to increase in the coming period. With growth in population, total demand for food, including processed food, will increase. The stakeholders see primarily Asia, Latin America and Middle East as the regions where population growth can be expected. The growth in population and demand for food offers opportunities for the global food and drink industry.

When considering the opportunities posed by world population growth for the European food and drink industry, it's important to realise that food production does not always take place within Europe. European food and drink manufacturers may also decide to open factories in the target region to reduce transport costs and benefit from potentially lower local input costs. Depending on the location of production, the benefits for Europe will accrue in the form of profits (in the case of production abroad in the targeted region) or profits and employment (in the case of production in Europe and export to the target region).

We expect much of the increases in production, as driven by world population growth, to take place in the target region. Therefore it is foreseen that world population growth will provide opportunities for the European food and drink industry to raise profit levels in the coming period.

Rising incomes in developing countries

Provided that economic development in emerging markets continues to underpin rising incomes and a growing middle class in these regions, demand for high quality food and drink products will increase. On this point, the European food and drink industry has a competitive advantage due to the already strong reputation as provider of high quality food and drink products. Maintaining and, where needed, improving the quality requirements in Europe should help the European food and drink industry to continue to benefit from the development in global incomes.

Economic recovery in the EU

The EU is in the process of recovering slowly from recession. A continuation of this recovery and a sustained growth in GDP in the EU in the coming period is expected to cause incomes of EU citizens to rise and consumer confidence to improve. This will likely result in a return of consumer demand for premium (differentiated) food and drink products (for example, PDO, PGI, organic or boutique/niche), along with more consumption of prepared foods (for example ready-to-eat meals

[215] As the previous section showed, it's very difficult to predict future developments, especially in the current volatile economic and political environment. In such circumstances, quantification of the outlook only presents a reflection of assumptions rather than a reasonable estimate for the future.

and convenience food). In addition, it is anticipated that intra-EU trade will increase as a result of the increased demand for premium products.

However, the structural trend in the rise of private labels (further discussed in section 5.3.2), a trend reinforced during the recent economic crisis, negatively impacts the demand for premium labels. Due to the expected structural character of the increase in popularity of private labels, the opportunities for premium labels to benefit from the economic recovery seem limited in the future outlook.

Technological advances

For the industry, the main technological developments may be expected in the form of process innovation. This includes, inter alia, the automation of production and improved technologies to conduct quality control in the chain. These process innovations offer opportunities to improve productivity and quality.

Alternative technology advances may come in the form of packaging and ingredients. These advances are related to the food industry, but not developed by the food industry itself.

Digitalisation

With the increasing digitalisation in society, it is expected that important changes will occur in the food and drink industry in the coming period. The current trend of on-line shopping is likely to only grow in importance, which is expected to mainly impact on the retail sector. However, the digitalisation may also offer opportunities for the industry to enter into the down-stream distribution part of the value chain, for example by directly offering of products to consumers and business clients.

Also within the supply chain, digitalisation may be expected to offer opportunities, for example by using digital solutions to further improve cooperation between actors in the supply chain and thus reduce costs of production. In particular, developments in digitalisation that offer the possibility of production-on-demand may help industry to micro-manufacture, offering the opportunity of production of small batches. This helps the industry to exploiting the diversity present in the European sectors due to the relatively many small scale enterprises in the EU and the rich number of differentiated products (from different regions).

5.3.2 *Vertical factors*

The main vertical factors discussed are:

- Bargaining power of retailers;
- Consumer driven innovation;
- Costs of inputs.

Bargaining power of retailers

The current developments of expanding bargaining power of retailers within Member States is expected to continue (observed for example in the increased market penetration of private labels). In Northern Europe, where this development already took place, further gains in bargaining power of retailers is expected to be limited. The increased role of retailers is mainly expected to take place in Southern Europe.

The impact will be that the retail sector puts downward pressure on prices, forcing small operators to become more cost efficient, for example through concentration or by production on demand. Concentration to reduce costs will lead to products becoming more and more mass produced.

Concentration implies a strong reduction in the number of SMEs active in the sector. Also, in this situation profit margins of industry will likely come under pressure.

An alternative outcome is for food processors to create the opportunity of micro-producing, thereby resisting the threat of concentration and mass production. Micro-producing has potential given the individualisation of consumer demand. This offers more opportunities for differentiation and production of value added products (see also above under Digitalisation).

