



Competitiveness of the EU poultry meat sector, base year 2015

International comparison of production costs

P.L.M. van Horne

Competitiveness of the EU poultry meat sector, base year 2015

International comparison of production costs

P.L.M. van Horne

This research has been commissioned by the Association of Poultry Processors and Poultry Trade (AVEC) in the EU.

Wageningen Economic Research
Wageningen, January 2017

REPORT
2017-005
ISBN 978-94-6343-091-3

Horne, P.L.M. van, 2017. *Competitiveness of the EU poultry meat sector, base year 2015; International comparison of production costs*. Wageningen, Wageningen Economic Research, Report 2017-005. 36 pp.; 14 fig.; 11 tab.; 16 ref.

Companies in the European Union poultry meat supply chain have to comply with European legislation on animal welfare, food safety and environmental protection. Whereas the legislation aims to guarantee a comprehensive high quality poultry production, it also confronts the sector with extra costs. Countries outside the EU do not have the same extensive legislation. This report presents the results of a study on the competitiveness of the EU poultry meat sector. The production costs for poultry meat are calculated for several EU and non-EU countries.

Key words: competitiveness, poultry meat, production costs, international trade, EU

This report can be downloaded for free at <http://dx.doi.org/10.18174/404949> or at www.wur.eu/economic-research (under Wageningen Economic Research publications).

© 2017 Wageningen Economic Research
P.O. Box 29703, 2502 LS The Hague, The Netherlands, T +31 (0)70 335 83 30,
E communications.ssg@wur.nl, <http://www.wur.eu/economic-research>. Wageningen Economic Research is part of Wageningen University & Research.



For its reports, Wageningen Economic Research utilises a Creative Commons Attributions 3.0 Netherlands license.

© Wageningen Economic Research, part of Stichting Wageningen Research, 2017
The user may reproduce, distribute and share this work and make derivative works from it. Material by third parties which is used in the work and which are subject to intellectual property rights may not be used without prior permission from the relevant third party. The user must attribute the work by stating the name indicated by the author or licensor but may not do this in such a way as to create the impression that the author/licensor endorses the use of the work or the work of the user. The user may not use the work for commercial purposes.

Wageningen Economic Research accepts no liability for any damage resulting from the use of the results of this study or the application of the advice contained in it.

Wageningen Economic Research is ISO 9001:2008 certified.

Wageningen Economic Research Report 2017-005 | Project code 2282100173

Cover photo: Shutterstock

Contents

	Preface	5
	Summary	6
	S.1 Key findings	6
	S.2 Complementary findings	7
	S.3 Methodology	8
1	Legislation	9
	1.1 Introduction	9
	1.2 EU legislation	9
	1.3 Economic impact of EU legislation	11
	1.4 Situation in some third countries	12
2	Production costs of broilers in selected countries, 2015	15
	2.1 Production costs in some EU countries	15
	2.1.1 Production costs at primary farm in EU countries	15
	2.1.2 Production costs after slaughter	17
	2.2 Production costs in some non-EU countries	18
	2.2.1 Production costs at primary farm	18
	2.2.2 Production costs after slaughter	19
3	Results of different scenarios	21
	3.1 Description of the scenarios	21
	3.2 Production costs of breast filet	21
	3.3 Scenario 1 - Lower EU import levy	22
	3.4 Scenario 2 - Change in exchange rate	23
	3.5 Scenario 3 - Combination	24
4	Conclusions	26
	References and websites	28
	Appendix 1 Development of the currency exchange rate	30
	Appendix 2 Import and export of poultry meat	31
	Appendix 3 Overview of EU import levies (€/1,000) and quotas (1,000 kg) (2017)	34

Preface

Companies in the European Union (EU) poultry meat supply chain have to comply with European legislation on animal welfare, food safety and environmental protection. Whereas the legislation aims to guarantee a comprehensive high quality poultry production, it also confronts the sector with extra costs. Countries outside the EU do not have the same extensive legislation. At the same time, the EU is engaged in multilateral negotiations with the World Trade Organisation (WTO) and bilateral negotiations with different partners - among them India, Ukraine, Mercosur and the USA - which are intended to further liberalise trade by reducing or abolishing import levies. This causes concerns within the poultry meat industry in the EU regarding its competitiveness.

In this report Wageningen Economic Research, an independent research institute of Wageningen UR (University and Research) in the Netherlands, presents the results of a study on the competitiveness of the EU poultry meat sector. The production costs for poultry meat are calculated for several EU and non-EU countries. Based on these data, different scenarios are outlined and their effects are calculated to illustrate the impact of lower import levies and changes in exchange rates. In this study, the base year for the calculations was 2015. The report is an update of two earlier reports with base year 2013 (van Horne and Bondt, 2014) and base year 2011 (van Horne and Bondt, 2013).

The study was initiated and funded by the Association of Poultry Processors and Poultry Trade (AVEC) in the EU. The authors thank AVEC for providing access to data and for comments on the draft report.



Prof.dr.ir. J.A.G.J. van der Vorst
General director Social Sciences Group
Wageningen University & Research

Summary

S.1 Key findings

EU poultry meat producers have to comply with legislation on environmental protection, animal welfare and food safety. This legislation has increased the production costs of poultry meat. At the same time the European Union (EU) is negotiating with other countries or groups of countries to liberalise trade in agricultural products. This report examines how lowering import levies impacts the competitiveness of the EU poultry industry. The results show that the offer price of broiler breast fillet in 2015 of some third countries was already equal to or lower than the average EU price. Despite the current import levy on breast fillet, Brazil and Ukraine can be competitive at the EU market. In a scenario with 50% lower import levies and no additional levy, Brazil, Ukraine and also Thailand, Argentina, the USA, and Russia have a lower offer price for breast fillet compared to the EU poultry meat industry.

The results for the situation in 2015 are presented in Figure S.1 and Figure S.2. Figure S.1 lists all cost components for breast fillet in order to compare the EU average offer price of breast fillet with the price of six selected non-EU countries. The figure clearly shows that import levies protect the EU from imports from the non-EU countries. However, even with substantial import levies, the offer price of breast fillet from Brazil and Ukraine is equal to or lower than the offer price of EU producers. Compared to the results of the 2013 base line (van Horne and Bondt, 2014) the offer price of breast fillet of EU producers and all third countries did decrease. This was a result of lower production costs at farm level (lower feed prices) in all countries. Russia and Ukraine showed the largest decrease in offer price of 70 to 80 eurocents per kg breast fillet. The main reason for this was a lower exchange rate of the currency of these countries to the euro.

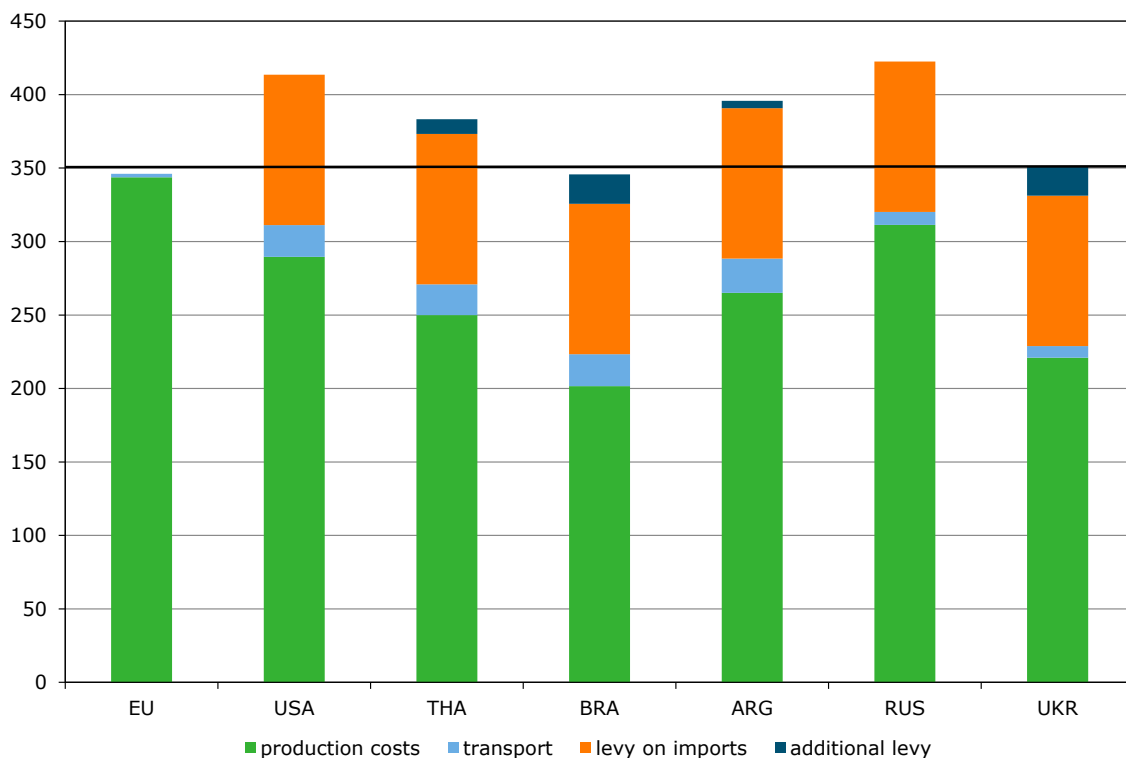


Figure S.1 Offer price of breast fillet in Germany from EU average (horizontal line) and non-EU countries in eurocents per kilogram in 2015

The combined consequences of a 50% lower levy on imports (and no additional levy) and 10% lower exchange rates are presented in Figure S.2. In this worst-case scenario, all third countries obtain a competitive to strongly competitive position in the EU market for breast fillet, and they are most likely to export large volumes of poultry meat to the EU.

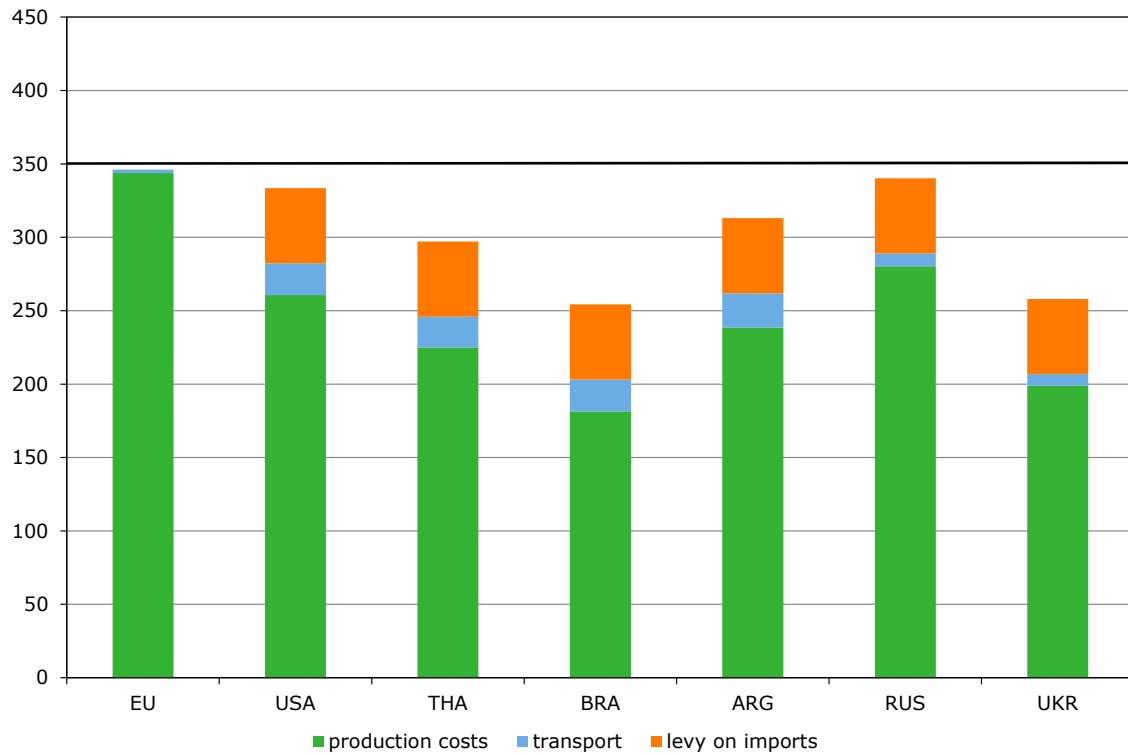


Figure S.2 Offer price of breast fillet in Germany from EU average (horizontal line) and non-EU countries in eurocents per kilogram with 50% lower import levy, no additional levy and 10% lower exchange rate

S.2 Complementary findings

The EU is an important player in the international trade of poultry meat. In 2015, the EU exported 1.490m tonnes of poultry meat with a value of €2.113bn (average value €142 per 100 kg) while it imported 0.871m tonnes with a value of €2.329bn (average value €267 per 100 kg).

In the EU, poultry meat producers have to comply with European legislation. The additional costs of EU legislation on farm level were estimated to be 5.0 eurocents per kg live weight (5.8% of the total production costs in 2015). Table S.1 gives an overview of the regulations and political and societal interest of environmental, food safety and animal welfare issues in some selected non-EU countries.

