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THE POULTRY AND EGG SECTORS: EVALUATION OF THE CURRENT MARKET SITUATION AND FUTURE PROSPECTS

STUDY

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POLICY DEPARTMENT B: STRUCTURAL AND COHESION POLICIES

AGRICULTURE AND RURAL DEVELOPMENT

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STUDY

This document was requested by the European Parliament's Committee on Agriculture and Rural Development.

AUTHORS

Mr Conrad Caspari, Agra CEAS Consulting
Dr Edward Oliver, Agra CEAS Consulting
Mr John Nganga, Agra CEAS Consulting
Ms Mariana Ricci, Agra CEAS Consulting
Mr Peter van Horne, LEI
Ms Pascale Magdelaine, ITAVI

RESPONSIBLE ADMINISTRATOR

Mr Albert Massot
Policy Department Structural and Cohesion Policies
European Parliament
B-1047 Brussels
E-mail: poldep-cohesion@europarl.europa.eu

EDITORIAL ASSISTANCE

Ms Catherine Morvan

LINGUISTIC VERSIONS

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ABOUT THE EDITOR

To contact the Policy Department or to subscribe to its monthly newsletter please write to: poldep-cohesion@europarl.europa.eu

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STUDY

Abstract:

This report examines the current situation in, and outlook for the European poultry and eggs sectors. The study was undertaken by Agra CEAS Consulting with input from LEI and ITAVI in the period January to May 2010. The study can be roughly broken into four parts: (1) a review of the current situation in the EU poultry and egg sectors; (2) an examination of current problems in the sectors; (3) analysis of animal welfare legislation in the sectors and its impact; and (4) conclusions and recommendations arising from the previous three sections.

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LIST OF ABBREVIATIONS

ACP Assured Chicken Production (UK Industry Initiative)

AI Avian Influenza

AMT Antimicrobial Treatments

AVEC Association of Poultry Producers and Poultry Trade in the EU

BSE Bovine Spongiform Encephalopathy

CAP Common Agricultural Policy

CN Combined Nomenclature (for Tariff Lines)

CMO Common Market Organisation (of the EU)

DG Directorate General

DG AGRI Directorate General for Agriculture and Rural Development

DG SANCO Directorate General for Health and Consumer Affairs

DG TRADE Directorate General for Trade

EC European Community / European Commission

EEC European Economic Community

EFSA European Food Safety Agency

EU European Union

EU-15 Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom

EU-25 EU-15 plus: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

EU-27 EU-25 plus: Bulgaria and Romania.

EUWEP European Union of Wholesale Eggs, Egg-Products, Poultry and

	Game
FADN	Farm Accountancy Data Network
FAO	Food and Agriculture Organisation
FAPRI	Food and Agriculture Policy Institute
FEFAC	European Feed Manufacturers' Association
GATT	General Agreement on Tariffs and Trade
GBP	British Pound
GM	Genetically Modified
H5N1	Subtype of Avian Influenza
IPPC	Integrated Pollution Prevention Control
ITAVI	(French) Institut Technique de Aviculture
lux	Measure of Luminous Intensity
kg	Kilogram
OECD	Organisation for Economic Co-operation and Development
OIE	World Organisation for Animal Health
OJ	Official Journal (of the EU)
RDP	Rural Development Program (of the EU)
SPS	Sanitary and Phytosanitary
TRQ	Tariff Rate Quota
URAA	Uruguay Rounds Agreements Act
UK	United Kingdom
US / USA	United States of America
WPSA	World Poultry Science Association
WTO	World Trade Organisation

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EXECUTIVE SUMMARY

This study was commissioned at the request of the AGRI committee of the European Parliament (EP). It examines the current situation in, and outlook for the European poultry and eggs sectors. The study was undertaken by Agra CEAS Consulting with input from LEI and ITAVI in the period January to May 2010. The study can be roughly broken into four parts: (1) a review of the current situation in the EU poultry and egg sectors; (2) an examination of current problems in the sectors; (3) analysis of animal welfare legislation in the sectors and its impact; and (4) conclusions and recommendations arising from the previous three sections.

The European Union is self sufficient in poultry meat. After increasing between 1996 and 2002, EU-15 poultry meat production fell in 2003 (partly due to the Avian Influenza crisis) and has since levelled off. Since enlargement, production has increased due to the additional capacity of new Member States; however taking into account this extra capacity, the overall trend in production in the EU-27 has been more or less flat. The long term trend in consumption of poultry meat is upwards. Trade in poultry meat is primarily caused by demands for different cuts. While the EU is self-sufficient in poultry meat as a whole, there is a high demand for breast fillets and lower demand for low value cuts. This leads to the import of breast fillets from Third Countries (primarily Brazil), and the export of lower value cuts. There is also some export oriented whole chicken production in Brittany.

As with poultry meat, the EU is self sufficient in eggs. However, while egg production has increased over the last few years, consumption has increased at a higher rate, and as a result the surplus in eggs has fallen. There is little trade in egg and egg products. Imports from Third Countries are small, and are primarily in the form of egg powder due to logistical difficulties in trading shelled eggs. Exports are primarily to Switzerland and Japan.

In terms of production methods, there are two principal methods of production for broiler meat which relate to the level of integration of the production chain. The first of these; integrated; is common in France, Germany, Italy and Spain, and has the benefits of higher capacity utilisation, lower risk and income volatility, and quicker technology transfer to farmers. The second of these; non-integrated; is common in the Netherlands, Poland and Belgium, and has the benefits of performance incentives for farmers as well as allowing farmers to benefit from competition among potential partners in the supply chain (hatcheries, slaughterhouses, etc). Egg production systems are primarily characterised by the layer housing method, with the majority of EU production occurring in conventional cage systems. There is also significant production in barn and free-range systems, plus some production in enriched cage and organic systems. It should be noted that the proportions of production under different systems vary greatly between Members States.

EU support for the poultry and egg sectors is provided through the CMOs (Common Market Organisations). The CMOs for eggs and poultry are “light” CMOs, based primarily on protection at borders. Marketing standards and export refunds provide some additional assistance.

While various factors have impacted the egg and poultry markets in recent times, two factors apart from animal welfare legislation stand out in particular. The first of these is Avian Influenza (AI). There were significant outbreaks of AI in the EU in 1999 and 2003. In

2006, following the spread of the H5N1 strain to EU borders, outbreaks were detected on EU territory. This resulted in falls in consumption and the imposition of trade bans on some of the EU Member States with outbreaks. The European Commission formulated exceptional market support measures to mitigate a fall in consumer confidence resulting from AI outbreaks. These measures were in addition to compensation for losses and assistance with vaccination costs.

The second notable factor is an increase in input costs. Feed accounts for the majority of production costs in both egg and broiler production. Feed costs have increased over the last five years, though it should be noted that they have fallen back from the 2008 peak. Feed costs in the EU are higher than that of key world poultry and egg producing countries, at least partly due to EU regulation and policy in a variety of areas (e.g. AMTs, MBM ban, GM policy).

There is also a range of animal welfare legislation in force in the EU, all of which (with the exception of slaughtering) only applies to EU producers. In contrast, there are few provisions for animal welfare in Third Countries. The animal welfare provisions fulfil an EU consumer wish for higher welfare; however, they arguably disadvantage EU production vis-à-vis Third Country production.

For both broilers and layers this legislation is in the process of implementation in 2010 for broilers and 2012 for layers (under EU Directive 99/74/EC and EU Directive 2007/43 respectively) and as this is the case it can be argued that to date the direct impacts of the legislation have been limited since the sectors have also operated with more or less adequate levels of tariff protection (i.e. outside existing TRQs). This having been said, although there are some productivity and meat quality benefits from the implementation of the welfare legislation, in particular for broilers as has been highlighted in this report, these benefits are difficult to quantify and arguably do not fully offset the cost disadvantages likely to arise, particularly for egg and egg product production. Looking firstly at shell eggs, to the extent that the EU industry adjusts its production system to move to enriched cages by 2012 it is estimated by van Horne that this will involve an increase in costs of approximately 8% compared to the current system based on standard cages.

For eggs the sector operates under the additional disadvantage that while shell eggs produced under different systems in the EU need to be labelled according to the system used for Third Countries, such labelling is not required and perhaps more importantly in any case the bulk of competition arises for egg products used in the food processing and food service sectors which are generally not as sensitive to welfare concerns but are more focused on price.

Looking at broilers, the report considers that the broiler directive will only have economic impacts on broiler farms in some Member States (notably in north-west Europe). If stocking density is limited to 42kg per m^2 (which is possible if certain historical performance criteria are fulfilled), the majority of Dutch and Belgian farms will be affected, while 20 to 30% of French and UK farms will be affected. If the stocking density is limited to 39kg per m^2, the effects will be greater. The actual consequences also depend on any additional national criteria; for example there are stricter rules on density in Sweden and Denmark, and voluntary schemes in the UK and Germany. Based on economic calculations made in Belgium, the UK and the Netherlands, it is estimated that lowering the density to meet the Directive's requirements would potentially increase production costs at farm level by 1-1.5%.

Other legislation, such as the IPPC (Integrated Pollution and Prevention Control) Directive and salmonella requirements also have adverse impacts on competitiveness.

It is noted that these changes mean that both sectors will be particularly exposed should further reductions in external protection be agreed in bilateral or multilateral trade negotiations. It is therefore recommended that:

- The reason for the apparently poor uptake of provisions under the Rural Development Regulation for addressing animal welfare related investment be examined with a view to encouraging higher uptake;
- The sensitivity of the sectors to further changes in external protection be taken into account in current and future bilateral and multilateral trade negotiations;
- Consideration be given to reviewing the scientific evidence underlying the ban on MBM usage and the ban on use of antimicrobial growth stimulators as well as reviewing the impact of the EU regulations on GM food and feed with a view to ensuring that they remain justified and are not unnecessarily placing EU producers and processors in these sectors at a potential competitive disadvantage *vis-á-vis* Third Countries.

1. INTRODUCTION

1.1. Background

The EU egg and poultry sector is an important contributor to overall EU agricultural output accounting for 6.3% of EU agricultural output in 2006 with a value of some €23.3 billion in 2007.

The poultry meat sector is one of the most intensive farming systems in the EU. However, the EU is losing international market share to Brazil as a result of currency movements and high domestic production costs and became a net importer of poultry meat for the first time in 2007[1] as domestic consumption continued to increase. Egg production in the EU has risen since the mid 1990s but has not matched rising demand and there has therefore been a decline in self sufficiency levels.

The EU poultry and egg regimes are "light" with export refunds and import tariffs being the only forms of support under Council Regulation (EC) No 1234/2007 and Commission Regulation 589/2008. Public support can be provided to assist the modernisation of egg packing stations and slaughtering plants, but not to increase production capacity. The sectors are also affected by a number of pieces of EU legislation with relevance to food safety, public and animal health, trade and marketing standards for poultry meat and eggs.

EU poultry production is also affected by animal welfare legislation. Animal welfare legislation in the poultry sector covers production, transport and slaughter. Additionally, Directive 2007/43/EC sets out, with effect from July 2010, minimum standards for the welfare of broiler chickens on farm. The main provision of the Directive is to reduce the stocking density of broiler chickens by setting a maximum stocking density. Animal welfare legislation regarding laying hens will lead to a ban on traditional battery cages by 2012[2], although production in enriched cages will still be allowed.

The EU poultry and egg sectors have also been affected by Avian Influenza outbreaks, most notably in 2006, and large increases in input prices from 2007 which reversed a long-term downward trend. These increases resulted from a mixture of structural and temporary factors ranging from general global population growth to adverse weather conditions and exchange rate movements. Increasing demand from the ethanol industry in the US, Europe and China for in corn and other cereal grains has also had an impact. Although prices fell back from April 2008, the underlying structural pressures remain.

1.2. Objective of the report

Against this background, the European Parliament's Committee on Agriculture and Rural Development appointed Agra CEAS Consulting, in conjunction with LEI - Wageningen University and Research Centre in the Netherlands and the Institut Technique de l'Aviculture (ITAVI) in France to carry out an evaluation of the current market situation and future prospects in the poultry and egg sectors. The specific objectives of this research are thus to carry out:

[1] European Commission DG AGRI Agricultural Situation Report 2008, Brussels 2009.
[2] Council Directive 1999/74/EC.

- an analysis of the current situation of the European Poultry meat and egg sectors and comparison with the world situation;
- an analysis of the consequences of avian influenza three years after the epidemic outbreak;
- evaluation of the effect of the increase in input prices; and,
- impact of the European legislation on the poultry welfare to the increase of the cost of production and the consequent weakening of the competitiveness of the European poultry meat and egg sectors.

1.3. Methodology

This study is based on a qualitative and quantitative analysis of primary and secondary data, including interviews carried out with the industry. Specifically, interviews were carried with the following:

- European Commission DG Agri (Stefania Marrone (eggs and poultry) and Jens Aksel Munch (budget)).
- European Commission DG Sanco (Maria Ferrara and Agneta Norgren (Animal Welfare), Wolfgang Trunk (Feed) and Maria Pittman (Avian Influenza)).
- European Commission DG Trade (Andreas Schmidt and Hans Joostens).
- AVEC (Cees Vermeeren).
- EUWEP (Mark Williams).
- Eurogroup for Animals (Michel Courat).
- FEFAC (Arnaud Bouxin).
- Copa Cogeca (Lucia Zitti).

1.4. Structure of the report

The report is structured as follows:

Chapter 2 sets out the current situation in the EU poultry meat and egg sectors. This includes a review of the current situation in the EU-27, an analysis of the commercial structures used in the two sectors and an assessment of the common organisation for the poultry and egg markets.

Chapter 3 sets out the current problems in the EU poultry and egg sectors including an analysis of the economic consequences of the 2006 Avian Influenza outbreak, as assessment of the impact of increasing input prices and a review of EU financial measures to support the poultry meat and egg sectors.

Chapter 4 focuses on the impact of animal welfare legislation in the poultry and egg sectors through a discussion on the advantages and disadvantages of EU animal welfare legislation and the impact of this legislation vis-à-vis Third Country production.

Chapter 5 presents our conclusions and recommendations in terms of the drivers of future policy, concrete policy proposals and recommendations to mitigate the cost impact of animal welfare measures.

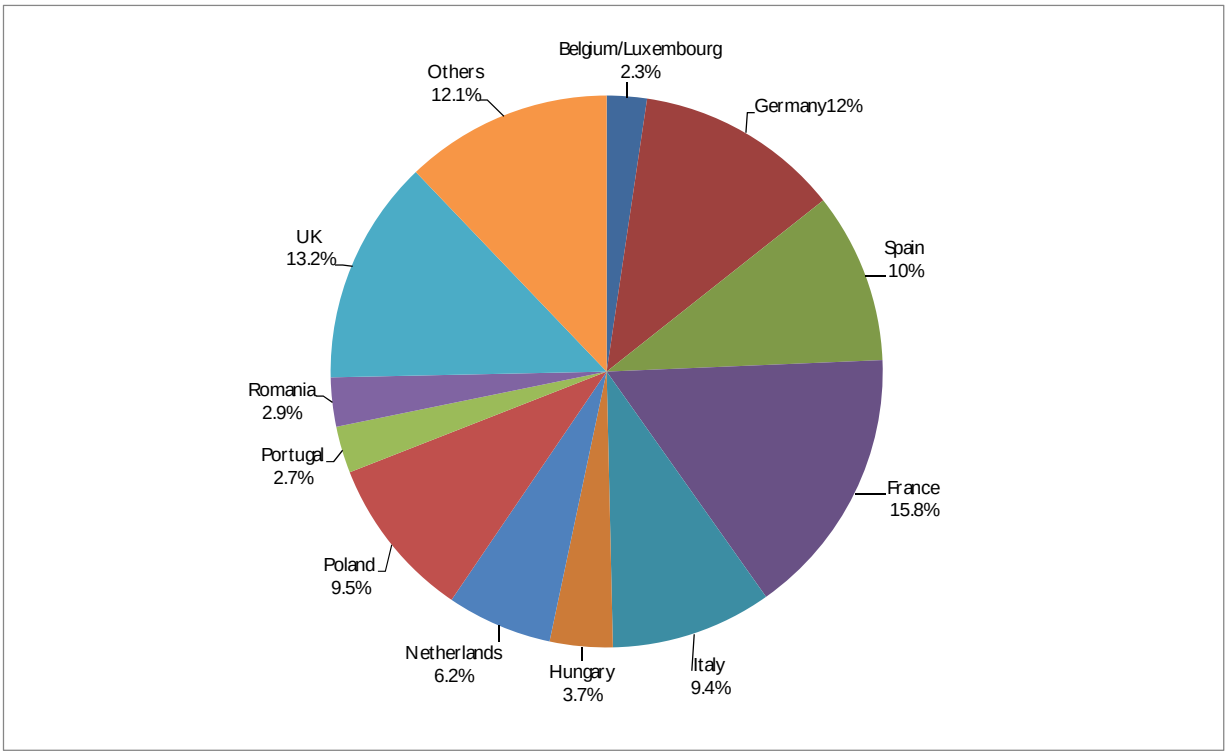
2. THE CURRENT SITUATION OF THE EU POULTRY MEAT AND EGG SECTOR

2.1. Overview of the EU poultry meat sector

2.1.1. Production

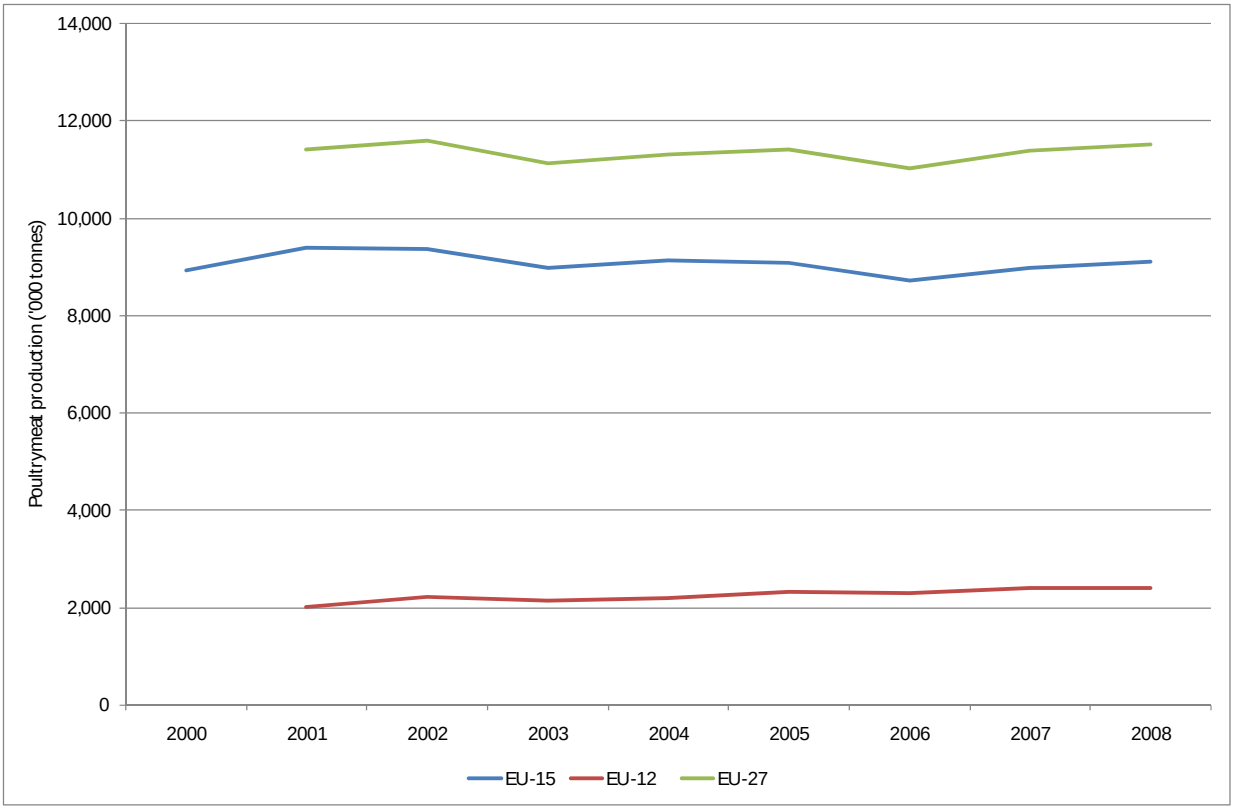
Total EU poultry meat production currently amounts to 8.5 million tonnes (AVEC, 2009), mostly coming from five Member States (namely, France, the UK, Germany, Spain and Italy). France is responsible for the largest share of total EU production, accounting for 1.7 million tonnes (15.8%), followed by the UK with 1.4 million tonnes (13.2%) and Germany with 1.3 million tonnes (12%). Approximately, 78% of total EU poultry production takes place in the EU-15 (Figure 2.1).

Figure 2.1: Major EU poultry producers, 2008



Looking at the evolution of poultry meat production between 2000 and 2008 production has remained virtually stable over the period. In 2003 there were production cuts in France, Italy and Sweden. In the same year, the EU poultry market faced its first major avian influenza outbreak with mild outbreaks in Belgium and the Netherlands also contributing to a decrease in poultry production with an overall reduction of 3.9% in the EU-15 and 3.6% in the EU-12. In some countries including the Netherlands and Belgium, production has still not returned to pre-2003 levels.

Figure 2.2: Evolution of poultry production in the EU ('000 tonnes)



Source: AVEC

In 2005, the year following the EU-10 accession, overall production in EU-12 increased by 5.9% to a total of 2.3 million tonnes, primarily due to increases in Poland (up by 10.9%). However, in 2006 production in the EU-27 fell back 3.4% as a result of the negative impact of avian influenza on consumer confidence; avian influenza was primarily found in wild birds in the EU and while there were a limited number of outbreaks in domestic poultry flocks these did not substantially disrupt production (see Section 3.1). By 2008, EU-27 production had recovered to pre-AI levels reaching 11.5 million tonnes.

While overall EU production has grown over the last decade, there has been considerable variation in the general direction of the trend between Member States. In the EU-15 production had been on an increasing trend prior to 2003, but has since remained more or less stable. In contrast, production in the EU-10/12 has generally been increasing, with production doubling in Poland between 2000 and 2008.

Table 2.1: EU poultry meat production by Member States ('000 tonnes)

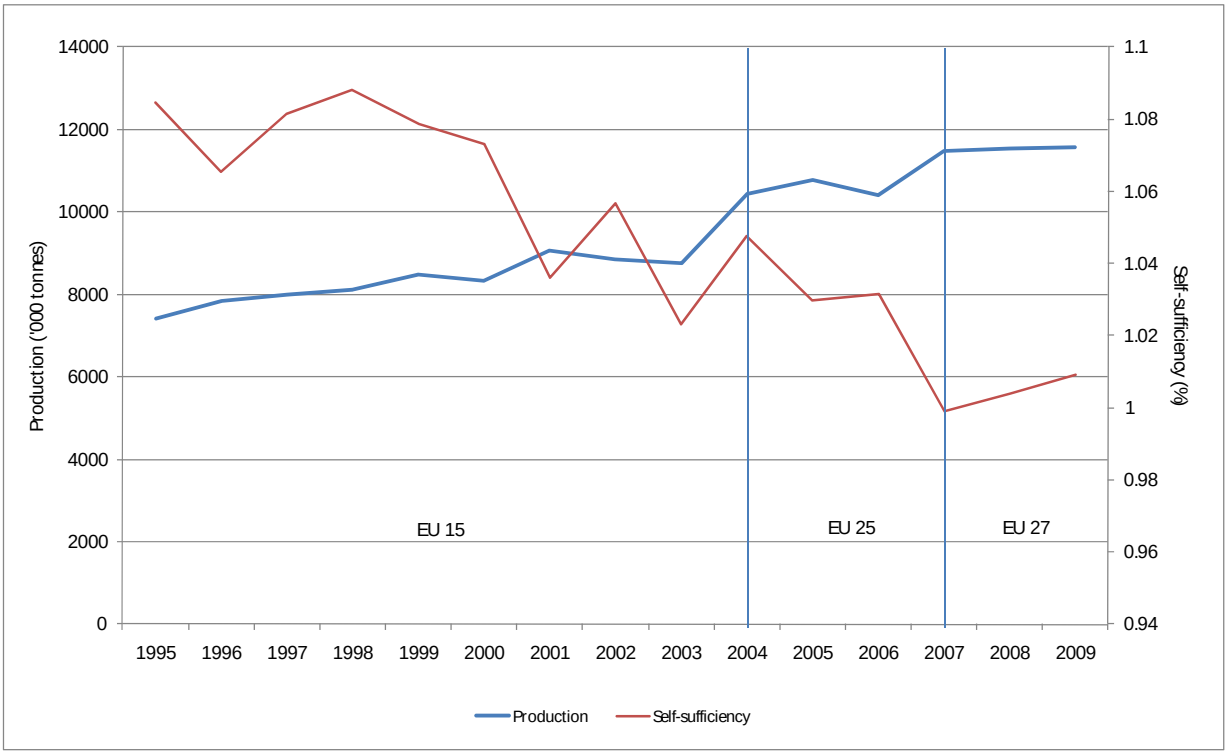
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	106	108	110	112	114	114	109	119	119
Belgium/ Luxembourg	296	291	321	289	295	282	278	267	263
Denmark	205	218	219	205	213	207	185	187	191
Finland	64	76	83	84	87	87	87	95	102
France	2,243	2,269	2,145	2,015	1,973	1,918	1,793	1,862	1,845
Germany	923	986	1,026	1,077	1,166	1,197	1,185	1,273	1,341
Greece	164	163	164	169	166	177	169	184	184
Ireland	121	121	121	120	122	127	121	112	103
Italy	1,080	1,134	1,169	1,097	1,128	1,101	984	1,056	1,106
Netherlands	695	717	705	534	604	618	617	684	697
Portugal	293	317	311	270	290	296	289	318	320
Spain	1,125	1,305	1,331	1,336	1,310	1,302	1,283	1,283	1,306
Sweden	99	106	111	106	81	82	85	87	88
United Kingdom	1,526	1,572	1,544	1,574	1,574	1,581	1,535	1,460	1,432
Cyprus	34	36	33	34	31	33	27	29	29
Czech Rep	214	234	222	212	217	226	213	202	196
Estonia	7	9	12	14	15	14	13	12	12
Hungary	470	472	468	380	384	375	386	376	380
Latvia	7	9	11	12	14	17	21	21	21
Lithuania	25	30	38	39	49	57	66	68	68
Malta	6	6	7	8	6	5	4	5	5
Poland	581	695	794	851	916	1,016	1,037	1,116	1,115
Slovenia	57	64	65	66	67	67	67	66	65
Slovakia	66	72	97	98	99	99	95	83	83
Bulgaria	:	110	124	84	97	98	107	116	120
Romania	:	284	350	343	302	320	264	304	312
EU-15	**8,939**	**9,381**	**9,360**	**8,987**	**9,122**	**9,089**	**8,720**	**8,987**	**9,097**
EU-10	**1,467**								
EU-12		**2,021**	**2,221**	**2,141**	**2,197**	**2,327**	**2,300**	**2,398**	**2,406**
EU-25	**10,406**								
EU-27		**11,404**	**11,581**	**11,128**	**11,319**	**11,416**	**11,020**	**11,385**	**11,503**

Source: AVEC

While overall EU production levels have on average been rising since the mid-1990s, self-sufficiency levels have fallen particularly following the recent enlargements of the EU. As Figure 2.3. shows, the level of self-sufficiency in the EU has steadily decreased from 108.5% in 1995 to 100.9% in 2009.

Within this total there are significant country variations with the Benelux countries in particular being significant net exporters and Denmark, France, Poland, Hungary, Finland and Italy also above the EU average in terms of self sufficiency (Table 2.2).

Figure 2.3: Production ('000 tonnes) and self-sufficiency levels (%) in the European Union, 1995 – 2009



Source: European Commission

Table 2.2: Self-sufficiency rate in selected EU Member States, 2009

Member State	Self-sufficiency rate
Netherlands	188%
Belgium / Luxembourg	165%
Denmark	145%
Hungary	124%
France	120%
Poland	118%
Italy	106%
Finland	105%
United Kingdom	98%
Spain	96%
Portugal	93%
Germany	87%
Ireland	85%
Sweden	85%
Czech Republic	84%
Slovak Republic	83%
Austria	80%
Lithuania	80%
Greece	79%
Latvia	49%

Source: AVEC (2009).
Note: Data not available for all Member States

According to one interviewee, the ability to sell all cuts (including lower value ones) and the ability to obtain higher margins on premium products have a significant effect on EU production levels. At current production levels it is possible for producers to sell all poultry cuts including the low value products. Since the accession of Eastern European countries to the EU, demand for the different cuts of poultry meat has become more balanced. In Eastern Europe there is relatively higher demand for low value cuts, which tend to be in

surplus in the EU-15 Member States. However, overall the EU has a deficit of poultry breast meat. If production were to increase to a level that would allow the EU to obtain self-sufficiency in poultry breast meat, it is possible that there would be an overall surplus of the lower value poultry meat cuts which EU producers might then have difficulty finding markets for. With respect to premium poultry products, there are some quality labels such as *Label Rouge* in France, but in general quality labels do not play as great a role as in some other livestock industries.

Looking at the world level, poultry meat production has also been on an increasing trend, growing by 30% between 2000 and 2008 (Table 2.3). Major producers Brazil and China registered an increase in poultry meat production by 87% and 22% respectively during the period. Major net importers of poultry meat Saudi Arabia and Japan also increased production, but by a lower rate (17% and 15% respectively).

Table 2.3: Poultry meat production in selected third countries ('000 tonnes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Switzerland	49	50	54	56	60	58	52	60	64
Saudi Arabia	484	506	468	469	481	538	549	560	570
Japan	1,195	1,216	1,229	1,250	1,255	1,280	1,370	1,360	1,380
Thailand	1,194	1,336	1,414	1,302	996	1,038	1,150	1,230	1,300
China	12,873	12,910	13,307	13,135	13,237	14,055	14,286	15,042	15,800
Brazil	6,118	6,732	7,669	7,905	8,723	9,681	9,707	10,700	11,471
USA	16,416	16,813	17,024	17,225	17,925	18,539	18,680	19,090	19,574
World	**69,192**	**71,935**	**75,289**	**75,875**	**79,248**	**82,729**	**83,971**	**87,585**	**90,000**

Source: AVEC

2.1.2. Consumption

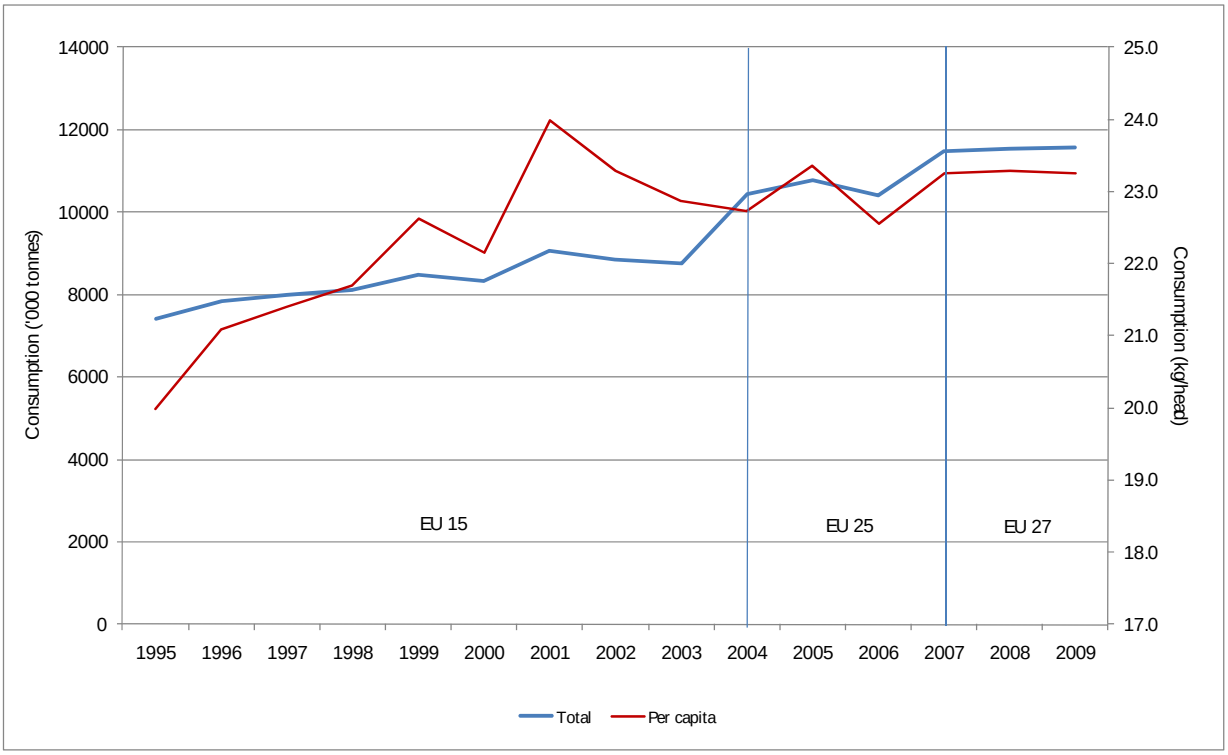
Poultry meat is generally considered to be versatile and cheaper than other popular animal proteins (namely beef and lamb). Poultry meat is produced over a shorter period and uses less space and natural resources than other livestock. From the early 1990s the market share of poultry meat *vis-á-vis* other meats has benefited from the growing view that 'white meat' is healthier than red meats as well as the increased use of poultry meat in frozen processed products and ready-meals. An additional factor driving increased consumption of poultry meat over the last decade was the shift away from beef due to concerns related to BSE.

One interviewee provided comments on the trends within different markets. In the retail market, there has been a general trend away from whole birds towards more cuts and boneless meat. Consumers are looking for more convenience meals, and as a result poultry is also increasingly used in prepared meals. Special products such as organic and Label Rouge have also increased in popularity, although these products are generally sold as whole chickens.

Figure 2.4Figure 2.4 highlights the evolution of poultry meat consumption and shows that since 1995 total and per capita consumption of poultry meat have risen due to both an increase in the number of consumers following the enlargements in 2004 and 2007 and rises in per capita consumption. The biggest growth in per capita consumption occurred between 1995 and 2001 leading to a rise in aggregate consumption from 7.4 million tonnes to 9.0 million tonnes. With the EU-10 enlargement, total internal use of poultry meat rose by 20.5% in 2004 and by 4.2% in 2007 after the accession of Bulgaria and Romania.