Consumer driven innovation

The increasing power of the retail sector in the food supply chain means innovation in the food industry is increasingly driven by retail. Retailers have data on consumer preferences, allowing them to take a primary role in the identification of explicit or latent consumer demand for new packaging and ingredients. Incentive for retailers to stimulate these innovations is identification of ways to differentiate their product range from those of other retailers and provide value added. This will cause innovation to be closely linked with consumer preferences for individualised products. Products will be more differentiated and change more frequently (shorter life cycle).

The on-going trend of the individualisation of consumer choices is expected to continue. This individualisation of consumer demand leads to a higher demand for differentiated products, which in turn is likely to result in a stronger focus on more niche and targeted products with shorter product lives, especially if this is supported by the trend in digitalisation discussed before. For the industry, this offers opportunities for product innovations, but also for 'single play' companies to enter the market.

Catering to increasingly individualised consumer preferences will remain a continuous challenge. More cooperation between all actors of the supply chain will be needed to adapt to changing consumer behaviours and to become more flexible and integrated.

Costs of inputs

In the future outlook, rising costs of raw materials is expected to be the most important development.[216] It is anticipated that environmental conditions will continue to make raw materials scarce, driving input prices up for manufacturers. As discussed in section 2.3, agricultural commodity prices are expected to continue to rise as demand for food and food-producing resources continues to outpace supply that is, at least in Europe, restricted by the limited availability of suitable land and water, climate-related poor harvests, and the growing demands for bio-fuel production. That is particularly true for sectors for which raw material costs represent a high share of production costs, for example in the fish industry. Access to the materials, and in particular the price at which these materials can be obtained, is in particular relevant for international trade, in case a food manufacturer/sector has control over the raw materials and can access these raw material cheaper than the rest of the world. Within a region, where costs of inputs are approximately the same, there is no competitive distortion within a sub-sector as a result of changes to costs of input. Substitution between sub-sectors may occur is prices of raw materials for one sector increase significantly more than the prices of raw materials for another sub-sector.

For the overall performance of the European food and drink industry, the impact of price changes in raw materials on total demand (not taking into account substitution effects) will be limited, as 92% of the production is aimed at the domestic (European) market. The export market constitutes a relatively small portion of total production (8%), compared to Canada, Brazil and Australia who

[216] Other costs of inputs, like energy, labour and achieving sustainability may play a role, albeit very limited due to their limited size (in comparison to raw materials).

export 30% of their food production. However, for the export position of the European food and drink industry, access to raw materials remains a point of attention.

The effect of rising input costs on profits depends on the ability for the food and drink industry to offset costs through improvements in efficiency (via innovations) and to pass through cost increases to consumers. There is an increasing trend of consumers wanting sustainable and socially conscious products and thus pass through of higher input prices to consumer prices may be possible for products differentiated on the basis of environmental and sustainable attributes.

5.3.3 Horizontal factors

The main horizontal factors discussed are:

- Improving food safety requirements;
- Harmonisation of regulation;
- Access to skilled labour.

Improving food safety requirements and traceability

Regulatory and consumer pressure on improvement of food safety requirements and product quality is expected to continue, in particular in relation to food safety and traceability. Current levels of regulatory requirements are considered quite manageable in the light of many companies currently already exceeding the minimum thresholds set in regulations.

It's also unlikely that stricter and more comprehensive requirements themselves will harm competitiveness, especially since many manufacturers, including SMEs, already comply with higher requirements that the obligatory requirements set in EU regulation. Rather, making sure the attention to food safety and traceability is maintained and where possible further improved may help EU food and drink companies to keep a competitive edge on the international competition. No new fundamental legal requirements seem to be necessary. Minor modifications, like adaptation of the legislation when science evolves, for example in the form of new authorisations, will be necessary.

A key issue raised by stakeholders in relation to improving food safety requirements and traceability is the regulatory uncertainty associated with frequent legislation changes. Frequent changes at unpredictable intervals require the employment of dedicated people/resources to keep track of all the changes. Especially for SMEs, keeping up with the regulatory changes may impact their profitability as they have less resources to dedicate people on this task compared to large companies.

Here, a distinction should be made between two types of cases. On the one hand, there are revisions of fundamental legislative requirements that need to be made at rather long intervals. Regulation 1169/2011 on the provision of food information on consumers is an example of such a fundamental legislative change. On the other hand, there are adaptations of technical-legal nature, which only require transitional period to ensure legal security and stability for businesses.