Table S.1 Regulation in selected non-EU countries (Brazil, Argentina, USA and Thailand)

	Political and societal interest	Regulations in place	Situation in practice
Environment			
Manure disposal	Medium	Differs ¹	Most farmers receive revenues from manure
Ammonia emission	Low	No	No measures taken to limit emission
Food Safety			
Zoonosis control	Medium	Differs ²	Limited action
Meat-and-bone-meal	Low	No	Meat-and-bone-meal is used
Antibiotic use	Differs	No	Growth promoters commonly used
GMOs	Low	No	All GMOs are used
Animal Welfare			
Stocking density	Low	No	Bird densities are relatively low

The production costs of broiler meat have been calculated for nine EU countries. After slaughter the production cost for these countries ranged from 139 to 159 eurocents per kg carcass with an average of 152 eurocents per kg. In comparison to EU countries, the production costs after slaughter are significantly lower in most non-EU countries such as Brazil (70% of EU average), Ukraine (74%), USA (81%), Argentina (81%) and Thailand (83%).

The EU is a large importer of poultry meat. Imports of breast fillet mainly come from Brazil and Thailand. Salted breast fillet is imported within quota at an import levy of 15.4%. The full levy is €1.30 per kg. Cooked breast fillet is imported within quota at an import levy of 8%. The full levy is €1.02 per kg. Natural breast fillet has just a limited quota and in addition imports occur outside the quota. At import, an import levy of €1.02 per kg has to be paid with in recent years an additional import levy (safe guard) of €0.10 to 0.20 per kg. Despite these high import levies, poultry meat imports are competitive, and in 2015, 96,000 tonnes of natural breast fillet was imported. After the introduction of import quotas in 2007, the total imports of poultry meat have not further increased.

S.3 Methodology

In this report, Wageningen Economic Research analysed the production costs of poultry meat in nine EU countries: the Netherlands (NL), Germany (DE), France (FR), the United Kingdom (UK), Italy (IT), Spain (ES), Denmark (DK), Poland (PL) and Hungary (HU), and six non-EU countries: the United States of America (USA), Thailand (THA), Brazil (BRA), Argentina (ARG), Russia (RUS) and Ukraine (UKR). In all countries, data were collected on prices (feed, day-old chicks), technical parameters (growth rate, feed conversion, mortality), investment (poultry house) and other costs (interest rate, labour, manure disposal). For slaughterhouses, data were collected on investment in buildings, equipment and labour costs. The base year for the data was 2015. The total costs were converted to euros with the average exchange rate in 2015.

Based on the situation in 2015, three scenarios were developed:

- Change in import levy for breast fillet. A 50% reduction of the basic levy and no additional levy to illustrate the result of any multi- or bilateral agreement of the EU
- Lower exchange rate for the currency of the non-EU countries.
- In the scenarios, a 10% lower exchange rate was assumed. An analysis of the exchange rates developments showed that this can be a realistic scenario for some non-EU countries.
- Combination of both measures.
- 50% reduction of the import levies plus a 10% lower exchange rate.

¹ Regulations in some regions, for example in the USA.

² Regulations in some countries, for example in the USA or only export oriented companies.

1 Legislation

1.1 Introduction

This chapter provides an overview of legislation in the EU. Poultry farmers and other food business operators in the poultry meat chain in the EU have to comply with this European legislation. This legislation is the translation of societal and political choices made in the EU and its standards and demands may exceed international standards and practices. Most EU legislation relates to environmental protection, animal welfare and food safety. Section 1.2 gives an overview of the most important legislation. Section 1.3 presents the economic impact of the legislation while Section 1.4 gives a short overview of the current situation of (welfare) legislation in some third countries. Although all links in the supply chain are confronted with legislation, this chapter mainly focuses on the situation and consequences at farm level.

1.2 EU legislation

This section briefly presents the EU legislation that is directly relevant to the poultry meat sector. Some countries choose to go beyond EU standards by implementing more stringent national or regional legislation, which is not, or just briefly, discussed in this chapter. A report of the European Parliament, written by a group of research institutes, gives an overview of EU legislation related to the livestock sector: beef cattle, pigs, sheep and poultry (Chotteau et al., 2009).

Environmental protection

The EU has taken measures to limit the pollution of land, water and air. The main environmental legislation affecting poultry production in the EU is the Nitrates Directive. The Nitrates Directive (91/676/EC) aims to control pollution and protect water quality in Europe, by preventing nitrates from agricultural sources from polluting ground and surface waters and by promoting the use of good farming practices. The Nitrates Directive forms an integral part of the Water Framework Directive and is one of the key instruments to protect waters against agricultural pressures. The Directive has established action programmes to be implemented by farmers, such as limitation of fertiliser application and/or a maximum amount of livestock manure that can be applied per hectare per year (170 kg of nitrogen). Some countries have additional national environmental legislation to limit manure spreading to certain periods or specific soil types. This is especially relevant in areas with a high concentration of pigs and poultry, such as the south and east of the Netherlands, Flanders in Belgium, Bretagne in France, Catalonia in Spain, and the Po valley in the north of Italy. Because of this legislation poultry farmers in these regions have to pay for the disposal of manure (Van Horne, 2012).

In the EU, all poultry farms which exceed a threshold size of 40,000 bird places are requested through legislation to hold an environmental permit (Directive 2010/75). Operators are required to carry out activities in compliance with their environmental permit and they must use 'Best Available Techniques' (BAT) in order to achieve a high level of environmental protection (ADAS, 2016). The aim of the Directive is to apply the best available techniques to prevent or to reduce ammonia or other emissions to air, land and water from these activities, since pollution from poultry houses need to be controlled. In another Directive (2011/92) it is regulated that poultry farms need to have an Environmental impact assessment (EIA). This is required for all installations with over 85,000 broiler places. Smaller farms and installations for the slaughter of animals may also require such an assessment at the discretion of the Member State. A fee is charged to cover the costs of the assessment. The Directive also requires an odour or noise management plan in case of potential odour or noise complaints (Van Wagenberg et al., 2012). In addition, Directive 2001/81/EC gives National Emission Ceilings to ammonia emission for every Member State. Some countries, such as the Netherlands and Germany, have additional national regulations to reduce ammonia emissions from poultry houses.

EU countries have to meet maximum limit values for certain substances to ensure air quality, following Directive 2008/50/EC. The Directive offers 3- or 5-year extensions to comply with the maximum limit values based on conditions and the assessment by the European Commission. Several EU Member States will have to take measures to reduce emissions of fine dust from the most important sources, such as poultry houses, in which the dust arises from feathers, bedding material and manure (Aarnink and Ellen, 2008). National authorities can set emission standards for fine dust from poultry houses based on the BAT. Examples are the Netherlands and Germany with legislation for poultry farms to control the emission of fine dust.

On 27 October 2003, the European Union's Council of Ministers adopted The Energy Taxation Directive (2003/96/EC), restructuring the European Community framework to tax energy products and electricity. The Directive widens the scope of the EU's minimum rate system for energy products, previously limited to mineral oils, to all energy products, including coal, natural gas and electricity. The taxation leads to a rise of energy prices for broiler farmers, resulting in higher costs of heating and mechanical ventilation.

In the EU, the disposal of poultry that die on the farm during the course of the normal production cycle is controlled by legislation (Regulation 1069/2009). Permitted disposal methods are specified. These include on-farm incineration (subject to approval from the competent authority) and off-farm disposal methods via a licensed disposal operator. In most EU countries farmers have to pay for regular collection of fallen stock.

Food safety

The European legislation on animal feed provides a framework to ensure that feedstuffs do not endanger human or animal health or the environment. The legislation sets rules on the circulation and use of feed materials, requirements for feed hygiene, rules on undesirable substances in animal feed, legislation on genetically modified food and feed, and conditions for the use of additives in animal nutrition. For example, in the EU the use of meat-and-bone meal in poultry feed is still banned. The consequence is higher disposal costs for slaughterhouses and higher costs for poultry feed. Furthermore, in January 2006, the EU banned growth-promoting antibiotics in animal feed. In addition, the European Commission has launched an EU strategy to combat the threat of antimicrobial resistance to human, animal and plant health. The strategy includes phasing out of antibiotics for non-medical use in animals, and covers a range of actions at EU and national level in the areas of data collection, surveillance, research and awareness-raising. A large proportion of protein sources for poultry feed is imported from outside the EU. An increasing share of world production of soya crops is from genetically modified hybrids. The asynchronous EU approval of GM crops, coupled with the operation of almost zero tolerance, is negatively affecting the EU supply of feed ingredients (Backus et al., 2008), resulting in higher feed costs.

The poultry meat industry has to adapt rules of hygiene, traceability and labelling, because foodstuffs of animal origin may present microbiological and chemical risks. The EU has extensive food safety legislation based on risk analysis, most importantly the General Food Law (Regulation (EC) No 178/2002) and the hygiene package (Regulations (EC) No 852/2004, 853/2004, 854/2004 and 882/2004). This legislation states that food business operators such as farmers have the primary responsibility for food safety. Farmers are specifically affected by legislation on implementing good agricultural practices and Salmonella control. Farmers are also confronted with higher feed costs as a result of this EU legislation.

For the poultry meat sector, the Zoonoses legislation is especially relevant. Zoonoses Directive 2003/99/EC and Regulation 2160/2003 regulate sampling, monitoring and control measures. In the EU, a framework of legislation on Salmonella has targeted a reduction in the incidence of *Salmonella Enteritidis* and *Salmonella Typhimurium* in poultry. Legislation has been implemented across Member States through National Control Plans and additional legislation (ADAS, 2016). The legislation ensures that proper and effective measures are taken to detect and to control Salmonella and other zoonotic agents at all stages of production, processing and distribution, particularly at the level of primary production, including in feed. The industry is confronted with costs of monitoring and expensive measures such as compulsory slaughter of breeding flocks found to be Salmonella positive.

Animal welfare

All Member States have ratified the European Convention for animal protection with principles relating to animal housing, feed and care appropriate to their needs (Council Directive 98/58/EC). The aim is to spare animals all unnecessary suffering in three main areas: farming, transport and slaughter. Minimum animal welfare standards have been established to protect and to avoid competition distortions between producers in various Member States. The most important standards are concerned with natural behaviour, space, feed and water supply, lighting, surgeries, veterinary aid and good stockmanship. European legislation forms the basis, partly complemented by national top-ups (Van Wagenberg et al., 2012). Protection of animals during transport is regulated in EC 1/2005. Directive 2007/43/EC establishes minimum rules for the protection of chickens for meat production. This directive aims to provide the chickens with a good level of welfare and health under good indoor climate conditions. An important part of this directive is setting a maximum stocking density of 33 kg/m², or a maximum of 39 to 42 kg/m² if stricter housing conditions and welfare standards are met and the mortality rate of at least seven consecutive flocks is under a certain target value. The new legislation establishes several other conditions, such as lighting, litter, feeding, and ventilation requirements, to ensure better animal welfare. The Directive also provides the Commission with the possibility to introduce further measures in the future, based on the scientific data and practical evidence collected by the Member States. On top of EU legislation many countries especially in North-West Europe have additional regulation for animal welfare. In Germany, the Netherlands and UK retailers play a driving role in development, promotion and sales of poultry meat produced under conditions with different welfare standards going beyond the legislation.

1.3 Economic impact of EU legislation

The poultry sector is governed by EU legislation and its implementation almost always leads to extra costs. The poultry meat sector has to cope with the additional costs related to environmental protection, food safety and animal welfare regulations. These additional costs were estimated for the following aspects:

- *Environmental protection*
 - Manure disposal costs, as result of the Nitrate directive.
 - Reduction of ammonia emission in manure application, during manure storage and in the poultry house.
- *Food safety*
 - Salmonella control. Costs of hygiene measures, sample collection, testing and vaccination.
 - Meat-and-bone meal (MBM). The ban on meat-and-bone meal in the EU results in higher feed costs.
 - Antibiotic growth promoters. The ban on the use of antibiotic growth promoters results in higher feed costs.
 - Genetically Modified Organisms (GMO). The strict rules in the EU on the use of GMO crops result in higher feed costs.
- *Animal Welfare*
 - Stocking density. Additional housing costs to regulate the maximum live weight per square meter poultry house.

In this study, the costs were estimated for the year 2015 based on the average situation in all EU countries using the method described in Van Horne (2013). However, the actual situation can differ per country or per region. For example, manure disposal costs are high in regions with a large number of poultry farms and there are low or absent in regions with few poultry farms. In some EU countries, other regulations can be relevant, which are not mentioned in the list above, such as the energy tax in the Netherlands, resulting in higher cost for heating and electricity, and regulations on preventing foot pad lesions (dermatitis) in Denmark and Sweden.

Figure 1.1 gives all cost components of the EU legislation relating to poultry meat. The additional costs directly related to EU regulations are estimated to be 5.0 eurocents per kg live weight. This is almost 6% of the total production costs in 2015.

