Effects of an EU-US trade agreement on the Dutch agro-food sector

Siemen van Berkum, Martine Rutten, Jo Wijnands and David Verhoog

LEI
WAGENINGEN UR

Effects of an EU-US trade agreement on the Dutch agro-food sector

S. van Berkum, M. Rutten, J. Wijnands and D. Verhoog

This study was carried out by LEI Wageningen UR and was commissioned and financed by the Dutch Ministry of Economic Affairs within the context of the 'Exploring Market Opportunities' research theme of the Policy Support Research Task (BO-23.02-002-005).

LEI Wageningen UR
Wageningen, July 2014

REPORT
LEI 2014-021
ISBN 978-90-8615-680-1

LEI
WAGENINGEN UR

Berkum, S. van, M. Rutten, J. Wijnands and D. Verhoog, 2014. Potential effects of an EU-US trade agreement on Dutch agribusiness trade opportunities and competitiveness; LEI Wageningen UR, draft version, 6/05/12014. Wageningen, LEI Wageningen UR (University & Research centre), LEI Report 2014-021. 84 pp.; 27 fig.; 26 tab.; 25 ref.

This report offers quantification of effects of a EU-US trade agreement for the Dutch agro-food sector under a range of possible policy options. Trade impacts on the food industry in the Netherlands, the EU and the US are positive. However, the competitiveness of the Dutch (and EU-27) food industries will decline in case of a trade liberalisation between the two blocs: competitors will increase their exports of food more than the Dutch food industry, and developments in value added and labour productivity of the Dutch food industry lag behind the developments in these indicators in other parts of the economy.

Dit rapport biedt een schatting van de effecten van een handelsovereenkomst tussen de EU en de VS voor de Nederlandse agrofood-sector onder een reeks mogelijke beleidsopties. De gevolgen voor de voedingsmiddelenindustrie in Nederland, de EU en de VS zijn positief. Indien de handel tussen de beide machtsblokken wordt geliberaliseerd, zal de concurrentiepositie van de Nederlandse (en EU-27) voedingsmiddelenindustrie echter afnemen: concurrenten zullen hun voedselexport meer verhogen dan de Nederlandse voedingsmiddelenindustrie. Bovendien lopen de ontwikkelingen in de toegevoegde waarde en de arbeidsproductiviteit van de Nederlandse voedingsmiddelenindustrie achter bij de ontwikkelingen van deze indicatoren in andere delen van de economie.

This report can be downloaded for free at www.wageningenUR.nl/en/lei (under LEI publications).

P.O. Box 29703, 2502 LS Den Haag, The Netherlands, T +31 (0)70 335 83 30,
E informatie.lei@wur.nl, www.wageningenUR.nl/en/lei. LEI is part of Wageningen UR (University & Research centre).

LEI is ISO 9001:2008 certified.

LEI Report 2014-021 | Project code 2282500019

Photo cover: Shutterstock

Contents

Preface

The European Union and the United States of America have started a comprehensive dialogue regarding possibilities for deepening their transatlantic trade and investment relations in 2012. Serious negotiation talks started after the EU and the US announced their intention to conclude a free trade agreement (FTA), which would encompass both sides of the Atlantic. In July 2013 the first round of negotiations took place in Washington DC and, when this report was published (July 2014) a fifth round of talks had just been held. Negotiations are expected to take place until the end of 2014.

This report offers quantification of effects of a trade agreement for the Dutch agro-food sector under a range of possible policy options. The agro-food sector is an important industry for the EU in terms of added value and in terms of its share in EU export to the US. Both sides have complained about the many regulatory hurdles exporters are facing when entering the partner's market. For example, EU dairy export is subject to US import quotas while the EU does not approve the use of growth hormone and pathogen reduction treatment in US meat. Both partners expect to gain from regulatory alignment. The Dutch agro-food sector, with its strong orientation on trade, may gain if regulatory divergences that exist between the EU and the US are addressed. This study shows this is the case, but more open borders will also imply more competition from US agro-food companies on the Dutch and EU market.

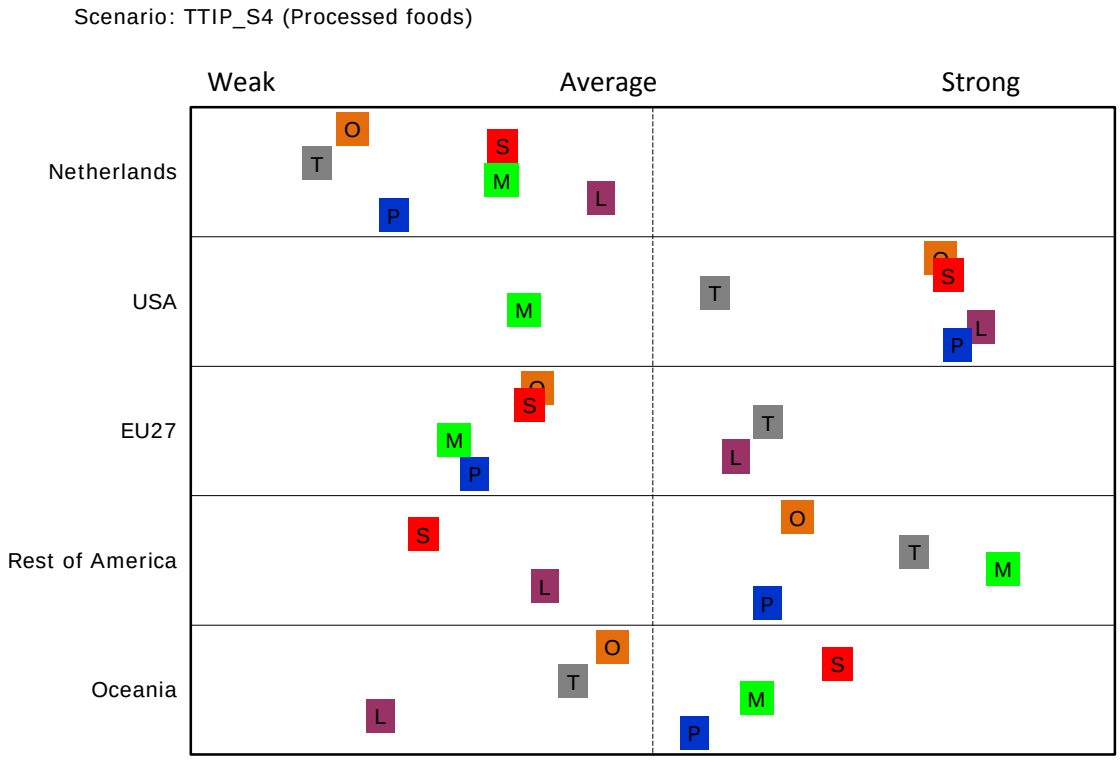
The study has been commissioned and financed by the Ministry of Economic Affairs. The authors gratefully acknowledge the valuable comments of Mr. Henk Riphagen and Mr. Gijs Zeestraten, both at the ELV-department of DG Agro on earlier drafts of the report. LEI colleagues Gerdien Meijerink and Marie Luise Rau are also thanked for their comments and suggestions.

Ir. L.C. van Staalduinen
Managing Director LEI Wageningen UR

Summary

S.1 Key findings

Agricultural trade liberalisation in the context of a Trans-Atlantic Trade and Investment Partnership (TTIP) will positively affect the food industry exports in the Netherlands, the EU and the US. This study shows it will raise the Dutch GDP by 6.7% in 2027 in the most ambitious scenario (with spillover effects of NTMs to the rest of the world). However, the competitiveness of the Dutch (and EU-27) food industries will decline in case of a TTIP trade liberalisation: Dutch competitors will increase their exports of food more than the Dutch food industry. Other indicators of competitiveness are the developments in value added and labour productivity of the Dutch food industry, which are lagging behind the developments in these indicators in other parts of the economy. Figure S1 summarises the effects of the most ambitious trade liberalisation scenario on the competitive position of the Dutch food industry.



Legend:
O Overall competitiveness
S Annual growth of the share of the food industry in the added value in manufacture industry (2014-2027);
T Difference RTA indicator (2014-2027);
M Difference world market share 2027 minus 2014;
L Annual growth rate labour productivity (2014-2027);
P Annual growth rate real added value (2014-2027).

Figure 4.7 *Outcomes of Scenario 4 on competitiveness of the Dutch processed food sector*
Source: Own calculations

S.2 Complementary outcomes

Trade flows and trade conditions

Dutch agricultural trade balance with the USA has become negative

- The Netherlands used to have a positive agricultural trade balance with the USA, but this has eroded in recent years and has turned negative in 2013. Dutch export performance in the US market was, on average, weaker than the EU over the last decade.
- The USA is the Netherlands' most important non-EU market, accounting for 12.5% of all Dutch agro-food exports to non-EU markets. Dutch agro-food imports from the US are about 8% of all agro-food imports from non-EU countries. Most important Dutch exports to the USA are beverages, cocoa products and live trees and other plants. Most important import products are oilseeds (largely soybeans) and fresh fruits.

Several hurdles exist to free trade on both sides

- As to average applied tariffs, the EU seems more closed regarding agricultural products than the US. Behind these averages, one finds a wide range of ad valorem duties for detailed products of which many are subject to specific duties too. The results of assessments of liberalisation impacts on aggregated product levels are therefore tentative.
- Both sides complain about the many regulatory hurdles exporters are facing for their specific products when entering the partner's market. EU's dairy export to the US is subject to an import quota system. The EU, for its part, does not approve the use of growth hormone and pathogen reduction treatment in US meat. Estimates indicate that EU restrictions on cross-border trade add over 50 percent additional cost for food and beverages trade and US restrictions add an even larger 70 percent. Reducing these costs would result in significant potential welfare gains at both sides.

Competitiveness of the Dutch food industry

The Dutch food processing industry has a relatively strong competitive position

- The Dutch oils & fats industry, the dairy, other food products and feed industry are relatively large compared to the composition of the EU food industry. The Dutch food processing industry has a relatively strong competitive position compared to benchmark countries. By contrast, the US food industry is on the bottom end of the performance spectrum of benchmark countries.

Meat (processing) industries

- The Dutch meat industry is relatively small, although it has a significant share in the Dutch food industry turnover. In the US, meat processing and grain milling are relatively large parts of the food industry and impacts of trade liberalisation on these industries have a high weight in the overall effects for the food industry.
- The overall competitive position of the Dutch meat processing industry is below the average of the benchmark countries. The same holds for the US meat industry. The Dutch meat industry is not performing well on trade indicators: it lost export share on the world market and imports are increasing.
- In order to compete with cheap meat from Brazil and the US (in case of trade liberalisation) the Dutch meat industry should focus on quality and fresh meat segments.

Dairy (processing) industries

- The Dutch dairy processing industry has the strongest competitive position of all benchmark countries, with the US dairy industry close to the Dutch position. The Dutch dairy industry's positive evaluation is largely due to its high score on economic performance indicators (value added and labour productivity). The Dutch dairy industry should be able to benefit from a further opening up of markets.

Outcomes of trade liberalisation scenarios

Largest (positive) effects from tariff elimination are expected in the dairy and meat sectors

- In scenario S1, in which we assume a 100% reduction of import tariffs on both the EU and the US side, Dutch exports of agro-food products will increase, in particular dairy products, meat products and oils & fats, followed by the fruit and vegetables product category.