Continued focus of EU legislation on sustainability/circular economy/environment will likely further drive process and operational changes, both within firm and across the supply chain. While there are some costs associated with these changes, the current Commission policy seems to support minimising the size of these costs. For fundamental changes like Regulation 1169/2011, the Commission allowed quite extensive periods for implementation, allowing the sector to adjust. For technical changes, for example, in case of technical adaption related to food safety legislation, the Commission typically allows for a transitional period during which products can be still on the market if compliant with former legislation, except in cases of acute/ immediate risk for heath.

Harmonisation of regulation

In terms of regulation, a distinction can be made between two types of cases. First, there are areas that have are not fully harmonised or not harmonised at all in European legislation. For example, regulation related to contaminants is not fully harmonised across the European Union. Secondly, lack of harmonisation can be caused by Member States having a different interpretation of the EU regulations, leading to differences in national legislation or policy. Both cases are signalled by industry stakeholders during the interviews but with most emphasis on the latter case of Member State interpretation[217].

One stakeholder signals that (perceived) lack of harmonization may result from the legislation becoming increasingly difficult due to political decisions. As a result, the legal texts become ever more complex and require legal interpretation at national level. Consequently, there is still a wide variety of interpretation and implementation at Member State level. This creates a fragmented market as long as there is no agreement on the interpretative guidelines. This situation, which seems in opposition to the European aim for one internal market, makes it more difficult for the industry to produce for the intra-EU market, increasing costs and lowering competitiveness.

Access to skilled labour

Access to skilled labour is expected to remain limited in the coming period, similar to the current situation, if no action is taken. With the work force aging over time, the need to attract skilled labour is likely to only increase in the near future given that the industry is struggling to attract employees from younger generations.

Offering higher wages to attract people is unlikely to be a suitable way forward, as increased wages will tend to negatively impact profit margins and labour productivity. Moving production to lower-wage countries is a possibility for some manufacturers. 'Footloose' food manufacturers[218] can, especially in the long run, move production to locations with favourable labour conditions, either within or outside the EU.

In the shorter term, an alternative solution may be found in addressing the industry's poor reputation, as explored in the policy recommendations.

5.4 Policy Recommendations

In order to improve the competitiveness of the European food and drink industry and meet the future opportunities and challenges as described in the future outlook above, various actions are suggested. These actions aim to reinforce current strengths, in particular the international trade position, and address current weaknesses, such as the relative worsening of labour productivity in the past period. To support the policy recommendations, further improvements in the functioning of the supply chain are also proposed.

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[217] One example of lack of harmonisation due to Member State policy, as presented by an industry association, is the food safety legislation regulating the use of Bisphenol A in plastic bottles. France had banned the use of the substance from 2015 onwards and, according to the association, breached European laws. With the ban, foreign producers using Bisphenol A were faced with trade barriers when exporting to France. In a decision on 17 September 2015, the French Constitutional Council overturned the ban on the use of BPA in food containers destined for the export market. The sale and import of the substance remains prohibited in France itself.

[218] Footloose refers to the possibility to be placed and located at any location without effect from factors such as resources or transport.

5.4.1 *Strengthening the international trade position*

To further strengthen the current position of the European food and drink industry on the global market, the main policy recommendations relate to:

- Strengthening of quality labels;
- Elimination of barriers to trade.

Maintaining food safety and quality

The EU food industry's main competitive advantage lies in its high requirements for food safety, the quality of its products and its image. To maintain this position, the attention to food quality and food safety within the current legislative framework should at least be maintained. Where needed, for example following evolution of science or new views on risks, the food quality and safety regulations should be amended accordingly. This will make sure that the safety and quality of European products continues to allow the European industry to be competitive at global level.

No major areas for improvement of the legal framework have been identified during the study, except the barriers to trade discussed below. One of the major issues raised during the interviews, being the provision of information to the consumer, has been addressed with the introduction of Regulation 1169/2011.

Elimination of barriers to trade

Barriers to trade refer both to the European internal market as well as the global market.

To further stimulate the internal market, any trade obstacles resulting from differences in the way Member States apply rules should be eliminated[219]. During the interview with stakeholders, no list of areas to be addressed has been discussed. The most urgent areas where trade barriers remain as a result of differences in national interpretations can be identified in the High Level Forum. The EU is encouraged to address any such trade obstacles identified.

At the global level, opening up external markets, for example by means of Free Trade Agreements or an agreement in the WTO context would strengthen the possibilities of industry to fully benefit from the international growth in demand. The recommendation is to keep monitoring for opportunities for further trade liberalisation. No specific bottlenecks or problematic countries have been mentioned during the interviews with the interviewed sector representatives.