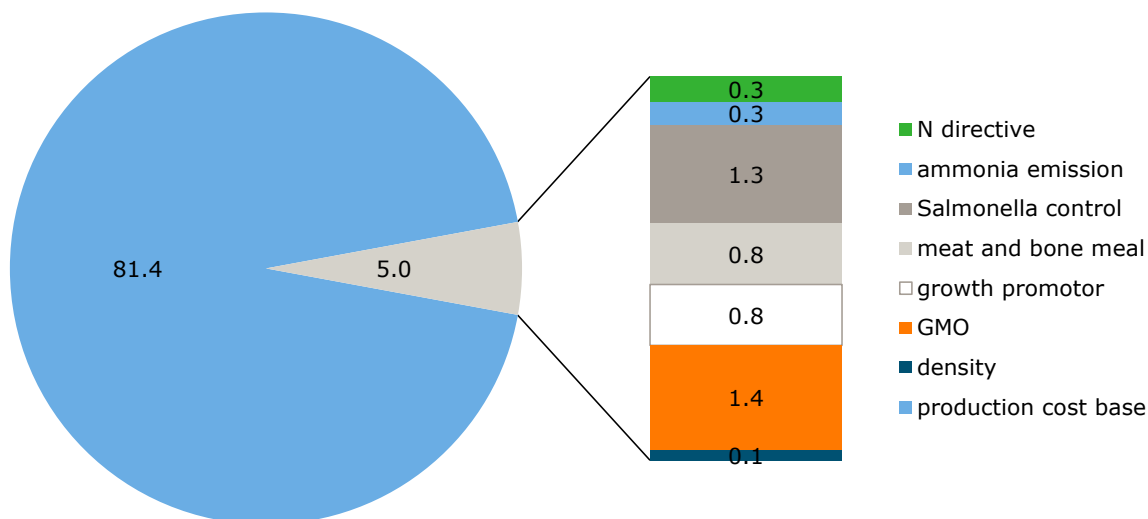


Figure 1.1 Production costs in eurocents per kg live weight directly related to EU legislation in 2015

EU legislation is also creating additional costs for slaughterhouses and other companies in the supply chain. No detailed calculations are available on these costs, but legislation on Salmonella control and the ban on meat-and-bone meal (extra disposal costs for slaughter offal) result in higher costs for slaughterhouses. As a result of Regulation 1161/2011 of the European Parliament and the Council, the EU has mandated that all unprocessed poultry meat must be labelled with its country of origin. This new legislation will confront most companies with additional costs (Baltussen et al., 2013). Another example of legislation affecting the costs of slaughterhouses is Regulation 1099/2009 on stunning of poultry. This regulation has been in effect since 1 January 2013.

Future European and national legislation may further increase the production costs of poultry meat. The Member States have the competence to impose stricter rules for their regions in a number of affairs. Additional regulations have already been implemented or will be implemented on several topics in the coming years, including legislation on the limited use of antibiotics (e.g. the Netherlands, Denmark), further reduction of fine dust emission (Germany, the Netherlands), reduction of footpath dermatitis (e.g. the Netherlands, Sweden, Denmark) and reduction of the Campylobacter prevalence (e.g. UK).

1.4 Situation in some third countries

Several reports give an overview of legislation in selected third countries. Van Wagenberg et al. (2012) extensively studied the standards on food safety, environment and animal welfare in several non-EU countries. A study at Wageningen UR (Bracke, 2009) focused on animal welfare regulations and husbandry standards in the poultry sector with special attention for the broiler sector in Brazil, Thailand and the USA. Also, Van Horne (2012) mapped the situation in the USA, India, Ukraine and Argentina in the egg layer sector. More recently Lichter and Kleibrink (2016) did an extensive analysis on standards for poultry production in 16 important poultry producing countries worldwide. ADAS (2016) made a comparison of regulatory requirement and key practices in the poultry meat supply chain in the EU and USA. This report gives an extensive overview covering the key areas: farm production systems, feed supply and slaughter/processing.

In general, non-EU countries do not have any or have limited legislations on environmental protection, food safety, and animal welfare. In some countries, for example the USA, the standards for food safety and animal health are considered to be equivalent to those in the EU. Nevertheless, standards between the EU and third countries do differ with regard to the type of veterinary drugs allowed and GMOs that are approved. Specifically for animal welfare, research shows that the EU standards for

broiler production are the highest in the world. No country outside Europe has such detailed and strict regulations to protect the welfare of poultry for meat production (Lichter and Kleibrink, 2016).

In most third countries, the standards for the environment, animal welfare and labour conditions are lacking or the standards are lower than they are in the EU. These topics are not incorporated or only marginally incorporated into trade agreements. Internationally accepted conventions or standards exist for food safety (Codex Alimentarius), animal health and animal welfare (OIE) and labour conditions (ILO), but do not exist for the environment. OIE codes are recommendation to its members and the OIE has no power to force their members to follow the recommendations or standard laid down in the codes. Food safety and animal health are important aspects in negotiating and establishing trade agreements, but the environment, animal welfare and labour conditions are not or not high on the agenda (Van Wagenberg et al., 2012).

Important exporters of poultry meat on the world market are Brazil, USA, Thailand, Argentina and Ukraine. These countries have no food safety regulations that are similar to those in the EU, such as the ban on meat-and-bone meal and antibiotic growth promoters, and the strict rules on the use of GMO crops as ingredients in poultry feed. In the following sections we summarise the main characteristics of the poultry sector, the export position, the legislation on animal welfare and the production standards for these poultry meat producing countries.

Brazil

Brazil is one of the world's leading poultry producing countries (ranked number 2) and the number one exporter of poultry meat. The Brazilian poultry industry has some very large integrated companies that are global players, such as BRF and JBS Aves Brazil. The poultry sector is characterised by high productivity and high technology use. The integration model is largely adopted, bringing strict control of the entire supply chain. The poultry industry is mainly concentrated in southern Brazil because of its subtropical climate where broilers are often kept in simple open houses. Three types of broiler housing can be distinguished in the area: low density housing (max 30 kg of live weight per m²), middle level density housing (max 34 kg per m²) and high density housing (modern systems with mechanical tunnel ventilation with up to 38 kg per m²). In Brazil, there is not much information available on animal welfare since this topic does not receive much attention in the country. In fact, Brazil has no legislation on animal welfare at farm level or during transport for poultry. A French report (ITAVI, 2012) gives an overview of regulation on food safety, animal feed and environmental protection in Brazil. However, there is no or only limited legislation on these topics.

USA

The USA is the number one producer of poultry meat in the world and is the second largest exporter of poultry meat after Brazil. As a result of the large domestic demand for breast meat, exports are mainly cuts with bone (leg meat and leg quarters). The largest poultry producer in the world is based in the USA: Tyson Foods. Other USA companies in the world's top 10 poultry producers are Pilgrim, Perdue and Koch Foods. The USA does not regulate welfare standards for farmed animals. In fact, federal legislation in the USA focuses on transport (Farm Bill, 1996), slaughtering methods (1958) and 'laboratory animals' (1966), but even this legislation can differ from state to state. For poultry, the US regulations dictate that poultry must be slaughtered using good commercial practices. There are no federal regulations to control or safeguard the welfare of animals used in agriculture. State laws govern animal welfare in some parts of the country but currently no such legislation applies to poultry in any of the three major poultry-producing states Georgia, Alabama and Arkansas (ADAS, 2016). In the USA, the national chicken council (NCC) has established guidelines for animal welfare of broilers. The NCC recommends the guidelines to its members to ensure the humane treatment of animals and to promote the production of quality products. The NCC guidelines promotes good health and the welfare of broilers in several areas: education and training of farmers, proper nutrition and feeding, appropriate comfort and shelter, health care, ability to display most normal behaviours, best practices on the farm, catching and transport. Bird welfare at different stocking densities depends on access to feeders and drinkers, ventilation system, litter management and husbandry, and density is advised not to exceed 37 kg per m² poultry house for chickens between 2 and 2.5 kg of live weight.

Thailand

The Thai poultry industry is an important player within Asia and a leading exporter of poultry meat. Thailand is together with Brazil the main supplier of poultry meat to the EU. Thailand can compete with breast meat on the EU market because dark leg-meat is preferred on the local Thai market. Since 1999, animal welfare in Thailand has been part of Thai government's agenda and farms need to meet government standards. These farm standards are based on the Good Agricultural Practice (GAP) and are aimed to improve the quality and safety of livestock products.

To be certified as export farms, farmers need to meet government criteria addressing not only animal welfare but also environmental concerns (waste management), food safety (e.g. withdrawal time of some pharmaceuticals), disease monitoring, biosecurity and traceability. In practice, the government notifications are mostly implemented on a voluntary basis by the sector. However, the regulations are compulsory if farms want to export. On these farms the density should not exceed 34 kg per m² in closed poultry houses (Bracke, 2009).

Argentina

Argentina has a relatively new poultry industry. The country is ranked number eight in the list of poultry producing countries in the world. In the last 10 years, Argentina has become an exporter of broiler meat. In 2015 it was the number six supplier of poultry meat to the EU. The main product exported to the EU is breast meat, which has the highest average value per tonne.

Circumstances for broiler farming in Argentina are excellent. Feed ingredients such as corn and soybeans are locally available in large amounts, the climate is moderate and cheap labour is available for farming and processing. Currently, broiler farming and slaughtering/processing in Argentina are almost completely vertically coordinated. Through contracts, the industry delivers, in most cases, day-old chicks, feed and professional advice to the producers, who contribute the poultry housing and labour. The integrators in Argentina promote modernisation by financing improvements on contracted farms, and demanding certain technological standards as a condition of entrance for new producers. Argentina has no specific legislation on animal welfare. However, it does have some legislation for related topics such as food safety and product quality, as well as manuals for the broiler sector on Good Practices for the Production that indirectly impose animal welfare criteria. Van Horne (2010), however, concluded that, according to the information collected through the survey and the interviews with producers and businessmen, producers in Argentina do not consciously implement animal welfare practices. However, the average density in the broiler houses is relatively low as a result of the warm climate.

Ukraine

After Ukraine became independent in 1991 the principles of the free market economy were introduced. Since the poultry sector was privatised in 1998, it has shown remarkable progress. In recent years, the production results improved as a result of better management, improved feed quality and modern health service. At the moment Ukraine has become a competitive producer of poultry meat. In 2015 Ukraine was the third supplier of poultry meat to the EU. Large companies are Agromars and Myronivsky Hliboproduct (MHP). MHP has a dominant position on the domestic market and exports to many countries in the direct region, Middle East and North Africa. Most of the poultry meat production is fully integrated with grain production, parent stock, hatcheries, feed mills and slaughterhouses. What is different from other countries is that grain production is integrated in the company.

In the Ukraine there is no governmental legislation with standards on animal welfare for broiler production (ITAVI, 2016). According to company information MHP has an internal standard to limit the density to 38-39 kg of live weight per m² poultry house. The Ministry of Agriculture has the objective to adapt national legislation on animal welfare with the standards of the EU. The exact time schedule is not known, but the year 2020 was mentioned.

2 Production costs of broilers in selected countries, 2015

2.1 Production costs in some EU countries

The production costs of broilers have been researched for the following nine EU countries: the Netherlands (NL), Germany (DE), France (FR), United Kingdom (UK), Italy (IT), Spain (ES), Denmark (DK), Poland (PL) and Hungary (HU). The calculated production costs at farm level are based on the situation in 2015. Of almost all countries average zootechnical (performance) data and economic data (prices) were available. To give some examples: in the Netherlands Wageningen Economic Research collects data of broiler farms, in Germany similar data are available from the Chamber of Commerce (Landwirtschaftskammer Niedersachsen) and in Denmark data are collected and published by the Danish Poultry Council (Det Danske Fjerkraeraad). For France, the UK and Hungary the data are based on information of respectively the research institute ITAVI, advisory group ADAS and the University of Debrecen. For Poland, Italy and Spain a mix of sources was used to compile the basic assumptions. After calculating the production costs at farm level, we also calculated the costs for slaughter. Section 2.1.2 gives an overview of the production cost after slaughter.

2.1.1 Production costs at primary farm in EU countries

Figure 2.1 shows the calculated production costs in the selected EU countries and Table 2.2 gives the total production costs and the build-up of the production costs in these countries. All countries have production costs in the range of 82 to 91 eurocents per kg live weight. The production costs in Poland are the lowest at 81.8 eurocents per kg live weight. Italy has the highest production costs at 90.6 eurocents per kg live weight.