In per capita terms, the demand for poultry meat increased by 1% after the accession of the EU 10 in 2004 but the inclusion of Bulgaria and Romania in 2007 decreased average per capita consumption by 1.9%. Since 2001, per capita consumption in the EU-15 has remained stable while it has grown by over 10% in the EU-10.

Figure 2.4: Total ('000 tonnes) and per capita (kg/head) poultry meat consumption in the EU



Source: European Commission

Within this overall picture, major increases in consumption per capita were registered in Finland, Denmark and Germany over the period as well as even more markedly in Lithuania and Poland. In contrast, France, Italy, and the UK (three of the main poultry producing countries) exhibited a decrease in poultry meat consumption over the period.

Table 2.4: Per capita consumption of poultry meat in the EU (kg)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	17.2	18.3	17.9	17.7	19.2	20.2	18.7	19.0	18.5
Belgium/Luxembourg	18.5	17.7	20.3	19.0	18.5	18.7	17.5	18.0	18.7
Denmark	19.1	20.8	22.5	21.2	23.0	23.5	21.7	22.5	24.0
Finland	13.3	14.5	15.4	15.8	15.9	16.2	15.6	16.5	17.0
France	24.8	26.1	24.6	25.3	23.3	23.0	22.6	23.5	24.5
Germany	16.0	18.2	17.2	17.6	17.7	17.5	16.7	17.8	18.8
Greece	19.7	19.6	19.3	22.8	19.6	20.9	19.3	20.0	20.5
Ireland	33.6	30.7	31.4	32.0	31.8	33.0	34.0	32.0	32.2
Italy	19.0	18.3	18.3	17.8	18.2	17.6	15.3	17.0	17.5
Netherlands	21.6	22.2	22.6	18.6	21.9	22.1	21.9	22.5	22.5
Portugal	30.3	31.2	31.3	27.9	29.2	29.7	29.8	30.5	31.5
Spain	29.3	33.9	33.6	33.1	32.1	32.0	31.0	30.5	30.5
Sweden	12.5	13.6	14.4	13.9	13.5	13.0	12.8	12.5	13.0
United Kingdom	28.8	28.9	28.9	26.8	30.3	26.6	29.8	28.0	27.7
Cyprus	35.0	35.8	37.0	37.4	38.4	:	:	:	:
Czech Rep	22.3	22.9	22.0	22.7	24.2	24.9	25.7	24.0	23.8
Estonia	17.1	21.4	21.0	21.3	18.0	17.0	:	:	:
Hungary	35.9	36.3	38.8	37.6	37.9	37.7	32.0	32.8	31.7
Latvia	10.3	11.9	15.6	16.5	18.5	20.0	21.5	21.2	20.2
Lithuania	9.7	11.1	12.8	15.6	19.7	23.4	23.8	23.3	23.3
Malta	15.7	18.1	19.4	21.5	25.3	:	:	:	:
Poland	14.3	17.0	19.8	19.7	22.2	23.4	23.7	24.0	23.5
Slovenia	35.4	30.6	29.3	28.7	25.0	:	:	:	:
Slovakia	17.1	18.4	25.9	26.3	27.0	28.0	27.0	26.5	27.0
Bulgaria	:	:	:	:	:	:	:	:	:
Romania	:	:	:	:	:	:	:	:	:
EU-15	**21.7**	**22.4**	**22.7**	**22.1**	**22.4**	**22.4**	**21.9**	**22.2**	**22.6**
EU-10	**21.3**	**22.4**	**24.2**	**24.7**	**25.6**	**24.9**	**25.6**	**25.3**	**24.9**
EU-25	**21.5**	**22.4**	**23.3**	**23.2**	**23.8**	**23.3**	**23.0**	**23.1**	**23.3**

Source: AVEC

Worldwide there has also been a marked trend towards increased poultry meat consumption. Table 2.5 shows that between 2000 and 2008, poultry meat consumption per capita has increased in almost all countries/regions.

Table 2.5: Broiler consumption in selected third countries (kg per capita)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Brazil	29.9	31.8	33.8	33.3	33.9	35.9	36.8	39.2	39.9
China	:	:	7.3	7.5	7.5	7.6	7.7	8.5	9.1
UAE	49.0	46.7	45.3	44.0	43.1	42.6	:	:	:
Japan	:	:	14.4	14.4	13.4	14.7	15.4	15.2	15.2
Mexico	:	:	23.8	24.9	25.9	27.1	28.1	28.3	30.1
Russia	:	:	11.8	12.6	11.8	15.0	16.7	18.1	19.3
South Africa	:	:	:	:	21.1	23.5	26.2	26.9	26.0
USA	40.9	40.7	42.8	43.3	44.6	44.9	45.4	44.8	44.1

Source: AVEC

2.1.3. Trade

2.1.3.1. Imports

Most imports of poultry meat (92.7% in 2009) by EU Member States are from within the EU. However, the proportion of imports taken from third countries has varied between a low of 7.8% of total trade (in 2000 and 2009) to a high of 16.9% (in 2005). The main exporters from within the EU are the Netherlands and Germany. Other important intra EU players are Belgium, Czech Republic, France, Poland and the UK (Table 2.6).

Table 2.6: Imports of EU poultry meat ('000 tonnes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	36	45	27	48	47	66	62	70	68
Belgium/Luxembourg	129	165	175	150	137	157	138	141	150
Denmark	17	25	27	27	33	39	43	37	40
Finland	3	3	3	4	4	5	4	4	5
France	153	163	164	176	180	207	211	260	275
Germany	386	449	385	407	419	470	407	457	371
Greece	87	86	48	79	51	56	48	50	56
Ireland	56	33	33	39	40	55	94	52	55
Italy	72	43	13	36	49	23	18	34	31
Netherlands	175	195	223	252	261	283	280	408	490
Portugal	14	17	14	17	18	22	26	28	28
Spain	99	112	78	107	105	129	109	124	116
Sweden	14	19	22	24	30	33	39	35	37
UK	295	286	289	338	344	406	381	381	334
Bulgaria	:	:	:	:	:	:	42	48	59
Cyprus	1	1	1	0	0	2	2	4	5
Czech Rep	18	17	22	33	54	56	58	53	62
Estonia	35	26	23	21	16	15	15	17	17
Hungary	21	25	15	17	27	43	31	33	45
Latvia	18	20	26	24	27	28	32	29	27
Lithuania	10	10	22	15	22	31	33	34	31
Malta	1	2	2	1	3	4	5	5	4
Poland	19	28	30	23	89	82	71	59	35
Romania	:	:	:	:	:	:	159	127	114
Slovakia	9	13	17	19	23	32	33	31	38
Slovenia	6	3	5	3	4	7	8	9	11

Note: Includes trade from inside and outside the European Union.

Source: AVEC

In general, EU Member States considerably increased their levels of imports between 2000 and 2008 (Table 2.6). The Netherlands (the largest EU poultry meat importer) more than doubled its imports, increasing from 175,000 tonnes in 2000 to 490,000 tonnes in 2008. According to industry sources, the Netherlands acts as a hub for imports of third country chicken into the EU, which is subsequently re-exported to other Member States where it appears as intra-EU trade[3].

France also registered a sharp increase of 79% in the volume of imports during the period. Spain and the UK had moderate increases of 17% and 13% respectively in their volume of poultry meat imports. Italy was the only Member State among the main players in which total imports fell over the period, decreasing by 56% from 72,000 tonnes in 2000 to 31,000 tonnes in 2008.

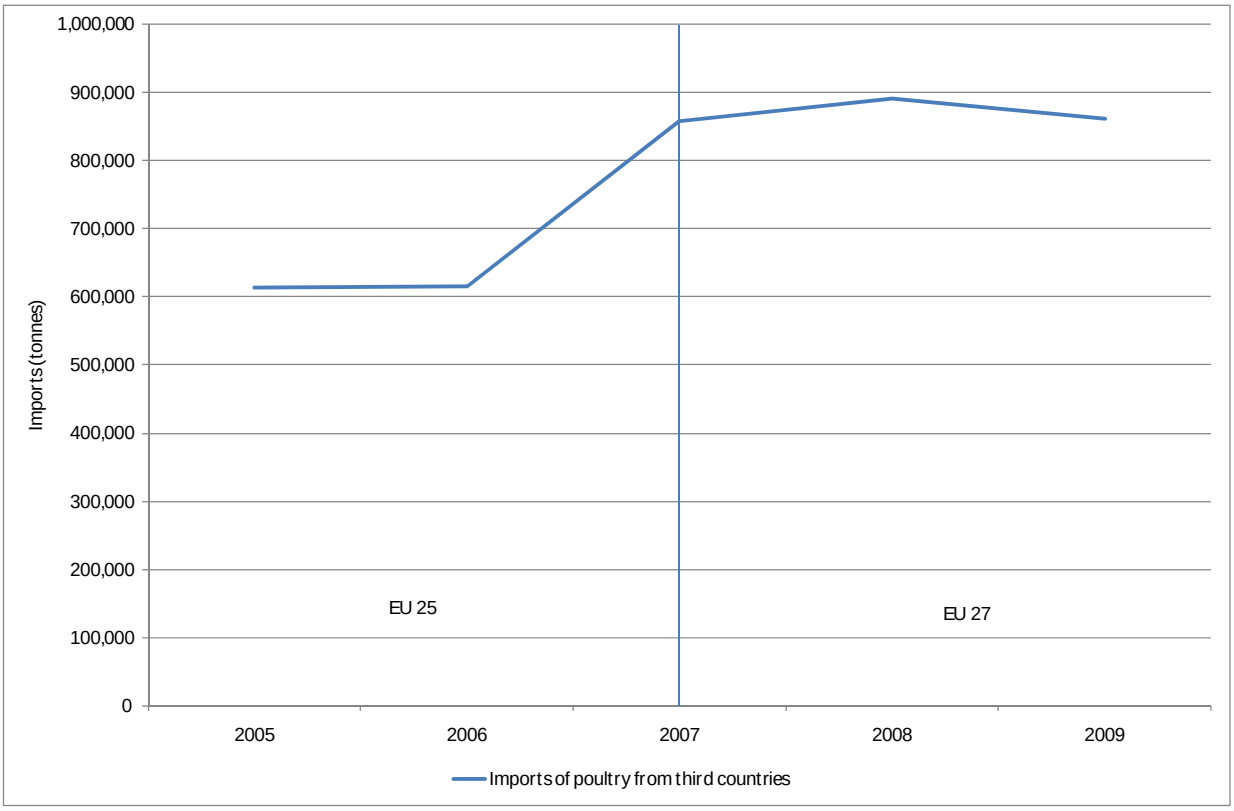
Following accession in 2004, imports of poultry meat into Poland increased significantly from 23,000 tonnes in 2003 to 89,000 tonnes in 2004. In the following years, the improvement and expansion of poultry meat production in the country reduced the level of imports, which fell to a total of 35,000 tonnes by 2008.

Figure 2.5 shows the evolution of imports in poultry meat since 2005. According to the industry, the increase in imports is mainly accounted for by boneless breast meat. Several interviewees commented that the nature of poultry meat imports had changed over the last decade. During the 1990s and up to 2002, there was a sharp increase in exports of cooked and salted poultry meat notably from Thailand and Brazil; the addition of salt enabled the product to attract a lower tariff than the equivalent fresh product when entering the EU. In 2002 the EU changed the classification (and duty rate) of this product, which then led Brazil and Thailand to open a case in the WTO against the EU. As a result of the ruling of the WTO

[3] The data presented in this section may therefore downplay the importance of third country imports.

panel, the EU applied Article XXVIII of GATT. This allowed the EU to align tariffs for different poultry meat lines, but in 2006 tariff rate quotas (TRQs) were agreed with the main affected parties. According to one interviewee, the tariff lines for turkey preparation and cooked poultry meat were harmonised at the same time as that for salted poultry meat as some substitution of products by tariff line was taking place. The same interviewee commented that the EU is applying Article XXVIII of GATT to eight more tariff lines in order to avoid substitution effects with these tariff lines.

Figure 2.5: EU poultry meat imports from third countries (tonnes)



Source: European Commission, Management Committee

Table 2.7 presents a breakdown of EU poultry meat imports since 1999 from third countries and Figure 2.6 presents the share of imports by third country in 2009. The main origin of third country poultry imports is Brazil, which currently accounts for more than 75% of the total. Over the period, imports from Brazil peaked in 2008 at 679,358 tonnes. The second largest exporter to the EU is Thailand, with a 16.1% market share. Imports from Thailand were 146,467 tonnes in 2009 and have remained strong throughout the period. Other exports to the EU include Chile and Argentina with market shares of 4.5% and 2.4% respectively. While the US would like to export more poultry meat products to the EU market, significant quantities of exports do not occur due to the EU ban on the anti-microbial treatments (AMTs) which are commonly used in broiler production in the US.

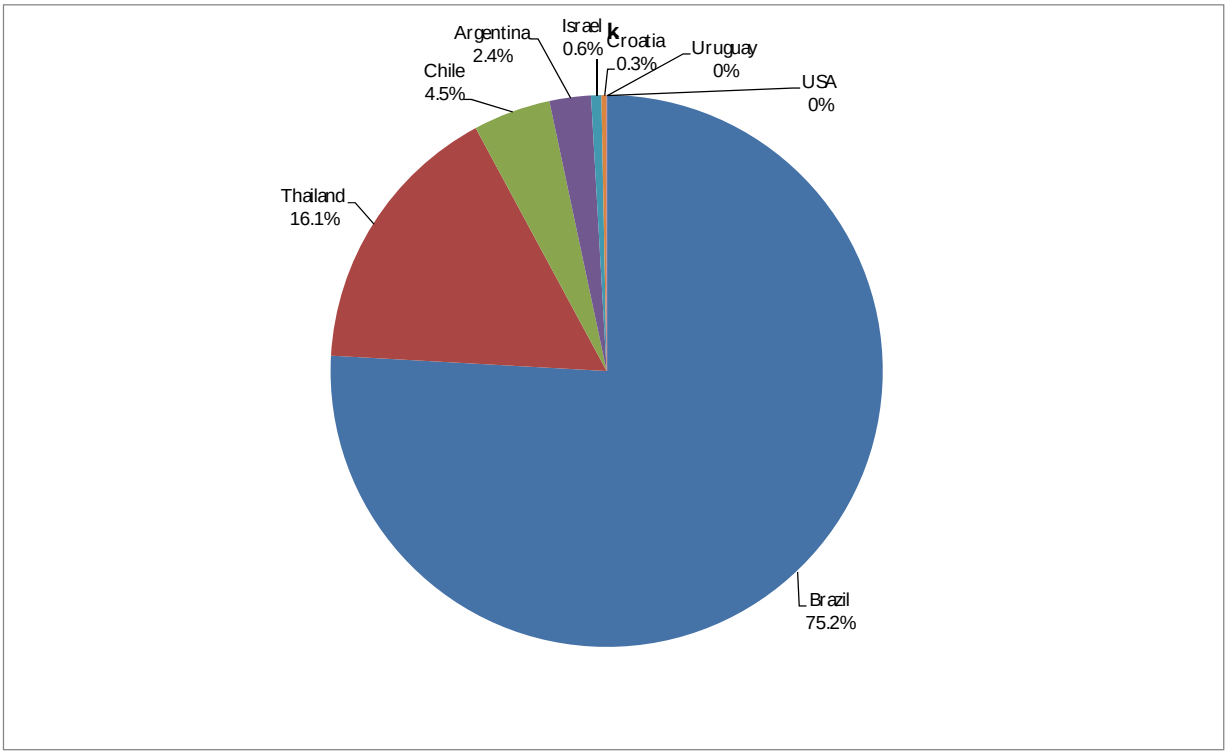
With respect to the use of import quotas, according to one interviewee there is some out-of-quota trade. Furthermore, some quotas are not fully utilised; for example, Thailand's quota is not fully utilised due to SPS problems.

Table 2.7: EU imports of poultry meat from selected third countries ('000 tonnes)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Brazil	83,853	148,832	260,590	282,509	311,471	295,177	412,712	408,683	541,190	679,358
Thailand	87,553	110,309	151,377	120,416	155,660	99,903	115,733	139,769	162,362	146,467
Chile	5,339	5,953	11,031	5,738	14,665	17,559	17,962	13,912	13,318	38,796
Argentina	1,653	2,364	3,900	5,537	8,837	10,025	14,240	12,605	22,375	20,692
Israel	3,998	6,463	6,470	4,340	4,243	5,056	6,457	4,530	8,892	5,173

Source: European Commission, Management Committee

Figure 2.6: Main third countries exporters of poultry meat to the EU, 2009 (%)



Note: Uruguay and the USA each export less than 500 tonnes of poultry to the EU.

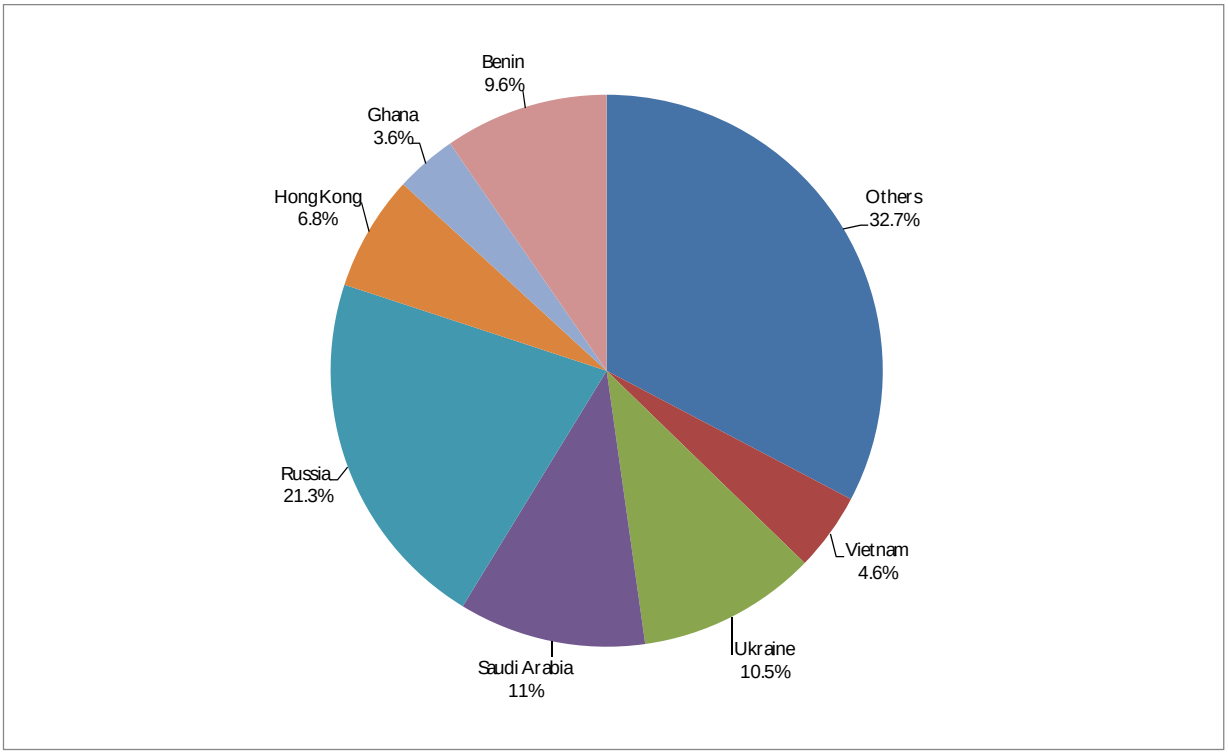
Source: European Commission, Management Committee

2.1.3.2. Exports

The EU exported a total of 857,000 tonnes of poultry meat to countries outside the EU in 2008. Exported products consist mainly of unpopular cuts for which there is little domestic demand (i.e. wings, feet and offal). In addition, there is an export refund supported volume of whole chicken production in Brittany (France) which is exported primarily to Russia and countries in the Middle East. Poultry production in Brittany is the only significant export-oriented production in the EU.

Figure 2.7 shows the export destinations for EU poultry meat. The main export markets are Russia (21.3%), Saudi Arabia (11%), Ukraine (10.5%) and Benin (9.6%).

Figure 2.7: Main destinations for extra-EU exports of poultry meat, 2008 (%)



Source: Eurostat.

Although Russia and Hong Kong tend to source the majority of their poultry imports from the USA and South America respectively, there is still trade with the EU driven by quality, bilateral agreements, price, and in the case of Russia the specialist Brittany production. Between 1999 and 2007, exports of poultry meat to Russia have varied, but the trend in terms of the total volume of exports has been declining (Table 2.8).

Similarly, exports to Saudi Arabia and the UAE have been decreasing, with decreases of 38% and 74% respectively between 1999 and 2007. This has primarily been due to competition from South American exports that has taken market share from EU countries, with Brazil now being the main supplier of poultry meat to both Saudi Arabia and the UAE.

Table 2.8: EU exports of poultry meat to selected countries (tonnes)

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Russia	260,694	257,558	190,288	270,248	188,927	172,558	224,833	206,436	196,823
Saudi Arabia	128,177	113,743	107,729	102,547	114,137	84,177	94,271	76,899	79,289
Benin	42,639	67,883	81,378	71,407	77,615	49,983	47,652	47,060	63,417
Ukraine	9,292	8,544	19,375	43,700	48,108	107,678	64,354	72,745	26,859
Hong Kong	90,578	63,936	54,966	41,161	34,200	30,468	40,781	62,214	63,963
UAE	65,349	50,423	42,264	37,121	26,433	22,366	24,298	20,195	16,977

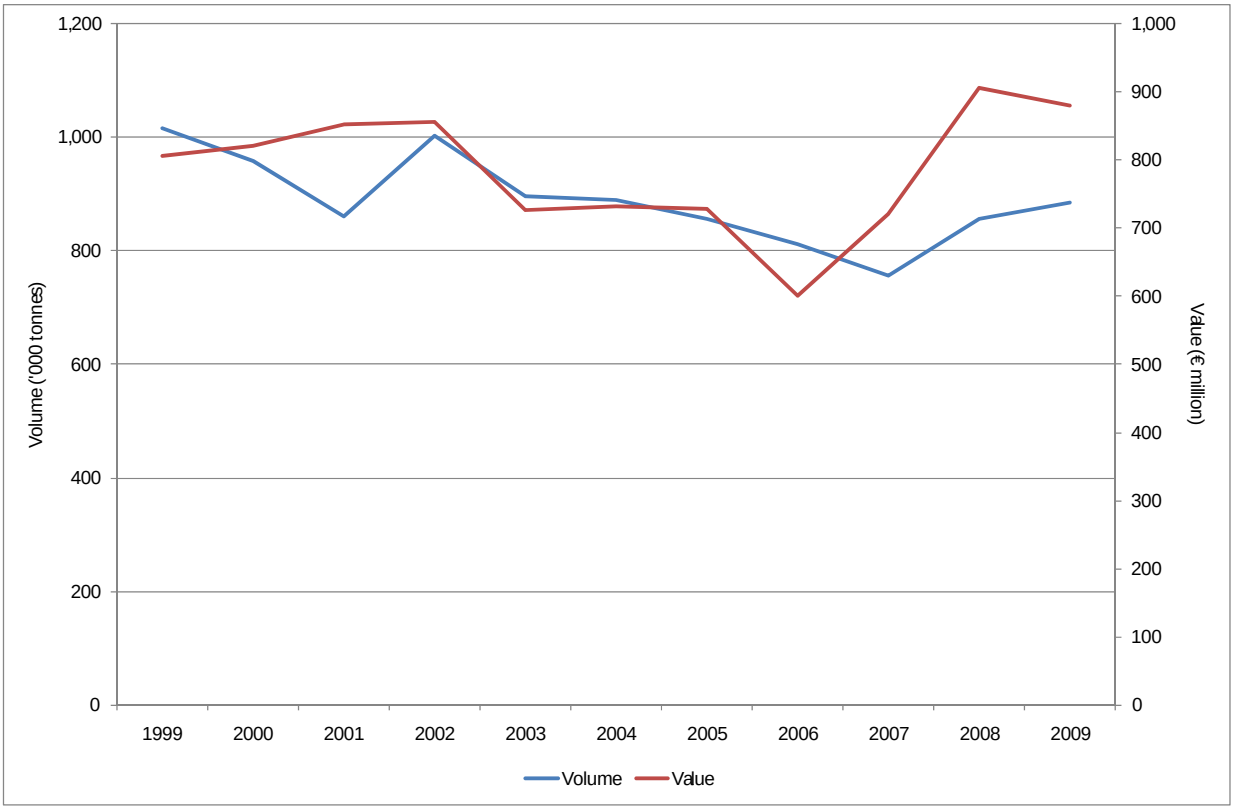
Source: European Commission, Management Committee

Export trade is nonetheless important for EU producers in terms of boosting the revenue that can be made per bird by selling low value parts for which there is lower demand within the EU.

Figure 2.8 presents the evolution of EU poultry meat exports since 1999. Between 2002 and 2007 both the volume and value of exports has steadily decreased. After the avian influenza crisis in 2003, several third countries banned imports of poultry meat from the

EU. This situation did not change until 2007, with export volumes having fallen by 24.5%. Since then, more markets for EU poultry meat have re-opened although overall exports have not yet reached pre-avian influenza levels in volume terms.

Figure 2.8: Extra-EU 27 exports of poultry meat ('000 tonnes)



Source: Eurostat

However, there are marked differences between Member States in the evolution of exports. For example, while exports from France (the EU's largest exporter) and Denmark have fallen sharply over the period, exports from Germany, the UK, and latterly the Netherlands and Poland have been rising (Table 2.9).

Table 2.9: Intra and Extra EU exports of poultry meat ('000 tonnes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	14	17	26	29	23	33	34	43	44
Belgium/Luxembourg	311	327	351	322	357	351	374	334	342
Denmark	124	121	128	121	121	114	99	94	89
Finland	2	6	10	11	12	12	14	14	14
France	736	672	666	626	596	560	460	481	484
Germany	158	161	232	275	275	323	323	385	327
Greece	6	7	4	6	8	11	8	16	14
Ireland	54	41	38	40	39	45	46	44	35
Italy	69	117	143	111	121	127	132	115	118
Netherlands	722	733	773	661	613	605	716	873	812
Portugal	2	2	3	3	4	3	5	8	6
Spain	67	70	66	71	71	72	63	79	97
Sweden	16	19	11	14	13	13	38	46	29
UK	190	220	244	268	265	304	258	291	277
Bulgaria	:	:	:	:	:	:	8	17	12
Cyprus		0	0	0	0	0	0	1	1
Czech Rep	9	11	13	13	24	27	21	22	22
Estonia	19	9	6	5	4	3	3	2	4
Hungary	122	132	134	110	125	111	91	104	120
Latvia		0	0	0	0	1	5	3	3
Lithuania	1	1	12	3	6	12	13	17	3
Malta	0	0	0	0	0	0	0	0	0
Poland	49	52	58	109	132	186	208	235	258
Romania	:	:	:	:	:	:	0	2	10
Slovakia	4	4	4	5	10	12	15	15	15
Slovenia	2	16	15	9	9	9	9	13	15

Note: Includes trade from inside and outside the European Union.
Source: AVEC

2.1.4 Employment

The EU poultry meat sector employs an estimated 147,000 persons in the slaughtering and processing of poultry meat. Approximately half the numbers employed in the sector are found in three Member States: France, Poland and the United Kingdom.

Eurostat data for employment is incomplete but the available evidence from those Member States reporting shows a variable picture with numbers employed declining since 2000 in Belgium, Ireland, Italy, Hungary, Netherlands, Portugal and Slovakia. In contrast, employment in the sector has been rising in Germany, Spain, France, Austria, Finland, Sweden and the United Kingdom (Table 2.10). Within this overall picture, it is understood that in slaughterhouses and further processing plants employment has remained relatively stable but where there has been a decline in employment this has been largely a result of consolidation within the sector[4]

[4] Interview with AVEC.

Table 2.10: Poultry meat slaughtering and processing sector employment, number of enterprises and turnover by EU Member State in 2007

	Employment	Employment	Number of enterprises	Number of enterprises	Turnover (Euro million)	Turnover (Euro million)
	2000	2007	2000	2007	2000	2007
Belgium	2,991	2,637	137	103	823.1	1,204.8
Bulgaria		4,162		70		219.0
Czech Republic		3,715		35		332.5
Denmark			10	7		
Germany (including ex-GDR from 1991)	8,698	10,153	74	93	1,968.8	3,497.2
Estonia	0		0	1	0.0	
Ireland	2,558	1,552	16		405.3	
Greece		1,540		38		246.5
Spain	9,312	10,527	447	220	1,716.4	2,277.0
France	29,627	29,898	480	425	5,756.7	6,285.7
Italy	14,087	9,878	239	185	2,856.7	2,406.0
Cyprus	261	391	15	15	28.0	51.8
Latvia		1,115	3	4		
Lithuania		40	2	5		1.7
Luxembourg (Grand-Duché)	0	0	0	0	0.0	0.0
Hungary	15,465	9,808	74	110	687.2	806.7
Malta	24		7		1.9	
Netherlands	4,888	2,637	70	55	1,716.5	1,754.5
Austria	730	780	5	12	102.5	148.5
Poland		22,467	333	318	866.7	2,447.6
Portugal	3,685	3,397	71	54	464.9	
Romania		5,145		50		190.3
Slovenia		1,457	5	4	108.1	158.9
Slovakia	2,764	1,685	13	8	119.5	113.9
Finland	22	99	3	4	1.8	23.5
Sweden	1,436	1,511	19	29	252.3	335.5
United Kingdom	21,305	22,455	120	119		3,905.4
EU-27		147,049		1,970		

Notes: Processing includes slaughtering; for Ireland and Portugal, 2006 data for employment and turnover.

Source: Eurostat

According to the industry, the broiler sector has been undergoing restructuring and consolidation over time; the number of poultry farms has been decreasing year on year but at the same time the size of the farms has been increasing. In general, interviews with the industry suggest consolidation within the sector is more common than companies leaving the sector. Data from Eurostat indicates that between 2000 and 2005 the number of enterprises involved in the production and processing of poultry meat in the EU-15[5] fell from 1,691 to 1,279.

[5] Excluding Greece for which data is not available.

2.1.5. Key driving factors

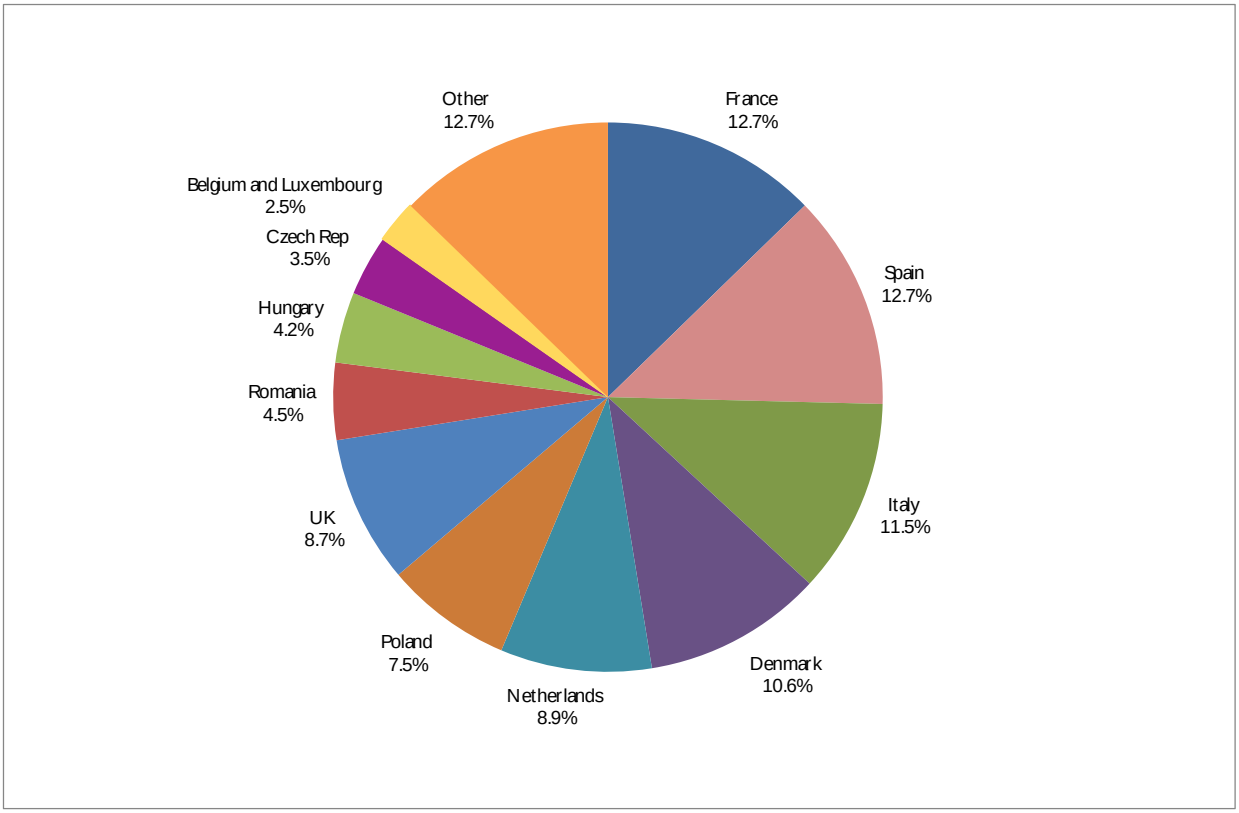
The key factors driving market evolution in the broiler production sector are discussed in Section 3.2.4 in the context of the analysis of feed costs as well as in Sections 2.1.1.1 and 2.1.2.1 on consumption trends.

2.2. Overview of the EU egg sector

2.2.1. Production

Total EU egg production currently amounts to 6.9 million tonnes. The largest egg producers in the EU are France, Spain, Italy, Germany, the Netherlands and the UK and consequently over three quarters of total egg production takes place in the EU-15 (Figure 2.9).