5.4.2 *Supporting productivity*

The policy recommendation in relation to the support of productivity is related to monitoring of the regulatory burden.

Further actions are not necessarily regulatory actions, but actions to be taken by, or together with, the manufacturing industry and the broader sector. These actions include optimisation of cooperation within and outside the chain.

Monitoring of the regulatory burden

An important point with respect to legislation is keeping the cost of compliance down and avoiding unnecessary costs. As discussed in section 4.1.1., the current approach of the European Commission towards regulatory change seems quite suitable to minimising the cost of regulatory change. Also conducting Fitness Check exercises, like the one conducted for Regulation 178/2002, are good examples of initiatives to help minimise regulatory burden and should be continued.

[219] See, for example, the example of Bisphenol A in footnote 217.

Optimisation of cooperation within and outside the chain

Given the many future challenges facing the food and drink industry, further cooperation across the supply chain is advisable in order to optimise the supply chain, both in pursuit of meeting consumer demands and minimising costs. Increasing vertical integration across the supply chain means growing internal efficiencies, improving the prospects of the industry.

For the industry, expansion of cooperation beyond the chain should be explored. First of all, one may think of cooperation, like strategic alliances and partnerships, between traditional food companies and digital technology companies may be in order in case the impact of digitalisation strongly increases in the next years. Such cooperation may boost the use of e-commerce, help to further optimise the production process and on-time delivery within the value chain and potentially provide other, currently undiscovered possibilities to strengthen the value chain.

Another area of cooperation that has come into attention is the re-use of resources, which also helps to reduce waste. Food industry generates high amounts of solid waste and by-products. While traditionally the use of food left-overs as feed is the key example of re-use of resources in the agri-food industry, possibilities have been identified. Raw materials, co-products, by-products and waste can be transformed into fine-chemicals and natural macromolecules, which are of high interest for other sectors like the pharmaceutical or chemical industry.

Valorisation of by-product and waste from food and drink industry should be highly prioritised as it impacts not only environmental performance but also economic efficiency and as mentioned in the report – this area is expected to gain importance in future. Initiatives are already developed, including as EU level. For example, the EU-funded NAMASTE project aims to find valorising routes and markets for citrus by-products and wheat bran.

5.4.3 Improving the functioning of the supply chain

To optimise the cooperation within the supply chain, the main policy recommendations are:

- Continuation and strengthening of the High Level Forum;
- Promotion of the industry.

Continuation and strengthening of the High Level Forum

The objective of the 2012-2014 High Level Forum for a Better Functioning Food Supply Chain was to develop a specific strand of industrial policy that supports the further development and growth of the sector in the future and values its specific features. The Commission decided in June 2015 to re-establish the High Level Forum for a Better Functioning Food Supply Chain.

To optimise the impact of the High Level Forum, the role of the High Level forum should be extended to ensure a closer monitoring of the adoption of EU programmes and policies, like the CAP and research programmes.

Promotion of the industry

Various bottlenecks in the sector can be linked to the relation between the sector and the general public. In particular, consumers' trust in the sector (an important factor influencing food choices), consumer stance on flavourings and nanomaterials (not embracing them), and the perception of the food and drink industry as an employer (not very attractive), may all be addressed by coordinated industry level campaigns and initiatives that provide the general public with information about the positive actions and value of the sector.

Annex 1 Methodology

This section is largely a wrap up of the methodology for assessing the competitiveness of the food industry designed by Wijnands et al. used in their studies on the competitiveness of the European food industry (WIJNANDS et al., 2007, Wijnands et al., 2008, van Berkum et al., 2014) In this section, we discuss alternative indicators that are used in assessing the competitiveness. We did not perform an extensive literature review and the indicators are derived from a few papers that are mentioned below. Therefore, the overview below is far from exhaustive. Furthermore, we make a distinction between trade and business economic performance measures of competitiveness. Below, after we discussed the indices, we will present that we use growth rates between two periods of these indices.

Trade related indicators

Exchange rate and inflation

Latuffe (2010) indicates the real exchange rate as a measure for competitiveness(Latruffe, 2010). In this research, this indicator will not be included because the food industry takes a small part in the GDP of the economies. To determine the real value added we use the development of consumer prices also indicated as inflation. The inflation measures the change in the costs that the average consumer has to pay for a basket for services and goods. For our purpose, we use the consumer price index of the World Development Indicators database.

CP_{ct} is the consumer price index for country c in period t.