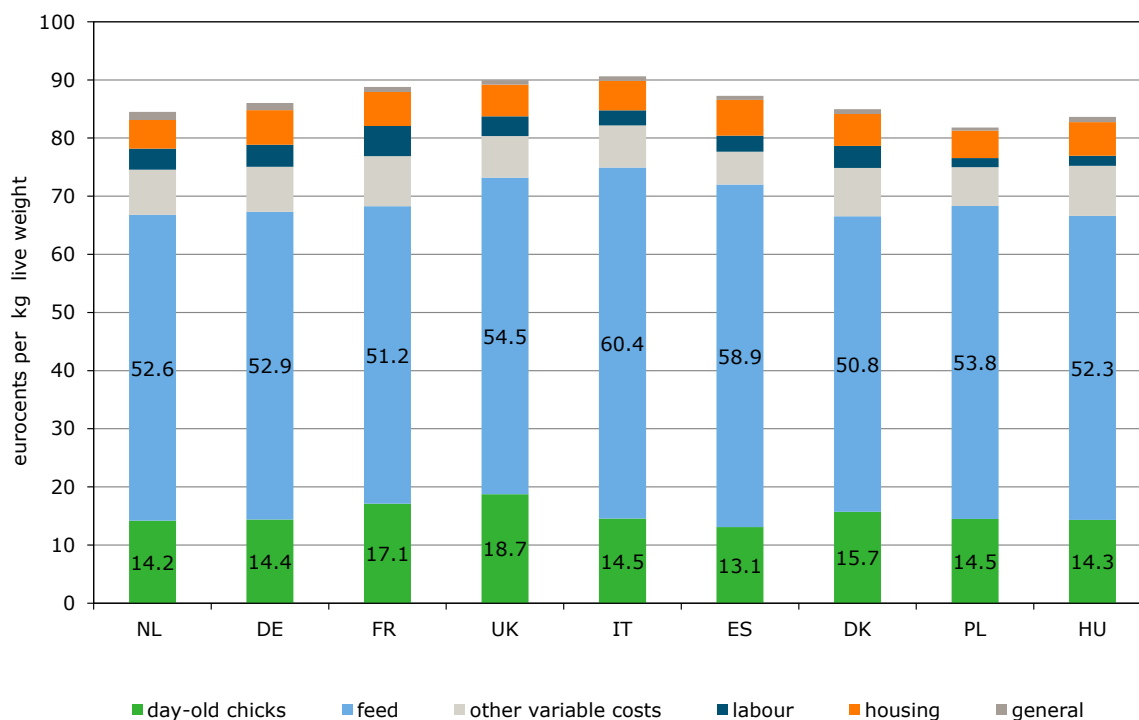


Figure 2.1 Production costs of broilers in eurocents per kg live weight in nine EU countries in 2015

Table 2.1 Prices and technical performance for broiler production in selected EU countries

	NL	DE	FR	UK	IT	ES	DK	PL	HU
Feedprice (euro /100 kg)	32,7	32,9	30,1	33,0	35,3	33,7	32,2	32,6	31,5
Day-old chick (eurocent)	31,5	32,0	31,2	40,6	33,5	32,5	33,2	32,0	31,6
Live weight (g)	2,300	2,300	1,900	2,250	2,400	2,600	2,200	2,300	2,300
Feed conversion	1,61	1,61	1,70	1,65	1,71	1,75	1,58	1,65	1,66

Table 2.2 Costs of primary production in eurocents per kilogram of live weight in selected EU countries in 2013

	NL	DE	FR	UK	IT	ES	DK	PL	HU
Total costs (incl. labour)	84,5	86,0	88,8	89,9	90,6	87,3	85,0	81,8	83,6
Total costs (excl. labour)	80,9	82,2	83,6	86,5	88,0	84,5	81,2	80,3	81,9
Day-old chicks	14,2	14,4	17,1	18,7	14,5	13,1	15,7	14,5	14,3
Feed	52,6	52,9	51,2	54,5	60,4	58,9	50,8	53,8	52,3
Other variable costs	7,8	7,8	8,6	7,1	7,3	5,6	8,3	6,7	8,6
Labour	3,6	3,8	5,2	3,4	2,6	2,8	3,8	1,5	1,7
Housing	4,9	5,9	5,9	5,4	5,1	6,2	5,5	4,7	5,8
General	0,8	0,8	0,9	0,9	0,7	0,7	0,9	0,6	0,6
Manure disposal	0,6	0,4	0,0	0,1-	-	-	0,0	0,1-	0,3

Prices

Table 2.1 gives the average price of feed and day-old chicks. The price of feed strongly influences the total production costs. Feed prices in the EU countries range from €30.1 per 100 kg in France to €35.3 in the Italy. In all countries, the feed price is influenced by the world market prices of the main feed ingredients, such as grains (wheat and maize) and soybeans. The difference in feed price between the EU countries is a result of differences in structure of the supply chain (integrated versus non-integrated), average farm size, feed mill policy, average transport distance to farms and the country's access to sea harbours and water ways for efficient supply of feed ingredients. For the countries that do not use euros, the exchange rate is also relevant because the feed prices in Table 2.1 are calculated in euros: Poland, UK and Hungary. Table 2.1 also gives the day-old chick prices in eurocents per chick. For most countries the price in 2015 was between 31 to 34 eurocents per chick. Prices in the UK are higher compared to the other countries. Table 2.2 also indicates the costs of day-old chicks but these are expressed in costs per kg live weight. This means that besides the price of the day-old chick the average final live weight of the broilers also impacts the costs of day-old chicks per kg live weight.

Performance

Table 2.1 gives the main indicators of the zoo-technical results that are the average live weight (gram) and the feed conversion (kg of feed used per kg live weight). The live weight in most countries is between 2 and 2.5 kg. Exceptions are France with a lower average live weight and Spain with an average higher live weight of 2.6 kg. The feed conversion is a good indicator of the production efficiency. Feed conversion also differs between the EU countries. Table 2.1 shows that farms in Netherlands, Germany and Denmark have low feed conversion rates. At first glance, Italy and Spain seem to have high feed conversion rates. However, it should be taken into account that feed conversion is correlated with live weight. Growing broilers to a higher final weight, as in Italy and Spain, results in a higher feed intake per kg growth.

Cost components

Table 2.2 shows that EU countries also differ in some other cost components. Other variable costs relate to costs of heating, electricity, litter, animal health and catching. These costs vary slightly between the countries mainly because of differences in heating costs (fuel prices) and costs of catching. Labour costs also differ between countries. Normally, the work on the farm is done by the farmer. This work is calculated in the production costs based on a regular payment (full-time equivalent) for similar work in the specific country. In the eastern and southern countries, the costs of labour are generally lower than they are in North-West Europe. The differences in housing costs (poultry house and inventory) between the countries relate to differences in investments for a poultry

house, stocking density and interest rate. General costs relate to the costs at farm level for insurance, bookkeeping, consultancy, telephone, and transport. In some countries broiler farmers have manure disposal costs. In the Netherlands, Germany (in the state Lower Saxony) and Hungary farmers have to pay for a sustainable disposal of manure. In other countries, farmers do not have to pay for manure disposal, while in the UK and Poland farmers even receive a small revenue.

2.1.2 Production costs after slaughter

The costs of slaughter are calculated based on the slaughter of broilers in a large commercial slaughter house. The final product is a broiler carcass. The weight of the carcass is 70% of the live weight of the broilers delivered from the farm. Basic assumption is that the costs of slaughter are 33 eurocents per kg carcass weight in the Netherlands. The main components in the slaughter costs are labour (35%) and building and equipment (25%). The other costs (40%) are, for example, transport of broilers, energy, water, inspection and packing. These costs vary from country to country. However, because all slaughterhouses in the EU use advanced modern equipment, it is assumed that the differences in slaughter costs between the countries are mainly a result of differences in labour costs. Based on labour costs for slaughterhouse workers, the costs of slaughter are calculated for the selected EU countries. The hourly wages for workers in slaughterhouses, including social tax, are: in the Netherlands €22, in Germany €15, in France €20, in the UK €15, in Italy €14, in Spain €14, in Denmark €30, in Poland €6 and in Hungary €5. Differences in labour costs also have an influence on the level of investment for buildings and the costs of bird transportation. Also differences in interest rate between the countries are taken into account and have an impact on the annual costs of building and equipment. Table 2.3 gives the final results of costs at farm level and the costs of slaughter in euro per kg carcass weight. Figure 2.2 gives the same data in a graph.

Table 2.3 Cost of primary production, cost of slaughter and total costs in eurocents per kg carcass weight

	NL	DE	FR	UK	IT	ES	DK	PL	HU
Farm-level costs	121	123	127	128	129	125	121	117	119
Slaughter costs	33	28	31	27	27	27	38	22	21
Total	153	150	158	156	156	152	159	139	140

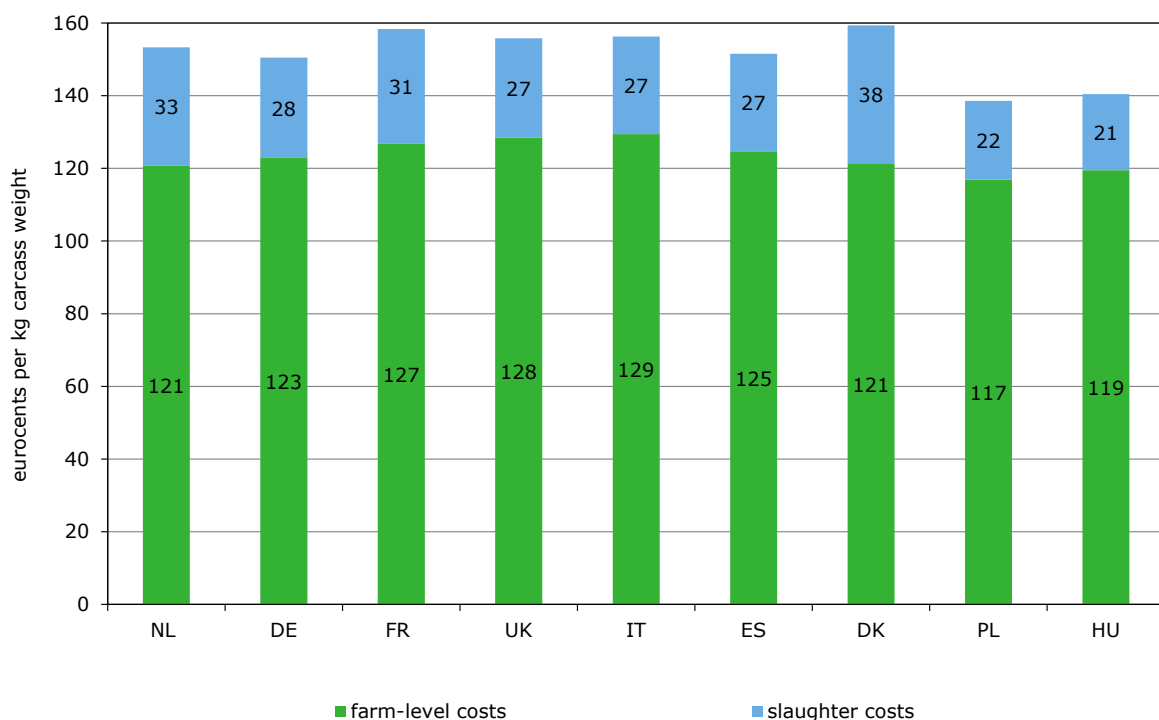


Figure 2.2 Costs of primary production and slaughter of broiler in eurocents per kilogram of carcass weight in 2015

2.2 Production costs in some non-EU countries

The production costs of poultry meat was researched in six countries outside Europe: the United States of America (USA), Thailand (THA), Brazil (BRA), Argentina (ARG), Russia (RUS) and Ukraine (UKR). Brazil and the United States are the main exporters to the world market. Brazil and Thailand are the main suppliers of (frozen) poultry meat to the EU. Argentina is an important 'low costs producer' and also exports poultry meat to the EU. Ukraine has been included in the above list because this country in 2015 started exporting poultry meat to the EU. Ukraine is close to Poland and Germany and it has the potential of becoming an important exporter to the EU. The data for the United States are based on information from the National Chicken Council (NCC). For Brazil, data are available from the research organisation Embrapa. For Thailand, Argentina, Russia and Ukraine, the information is based on several sources. Production costs for these countries are calculated in local currency and subsequently converted into euros. The average exchange rate for 2015 was used for the euro conversion (Appendix 1).

2.2.1 Production costs at primary farm

Figure 2.3 shows the total production costs for the EU as compared to the USA, Thailand, Brazil, Argentina, Russia and Ukraine. In the EU, the average total production costs were 86.4 eurocents per kg live weight in 2015. In the Brazil, Ukraine and the USA, production costs are significantly lower than in the EU, respectively 62.2, 65.6 and 68.6 eurocents per kg live weight. Argentina and Thailand also have lower production costs compared to the EU: Argentina 72.0 eurocents and Thailand 76.6 eurocents per kg live weight. The total production costs in Russia are only slightly below the EU average. The basic assumptions for performance and prices are given in Table 2.4. The total costs and the build-up of the main items for all countries are shown in Table 2.5.