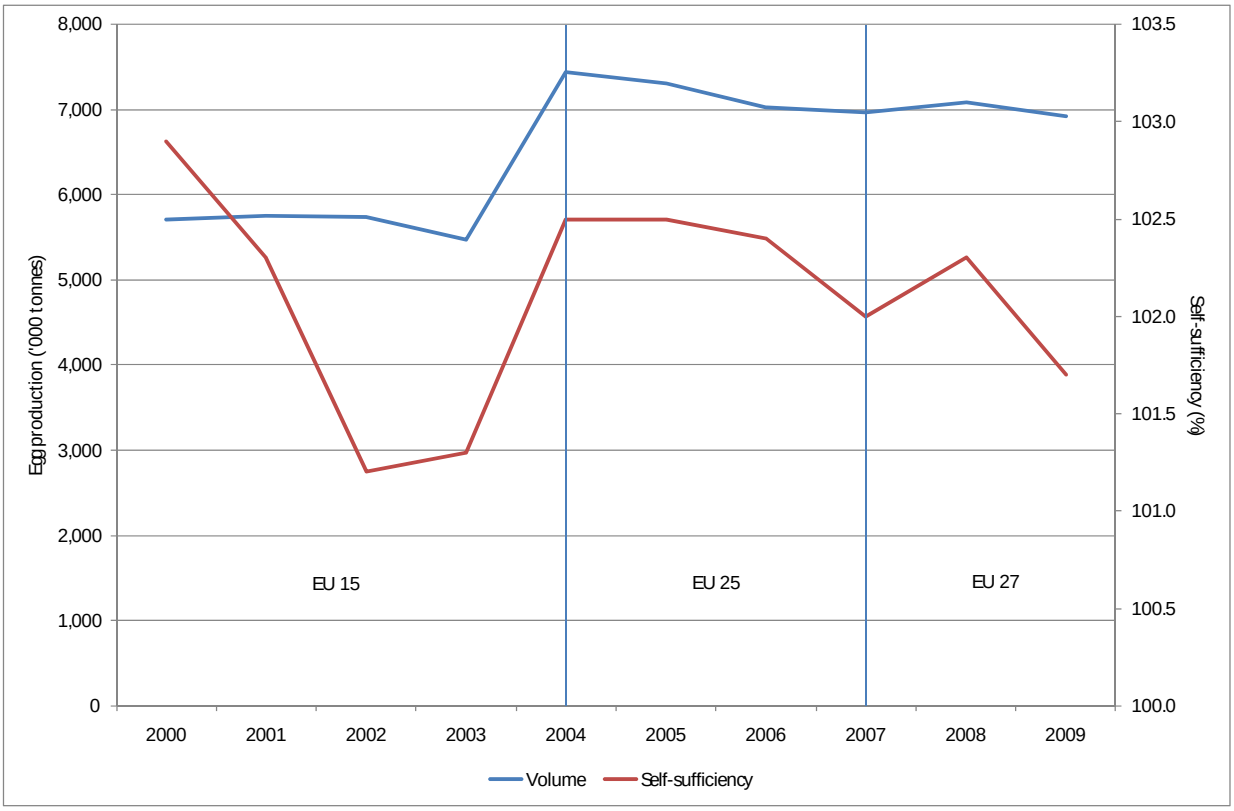
Figure 2.9: EU-27 egg production share by Member State, 2009



Source: European Commission DG Agri, 2009

The overall trend in EU egg production has been one of a general increase. Between 1998 and 2002 egg production grew by a total of 6.3%, driven by increasing per capita consumption which rose by an average rate of 275 grams per year. However, growth in demand outpaced production growth causing self-sufficiency levels to drop from 103.8% to 101.2% over the period (Figure 2.10). In 2003, the avian influenza outbreak resulted in a reduction in EU egg production which fell by 3.6%, primarily due to a 27% reduction in the Netherlands with production falling from 638,000 to 463,000 tonnes (Table 2.11).

Figure 2.10: Egg production ('000 tonnes) and self-sufficiency levels (%) in the EU, 1998 – 2009



Source: European Commission

The accession of the EU-10 in 2004 added over 1 million tonnes to overall EU egg production. In addition, production in those countries affected by the 2003 avian influenza outbreak recovered, with egg production in the Netherlands increasing back to almost pre-avian influenza levels (611,000 tonnes). Despite a further outbreak of avian influenza in the EU in 2006, and the resultant loss of consumer confidence, EU-25 production fell by less than 1%. Vaccination programmes and quarantine measures were for the most part successful in containing the outbreak.

In 2007, production decreased by 0.8% in the EU 27 and demand rose by 6.4%, which had the effect of reducing self-sufficiency levels to 102% (equating to a surplus of 141,000 tonnes). The accession of Bulgaria and Romania in this year added over 400,000 tonnes of egg output to the EU total.

As shown in Figure 2.10, while EU egg production has generally been increasing over the period, the rate of demand growth has continued to exceed domestic supply leading to a reduction in self sufficiency.

Table 2.11: EU Egg production by Member State ('000 tonnes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	86	86	88	85	87	89	91	95	96	94
Belgium / Luxembourg	216	236	218	216	230	200	194	174	164	164
Denmark	74	81	82	81	83	80	77	78	78	79
Finland	59	57	55	56	58	58	57	57	58	55
France	1,039	1,029	999	996	1,021	1,001	975	952	947	928
Germany	893	877	861	814	804	816	780	778	787	671
Greece	122	131	123	124	126	123	113	117	127	127
Ireland	38	37	40	39	39	43	46	42	43	43
Italy	846	832	790	785	783	777	743	743	748	743
Netherlands	669	657	638	463	611	607	615	634	644	645
Portugal	117	124	125	126	132	120	119	122	124	125
Spain	811	819	878	891	924	924	924	924	924	924
Sweden	107	105	101	100	111	108	100	96	104	104
United Kingdom	632	679	741	701	789	819	634	619	646	647
Cyprus	11	11	12	12	12	12	12	8	9	9
Czech Rep	306	183	169	263	242	140	140	148	192	188
Estonia	16	17	16	15	14	13	13	10	9	9
Hungary	367	378	339	190	193	176	175	168	169	139
Latvia	25	27	31	31	33	34	36	42	41	41
Lithuania	42	45	48	49	52	52	57	59	55	55
Malta	5	5	6	6	6	6	7	7	7	7
Poland	424	449	499	518	521	545	546	556	590	590
Slovenia	22	21	23	23	23	23	23	21	21	23
Slovakia	71	74	76	78	78	78	70	73	73	73
Bulgaria	:	:	:	:	:	:	:	99	96	100
Romania	:	:	:	:	:	:	:	338	335	335
EU-15	**5,708**	**5,750**	**5,738**	**5,477**	**5,798**	**5,766**	**5,467**	**5,431**	**5,490**	**5,348**
EU-10	**1,288**	**1,212**	**1,218**	**1,184**	**1,637**	**1,541**	**1,551**	**1,092**	**1,166**	**1,134**
EU-12	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**436**	**430**	**434**
EU-25	**6,996**	**6,962**	**6,956**	**6,753**	**7,434**	**7,307**	**7,018**			
EU-27	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**6,960**	**7,086**	**6,917**

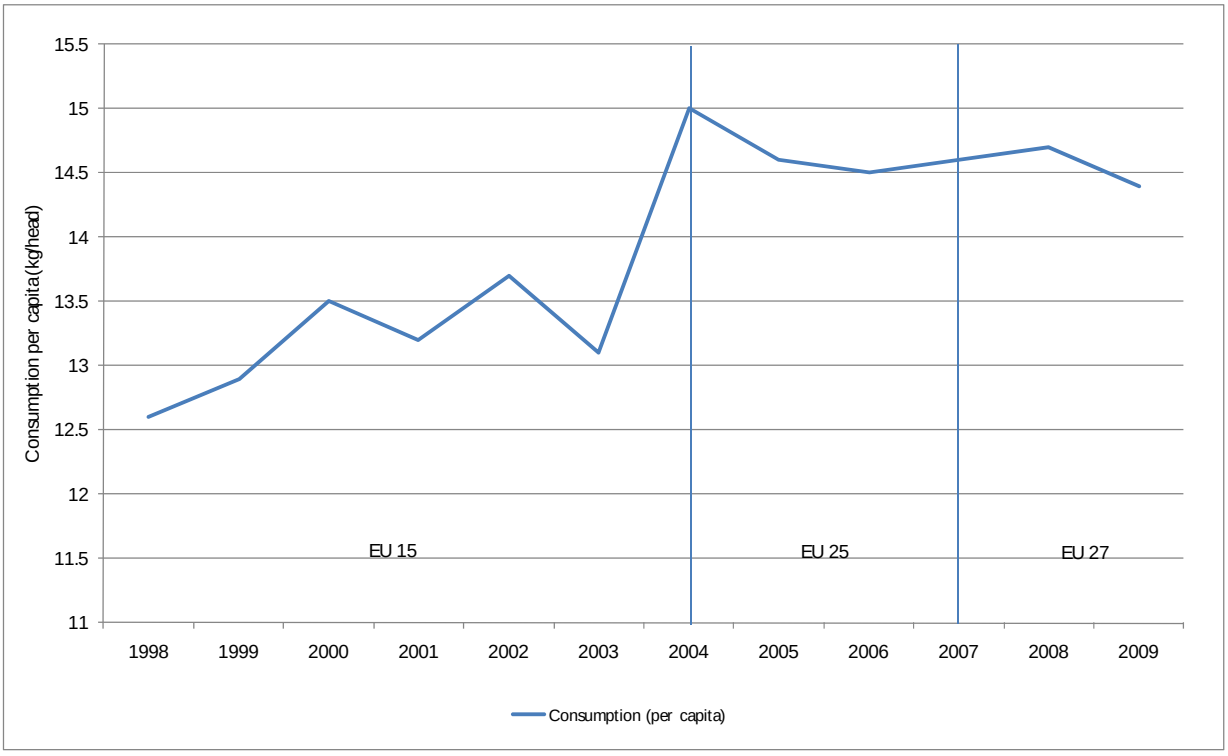
Source: European Commission, Management Committee

2.2.2. Consumption

The overall trend in EU egg consumption has been one of a general increase, with average EU consumption per head rising from 12.6 kg/head in 1998 to 14.4 kg/head in 2009. There have been varying trends between Member States, with per capita consumption generally rising more slowly in the EU-15, albeit starting from a higher base, than in the New Member States. Between 2004 and 2009, consumption per head in the new Member States increased by 3.2% to 12.8 kg per head compared with 0.7% to 13.7 kg per head in the EU 15.

Figure 2.11, provides data on egg consumption per capita and indicates consumption increased in the EU-15 between 1998 and 2004. Aggregate consumption then levelled off in the following years, due to the lower level of per capita consumption in the EU 12.

Figure 2.11: Egg consumption per capita in the EU, 1998 – 2009 (kg/head)



Source: European Commission

Total EU consumption of eggs has risen in line with increased per capita demand, rising from 5.8 million tonnes in 1998 to 7.1 million tonnes in 2009. In 2004, the addition of 10 new Member States to the EU increased aggregate EU consumption levels by 1.4 million tonnes (Table 2.12).

Table 2.12: Total use of eggs by EU Member State ('000 tonnes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	172	187	176	189	182	163	170	171	:
Bulgaria	:	:	:	:	:	:	97	93	87
Czech Republic	181	188	173	169	158	145	:	154	:
Denmark	84	90	95	97	111	100	95	110	:
Germany	1,168	1,156	1,144	1,123	1,110	1,122	1,105	1,125	1,124
Estonia	:	:	:	:	15	16	:	16	16
Ireland	42	44	46	45	46	51	52	49	50
Greece	126	135	128	129	128	127	119	125	120
Spain	764	773	813	778	813	:	:	:	:
France	1,024	1,020	1,000	1,003	1,030	1,028	:	:	:
Italy	888	796	763	732	730	736	695	:	:
Cyprus	:	:	:	:	:	:	10	10	10
Latvia	:	26	29	26	31	32	34	35	36
Lithuania	43	46	48	46	47	42	46	43	44
Luxembourg	0	0	0	0	:	:	:	4	4
Hungary	:	:	:	170	193	187	187	182	177
Malta	:	:	6	7	6	7	7	8	8
Netherlands	293	278	279	258	:	:	:	:	:
Austria	112	112	117	115	116	120	122	123	125
Poland	:	:	488	490	496	499	487	433	467
Portugal	118	127	125	121	126	122	117	125	124
Romania	:	:	:	:	377	375	373	339	345
Slovenia	23	23	:	:	:	:	:	:	:
Slovakia	:	:	:	:	:	:	66	59	48
Finland	52	49	52	48	49	49	:	:	:
Sweden	113	113	108	110	118	116	:	:	:
United Kingdom	680	746	825	786	870	908	744	:	:

Source: Eurostat

Within the overall increasing consumption trend, there has been a marked shift in the nature of demand for eggs. In northern Europe, there has been sustained growth in demand for non-caged eggs in recent years. This has in part been driven by retailer led product differentiation. However, this trend has not been observed to the same extent in southern Europe and in the new Member States where demand for traditional caged output still predominates.

2.2.3. Trade

2.2.3.1. Imports

The bulk of EU trade in eggs and egg products is intra-EU trade. Overall, intra-EU trade has grown steadily, with the biggest increases occurring in the EU-12 where imports went from 7,141 tonnes in 2000 to 150,153 tonnes in 2008 (Table 2.13).

Table 2.13: Intra-EU imports of fresh and processed eggs, by Member State (tonnes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	1,714	2,254	2,036	6,395	5,024	4,984	4,148	5,494	6,686	6,463
Belgium /Luxembourg	72,577	75,738	84,470	85,142	88,466	83,923	30,954	28,261	27,006	36,840
Bulgaria	384	322	322	345	22	399	1,319	4,889	8,441	7,608
Cyprus	17	79	0	96	50	49	0	0	16	22
Czech Rep	2,261	2,639	5,634	6,505	5,020	6,069	6,750	6,144	8,365	8,110
Germany	88,883	75,274	75,355	106,197	86,795	98,690	56,991	58,950	58,839	73,124
Denmark	8,653	10,999	10,182	11,658	13,516	16,552	11,605	15,398	14,364	17,297
Estonia	524	0	185	261	309	595	812	473	583	867
Spain	45,005	54,463	75,315	126,031	111,954	122,427	52,240	45,675	53,133	68,805
Finland	5,004	5,178	3,747	6,788	8,504	8,789	7,079	8,143	8,583	5,752
France	51,837	50,226	60,297	61,678	89,168	65,217	44,083	43,397	57,110	47,664
United Kingdom	8,969	10,912	13,804	12,566	15,234	12,435	9,049	7,228	9,055	10,529
Greece	697	1,954	663	3,012	6,319	3,552	953	1,358	1,765	2,913
Hungary	1,155	1,285	1,221	6,855	3,042	2,461	3,073	5,117	6,199	5,337
Ireland	2,260	2,782	2,974	1,641	1,062	4,459	1,510	2,012	5,010	6,610
Italy	2,321	11,213	10,293	33,941	15,024	15,605	16,579	18,163	17,534	18,350
Lithuania	0	58	1,966	3,488	7,217	14,086	10,843	10,526	16,226	11,006
Luxembourg	924	838	186	107	119	139	17	24	6	53
Latvia	1,699	771	1,263	1,425	883	2,745	2,653	7,621	5,136	10,863
Malta	:	:	:	:	:	:	3	;	;	;
Netherlands	382,722	352,072	359,969	305,338	377,521	407,456	385,594	412,844	394,582	459,922
Poland	361	3,235	7,353	26,675	21,761	40,556	47,324	79,590	81,171	96,571
Portugal	4,046	5,125	7,767	13,104	12,357	11,369	8,730	7,822	10,794	12,064
Romania	5	10	0	1,028	1,336	34	0	2,001	3,187	1,855
Sweden	3,410	3,162	3,657	4,348	4,447	3,498	1,293	2,430	2,836	2,525
Slovenia	71	0	7	0	736	299	115	315	109	95
Slovakia	664	1,170	757	2,496	3,441	4,243	3,723	6,772	5,603	7,819
EU-15	**679,022**	**662,191**	**710,716**	**777,946**	**835,509**	**859,095**	**630,824**	**657,198**	**667,303**	**768,909**
EU-12	**7,141**	**9,570**	**18,710**	**49,173**	**43,815**	**71,536**	**76,614**	**123,449**	**135,035**	**150,153**
EU-27	**686,163**	**671,760**	**729,426**	**827,119**	**879,324**	**930,632**	**707,438**	**780,647**	**802,339**	**919,062**

Note: 0407 – Birds' eggs in shell, fresh, preserved or cooked.
0408 – Birds' eggs not in shell, and egg yolks, fresh, dried, cooked by steaming or boiling in water, moulded, frozen or otherwise preserved, whether or not containing added sugar or other sweetening matter.

Source: Eurostat

Imports of eggs and egg products from third countries account for a relatively small proportion of overall trade (Table 2.14). According to Eurostat data, while at the beginning of the period under review shell eggs accounted for the bulk of imports this has changed in recent years and processed eggs and egg products now account for 57% of the total. The total volume of egg imports from third countries was 25,347 tonnes of egg-in-shell equivalents in 2008. Some 75% of these imports are sourced from the USA, Argentina and India.

Table 2.14: Imports of eggs with non-member States, 2000 – 2008 (eggs and products in eggs-in-shell equivalent)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	1,102	1,349	4,945	7,448	829	108	1,215	1,271	1,116
Bulgaria	:	:	:	:	:	:	:	50	132
Czech Republic	:	:	:	:	0	0	0	0	0
Denmark	3,027	2,414	4,276	8,717	7,913	7,434	14,559	16,532	8,606
Germany	4,779	3,225	6,102	18,770	5,207	10,431	9,813	8,088	2,987
Estonia	:	:	:	:	0	90	0	0	0
Ireland	0	0	0	0	0	0	1	0	0
Greece	17	79	9	101	2	0	0	0	0
Spain	128	96	22	35	27	484	107	483	774
France	644	397	517	1,108	247	199	1,353	405	189
Italy	3,949	284	2,713	6,424	1,826	144	352	6,125	2,452
Cyprus	:	:	:	:	7	2	6	16	8
Latvia	:	:	:	:	0	0	0	0	0
Lithuania	:	:	:	:	30	3	1	0	0
Luxembourg	0	0	0	0	0	0	0	0	0
Hungary	:	:	:	:	184	233	110	266	240
Malta	:	:	:	:	0	0	0	0	0
Netherlands	6,735	2,268	4,051	14,428	1,225	1,114	1,324	3,317	1,362
Austria	3,782	3,379	4,059	9,470	5,401	5,940	5,279	5,534	4,072
Poland	:	:	:	:	115	165	608	465	678
Portugal	41	56	0	100	3	348	84	183	105
Romania	:	:	:	:	:	:	:	0	0
Slovenia	:	:	:	:	3	55	689	5	49
Slovakia	:	:	:	:	2	11	0	0	0
Finland	0	0	23	1	0	0	0	0	0
Sweden	333	539	308	827	658	1,407	1,821	2,487	1,430
UK	2,302	1,725	2,925	1,809	1,073	1,574	1,631	2,403	1,147
EU-15	**26,840**	**15,811**	**29,951**	**69,239**	**24,410**	**29,742**	**38,950**	**:**	**:**
EU-25	**:**	**:**	**:**	**:**	**24,751**	**29,114**	**38,930**	**:**	**:**
EU-27	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**47,748**	**25,347**

Source: European Commission, The Agricultural situation in the European Union.

Only three third countries which have achieved equivalence on their salmonella status are authorised to export eggs in shell for sale in the EU; Switzerland, Norway and Croatia. An interviewee noted that imported eggs in shell must be marked with the country code of origin, and the method of production must be indicated as being not in accordance with EU standards (as there is no equivalence in standards). Other industry comments received were that: "best before" quality and labelling requirements prevent the US, Brazil, Mexico and India from exporting shell eggs to the EU; the fact that the bulk of US egg production consists of white eggs which need to be washed contravenes the EU prohibition on the washing class A eggs and thus effectively also limits the scope for US exports[6]; and that exports from the Ukraine are limited as the country is still some distance from obtaining salmonella equivalence.

According to one interviewee, there may be greater imports of powdered egg products in future. This issue is further analysed in Section 4.

The total value of EU imports from third countries averaged €52.6 million between 1998 and 2009. It should be noted that in the period since 2004, there has been a gradual increase in the value of imports from €51.4 million in 2001 to €62.9 million in 2004 and €62.3 in 2009. Between 2001 and 2009, volumes declined from 23,000 tonnes to 13,000 tonnes suggesting a sharp increase in the value per tonne of product imported.

[6] Shell eggs imported from third countries go to processing industry.

The EU is self-sufficient in egg production. Between 2000 and 2009, overall self-sufficiency levels have varied between 101% and 102%. However, a number of Member States (e.g. Austria, Germany, France, Portugal, Sweden and the UK) are net importers (Table 2.15).

Table 2.15: Self sufficiency in egg production in selected EU Member States, 2008

Country	Self-sufficiency rate
Germany	67%
Austria	76%
United Kingdom	83%
France	86%
Sweden	94%
Portugal	96%

Source: ZMP, 2008

2.2.3.2. Exports

Table 2.16 presents data on intra EU trade in fresh and processed egg products and highlights that the main growth in this trade since 2000 has occurred as a result of increased intra-EU exports, primarily in the new Member States following Accession. Within the overall EU it is important to note that Germany is the largest exporter of fresh and processed egg products within the EU, and in particular exporting a large volume of shell eggs for processing to the Netherlands. The Netherlands and France are also significant exporters within the EU.

Table 2.16: Intra-EU exports of fresh and processed eggs by Member State (tonnes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	17,091	15,431	17,409	19,834	19,702	20,490	16,782	18,835	19,061	19,080
Belgium /Luxembourg	32,577	31,228	43,879	44,761	49,841	46,247	33,229	34,118	29,310	30,043
Bulgaria	518	348	157	215	1,615	1,319	990	1,697	3,441	2,856
Cyprus	292	87	67	103	166	612	536	1,412	1,137	1,379
Czech Rep	1,876	2,444	1,929	3,574	10,871	26,480	22,359	22,719	24,328	28,744
Germany	275,221	282,162	292,803	324,689	345,155	344,965	73,263	107,378	144,420	223,760
Denmark	19,594	21,314	15,700	20,437	27,755	33,754	23,920	29,108	34,158	32,848
Estonia	1,526	1,024	928	664	1,444	3,623	2,458	3,450	7,026	6,590
Spain	9,976	12,072	14,154	14,830	15,191	9,284	14,761	19,553	15,706	19,910
Finland	193	158	650	853	741	766	433	559	1,717	2,589
France	65,179	72,944	87,072	104,084	91,086	101,925	30,819	34,587	91,324	85,712
United Kingdom	43,613	49,793	60,089	64,396	64,693	66,184	47,985	60,967	59,484	62,434
Greece	3,582	3,849	4,153	3,267	3,904	6,334	2,697	4,101	6,020	7,491
Hungary	875	2,041	2,586	2,370	6,597	35,060	15,532	27,058	46,285	18,762
Ireland	6,058	5,955	5,246	8,263	7,076	7,103	6,563	7,450	11,808	19,757
Italy	69,450	16,489	22,955	19,289	22,037	21,933	4,769	10,916	20,368	22,281
Lithuania	442	1,321	1,416	1,176	871	2,839	2,265	738	1,577	2,398
Luxembourg	4,258	4,389	3,987	3,632	3,529	4,478	1,965	1,495	1,612	1,651
Latvia	544	698	723	462	719	2,368	2,690	4,936	5,048	5,550
Malta	529	584	551	670	296	199	141	123	92	140
Netherlands	85,919	72,908	87,633	124,276	112,906	114,377	56,858	47,489	91,498	84,730
Poland	1,800	1,502	1,359	1,098	6,460	14,528	9,577	10,012	15,693	23,270
Portugal	8,954	12,712	11,836	8,141	7,225	11,272	2,316	2,815	13,145	38,532
Romania	435	4,057	1,730	584	2,933	2,374	2,126	23,013	26,514	27,646
Sweden	12,664	11,005	8,312	11,624	9,439	9,162	11,721	12,248	10,873	12,523
Slovenia	394	268	552	287	528	1,312	728	1,377	1,681	1,999
Slovakia	1,053	751	712	752	6,324	10,017	8,425	7,968	11,187	12,431
EU-15	654,326	612,409	675,878	772,373	780,282	798,273	328,083	391,617	550,502	663,341
EU-12	10,284	15,124	12,708	11,954	38,824	100,730	67,827	104,502	144,008	131,766
EU-27	664,610	627,533	688,586	784,328	819,106	899,003	395,910	496,119	694,511	795,107

Note: 0407 – Birds' eggs in shell, fresh, preserved or cooked.
0408 – Birds' eggs not in shell, and egg yolks, fresh, dried, cooked by steaming or boiling in water, moulded, frozen or otherwise preserved, whether or not containing added sugar or other sweetening matter.

Source: Eurostat

In total terms while the volume of intra-EU trade has grown over the last decade, the volume of extra-EU exports has remained relatively stable. That said trade was negatively impacted in the years during which outbreaks of avian influenza were identified the EU, although the impact was short lived.

Regarding exports to Third Countries, the Netherlands and Germany are the largest exporters accounting for 55.6% of total extra-EU egg exports (Table 2.17). Other significant extra-EU exporters of fresh and processed eggs include Poland, Italy, Belgium/Luxembourg and France. Egg and egg product exports outside the EU are predominantly directed to Japan and Switzerland.

Table 2.17: Exports of eggs with non-Member States, 2000 – 2008 (eggs and products in eggs-in-shell equivalent)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	15,288	15,015	13,726	8,934	13,982	10,960	13,494	6,640	5,180
Bulgaria	:	:	:	:	:	:	:	2,948	1,022
Czech Republic	:	:	:	:	1,424	1,464	943	119	77
Denmark	3,670	3,483	2,716	2,587	2,695	2,194	2,306	4,139	2,499
Germany	34,333	39,391	37,729	26,962	39,294	38,658	36,619	33,209	31,131
Estonia	:	:	:	:	12	142	5	10	22
Ireland	0	2	0	11	34	0	59	45	0
Greece	891	709	232	40	3,944	2,304	552	62	57
Spain	7,552	6,310	5,572	4,195	5,437	4,988	6,903	6,087	7,865
France	26,932	26,903	28,092	30,962	33,966	29,613	27,517	26,825	29,922
Italy	12,837	14,696	13,238	13,079	15,153	13,932	17,522	21,613	29,858
Cyprus	:	:	:	:	12	15	59	0	0
Latvia	:	:	:	:	11	18	1	211	4
Lithuania	:	:	:	:	136	1,207	86	18	0
Luxembourg	13	13	10	2	130	0	0	0	1
Hungary	:	:	:	:	3,309	4,650	3,847	1,212	2,099
Malta	:	:	:	:	0	0	0	0	0
Netherlands	86,226	83,225	76,161	45,664	66,484	69,677	72,457	69,271	88,367
Austria	3,423	4,981	1,340	1,339	816	978	624	738	1,090
Poland	:	:	:	:	3,572	7,469	10,036	8,590	6,170
Portugal	1,167	735	874	881	1,211	1,281	1,464	1,334	1,738
Romania	:	:	:	:	:	:	:	10	31
Slovenia	:	:	:	:	554	1,114	1,075	730	782
Slovakia	:	:	:	:	46	117	61	83	274
Finland	1,356	1,423	438	811	90	595	1,167	414	247
Sweden	4,414	4,814	6,208	4,700	3,217	4,338	3,946	4,795	4,579
UK	2,690	3,029	4,682	1,695	1,611	1,992	1,380	1,483	1,642
EU-15	**200,789**	**204,727**	**191,019**	**141,861**	**188,064**	**:**	**:**	**:**	**:**
EU-25					**197,139**	**195,667**	**202,122**	**:**	**:**
EU-27						**:**		**190,585**	**214,656**

Source: European Commission, The Agricultural situation in the European Union.

2.2.4. Employment

There appears to be no comprehensive data on egg sector employment but according to the industry, over the last decade there has been considerable consolidation. This consolidation has been primarily driven by the desire of multiple retail sectors to limit the number of suppliers they have to deal with. In terms of employment levels there appear to have been differing trends at different stages of the egg supply chain. On one hand, the move to free-range and other alternative production systems in northern Europe have increased labour requirements, whereas on the other hand the mechanisation of packing processes has reduced labour requirements with the overall effect that employment

numbers have probably been relatively stable in northern Europe, but declining elsewhere where caged systems still predominate.

2.3. The commercial structures used in the poultry meat and egg sectors

2.3.1. Structure of the poultry meat production sector

Broiler production can be considered to be either integrated or non-integrated. These approaches are set out below and are followed by a concise comparison:

- **Integrated production.** In France, Germany, Italy and Spain standard poultry meat production is mainly organised through integrators. This process was started in the 1970s in Brittany as part of a push from feed compounders to integrate forwards whereas in the 1980s and 1990s integration reflected more of a backward push from slaughterhouses so that by the year 2000 the share of the four largest companies in the output of the sector had reached 57%.

  Integrators own the processing plant and often also the hatchery and the feed mill. At the broiler farm level, integrators use contracts to vertically coordinate poultry production. Broiler farmers remain the owners of the production buildings, but most technical choices (from sourcing one day old chicks and feed to decisions on the type of buildings to be used) are made by the integrator, who also plan chick placements in coordination with the slaughterhouses and market needs. Producers are often organised (e.g. in France and Germany) in production groups (mainly cooperatives), which are responsible for negotiating the terms of the contracts with the industry[7].

- **Non-integrated production**. In some EU countries (e.g. the Netherlands, Belgium and Poland) production of poultry meat is generally not integrated. This means that each link of the production chain operates independently, with slaughterhouses, hatcheries and feed mills being separate legal entities. Typically, broiler farmers buy the day old chicks from a hatchery and the feed from a feed mill, and subsequently the fattened birds are sold to slaughterhouses. This is done based on a long-term agreement for the supply of chickens. Compared to integrated systems, in non integrated systems farmers are more directly confronted with fluctuations in the markets for feed and broilers.

The Farm Accountancy Data Network (FADN) gives insights into the financial performance of broiler farms. In December 2009 LEI published the results for 2008 and provided an estimate for the year 2009 (LEI, 2009). Figure 2.12 shows that family farm income in the broiler sector in the Netherlands has fluctuated significantly between years, with negative incomes having been recorded in a number of years. These fluctuations have been mainly caused by changes in input prices (notably feed prices) and market prices for broilers. Most recently, average family farm income was negative:

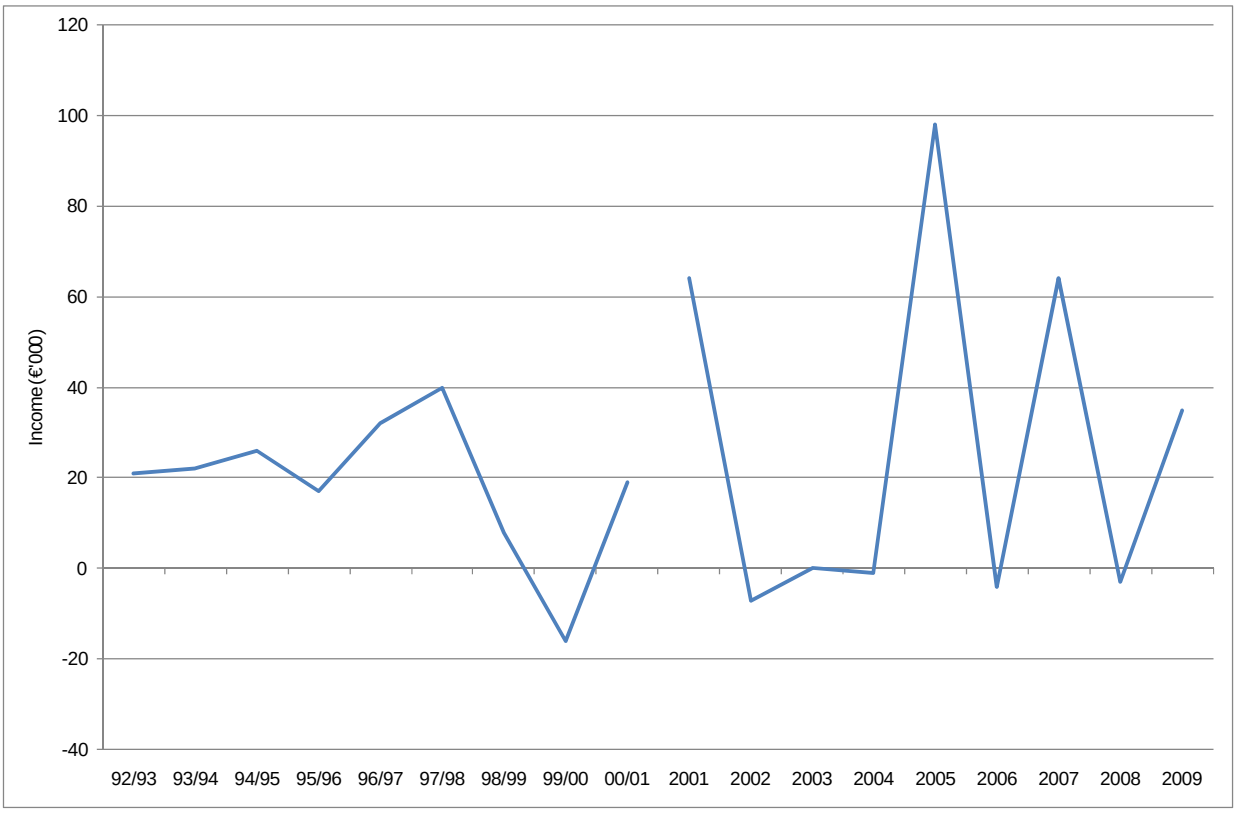
- in 2006 as demand for poultry meat fell because of the extensive media attention given to the outbreak of avian influenza in wild birds in some European countries.

[7] In France, most contracts afford some guaranteed margins for producers.

- in 2008 despite higher market prices for broilers, because of the very significant increase in input costs (especially feed).

The estimate for the average family farm income in 2009 is €35,000 as feed prices have fallen and market prices for broilers have been relatively favourable.

Figure 2.12: Family farm income development in the Netherlands on broiler farms, 1992/1993-2009, (Euro/ farm)



Note: From 2001 the registration period changed from a marketing (May to April) to a calendar year basis.

Source: LEI (2009).