Market shares on the world market

The export share on the world market is a straightforward performance indicator and it reflects the outcome of the international competitive process. We will take the difference between two periods of a country's export share on the world market. The growth we measured is the change and not an annual growth rate between two periods, as we will propose for other indicators. Growth rates between two periods have a strong flaw. Very small exporters can have large growth rates, but remaining small exporters. Even with small growth rates, large exporters will have a larger impact on the market. The definition of this indicator reflects the strong interdependency between the exports of the different countries. By taking the absolute deviation, the real impact on the world market is taken into account. Furthermore, the total sum of all changes is by definition zero. Table A2 gives an example of the discussion above taken from (WIJNANDS et al., 2007).

Table A.1 ***Example of impact of indicators and market shares development***

	Market share (%)			
	1996-1998	2002-2004	Deviation	Growth
Country A	1	2	1	100 %
Country B	50	51	1	2 %
Country C	20	20	0	0 %
Country D	29	27	-2	-7 %

(1) $GES_{ict} = MS_{ict} - MS_{ict}$

GES_{ict}	Growth export share on the world market for industry i for country c in period t
MS_{ict}	Export share on the world market for industry i for country c in period t
C	Selected country;
i	Selected industry according to classification of NACE
t	Selected year

(2) $MS_{ict} = X_{ict} / X_{iwt}$

X_{ict}	The export value of industry i, country c in period t.
X_{iwt}	The export value of industry i of the world (as a whole) in period t.

Revealed comparative advantage indices

The relative importance of an industry in the total trade is usually measured by the Revealed Comparative Advantage (RCA) or Balassa index or specialisation index (Latruffe, 2010, Wijnands et al., 2008, Fertö and Hubbard, 2003). If it is related to the export, it measures the export share of a product of one country in the total export of the world relative to the country's export share in the world of all products. The relative export advantage index is as follows:

(3) $RXA_{ict} = \dfrac{X_{ict} / X_{iwt}}{XT_{ct} / XT_{wt}}$ Export value of specific industry i from country c in period t.

RXA_{ict}	The relative export advantage index for industry i, country c in period t.
X_{ict}	The export value of industry i, country c in period t.
X_{iwt}	The export value of industry i of the world w in total in period t.
XT_{ct}	The total export value of all industries of country c in period t.
XT_{wt}	The total export value of all industries in the world in period t.

The total export value of all industries from one country is the total of all export: unprocessed or processed agriculture commodities, or industrial products or services.

The flaw of this index is that re-export might suggest high competitiveness of one industry. These transit activities might be influenced by a good performance of another sector i.e. logistics or by beneficial natural and infrastructural conditions like sea or airports.

A RXA index of 1 indicates that a country is equally specialised as the total world exports. A level below 1 means relatively unspecialised and above 1 relatively specialised. The latter indicates an export advantage, as relative more is exported than the world average. In fact it indicates the export focus of an industry and is therefore externally oriented. Again the annual growth between the first and last time period will be used. The index is only relevant for exporting industries.

The opposite of the relative export advantage index is the relative import advantage index:

(4) $RMA_{ict} = \dfrac{M_{ict} / M_{iwt}}{MT_{ct} / MT_{wt}}$ import value of specific industry i from country c in period t.

RMA_{ict}	The relative import advantage index for industry i, country c in period t.

M_{ict}	The import value of industry i of country c in total in period t.
M_{iwt}	The import value of industry i of the world in total in period t.
MT_{ct}	The import value of all industry i of country c in total in period t.
MT_{wt}	The total import value of all industries in the world in period t.

The interpretation of the index is reversed from that of RXA. A value below unity (=1) shows that country imports relatively less than the world average and can be indicated as a competitive advantage; a value above unity indicates a relative higher import level.

A high value might be explained by high levels or re-export of products, due to comparative advantage of other sectors or countries location.

The Relative Trade Advantage index is defined by Scott and Vollrath as difference between the RXA and RMA (Scott and Vollrath, 1992).

(5) $RTA_{ict} = RXA_{ict} - RMA_{ict}$

A positive RTA indicates a competitive advantage: the exports exceed the imports. Negative values signify competitive disadvantages (Scott and Vollrath, 1992).