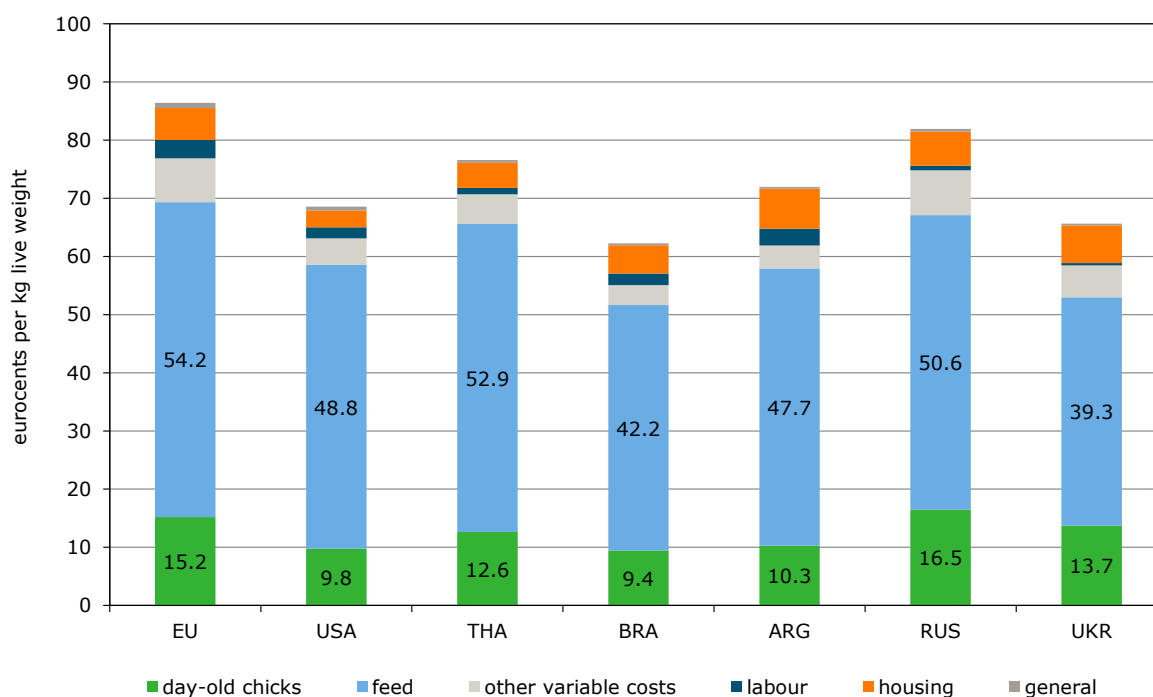


Figure 2.3 Production costs of broilers in eurocents per kg live weight in the Europe Union (EU) and six third countries in 2015

The feed price determines the total production costs to a significant extent. The feed price is considerably lower in Ukraine, Brazil, Argentina and the USA than it is in the EU. The lower feed price

in these countries can largely be explained by the domestic availability of sizeable quantities of feed ingredients such as maize and soy bean. European producers partly depend on South American imports for their feed ingredients. The costs of storage, transport and margins increases the price of feed ingredients in Europe. The price of day-old chicks is also lower because of the low feed price. Table 2.4 also shows the most important zoo-technical results for third countries. In the USA, Brazil, Argentina, the final weight of broilers is higher than it is in the EU. When the final weight is higher, then the feed conversion is also higher. Still, the feed conversion is relatively high in some countries.

Table 2.4 *Prices and technical performance for broiler production in EU and selected non-EU countries*

	EU	USA	THA	BRA	ARG	RUS	UKR
Feedprice (euros /100 kg)	32,7	26,3	31,5	23,6	26,0	28,9	21,8
Day-old chick (eurocents)	33,1	25,1	28,9	23,6	25,5	32,5	32,0
Live weight (g)	2,283	2,700	2,400	2,600	2,600	2,100	2,480
Feed conversion	1,66	1,86	1,68	1,79	1,83	1,75	1,80

Table 2.5 *Costs of primary production in EU and selected non-EU countries in eurocents per kg live weight a)*

	EU	USA	THA	BRA	ARG	RUS	UKR
Total costs (incl. labour)	86,4	68,6	76,6	62,2	72,0	81,9	65,6
Total costs (excl. labour)	83,2	66,7	75,5	60,3	69,1	81,1	65,3
Day-old chicks	15,2	9,8	12,6	9,4	10,3	16,5	13,7
Feed	54,2	48,8	52,9	42,2	47,7	50,6	39,3
Other variable costs	7,5	4,5	5,1	3,4	4,0	7,7	5,5
Labour	3,2	1,9	1,1	2,0	2,9	0,8	0,4
Housing	5,5	2,9	4,3	4,9	6,8	5,8	6,5
General	0,8	0,7	0,5	0,4	0,4	0,5	0,4
Manure disposal	0,1	-	-	0,1-	0,1-	-	0,1-

In addition to the aforementioned differences in the feed price and purchase price of day-old chicks, some third countries also have the advantage of lower housing and labour costs. The reason for the lower labour costs in Thailand, Brazil, Argentina, Ukraine and Russia are lower wages but also lower social security premiums. The difference in labour costs between Europe and the US is mainly attributable to the social security system, with higher employer charges being paid in Europe.

In all non-EU countries, broiler producers have no costs for the disposal of manure. Manure is disposed free-of-charge in the region. In Brazil, Argentina and Ukraine, the removal of dry poultry manure is a small source of income.

In Brazil, Argentina, Thailand and Ukraine producers have lower costs, because on many topics no legislation exists as in the EU. Examples are the use of antimicrobial growth promoters and meat-and-bone meal in broiler feed, and the absence of environmental legislation. Meat-and-bone meal is used in countries outside the EU, whereas it is explicitly forbidden in the EU. When meat-and-bone meal is used, the composition of the feed is adjusted and this leads to a lower feed price.

2.2.2 Production costs after slaughter

In addition to the costs of primary production, the costs of slaughter also play an important role in the international comparison of competitiveness. The costs of slaughter are calculated based on slaughter of broilers in a large commercial slaughterhouse. The weight of the carcass is 70% of the live weight delivered from the farm. The main components of the slaughter costs are labour (35%) and building and equipment (25%). The other costs (40%) are, for example, transport of broilers, energy, water, inspection and packing. We assumed that all countries use advanced modern equipment in the

slaughterhouses that produce broiler meat for export. It is assumed that the differences in slaughter costs between the countries are mainly a result of differences in labour costs. Based on labour costs for slaughterhouse workers, the costs of slaughter are calculated for the selected non-EU countries. Hourly wages for workers in slaughterhouses, including social tax, in some countries are: the USA €13.5, Thailand €2, Brazil €3, Argentina €6, Russia €3.5 and Ukraine €2. In the calculations per country also differences in interest rate on investments are taken into account and the fact that inspection costs are lower in third countries compared to the EU. Table 2.6 gives the results of costs at farm level and the costs of slaughter in eurocents per kg carcass weight. Figure 2.4 gives the same data in a graph.

Table 2.6 Costs of primary production, costs of slaughter and total costs in eurocents per kg carcass weight

	EU	USA	THA	BRA	ARG	RUS	UKR
Farm-level costs	123	98	109	89	103	117	94
Slaughter costs	28	25	17	17	20	19	18
Total	152	123	126	106	123	136	112

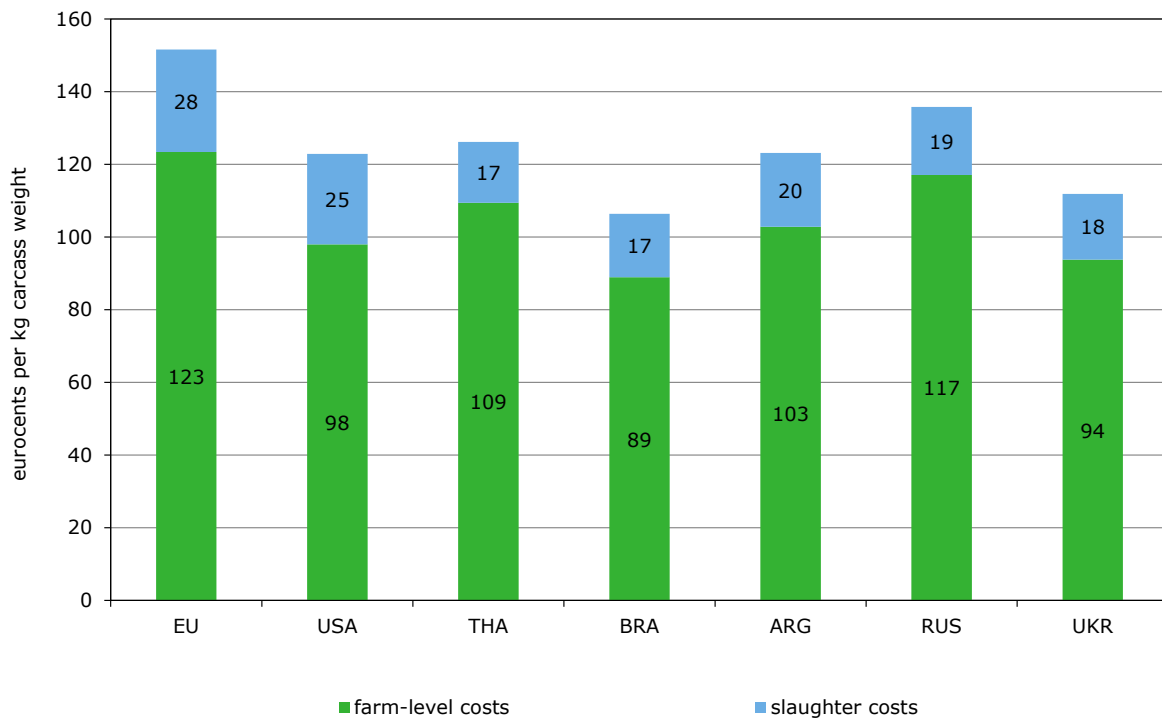


Figure 2.4 Costs of primary production and slaughter of broilers in eurocents per kg slaughter weight in the European Union and six third countries in 2015

In the EU, the average production costs after slaughter are 152 eurocents per kg carcass weight. Brazil and Ukraine have very low costs with 106 to 112 eurocents per kg carcass weight, which is around 30% lower than the EU average.

3 Results of different scenarios

3.1 Description of the scenarios

Three scenarios were developed to show how a change in import levies and a change in the exchange rate may impact the competitiveness of the EU poultry meat sector:

1. A change in the EU import levy on poultry meat, as a possible result of a new multilateral (WTO) agreement or bilateral agreements
In this scenario, the basic import levy is reduced by 50%, plus the additional levy is removed.
2. A change in exchange rates of the US dollar, Thai baht, Brazilian real, Argentine peso, Russian rouble and Ukrainian hryvnia
In this scenario, a 10% lower exchange rate is assumed for the currencies of the non-EU-countries. The average exchange rate in 2015 was used to convert the production costs of all countries into euros. Appendix 1 shows the development of the exchange rates in these non-EU countries. The graph and the table in Appendix 1 illustrate that a 10% lower exchange rate can be a realistic scenario for some countries.
3. A combination of a lower import levy (scenario 1) and a lower exchange rate of third country currencies (scenario 2)
This is the 'worst case' scenario.

In this chapter these three scenarios have been examined for breast fillet. In all figures, the EU level is an average of the nine EU countries shown in chapter 2.

3.2 Production costs of breast fillet

Based on the calculation of the production costs at farm level and in the slaughterhouse (see Chapter 2), the production costs of breast fillet was calculated for all countries. After slaughter the bird's carcass has to be cut into different parts: breast cap, leg quarter, wings and rest of the carcass. In the next processing step, the breast cap will be deboned, and breast meat will be the final product. Breast meat is the product with the highest value on the European market and, therefore, it is the most interesting product to be exported to the EU. To calculate the production cost of breast meat for all countries, we added the following costs to the production after slaughter: the costs of cutting up the breast cap and the costs of deboning it. For EU countries, the disposal costs for offal were added. Revenues come from the sale of the legs/leg quarters, the wings and the rest of the carcass. Finally the revenues were subtracted from the total costs. For the non-EU countries, the offal also results in revenues. The result of the calculation is the net production costs of a kg of breast meat at the processing plant in the production country.

To compare the offer price on the EU market, we also added the additional costs of transport for all countries. Transport costs include local transport to the harbour, sea freight in a container, handling costs in the harbour, and transport from a European harbour to the final location within Europe. Frankfurt am Main in Germany is set as a reference to calculate the transport costs. The import levies were also added to these costs. Figure 3.1 gives an overview of all costs components to compare the offer price of the selected non-EU countries to the EU average.