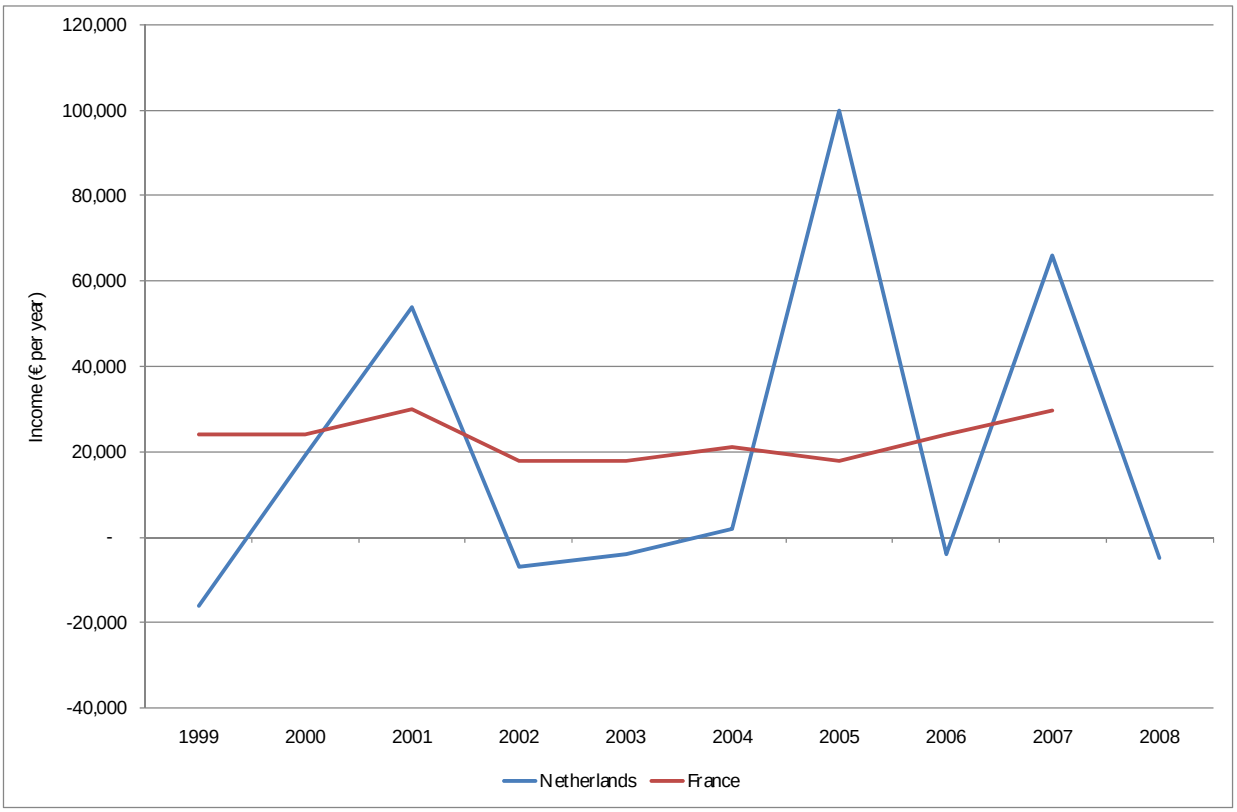
As is indicated above, income in poultry production is mainly influenced by the level and variability of poultry meat and feed prices. Poultry meat prices inevitably fluctuate from year to year in line with the variations in supply and demand on the European market. Farmers typically operating in non-integrated systems in countries like the Netherlands and Poland accept and respond to these price fluctuations by changing their production pattern. This is mainly achieved through changes in stocking densities (number of broilers per square meter in a poultry house) and changes in the length of the empty period between batches of birds. These changes are made in cooperation with the poultry meat slaughterhouses as they are in direct contact with the market.

In Member States with integrated production systems (e.g. France and Germany), the farmers receive a contracted payment for fattening broilers. This integration contract almost completely disconnects the farmers from the market. The risks arising from high feed prices or low poultry meat prices are thus mainly carried by the integrator. Therefore, by working with integrators the broiler farmer tends to have a more stable income over time with just minor fluctuations between years. However, the market nevertheless affects revenues by influencing the farms' level of activity. In France, data from the Chambres d'Agriculture indicates that productivity differences (kg of live weight produced/m²/year)

explain 58% of the gap between the lower and upper quartiles in terms of margins. This is mainly due to the number of rotations which are laid down by the integrators.

Figure 2.13 provides a comparison of family farm income development in the Netherlands where non integrated production systems prevail and France where integrated production systems prevail. It can be clearly seen that the income of broiler farmers in the Netherlands is more volatile as a result of changes in market prices for feed and poultry meat being transmitted to producers. In contrast, family farm income in France is much more stable due to the fact that the integrators absorb more of the market risk.

Figure 2.13: Broiler farm income (in Euros per year) in the Netherlands (non integrated systems) and France (integrated systems)



Source: Agra CEAS Consulting based on van Horne

The strengths and weaknesses of the integrated versus non-integrated systems are summarised in Table 2.18 and Table 2.19.

Table 2.18: Strengths and weaknesses of integrated production

Strengths	Weaknesses
• Optimum capacity utilization within production chain (feed mill, hatchery and slaughterhouse); • Lower risk on performance and market prices for the broiler farmer; • Faster technology transfer to broiler farmers. • Vertical coordination and better quantitative and qualitative adaptation of supply to demand	• Broiler farmers forgo opportunity to receive high revenue when market conditions are favourable; • Limited possibilities for broiler farmers to be an entrepreneur; • Farmers are totally dependent on the integrator, who is the decision maker for many management choices.

Source: European Parliament (2009)

Table 2.19: Strengths and weaknesses of non-integrated production

Strengths	Weaknesses
• High motivation for farmers to have good production performance ; • Competition between hatcheries, feed mills and slaughterhouses to do business with broiler farmers. • Vertical coordination and better quantitative and qualitative adaptation of supply to demand	• Potentially large fluctuations in income for broiler farmers due to changes in input and output prices; • Large cash requirements, tending to create dependence on loans and vulnerability to changes in interest rates for broiler farmers; • No strong incentive for maximising efficiency within production chain.

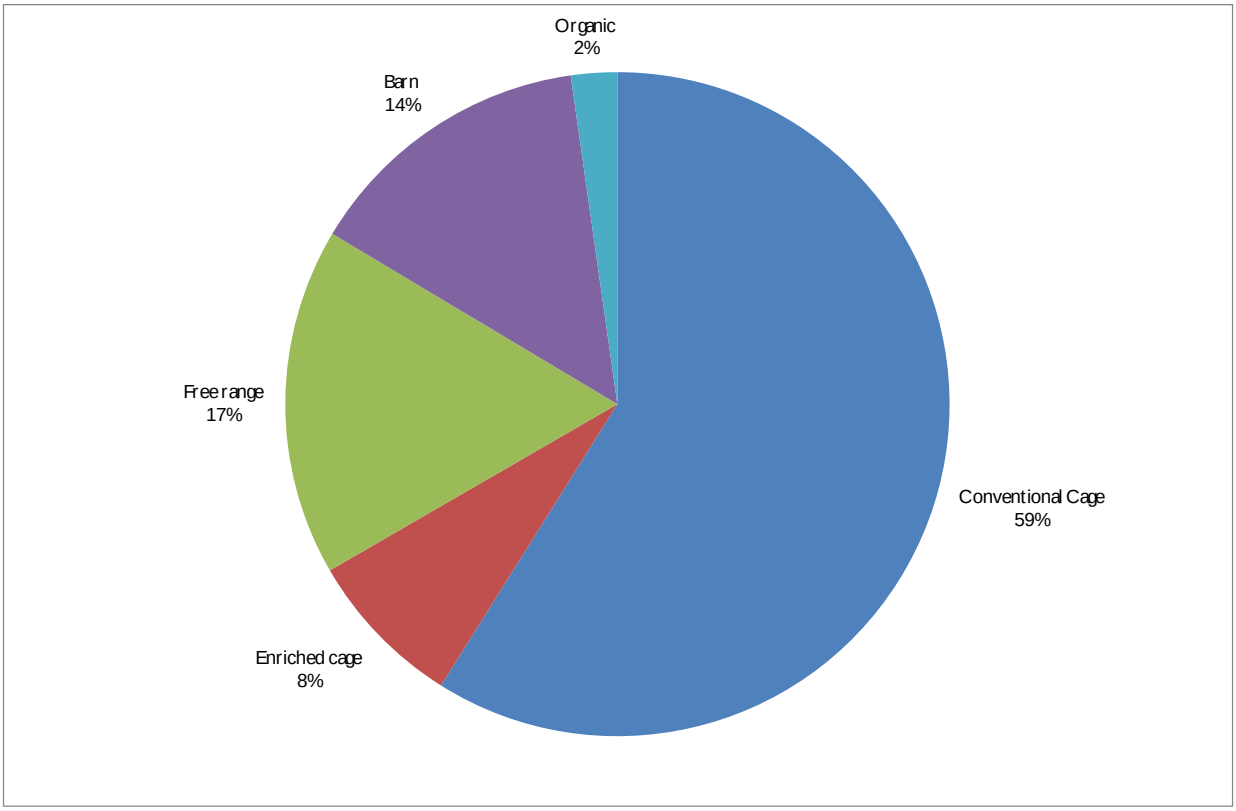
Source: European Parliament (2009)

2.3.2. Structure of the egg production sector

2.3.2.1. Egg production systems

Figure 2.14 presents a breakdown of the different egg production systems in the EU-27. These provisional figures for 2009 assume the following: the use of enriched cages will have grown from 19.2 million (5% of total units) in 2008 to 30 million units in 2009; and the number of layers in barn systems will have risen from 50.4 million to 55 million. Based on these assumptions and noting also that the 'free range' category includes an estimated 34.2 million backyard hens in Romania, traditional caged system thus account for some 59% of layers (228.4 million out of a total of 387.7 million layers) in the EU.

Figure 2.14: EU laying hens by system of production, 2009 (%)



Note: Data is provisional

Source: EUWEP based on European Commission DG Agri data.

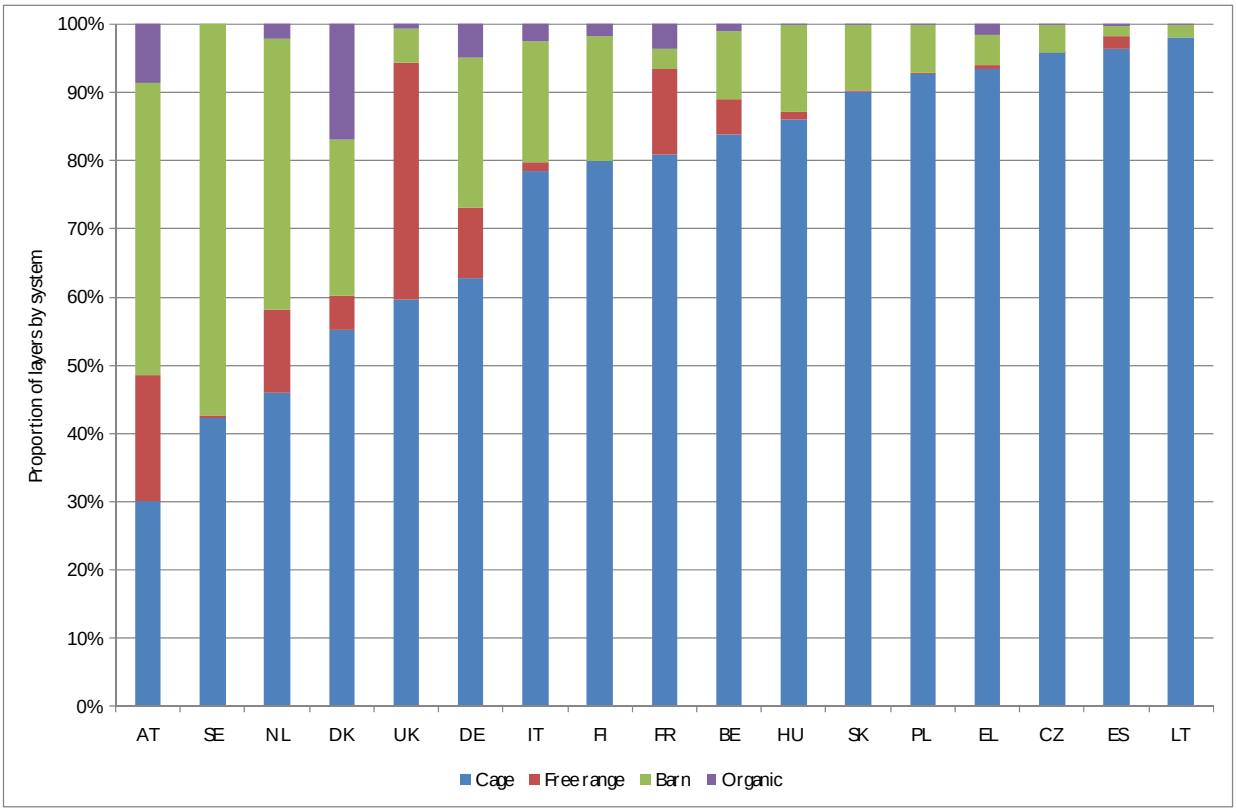
In the predominant caged or confined housing system almost all management activities are automated, namely: feeding, ventilation and egg collection. As a result of the high level of automation and mechanisation, labour requirements are relatively low.

Non cage or alternative systems have the common feature that layers are kept in large barns with litter on the floor and freedom of movement for the birds within the poultry house. Although also in these housing systems automation levels are often high, some management activities cannot be automated. The farmer needs to regularly monitor the birds visually by going into the barn. There is also a large labour input in terms of collecting those eggs in the barn which are laid outside the laying nests. Alternative housing systems therefore have a significantly higher labour input per 1,000 hens than cage systems. At the same time a high level of stockmanship is needed in order to obtain satisfactory production results. For this reason farms with alternative housing systems are relatively small and frequently family farms. For example: in the Netherlands, Germany and the UK barn eggs and free range eggs are mainly produced on small and medium size farms with less than 100,000 layers; in France, the main share of alternative output is produced in farms with less than 20,000 hens (some 8,000 hens on average), compared to cage egg production where the average size of unit is approximately 55,000 hens.

As shown in Figure 2.15, there is strong diversity between the Member States in terms of the numbers of hens kept in cage and non cage systems. In general member States in north-western Europe have the highest percentage of hens in non cage systems. In 2008, six Member States had more than 30% of layers in non cage systems, namely: Austria (AT), Sweden (SE), the Netherlands (NL), Denmark (DK), United Kingdom (UK) and Germany (DE). This having been said, the numbers provided here indicate that there is still significant progress to be made if the shift to enriched cages required by Directive 99/74 is to occur by 2012.

According to estimations from EUWEP, in 2012 the proportion of organic, barn reared and free-range production on an EU level will increase slightly (to 2.2%, 16.8% and 18% respectively). Meanwhile, the share of conventional barn production will fall to 29.7%, while the share of enriched cage production will reach 33.3%. This implies that there will still be a significant proportion of production (almost 30%) which does not comply with the laying hens directive in 2012.

Figure 2.15: Percentage of layers kept in different housing systems in 17 EU Member States, 2008



Source: Agra CEAS based on ITAVI from euro com

2.3.2.2. Organisational structure

The organisational structure in the egg sector is very different from the poultry meat sector. The organisational structure of egg production varies greatly between Member States and is either organized in a (semi-) integrated way or without any coordination. The particular organisational structure which prevails is also related to the housing system (i.e. cage versus alternative production):

- **Integrated production.** In many EU countries there are large companies holding more than 1 million layers in cage systems. This is clearly the situation in the UK, Germany, Spain, Italy and Poland. In these countries substantial portions of the chain are integrated in that pullet rearing, layer management, feed supply, packing, processing and marketing to the retailer are all in the hands of a single company or co-operative (Agra CEAS, 2004). These integrated companies own and pack a significant proportion of national production.

  In France, production is often organized by the feed mills (often cooperative groups), which provide feed and pullets to the producers. In the Netherlands feed mills also play an important role in supplying feed and advice to farms. Layer farmers are independent entrepreneurs taking full risk for changes in input (feed and pullet) and output (eggs) prices.

- **Non-integrated production**. At the other end of the scale is a relatively fragmented production structure, accompanied by a marked lack of concentration at both the production and egg packer level. This is the situation in countries such

as Portugal, Greece and Romania (and also partly in Poland). In some countries (such as Austria) producer groups play a significant role in the marketing of the eggs. In non-integrated systems, however, packer concentration is relatively low and producers will either own their own packing station, or have arrangements to sell to independent packers who will bundle supplies on short-term contracts from a relatively limited number of producers. The processing sector is much more concentrated than the packing sector with many Member States (Sweden, Finland, Denmark, Portugal, Greece, Austria, Belgium and Ireland) having fewer than four processors.

All EU-15 Member States do, however, have at least one processing facility. Where processors are limited in number they tend to focus on breaking second quality eggs, mainly for the domestic market, and usually liquid products only. Often these liquid products include blends and mixes in order to capture greater added value. The drying sector is being increasingly concentrated and many smaller scale processors have stopped this activity in the face of competition.

As is indicated above there is a relation between housing system, farm size and integrated production. Large integrators tend to keep hens in cages on large farms. In countries with a high percentage of hens kept in alternative housing systems, the average farm size is smaller and a larger proportion of production is non-integrated. However, large groups or producers of cage eggs may often also integrate some alternative egg producers, to complete the range of products they can offer to distributors.

Where eggs are produced by independent producers, these eggs are sold to a packing stations or (semi-) integrated companies. In general the farmer will have a contract to deliver the eggs produced by 1 or 2 flocks (marketing contract). Apart from conditions relating to the logistics and quality of the eggs, the contract may also include a pricing formula. This can be a price based on the market price (which can change on a weekly basis) or it can be a fixed price for a certain period. Other pricing arrangements include the option to relate the egg price to the price of feed or to offer the flexibility to adjust prices during the year. In general, it can be said that in alternative egg production systems there is more contract production with arrangements relating to price compared to cage production. This is clearly the situation in the UK, France and the Netherlands. Under such arrangements the market risk of changes in egg prices paid by the wholesaler or retailer partly lies with the packing station or integrated company.

2.4. Assessment of the common organisation for the poultry and egg markets

2.4.1. Background

The overarching objectives of the Common Agricultural Policy and the Common Market Organisation for poultry meat and eggs reflect those in Article 39 of the consolidated Treaty of Rome, namely:

- to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour;

- thus to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;
- to stabilise markets;
- to assure the availability of supplies;
- to ensure that supplies reach consumers at reasonable prices.

An EC eggs and poultry regime first came into operation in July 1967. The present regime is laid down in Council Regulations 2771/75 and 2777/75 for the Common Organisation of the Market in Eggs and Poultry meat, respectively. These incorporate all the changes made to the principal Regulations between 1967 and 1975, creating a single trading system at the external frontiers of the Community.

This system includes import tariffs, additional (safeguard) duties and export refunds, to facilitate the adjustment of supplies to market requirements. The Regulations also provide for the establishment of marketing standards for intra-Community trade in eggs and poultry products. Marketing standards Regulations were adopted in 1990 and 1991, and have been amended periodically since then.

Decisions concerning the implementation of policy are taken (by weighted voting procedure) at the Eggs and Poultry Management Committee meetings, held once a month in Brussels.

2.4.2. Common organisation of the poultry meat market

Figure 2.16 summarises the intervention logic of the CMO for poultry meat. As shown, the various measures under the CMO for poultry meat (namely import tariffs, export refunds and marketing standards) aim to meet the first three objectives of the Common Agricultural Policy listed above.

The common agreements for poultry meat were introduced in July 1967 *via* EC Regulations 122/67 and 132/67 and later replaced by the introduction of 2771/75 and 2777/75 in November 1975. Since July 2008, the poultry CMO agreement has been included in the Single CMO Regulation (Council Regulation (EC) No 1234/2007).

Figure 2.16: Intervention logic: Poultry meat CMO

Type of measure	Tariffs	Export subsidy	Marketing standards
Role of measure	Maintain Community preference for poultrymeat	Removes internal supply from EU market permanently Enables EU producers to compete on world markets	Increase the quality of marketed output
	⇩	⇩	⇩
Expected primary impacts	Increases demand for EU internal supply	Increases demand for EU internal supply	Increases demand for EU internal supply
	⇩	⇩	⇩
Expected secondary/tertiary impacts	Maintains and stabilises internal prices above world market levels Stabilises/enhances farm incomes	Maintains and stabilises internal prices above world market levels Stabilises/enhances farm incomes	Enhances farm incomes
	⇩	⇩	⇩
Treaty objectives being met	Objective 2: to ensure a fair standard of living for farmers Objective 3: to stabilise markets	Objective 1: to increase agricultural productivity Objective 2: to ensure a fair standard of living for farmers Objective 3: to stabilise markets	Objective 2: to ensure a fair standard of living for farmers

The CMO for poultry is based on protection at borders, with normal Community preference for many cuts and lower tariff lines and duties under the agreement reached during the GATT Uruguay Round. Minimum access quotas have been instituted, for which customs duties are limited to a percentage of the basic tariff. Moreover, a special safeguard clause (WTO) for fresh and frozen poultry meat (CN 1602, 0207 and 0210) provides for additional duty to protect against import prices falling below the trigger price fixed in the GATT URAA. This safeguard clause has been permanently invoked, subject to a monthly review. Poultry exports receive export support which is limited in terms of volume and value receiving support in line with the Uruguay Round WTO Agreement on Agriculture. While in general terms there are no market support measures in the poultry CMO (thus no guaranteed prices or direct aid), following the Avian Influenza crisis of 2006, exceptional support measures were included in the CMO for situations where: (1) restrictions on free circulation may result from the application of measures to combat the spread of animal diseases; and (2) serious market disturbances can be directly attributed to a loss in consumer confidence due to public health, or animal health risks.

Council Regulation (EC) No 1234/2007 covers:

- live poultry, fowls, duck, geese, turkeys and guinea fowl;
- dead poultry of the aforementioned stock and edible offal thereof, fresh, chilled or frozen;
- poultry liver, fresh, chilled, frozen, salted, in brine, dried or smoked;
- poultry fat (not rendered or otherwise extracted), fresh, chilled, frozen, salted, in brine, dried or smoked;
- poultry fat;
- other prepared or preserved goose or duck lives; and,
- other prepared or preserved poultry meat or poultry offal

The EU has never operated a domestic support 'regime' for poultry meat producers. It has relied in the past on tariffs to help stabilise the EU market and keep market prices in proportion to prices for cereals, and other costs, thus allowing EU producers to achieve sustainable profit margins. It also provides for limited export refunds on certain categories of poultry export notably frozen whole chickens which are primarily exported from France.

EU protection remains high for fresh poultry meat products, but is low for processed products. An increasing proportion of the EU poultry sector is thus operating in a global market. As is discussed in Sections 3 and 4, this is challenging for the EU poultry meat sector not least because it is being required to meet health, environmental and welfare standards (and costs) not necessarily faced by its overseas competitors. At the same time access for EU poultry meat to third country markets is not always open (e.g. where Special Safeguard Clauses have been invoked for SPS reasons).

2.4.3. Common organisation of the egg market

Figure 2.17 summarises the intervention logic of the CMO for eggs. As shown, the various measures under the CMO for eggs (namely import tariffs, export refunds and marketing standards) aim to meet the first three objectives of the Common Agricultural Policy listed above.

Figure 2.17: Intervention logic: Eggs CMO

Type of measure	Tariffs	Export subsidy	Marketing standards
Role of measure	Maintain Community preference for eggs	Removes internal supply from EU market permanently Enables EU producers to compete on world markets	Increase the quality of marketed output
	⇩	⇩	⇩
Expected primary impacts	Increases demand for EU internal supply	Increases demand for EU internal supply	Increases demand for EU internal supply
	⇩	⇩	⇩
Expected secondary/tertiary impacts	Maintains and stabilises internal prices above world market levels Stabilises/enhances farm incomes	Maintains and stabilises internal prices above world market levels Stabilises/enhances farm incomes	Enhances farm incomes
	⇩	⇩	⇩
Treaty objectives being met	Objective 2: to ensure a fair standard of living for farmers Objective 3: to stabilise markets	Objective 1: to increase agricultural productivity Objective 2: to ensure a fair standard of living for farmers Objective 3: to stabilise markets	Objective 2: to ensure a fair standard of living for farmers

The common agreements for eggs were introduced in July 1967 via EC Regulations 122/67 and 132/67 and later replaced by the introduction of 2771/75 and 2777/75 in November 1975. Since July 2008, the poultry CMO agreement has been included in Single CMO regulation (Council Regulation (EC) No 1234/2007).

The CMO for eggs does not include any guaranteed prices or direct aid, only protection at borders with a very low customs duty in accordance with the agreement reached during the GATT Uruguay Round as well as limited export restitutions. Minimum access quotas have been instituted, for which customs duties are limited to a percentage of the basic tariff. Moreover, a special safeguard clause provides for additional duties where the volume of imports rises too sharply or the price of imports falls too low. This safeguard clause has, however, not been invoked since 23 May 1996.

Council Regulation (EC) No 1234/2007 covers the following categories of products:

- poultry eggs in shell, fresh, preserved or cooked; and,
- bird's eggs, not in shell, and egg yolks, fresh, dried, cooked by steaming or by boiling in water, moulded, frozen or otherwise preserved, whether or not containing added sugar or other sweetening matter, other than unfit for human consumption

The EU has never operated a domestic support 'regime' for egg producers. It has relied in the past on tariffs to help stabilise the EU market and keep market prices in proportion to prices for cereals, and other costs, thus allowing EU producers sustainable profit margins. However, following the World Trade Organisation (WTO) Uruguay Round agreement, these tariff barriers have been gradually eroded.

3. CURRENT PROBLEMS IN THE EU POULTRY AND EGG SECTORS

This section provides an assessment of the economic consequences of the 2006 Avian Influenza outbreak three years after its outbreak (Section 3.1) and evaluation of the effect of increasing input prices (Section 3.2).

3.1. Economic consequences of the 2006 Avian Influenza outbreak

This sub-section provides an analysis of the economic consequences of the 2006 outbreak of avian influenza three years after its outbreak. Much of the supporting information underpinning this analysis is presented in Section 2.

3.1.1. Background

The first outbreaks of the highly pathogenic strain of H5N1 avian influenza were reported in South-East Asia in 2003. By the end of 2005 the virus had spread northwards affecting birds in Croatia, Romania, Turkey, Ukraine and the European part of Russia, and by February 2006 the virus had spread to parts of the EU with the last outbreak confirmed in August 2006. During this period, there were a total of 458 confirmed outbreaks in wild birds in 14 Member States (excluding Romania and Bulgaria) and 33 confirmed outbreaks in domestic poultry in 5 Member States (excluding Romania) (Table 3.1).

Table 3.1: EU-25 avian influenza outbreaks, 2006

	Wild birds		Domestic birds	
	Number of outbreaks	Date of last confirmed outbreak	Number of outbreaks	Date of last confirmed outbreak
Austria	46	02/05/06		
Czech Republic	14	22/05/06		
Denmark	26	26/05/06		
France	21	25/04/06	1	25/02/06
Germany	221	03/08/06	1	05/04/06
Greece	25	22/03/06	1	18/05/06
Hungary	12	13/03/06	29	13/07/06
Italy	19	25/03/06		
Poland	29	07/05/06		
Slovakia	2	24/02/06		
Slovenia	28	22/03/06		
Spain	1	07/07/06		
Sweden	13	21/04/06	1	17/03/06
UK	1	06/04/06		
EU-25	**458**	**03/08/06**	**33**	**13/07/06**
Bulgaria	4	27/02/06		
Romania	10	31/03/06	172	10/06/06

Source: European Commission (Animal Disease Notification System)

3.1.2. Control and preventive measures

The nature and extent of the avian influenza outbreak in South East Asia in 2003 necessitated that countries throughout the world increase their surveillance and control measures. In accordance with Community legislation, all Member States have avian influenza contingency plans (approved by Commission Decision 2004/402/EC) in place to ensure that the most appropriate measures are immediately implemented. Legislation on the control and prevention of avian influenza in the EU had been updated just prior to the

first confirmed EU outbreak, with Council Directive 2005/94/EC on avian influenza adopted by the Member States in December 2005.

The European Commission's strategy to control the introduction and spread of avian influenza relies on rapid disease detection, killing of infected birds, movement restrictions for live birds and their products, cleaning and disinfection and vaccination. Enhanced surveillance in poultry holdings and wild birds, as well as preventive vaccination, was also introduced.

Given the nature of the H5N1 strain of avian influenza and its spread by wild migratory birds, additional control measures were implemented, including: reporting of increased abnormal morbidity and mortality in wild birds to the national veterinary authorities by bird watchers, hunters and other relevant organisations. According to Pittman and Laddomada (2008), EU legislation and its implementation in Member States in 2006 successfully limited the impact of the disease on animal and human health.

3.1.3. Economic impact

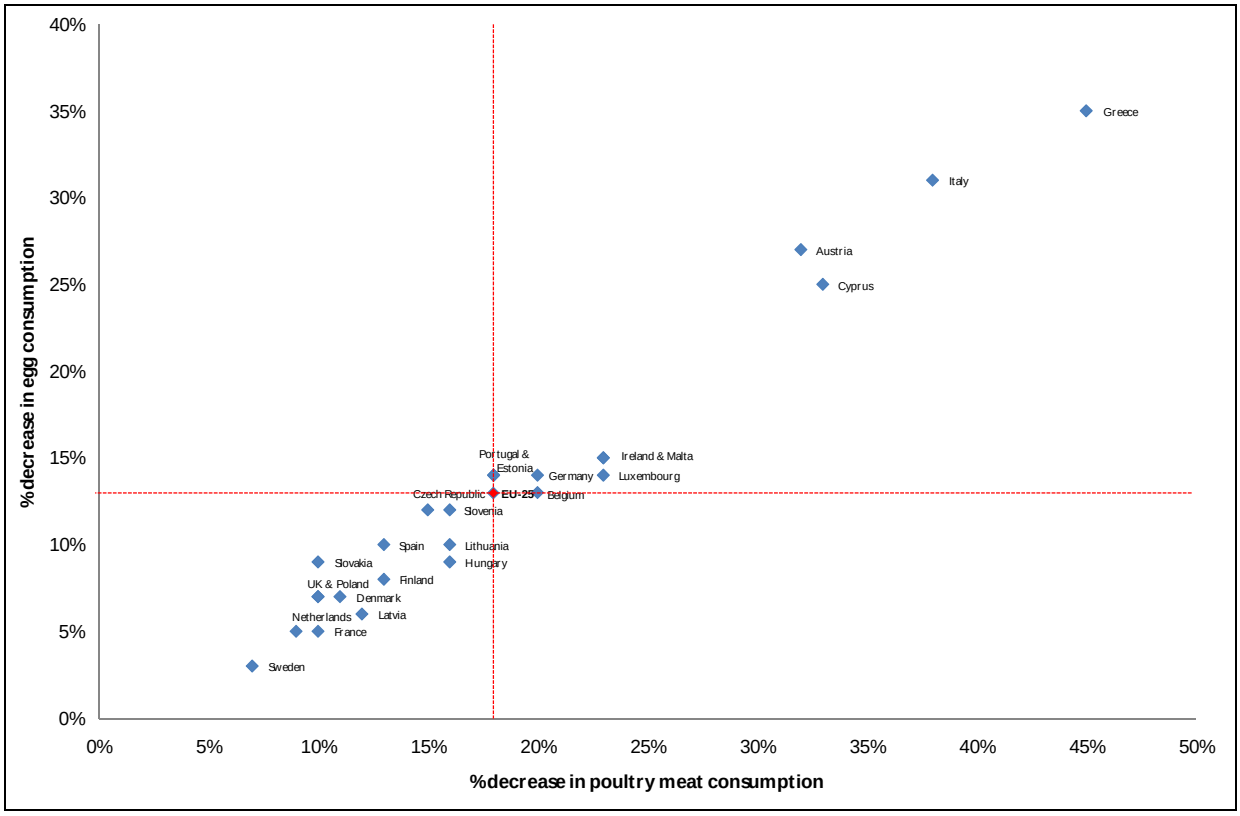
In Europe, avian influenza outbreaks were confirmed in 14 Member States, with trade bans put in place for those 5 Member States where avian influenza was identified in domestic poultry operations. Approximately 69 third countries put bans on poultry products from the various affected Member States within the EU-25, of which eleven did not adopt a regional approach and imposed bans on all EU products (FAO, 2006). Consequently, EU exports of both poultry meat and eggs were affected, with depressed exports levels in 2006 recorded (see Section 2).

Looking at the impact on demand, research has identified that consumer attitudes towards poultry meat and eggs were closely related to the development of the avian influenza epidemic (see for example: FAO, 2006; European Commission, 2006; and Magdelaine et al., 2008). A survey commissioned by the European Commission established the extent of the consumption shocks during the outbreak (European Commission, 2006). Although the majority of consumers had not changed their consumption habits, the survey found that demand for poultry meat was more affected than the demand for eggs. Specifically, 18% of respondents had reduced consumption of poultry meat, compared to 13% of respondents having reduced their egg consumption (Figure 3.1).

Figure 3.1 also shows that the consumption response varied considerably between Member States, with reductions in poultry meat and egg demand ranging from as much as 25% to 45% in Greece, Italy, Austria and Cyprus; both Greece and Italy had outbreaks of avian influenza. In contrast, demand was less affected in Sweden, France, Netherlands, UK, Latvia, Poland, Slovakia, Denmark, Finland and Spain.

The survey also found that more than three quarters (76%) of those respondents who declared that they had reduced their consumption of poultry meat (14% of all EU-25 citizens) perceived this change as temporary, while 13% (3% of all EU-25 citizens) declared they had reduced their consumption of poultry meat forever. Magdelaine (2008) reported that generally speaking EU demand had returned to pre-outbreak levels by the summer of 2006. As discussed Section 2 and Figure 2.4 and Figure 2.11, although total and per capita poultry meat and egg consumption fell in 2006, consumption in 2007 more or less returned to pre-outbreak levels.