- Both at the EU and the US side import tariffs in the animal product categories are highest. Therefore, US will benefit especially from the improved access to the EU for dairy, red and white meat products. Imports of dairy and meat products from the US will therefore increase significantly, the resulting in a negative trade balance of the Netherlands and the EU in their bilateral trade with the US in these product categories. US exports to other regions than the EU will decline.
- The EU and the Netherlands will gain market share in the US dairy market. Increased US exports of dairy and white meat to the EU will be at the cost of Dutch exports to other EU countries.

Largest welfare effects (GDP) are expected from reduction of trade costs associated with NTMs.

- Welfare effects in terms of GDP are generally low in case only tariffs are eliminated (Scenario S1). In case of significant reduction of trade costs associated with non-tariff measures (Scenario S3), GDP effects are substantial with a 4% higher GDP in 2027 for the Netherlands, the EU and the US.
- Third countries will only benefit from the bilateral trade agreement if their standards converge with those of the EU and the US (Scenario S4). If they do, global GDP will be almost 5% higher in 2027. GDP in the Netherlands will be 6.7%, or €70bn higher than it would have been without the S4 scenario.

Dutch competitiveness will decline

- Competitors of the Netherlands will do better under each of the projected bilateral trade liberalisation scenarios regarding economic (value added and labour productivity) and trade indicators (market shares).
- Competitiveness of the Dutch food industry will decline due to the fact that developments in value added and labour productivity of the Dutch food industry are lagging behind the developments in these indicators in other parts of the economy.

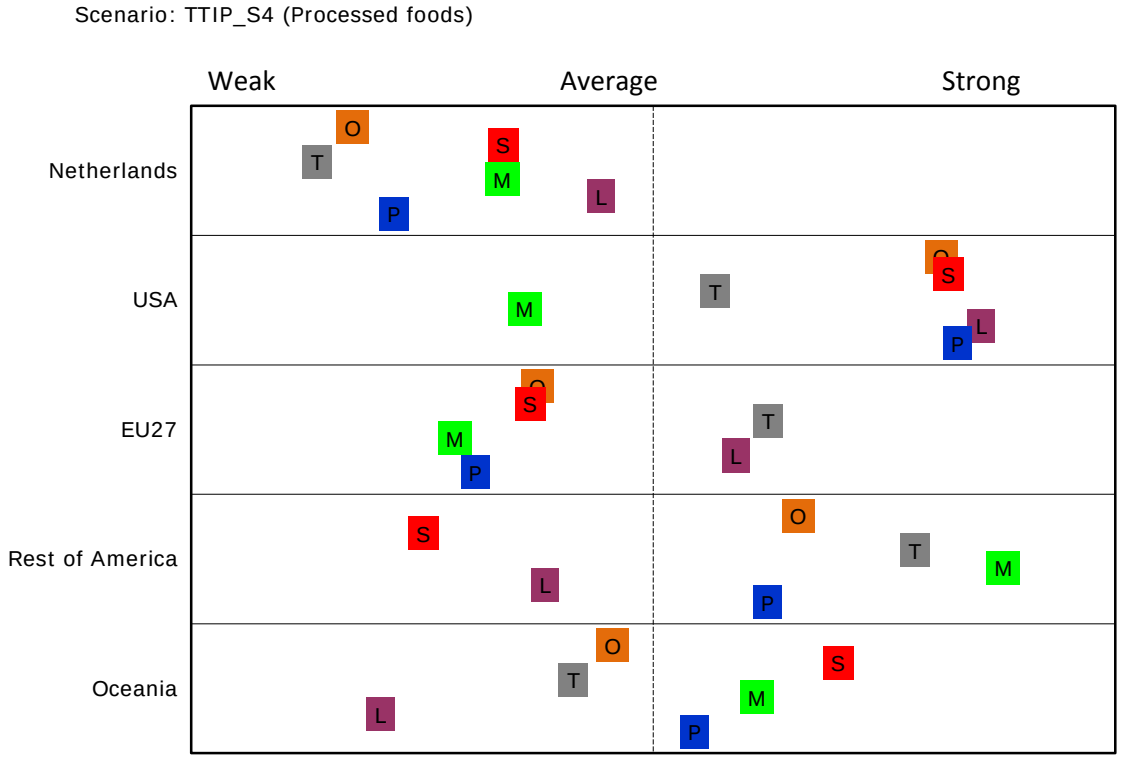
S.3 Method

This report was commissioned by the Ministry of Economic Affairs. The report's main objective is to provide detailed insights into the economic impacts of expected outcomes of a trade agreement between the EU and the US on selected Dutch agro-food (sub)sectors and for specific products. The study is based on statistical analyses of trade and food industry data, and model simulations to project the possible outcomes of trade liberalisation scenarios.

Samenvatting

S.1 Belangrijkste uitkomsten

Liberalisering van de agrarische markt in het kader van de Transatlantische Vrijhandelsovereenkomst (TTIP) zal een positieve invloed hebben op de export van de voedingsmiddelenindustrie in Nederland, de EU en de VS. Deze studie toont aan dat het Nederlandse BBP volgens het meest ambitieuze scenario (met spill-overeffecten van NTM's naar de rest van de wereld) in 2027 6,7% hoger zal toenemen dan zonder zo'n akkoord. In het geval van een TTIP-handelsliberalisering zal de concurrentiepositie van de Nederlandse (en EU-27) voedingsmiddelenindustrie echter afnemen: de export van de concurrenten zal meer groeien dan die van de Nederlandse voedingsmiddelenindustrie. Andere indicatoren van concurrentiekracht zijn de ontwikkelingen in toegevoegde waarde en arbeidsproductiviteit; in de Nederlandse voedingsmiddelenindustrie loopt deze achter bij de ontwikkelingen in andere delen van de economie. Figuur S1 vat de effecten van het meest ambitieuze handelsliberalisatiescenario voor de concurrentiepositie van de Nederlandse voedingsmiddelenindustrie samen.



Legenda:
O Concurrentiepositie (totaalbeeld)
S Jaarlijkse groei van het aandeel van de voedingsmiddelindustrie in de toegevoegde waarde van de (totale) industrie (2014-2027);
T Verschil tussen de RTA indicator van 2027 en 2014;
M Verschil aandeel op de wereldmarkt in 2027 en 2014;
L Jaarlijkse groei arbeidsproductiviteit (2014-2027);
P Jaarlijkse groei (reële) toegevoegde waarde (2014-2027).

Figuur 4.7 *Uitkomsten van Scenario 4 voor de concurrentiepositie van de Nederlandse voedingsmiddelenindustrie.*
Bron: Eigen berekening

S.2 Overige uitkomsten

Handelsstromen en handelsvoorwaarden

Nederlandse agrarische handelsbalans met de VS is negatief geworden

- Ooit had Nederland een positieve agrarische handelsbalans met de VS. Deze is in de afgelopen jaren echter afgenomen en werd in 2013 zelfs negatief. Gedurende de afgelopen 10 jaar was de Nederlandse exportgroei naar de VS gemiddeld lager dan die van de EU.
- Voor Nederland is de VS met 12,5% van de totale export van agrofood-producten naar niet-EU-markten de belangrijkste markt buiten de EU. De Nederlandse import van agrofood-producten uit de VS bedraagt ongeveer 8% van alle import van agrofood-producten uit niet-EU-landen. De belangrijkste Nederlandse exportproducten naar de VS zijn dranken, cacaoproducten en levende bomen en andere planten. De belangrijkste importproducten zijn oliehoudende zaden (voornamelijk sojabonen) en vers fruit.

Vrije handel stuit aan beide zijden op verschillende hindernissen

- Wat betreft de tarieven die gemiddeld worden toegepast, lijkt de EU voor landbouwproducten geslotener dan de VS. Achter deze gemiddelden bevindt zich een breed scala aan ad valorem-invoerrechten voor producten, waarvan een groot deel ook nog onderhevig is aan specifieke invoerrechten. De gevolgen van een liberalisering voor geaggregeerde productgroepen kunnen derhalve moeilijk worden voorspeld.
- Beide partijen klagen over de vele wettelijke hindernissen waar exporteurs tegenaan lopen bij het verkrijgen van toegang tot de partnermarkt. De export van zuivelproducten uit de EU naar de VS is onderworpen aan een systeem voor importquota. De EU keurt van haar kant het gebruik af van groeihormonen en van middelen die ziekteverwekkers bestrijden; beide worden in de vleesindustrie in de VS toegepast. Schattingen geven aan dat de EU-beperkingen op grensoverschrijdende handel zorgen voor meer dan 50% aanvullende kosten op de handel in voedingsmiddelen en dranken, en de beperkingen in de VS zorgen zelfs voor 70% extra kosten. Een verlaging van deze kosten zou kunnen leiden tot aanzienlijke potentiële welvaartstoename aan beide zijden.

Concurrentievermogen van de Nederlandse voedingsmiddelenindustrie

De Nederlandse voedingsmiddelenindustrie heeft een relatief sterke concurrentiepositie

- De Nederlandse industrieën voor oliën en vetten, zuivelproducten, andere voedingsmiddelen en diervoeders zijn relatief groot vergeleken met die in de EU. De Nederlandse voedingsmiddelenindustrie heeft een relatief sterke concurrentiepositie ten opzichte van benchmarklanden. Ter vergelijking: de voedingsmiddelenindustrie in de VS bevindt zich in de onderste regionen van het prestatiespectrum van benchmarklanden.

Vlees- (en vleesverwerkende) industrie

- De Nederlandse vleesindustrie is relatief klein, maar heeft een belangrijk aandeel in de omzet van de Nederlandse voedingsmiddelenindustrie. In de VS maken de vlees- en graanverwerkende industrie een relatief groot deel uit van de voedingsmiddelenindustrie, die dan ook een grote invloed hebben op het totale effect van handelsliberalisering voor de voedingsmiddelenindustrie.
- De algehele concurrentiepositie van de Nederlandse vleesverwerkende industrie ligt onder het gemiddelde van de benchmarklanden. Hetzelfde geldt voor de vleesindustrie in de VS. De Nederlandse vleesindustrie presteert niet goed voor wat betreft de handelsindicatoren: het exportaandeel op de wereldmarkt is gekrompen en de import neemt toe.
- Om te kunnen blijven concurreren met goedkoop vlees uit Brazilië en de VS (in het geval van liberalisering van de handel) verdient het volgens onderzoek aanbeveling voor de Nederlandse vleesindustrie zich te richten op de markten voor kwaliteitsvlees en vers vlees.

Zuivel- (en zuivelverwerkende) industrie

- De Nederlandse zuivelverwerkende industrie heeft de sterkste concurrentiepositie van alle benchmarklanden. De zuivelindustrie in de VS volgt de Nederlandse op de voet. De positieve beoordeling van de Nederlandse zuivelindustrie is grotendeels te danken aan de hoge score op economische prestatie-indicatoren (toegevoegde waarde en arbeidsproductiviteit). De Nederlandse zuivelindustrie moeten kunnen profiteren van een verdere openstelling van de markten.