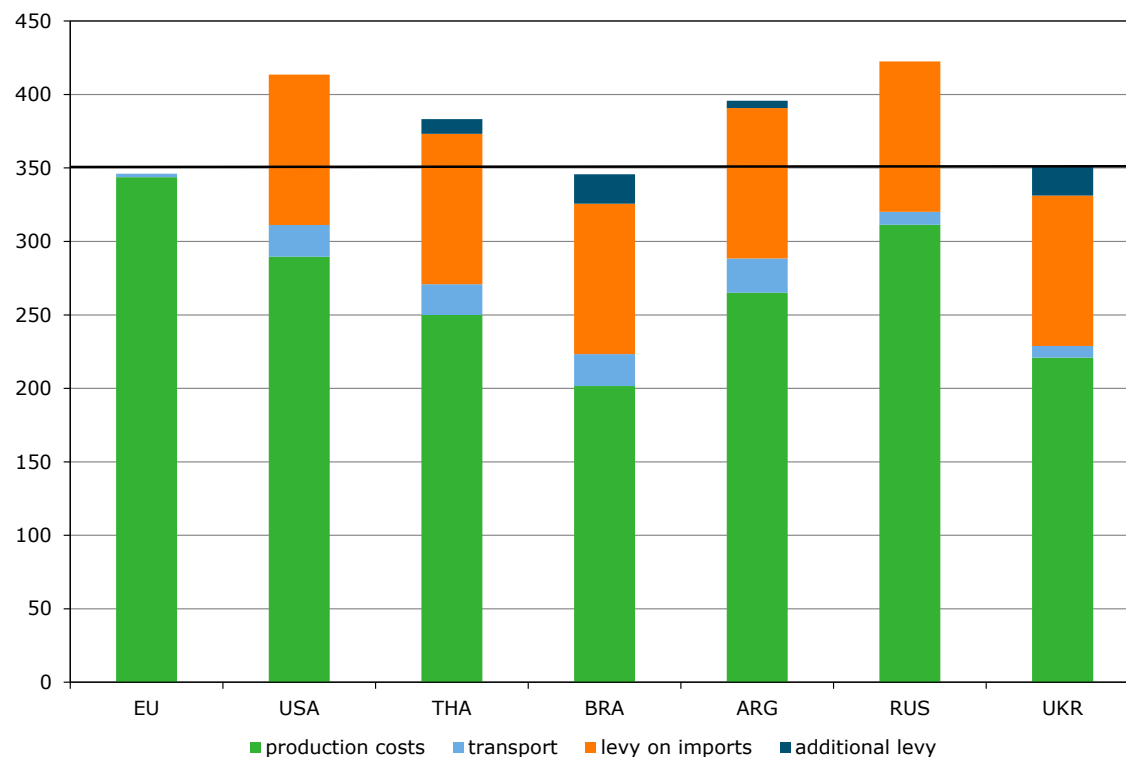


Figure 3.1 Offer price of breast fillet from EU average (horizontal line) and non-EU countries in eurocents per kg breast meat in 2015

In 2015, the offer prices of Brazil and Ukraine was equal to the EU average offer price of breast fillet. Figure 3.1 illustrates that the import levies protect the EU countries from large imports of breast meat from third countries. The additional levy is an extra import tax that may be applied in case of a serious market disorder.

3.3 Scenario 1 - Lower EU import levy

In scenario 1, the impact of a 50% lower basic import levy and no additional levy on imports into the EU has been examined.

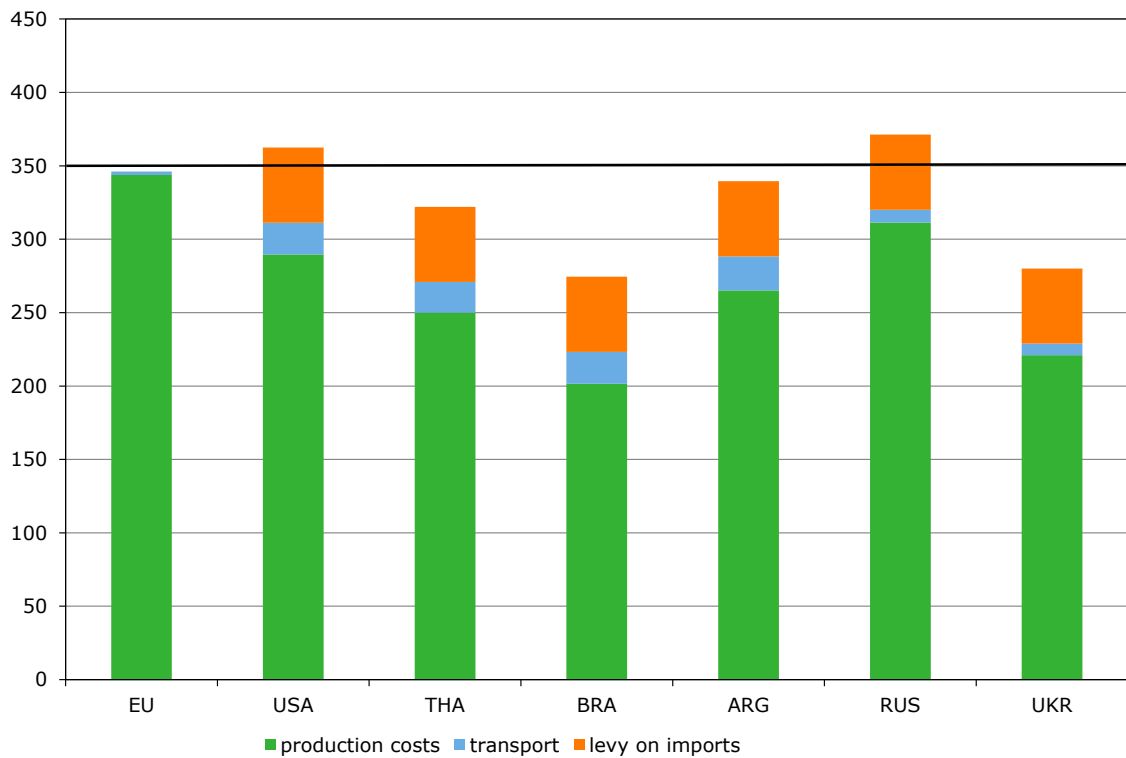


Figure 3.2 Offer price of breast fillet from EU average (horizontal line) and non-EU countries in eurocents per kg breast meat (scenario 1: 50% lower basic levy, no additional levy)

As Figure 3.2 illustrates, in this scenario Brazil and Ukraine would be the most competitive suppliers of breast fillet to Frankfurt in 2015. Thailand and Argentina would also have a lower offer price than the EU countries do. The USA and Russia have an offer price, after including the lower import levy, slightly above the average offer price of the EU countries.

3.4 Scenario 2 - Change in exchange rate

Scenario 2 evaluates the consequences of 10% lower currency exchange rates of all non-EU countries.

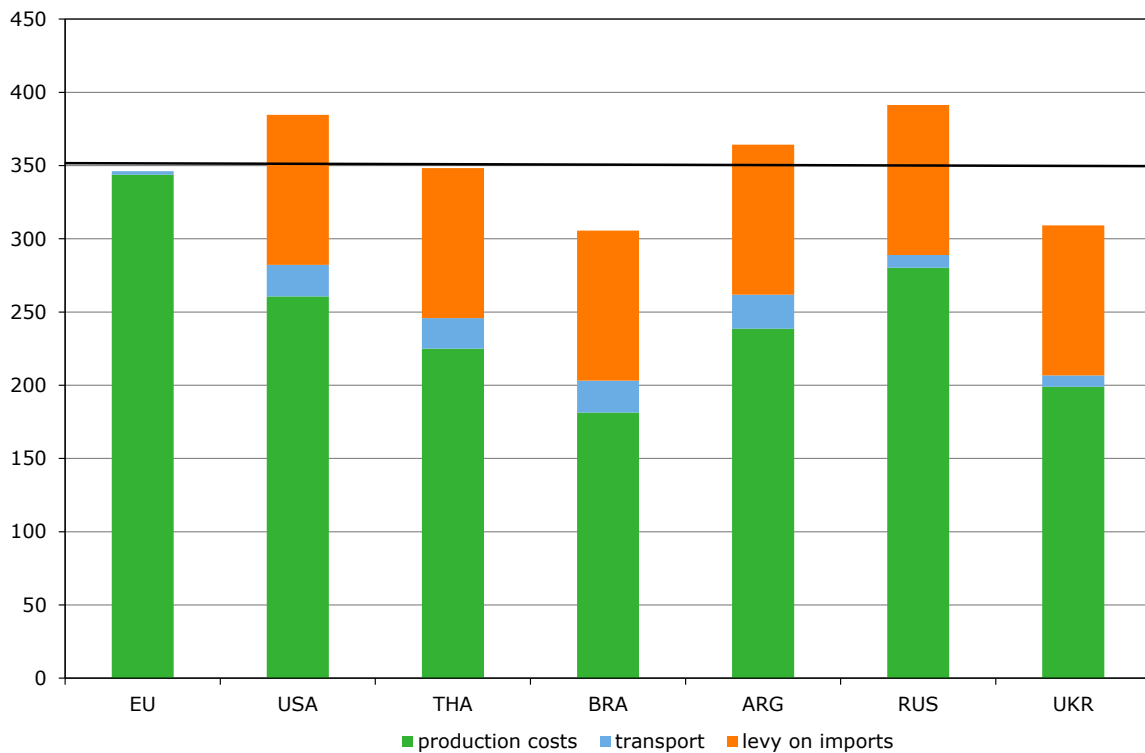


Figure 3.3 Offer price of breast fillet in Germany from EU average (horizontal line) and non-EU countries in eurocents per kg breast meat (scenario 2: 10% lower exchange rates)

Lower exchange rates have less impact than the lower import levies of scenario 1. However, Figure 3.3 shows that even in the case of only 10% lower exchange rates, besides Brazil and Ukraine, also Thailand has an offer price for breast fillet close to the EU average price.

3.5 Scenario 3 - Combination

Scenario 3 is a 'worst-case scenario' with a combination of scenarios 1 and 2: a lower import levy (scenario 1) and a 10% lower exchange rates of all non-EU currencies (scenario 2).

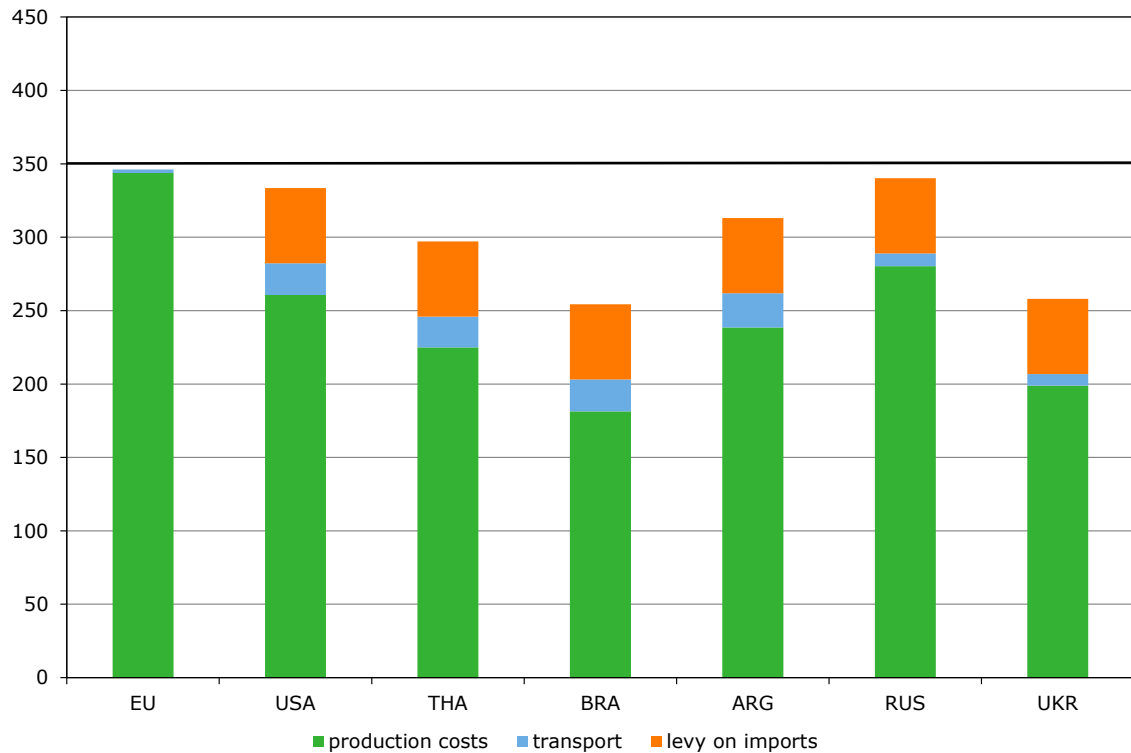


Figure 3.4 Offer price of breast fillet in Germany from EU average (horizontal line) and non-EU countries in eurocents per kg breast meat (scenario 3: lower import levy and 10% lower exchange rate)

The combined consequences of lower import levies and 10% lower exchange rates are indicated in Figure 3.4. In this worst-case scenario, all third countries obtain a competitive position on the EU market for breast fillet.

Imported poultry meat from third countries is brought in frozen condition, so it cannot be used for the fresh-food market. However, Ukraine could have a different position. The distance to some EU countries is so close that export of fresh poultry meat in chilled condition could be an option.

4 Conclusions

EU legislation

In the EU, poultry meat producers have to comply with European legislation. The additional costs of EU legislation are estimated to be 5.0 eurocents per kg live weight (5.8% of the total production costs in 2015). These costs directly relate to EU legislation on environmental protection (Nitrate directive and reduction of ammonia emissions), food safety (Salmonella control, ban on the use of meat-and-bone meal, antibiotic growth promoters and GMO crops as feed ingredients) and animal welfare (minimum standards on space allowance).

Third countries

In general, many non-EU countries have very little to no legislation on environmental protection and animal welfare. Some countries, especially the USA, do have legislation on food safety. The main poultry meat exporting countries in the world are Brazil and the USA. Main exporters to the EU are Brazil, Thailand and Ukraine. These countries have no environmental or animal welfare legislation. However, in Brazil and Thailand the stocking density is relatively low, due to high temperatures and low housing costs. All mentioned third countries have no legislation in the following areas: the use of GMO feed ingredients, use of meat-and-bone meal in poultry feed, the use of growth promoters, and the control of ammonia emissions from poultry houses and during manure application.

Production costs within the EU

The production costs of broiler meat have been calculated for the Netherlands, Germany, France, United Kingdom, Italy, Spain, Italy, Denmark, Poland and Hungary. The production costs in 2015 at farm level in these countries were, on average, 86 eurocents per kg live weight. After slaughter, the production costs for these countries ranged from 139 (Poland) to 159 eurocents (Denmark) with an average of 152 eurocents per kg carcass weight.