Figure 3.1: Immediate impact of avian influenza on EU poultry meat and egg consumption



Source: European Commission (2006)

While production was also affected primarily as a result of the culling of infected birds, the relatively larger impact on consumption resulted in reduced prices in some Member States, primarily for poultry meat. Lower prices and the unproductive downtime forced on those poultry farms affected both directly and indirectly had a negative effect on industry profitability and market stability (FAO, 2006).

In summary, most of the market and trade impacts resulting from the EU avian influenza outbreak in 2006 were short-term and closely linked to consumption shocks and the imposition of trade restrictions. From a production perspective, avian influenza had a limited impact on market supply particularly given the rapid supply response (i.e. short production cycle) of poultry production.

3.1.4. EU financial measures to support the poultry meat and egg sectors

In the case of outbreaks of avian influenza, the European Commission provides support to the poultry sector. This includes:

- Market support measures. The EU will pay up to 50% of the cost of market support measures in the eggs and poultry sector, mitigating the effects of a drop in demand resulting from avian influenza outbreaks.
- Compensation. The budget also covers 50% of the costs of compensating for the financial losses that farmers incur as a result of eradication measures. This support includes compensation for the loss of livestock and the costs of cleaning and disinfection.

- Vaccination costs. The EU can fund up to 100% of the cost of supplying emergency vaccines and 50% of the costs of carrying out emergency vaccination.

In response to the 2006 outbreak of avian influenza, compensation was provided by the European Commission under Council Regulation (EC) No 1010/2006. Maximum support of €81.6 million was envisaged, most of which was to be used for the destruction of hatching eggs and breeding birds. However, it was only deemed necessary to make available 52% of the total €81.6 million support foreseen under Regulation (EC) 1010/2006, with only one Member State (Spain) using 100% of its allocation.

3.2. Evaluation of the effect of increasing input prices

This sub-section provides an evaluation of the effect of increasing input prices on the poultry and egg sectors. The analysis underpinning this evaluation focuses on the cost of production in selected Member States. These Member States were selected based on their importance as producers of poultry meat/eggs, their importance as exporters of poultry meat/eggs, the availability of cost data, and geographical coverage.

3.2.1. General analysis of broiler production costs

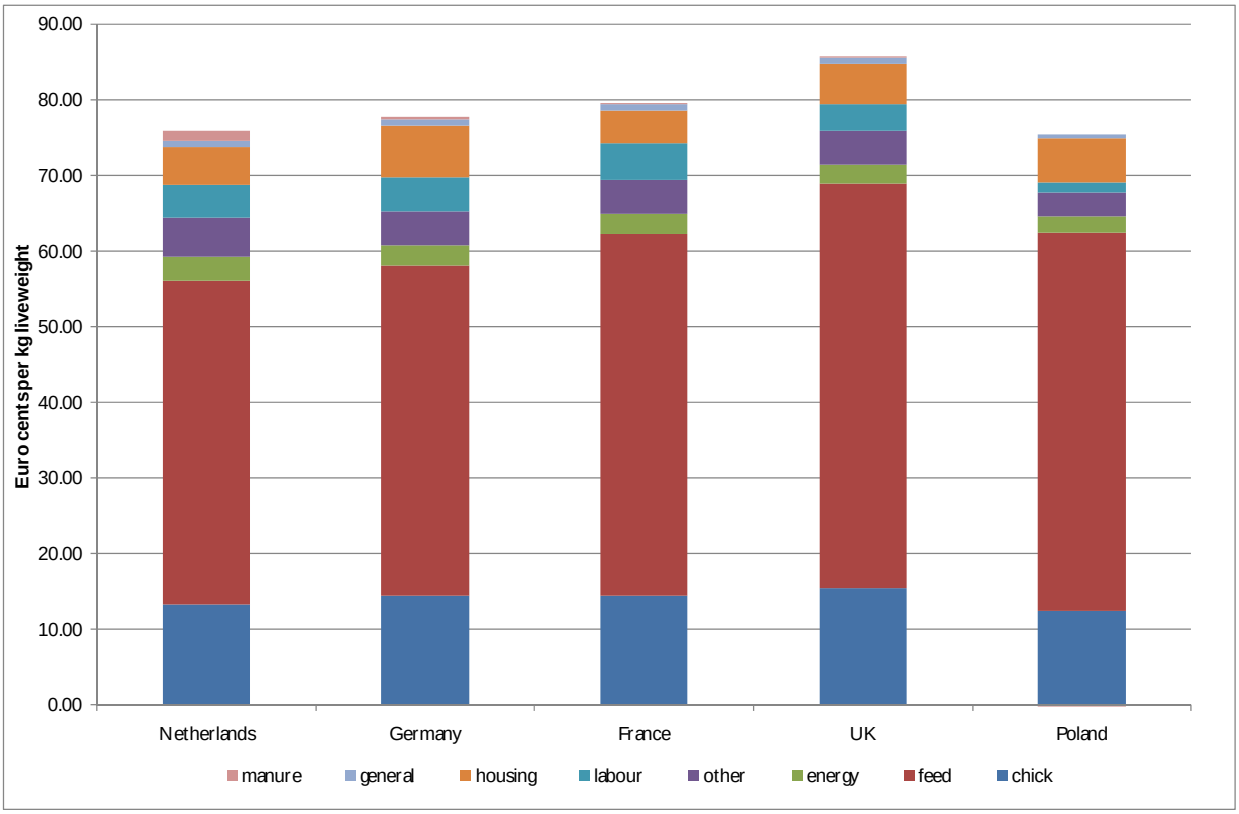
Figure 3.2 provides a comparison of the cost of broiler production in selected EU Member States, based on cost data for the year 2007. Although overall production costs are fairly similar between Member States, the cost of broiler production was at its lowest in Poland and the Netherlands and at its highest in the UK. There are however clear differences with regard to some of the individual cost items. For example, despite lower feed prices in the Netherlands, Dutch broiler production generally has higher manure-disposal costs, more expensive poultry housing, and higher energy costs. In contrast, while the cost of feed is higher in Poland, Polish broiler production has the advantage of lower labour costs and no manure disposal costs.

Another factor influencing production costs between Member States (and hence competition and trade within the EU) is the exchange rate. Of the countries under review France, Germany and the Netherlands are all within the Euro zone. However, the UK and Poland are not. In 2007, the unfavourable £ Sterling: Euro exchange rate exacerbated the relatively higher day old chick and feed costs.

All data presented in Figure 3.2 is based on average production costs and costs vary significantly within Member States. An analysis carried out by LEI found that broiler production costs within the Netherlands vary by ±8% around the average. A priori it would be expected that such differences between farms probably also occur in the other Member States. This would suggest cost differences between farms within a country are greater than the cost differences noted between Member States. As such no single Member State necessarily has a competitive advantage over another.

It should be noted that the cost of broiler production in EU countries is higher than that in some key poultry meat producing and exporting Third Countries (e.g. the US, Brazil and Thailand). A comparison of the cost of poultry meat production in the EU with that in Third Countries can be found in Section 4.7.

Figure 3.2: Production costs of broilers in selected EU Member States, 2007 (eurocent per kg live weight)



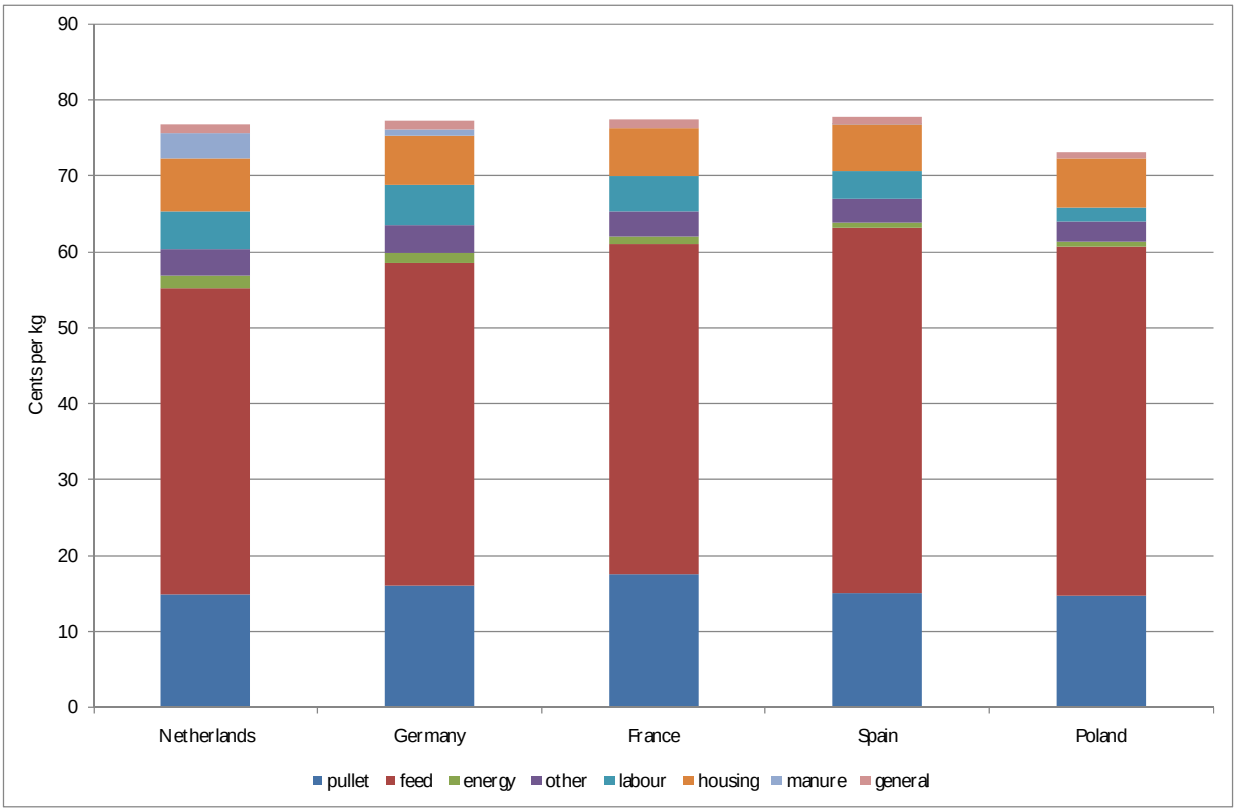
Source: van Horne (2009)

3.2.2. General analysis of egg production costs

Figure 3.3 provides a comparison of the cost of egg production in selected EU Member States, based on cost data for the year 2007. Overall production costs are fairly similar between Member States, with the cost of egg production slightly lower in Poland. There are however clear differences with regard to some of the individual cost items. Feed costs are generally lower in the Netherlands and relatively high in Spain and Poland. This is a result of lower feed prices in the Netherlands combined with good production results (higher egg output and a lower feed intake). On the other hand, egg producers in Spain have lower labour costs, housing costs and no manure disposal costs compared to the Netherlands and Germany. Poland's largest cost advantage is its low labour cost.

Another factor influencing production costs between Member States (and hence competition and trade within the EU) is the exchange rate. Of the countries under review France, Germany, the Netherlands and Spain are all within the Euro zone. In contrast, Poland is not and the current exchange rate of the Polish zloty: Euro would improve the competitive position of Polish egg production.

Figure 3.3: Production cost of eggs in 2007 in selected EU Member States, 2008 (Eurocent per kg)



Source: van Horne (2008)

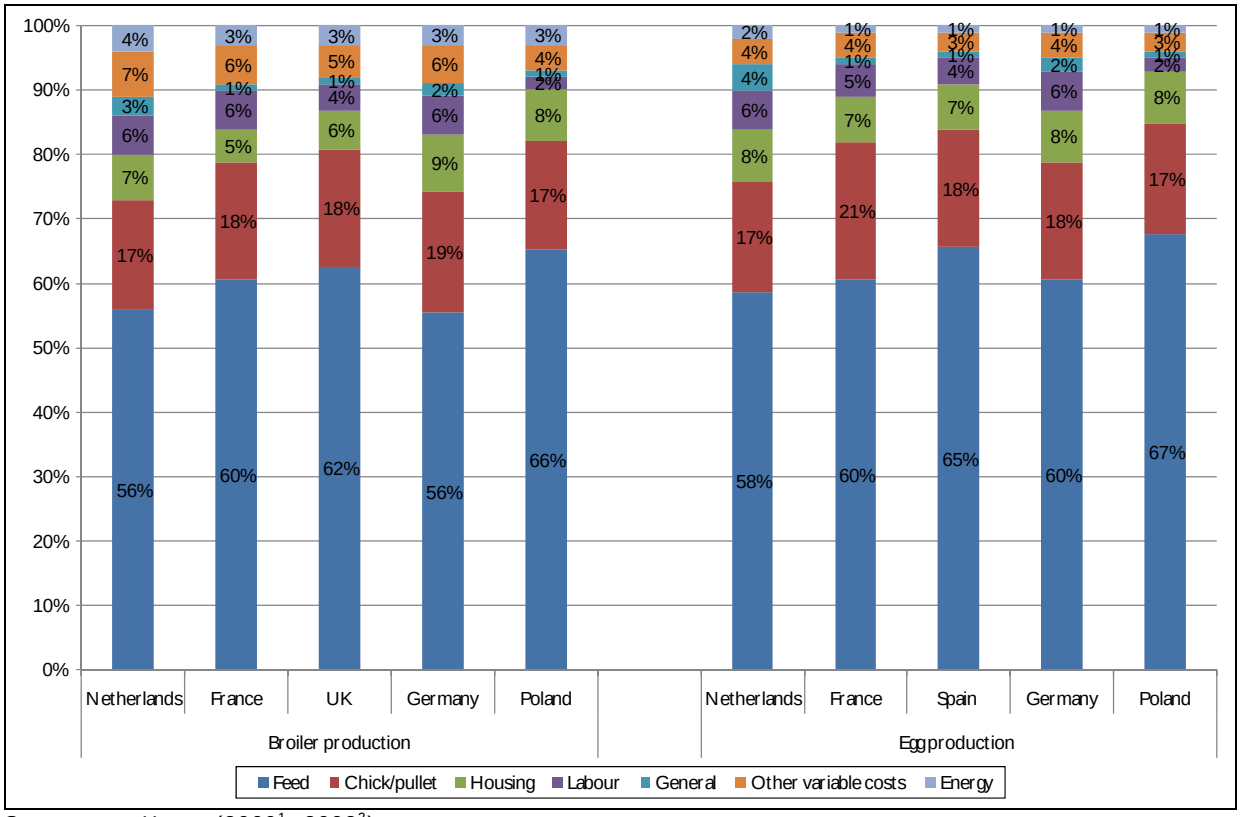
Cost data presented in Figure 3.3 is based on average production costs which vary significantly within Member States. An analysis carried out by LEI found that caged egg production costs within the Netherlands vary by ±10% around the average. A priori it would be expected that such differences between farms probably also occur in the other Member States. This would suggest cost differences between farms within a country are greater than the cost differences noted between Member States. As such no single Member State necessarily has a competitive advantage over another.

It should be noted that the cost of egg production in EU countries is higher than that in some key egg producing and exporting Third Countries (e.g. the US, Brazil, Argentina and India). A comparison of the cost of egg production in the EU with that in Third Countries can be found in Section 4.6.

3.2.3. Comparison of broiler and egg production costs

Figure 3.4 provides a comparison of the typical cost structure of broiler and egg production in selected EU Member States. Production costs of both broilers and eggs are a combination of several inputs, including feed, day old chicks for broiler production/pullets for egg production, housing, labour and energy.

Figure 3.4: Cost components as a percentage of the total production cost of broiler[1] and egg[2] production at farm level



Source: van Horne (2009[1]; 2008[2])

However, the cost of feed accounts for the majority of total production costs, ranging from 56% to 67% in the selected Member States presented in Figure 3.4 with feed accounting for a slightly higher percentage of total production costs in egg production (58% to 67%) compared to broiler production (56% to 66%).

Other relatively important production cost components include the cost of day old chicks/pullets (ranging from 17 to 21%) and housing costs (ranging from 5% to 8%). Labour typically accounts for between 4% and 6% in both broiler and egg production, although this cost category accounts for just 2% in Poland due to lower unit labour costs.

In contrast the cost of energy (heating and electricity) is relatively small in all selected Member States in Figure 3.4, accounting for less than 4% of total production costs; energy costs account for a slightly higher percentage of total production costs in broiler production (3% to 4%) compared to egg production (1% to 2%).

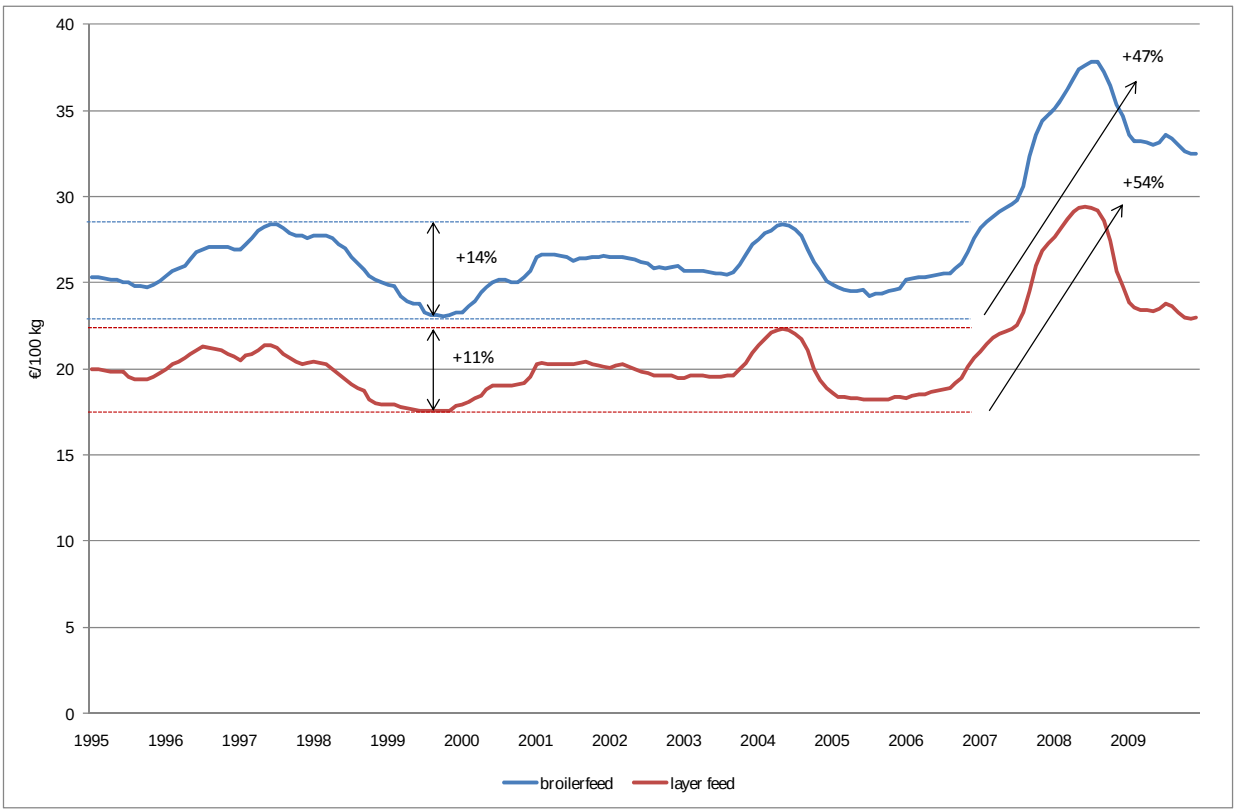
3.2.4. Analysis of feed costs

Given that feed is the major cost for the production of broilers and eggs, any change in the cost of feed has a significant impact on the overall cost of production. Poultry feed consists primarily of three feed ingredients, namely maize, wheat and soybean meal. In general, poultry feed for broilers consists of 60% grains (mainly maize and wheat) and 25% protein rich ingredients such as soybean meal. In contrast, the inclusion of soybean meal in the feed ration of layers is in the region of 15% to 20%. Given that soybean meal is generally more expensive than other feed ingredients (such as wheat and maize); the cost of feed for broilers is higher than that for layers (Figure 3.5).

Figure 3.5 provides an overview of the long-term price development of poultry feed for broilers and layers in the Netherlands. Prior to 2007, feed prices remained relatively stable with prices fluctuating within a relatively narrow margin of ±11%-14% of the average price for the period 1995-2006. However, between 2007 and 2008 the volatility in poultry feed prices increased fivefold, with feed prices for layers and broilers rising by 54% and 47%, respectively.

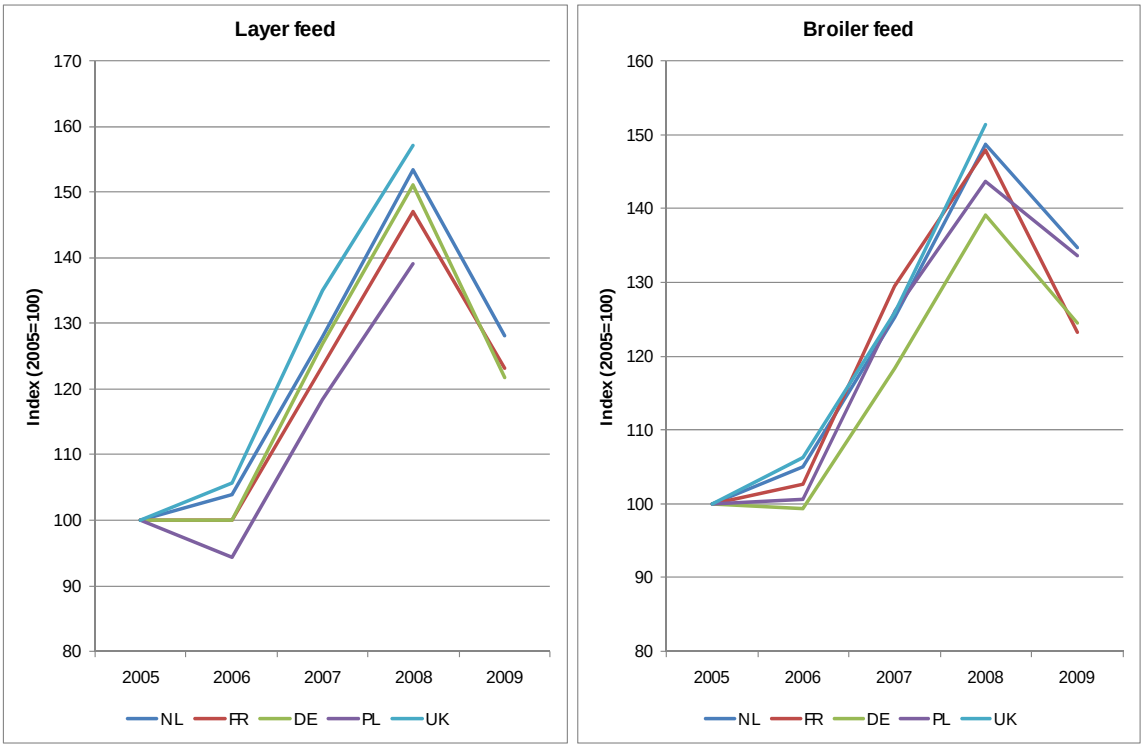
Although poultry feed prices have since decreased from their peak in mid-2008, prices have stabilised at levels well in excess of their long-term averages. By the end of 2009, the price of feed for broilers and layers in the Netherlands was trading at a premium of 35% and 28%, respectively, compared to 2005 prices (Figure 3.5). As shown in Figure 3.6, this pricing behaviour has been similar in other Member States where 2009 poultry feed prices remain well above 2005 levels.

Figure 3.5: Price of poultry feed for broilers and layers in the Netherlands, 1995 to 2009



Source: Agra CEAS and LEI

Figure 3.6: Price of poultry broiler and layer feed in selected Member States (2005=100)



Source: LEI, ITAVI, MEG

Given the commodity nature of the ingredients used and composition of poultry feed, these price trends have been driven by the pricing behaviour in the agricultural commodity markets which also increased significantly between 2007 and 2008. However, although maize and wheat prices have subsequently fallen back and are now trading at levels similar to those experienced before the 2007-2008 price hikes, the price for soybean meal has remained at its recent high level (Figure 3.7). Due to the inclusion of soybean meal in poultry feed prices have remained at inflated levels, with the price of feed for broilers trading at a higher premium than that of feed for layers (Figure 3.6) given the higher inclusion of soybean meal in the broiler feed ration.

Figure 3.7: EU maize, wheat and soybean meal wholesale prices (Rotterdam) 2002-2009

Source: LEI

Table 3.2 quantifies the extent to which a change in the price of poultry feed and its ingredients will impact the total cost of broiler and egg production (based on cost data for broiler and egg production presented in Figure 3.4). A 1% change in the cost of poultry feed would, *ceteris paribus*, have a 0.6% impact on total broiler and egg production costs, demonstrating the significance of feed as a cost component in the production of broilers and eggs. Given the different proportions of the individual feed ingredients used in broiler and egg production, broiler production is more sensitive to changes in soybean meal prices *vis-à-vis* egg production. In contrast, egg production is more sensitive to changes in grain prices *vis-à-vis* broiler production.

Table 3.2: Sensitivity analysis of the impact of a change in poultry feed and feed ingredient prices on total poultry production costs in France

% change in price	Impact on broiler production costs			Impact on egg production costs		
	1%	10%	25%	1%	10%	25%
Feed price	0.6%	6.0%	15.0%	0.6%	6.0%	15.0%
Grain (maize, wheat) price	0.4%	3.6%	9.0%	0.4%	4.0%	10.1%
Soybean meal price	0.2%	1.5%	3.8%	0.1%	1.1%	2.7%

Source: Agra CEAS calculations based on van Horne (2008; 2009)

There have been numerous studies undertaken to review and explain the supply and demand fundamentals that led to the sharp increase in agricultural commodity prices between 2007 and 2008 (see for example Voituriez (2009), Wagenberg (2009) and Banse et al (2008)). In general, the increase in agricultural commodity prices were caused by a combination of record low global inventory levels, weather induced lower supply, surging outside investor influence, record oil prices and structural changes in demand for grains

and oilseeds due to changes in population dynamics and the development of the biofuels sector (Banse et al, 2008):

- Effect on demand. On the demand side, urbanisation, economic growth, changing diets and expanding populations are driving increases in food and feed demand, particularly in developing countries. In Europe and Northern America demand for grains, for example, was constant with an increase in demand in Asia. Globally, and in absolute terms, food and feed remain the largest sources of demand growth in agriculture, although demand for agricultural commodities for use as feedstocks by the biofuel sector (e.g. wheat and maize for bioethanol production and soybean oil for biodiesel production) represents the largest source of new demand to underpin prices (OECD and FAO, 2008).

- Effect on supply. On the supply side, the increase in agricultural commodity prices were caused in part by weather induced lower supply and record low global agricultural inventory levels, which meant that the shortfall in demand could not be met thereby driving up prices. This also resulted in a certain degree of market speculation, with some countries taking protective policy measures designed to keep supply within domestic markets and discouraging exports. In addition, higher oil prices were transmitted along the supply chain to higher grain prices as production costs (e.g. fertiliser and transport) increased accordingly.

3.2.5. Analysis of energy costs

Figure 3.8 provides an overview of the long-term price development of crude oil, which is highly correlated to energy prices in general. Between 2007 and 2008, the price of crude oil (US$ per barrel) increased threefold.

Although the cost of energy accounts for a relatively small proportion of total production costs (less than 4%), the extent of the recent volatility in energy markets has had a proportional impact on the overall cost of broiler and egg production. Energy is used to heat poultry houses and electricity is mainly used for the running of feeding equipment and ventilation fans. As discussed and presented previously in Figure 3.4 above, more energy is used in broiler production than egg production, with the total energy input (heating plus electricity) accounting for 3% to 4% of the total production cost for broiler production and 1% to 2% for egg production. Hence, broiler production is more sensitive to changes in energy prices vis-à-vis egg production.

Figure 3.8: World crude oil price evolution

Source: EIA

Table 3.3 quantifies the extent to which a change in the price of energy will have an impact on the total cost of broiler and egg production (based on the cost data for broiler and egg production presented in Figure 3.4). A 1% change in energy costs would, *ceteris paribus*, have a 0.04% impact on total broiler production costs and a 0.02% impact on total egg production costs. Although the sensitivity of poultry production to changes in energy costs is relatively low, the absolute scale of recent energy price hikes has had a quantitative impact on total poultry production costs.

Table 3.3: Sensitivity analysis of the impact of a change in energy prices on total poultry production costs

% change in price	Impact on broiler production costs				Impact on egg production costs		
	1%	10%	25%		1%	10%	25%
Energy price	0.04%	0.35%	0.88%		0.02%	0.15%	0.38%

Source: Agra CEAS calculations based on van Horne (2008; 2009)

3.2.6. Outlook for production costs

The outlook for poultry feed is dependent on expected developments in each of the feed ingredients. Wheat and maize used in poultry rations are mainly produced within the EU (which are closely related to international wheat prices) whereas soybeans and soybean meal are imported from third countries (primarily the USA, Brazil and Argentina) at zero custom duty. Accordingly to the latest FAPRI forecasts (FAPRI, 2010), world wheat and maize prices are expected to increase by less than 1% per annum over the next 10 years. However, an expected slowdown in the expansion of soybean production in South America

and the US coupled with strengthening soybean meal demand due to the economic recovery will continue to put prices on an ascendant path over the next 10 years; the average price over the outlook period remains 34% above that of the previous decade. These projections are of course highly dependent future exchange rate evolution as well as the economic and political assumptions used to generate the forecasts.

In general, it is expected that commodity prices will be more volatile than they have been historically. With increased use of agricultural commodities as feedstocks for biofuel production, commodity prices are increasingly expected to track prices in the more volatile energy markets, which according to the latest EIA projections are themselves expected to rise to in excess of US$100 per barrel by 2020.

However, there is still a large differential between the cost of poultry feed in the EU and in key world poultry meat and egg producing countries. This cost differential is mainly the result of increased EU regulations and legislation primarily concerned with increasing food safety (e.g. prohibition of the use of antimicrobial growth stimulators and meat-and-bone meal in poultry feed and the increased use of GM feed ingredients in such third countries that are not authorised for use in the EU). This puts EU poultry meat and egg production at a significant cost disadvantage to key non-EU poultry meat and egg producing countries. Thus, the extent to which EU broiler and egg feed costs will remain higher than key third country producers going forward will depend on the continuation of such EU regulations and legislation, which will be further impacted by the evolution of exchange rates.

Other EU regulations and legislation will also continue to affect EU production costs going forward. These include legislation concerning animal welfare, which are examined in detail in Section 4. Other legislation which are also likely to affect production costs include those relating to the protection of the environment and food safety:

- **Environment.** Directive 2001/81/EC places emissions ceilings on ammonia for each Member State. Some Member States such as Germany and the Netherlands have national limits on ammonia emissions from poultry houses (European Parliament, 2009). Van Horne (2009) estimates that the impact of ammonia legislation on broiler production costs between 2007 and 2012 could result in an increase of €0.015 per kg live weight in the Netherlands; €0.014 in Germany; and €0.003 in the UK.

  Additionally, the IPPC (Integrated pollution and prevention control) Directive which applies to broiler and egg production holdings of over 40,000 birds is expected to result in increased compliance costs. In the case of egg production, according to estimations by LKS (2009), IPPC compliance is expected to add €0.0156 per bird place per year.

- **Food safety**. There are certain food safety requirements with which EU production must comply. For broiler production, the most relevant pieces of legislation are Regulations 2003/2160/EC and 2007/646/EC. With regard to salmonella, there is a variation in the presence in different Member States, and Member States must make efforts to reduce salmonella, taking into account the baseline presence (European Parliament, 2009). Van Horne (2009) estimates that the impact of the reduction of salmonella on broiler production costs between 2007 and 2012 would result in an increase of €0.004 per kg live weight in the Netherlands; €0.0075 in Germany; €0.004 in the UK; €0.003 in France; and most significantly, €0.029 in Poland.

4. IMPACT OF ANIMAL WELFARE LEGISLATION IN THE POULTRY AND EGG SECTORS

4.1. Background

The EU remains a leader in animal welfare, having adopted the first piece of legislation over 30 years ago. Competence for animal welfare was previously derived from Article 37 of the amended Treaty of Rome, and animals were first recognised as sentient beings in a protocol in an annex to the Treaty of Amsterdam. Following the Treaty of Lisbon, Article 13 of the Treaty on the Functioning of the European Union recognises animals as sentient beings, and states that agricultural legislation must take this into account. Within the EU, animal welfare is considered to be a scientific issue, and policy actions are based on both scientific evidence and socio-economic impact assessments; EFSA is now responsible for the scientific side (previously this was the responsibility of a scientific committee).

Evidence from Eurobarometer (2007a) implies that animal welfare is an important topic for EU citizens. On average, EU-25 citizens rated the importance of animal welfare as 7.8 out of 10. It is often considered that if the welfare of animals is improved, there is an improvement in the quality of meat.

4.2. Legislation

Table 4.1 outlines animal welfare legislation relevant to all farmed animals as well as specific to broilers and laying hens. The most important horizontal pieces of legislation affecting all farmed animals are:

- Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes
- Council Regulation (EC) No 1/2005 of 22 December 2004, on the protection of animals during transport and related operations
- Council Directive 93/119/EC of 22 December 1993 on the protection of animals at the time of slaughter or killing (which will be replaced with Council Regulation (EC) No 1099/2009 from 2013)

Since the 1990s, the EU has developed a more detailed legislative framework on animal welfare specific to the production broilers and laying hens. These are notably Council Directive 2007/43 for broilers and Council Directives 1999/74/EC and 2002/4/EC, and Council Regulations (EC) no 1028/2006 and (EC) no 557/2007 for laying hens. These are outlined in Table 4.1 briefly described in the following sub-sections.