Uitkomsten van de scenario's voor handelsliberalisering

Grootste (positieve) effecten van tariefafschaffing verwacht in zuivel- en vleessectoren

- In scenario S1, waarin we uitgaan van een verlaging van de importtarieven van 100% aan de kant van zowel de EU als de VS, zal de Nederlandse export van agrofood-producten toenemen. Dit geldt met name voor de export van zuivelproducten, vleesproducten en oliën & vetten, gevolgd door groenten en fruit.
- Zowel in de EU als de VS zijn de importtarieven het hoogst voor dierlijke producten. De VS zal dus met name profiteren van verbeterde toegang tot de EU voor zuivelproducten en rood en wit vlees. De import van zuivel- en vleesproducten uit de VS zal derhalve sterk toenemen, wat zal resulteren in een negatieve handelsbalans van Nederland en de EU in hun bilaterale handel met de VS in deze productcategorieën. De export vanuit de VS naar andere regio's dan de EU zal afnemen.
- Op de zuivelmarkt in de VS zullen de EU en Nederland marktaandeel winnen. Meer export van zuivelproducten en wit vlees vanuit de VS naar de EU zal ten koste gaan van de Nederlandse export naar andere EU-landen.

Grootste welvaartseffecten verwacht door verlaging van handelskosten van NTM's.

- Welvaartseffecten in termen van BBP zijn over het algemeen laag indien alleen tarieven worden geschrapt (scenario S1). In geval van significante verlaging van kosten van niet-tarifaire maatregelen (scenario S3), zullen de effecten op het BBP aanzienlijk zijn. Het BBP zal in 2027 in Nederland, de EU en de VS 4% hoger zijn bij dit scenario.
- Andere landen profiteren alleen van de bilaterale handelsovereenkomst als hun standaarden overeenkomen met die van de EU en de VS (scenario S4). Indien dit het geval is, zal het wereldwijde BBP tot 2027 met 5% toenemen. Het BBP zal in Nederland 6,7%, of € 70 miljard, hoger zijn dan het zonder scenario S4 zou zijn.

Nederlands concurrentievermogen zal afnemen

- Concurrenten van Nederland zullen beter presteren onder elk van de geschetste scenario's voor bilaterale handelsliberalisatie volgens economische indicatoren (toegevoegde waarde en arbeidsproductiviteit) en handelsindicatoren (marktaandeel).
- De concurrentiepositie van de Nederlandse industrie zal afnemen doordat ontwikkelingen in de toegevoegde waarde en de arbeidsproductiviteit van de Nederlandse voedingsmiddelenindustrie achterlopen op de ontwikkelingen van deze indicatoren in andere delen van de economie.

S.3 Methode

Dit rapport is opgesteld in opdracht van het ministerie van Economische Zaken. De hoofddoelstelling van dit rapport is het bieden van gedetailleerde inzichten in de economische effecten van de te verwachten resultaten van een handelsovereenkomst tussen de EU en de VS op bepaalde Nederlandse agrofood-(sub)sectoren en voor bepaalde producten. De studie is gebaseerd op statistische analyses van gegevens van de handels- en voedingsmiddelenindustrie en op modelsimulaties om de mogelijke uitkomsten van de handelsliberaliseringsscenario's te voorspellen.

1 Introduction

1.1 Background and aim of the study

The EU and the US together account for over half of world's production and contribute to almost a third of global trade flows. Though the two economies are in many ways integrated, there is still significant potential for further economic co-operation. The EU and the US started negotiations on a Transatlantic Trade and Investment Partnership (TTIP) in July 2013. A TTIP agreement is about establishing a framework for free or freeer trade and investment flows between the two partners. Potential gains could be up to more than €100bn for the EU (CEPR, 2013).

In the field of agriculture and food products, the US is one of the Netherlands' most important trading partners outside the EU, with export and import values around €2bn each in recent years. The Dutch agribusiness therefore has a great interest in the potential outcome of the EU-US trade negotiations. On the one hand there will be new export opportunities to the USA for Dutch agribusiness, while on the other hand Dutch primary agricultural producers and/or food processors might experience increased competition from imported US produce on the Dutch and other EU markets.[1]

The possible gains of a free trade agreement (FTA) between the EU and the US for the Dutch economy have been estimated by ECORYS (2012), indicating a yearly change in national income of €4.1bn in the long run, assuming an ambitious scenario of full (tariff) liberalisation and reducing 50% of the trade costs associated with non-tariff measures (NTMs). Sector specific results indicate the largest positive effects in terms of output and exports (in percentage change) of a FTA are to be found in the chemicals and food processing sector, for both the Netherlands and the EU. Although the sector coverage is wide (20 sectors) the agro-food sector is collapsed to a 'primary agriculture' and 'processed foods' industry only. Ecorys' study models liberalisations in the area of NTMs, using scores based on perceptions of business of difficulties of market access as a proxy for an NTM indicator. Although it has been a great and valuable effort, an NTM approach based on surveys can be subject to criticisms due to the limitation of the sample representativeness and the subjectivity of the measurement.

This research adds to the existing studies by providing more detailed insights into the economic impacts of expected outcomes of a trade agreement between the EU and the US on selected Dutch agro-food (sub)sectors and for specific products. Reducing trade barriers such as tariffs and trade costs associated with non-tariff measures (NTMs) will provide opportunities for Dutch export-oriented sectors to increase their exports to the US; most likely this would be the case for dairy products on which the US impose significant import duties and apply import quota. Other sectors may face increasing competition from US exports to the EU: the poultry meat sector signals fears of this kind (Van Horne and Bondt, 2013). An important part of this research is to indicate the current state of competitiveness of Dutch agro-food industry as a base for comparison to demonstrate the impact of the bilateral trade agreement on the food industry's future position vis-a-vis the one in the US and in other countries. This research will focus on a selection of agro-food sectors that will cover both the export opportunities and consequences for imports under assumed free trade modalities as part of the TTIP between the EU and US.

[1] This research concentrates on the possible impact of removing import tariffs and other trade barriers on trade in agro-food products. Impacts of removing regulatory differences between the EU and the US affecting investment flows is outside the scope of this study.

1.2 Approach

For analytical purposes the research question of the possible impact of a TTIP on trade in agricultural and food products is split in a subset of questions and tasks. The first bloc is on trade flows and trade conditions. This part of the analysis will provide insights and explanations of major trends and structural features of bilateral trade flows between the EU and the US, with specific attention to the products that are of interest to the Netherlands in its bilateral trade relation with the EU. Current trade conditions are reported and for some of them we will indicate the impacts these conditions have (had) on the bilateral trade flows up to now. Main sources of the analysis are EU and UN trade databases, plus WTO and national documents that picture tariffs, tariff-rate quota (TRQ) and other non-tariff measures (NTMs), relevant for the agro-food product categories selected.

The second bloc of the report addresses the competitiveness of the agricultural and food industries of the Netherlands and several EU countries compared to those in the US and several other (non-EU) countries. The analysis focuses on the following indicators: 1) growth in real value added; 2) growth of labour productivity; 3) export specialisation; and 4) growth in the export share on the world market. The methodology used is broadly based on the one used in Wijnands et al. (2007) on the competitiveness of the European food industry. This largely quantitative and ex-post analysis will be complemented by interviews with companies and/or business organisation representatives to a) further detail and qualify the assessments of the selected Dutch and US agro-food industries' competitive positions and b) to discuss the possible impacts of the TTIP on market prospects for products of the interviewees' interests and how identified opportunities or threats are being dealt with in their company's strategy.

The third bloc of the report is forward looking and uses scenario analyse to estimate the impact of a 'free trade' agreement between the EU and the US for selected Dutch agro-food sectors. Using the economic model MAGNET the impacts of a free trade scenario will be compared with a continuation of current trade policies. A free trade scenario will include tariff liberalisation and reductions in NTMs; the effects will be estimated in terms of trade flows (imports, exports), price levels, production and incomes of the respective sectors. The focus will be on the impacts on the Dutch agro-food sectors (although our model generates outcomes for all EU countries). Because NTMs are not explicitly included in the MAGNET database, we use assumptions on NTM related trade costs from the literature[2] and introduce these into the model. Moreover, since specific cost estimates for individual EU member states such as the Netherlands are not available, we use estimates for the EU as a whole as proxies for the Netherlands. The outcomes of the scenario analyses will be transposed into the competitive analysis framework applied in the second bloc of the study to show the impact of bilateral trade agreement scenario outcomes on competitive position of the Dutch food industry. This part concludes with some recommendations on how the industry should enhance its competitive position.

A summary wrapping up the major findings of the analysis closes the study.

2 An alternative would be to use a complementary data source from a study by ECORYS (2010)2 for the NTM estimates. This option will be explored during the study.

2 Trade flows and trade conditions

Key findings and observations:

- The Netherlands used to have a positive agricultural trade balance with the USA but this has eroded in recent years and has turned negative in 2013. Dutch export performance in the US market was, on average, weaker than the EU over the last decade.
- The USA is the Netherlands' most important non-EU market, accounting for 12.5% of all Dutch agro-food exports to non-EU markets. Dutch agro-food imports from the US are about 8% of all agro-food imports from non-EU countries. Most important Dutch exports to the USA are beverages, cocoa products and live trees and other plants. Most important import products are oilseeds (largely soybeans) and fresh fruits.
- Looking at average applied tariffs the EU seems more closed regarding agricultural products than the US. Behind these averages, one finds a wide range of ad valorem duties for detailed products of which many are subject to specific duties too. This makes assessments of liberalisation impacts on aggregated product levels indicative at the most.
- Both sides complain about the many regulatory hurdles exporters are facing for their specific products when entering the partner's market. EU's dairy export to the US is subject to an import quota system. The EU, for his part, does not approve the use of growth hormone and pathogen reduction treatment in US meat. Estimates indicate that EU restrictions on cross-border trade yield over 50 percent additional cost for food and beverages trade and US restrictions add an even larger 70 percent. Reducing these costs would result in significant potential welfare gains at both sides.

2.1 Overview of trade flows

Overall trends in Dutch bilateral agricultural trade relations with the US

The Dutch export value (blue line in Figure 2.1) varies over time between €1.8bn and €2.2bn, with a declining trend over the years since 2002, which seems to have reversed from 2011 onwards. Import values were almost €2bn in 2000. A rather strong decline followed since, hitting bottom in 2005 after which imports rapidly increased from 2009 onwards.[3] As a result, the positive agricultural trade balance of the Netherlands with the USA has eroded in recent years, becoming negative in 2013. Figure 2.1 also shows EU export and import totals. Comparing trends in these overall trade totals for the Netherlands and the EU shows that EU's trade surplus with the US is increasing where the Dutch trade surplus declined, and that the Dutch share in EU exports to the US declined over time, from 15-16% in the early 2000s to less than 9% in 2013. These observations indicate that Dutch export performance in the US market was, on average, worse than the EU over the last decade.

Importance of the US for Dutch exports and imports

Agro-food trade of the Netherlands is largely focused on EU-countries: 55% of all Dutch agro-food imports originates from other EU countries, whereas 80% of its exports finds its way within the EU, mainly to neighbouring countries. That means that only 20% of the Dutch agro-food exports is to non-EU markets. The USA is the Netherlands' most important non-EU market, accounting for 12.5% of all Dutch agro-food exports to non-EU markets. Dutch agro-food imports from the US are about 8% of all agro-food imports from non-EU countries. Although these percentages are fairly low, trade values add up to €2bn on both the export and import side, making trade relations with the US very relevant for the Dutch agro-food sector.