The advantage of these indices is the simplicity to calculate these indicators based on an available and well accessible database. In this report, the values of all three indices are presented. As metrics in the assessment of the competiveness, the difference between 2 periods of the Relative Trade Advantage is used as this index summarizes the export and import developments. This index has an advantage above the indices based on either export or imports (Frohberg and Hartmann, 1997). This indicator is modification of the approach of Wijnands et al. (2008)

Other indices based on trade

Several other indicators related to international trade are available such as the Net Trade Ratio that expresses the ratio between imports and exports of a country or the Grubel-Loyd intra-industry trade index, Porter-adapted index of RXA or the Dunning adapted RXA. Furthermore several modifications of the indices mentioned above are discussed in the literature ((Latruffe, 2010, Frohberg and Hartmann, 1997, Gellynck, 2002). We do not consider these indices because above we already mentioned the export and import advantage indices whose interpretation is less complicated in terms of competitiveness. The Porter and Dunning indices include outward an inbound production. We do not consider these indices as we will present below, because as we are using data from national accounts that includes only domestic production.

Economic indicators

The selected indicators for quantifying the industry's competitiveness are taken from Wijnands et al., 2008.

Real value added

Creating added value is an important economic indicator. It is related to the industrial dynamism. Total value added is not only based on the production factor labour but also on the production factor capital and land. Again the growth is taken, so that countries can be compared easily. Annual

growth in real value added of the food industry (or subsector). Their growth is taken as an indicator, so that countries can be compared despite differences in PPP.

To derive the real value added at factor costs, the nominal value added is deflated by the consumer price index.

(6) $$RVA_{ict} = \frac{VA_{ict}}{CP_{ct}}$$

RVA_{ict}	Real value added for industry i in in country c for period t
VA_{ict}	Nominal value added for industry i in country c for period t
CP_{ct}	Consumer price indicator for country c in period t

Real value added shares

The importance of a specific sub-industry is derived from its share in the food industry. A growth in the share reflects a competitive advantage. The industry is then able to attract resources for their production. This reflects the competition for production factors (labour and/or capital) between different industries within a country.

The food industry is used for comparison, if a sub-sector of the food industry, e.g. dairy processing, is evaluated. Where the food industry as whole is evaluated, the manufacturing industry has been used. The metrics is the growth of the share of the specific industry in the food industry. A positive growth shows a better than average performance than the food industry as a whole.

(7) $$SRVA_{ict} = \frac{RVA_{ict}}{RVA_{mct}}$$

$SRVA_{it}$	Share of the real value added for industry i in total manufacture industry (m) in country c for period t
m	Manufacture industry as a whole

Labour productivity

Labour productivity affects prices in the market. Growth of labour productivity improves industrial competitiveness in international markets. Labour productivity is often seen as a crucial determinant of competitiveness. The labour productivity is the real value added divided by the number of employees. This indicator cannot be compared between different countries due to different levels of Purchasing Power Parities. As we take the growth of the labour productivity, the indices of different countries can be compared. This indicator can be seen as measurement of the potential competitiveness.

(8) $$RLP_{ict} = \frac{RVA_{ict}}{E_{ict}}$$

RLP_{ict} is real labour productivity for industry i in country c for period t

E_{ict} is number of employees in industry i in country c for period t

Exchange rates

All indicators are growth percentages. Growth percentages are not influenced by exchange rates, so they can be calculated in the original currency. The nominal values in the descriptive parts are converted to Euros with the exchange rate as mentioned by Eurostat and DNB. The trade values are presented in Euro.

Competitiveness assessment

Annual growth rates of the indices

According to Porter sustainable competitive advantage is the fundamental source for above-average performance in the long run (Porter, 1980, Porter, 1990). In line with Porter's viewpoints, competitiveness of the food industry is defined as the sustained ability to achieve profitable gain and market share in domestic and export markets in which the industry is active. Annual growth rates (except for market shares on the world market and Net Trade Advantage index) between 2 periods are used as indicators. High growth rates indicate high ex-post performance, compared to other industries of a particular country.

Data

Linking databases

The economic indicators are derived from industry-based information (e.g. Eurostat Structural Business Statistics database) and the trade indicators from product based information (UNComtrade database). First, the products need to be linked to the industries. A second issue is the revision of the NACE classification. Furthermore, the EU's NACE industry classification differs from the NAICS classification.

Table A.2 International Family of Economic and Social Classifications

	Reference	Derived	Related
Economic activities	International Standard Industrial Classification of All Economic Activities (ISIC).	General Industrial Classification of Economic Activities within the European Communities (NACE).	Australian and New Zealand Standard Industrial Classification (ANZSIC) North American Industry Classification System (NAICS).
Products	Harmonized Commodity Description and Coding System (HS).	Standard International Trade Classification (SITC).	Trade in Services.