Table 4.1: Current European legislation on animal welfare relevant for egg and poultry sectors

	Legislation	Topic
All farm species	Council decision 78/923/EEC	European Convention for the protection of animals kept for farming purposes
	Council Directive 98/58/EC	The protection of animals kept for farming purposes
	Commission Decision 2006/778/EC	Amending Decision 2000/50/EC concerning minimum requirements for the collection of information during the inspections of production sites on which certain animals are kept for farming purposes
	Council Regulation (EC) no 882/2004	Official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules
General overview	Commission working document of 23 January 2006	Community action plan for protection and welfare of animals 2006-2010
Broilers	Council Directive 2007/43	Minimum rules for the protection of chickens kept for meat production
Laying hens	Council Directive 1999/74/EC	Laying down minimum standards for the protection of laying hens
	Council Regulation (EC) no 1028/2006	Marketing standards for eggs
	Commission Regulation (EC) no 557/2007	Laying down detailed rules for implementing Council Regulation (EC) no 1028/2006 23 May 2007 on marketing standards for eggs
	Commission Directive 2002/4/EC	Registration of establishments keeping laying hens
Protection during transport	Council Regulation (EC) 1255/97	Community criteria for staging points and amending the route plan referred to in Annex to Directive 91/628/EEC
	Council Decision 2004/544/EC	European Convention for the protection of animals during International Transport
	Council Regulation (EC) 1/2005	Protection of animals during transport and related operations (amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97)
Protection at the time of slaughter and killing	Council Decision 88/306/EEC	European Convention for the protection of animals for slaughter
	Council Directive 93/119/EC	Protection of animals at the time of slaughter or killing
	Council Regulation (EC) No 1099/2009	Protection of animals at the time of slaughter or killing (applicable from 2013)

Source: DG SANCO

4.2.1. Poultry meat production

For broilers the main animal welfare legislation is contained in Council Directive 2007/43 of 28 June 2007 which lays down minimum rules for the protection of chickens kept for meat production (also known as the Broiler Directive). According to the Commissioner in office at the time of agreement of this Directive, the Directive was needed because “EU consumers repeatedly expressed concern at the welfare problems arising in intensive chicken farming”. The Broiler Directive sets out chicken production standards although it should be noted that Member States do not have to implement the Directive until July 2010. The Directive applies to all holdings with more than 500 chickens for meat production, but does not apply to extensive indoor, free-range or organic production. The main standards which must be met concern stocking density and lighting. In addition, there are also further requirements relating to factors such as heating, feed and water availability, litter and ventilation.

The objective of this Directive is to avoid competition distorting differences in production standards and assure a smooth running of the organisation of the common market in poutry meat production. As the Directive has not yet been implemented, there have as yet been no impacts on production and it should be noted that for the most part, the sector has not expressed concerns about the impact of the Directive.

4.2.2. Laying hens

In respect of laying hens the main legislation relating to animal welfare is Council Directive 1999/74/EC of 19 July 1999 laying down minimum standards for the protection of laying hens, which outlines in particular provisions applicable to unenriched and enriched cage systems and alternative (non-cage) systems. The Directive provides that the rearing of laying hens in unenriched cage systems will be prohibited with effect from 1 January 2012. The Directive mandated the Commission to submit to the Council a report based on a scientific opinion on the various systems of rearing laying hens taking into account pathological, zootechnical, physiological and ethological aspects as well as environmental and health impacts. The report was also to be based on a study of the socio-economic implications of the various systems and their effects on the Community's economic partners. The Directive is complemented by legislation on the registration of establishments keeping laying hens[8] and on the labelling of eggs[9] as well as on food safety aspects[10].

The Commission duly produced its report on the impact of these aspects in January 2008[11] and in particular concluded that there was no reason to consider amending the Directive and thereby delaying the implementation of the Directive beyond the date foreseen.

4.2.3. EU welfare legislation and third country imports

During the industry interviews, it was noted that EU animal welfare legislation applies only to production that takes place in the EU and not to meat imported into the EU, with the exception of legislation on slaughtering. In the case of slaughtering, meat imported into the EU must be accompanied by a health certificate which certifies equivalency.

The industry interviews cited two reasons why animal welfare legislation is not imposed on third country imports:

- Animal welfare is not covered by the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) within the WTO.
- There is a wish to engage with third countries on the subject rather than to impose it.

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8 Commission Directive 2002/4/EC of 30 January 2002 on the registration of establishments keeping laying hens, covered by Council Directive 1999/74/EC Official Journal L 30 , 31/01/2002 p. 0044 – 0046.

9 Council Regulation (EC) no 1028/2006 of 19 June 2006 on marketing standards for eggs (OJ L 186, 7.7.2006 p. 0001-0005) and Commission Regulation (EC) no 557/2007 laying down detailed rules for implementing Council Regulation (EC) no 1028/2006 23 May 2007 on marketing standards for eggs (OJ L 132 24.5.2007 p. 0005-0020).

10 Regulation (EC) No 852/2004 of the European Parliament and of the Council on the hygiene of foodstuffs (OJ L 139, 30.4.2004, p. 1) and Regulation (EC) No 853/2004 of the European Parliament and of the Council laying down specific hygiene rules for food of animal origin (OJ L 139, 30.4.2004,p. 55).

11 Communication from the Commission to the European Parliament and the Council on the various systems of rearing laying hens in particular those covered by Directive 1999/74/EC Brussels, 8.01.2008, COM(2007) 865 final.

The second issue originates from the 2006-2010 Community Action Plan for Animal Welfare. One of the stated aims of this Plan is to promote and share understanding on animal welfare issues globally. The Commission is thus working to promote better understanding of animal welfare, and the link between animal welfare and other key values such as animal health, food safety, food quality and food security.

Chile was cited during the industry interviews as an example of successful engagement with third countries on this issue. Animal welfare was included in the SPS agreement with Chile in 2004, and at the end of 2009 the country adopted its first animal welfare law. Furthermore, it was noted that the EU has: also included animal welfare in bilateral agreements with Canada and South Korea; a co-operation forum on animal welfare with New Zealand and Australia; and a technical co-operation and information exchange with some countries in Asia, Africa and Latin America. It was also reported that there is some work being undertaken on animal welfare through the *Better Training for Safer Food programme* (e.g. it was noted that Thailand has requested a specific expert meeting on the welfare of poultry).

On an international level, there is a lack of clarity as to whether animal welfare is within the scope of the WTO - as noted above; it is not within the SPS agreement. According to one interviewee, in the case of the EU it may be possible to introduce the animal welfare requirements under Article 20 of GATT (as “public morals” within technical barriers to trade). However, this would tend to go against the EU’s desire to engage with third countries rather than impose standards.

As a final note, evidence from Eurobarometer (2007a) suggests that citizens want third country production to respect EU animal welfare standards. When asked if imported foods should respect the same conditions/standards of animal welfare and protection as food produced inside the EU, 66% replied “Yes, certainly” and 23% replied “Yes, probably”.

4.3. Animal welfare legislation in third countries

In third countries there are generally far less demanding requirements, targets and legislation concerning the welfare of laying hens and broilers, with the exception of production in Norway and Switzerland and more recently Chile.

It was also noted during the industry interviews that there is some work on animal welfare being done at an international level. The OIE is working on international standards to be democratically adopted by the 175 member countries. There is an internationally recognised methodology for risk assessment in the fields of animal health (developed by the OIE) and food safety (developed by Codex Alimentarius), though no such methodology has yet been developed for animal welfare. The FAO has also started work on capacity building for the implementation of good animal welfare practices against the background of increased productivity, and hence food security, in developing countries.

Some of the key welfare requirements in selected key producing and exporting Third Countries are presented in the following two sub-sections and more fully in Annexes 1 and 2.

4.3.1. Welfare of laying hens

While the US Animal Care Certified Programme does propose space requirements of 432 cm^2 for white layers and 489 cm^2 for brown layers, these limits are voluntary and the scheme does not cover whole industry.

In Brazil, layers are kept in conventional cages with a space allowance of 300 to 400 cm^2 per hen. Similarly for Argentina a survey in 2009 showed that the average space allowance was 372 cm^2 per hen.

Global information on India indicates a similar space allowance in this country. Between countries, regions and farms the density can change due to expected market prices (high density when high egg prices are expected), climate (lower density in hot areas) and housing systems (open or climate controlled houses). American literature shows that purely from an economic point of view 300 to 400 cm^2 per hen gives the highest income for the poultry farmer (Bell, 2000).

4.3.2. Welfare of broilers

The US National Chicken Council has developed voluntary animal welfare guidelines, which include a stocking density of 38k per square metre (assuming a live weight of 2-2.5kg per bird).

In Brazil, there are no regulations on the density of broilers, however due to the warm climate Brazilian farmers keep broilers at relatively low densities of approximately 35kg per square metre (van Horne and Achterbosch, 2007).

In Thailand, all export orientated farms need to comply with standards set by the government; these include the requirement that stocking density does not exceed 34kg per square metre.

The situation in Argentina was recently described in a report from the University of Buenos Aires (UBA, 2009). There is no specific legislation to determine the general framework and procedures for animal welfare in Argentina. There is, however, a manual of Good Practice for the Production of Broilers. Husbandry and management practices in broilers farms contracted to major integrators were investigated in a survey. The average density was 10 birds per square metre (which implies 26 kg live weight per square metre). The actual range was the equivalent of 23 to 30 kg per square metre. This level is well within the standards demanded by the EU broiler directive.

4.4. Advantages and disadvantages of EU animal welfare legislation

During the industry interviews, a number of advantages and disadvantages of animal welfare legislation were identified. These are outlined below.

4.4.1. Advantages

Advantages were generally perceived to be linked to the issue of meeting consumer expectations and confidence. As noted in Section 4.1, animal welfare is considered an important topic by EU-25 citizens according to Eurobarometer (2007a). Evidence from Eurobarometer (2007a and 2007b) also suggests that EU consumers are willing to pay more for products produced with higher animal welfare standards. For example, 25% of respondents indicated they were willing to pay a 5% premium for eggs from an animal welfare friendly system, and a further 32% were willing to pay a premium of 10% or more although in practice those willing to actually do so may be lower as is evidenced by the market share of such products.

However, one interviewee believed that producers can only obtain premia from voluntary schemes which have higher standards than the minimum. Two pieces of evidence corroborate this. Firstly, according to Eurobarometer (2007a), 56% of respondents believed that current labelling did not allow consumers to find products sourced from animal welfare friendly production systems (34% believed it did, and the remainder answered they did not know). Secondly, the Commission has recently completed a report exploring options for animal welfare labelling. The background to the report is that animal welfare labelling may make it easier for consumers to identify animal welfare friendly products, and for producers to have an economic incentive to improve animal welfare.

Finally, one interviewee identified a benefit outside the area of consumer expectations and confidence, noting that better animal welfare leads to higher profitability[12].

4.4.2. Disadvantages

The disadvantage of animal welfare was considered to be its impact on EU producers *vis-à-vis* third country producers. This is explored in detail in Section 4.5.

4.5. Impact of EU animal welfare legislation *vis-à-vis* third country production

The cost of compliance with animal welfare measures will depend on the type of production system being used prior to any change. Changes will occur in production in order to implement the standards, such as: changes production facilities and/or practices (e.g. to provide more room and/or freedom of movement); measures to protect animal health; increase labour inputs; and training of staff.

The level of these costs will also depend on several factors, including: existing production methods; required animal welfare standards; nature of the supply chain; compliance period; access to and cost of compliance resources; and access to and cost of certification. These changes may reduce production costs (e.g. by reducing rates of death and disease,

[12] This is also noted in FCEC (2007) p.20 where it is stated in respect of slaughtering technology with improved animal welfare characteristics: 'Clearly it is possible for there to be a conflict between animal welfare and economics in that measures introduced to improve the former tend to have a cost associated with them. However, it is also important to consider the potentially positive impacts on revenue that animal welfare measures can provide. This impact ranges from tangible benefits such as a reduction in live handling which can have an impact in terms of reducing employment costs, to less tangible benefits such as improved meat quality from birds that are less exposed to stress in the slaughterhouse'.

reducing input requirements) or alternatively increase costs (by increasing space and care requirements) or they may be cost-neutral.

4.5.1. Potential impact on egg production costs of EU Directive 99/74/EC

In June 1999 the European Agricultural Council decided that, after a transition period, laying hens would be housed exclusively in so-called enriched cages or in alternative (non-cage) systems. The enriched cage gives each hen 750 cm^2 surface area, increased height, a perch, a nest box and litter. The alternative system described in the EU Directive most resembles the aviary system. Each hen has 1,100 cm^2 living space, (part of) the surface area of the pen is covered with litter and in the pen there are enough nest boxes and perches for the animals. In 2012 two different housing systems will be in operation:

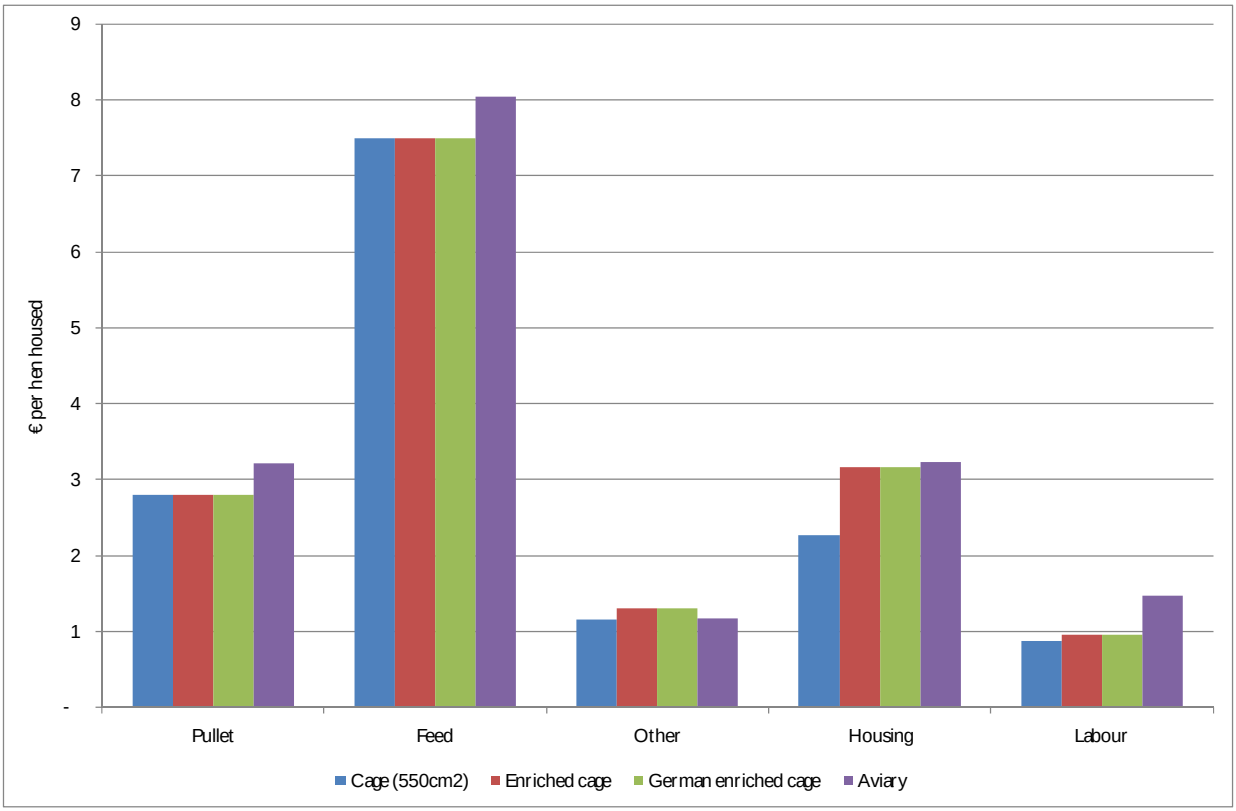
- **Enriched cages**. In comparison to conventional battery cages the group size is enlarged. The cage is complete with a nest box, perch and litter according to EU standards.
- **Aviary systems**. This system is based on floor accommodation (comparable to barn housing) whereby *via* levels the hens can also use the vertical space in the house. An amendment to the EU egg marketing regulations allows eggs from an aviary system to be marketed as barn eggs.

Some Member States have already implemented this Directive in part or in full prior to 2012. In Germany, it was decided to prohibit the keeping of laying hens in traditional cages after 31 December 2009. After this date, hens may be kept only in large enriched cages (colony cages or in German 'Kleingruppenhaltung'). The Netherlands also decided to set the larger enriched cage as a minimum standard.

This Directive also required that from 1st January 2003 the stocking density in conventional cages be increased from 450 cm^2 to 550 cm^2 per hen.

To assess the potential impact on egg production costs of EU Directive 99/74/EC, a comparison of production costs between the EU and third countries for caged systems is presented. Caged systems are the primary system on which international trade between the EU and non-EU countries in eggs and egg products is based. The production cost of eggs is calculated for four different situations: a conventional cage with 550 cm^2 per hen (i.e. the predominant situation in 2010), the enriched cage, the German enriched cage (colony cage) and the alternative system (aviary). Full details can be found in van Horne *et al* (2007). For the enriched cages in particular the housing costs increase as the higher space allowance per bird lowers the bird density per m^2 of poultry house. As a result, initial investment costs for housing and equipment as well as labour needs increase (Figure 4.1).

Figure 4.1: Breakdown of production costs for various housing systems for laying hens (in Eurocents per hen housed)



Source: van Horne et al (2007).

Based on these factors it is estimated that in the enriched cage system, production costs in relation to the situation in 2006 (conventional cage accommodation with 550 cm^2 per hen) are 8% higher. For the German enriched cage system, the increase is 10%. In the aviary system the increase is 21%. The figures show that in the period after 2012 the system with the lowest production cost will be the enriched cage. It should be noted this increase in production costs is simply based on a comparison with the currently predominant system of production in the EU, which remains the conventional cage with 550 cm^2 per hen for all layers.

EUWEP[13] points out that the effect of the 5 year review clause built into the original Directive as well as continued lobbying for a ban on all cages by animal welfare groups was to create uncertainty and in effect to make the industry in most countries (except those which took national measures such as Germany) delay implementation at least until such time as full clarity emerged of the Commission's intentions. This it is argued occurred with the publication of the Commission's report to the Council and Parliament in January 2008. However, EUWEP estimates that given the current rate of progress in terms of implementation, some 30% of the EU layer flock will still be in the traditional caged system by 1st January 2012. It is suggested that very large proportions of the flock in Spain, Italy, Greece, Portugal, Poland and, perhaps to a lesser extent, Czech Republic, Hungary and France are likely to still be in traditional cages. By contrast Belgium, Denmark, Finland, Germany, Netherlands, Sweden, and France already comply with the Directive and by 2012 the UK is expected to as well.

[13] The representative body in the European Union for egg packers, egg traders and egg processors.

4.5.2. Impact on broiler production costs after implementation of EU Directive 2007/43/EC

As noted in Section 4.2.1, Council Directive 2007/43/EC laying down the minimum rules for the protection of chickens kept for meat production must be implemented by 30th June 2010. The main requirements of the legislation are:

- **Stocking density:** a maximum of 33kg per m^2. If certain criteria are fulfilled, the stocking density can be 39kg per m^2; based on the fulfilment of further historical criteria, the density can reach 42 kg per m^2.
- **Lighting:** a minimum intensity of 20 lux during the lighting periods, illuminating at least 80% of the useable area, with temporary reductions allowed in certain situations.
- Various **comfort-based criteria** relating to factors such as heating, and feed and water availability.

As the Directive applies to holdings of over 500 chickens, the majority of EU chicken production will be affected.

It is difficult to gauge the impact of stocking densities as there is limited information on the stocking densities applied on farms in different EU Member States. There are surveys in the UK, France and the Netherlands. According to Sheppard and Edge (2005), the majority of UK farmers use stocking densities below 38kg per m^2. In contrast, according to ITAVI, 28% of French farms have densities between 39 and 42kg per m^2, while the stocking density exceeds 42kg per m^2 in 27% of French farms. A survey in the Netherlands completed by Van Horne and Puister (2005a) concludes that the stocking density in Dutch farms is particularly high. In the survey, 462 of 850 farmers asked agreed to reply to the questionnaire. 7% of respondents had an average stocking density below 38kg per m^2; 29% had an average stocking density between 39 and 42kg per m^2; and 64% above 43kg per m^2. Since climate, organisational structure and farm size are similar in Belgium; it is likely that Belgian stocking densities are similar to Dutch ones.

According to a 2005 report by Sheppard and Edge (2005), there are legal limits on stocking densities in some Member States, and voluntary schemes in others. Some of these are presented in Table 4.2. It should be noted that since this report was produced, stocking densities may have changed, and that laws and initiatives may have emerged in other Member States.

Table 4.2: Maximum stocking densities for broilers in selected EU Member States, 2005

Member State	Maximum stocking density kg per square metre	Status	Notes
Denmark	40	Legal	
Sweden	20	Legal	If not participating in animal welfare programme for chickens
Sweden	36	Legal	Higher limit only allowed if producer participates in animal welfare programme for chickens
Germany	35	Voluntary industry agreement	
Spain	32	Voluntary industry agreement with government incentive	Without forced ventilation; density drops to 28kg per square metre in summer
Spain	38	Voluntary industry agreement with government incentive	Without forced ventilation; density drops to 34kg per square metre in summer
U.K.	38	Voluntary industry scheme adhered to by most production	
U.K.	34	Government recommendation	

Source: Sheppard and Edge (2005)

Sheppard and Edge (2005) examined the effects of the density limits under the broiler directive proposal in the case of the UK. Of the producers who believed they would have to reduce their stocking density, 59% said they would rear fewer birds in the same house, 4% said they would increase the size of the house, and 37% said they would maintain the same flock size but build more houses to accommodate the flock. It was estimated that the capital cost of providing each new chick place could increase by up to £2 (25%) as a result of the stocking density change, though obviously this would be a one-off cost.

In terms of effects on production costs, Sheppard and Edge (2005) note that chick; feed and vaccine costs will not change as a result of a decrease in stocking densities. However, building related costs such as depreciation, heating, electricity and maintenance will change, as will labour costs. The estimations for changes in total cost are in Table 4.3.

Table 4.3: Production costs at different stocking densities

Stocking density (kg per square metre)	Production costs (GBP)	Index of production costs (42kg per square metre=100)
42	119.6 pence	100.0
38	122.0 pence	102.0
34	125.0 pence	104.5
30	128.9 pence	107.8

Notes: assumes production using crop thinning
Source: Sheppard and Edge

The French research institute ITAVI asked members of Working Group 1 (poultry economics) of the WPSA (World Poultry Science Association) to provide an overview of the current situation in their Member State, and the impact of the broiler directive. Italian and Spanish representatives believed that the directive would have a minor or no economic impact, as farmers already work with relatively low stocking densities due to climate and temperature factors. From the ITAVI data on French stocking densities, it can be inferred that the broiler directive may have stronger effects on French producers than on UK

producers. Similarly, one would expect the effects in the Netherlands and Belgium to be greater due to higher stocking densities. Van Horne and Puister (2005a) calculated that, in the case of the Netherlands, reducing density from 45kg to 39kg per square metre would lead to a loss of income of €120 000 for a 90 000 broiler farm. De Baere (2009) estimated that reducing density on Belgian farms from 46.9kg to 42kg per m^2 would lead to loss of farm income of €7,800 per year; a further reduction to 39kg per m^2 would lead to an additional loss of €5,400 per year.

It is also very difficult to examine the effects of the lighting requirement on EU producers due to an even greater lack of data on current lighting levels across the EU. The 2005 study by Sheppard and Edge examined the effects of the lighting levels in the UK. It should be noted that at the time of the study, the lighting levels of the voluntary UK ACP were below those of the proposed directive. This has since changed, and the ACP scheme now requires lighting levels in line with the EU broiler directive. Nonetheless, findings from the study may provide some insight into the effects of lighting levels in other Member States. Evidence from the study regarding lighting levels employed in UK chicken houses was conflicting, and the study notes that this may be due to a lack of understanding of the lux concept by farmers. However, in summary, a third of farmers interviewed for the study believed they were in line with the requirement of 20 lux over 80% of the area. A fair proportion of interviewed farmers believed that they could meet the 20 lux requirement with existing equipment. For those who provided estimates of the upgrade costs for equipment, these costs varied from £0.21 to £5.66 per m^2.

In summary, it is likely that the broiler directive will only have economic impacts on broiler farms in some Member States (notably in north-west Europe). If stocking density is limited to 42kg per m^2 (which is possible if certain historical performance criteria are fulfilled), the majority of Dutch and Belgian farms will be affected, while 20 to 30% of French and UK farms will be affected. If the stocking density is limited to 39kg per square metre, the effects will be greater. The actual consequences also depend on any additional national criteria; for example there are stricter rules on density in Sweden and Denmark, and voluntary schemes in the UK and Germany. Based on economic calculations made in Belgium, the UK and the Netherlands, it is estimated that lowering the density to meet the Directive's requirements would potentially increase production costs at farm level by 1-1.5%.

4.6. EU's competitive position on the world egg market

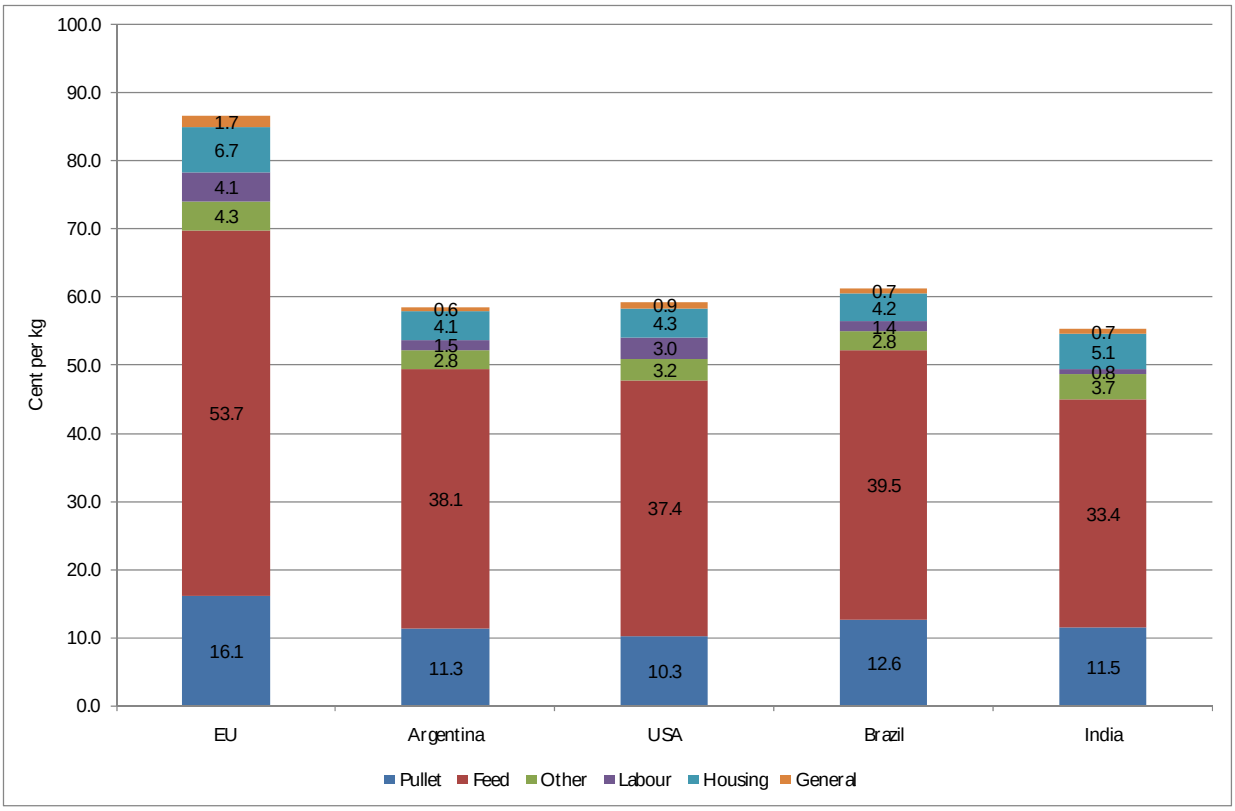
4.6.1. Egg production costs in the EU and third countries

Outside the EU there are only a limited number of countries that play a role in the trade in eggs and egg products. China is by far the largest producer worldwide with the United States ranking second. Currently only three third countries are authorised to sell shell eggs in the EU based on deemed equivalence of status on salmonella (Switzerland, Norway and Croatia). As none of these are significant egg producers the main items imported are egg products and the main exporters of egg products to the EU are the United States, Argentina and India.

To show the difference in production costs a comparison is made in Figure 4.2 between production cost in the EU (represented by the average of the Netherlands, France, Germany, Spain and Poland) and the United States, Brazil, Argentina and India.

In 2008 the production costs of eggs in these countries were estimated to be around 35% lower than in the EU. All four countries are so called "low-cost countries". In 2008 India had the lowest production cost of the countries addressed here. It should, however, be noted that fluctuations in the exchange rates of the local currency mean there can be significant year on year changes in relative production costs (expressed in Euros). Thus, for example, in 2008 the US dollar was relatively weak compared to the Euro which gave the United States egg sector an additional advantage on the export market in that year.

Figure 4.2: Production costs for eggs in the EU and selected third countries, 2008 (Eurocent per kg)



Source: van Horne

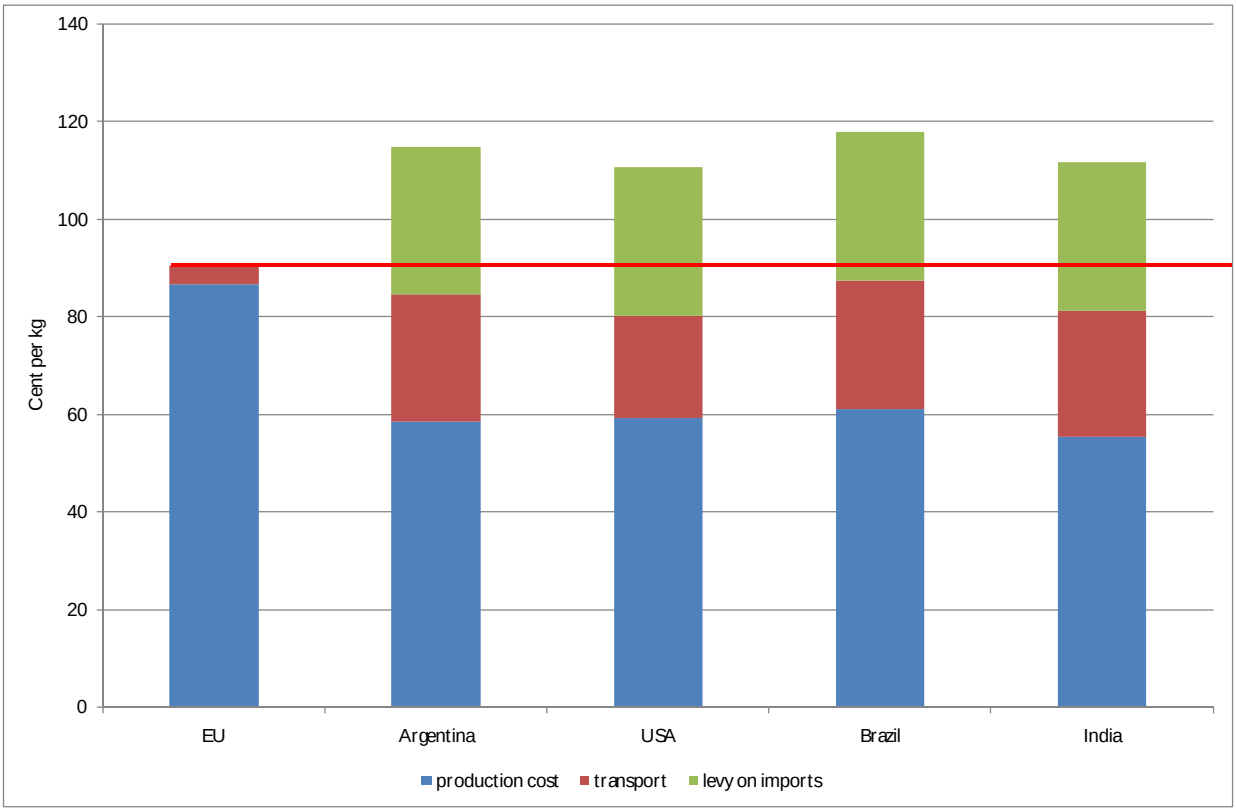
More generally the lower production costs in the US can be largely explained by the low feed price (due to the favourable domestic supply of feed ingredients for animal feed) and by the favourable operating environment for producers. Production takes place on large, efficient farms where the hens are kept in relatively cheap facilities. Brazil and Argentina also have ample access to low cost domestic supplies of feed ingredients combined with low labour costs. Competitiveness is further enhanced by the fact the industries operate with much less restrictive welfare requirements (including the absence of legislation on beak trimming) and that they are able to use meat-and-bone meal in poultry feed.

4.6.2. Offer price of eggs and egg powder in Europe

While production costs are therefore lower in third countries this does not immediately translate into competitiveness on the EU market as this is to a degree protected by an import levy on eggs and the transportation costs for shipment of eggs and egg products to Europe. These costs will include local transportation cost, sea freight as well as the transport cost within Europe. The calculations which follow assume that eggs are transported to Frankfurt am Main which is located at the centre of the main EU market i.e. Germany.

Figure 4.3 provides an overview of the calculated offer price of eggs delivered in Germany. The Figure shows that although third countries have lower production costs, the combination of transportation costs and import levies means the offer price is significantly above the EU price.