[3] Largely due to increased imports of oilseeds, meat, fruits and wood.

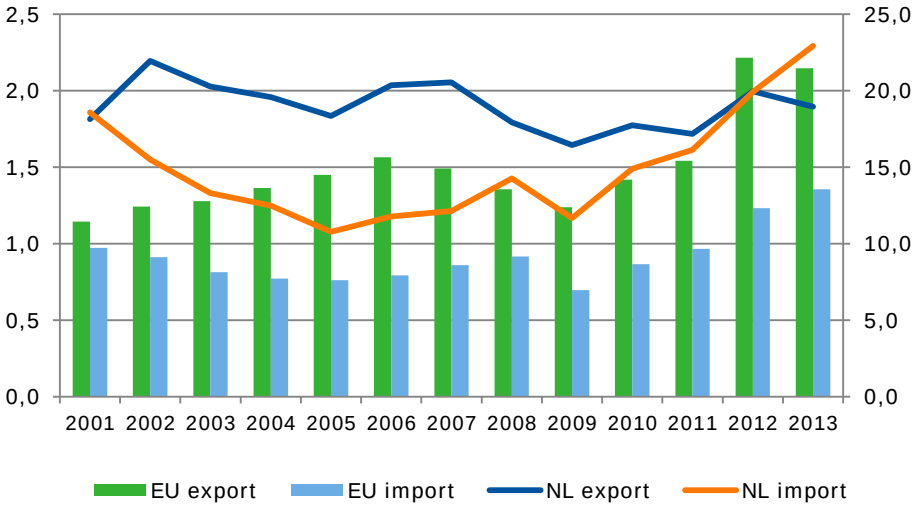


Figure 2.1 *Bilateral agricultural trade of the EU and the Netherlands with the USA (total agricultural exports and imports in billion euros; EU trade figures on the right axis, Dutch trade figures on the left axis).*

Structure of the bilateral agro-food trade flows

Figure 2.2 shows the structure of Dutch exports to and imports from the US. Netherlands' most important export product categories to the US are beverages, cocoa products and live trees and other plants. The dominance of beverages is striking, accounting for 35-40% of all agro-food export to the US during the last decade. This product group mainly consist of beer (in bottles), accounting for approximately 80% of total beverage exports to the US. Cocoa products are largely in the form of cocoa powder, while the category of live trees consists of bulbs (60%) and cut flowers (30%). The export of live animals (6% of the total export value) consists of horses, and in the vegeTable export category the capsicum/peppers is the major product. On the import side oilseeds (largely soybeans) and fresh fruits (mainly citrus fruits and 'other nuts', mainly pistachio) are the main products, followed by beverages (ethyl alcohol) and miscellaneous edible preparations (food preparations).

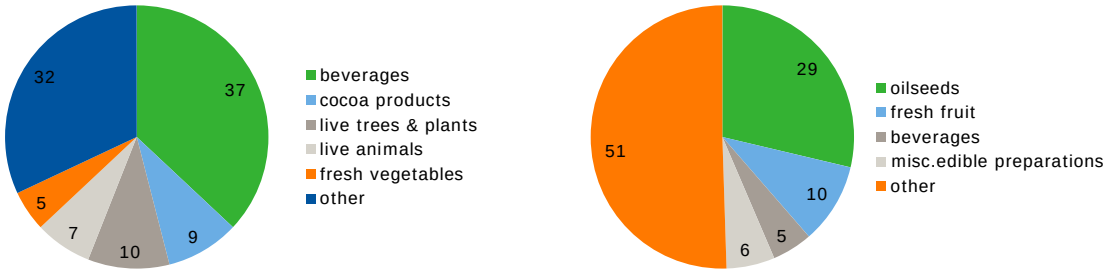


Figure 2.2 *Structure of the Dutch agro-food exports (left) to and imports (right) from the US, 2013. Source: Eurostat COMEXT.*

In contrast with the Netherlands' exports to other countries, dairy and meat play currently little or no role in the trade with the US, because of significant trade barriers on both sides. Therefore, in the context of this study we are especially interested in the possible effects of a reduction of trade barriers on bilateral trade flows of dairy and meat between the EU and the US. Consequently, we include dairy and meat products in our further analyses, next to product categories that are indicated as being important in current trade relations, like beverages, live trees & plants, fruit and vegetables and oilseeds. We continue in the next subsection with further spelling out the trade conditions in the bilateral relations providing an overall picture for all agricultural products. We then explore trade conditions for dairy and meat products in more detail in subsections 2.3 and 2.4.

2.2 Trade conditions in the bilateral trade relation between the EU and the US

2.2.1 Tariffs

Bilateral trade in agro-food products between the EU and the US is subject to WTO multilateral trading rules and agreements.

According to the WTO's tariff profiles, the average bound duty (this is the maximum duty allowed according to the WTO Uruguay Round Agreement on Agriculture) on agricultural products entering into the US is 4.7% ad valorem. Nearly 33% of US agricultural tariff lines are duty free already and an additional 43% are between zero and 5%. Thus, 76% of US agricultural tariff lines are at 5% or less. Tariff-rate quotas affect 4.5% of US agricultural tariff lines and 2.9% have special safeguard measures in place[4].

The EU seems more closed regarding agriculture than the US, as for the EU the average bound tariff on agricultural imports is 13.7% ad valorem. Approximately 32% of the EU's agricultural tariff lines are zero, and an additional 10% of tariff lines are 5% or less. Therefore, roughly 42% of the EU's agricultural tariff lines are at 5% or less. Tariff-rate quotas affect 11.3% of EU agricultural tariff lines and 23.9%.

In terms of its agricultural exports to the US, almost a quarter of all EU products exported enter the US duty-free. These products account for almost 50% of EU's total agricultural export value (in 2011) to the US. Vice-versa, US agricultural products imported duty-free by the EU are only 15% of all tariff lines, accounting for about 50% of the US export value to the Union.

The summarising overview of the tariff profile of both countries hides the complexities of import tariff structures applied by the EU and the US, which entail different measures applied at highly disaggregated product level. Table 2.1 provides more specific information on average applied tariffs actually imposed by the US and the EU, which are relevant for their bilateral agricultural trade. The Table shows the average tariff applied at 2-digit level (column 3 for the US,). Yet, the range of duties may vary among the products within the category. Column (4) indicates the maximum ad valorem duty in each of the product categories. On the US side, average import tariffs are relatively high for dairy products, oilseeds, prepared vegetables and fruits and tobacco. Other product groups have a relatively low average tariff level, but include tariff lines that are high. Examples for the US are in the meat product category, where fresh and frozen bovine meat imports face 26.4% import duty, whereas these imports also are subject to a specific tariff (a fixed amount per kg). The same hold for cheese (25% plus specific duty), dried vegetables (in HS07), certain fruits (in HS08), soybean oil (in HS 15) and groundnuts (in HS12 and in HS20).[5]

The EU imposes the highest average duties on fish, milling industry products, meat preparations, sugars and preparations of fruits and vegetables. Again, important is to note that in practically each product group there are tariff lines with particularly higher tariffs that the average of the group it belongs to. Next to that, the EU charges specific tariffs on many tariff lines in beef and poultry meat (186, see column 6 under 'EU applied tariffs' in Table 2.1), on dairy products, on specific fruits and vegetables, on rice, on milling grains and starch, on prepared meat, sugar, prepared fruit and vegetables and on beverages. Compared to the US, the EU charges specific tariffs on more tariff lines in all HS-2 digit classes mentioned except for the fruit and vegeTable category.

[4] See www.stat.wto.org/TariffProfiles/US_e.htm. Accessed April 2014.
[5] Tariff lines are publicly available at 8 digit product level, see www.tariffanalysis.wto.org. Accessed April 2014.

Table 2.1

US and EU applied ad valorem tariffs imposed on agricultural products, average at 2-digit level (2013 data).

	US applied tariffs						EU applied tariffs					
HS code description	Number of TL	Number of AV duties	Average of AV Duties	Maximum AV Duty	Duty Free TL (%)	Number of Non-AV Duty	Number of TL	Number of AV duties	Average of AV Duties	Maximum AV Duty	Duty Free TL (%)	Number of Non-AV Duty
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
01 Live animals	37	26	0.8	6.8	51.5	11	65	33	1.2	11.5	55.6	32
02 Meat	111	56	4.2	26.4	25.0	55	248	62	5.1	15.4	19.1	186
03 Fish	236	230	0.5	15	87.8	6	434	434	10.9	26	8.5	0
04 Dairy	258	125	12.7	25	0.1	133	172	11	5.8	17.3	5.7	161
05 Products of animal origin	21	20	0.4	5.1	77.3	1	20	20	0.1	5.1	98.3	0
06 Live trees etc.	31	23	3.6	7	24.0	8	55	55	7.1	12	13.3	0
07 Vegetables	186	91	8.7	29.8	7.9	95	122	94	8.5	15.2	14.4	28
08 Fruits	129	60	3.4	29.8	31.0	69	136	112	5.9	20.8	20.1	24
09 Coffee, tea etc.	57	48	0.3	6.4	85.0	9	50	50	2.3	12.5	68.2	0
10 Cereals	30	12	1.5	11.2	23.1	18	62	7	5.4	12.8	6.7	55
11 Milling industry	38	19	3.8	12.8	13.7	19	71	6	12.2	19.2	0.0	65
12 Oilseeds	67	39	13.1	163.8	51.4	28	74	71	1.2	8.3	73.1	3
13 Lacs, gums etc.	13	12	0.9	3.8	61.7	1	14	14	2.3	19.2	66.7	0
14 Veg. plainting mat.	11	9	1.1	4.4	58.0	2	5	5	0.0	0	100	0
15 Fats and oils	70	36	3.5	19.1	25.7	34	128	117	5.4	16	21.5	11
16 Meat prep.	114	105	3.1	35	48.5	9	96	77	17.6	26	2.4	19
17 Sugars etc.	70	32	6.2	12.2	2.0	38	44	3	11.4	13.4	0.0	41
18 Cocoa and prep.	78	44	3.3	10	38.1	34	27	7	6.1	9.6	18.2	20
19 Prep of cereals	70	52	5.5	17.5	37.1	18	51	2	10.7	12.8	0.0	49
20 Prep. Veg. & fruits	186	108	10.2	131.8	9.4	78	304	229	17.5	33.6	0.7	75
21 Misc. ed. Prep.	89	50	5.6	20	19.4	39	39	23	9.3	14.7	9.4	16
22 Beverages	73	39	1.8	17.5	38.4	34	303	58	3.9	32	41.9	245
23 Residues etc.	35	23	0.6	7.5	40.7	12	64	32	0.8	12	68.8	32
24 Tobacco	57	27	204.2	350	16.4	30	21	10	44.7	74.9	0.0	11

Notes:

1) Number of bound tariff lines in the HS code;

2) Number of national tariff lines in the HS code with ad valorem duty;

3) Average of all ad valorem duties in the HS code. Ad valorem equivalents for non-ad valorem duties are not included;

4) Maximum ad valorem duty in the HS code;

5) Percentage of duty free bound national tariff lines in the HS code;

6) Number of tariff lines in the HS code with non-ad valorem duty. Source: WTO Tariff download facility at www.tariffdata.wto.org.