Source: http://unstats.un.org/unsd/class/family/preamble.pdf (United Nations S).

We follow the available correspondence tables from among others the UN statistics division for linking different industry classifications:

1. Correspondence tables between NACE rev. 1.1 and NACE rev. 2 are taken from: http://epp.eurostat.ec.europa.eu/portal/page/portal/nace_rev2/correspondence_tables;
2. Linking industry classifications of the different regions by correspondence tables between NACE respectively NAICS and SITC are available. See for the link between NACE and ISIC also page 63 of (EC, 2008).

Linking products to economic activities is based on an own correspondence table. All UNcomtrade 6 digit HS codes are linked to 4-digit NACE codes. Similar correspondence tables for linking HS codes to SITC codes are made before but not fully available.(Arip et al., 2010).

Linking processed products to industries and excluding raw materials

In the study Wijnands et al. 2007, all products –raw materials as well as processed food products were linked to industries. Recently, an approach has been published on a two digit HS and NACE codes making a distinction between agriculture and food industry.

In our approach will follow the aforementioned correspondence tables for linking at a detailed level, products to industries. The bottom line is that we exclude raw materials because these are related to the competitiveness of the primary sector and that is beyond the scope of our study.

Annex 2 Review of past scenarios

The 2007 LEI study developed three scenarios, plus a number of sub-scenarios, that focused on developments in policy-related drivers in order to examine impacts on competitiveness of the food and drink industry. At the time of the study, the policy-related drivers that were most relevant were EU agricultural and fishery policies, enlargement decisions and implementation, WTO and other international trade agreements and environmental policy. In particular, the 2007 study identified that the EU had a lower labour productivity than the US and that the CAP restricted the supply of raw materials. With this in mind, the 2007 study developed the policy scenarios; continued reform, enhanced productivity and liberalise. The policy scenarios were comparatively analysed with respect to a base case, whereby the base case was modelled on the 2006 CAP and current state of (regulatory) play. All scenarios projected a medium-term development up until 2010.

The three scenarios examined were:

- **continued reform scenario**: it was assumed that current policies would continue into the future, with modifications over time that were reasonably certain to happen according to the current political situation. For example, the scenario anticipated reform of CAP with respect to quantitative restrictions on milk and sugar, as well as a further decline in support to farmers together with a complete abolition of export subsidies via international level trade agreements. It was also expected that growing economies in other regions of the world would provide export opportunities for European agricultural and food processing sectors;
- **enhanced productivity scenario**: this scenario built on top of the continued reform scenario by assuming that improvements in labour productivity in the food and drink industry were realised in addition to the policy changes under the continued reform. Three sub-scenarios were examined that analysed the consequences of enhanced productivity growth in European primary agriculture only (Prod. Agr.), enhanced productivity growth in the European food processing industries only (Prod. Food), and enhanced productivity growth in both sectors (Prod. Both);
- **liberalise scenario**: identified the consequences for the European food processing industries should full trade liberalisation occur in all sectors, including a withdrawal of all domestic support in agriculture. This scenario built on top of the liberalise scenario by assuming the same growth rates of sector productivity were achieved.

In the 2007 study, the above scenarios were simulated in a model using GTAP data. Results were given in terms of food export, GDP, value added, employment and sector income to determine an overall picture on changes in competitiveness. In the below sections we present the results of the 2007 LEI scenarios and, based on the analyses performed in the current study, compare this to what has actually occurred. However, given that it is clear that full liberalisation as described in the liberalise scenario did not actually occur in practice, only the continued reform and enhanced productivity scenarios will be discussed.

Food export and international competitiveness

Results from the 2007 scenario analysis

In terms of the development of food exports as a share of total world food exports, under both the continued reform and enhanced productivity scenarios, the EU remained the largest exporter of processed foods. In the continued reform scenario export shares declined, indicating a loss in international competitiveness. This decline came about as a result of the assumed decline in

agricultural support linked to the implementation of trade agreements. The CAP instruments were also seen to affect the prices of processed food causing production in agri-food sectors in the EU to decline and excess supply to disappear. Other regions in the world gained in export shares with the highest relative increases in US and Brazil.

The enhanced productivity scenario (both Prod. Agr. and Prod Food) was found to compensate for the above mentioned decline in European share of food products in world total food exports. This was because the assumed higher productivity growth reduced costs in production in Europe relative to other competitors at world markets. Under the sub-scenario where enhanced productivity growth is assumed to take place in both primary agriculture and food processing (Prod. Both), export shares in world market increased significantly.