Production costs in non-EU countries

The production costs of broiler meat were calculated for the following third countries: the United States, Thailand, Brazil, Argentina, Russia and Ukraine. For all these countries, the production costs after slaughter per kg carcass weight in 2015 were lower than in the EU: in Brazil (70% of the EU average), in Ukraine (74%), in the USA (81%), in Argentina (81%), in Thailand (83%) and in Russia (90%). In Brazil, Ukraine, USA and Argentina, the feed prices were low, due to the domestic availability of large quantities of feed ingredients. Most third countries also had the advantages of lower housing and labour costs (lower wages and low taxes and social security contributions), and a lack of legislation governing poultry meat production.

Imports of breast fillet from third countries

The EU is a large importer of poultry meat. Imports of breast fillet mainly come from Brazil and Thailand (see Appendix 2). Salted breast fillet is imported within quota at a low import levy of 15.4%. Cooked breast fillet is imported within quota at a low import levy of 8% (see Appendix 3). Natural (not prepared or processed) breast fillet has a small quota and imports occur outside the quota. Outside the quota an import levy of €1.02 per kg has to be paid, and in recent years, an additional import levy (safe guard) of €0.10 to 0.20 per kg has been charged. Despite these high import levies, the imports are competitive, and in 2015, 96,000 tonnes of natural breast fillet was imported.

Comparison with earlier studies

This study is an update of two earlier reports with base year 2013 and 2011. Comparison of the production costs after slaughter in this study with the results for 2013 shows that the costs of the EU producers and all third countries did decrease. This was a result of lower production costs at farm level (lower feed prices) in all countries. Russia and Ukraine showed the largest decrease. The main reason for this was a lower exchange rate of the currency of these countries to the euro in 2015. Figure 4.1

gives the production costs after slaughter for 2011, 2013 and 2015. The graph illustrates the low costs in Brazil for all years and the improved competitive position of Ukraine in 2015.

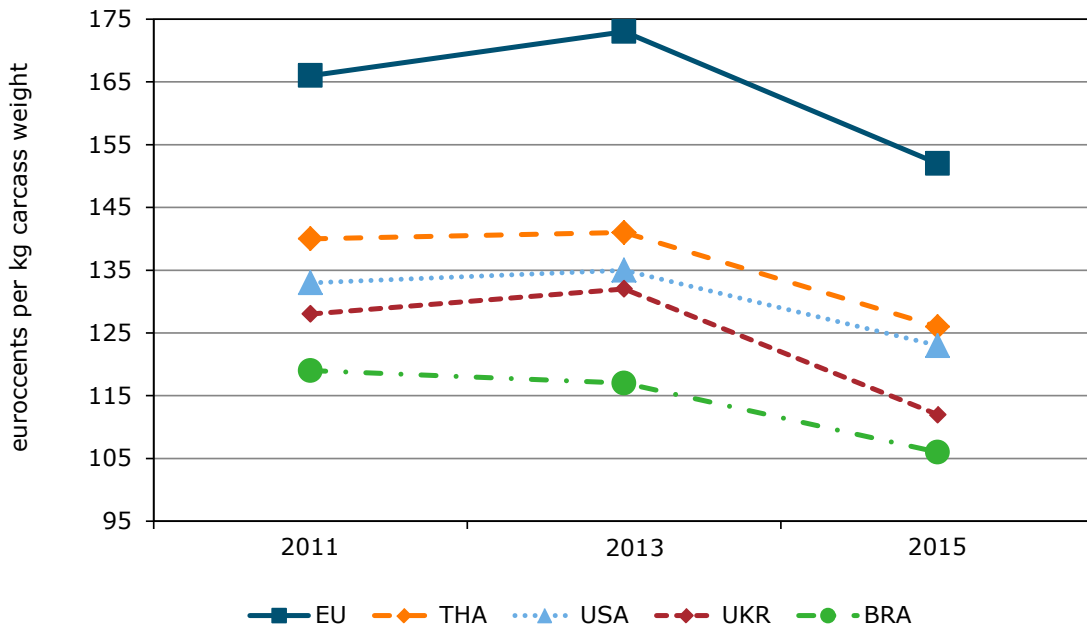


Figure 4.1 Production costs after slaughter (eurocents per kg carcass weight) in 2011, 2013 and 2015 in the EU, Thailand (THA), United States (USA), Ukraine (UKR) and Brazil (BRA)

Basic situation on import of breast fillet

Adding the costs of cutting up and deboning to the production costs at farm level and in the slaughterhouse and subtracting the revenues of other parts, resulted in the production costs of breast fillet for the EU and non-EU countries. After transportation costs and full import levy (including the additional levy) were added to the breast fillet costs of the third countries, results showed that Brazil and Ukraine can compete with the offer price of breast fillet of the EU poultry meat industry.

Scenarios

Three scenarios were developed to show how a possible change in import levies and a change in the exchange rate could impact the competitiveness of the EU poultry meat. In scenario 1, a 50% lower basic import levy and no additional levy on poultry meat was used to illustrate the impact of any multi- or bilateral agreement with lower import levies. The results show that in this scenario Brazil, Ukraine, Argentina and Thailand had a lower offer price of breast fillet than the EU poultry meat industry does. In scenario 2 with 10% lower exchange rates, Brazil and Ukraine had a lower offer price of breast fillet than the EU industry. Thailand had a similar offer price, and the other third countries a higher offer price. In scenario 3, with a combination of lower import levies and a 10% lower exchange rate, all third countries in this research show an offer price below that of the EU industry.

References and websites

- Aarnink, A.J.A. and H.H. Ellen, 2008. 'Processes and factors affecting dust emissions from livestock production'. In: *Dust Conf 2007. How to improve air quality*. International conference, 23-24.4,2008, Maastricht, The Netherlands.
- ADAS, 2016. Comparison of the Regulatory Framework and key Practices in the Poultry Meat Supply Chain in the EU and USA. Study by ADAS UK Ltd in conjunction with the University of Arkansas. UK, 2016.
- AVEC, 2016. *Annual report 2016*. Brussels. www.avec-poultry.eu
- Backus, G., P. Berkhout, D. Eaton, T. de Klijn, E. van Mil, P. Roza and W. Uffelmann, 2008. *EU policy on GMOs. A quick scan of the economic consequences*. Report 2008-070. LEI Wageningen UR, The Hague.
- Bracke, M. (editor), 2009. *Animal welfare in a global perspective*. Wageningen UR Livestock Research. Report 240. Lelystad.
- Baltussen, W., Jongeneel, R., van Horne, P., Helming, J., Dewar, D. et al., 2013. *Study on mandatory origin labelling for pig, poultry and sheep & goat meat*. Study by LEI Wageningen UR and commissioned by European Commission. June 2013. http://ec.europa.eu/agriculture/external-studies/origin-labelling-2013_en.htm
- Chotteau, Ph., N. Beaumont, C. Deblitz, R. Hoste, P. Magdelaine, A. Mottet, K. De Roest, C. Roguet, P. Sarzeaud, M. Topliff and P. Van Horne, 2009. *The impact of increased operating costs on meat livestock in the EU*. Study for the European Parliament. Paris, Institut de l'Élevage. [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2009/419109/IPOL-AGRI_ET\(2009\)419109_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2009/419109/IPOL-AGRI_ET(2009)419109_EN.pdf)
- Horne, P.L.M. van, C.P.A. van Wagenberg, M.A. de Winter, R. Hoste, S.I. Senesi, M.M. Barilatti, M. Daziano, L.D.C. Martino and M.M.T. Becerra, 2010. *The poultry and pig sector in Argentina: husbandry practice and animal welfare*. The Hague: LEI Wageningen UR.
- Horne, P.L.M. van, 2012. *Competitiveness of the EU egg industry*. Report 2012-065. The Hague: LEI Wageningen UR.
- Horne, P.L.M. van, 2013. *Competitiveness of the Dutch Poultry meat sector (in Dutch)*. Report 2013-037. LEI Wageningen UR, The Hague.
- Horne, P.L.M van and N. Bondt. 2013. *Competitiveness of the EU poultry meat sector*. International comparison base year 2011. Report 2013-068. The Hague: LEI Wageningen UR.
- Horne, P.L.M van and N. Bondt, 2014. *Competitiveness of the EU poultry meat sector*. International comparison base year 2013. Report 2014-038. The Hague: LEI Wageningen UR.
- ITAVI, 2012. *La compétitivité agricole du Mercosur Le cas des filières d'élevage brésiliennes*. Rapport DGPAAT 11-02. Institute de l'élevage, IFIP and ITAVI. France. <http://agriculture.gouv.fr/competitivite-agricole-Mercosur>
- ITAVI, 2016. L'Aviculture chair et ponte en Ukraine. Mission d'étude organisée par l'ambassade de France et est expansion du 20 au 22 juin 2016 (mission to Ukraine). Presentation by Pacale Magdelaine, ITAVI, Paris. France.

Lichter, J. and Kleibrink, J. 2016. Comparison of production standards World - Germany ('Geflügelwirtschaft weltweit - Deutschland im internationalen vergleich. Eine analyse der erzeugungsstandards'). Handelsblatt Research Institute. Düsseldorf, Germany.

Wagenberg, C.P.A. van, F.M. Brouwer, R. Hoste and M.L. Rau, 2012. *Comparative analysis of EU standards in food safety, environment, animal welfare and other non-trade concerns with some selected countries*. European Union. LEI Wageningen UR.
[http://www.europarl.europa.eu/RegData/etudes/etudes/join/2012/474542/IPOL-AGRI_ET\(2012\)474542_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2012/474542/IPOL-AGRI_ET(2012)474542_EN.pdf)

Appendix 1 Development of the currency exchange rate

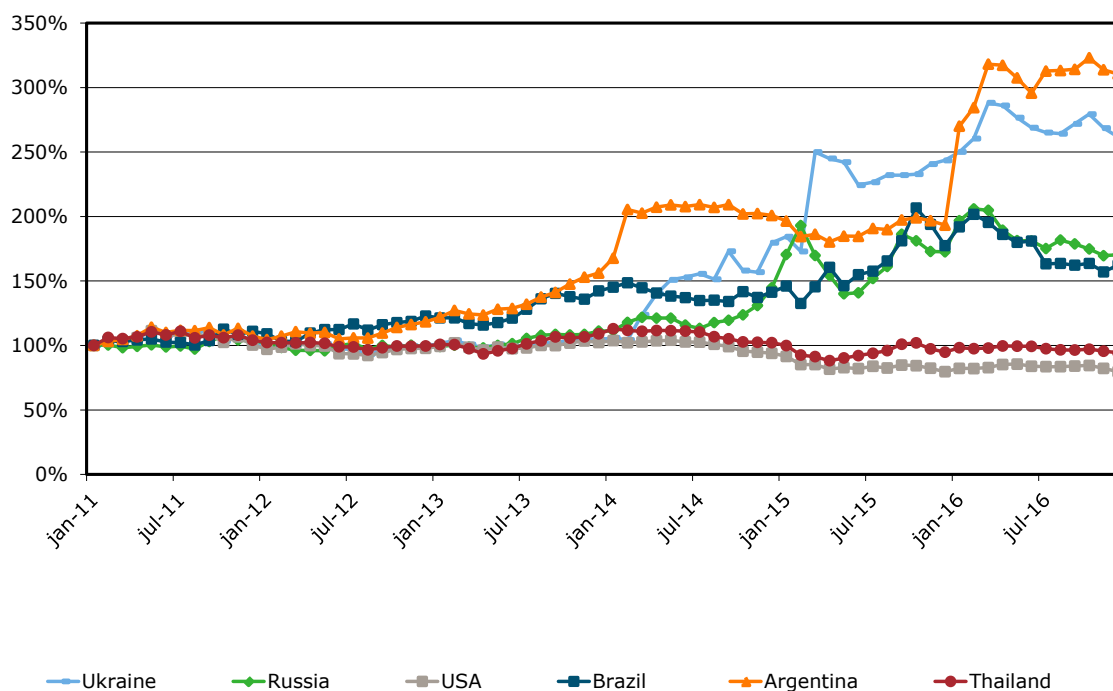


Figure A1.1 Development of the exchange rate of the currencies of Argentina, Brazil, USA, Ukraine and Russia against the euro (January 2011 = 100%)

Figure A1.1 shows that a 10% change in exchange rate (scenario 2) can be a realistic scenario. The exchange rate development of the Ukraine Hryvnia and the Argentina Peso is a good example. Between 2015 (the base year of this study) and 2016, the exchange rate of the Ukraine Hryvnia and the Argentina Peso increased against the euro. This means a higher exchange rate of the currency, resulting in a lower offer price of Ukraine or Argentina poultry meat in Europe. Although to a lesser extent than for Ukraine and Argentina, also for Brazil and Russia the value development of the local currency to the euro between 2015 and 2016 was in a similar direction. In contrast, the exchange rate of the US dollar developed in the other direction in 2016. This results in a higher offer prices of US poultry meat to Europe in 2016. Table A1.1 gives the average exchange rate to the euro which were used to calculate production costs for 2015 (local currency in euros). In the second and third column, the average exchange rates in 2016 and the difference between 2016 and 2015 are given.