In short, protection includes much more than only ad valorem tariffs: non-ad valorem, specific duties are significant for many products. By looking at averages only, one easily underestimates the impact tariff elimination may have on trade flows at a more detailed level. Indeed, behind these averages, ad valorem duties for detailed products stretch over a wide range, and hence their elimination would have a different impact on their import price and a different impact on market access. Moreover, many products are subject to specific duties which can be significant in terms of share of the ultimate import price.[6] This makes assessments of liberalisation impacts on aggregated product levels indicative at the most.

Although the argument above indicates working with averages of ad valorem tariffs is inaccurate for our case, a simple comparison of average ad valorem duties and the ranges of duties within each

6 Specific tariffs are converted into ad valorem tariffs which means converting specific tariffs into an ad valorem equivalent by converting an absolute tax/duty per tonne or litre into a percentage of the value of the imported commodity. Specific duties are compared with unit values of imports within each tariff category. This is a common approach but prone to bias, among others due to which unit value is taken (a global or country specific one) and aggregation methods. See http://capreform.eu/will-the-right-tariff-average-stand-up/ for a discussion. Accessed April 2014.

group demonstrates that, across the board, the US applies lower protection rates than the EU. Compared to the EU, the US seems more closed for only dairy, vegetables, oilseeds and tobacco. For all other groups, the EU is charging (much) higher duties on average than the US does. At first sight, this would indicate that the US would benefit more than the EU from a tariff reduction scenario.

2.2.2 SPS and other non-tariff measures affecting trade

The above presented overview of tariffs masks the complexity of access into each other's market as there are numerous non-tariff measures (NTMs) that affect trade, such as sanitary and phytosanitaire (SPS) measures and Technical Barriers to Trade (TBT) measures, next to 'non-technical' NTMs such as licenses and import quota.[7] Below are some of the major trade affecting measures that are classified as SPS measures, which are relevant to better understand the bilateral trade relations between the EU and the US. The next section will address US import quota regime for EU dairy products separately, as a typical 'non-technical' NTM that affects trade with the US for a product group that is of major importance to the Dutch agribusiness.

In the SPS and TBT area, both sides complain about the numerous regulatory hurdles exporters face for their specific products when entering the partner's market. The USTR 2013 report on SPS measures provides detailed insights in the barriers to trade that arise from differences in regulations in the bilateral relation between the US and the EU. For instance, EU policies restrict the import and use of US agricultural commodities derived from agricultural biotechnology, whereas under the implementation of EU's biotechnology regulation, EU member states are allowed to adopt own national legislation. The latter has further implications for US genetically engineered products as in many cases national legislation is used to further justify bans on cultivating GMO crops in a country's territory. In addition, the EU does not accept US beef raised with growth-promoting hormones, and only allows (a duty free import quota of 48,200 tonnes) high-quality beef from cattle that has not been raised with growth-promoting hormones.

Furthermore, the EU does not approve pathogene reduction treatments used in US beef and poultry production, and bans pork produced with ractomine, a feed additive that promotes feed efficiency. Under requirements for dairy imports, the EU limits the number of somatic cells (SCC) in raw milk, where US producers are allowed to sell raw milk in the US with higher SCC levels than the EU does. Besides SPS and TBT measures, exports of several products are subject to tariff rate quota, administration details, mandates related to certificate dating, and bans on the use of generic food names. In the case of wines and spirits, for instance, US exporters complain that EU labelling (particularly geographical indicators (GIs)) and packaging regulations, coupled with EU derogations on US wine-making practice, restrict the free flow and trade of these products.

The EU has a similar list of measures for which the EU claims that these obstruct exports to the US. For instance, the US imposes cross state retailing and distribution red tape restrictions on EU alcoholic beverages products. The US also imposes cumbersome administrative regulations on EU producers such as the Grade A dairy safety document for pasteurised milk ordinance'(PMO) which is, according to a survey conducted by ECORYS (2009), of a highly prohibitive nature. And further with respect to the animal sector, live ruminants, beef and derived products from the EU are banned from US import since 1998 due to the outbreak of BSE in the EU in the 1990s. This ban is, however, not in line with the international standards of the World Organisation for Animal Health (OIE).

There are many more measures affecting trade in food and beverages between the EU and the US than mentioned above. Ecorys (2009) presents a comprehensive list of non-tariff measures that affect trade flows from both sides, and estimates that EU restrictions on cross-border trade yield a significant 56.8 percent additional cost for food and beverages trade and US restrictions add an even larger 73.3 percent. With total bilateral trade of roughly €14.6bn (USD19bn) in 2007, reducing these costs will achieve potential welfare gains of €10.4bn (USD13.5bn) per year based on multiplying trade levels by

[7] UNCTAD provides a comprehensive classification of NTMs that distinguishes up to 14 types, see UNCTAD 2012.

trade costs (ECORYS, 2009:86). CEPR concludes that compared to other sectors NTMs are highest in the food and beverages sector. Consequently, reducing the trade impediments caused by NTMs could result in significant trade and welfare gains.

2.3 Current US import conditions for dairy products from the EU and impacts on trade

As indicated above NTMs can have many different forms, and the implementation of a measure can be complex and detailed. This section describes US' import policy on dairy products in more detail in order to show how it may affect the Netherlands' and other EU member states' dairy exports to the US. This section also points at the difficulties estimating the benefits of an elimination of a non-tariff measure.

Features of US dairy import policy
US imports of certain dairy products are subject to annual import quotas administered by the Department of Agriculture and may be imported at the in-quota duty rate only under import licenses issued by that Department. Dairy products subject to licensing are as follows:

- American-type cheese
- Blue-mold cheese
- Butter and fresh or sour cream
- Butter substitutes
- Cheddar cheese (except Canadian cheddar)
- Cheeses and substitutes for cheese
- Dried milk
- Dried milk or dried cream
- Dried milk, dried cream, or dried whey (up to 224,981 kilograms)
- Edam and gouda cheese
- Italian-type cheese
- Swiss or Emmentaler cheese

The above products may be imported at the over-quota duty rate without an import license. US based importers and manufacturers can qualify for a license to import EU dairy cheese. EU exporters may apply for licenses to export non-cheese dairy products, such as butter, but not for licenses to export cheese or cheese products (USDA, FAS Factsheet The dairy import licensing program). The Table below shows the allocation of tariff-free import quota on cheese to the EU(25). The amount is approximately 77,000 tonnes in 2012. Cheese imports from Argentina, New Zealand, Australia, Canada, Chile and 'other countries' are subject to the TRQ system too (Schneff, 2013). In Table 2.2 below the volumes under TRQs allocated to other countries than the EU are summed up to one aggregate, and amount to 48,617 tonnes in 2012.

Unfortunately, UNCOMTRADE does not report the actual US imports from these non-EU countries in more detail than at 6 digit levels. UNCOMTRADE data show that for recent years actual imports from non-EU countries have been less than the TRQ volumes granted. Hence, the EU is the main foreign supplier of cheese at the US market. EU's actual exports of cheese are an estimated 105,000 tonnes (see the 4th column in Table 2.2). [8]

8 To put the import flow in perspective: U.S. per capita consumption of natural cheese amounted 33.50 pounds (15.2 kg) in 2011 (www.idfa.org), With 315 million inhabitants, this means that the overall US cheese market is about 4.8m tonnes. Imports from the EU are about 2% of US cheese consumption.

Table 2.2

USA TRQs on cheese (0406) with agriculture licensing, allocated to the EC 25, and actual US imports of EU cheese, data 2012 (in tonnes).

Type of cheese	US TRQ for EU25	US TRQ for other suppliers	Actual US import volume from the EU (average 2010-2012)	HS codes of products included: 0406 with extended numbers
Cheese and substitutes for cheese	32,271	21,319	??	??
Swiss or Emmentaler	28,825	4,104	3,490	3010,9013,9015,9017
Italian type	5,407	7,584	23,790	4050,9061,9063,9073,9075
Edam and Gouda	6,389	427	5,971	9023,9078
Cheese American type	354	3,169	??	??
Blue mold cheese	2,829	82	3,722	4090
Cheddar cheese and cheese substitutes	1,313	11,922	3,546	9021
Total	77,388	48,617	105,000*	

Source: US Customs and Border protection website (CBP), CBP Memoranda: QBT-11-447 up to QBT-11-555. CBT website visited on 31 October 2013.

Notes: * = total cheese imports, not only the types mentioned in the table.

Consequences of US' cheese import policy on EU exports of cheese to the US

The Table above illustrates that for some types of cheese subject to a TRQ, export from the EU is exceeding the TRQ, implying that the import quotas are not binding: US imports of Italian type, Blue mold and Cheddar cheese from the EU are over quota. That means that the over-quota tariffs are not prohibitive: importers of these types of cheese are prepared to pay the over-quota tariff in order to sell these products on the US market because these cheeses can be sold on the domestic market at import prices plus full tariffs (see Text box 'How does a TRQ work?'; the situation described reflects situation 4). For Swiss or Emmentaler types of cheese as well as for Edam and Gouda cheese, imports are less than the TRQ. (This situation reflects regime 2 in the Figure presented in the Text box 'How does a TRQ work?'). Generally, in case of a non-binding quota, an abolishment of that quota would not lead to higher imports. Indeed, demand is already higher than the quota and buyers (traders/consumers) are prepared to pay the price including the out-of-quota tariff rate for the full amount they demand. (see situation 4 in the Text box below).

Table 2.3 below presents EU's main exporting member states of cheese to the US. Each exporter dominates EU exports to the US for one, two or three types of cheese. Note that for each type of cheese the quantity of cheese exported to the US is relatively small compared to the EU country's total export of that type of cheese to the World (indicating that the US is a relatively small market), yet that the price per tonne is (significantly) higher for this cheese exported to the US (all except for bleu-veined cheese from Denmark), indicating that the US is a relatively attractive market.

Table 2.3

Major EU exporters of cheese to the USA and to the World, their major types of cheese exported and export prices (annual averages 2010-2012).