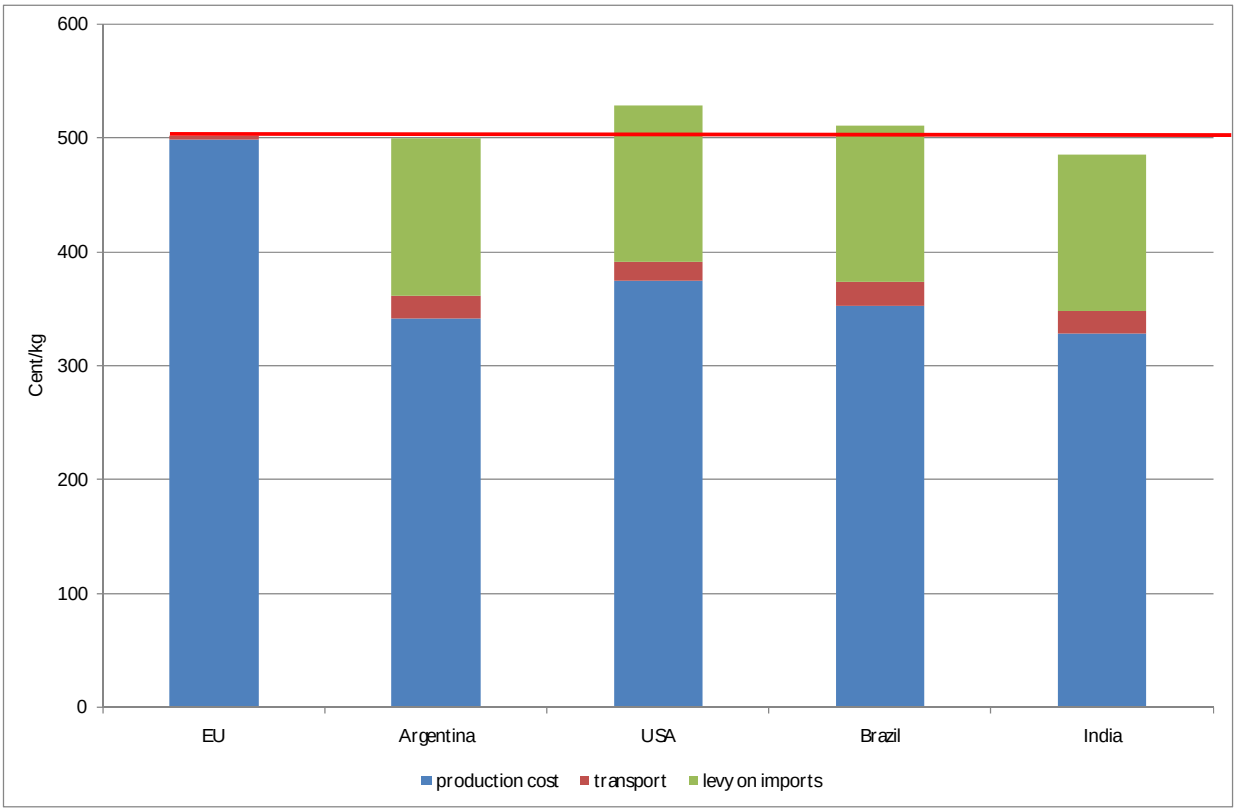
Figure 4.3: Offer price of shell eggs in Germany from EU and non-EU countries 2008 (Eurocents per kg shell eggs)



Source: van Horne

Similar calculations were made for egg powder which is extensively imported from third countries. Egg powder has a long shelf life (more than 1 year) and relatively low transportation costs. In contrast to shell eggs which tend to decline in quality when transported over long distances, egg powder has no such disadvantages. Using the same assumptions as for shell eggs in terms of country and location of the shipment the estimated offer price in Germany for whole egg powder is provided in Figure 4.4. This shows that using 2008 as a base year for whole egg powder both India and Argentina have a similar or lower offer price than the EU industry while the USA and Brazil remain above the EU price after taking into account EU import levies and the transport cost.

Figure 4.4: Offer price of whole egg powder in Germany from EU and non EU countries, 2008 (in Eurocents per kg)



Source: van Horne

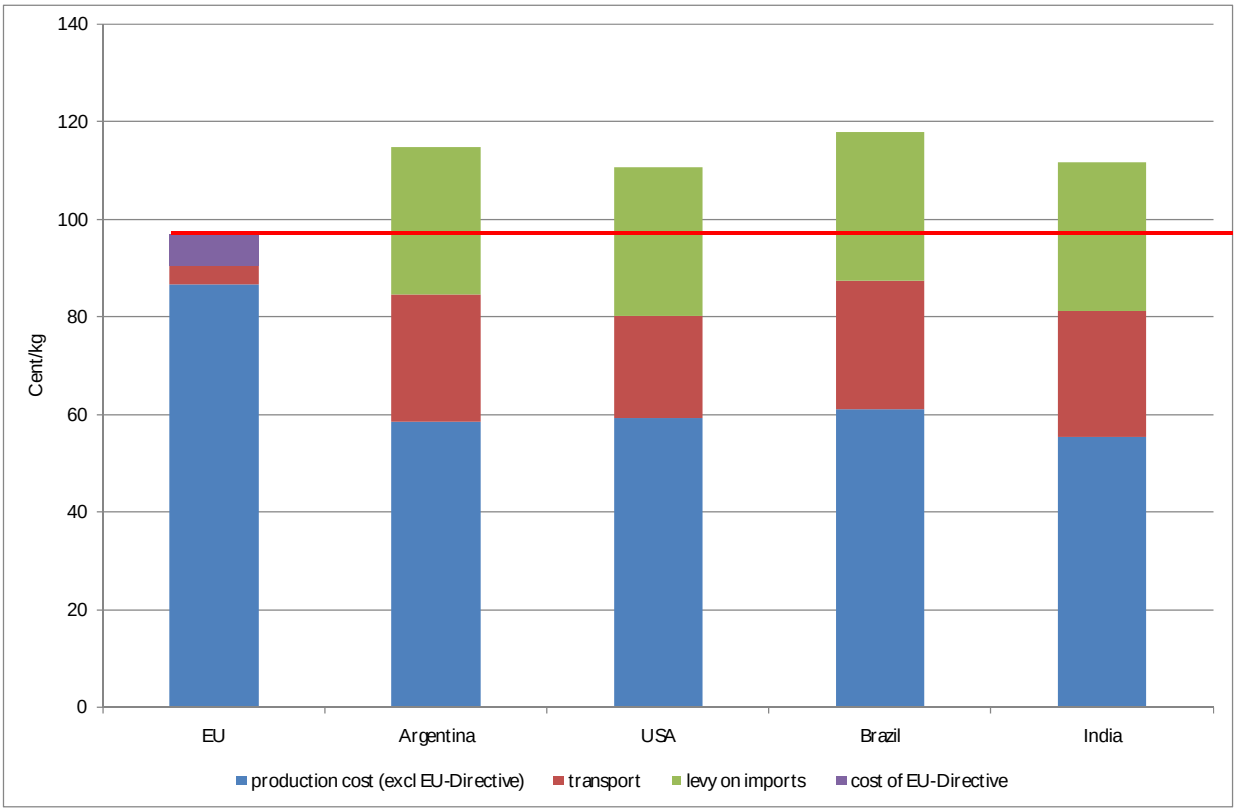
4.6.3. Outlook post-2012

Looking firstly at shell eggs, to the extent that the EU industry adjusts its production system to move to enriched cages by 2012, it is estimated by van Horne that this will involve an increase in costs of approximately 8% compared to the current system based on standard cages. Figure 4.4 provides an overview of estimated production costs in the EU compared to the offer price of shell eggs from selected third countries in 2012 assuming constant exchange rates.

The results show that the production cost advantage enjoyed by the United States, Brazil, Argentina and especially India in 2008 will tend to be enhanced after implementation of the EU "welfare" directive.

While the effect of transportation costs and EU import levies will mean the EU market will remain largely protected as in the past. However, a lowering of import levies and/or increased duty free/reduced duty access (as discussed in the current WTO Doha Round) would result in third countries being able to undercut EU egg producers in terms of price. Thus the final modalities paper put forward by the EU in the last substantive round of negotiations in the Doha framework in 2008 suggested a 72% cut on tariffs for shell eggs and very substantial increases in TRQs (up to 5% of consumption). Even with a 50% cut in import levies both the United States and India would be competitive on the market for shell eggs. However, it should be stated that international trade in shell eggs is limited primarily to the region. There is little trade in shell eggs with countries outside the EU. This is mainly because of demand for fresh eggs in the market.

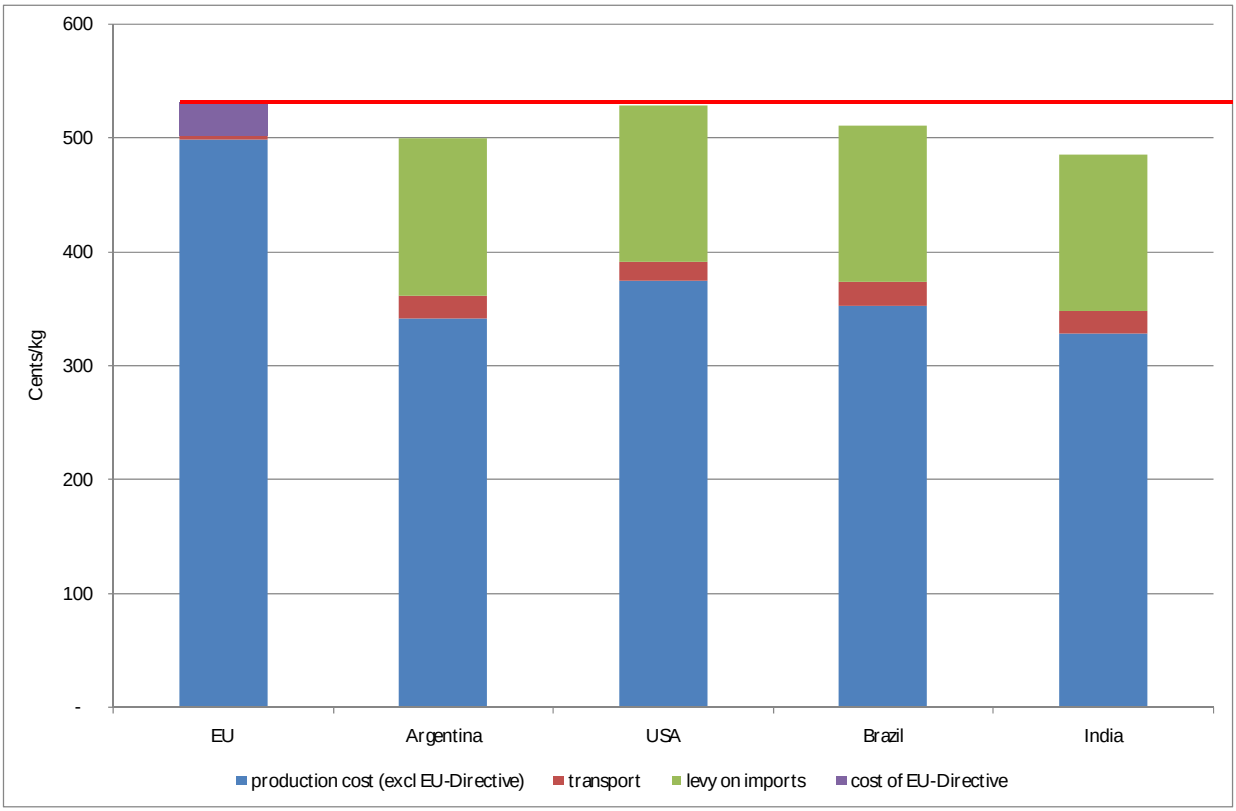
Figure 4.5: Estimated offer price of shell eggs in Germany from EU and non EU countries, 2012 (Eurocents per kg shell eggs)



Source: van Horne

Looking at egg powder, Figure 4.6 provides an overview of the estimated 2012 production cost of whole egg powder in the EU compared to the offer price of some third countries again assuming constant exchange rates. The results show that the production cost advantage enjoyed by the United States, Brazil, Argentina and especially India will tend to be enhanced after implementation of the EU "welfare" directive. The effect of this will be that after transportation costs and EU import levies are taken into account the EU market will no longer be protected as all the third countries considered would be able to undercut EU producers even without the assumption of a further lowering of tariffs.

Figure 4.6: Estimated offer price of whole egg powder in EU (average of selected countries) and selected third countries, 2012, (in Eurocents per kilogram)



Source: van Horne

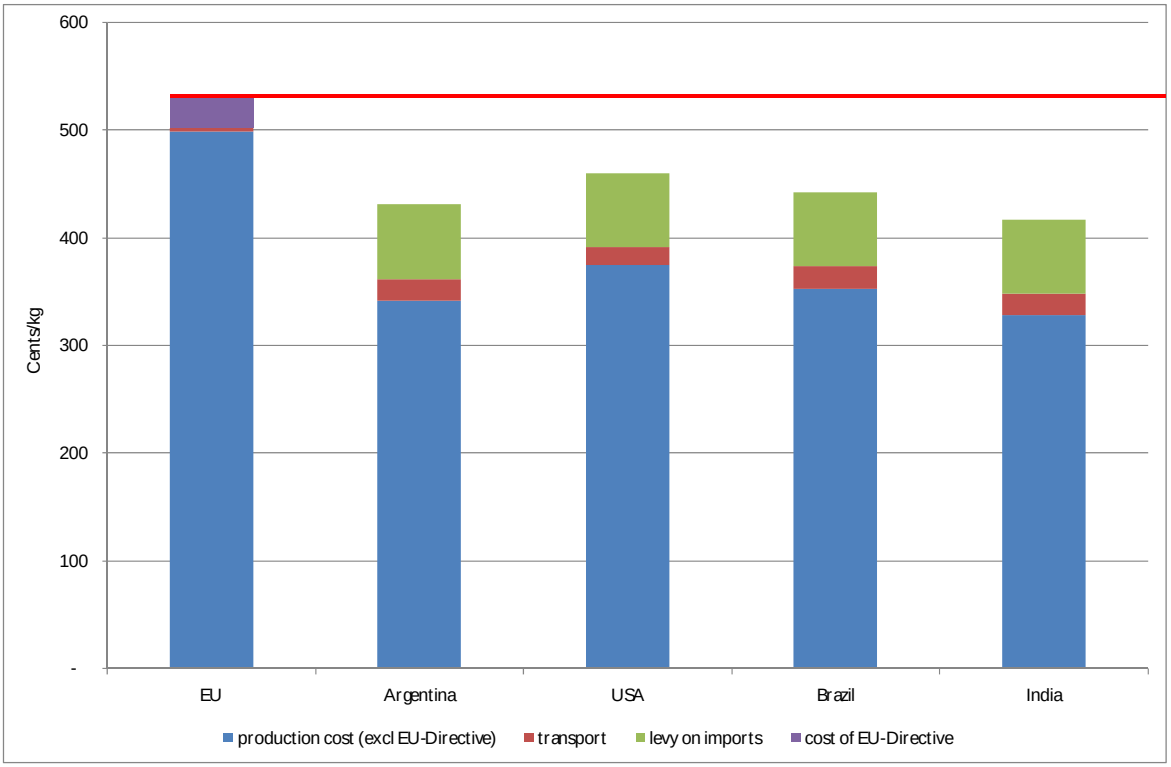
Two further scenarios assuming a further lowering of tariffs were calculated for egg powder.

- The first scenario assumes a 50% reduction in tariffs and the results are presented in Figure 4.7.
- The second scenario assumes that the value of the Euro increases by 10% vis-à-vis the third countries under review[14]. The results are presented in Figure 4.8.

As would be expected the results provided under these scenarios as shown in Figure 4.7 and Figure 4.8 illustrate that in a situation with lower import levies or a stronger exchange rate (i.e. a stronger euro compared to other currencies) the offer price of egg powder from non-EU countries falls significantly below the EU level. Conversely of course a weakening of the Euro would strengthen the relative competitiveness of EU production.

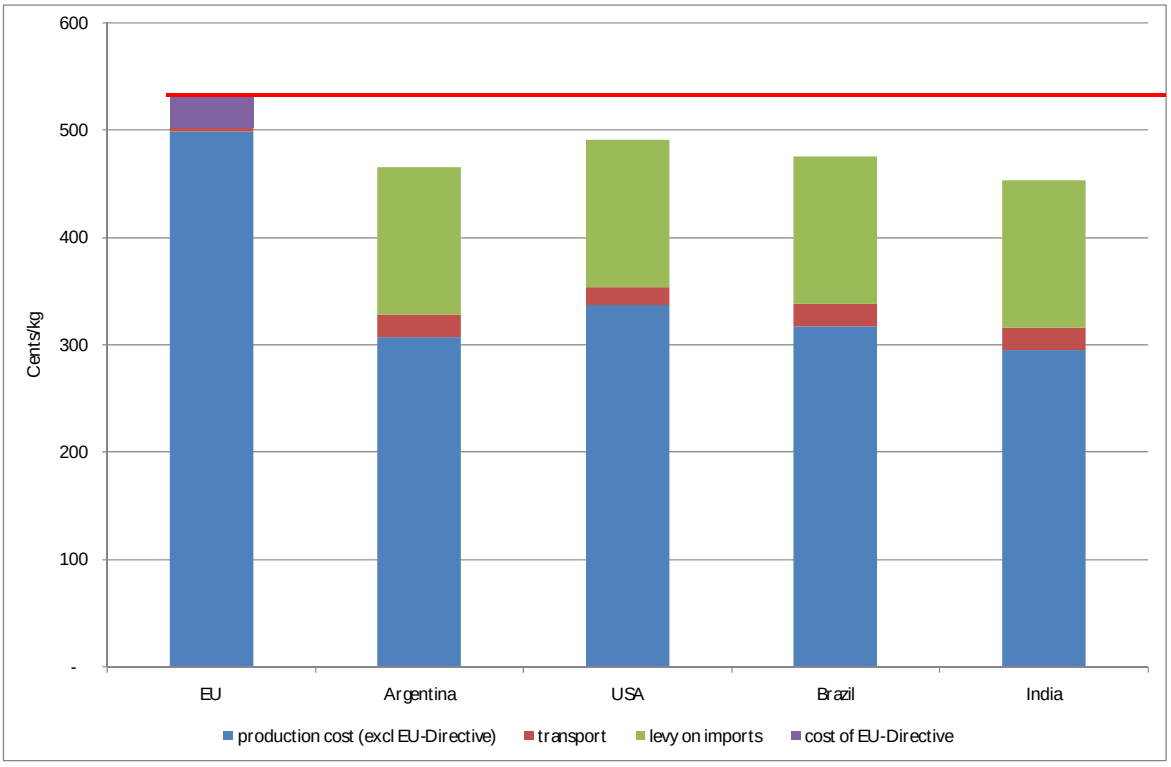
[14] In 2009 the value of the euro did in fact increase in value compared to the currencies of Argentina, India and Brazil.

Figure 4.7: Estimated offer price of whole egg powder in EU (average represented by horizontal line) and non-EU countries assuming a 50% reduction in import tariffs, 2012 (Eurocents per kilogram)



Source: van Horne

Figure 4.8: Offer price of whole egg powder in EU average (average represented by horizontal line) and non-EU countries assuming 10% appreciation of the Euro, 2012 (Eurocents per kilogram)



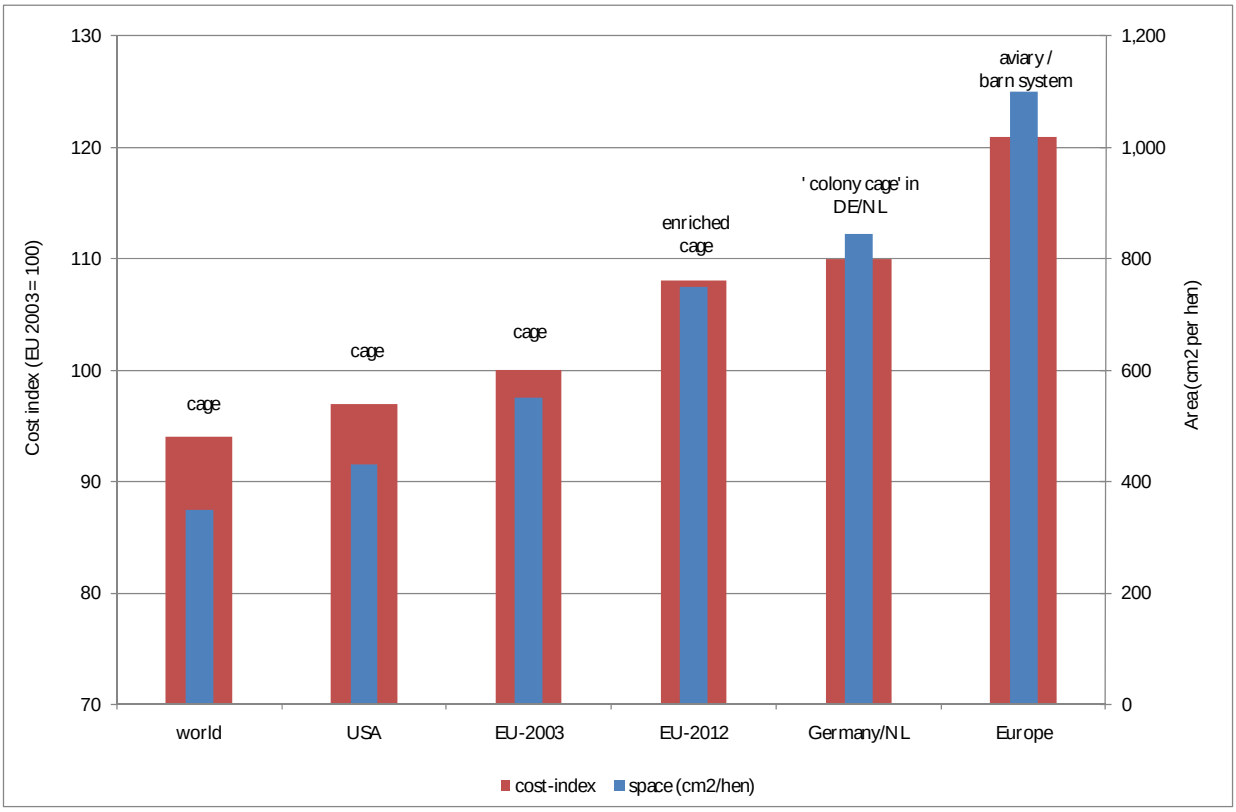
Source: van Horne

4.6.4. Summary

Figure 4.9 provides an overview of the relationship between production costs and the space standards for laying hens in different parts of the world. If, for example, the enriched cage were to be prohibited unilaterally in the Netherlands in 2012, laying hens would only be allowed to be kept in alternative housing systems with a minimum area of 1,111 cm^2 per bird. In Germany the standard will be 800 to 890 cm^2 per bird in a colony cage. In the EU as a whole the space allowance will be 750 cm^2 per bird in 2012 (enriched cages) and the current standard is 550 cm^2 per bird. In the United States voluntary rules apply which are based on 430 cm^2 per white layer with effect from 2008. In the other countries in the world there is no legislation governing the welfare of laying hens. Outside Europe laying hens are generally kept in cages with an average area per bird, in Brazil, Ukraine, or India, for example, of 300 to 400cm^2.

Figure 4.9 shows that the production cost of eggs increases as the space allowance per bird in caged housing rises. Assuming the current EU standard equates to an index value of 100 the production cost in the USA and the rest of the world would equate to approximately 97 and 94. The index rises above 100 when the space allowance is further increased in combination with a switch to enriched cages (index 108), German colony cages (index 110) and barn / aviary systems (index 121).

Figure 4.9: Relationship between costs for animal welfare (wide bar; cost index on left-hand axis) and the area per laying hen (small bar; space allowance per hen in cm^2 on right-hand axis)



Source: van Horne

4.7. EU's competitive position on the world poultry meat market

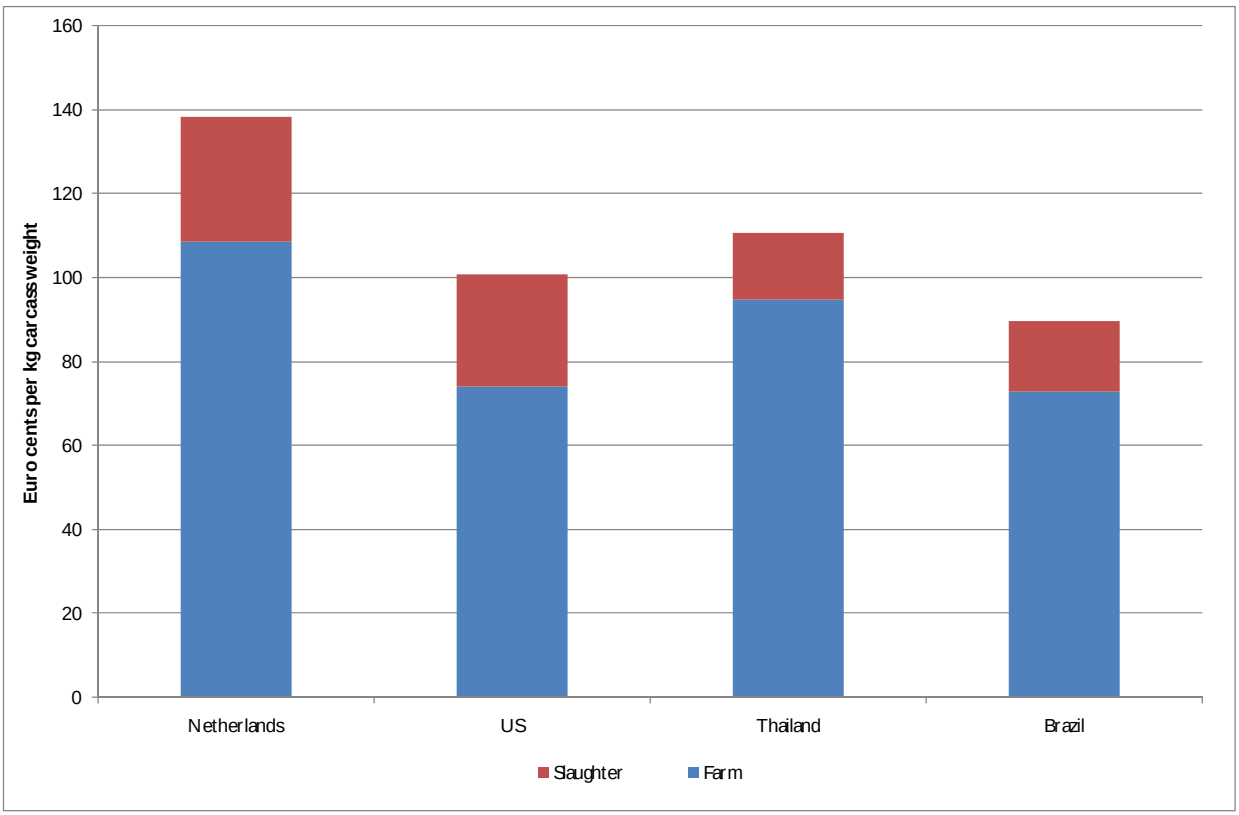
4.7.1. Poultry meat production costs in EU and third countries

Broiler production costs in 2007 for the EU and a number of countries outside the EU are presented in Figure 4.10. In all three major broiler exporting countries (Brazil, US and Thailand), the cost of production is lower. These costs are at their lowest in Brazil and the US. The lower production costs in the US and Brazil can largely be attributed to lower feed prices, which itself is the result of a substantial local supply of feed ingredients. For Brazil and Thailand, the favourable climate and lower labour costs are also important contributing factors.

In the non-EU countries, production costs are also lower due to the lack of regulations and legislation comparable with those within the EU. For example, these include the prohibition of the use of antimicrobial growth stimulators and meat-and-bone meal in poultry feed, which are not allowed in the EU.

Figure 4.10 also provides detail on the cost of slaughter in each country. Slaughter costs are considerably lower in Thailand and Brazil (€0.16 and €0.17 per kg of carcass weight, respectively compared to an EU average of €0.28). The production costs after slaughter are lowest in Brazil. While welfare legislation will impact production cost in EU countries, it will not affect that of third countries although it should be borne in mind as has been pointed out above that for certain kinds of more welfare friendly production will also command a premium in the market

Figure 4.10: EU (Netherlands) and third country broiler production and processing costs, 2007



Source: van Horne

The cost of broiler production in the EU is greater than that of the USA, Brazil and Thailand. It is difficult to quantify the effect of existing welfare legislation on broiler production in the EU. In the case of slaughtering, equivalency is requested from Third Country exporters, so EU producers are not disadvantaged. However, in the case of other legislation such as general welfare and protection during transport, equivalency is not requested so only EU producers are impacted. Council Directive 2007/43/EC may produce extra costs for EU producers; both capital outlay costs, and production costs. It is difficult to know how the directive will impact EU production *vis-à-vis* third country production. On one hand, welfare legislation is largely non-existent in third countries, and so producers can theoretically use higher stocking densities and lower lighting. In practice, there are some voluntary initiatives, and stocking densities may be limited in some countries due to the climate.

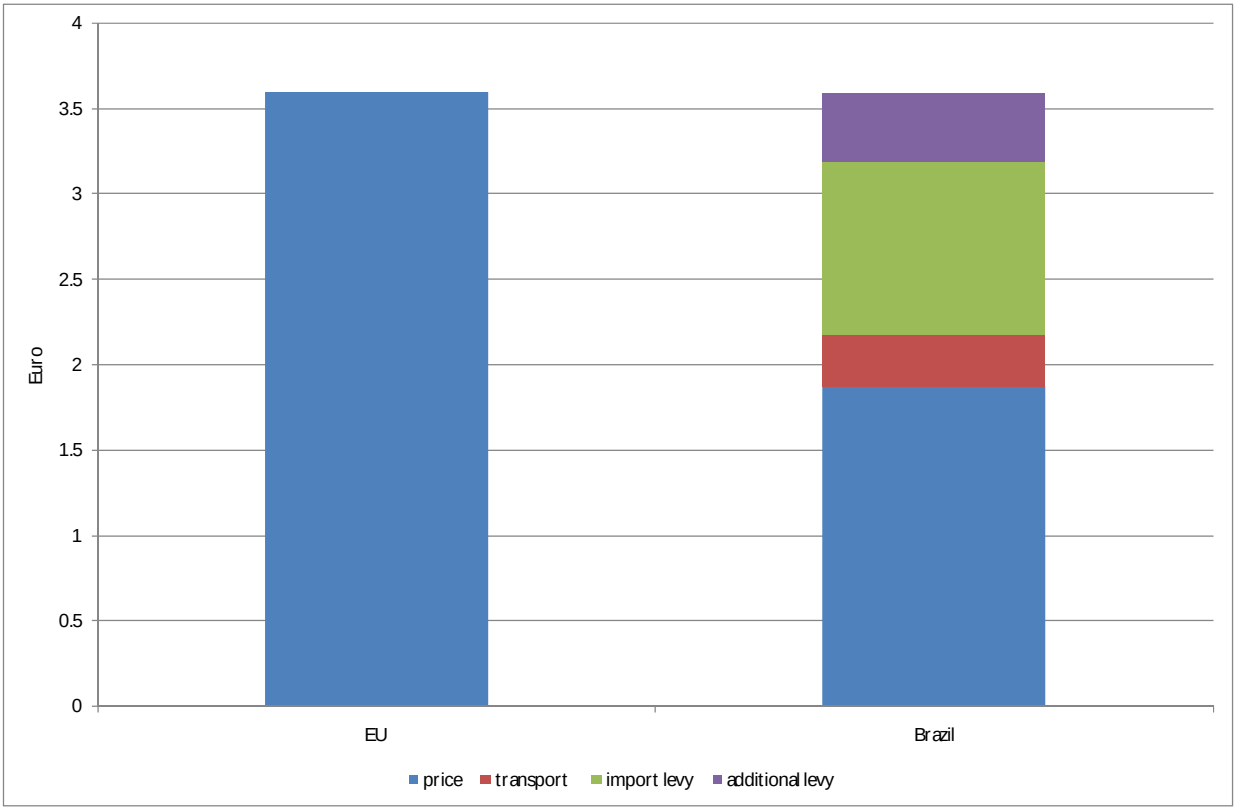
During the industry interviews, interviewees did not comment on the impact of general animal welfare legislation, or of Directive 2007/43/EC. This implies that concerns with the impact of these items of legislation are low. However, one interviewee expressed concern that the stunning requirements of Regulation (EC) 1099/2009 may have impacts as an alternative to water bath stunning will be needed[15]. The interviewee commented that the requirements would theoretically apply to third country production as well, but was concerned that this would be difficult to enforce, particularly given that water bath stunning is the global norm.

4.7.2. Offer price of breast meat in Europe

To determine the competitive position of third countries on the EU market, the effect of transportation cost and import levies also have to be considered. Another aspect is the fact that international trade is based on cuts. In the EU there is a high need for deboned chicken breast meat (fillet). Brazil and Thailand can offer this fillet at a competitive price. The low price of Brazlian and Thai fillet is due to the low production cost in these countries and the demand for other chicken cuts (legs) on the local market. In 2008 Brazil could offer deboned chicken fillet for around €2.20 per kg. The import levy on natural fillet is €1.02 per kg plus an additional levy of €0.40 per kg. Figure 4.11 gives an overview of the offer price for Brazilian natural fillet in Europe. The offer price is compared with the offer price of EU fillet. The EU price is estimated to be €3.60 per kg. This example illustrates that, despite the import levy and the additional levy, the Brazilian offer price is competitive. In a situation with lower import levies and the same exchange rate, the EU poultry industry could not compete with these imports. It should be noted that this conclusion assumes the stability of a number of factors (in addition to the exchange rate) which may, in reality, change over time.

[15] Interviews with equipment manufacturers and a survey undertaken by the Food Chain Evaluation Consortium (FCEC) for Euroepan Commission DG SANCO as part of a study on stunning / killing practices in slaughterhouses (FCEC indicate that the cost of stunning itself ranges from €0.000225 per bird to €0.0448. This equates to a cost for stunning of between 1.4% and 2.1% of ex-slaughterhouse price (net of profit margin) using the upper estimate for stunning cost. The lower estimate results in a stunning cost of no more than 0.01% of total ex-slaughterhouse cost (net of profit margin). Stunning/killing cost therefore comprises a small proportion of total slaughterhouse cos although the significance of this will depend on the,margins being made.