Under the continued reform scenario the EU showed a decline in specialisation in meat, oils and fats and sugar, but increases for dairy and beverages. The increase in dairy products reflected an increase in milk production in the EU as a consequence of the assumed abolition of the milk quota regime. The decline in sugar was a consequence of cuts in the sugar prices and a decline in European sugar production as a consequence of the assumed sugar reform. The enhanced productivity scenario does not reverse the development under the continued reform scenario but, the decline in specialisation in sugar and oils and fats is smaller compared to the continued reform scenario. However, the sub-scenario where productivity in primary agriculture and food processing industries increased (scenario Prod. Both) did manage to reverse the trend, showing higher levels compared to the continued reform scenario. Thus, enhanced productivity growth in European agri-food sectors was found to improve the competitiveness of European food products on world markets.

Economic growth and value added

Results from the 2007 scenario analysis

The continued reform and enhanced productivity scenarios only have a relatively minor impact on GDP. Even in the most optimistic enhanced productivity sub-scenario (where productivity enhances in both agriculture and food processing sectors), the impact on total GDP was only marginal.

With respect to value added, the contribution of the food processing industry in the continued reform scenario, was less than under the base case. This was also found to be the case for the enhanced productivity scenario, but an enhanced growth rate in productivity in primary agriculture (Prod. Agr.) or food processing (Prod. Food) did partially compensate for the decline in value added that was seen under the continued reform scenario. Enhanced productivity in agriculture and food processing industries (Prod Both) led to a higher level of value added for the food sector compared to the two scenarios where either primary agriculture or food processing industries exhibit higher productivity growth rates.

Employment in food processing industries

Results from the 2007 scenario analysis

The continued reform scenario led to a decline in employment in EU food processing by around 2.8% while employment in other regions or countries increased. In these countries employment in food processing increased while the sector shares in total GDP declined. This different development was explained by the fact that most other regions are much more dynamic compared to the EU. In these regions factor substitution was assumed to lead to an increase in labour

employment and a 'decline' in capital use, i.e. capital is substituted by labour. However in the EU the opposite development was found to be the case with labour in food processing industries substituted by capital. Enhanced growth in sector productivity in primary agriculture and food processing (Prod. Both) was found to lead to a slight decline in employment. However the impact of productivity on employment was relatively small compared to the continued reform scenario. The main reason for the fairly insignificant impact of different productivity growth assumptions was explained by the limited economy-wide relevance of these sectors. Changes in sector productivity growth were expected to have an impact on the output level but almost no impact on the economy-wide factor market.

Sector income in food processing industries

Results from the 2007 scenario analysis

Under the enhanced productivity scenario growth rates in value added in the EU food processing sector gained in total terms. In all other regions, the expansion of the EU food processing industries had a slightly negative impact.

Comparing the changes in EU food exports (discussed above) with development of the composition of value added food industry in the EU, showed that the loss of export shares at world level did not coincide with a general decline in value added of European food industries. Total value added in the European food industries remained relatively stable between different scenarios. There were some changes in the composition of total value added e.g. the abolishment of milk quota would increase the share of the dairy sub-sector. A constant value added in food processing did not however imply a constant or stable level of employment, due to the fact that increasing productivity requires less labour to produce the same amount of output. The positive changes in total value added under the scenarios with enhanced productivity growth were not mirrored by significant increase in sector employment.

Comparison of 2007 scenario results with actual outcomes

Given that full liberalisation as described in the liberalise scenario did not occur in practice, and that enhanced productivity was not realised (as shown in the sector analysis in chapters 2 and 3 where productivity declined overall for the EU food and drink industry), the continued reform scenario seems the most appropriate scenario to describe the situation since the 2007 report until now. That said, the assumed abolishment of the milk quota did not comes into effect in the time period of the scenario (up until 2010), but rather in 2015 and the abolishment of the sugar quota is not yet in effect.

The decline in competitiveness projected by the continued reform scenario, if defined based on the competitiveness performance indicators used in the competitiveness assessment in this study, took place as anticipated. However, contrary to the expectations of the continued reform scenario, the European export did not show a decline, but rather an improvement. This trend can also be observed for most of the sub-sectors that have been analysed.

The main question is why the export position remained relatively strong and much better than expected. A likely explanation is the focus on product quality in the industry, allowing some of the European products to avoid the market segment where price competition is dominant and where high labour productivity and a low cost base if necessary to compete.

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