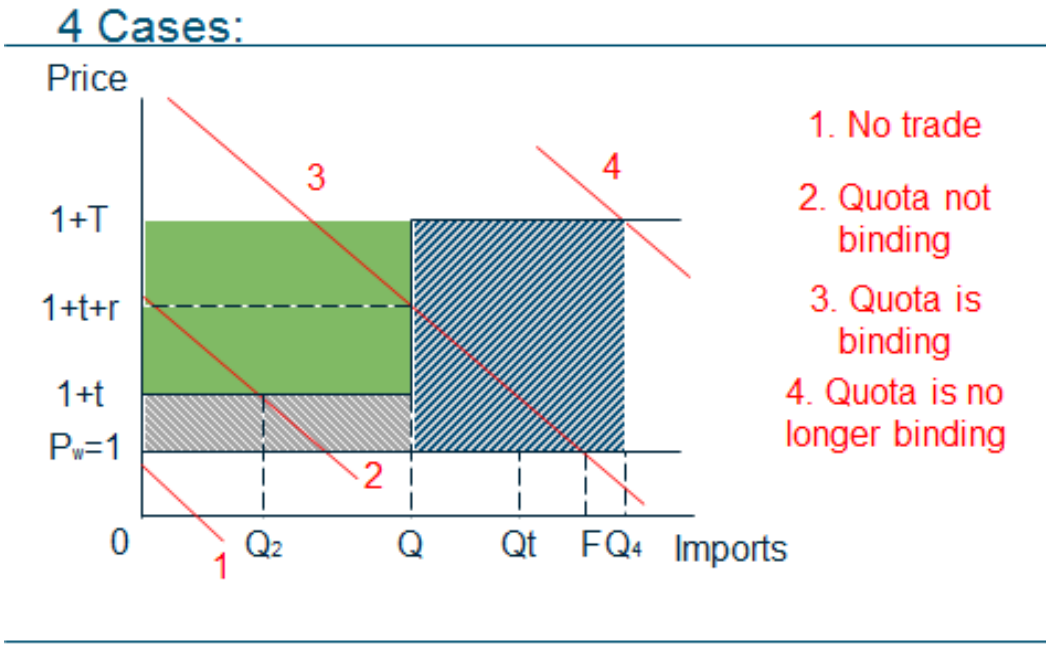
Country	Cheese type	Exported to the USA			Exported to World		
		Value (m euro)	quantity (in 1,000 tonnes)	euro per tonne [2]	Value (m euro)	quantity (in 1,000 tonnes)	Euro per tonne[2]
Denmark (43.7)[1]	04064090 - Blue-veined cheese	11.6	2.2	5,278	107.6	17.5	6,154
	04069076 - Danbo, fontal, etc.	23.7	4.9	4,881	112.7	25.1	4,495
France (90.6)[1]	04069084 - Brie	25.0	4.2	5,980	303.3	68.0	4,456
	04069088 - Cheese, of a fat content by weight of =< 40%	33.2	4.4	7,558	517.8	85.0	6,106
	04069099 - Cheese of a fat content by weight of > 40% n.e.s.	25.5	4.1	6,298	154.9	27.5	5,618
Italy (227.6)[1]	04069061 - Grana padano, parmigiano reggiano	115.5	10.7	10,865	728.0	70.6	10,314
	04069063 - Fiore sardo, pecorino	3.2	0.4	7,933	55.1	8.3	6,660
Netherlands (58)[1]	04069078 - Gouda	21.5	4.4	4,911	849.9	227.7	3,766
	04069087 - Cheese, of a fat content by weight of =< 40%	12.6	2.7	4,649	566.9	125.3	4,532
Spain (41.4)[1]	04069087 - Cheese, of a fat content by weight of =< 40%	36.3	4.1	8,885	75.9	10.0	7,632
UK (36)[1]	04069021 - Cheddar	14.6	2.2	6,655	165.5	40.8	4,053
	04069081 - Cantal, cheshire, etc.	7.9	1.0	7,498	14.1	2.2	6,264

Source: Eurostat, COMEXT.

Notes: 1) Total cheese exports to US, m euro; 2) unit value.

How does a TRQ work?

A TRQ combines a tariff and a quota to achieve a desired level of import protection, with in quota imports subject to a lower, sometimes zero, tariff and over quota imports being charged a higher, often prohibitive, tariff. The Figure below illustrates how a TRQ works. Exporters face a lower in-quota tariff when import demand is below the quota level (situation 2 in the Figure below, with a tariff 1+t). When import demand is stronger but the out-of-quota tariff is prohibitive, the TRQ is similar to the quota (situation 3). Quota rents can accrue to the importing or the exporting firms or both depending on the quota administration. When import demand is sufficiently strong, the out-of-quota tariff applies and quota rents are collected on the full difference between the in-quota and the out-of-quota tariff inclusive price times the quota level (situation 4). However, imports up to the quota level face a much lower tariff rate.



Clarification of the situations pictured in the graph above:

1. Domestic excess demand for imports is insufficient to sustain imports at world price, even without in quota tariffs, so imports are zero;

2. Import demand at Q2, but not great enough for quota to bind: equivalent to tariff of t, with revenue as depicted by grey shaded area;

3. Quota is binding, import demand at Q:
   - Without quota and tariff, imports would be at F (free trade). Without quota but with tariffs applied, imports would be at Qt
   - Deadweight loss compared to normal tariff is illustrated by the blue triangle
   - Tariff revenues increase as shown
   - Qt units must be rationed to Q. How? Depends on quota administration. This is core essence of TRQ! If you get the right to sell to this market, what would be the value to you? That is shown by the difference between what price you could sell it for on the domestic market (1+t+r) and price of imports (1+t), as represented by the green rectangle

4. Quota is no longer binding: imports are over quota, at Q4. First Q imports at low tariff t (with revenue as shown), then Q4-Q imports at high tariff T (with revenue as shown by rectangle in bleu), rents increase as shown by green rectangle.

2.4 EU import conditions for US meat products and impacts on trade

The EU and the US have been involved in several disputes on trade in meat products, with far-reaching consequences for their bilateral trade in meat.

One disagreement is on beef hormones: the dispute centres around the US practice of applying growth promoters in the latter stages of feeding beef cattle in order to accelerate growth and improve feeding efficiency. There has never been internationally accepted evidence that this practise poses a demonstrable risk to the health of the consumer. However, the EU banned a number of hormones used in cattle farming, claiming health and food safety risks. In 2009, the WTO panel decisions on the dispute concluded that the EU import prohibition was not based on a proper risk assessment, to which the EU gave notice of appeal. Next, the US and the EU agreed that the US would suspend retaliation tariffs in return for EU duty-free quota for high-quality US beef not treated with hormones. This agreement was valid up to August 2013 and now awaits for an extension or a permanent solution, otherwise import quotas disappear and tariffs will be re-imposed[9].

Another issue is the EU prohibition of the use of the growth promoter ractopamine which is used in the US and other major meat exporting countries to improve the efficiency of beef and pork production. In 2012 ractopamine was approved safe (within the indicated maximum residues levels) by the Codex Alimentarius commission, which makes it an international standard as defined by the WTO. However, also in this case it appears that the EU has quite a different attitude towards the use of pathogen reduction treatments (PRT) during the slaughter process for meats than the US - until now the EU did not approve the use of lactic acid for beef production.

The EU-US poultry meat dispute is about the fact that the EU does not allow the application of antimicrobial rinses (AMR, a kind of PRT) in the processing of poultry meat in the slaughter house. Chlorinated water may be the best-known example of such rinses, which are used for virtually all poultry meat production in the US.

The result of these trade barriers is that trade in meat (beef, pork and poultry) is relatively low. For beef, trade has been almost negligible in the years up to 2006. The US bans beef from the EU since of 1999 BSE), while the EU accepts only US beef raised without growth-promoting hormones for which it has granted a duty-free TRQ of 48,200 tonnes. Table 2.4 shows the resulting trade in meat products between the two: the EU largely exports meat of swine (HS 0203) and edible offal (HS 0210), whereas imports are mainly beef. The volume of EU beef imports is only one third of the duty-free TRQ granted to the US. Other meat imports show very small figures, both for other HS02 and for HS 16 (preparations of meat) codes.

[9] See for example http://www.globalmeatnews.com/Industry-Markets/EU-and-US-try-to-resolve-beef-hormone-dispute. Accessed April 2014.

Table 2.4.

EU export to and import from the US of meat products, 2012 (value in 1,000 euros, quantity in tonnes, source: EU COMEXT).

	Export		Import	
	Value	tonne	Value	tonne
0201 - Meat of bovine animals, fresh or chilled	14		155,849	15,904
0202 - Meat of bovine animals, frozen	1,033	100	1,802	275
0203 - Meat of swine, fresh, chilled or frozen	155,875	42,994	10,444	2,110
0204 - Meat of sheep or goats, fresh, chilled or frozen	67	5		
0205 - Meat of horses, asses, etc., fresh, chilled or frozen	1		7,389	2,738
0206 - Edible offal of bovine animals, etc. fresh, chilled or frozen	3,376	2,368		
0207 - Meat and edible offal of fowls etc., fresh, chilled or frozen	1,010	1,094	755	245
0208 - Meat and edible offal of rabbits, etc. fresh, chilled or frozen	147	34	286	38
0209 - Pig fat, free of lean meat and poultry fat not rendered				
0210 - Meat and edible offal, salted, in brine, dried or smoked; edible flours and meals of meat or meat offal	73,351	5,885	33	4
1601 - Sausages and similar products, of meat, offal or blood; food preparations based on these products	10,999	2,091	1,467	326
1602 - Prepared or preserved meat, offal or blood (excl. sausages and similar products, and meat extracts and juices)	49,363	12,637	593	79
1603 - Extracts and juices of meat, fish or crustaceans, molluscs and other aquatic invertebrates	801	239	116	1
Totals	296,039		178,734	

Table 2.5. below presents the Dutch export and import of meat products to and from the US. Data indicate that about half of the EU's total imports of fresh and chilled beef (€155m) is imported in the Netherlands: about 8,000 tonnes valued at €75.9m in 2012. Some swine meat imports exist; this is also the main Dutch export product in the meat category to the US, a modest €13m in 2012, yet carefully increasing since 2007. Exports of meat preparations (HS16) are pretty low, whereas Dutch imports of this category from the US are non-existing.

Table 2.5.

Dutch export to and import from the US of meat products, 2012 (value in 1,000 euro, quantity in tonnes, source: EU COMEXT).

	Export		Import	
4-digit	Value	tonne	Value	tonne
0201 - Meat of bovine animals, fresh or chilled			75,925	7,992
0202 - Meat of bovine animals, frozen			361	51
0203 - Meat of swine, fresh, chilled or frozen	13,206	3,623	2,765	482
0206 - Edible offal of bovine animals, etc., fresh, chilled or frozen	55	50		
0207 - Meat and edible offal of fowls etc., fresh, chilled or frozen	30	27		
0208 - Meat and edible offal of rabbits, etc., fresh, chilled or frozen			286	38
0209 - Pig fat, free of lean meat and poultry fat not rendered				
0210 - Meat and edible offal, salted, in brine, dried or smoked; edible flours and meals of meat or meat offal				
1601 - Sausages and similar products, of meat, offal or blood; food preparations based on these products	343	67		
1602 - Prepared or preserved meat, offal or blood (excl. sausages and similar products, and meat extracts and juices)	169	43		
1603 - Extracts and juices of meat, fish or crustaceans, molluscs and other aquatic invertebrates	452	193		
Totals	14,255		79,337	

3 Competitiveness of the Dutch food industry

Key findings and observations:

- Compared to the composition of the EU food industry, the Dutch oils & fats industry, the dairy, other food products and feed industry are relatively large. The Dutch meat industry is relatively small, although it has a significant share in the Dutch food industry turnover. In the US, meat processing and grain milling are relatively large parts of the food industry and impacts of trade liberalisation on these industries have a high weight in the overall effects for the food industry.
- The Dutch food processing industry has a relatively strong competitive position compared to benchmark countries. The US food industry is on the bottom end of the performance spectrum;
- The overall competitive position of the Dutch meat processing industry is below the average of the benchmark countries. The same holds for the US meat industry. Brazil is by far the best performing country. The Dutch meat industry is not performing well on trade indicators: it lost export share on the world market and imports are increasing;
- The Dutch dairy processing industry has the strongest competitive position of all benchmark countries, with the US dairy industry close to the Dutch position. The Dutch dairy industry's positive evaluation is largely due to its high score on economic performance indicators (value added and labour productivity), whereas the Dutch industry lost export market shares;
- In order to compete with cheap meat from Brazil and the US (in case of trade liberalisation) literature recommends the Dutch industry should focus on quality and fresh meat segments, whereas the Dutch dairy industry should be able to benefit from a further opening up of markets.