Figure 4.11: Offer price of natural frozen fillet by EU and Brazilian companies. The import levy is €1.02 plus an additional levy of €0.40 per kg product weight

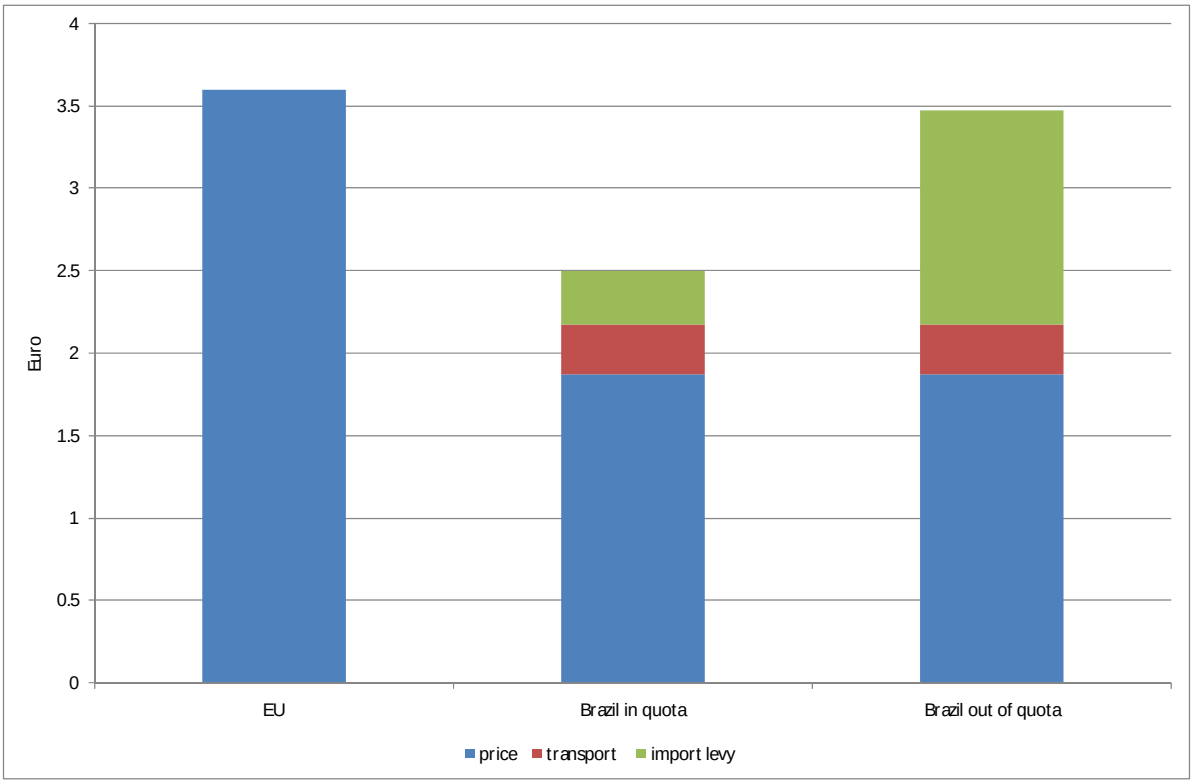


Source: LEI

In addition to natural fillet, salted fillet is also imported. The amount of salted fillet imported is regulated by tariff rate quotas (TRQs). Within the quota amount the import levy is 15.4% *ad valorem*. For quantities above the quota, the out-of-quota rate is €1.30 per kg. Figure 4.12 gives an example of the offer price of Brazilian fillet in 2008 inside and outside the quota.

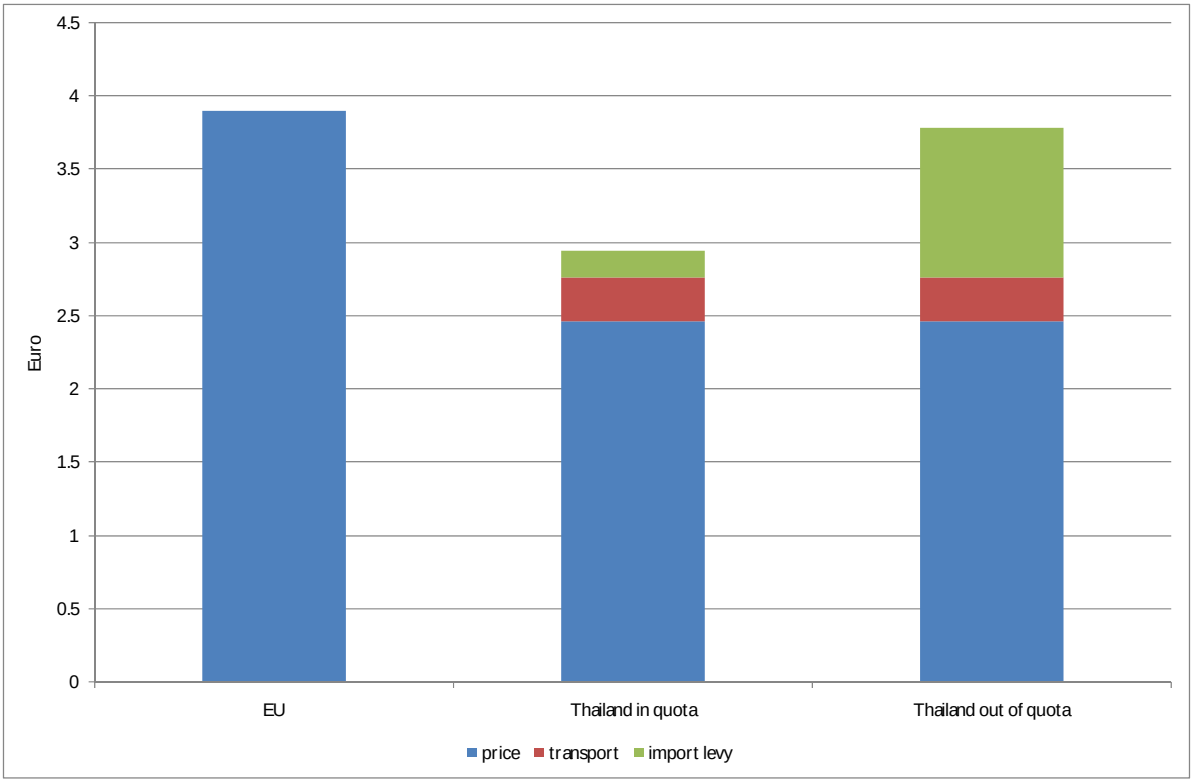
From Thailand only processed (cooked) fillet is imported. The amount of processed fillet imported is also regulated by TRQs. Within quota the import levy is 8% *ad valorem*. For quantities outside the quota the import levy is €1.02 per kg.
Figure 4.13 gives an example of the offer price of Thai fillet in 2008.

Figure 4.12: Example of offer price of Brazilian salted fillet (import levy within quota 8% tax and outside quota €1.02 per kg)



Source: LEI

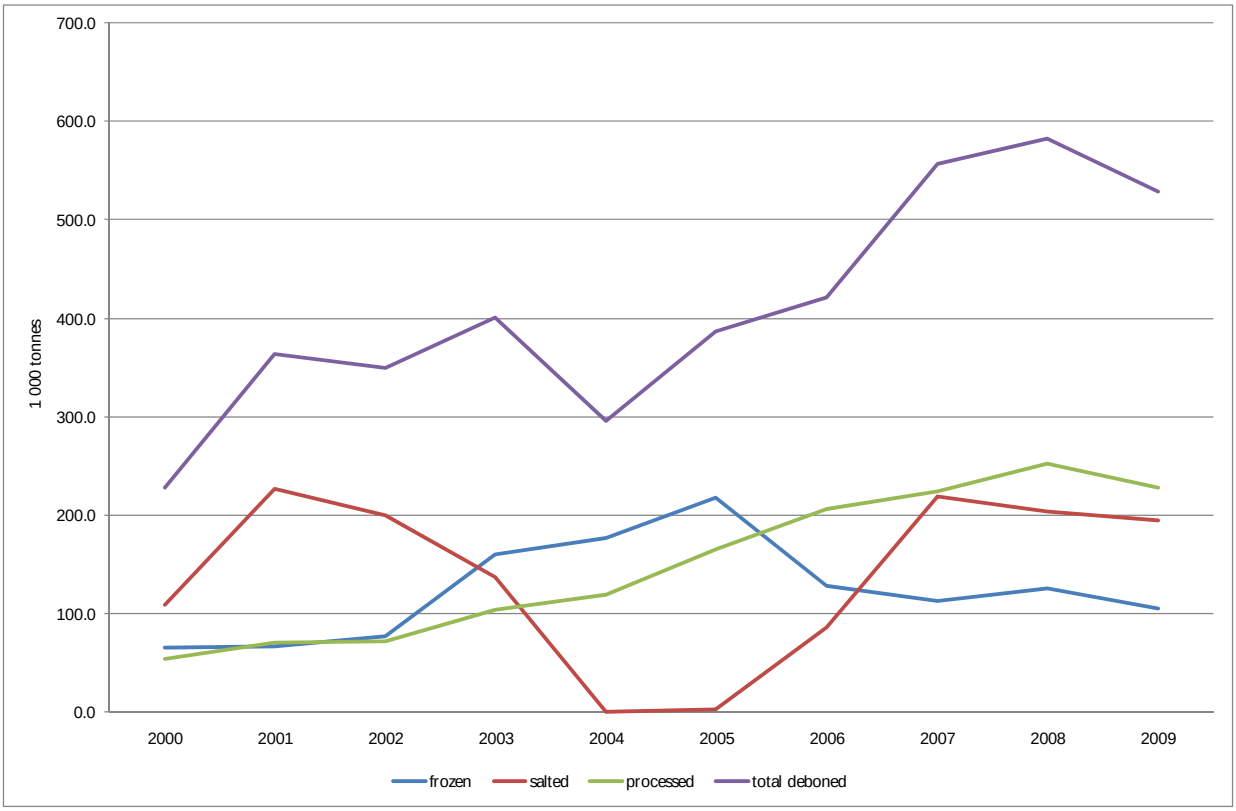
Figure 4.13: Example of offer price of Thai processed fillet (import levy within quota 15,4% tax and outside €1.30/kg)



Source: LEI

These examples show that the import levies give significant protection on imports from Brazil, Thailand and other Third Countries[16] although for the reasons indicated above from 2000 onwards imports from third countries (mainly Brazil and Thailand) increased rapidly. Figure 4.14 gives an overview of the development of EU import of poultry products (chicken fillet natural frozen, salted and processed) from third countries.

Figure 4.14: Development of EU imports of poultry products (deboned chicken cuts) from third countries



Source: EC

4.8. EU support for compliance with animal welfare legislation

The European Commission has offered support for compliance with animal welfare legislation under pillar two of the Rural Development Programme (RDP). There are three measures which provide funding opportunities:

- Measure 121 "modernisation of agricultural holdings". In the case of enriched cages, support could be granted in advance of the ban, and during a 36 month grace period thereafter.

[16] This is borne out by an evalauation of the CMOs for pigs, poultry and eggs conducted for European Commission DG AGRI by Agra CEAS Consulting in 2005 which modeled the impact of removal of import tariffs (and export refunds) on the sector and estimated the level of imports which would have occurred in three separate periods (1990-1992,1995-1997 and 2000-2002) if import tariffs (and export subsidies) had not been in place, i.e. a counterfactual. The results indicated that, as would be expected a priori, the import protection provided first by variable levies in the 1990-1992 period and subsequently by fixed tariffs are estimated to have led to substantially lower volumes of total annual imports than would otherwise have taken place. The presence of import tariffs resulted in an annual average reduction in the volume of imports in the three periods of 72% in 1990-92; 77% in 1995-97; and 52% in 2000-02. Expressed in absolute terms the tariffs are estimated to have reduced imports by over 1.5 million tonnes in the 1990-92 period and by over 1.0 million tonnes in the subsequent two periods (1995-97 and 2000-02). Agra CEAS Consulting.

- Measure 131 “Meeting standards based on Community legislation”. Support under this measure can only be applied once a standard is mandatory.
- Measure 215 “Animal welfare payments”. Support can be granted to farmers undertaking voluntary animal welfare commitments going beyond EU and national mandatory welfare standards for a period of 5-7 years. Support is not possible once a standard become mandatory.

However, interviewees believed that the support offered has been sparsely used. The following reasons for this were identified:

- Member States or regions (depending on the national administrative system) must request the support. Few authorities have in fact done this.
- Producers may not have been fully informed about the measures and their availability. One interviewee believed that the support opportunities had been poorly-communicated to producers.
- Producers may have been reluctant to change. One interviewee believed that there is low consumer understanding of the egg-numbering system, and that this may have contributed to producer reluctance to change.

Finally, it should be noted that authorities may not have chosen to allocate money to this area from the RDP due to the allocation of RDP funds to other ongoing projects.

4.9. The outlook for animal welfare legislation in the EU

Interviewees provided some comments on the outlook for animal welfare legislation in the EU. One interviewee believed that the requirements of the broiler directive could be further improved; most notably the stocking density quoted is high, and as breeds are not specified, there is no limit on the use of faster growing breeds. While this is an opinion, it does suggest that changes in the requirements are a possibility. The same interviewee believed that any animal welfare requirements should apply to producers both in the EU and in third countries.

One interviewee expressed concerns that the ban on conventional cages may be followed by a ban on all cages in a few years, which would adversely affect producers currently investing in enriched cages. Another interviewee believed that in Belgium a ban on all cages could take effect from 2025 although this is still under discussion. At an EU level, the aforementioned interviewee felt that any total ban on cages would be unlikely within the next 10 years, and would ultimately be led by the market.

Finally, one interviewee believed that changes to animal welfare legislation were not currently visible. There are evaluations on European Animal Welfare policies underway (one by the Commission and one by the Parliament), and until these evaluations are completed it is unlikely that new animal welfare legislation will be considered.

To conclude, while there is currently no indication of further animal welfare legislation, it is not possible to exclude future changes to the legislation. Future plans for animal welfare in the EU will become clearer following the completion of currently ongoing reviews of animal welfare policy. Despite the request of the Polish government for a delay in the introduction of the ban on conventional cages, it would appear that the Commission is keen to adhere to

the existing 2012 deadline. The Commission is expecting the broiler directive to be implemented in EU Member States as of June this year.

5. CONCLUSIONS AND RECOMMENDATIONS

This report has highlighted how the EU egg and poultry sectors have evolved since the mid 1990s and highlighted the fact that in this period these sectors have been affected by a number of significant internal and external factors. These include:

- A reduction in the level of support and in particular external protection over the period to 2001 as a result of the Uruguay Round Agreement on Agriculture;
- An increased regulatory burden due to the introduction of measures relating to animal welfare (notably under EU Directive 99/74/EC on the welfare of laying hens and EU Directive 2007/43 on the welfare of broilers) as well as on food safety, use of GM food and feed, use of antimicrobial growth stimulators and slaughtering. As has been shown in this report the combined effect of these and other measures has been to make the sectors increasingly vulnerable to competition from Third Country suppliers which do not for the most part impose the same requirements on the sector.

The European Parliament has also been particularly concerned about historic and potentially adverse future impacts of market disturbances (such as avian influenza) on the egg and poultry markets.

Based on the results of the analysis and industry interviews, a number of general conclusions and recommendations can be made with respect to the evolution of the market situation in these sectors and their future prospects:

- ***Avian influenza***. Revised EU legislation on the control and prevention of avian influenza and its implementation in the Member States during 2006 limited the impact of the disease on animal and human health, particularly compared to previous outbreaks. Most of the market and trade impacts resulting from the EU avian influenza outbreak in 2006 were short-term and closely linked to the impact of consumption shocks and the imposition of trade restrictions on market prices. From a production perspective, avian influenza had a limited impact on supply given the rapid supply response of poultry production. However, lower market prices and the unproductive downtime forced on those poultry farms affected both directly and indirectly had a negative effect on industry profitability and market stability.

While EU legislation and its implementation is generally considered to have been effective in limiting the spread of avian influenza in the EU, the main impact on producers' incomes were due to the depressed market prices as a result of reduced consumer demand. While this would suggest that the revised avian influenza legislation is working as intended in the event of an outbreak to control and prevent further outbreaks of the disease, it would seem that there may have been a greater need to limit the associated negative impact of the disease on consumer demand and hence market prices.

Recommendation: In the event of future outbreaks, resources need to be deployed promptly to limit negative demand shocks and in particular effective communication to consumers needs to be ensured.

- ***Input costs***. Given that feed is the major cost for the production of broilers and eggs, any change in the cost of feed has a significant impact on the overall cost of

production. Although poultry feed prices have decreased from their peak in mid-2008, prices have stabilised at levels well in excess of their long-term averages due to the higher cost of soybean meal, which going forward is expected to remain at higher levels. However, higher animal feed costs are not unique to the poultry meat and egg sectors. In general, the cost of animal feed ingredients and volatility in agricultural commodity prices are expected to remain higher going forward for all livestock sectors.

However, there is still a large differential between the cost of poultry feed in the EU and in key world poultry meat and egg producing countries, which is mainly the result of more stringent EU regulations and legislation primarily concerned with increasing food safety. This puts EU poultry meat and egg production at a significant cost disadvantage to key non-EU poultry meat and egg producing countries.

Recommendation: Any direct policy initiative to increase protection against cheaper imports of poultry meat and eggs to mitigate the additional cost of these food safety initiatives would run counter to the direction of recent CAP reforms and WTO commitments. However, of benefit to all livestock sectors would be to revisit the scientific advice on the continuation of EU specific food safety legislation concerning, for example, the prohibition of the use of antimicrobial growth stimulators and meat-and-bone meal in poultry feed and to review the authorisation process for GM feed ingredients the effects of which may over time result in higher costs for EU feed using sectors.

- **Animal welfare and environmental legislation.** EU producers are subject to some legislation, particularly with respect to animal welfare, which major competing producers are generally not subject to except for the requirements on slaughtering which need to be complied with by third countries exporting to the EU.

For both broilers and layers this legislation is in the process of implementation in 2010 for broilers and 2012 for layers (under EU Directive 99/74/EC and EU Directive 2007/43 respectively) and as this is the case it can be argued that to date the direct impacts of the legislation have been limited since the sectors have also operated with more or less adequate levels of tariff protection (i.e. outside existing TRQs). This having been said, although there are productivity and meat quality benefits from the implementation of the welfare legislation, in particular for broilers as has been highlighted in this report, these benefits are difficult to quantify and arguably do not fully offset the cost disadvantages likely to arise, particularly for egg and egg product production. Looking firstly at shell eggs, to the extent that the EU industry adjusts its production system to move to enriched cages by 2012 it is estimated by van Horne that this will involve an increase in costs of approximately 8% compared to the current system based on standard cages.

For eggs the sector operates under the additional disadvantage that while shell eggs produced under different systems in the EU need to be labelled according to the system used for third countries, such labelling is not required and perhaps more importantly in any case the bulk of competition arises for egg products used in the food processing and food service sectors which are generally not as sensitive to welfare concerns but are more focused on price.

Looking at broilers, the report considers that the broiler directive will only have economic impacts on broiler farms in some Member States (notably in north-west Europe). If stocking density is limited to 42kg per square metre (which is possible if certain historical performance criteria are fulfilled), the majority of Dutch and Belgian farms will be affected,

while 20 to 30% of French and UK farms will be affected. If the stocking density is limited to 39kg per square metre, the effects will be greater. The actual consequences also depend on any additional national criteria; for example there are stricter rules on density in Sweden and Denmark, and voluntary schemes in the UK and Germany. Based on economic calculations made in Belgium, the UK and the Netherlands, it is estimated that lowering the density to meet the Directive's requirements would potentially increase farm level production costs by 1-1.5%.

Other legislation, such as the IPPC (Integrated pollution and prevention control) Directive and salmonella requirements also have adverse impacts on competitiveness.

These factors may combine to place the sectors in a relatively vulnerable position going forward as these measures are implemented. In this context it is in particular noted that these changes mean that both sectors will be particularly exposed should further reductions in external protection be agreed in bilateral or multilateral trade negotiations.

Recommendation: The Uruguay Round on Agriculture established the current tariff and access basis for both poultry meat and eggs and egg products. In subsequent hitherto unsuccessful multilateral negotiations in the WTO Doha Round poultry has been treated as a sensitive product while eggs and egg products have not been considered as such. Nevertheless, based on the analysis of costs provided in this report and as has been highlighted by stakeholders in both cases any further reductions in tariffs and increases in access via reduced duty tariff quotas in either multilateral or bilateral trade agreements are likely to threaten the competitiveness of EU production. The egg and egg products sector in particular has argued that the tariff lines relating to this sector should also be treated as sensitive or that at the very least the EU should be pushing for animal welfare 'equivalence' in bilateral negotiations. The poultry sector argues that the fixing of TRQs should be based on 'realistic' estimates of EU consumption particularly for boneless breast meat.

In this context it is noted that animal welfare has been included in bilateral SPS agreements with Chile and more recently with countries such as South Korea. In view of the Commission's strategy of engagement over imposition in the area of animal welfare norms, it is recommended that the approach of including animal welfare in bilateral agreements is further pursued.

Beyond this there is concern about further extensions of welfare legislation e.g. via the banning of all caged production for layers or via stricter production standards for poultry and it is therefore recommended that prior to the introduction of such measures a full assessment of impact is undertaken.

Financial support has been offered to EU producers under the Rural Development Programme (RDP) to enable compliance with animal welfare legislation. However, there appears to have been little uptake of this support. It is therefore recommended that the measures are promoted and uptake is facilitated, in order that EU producers may benefit from financial support for compliance with this legislation.

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ANNEX 1: LAYER INDUSTRY IN THE USA, BRAZIL, ARGENTINA AND INDIA

USA

Egg production in the USA is concentrated in the North-East and South-East of the country. In the commercial egg industry numerous independent producers are marketing on a local basis, applying price competition as a major component of their marketing strategy. It is estimated that the top 10 egg producers, with each more than 5 million layers, represent 44% of the industry. These companies have the "economies of scale" and have a high efficiency in production, marketing and distribution (Shane, 2003). The USA is a large exporter of eggs and egg products.

The issue of animal welfare has become a more significant consumer concern in the US in recent years. Although there is hardly any legislation with regard to poultry welfare, the producer organisation, United Egg Producers (UEP), has established voluntary guidelines to gradually improve the welfare of laying hens. The guidelines include provisions for more space for layers in cages, conditions for moulting and standards for beak trimming. Within the UEP program the birds have more space in the cage. The space per bird is supposed to increase year on year and was 432 cm2 from January 2009 for white layers. White layers constitute 93% of the total layer population. Participating producers will be audited yearly through an independent certification program. At this point the market for alternative eggs (around 5%) in the USA is still very low compared to countries in North West Europe (Bracke et al, 2009).

Brazil

Brazil is the 8th largest egg producer in the world. Brazil has some export of eggs and egg products. However, compared to broiler meat exports this is very small. Some 90-95% of layers in Brazil are housed in cages, with the rest of the hens kept in floor systems in small flocks for local consumption. Commercial farms have good productivity. Pullets are reared in light controlled houses. Layers are commonly housed in open houses with curtain sides and tunnel ventilation. In warm areas padcooling is practiced. Brazilian egg producers have abundant access to high quality domestic grain and soya beans. This provides low cost pullet and layer feed. In general western breeds are used. Average Brazilian stocking density was reported to be 330cm^2 (Madeley, 2001), although in hot areas with simple housing the density can be lower (400 to 430 cm^2 per hen). Other sources report a general density between 330 and 400 cm^2 per hen. Specialists believe that the Brazilian egg industry has the potential to grow substantially.

India

All commercial layers kept on modern farms have open sided houses where birds are housed in 3 to 4 rows and three tier conventional cages. The new poultry houses in India have a length of 106 metres by 13.4 metres which can house 20,000 hens. The standard cage size for 3 birds is 37.5 cm by 30 cm. The space allowance is 375 cm^2 per bird (NECC, 2002). This is much lower than the current EU standard of 550 cm^2 per bird.

In India commercial layers are kept in cages in which space allowance is much lower than the European standards. Animal welfare standards do not exist. Animal welfare is not an issue for the government in India and in real life improving animal welfare is limited by poverty of a great part of the population and the life philosophy within the Hindu culture. Egg production in India is mainly focused on the national market. The growing population in India will increase the local market for poultry products, making export efforts unnecessary for Indian producers. However, some of the larger companies are exporting egg powder to the EU and Japan. This can be achieved as a result of the low production costs. For the future India has competitive advantages enabling the country to be a player on the world market for egg powder (Van Horne, 2005).

Argentina

Argentina is the 19th largest world producer of eggs in volume terms. Egg production in Argentina has been growing steadily since the 1990s in terms of production, value and exports. Production is expected to continue growing over the next few years.

Egg processing has also been also growing, currently consuming over 11% of total production. It is the most dynamic sub-sector in terms of foreign markets and contributed to reversing the country's situation from being an importer of egg products to being an emergent exporter.

No legislation regulating specific animal welfare practices for layers exists in Argentina. However, there are some public documents and manuals that present a framework for action. Among these are the Manual of procedures on Animal Welfare and a law of 1954 (which, for example, penalises insufficient quantity and quality of feed supply).

In 2009 a survey was conducted and interviews with producers and businessmen in the egg sector were held. The survey was undertaken by the University of Buenos Aires and included 30 operations (UBA, 2009). Factors directly related to layer welfare include space allowances, methods of beak trimming and mortality rates and these are reported on below:

- All farms in the survey kept layers in cages. The type of cage differed between farms. The average space allowance was 372 cm^2 per hen. However, there was a wide range from 278 cm^2 (8 companies) to 500 cm^2 per hen (1 company).
- All surveyed farms used pullets that had their beaks trimmed. The average age at which this was performed was 12 days with a range of 6 to 28 days. The beak trimming also differed in how much of the beak was trimmed with the majority of farms trimming between one quarter and one third of the beak.
- The mortality rate at the surveyed farms was just over 9%. On the larger farms the average mortality rate was 7.7%. The mortality rate ranged from 6% to 16% per company.

ANNEX 2: BROILER INDUSTRY IN BRAZIL, THAILAND AND USA

Brazil

Introduction

Brazil is one of the leading poultry producing countries in the world. It is the world's leading exporter of poultry meat. There has been enormous development and expansion since the 1970s. With a unique set of natural resources Brazil has become extremely competitive on the international poultry meat market. The main factors explaining the success are: the huge availability of areas of arable land to grow corn and soybeans to feed poultry; the friendly climate; the availability of water; low labour costs; and vertically integrated companies with good management (Van der Sluis, 2005). In 2008 total broiler production was around 10.9 million metric tons, of which 33% was exported. Brazil is exporting breast meat to the EU, whole birds to the Middle East, leg meat to Russia and deboned leg meat to Japan. Brazil exports large amounts of frozen and cooked breast meat to the EU, primarily to Germany, the United Kingdom and the Netherlands.

General

There is little information available on animal welfare in Brazil, simply because this subject does not receive much attention in the country. Within poultry farming the differences are large, and three main types of farming can be distinguished:

- **Subsistence farming.** Mainly in the north-eastern part of Brazil where farmers are focused on production for their own use.
- **Small and middle scale farming.** Independent or cooperative production for the regional and local market.
- **Multinationals** (e.g. Perdigao and Sadia). Large integrators producing for the Brazilian market and for export.

Legislation

For the local (Brazilian) market, animal welfare is not an issue; the topic does not receive any attention. There is no legislation on animal welfare at farm level or during transport for poultry in Brazil. In March 2003 the Minister of Agriculture installed a permanent committee on animal welfare. The task of this committee is to initiate studies on animal welfare. This is the first official governmental attempt to give attention to animal welfare (Vrolijk, 2008). Although there is no governmental legislation on animal welfare, the large exporting companies will consider animal welfare on their farms as part of their marketing strategy.

Practices

Only companies with exports to the EU take animal welfare into account. The chairman of ABEF ('Brazilian association of poultry exporters') stated: 'we deliver what the market asks for'. This remark was made when the EU decided to limit the density for broilers to roughly 21 birds per square metre poultry house. According to the ABEF the density in Brazil is 14

birds per square metre. Because Brazil has low costs of broiler production, the Brazilian industry is considered likely to remain competitive with the EU even were there to be a further decrease in density (Councillor Brazil, 2008).

Van Horne and Goddijn (2005) studied the situation of broiler welfare in Brazil, with their findings based on a study tour made in 2005 visiting several institutions and companies in the country. The poultry industry is mainly concentrated in the south of Brazil having a sub tropical climate. The broilers are often kept in simple open houses. In general three types of housing can be distinguished;

- **Low density:** the density is 10 to 12 birds per square metre, and birds are kept in simple traditional poultry houses. The poultry houses have open sidewalls with natural ventilation. The density per square meter is up to 30 kg.
- **Middle level density:** the density is 14 birds per square metre. In this housing system there is mechanical ventilation and there is some kind of cooling during the hot summer periods. The density translates to around 34 kg per square metre.
- **High density:** the density is 14 to 16 birds per square meter. The poultry houses are very modern with mechanical tunnel ventilation. At high temperatures the incoming air is cooled through a pad cooling system. Calculated at an average live weight of 2.5 kg per bird the density is up to 38 kg per square meter.

On other aspects on the welfare of broilers, there is not much information available on the situation in Brazil. The transport of the broilers takes places in crates. This method is less animal welfare friendly than the container system commonly used in the Netherlands. Transport to the processing plant is often over bad roads. However the distance from farm to processing plant is generally short (van Horne & Goddijn, 2005). The large integrators generally use modern European processing equipment. When properly used there should not be any difference in processing with the European situation. The scoring of foot pad lesions (dermatitis) in broiler chickens is one of the parameters of the broiler welfare assessment system that is currently being developed in Europe. At this moment there is no information available on the scoring on foot pad lesions (dermatitis) in Brazil.

Conclusions

For the local (Brazilian) market animal welfare is not an issue. In recent legislation, the EU has concentrated on the density of the broilers. In Brazil the density is already at the EU target level. Brazilian producers are likely to respond to regulatory demands from the EU for increased animal welfare if they were to be implemented. Large companies exporting to the EU already have demonstrated their willingness and capacity to respond.

Thailand

Introduction

The Thai poultry industry is the main poultry player within Asia. In addition to local market demand there is a substantial amount of export. Important destinations for poultry meat exports are the EU and Japan. Although Thailand has higher production costs than Brazil, it has the advantage of low labour costs. Thailand can compete with breast meat on the EU market as a result of a preference for dark leg meat on the regional market. The Thai broiler industry was severely hit by the outbreaks of Avian Influenza (AI) in recent years.

This caused low prices and the closing of farms. As a result of the AI situation only the export of cooked poultry meat to EU is permitted. This meat can be used in Europe by companies for the further processing poultry meat into convenience products.

Legislation

In November 1999 the Thai Ministry of Agriculture and Cooperatives (MOAC) by the department of Livestock Development (DLD) established a notification on standardisation for all economic livestock farming covering, among others, poultry, cattle, sheep and goats. The government wished to tighten up enforcement as food safety and animal welfare are concerns in the export and domestic market.

Practices

Since the aforementioned notification in November 1999 by the Thai government, animal welfare has been taken into account on the national agenda. The notification contains:

- Standards for livestock farming
- The manual/handbook for achieving these standards

In poultry the regulations cover all stages of the chain:

- Welfare at farm level
- Transport to the slaughter house
- Welfare at the slaughterhouse

It should be noted that in practice the governmental notifications are mostly implemented on a voluntary basis by the sector. However, for export purpose the regulations are compulsory (Councillor Thailand, 2008).

All export-oriented farms need to comply with the following standards:

- Density: not to exceed 20 kg of live weight per m2 broiler house for open houses and not to exceed 34 kg per m2 in closed poultry houses
- Not more than 10,000 broilers per worker in an open system and not more than 40,000 broilers per worker in closed systems
- One animal husbandry officer (BS degree) for every 400,000 broilers
- One veterinarian for every 500,000 broilers
- Average light intensity not less than 10 lux
- At least one hour of darkness per day
- Temperature must be 32-33 ºC for chicks and 20-30 ºC for broilers

Many farms found that following these standards is beneficial since the mortality rate is lowered and feed conversion rates have improved.

With respect to processing the poultry industry has switched to modern slaughterhouses. In these slaughterhouses, the standards also have to be met (‘no cruelty slaughter processes).

Perception

Although the government bodies play a key role in the welfare of animals, several NGOs also play an important role in supporting and promoting welfare among the public. The key

NGO worthy of mention include the Thai Society for the Prevention of Cruelty of Animals (TSPCA).

Local consumers have mixed views with respect to animal welfare of farm animals. Wealthier and better educated consumers in big cities or more urbanized areas are more aware of animal welfare and are willing to pay for higher quality. This provides opportunities for modern retailers to sell products produced according to higher standards. Welfare is considered less by consumers in rural areas where products are sold on the traditional wet markets. The outbreak of AI in Thailand has resulted in domestic consumers being more aware of product quality and they will choose certified products with the label of traceability, bio safety management and surveillance (Councillor Thailand, 2008).

Conclusion

The enforcement of regulations in Thailand focuses on the export market. The sector is very market driven, which is causing standards for animal welfare and food safety to be implemented on a voluntary basis. This is leading to a situation where Thailand has differing standards; there are high quality products mainly for export, while on the domestic market there is a wide range of qualities.

Thai exporters have a strict control system in place to meet international standards as well as certain requirements of European buyers. Both the government and sector recognize that animal welfare is an important criterion for the export market.

United States of America

Introduction

Along with Brazil, the USA is a leading world exporter of poultry meat.

Legislation

In the USA, federal legislation focuses on transport (Farm Bill, 1996), methods of slaughtering (update 1958) and ‘laboratory animal’ (1966). More specific legislation can be different in some states.

The US has fewer regulations for animal welfare of farm animals than the EU. US animal welfare is primarily regulated by the Animal Welfare Act (AWA), passed in 1966 and strengthened through subsequent amendments. The AWA sets standards on animal welfare of pets and laboratory animals, but does not regulate welfare standards for farmed animals. With regard specifically to poultry, the US regulations dictate that poultry must be slaughtered using good commercial practices. For the most part, however, no legislation regulates the welfare of poultry in slaughter or transport (Nelson, 2005).

Practices

In the USA the National Chicken Council (NCC) provides criteria for the welfare of broilers. The NCC is the association representing vertically integrated broiler producer-processors. The NCC recommends the guidelines to its members to assure the humane treatment of

animals to promote the production of quality products. The practices promote good health and welfare of broilers through focusing on several areas: education and training, proper nutrition and feeding, appropriate comfort and shelter, health care, ability to display most normal behaviours, best practices on farm, catching and transport.

The chapter on the ability to display most normal behaviours is particularly relevant. Bird welfare at different stocking densities will depend on access to feeders and drinkers, ventilation system, litter management and husbandry, but density shall not exceed the following limits:

- Birds below 2.0 kg (4.5 lbs): maximum 31.7 kg per m2 (6.5 lbs per square foot)
- Birds weighing 2.0 to 2.5 kg (4,5 to 5,5 lbs): maximum 36.6 kg per m2 (7.5 lbs per square foot)
- Birds above 2.5 kg (.5 lbs): maximum 41.5 kg per m2 (8.5 lbs per square foot)

Birds that exhibit stunted growth and obvious gait defects should be humanely slaughtered. The use of a lighting program is recommended to help manage growth and weight gain. With the exception of the first and the last two weeks of growout, the flock should be provided with at least four hours of darkness in every 24 hours (NCC, 2005).

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