Table A1.1 Average exchange rate against the euro in 2015, 2016 and the difference

Country	2015	2016	2016/2015
Ukraine	0.0414	0.0356	86%
Russia	0.0148	0.0134	90%
USA	0.8981	0.9042	101%
Brazil	0.2748	0.2566	93%
Argentina	0.0993	0.0616	62%
Thailand	0.0263	0.0256	97%

Appendix 2 Import and export of poultry meat

Imports of breast fillet

The EU is a large importer of poultry meat, mainly from Brazil (60% of EU imports) and Thailand (30%). These two countries account for almost 90% of the total EU import of poultry meat. Table A2.1 gives the amount imported from 2011-2015 from the most important third countries. The total import of poultry meat in 2015 was 0.871m tonnes. The total value of the EU poultry meat imports in 2015 was €2.329bn. The average value in 2015 was €267 per 100 kg of imported poultry meat.

Table A2.1 EU Import of poultry meat (in 1,000 tonnes) from third countries

	2011	2012	2013	2014	2015
Brazil	615	583	514	501	499
Thailand	156	198	228	250	274
Ukraine	0	0	0	20	42
Chile	44	42	31	26	22
China	14	16	18	20	18
Argentina	16	14	11	11	9
Other	10	13	12	10	7
Total	855	866	814	838	871

Source: European Commission, February 2016.

Table A2.2 gives more detailed information on the different poultry meat products imported by the EU. Table A2.2 shows the main imports (more than 40,000 tonnes imported) and their amounts in 2013, 2014 and 2015.

Table A2.2 EU Import (in 1,000 tonnes) in 2013, 2014 and 2015 of the main poultry meat products

Gn code	Products	2013	2014	2015
16023219	cooked, prepared, meat or meat offal $\geq 57\%$	232	233	241
02109939	meat, salted, dried or smoked	227	256	264
02071410	frozen boneless cuts	88	90	96
16023230	prepared, meat or meat offal $\geq 25\%$ but $\leq 57\%$	66	67	64
16023111	preparations of turkey	67	47	47

Source: AVEC annual report, October 2016.

Figure 1 shows that total EU imports of chicken breast fillet from third countries have stabilised since 2008. Total imports have amounted to around 600,000 tonnes in the year 2008. In 2015, the EU imported 96,000 tonnes of natural chicken breast fillet (frozen). The imported amount of salted chicken breast fillet in 2015 was 264,000 tonnes and the amount cooked fillet was 241,000 tonnes. The imported quantities in each category have been stable over the past seven years, indicating that the quotas and import levies introduced in 2008 limited imports from third countries.

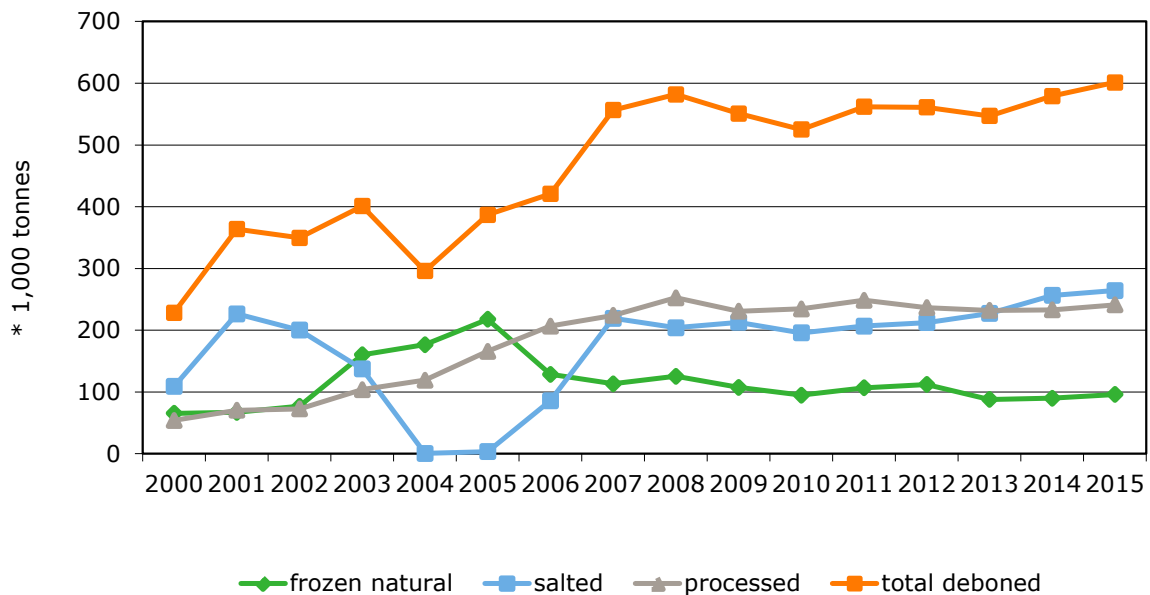


Figure A2.1 Import into EU of chicken breast fillet from third countries (in 1,000 tonnes of product)
 Source: Eurostat, adaptation Wageningen Economic Research.

The EU sets quota and different import levies for imports inside or outside the quota. There are quota to maximise the total amount of imports at a low import levy for natural, salted and cooked breast fillet. Salted breast fillet is imported within the quota at an import levy of 15.4% of the value. Outside the quota the full levy is €1.30 per kg. Cooked breast fillet is imported within quota at an import levy of 8%. Outside the quota the full levy is €1.02 per kg. The EU has a limited quota for natural breast fillet and imports occur outside the quota. At import, an import levy of €1.02 per kg has to be paid with in recent years an additional import levy (safe guard) of €0.10 to 0.20 per kg. Despite these high import levies, the poultry meat imports from these third countries are competitive, and in 2015, 96,000 tonnes of natural breast fillet was imported. After the introduction of import quotas in 2007, the total imports of poultry meat have not further increased.

Exports

EU countries export poultry meat to several third countries in the Middle East, Africa and Asia. In 2015, the EU mainly exported to South Africa, Saudi Arabia, Benin, Philippines and Hong Kong with each country importing more than 100,000 tonnes from the EU. Table A2.3 gives the amount exported to the most important third countries from 2011 to 2015. The total EU export of poultry meat in 2015 was 1.490m tonnes with a total value of €2.113bn. The average value in 2015 was €142 per 100 kg of exported poultry meat, in contrast to the average value of €267 per 100 kg for the EU imports. In general, the EU exports to third countries are lower value cuts of meat such as wings, feet and offal. These cuts are less popular on the EU market and export is a necessary outlet for the valuation of the whole bird.

Table A2.3 *EU Export of poultry meat (in 1,000 tonnes) to third countries*

	2011	2012	2013	2014	2015
South Africa	84	132	159	203	213
Saudi Arabia	151	149	155	124	143
Benin	126	140	139	164	137
Philippines	30	31	36	58	101
Hong Kong	188	125	117	136	101
Ukraine	82	103	76	81	91
Ghana	68	69	75	56	68
Russia	115	114	95	68	1
Other	566	550	574	613	635
Total	1,410	1,413	1,426	1,503	1,490

Source: European Commission, February 2016.

Appendix 3 Overview of EU import levies (€/1,000) and quotas (1,000 kg) (2017)

Import quota and duties	Poultry		01.01.2017								
			Third country	Code group	CN code 6-digit	poultry species	Quantity	Reduction Tariff rate €/ton		Initial duty amount €/ton	
								lowest	highest	lowest	highest
	Turkey	09.0244	0207 25 / 27	turkeys	1,000	93	339	187	679		
	Israel	09.4092	0207 25 / 27	turkeys	4,000	100%		187	679		
	Israel	09.4091	020732 / 33 / 35 / 36	geese and ducks	560	100%		free	1,232		
	Israel	09.1372	160231	turkeys	5,000	100%		1,024			
	Israel	09.1373	160232	poultry	2,000	100%		1,024			
	Chili	09.1923	ex 0207 - ex 1602	poultrymeat (preparations)	17,400	100%					
	GATT Oilseeds Brazil	09.4410	0207 14 (10/50/70)	gallus gallus	11,932	100%		602	1,024		
	GATT Oilseeds Thailand	09.4411	0207 14 (10/50/70)	gallus gallus	5,100	100%		602	1,024		
	GATT Oilseeds others	09.4412	0207 14 (10/50/70)	gallus gallus	3,300	100%		602	1,024		
	GATT Oilseeds Brazil	09.4420	0207 14 (10/50/70)	turkeys	4,300	100%		410	851		
	GATT Oilseeds others	09.4421	0207 14 (10/50/70)	turkeys	700	100%		410	851		
	GATT Oilseeds erga omnes	09.4422	0207 14 (10/50/70)	turkeys	2,485	100%		410	851		
	GATT	09.4067	0207 11 / 12	gallus gallus, carcass	6,249	131	162	262	325		
	GATT	09.4068	0207 13 / 14	gallus gallus cuts	8,570	93	512	187	1,024		
	GATT	09.4069	0207 14 (10)	gallus gallus frozen boneles	2,705	795		1,024			
	GATT	09.4070	0207 24 / 25 / 26 / 27	turkeys	1,781	93	425	187	851		
	USA	09.4169	0207 11 / 12 / 13 / 14 / 24 / 25 / 26 / 27 / 28		21,345	50%	100%	187	1,024		
	Brazil - panel salted	09.4211	ex 0210 99 39	salted poultrymeat	170,807	tariff	15.40%		1,300		
	Brazil - panel salted	09.4214	16023219	preparations gallus gallus	79,477	tariff	8%		1,024		
	Brazil - panel salted	09.4251	16023211	preparations gallus gallus	15,800	tariff	630		2,765		
	Brazil - panel salted	09.4252	16023230	preparations gallus gallus	62,905	tariff	10.90%				
	Brazil - panel salted	09.4253	16023290	preparations gallus gallus	295	tariff	10.90%				
	Brazil - panel salted	09.4217	160231xx	preparations turkey	92,300	tariff	8.50%		1,024		
	Thailand - panel salted	09.4212	ex 0210 99 39	salted poultrymeat	92,610	tariff	15.40%		1,300		
	Thailand - panel salted	09.4215	16023219	preparations gallus gallus	160,033	tariff	8%		1,024		
	Thailand - panel salted	09.4254	16023230	preparations gallus gallus	14,000	tariff	10.90%				
	Thailand - panel salted	09.4255	16023290	preparations gallus gallus	2,100	tariff	10.90%				
	Thailand - panel salted	09.4256	16023929	preparations gallus gallus	13,500	tariff	10.90%				
	Thailand - panel salted	09.4257	16023921	preparations gallus gallus	10	tariff	630		2,765		
	Thailand - panel salted	09.4258	16023940	preparations gallus gallus	600	tariff	10.90%				
	Thailand - panel salted	09.4259	16023980	preparations gallus gallus	600	tariff	10.90%				
	Other - panel salted	09.4213	ex 0210 99 39	salted poultrymeat	828	tariff	15.40%		1,300		
	Other - panel salted	09.4216	16023219	preparations gallus gallus	11,443	tariff	8%		1,024		
	Other - panel salted	09.4260	16023230	preparations gallus gallus	2,800	tariff	10.90%				
	Other - panel salted	09.4261	16023211	preparations gallus gallus	340	tariff	630		2,765		
	Other - panel salted	09.4262	16023290	preparations gallus gallus	470	tariff	10.90%				
	Other - panel salted	09.4263	16023929	preparations gallus gallus	220	tariff	10.90%				
	Other - panel salted	09.4264	16023940	preparations gallus gallus	148	tariff	10.90%				
	Other - panel salted	09.4265	16023980	preparations gallus gallus	125	tariff	10.90%				
	Other - panel salted	09.4218	160231xx	preparations turkey	11,596	tariff	8.50%		1,024		
	PERU	09.7221			10,500		100%				
	UKRAINE	09.4273			16,800		100%				
		09.4274			20,000		100%				
	TOTAL EU IMPORT QUOTA				878,734						

Import quota and duties		Poultry		01.01.2017				
Third country	Code group	CN code 6-digit	poultry species	Quantity	Reduction rate €/ton		Initial duty amount €/ton	
					lowest	highest	lowest	highest
EPA			All goods except those mentioned in one of the annexes				100%	
GSP (Developing countries)			All goods except those mentioned in one of the annexes				100%	

Check: European Commission Taxation and Customs Union - Taric Consultation website

http://ec.europa.eu/taxation_customs/dds2/taric/taric_consultation.jsp?Lang=en

Wageningen Economic Research
P.O. Box 29703
2502 LS The Hague
The Netherlands
T +31 (0)70 335 83 30
E communications.ssg@wur.nl
www.wur.eu/economic-research

Wageningen Economic Research
REPORT
2017-005

The mission of Wageningen University and Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 5,000 employees and 10,000 students, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.



To explore
the potential
of nature to
improve the
quality of life



Wageningen Economic Research
P.O. Box 29703
2502 LS Den Haag
The Netherlands
E communications.ssg@wur.nl
www.wur.eu/economic-research

Report 2017-005
ISBN 978-94-6343-091-3

The mission of Wageningen University and Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 5,000 employees and 10,000 students, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.