3.1 Introduction

This chapter addresses the question of the current level of competitiveness of the Dutch agro-food industries compared to those in the US and other competing countries on the US market. The objective is to provide an assessment of the past competitive position of the Dutch and the US agro-food industries, with a focus on the main agro-food sectors from the Dutch perspective, specifically on the dairy and meat processing industry. The analysis will focus on the following indicators: 1) growth in real value added; 2) growth of labour productivity; 3) relative trade advantage, and 4) growth in the export share on the world market. The selected subsectors of the food industries will be benchmarked against subsectors in Australia, Brazil, Canada, and, next to The Netherlands, against selected EU countries France, Germany, Italy, Ireland, Spain and the UK. These countries are chosen based on their size of the food industry (>5% of EU food industry total) and important trade partner with the US (>2% of US agro-food imports or exports) (see Appendix 1 for further clarification). The methodology used is broadly based on the one used in Wijnands et al. (2007) on the competitiveness of the European food industry.

For presentation purposes, the indicators are standardized in Z-scores. These have the same mean (0) and the same variance (1). Z-scores can be used to compare observations from different distributions (Abdi, 2007). In addition, standardized indicators can be visually presented in one overview. Furthermore, the mean of all indicator values can be used as a measure for the overall competitiveness of a country. We assume that the weight of each indicator is equal. It should be borne in mind that the results of our analysis depict relative values. The standard scores depend on the specific countries taken into account. If the benchmark countries change, the position of a specific country will change as well.

The structure of this chapter is as follows. Section 3.2 provides further details on the data used, whereas Section 3.3 to 3.6 presents and discusses results of the quantitative analyses for first the whole food industry, then the meat processing industry with further detailed analysis of the poultry

processing industry, and for the dairy industry respectively. The quantitative subsections on poultry meat and dairy industries are complemented by literature reviews for further interpretation. Section 3.6 concludes.

3.2 Data for international economic competitiveness indicators

3.2.1 Indicators

Following Wijnands et al. (2007) we select the following indicators to quantify the competitiveness of industry (see Appendix 2 for a more detailed clarification of competitiveness indicators used in this study).

- Trade related indicators:
  - Growth of the export share on the world market of a specific subsector of the food industry of the food industry as whole. The market share of one country is compare with the total world export of that (sub-) industry. This performance indicator reflects the outcome of the competitive process.

  - The difference of the Relative Trade Advantage (RTA) index between 2 periods. The RTA is defined by Scott and Vollrath (1992) as the difference between the Relative Export Advantage (RXA) and the Relative Import Advantage index (RMA). A positive RTA indicates a competitive advantage: the exports exceed the imports. Negative values signify competitive disadvantages. In the report also the RXA and RMA will be presented, indicated whether the advantage is the result of higher export or lower imports.
    The flaw of the RTA is that re-export might suggest high competitiveness of one industry. These transit activities might be influenced by a good performance of another sector i.e. logistics or by beneficial natural and infrastructural conditions like sea or airports.
- Economic performance measures:
  - Annual growth of the value added of a specific industry in the total food industry. This reflects the competition for product factors between different industries within a country;
  - Annual growth of the value added per employers as indicator for labour productivity. This affects the unit labour costs and in this way the relative prices.
  - Annual growth of value added reflects the performance of that specific (sub-)industry.

The methodology is based on annual growth percentages of the indicators, except for the trade indicators. In the latter we use the difference of the indicator outcomes between 2 periods. For instance, the market share in 2011 minus the market share in 2000. In Wijnands et al. (2007) raw materials as well as processed products are included in assessing the competitiveness of the food industry. Trade in raw material is a determinant of the competitiveness of the primary sector, while processed products are linked to the processing industry. This study will distinguish between processed and raw materials. The UNComtrade product codes are linked to the NACE industry codes. The revision envisages selecting only processed products from the trade database for assessing the food industry's competitiveness for the 'trade' indicators.

3.2.2 Data

The UNComtrade provides the international trade data. These data are used for the period 1995 until 2012. To mitigate annual fluctuation in trade values, three yearly averages have been taken for calculating the export shares and Balassa Indices. The export values of the countries are used for benchmarking purposes, except for the Netherlands. The trade data are based on the customs registrations of individual countries. The EU-27 is an aggregate of individual countries and therefore includes trade between these individual EU countries, for example between the Netherlands and Germany. For each individual country, e.g. the Netherlands, all exports are included, as well as the exports to other EU member states.

Next to the US, non-EU benchmark countries have been selected based on the relevance of these countries for the export market of specific subsectors. This selection indicator is in line with the international economics approach we apply, in which export performance is a main indicator. Australia, Brazil, and Canada are competing on the world market in at least four subsectors. They are included in the analysis and serve as benchmark countries. No other countries are included, even if they were relevant for a few subsectors, such as New Zealand for dairy, Turkey for processed fruit and vegetables or Argentina, Indonesia and Malaysia for fats and oils.

A consistent database with publicly available data regarding industry performance has been compiled for this study. Main data sources are official statistics. Eurostat (Structural Business Statistics) provided the industry data for the EU countries. This database covers the period from 1999 until 2011 for the EU-27 countries. The new member states that joined the EU in 2004 are represented in the results too. Comparable data have been retrieved for the selected non-EU-countries, namely from the U.S. Census Bureau (1997-2013), Ausstat (Australia, 2001-2013), IBGE (Brazil, 1999-2013), and IC (Canada, 1997-2013). The study's main problem concerning the available data has been the fact that some information was not available and some possibly unreliable. This problem could in most cases be solved by using the nearest alternative year.

Table 3.1. presents the breakdown of the turnover of the EU, the US and the Dutch food industry in order to show the importance of its branches in terms of turn-over. The General Industrial Classification of Economic Activities (abbreviation NACE) within the European Community defines the industries. The NACE code DA15 and sub-classifications are used. For the US and other countries comparable classifications have been used such as the North American Industry Classification System (NAICS).

Table 3.1

Turnover of food industry groups according to the NACE classification (average 2009-2011, in bn euro).

NACE	Description	Netherlands		EU27		USA	
		Turnover	% of total	Turnover	% of total	Turnover	% of total
C101	Meat products	8.8	14.7	192.0	20.1	130.2	23.1
C102	Fish	0.8	1.3	22.4	2.3	7.6	1.4
C103	Fruit and vegetables	4.6	7.7	58.5	6.1	47.0	8.3
C104	Oils and fats	6.7	11.2	41.7	4.4	10.7	1.9
C105	Dairy products	9.7	16.3	126.9	13.3	69.6	12.4
C106	Grain mill and starches	2.0	3.4	40.2	4.2	64.1	11.4
C107	Bakery/ cereal products	4.4	7.4	108.0	11.3	43.6	7.7
C108	Other food products	11.4	19.2	157.6	16.5	84.9	15.1
C109	Prepared animal feeds	6.5	10.9	66.8	7.0	37.1	6.6
C110	Beverages	4.7	7.9	139.5	14.6	68.5	12.2
C101 - C110	Total Food & Beverages	59.5	100.0	953.7	100.0	563.5	100.0

Note: Tobacco, although included in agricultural trade figures presented in chapter 2, are included in C12 respectively, hence not under the heading 'manufacture of food products & beverages'.

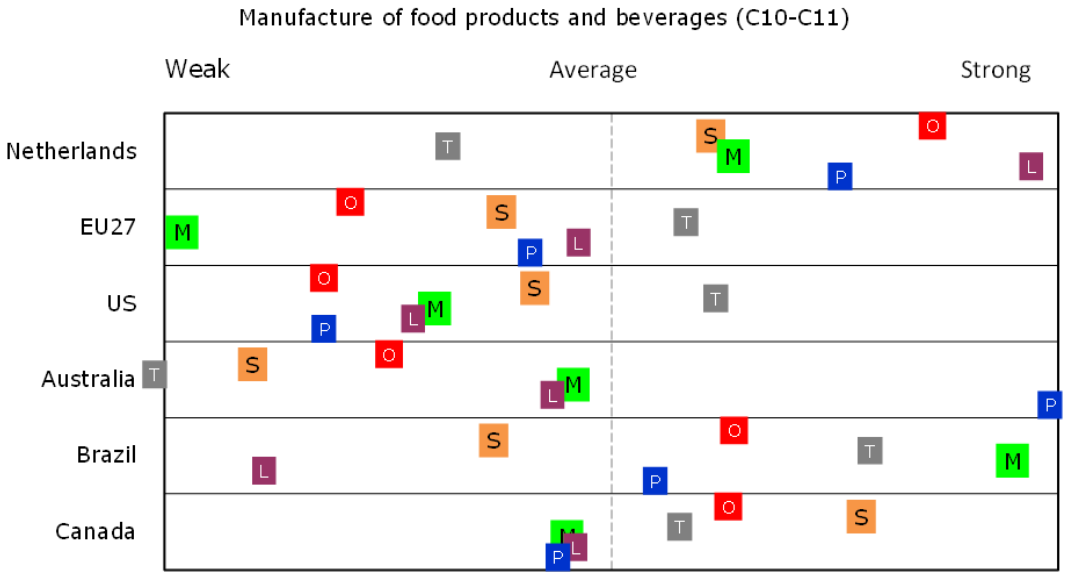
The breakdown of industries as presented in Table 3.1 shows that, compared to the composition of the EU and USA food industry, the vegeTable and animal oils & fats industry, the dairy industry and the prepared animal feed industry are relatively large in the Netherlands, whereas the meat industry is relatively small (although it has a significant share in the Dutch food industry production value).
In the following subsections we will report on the competitiveness of the Dutch food industry overall, and on the overall meat processing, poultry meat and dairy industry in particular. For the sake of space, we have chosen to present the outcomes for the Netherlands, the EU27 and the non-EU benchmark countries in the main text; graphical overviews that include all selected EU countries are presented in Appendix 4 and 5. A summarising key finding on the performance of the other EU countries is included in each of the following sections.

3.3 Competitiveness of the Dutch food industry

3.3.1 Key findings

Key findings of our quantitative analysis showing the competitiveness of the food industry according to the five indicators discussed in Section 3.2 are presented in Figure 3.1. This overview shows that:

- The overall competitive position (O) of the Dutch food processing industry is stronger than the food industry's position in all benchmark countries. The US food industry shows a low score on all indicators except for the relative trade advantage indicator RTA (T) and is on the bottom end of the performance spectrum compared to benchmark countries. Also the Australian food & beverage industry is weak. Brazil and Canada show a mixed set of scores on the selected indicators resulting in an overall positive evaluation of its competitive position.
- The overall strong position of the Dutch food industry is the result of robust growth of all indicators except on the Relative Trade Advantage indicator RTA (T). The latter's weak position is due to increased imports over the years analysed. The performance of the EU-27 indicates an almost completely inverse development: the Dutch strengths are the EU weaknesses and vice versa. The EU saw its world market share (M) declining.
- Other EU countries included in the selection perform well, except the UK and Germany (see Appendix 4, Figure 1, for a graphical summary of the indicators for the other selected EU countries).



Legend:
- O Overall competitiveness
- S Annual growth of the share of the food industry in the added value in manufacture industry (2001-2011); US (2002-2011) & Brazil (1999 -2011)
- T Difference RTA indicator (2000 - 2012)
- M Difference world market share 2011 minus 2000
- L Annual growth rate labour productivity (2001-2011); US (2002-2011) & Brazil (2005-2011)
- P Annual growth rate real added value (2001-2011); US (2002-2011) & Brazil (1999-2011)

Figure 3.1 *Competitiveness of the food & beverage processing industry (NACE C10&C11).*

3.3.2 Structure and economic indicators of the food industry

Turnover of the Dutch food industry has grown substantially over the last decade, with the number of persons employed decreasing over time. This indicates a significant increase of the turnover per employee. Dutch food enterprises are smaller than those in the US, Brazil and Ireland on average yet much bigger in terms of average turnover than companies in other EU countries. Generally economies of scale are important in the food processing industry as costs per unit produced decrease

when production capacity expands (e.g. Ollinger et al., 2000). This means a price advantage in competition.

Table 3.2

Structure of the food and beverage processing industry (NACE C10+ C11) in 2011.

	Turnover 2011 (bn euro)	Growth turnover 2001-2011 (%)	Number of enterprises 2011	Turnover per enterprise 2011	Number of persons employed 2011 (1,000)	Growth number employees 2001-2011 (%)
Netherlands	62.9	3.7	4,477	14.1	125	-2.5
EU-27	1016.2	2.6	286,925	3.5	4,443	-0.4
USA	559.5	0.1	24,979	22.4	1,484	-1.3
Australia	63.0	16.4	13,015	4.8	237	13.5
Brazil	176.9	12.3	4,713	37.5	1,560	6.1
Canada	64.1	2.6	7,728	8.3	258	-0.1
Germany	180.4	2.4	32,204	5.6	888	0.8
Spain	101.5	3.6	27,722	3.7	366	-0.1
France	168.9	1.9	59,405	2.8	604	-0.4
Ireland	25.9	3.0	671	38.6	39	-2.5
Italy	124.3	2.5	58,074	2.1	433	0.0
UK	105.8	0.0	7,492	14.1	376	-3.0

[a] Growth rates: US 2002-2010, Australia 2003-2011, Brazil1999-2011.

Talking about average sizes is, however, not very relevant. The distribution of the firm sizes in the food industry is in fact very skewed: the largest 8.4% Dutch firms (firms with more than 50 employees) count 85% of the turnover, the 1.5% very largest (above 250 employees) count 49%. For the USA a similar distribution can be observed: the 8.6% of the US firms that have more than 100 employees count 87% of the turnover and the 2.5% very large (above 500 employees) count 70%. The Figure below shows that other EU countries have an almost similar pattern: roughly 10% of the firms count for 90% of the turnover. In South-European countries the smaller firms (with less than 50 employees) have a slightly higher share of the industry's turnover. Furthermore all European food subsectors show such skewedness. For this reason, we will not discuss further the size and turnover distribution for the food industry subsectors. The conclusion is that SMEs are important in numbers but not in terms of turnover.

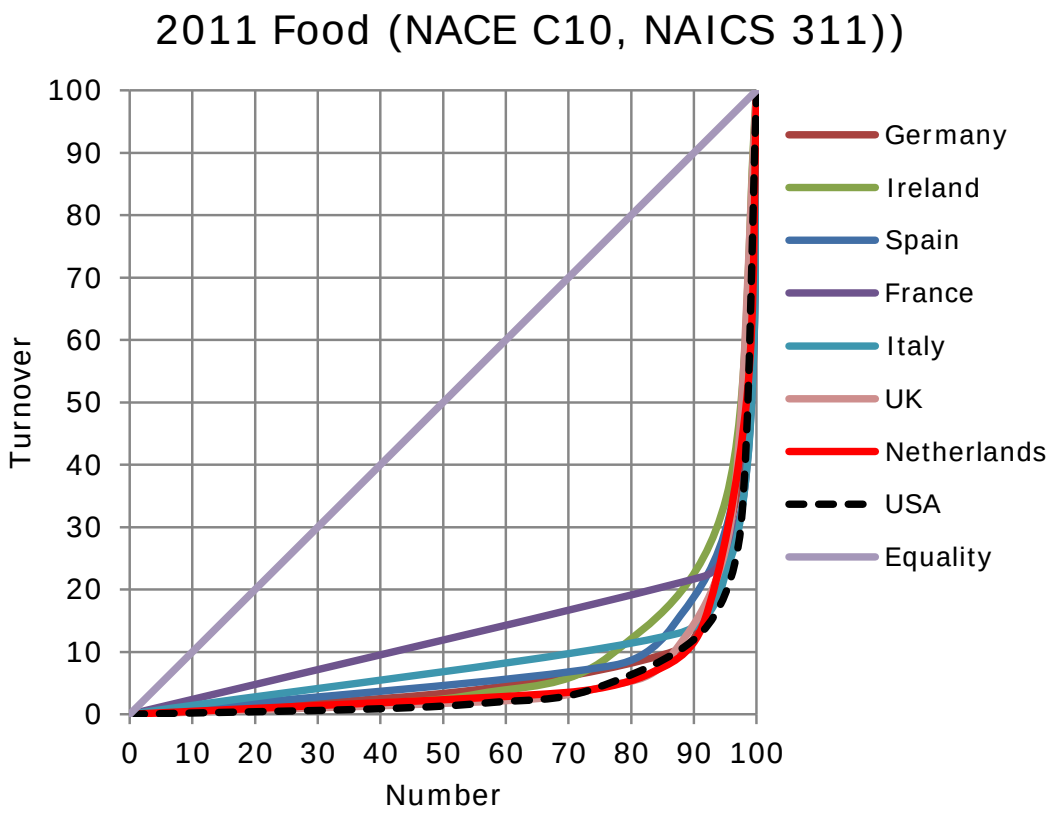


Figure 3.2 *Cumulative percentage distribution (Lorentz curve) of the number of enterprises and turnover.*
Source: Based on size distribution classified on number of employees Eurostat and US census bureau. (USA payroll instead of turnover).

The growth of the share of value added in total manufacturing has been positive in the Netherlands. This implies that the food industry can compete with other industries to attract production factors like labour and capital. The annual growth of the food industry's share has been modest, though, compared with Ireland, Spain, France and Canada (see Table 3.3). The annual growth of the labour productivity has been very positive in the Dutch food industry, with an annual 6.1% over the last decade.

Table 3.3
Share of food & beverage (C10+C11) industry in manufacturing and labour productivity.

Country	Share of value added in manufacturing total			Real labour productivity (value added)			Real value added (m euro)		
	2001[a]	2011	Annual Growth	2001[a]	2011	Annual Growth	2001[a]	2011	Annual Growth
Netherlands	13.6	16.7	2.1	42.7	77.5	6.1	6,873	9,703	3.5
EU-27	11.3	12.2	0.8	36.2	35.2	-0.3	167,966	156,493	-0.7
USA	12.5	13.7	1.0	145.7	112.4	-2.8	239,181	166,950	-3.9
Australia	25.5	22.7	-1.2	50.8	47.4	-0.7	5,845	11,255	6.8
Brazil	17.1	18.6	0.7	23.3	12.3	-5.2	17,851	19,253	0.6
Canada	11.8	16.3	3.2	67.5	65.3	-0.3	17,551	17,077	-0.3
Germany	7.9	7.0	-1.2	38.0	31.9	-1.7	31,270	28,291	-1.0
Spain	14.5	19.8	3.2	40.6	42.1	0.3	15,059	15,389	0.2
France	13.2	17.2	2.6	41.5	44.8	0.8	26,102	27,106	0.4
Ireland	15.7	21.1	3.0	96.8	154.6	4.8	4,840	6,009	2.2
Italy	8.6	10.9	2.3	39.1	39.8	0.2	16,853	17,255	0.2
UK	13.3	14.6	0.9	58.0	46.9	-2.1	29,570	17,653	-5.0

[a] Annual growth rates: US, 2002 -2011, Brazil 1999- 2011.

3.3.3 Trade in food products and trade indicators

Table 3.4 below shows that the Dutch food industry lost export market share, despite a considerable growth of the exports by 11.3% over the whole period. Dutch imports of processed foods grew even more. The Dutch food industry remains a significant net exporter of processed foods, as well as almost all other countries. The US, though, is a net importer of processed food and beverages products, as well as the UK.

Table 3.4

Trade and market shares in processed food products (markets share on world market).

	Export 2012 (Million USD)	Growth 2000 - 2011 (%)	Market share 2000 (%)	Market share 2011 (%)	Import 2012 (Million USD)	Growth 2000 - 2011 (%)	Market share 2000 (%)	Market share 2011 (%)
Netherlands	59,633	11.3	6.8	6.7	41,461	12.9	3.7	4.6
EU-27	396,180	10.5	47.7	43.4	370,387	10.4	44.5	43.0
USA	76,355	8.9	9.9	7.8	90,755	7.8	12.7	9.5
Australia	18,408	7.2	3.0	2.0	11,217	12.7	1.0	1.2
Brazil	45,325	17.6	2.8	5.0	7,338	12.6	0.7	0.8
Canada	27,425	8.2	4.0	2.9	25,746	10.0	2.9	2.7
Germany	64,446	12.5	6.4	7.1	59,075	10.2	7.4	7.1
Spain	29,024	11.1	3.1	3.0	23,520	9.7	3.2	2.9
France	53,620	7.8	8.5	6.0	43,276	9.1	5.9	5.0
Ireland	11,198	6.9	2.0	1.3	7,159	10.1	0.8	0.8
Italy	32,574	10.2	4.0	3.6	32,122	9.0	4.7	3.9
UK	15,315	7.5	2.9	1.9	38,750	8.6	6.2	4.9

Source: own calculations, based on UNCOMTRADE.

The export and import developments presented in Table 3.4 above are reflected in the trade indicators presented in Figure 3.3, and especially the change in these indicators show the increase or decrease of competitiveness. The Relative Export Advantage (RXA) of the Netherlands declined in the period 1995-2005 and stabilised since then on a still relatively high level. The Dutch Relative Import Advantage (RMA) increased too. Both trends resulted in a declining but still positive Relative Trade Advantage (RTA) indicator of 0.3 in 2012, indicating an overall competitive advantage. The US RTA is also positive (yet small), and its underlying trade indicators showed only small changes over the period 1995-2012. Brazil has particularly high levels of RTAs, although there has been a decline since 2005. The same happened to the (still positive) RTA for the food industry in Australia, whereas for Canada both export and import advantage indicators increased with the net effect of a negative value of RTA, indicating a competitive disadvantage of the food industry in recent years.

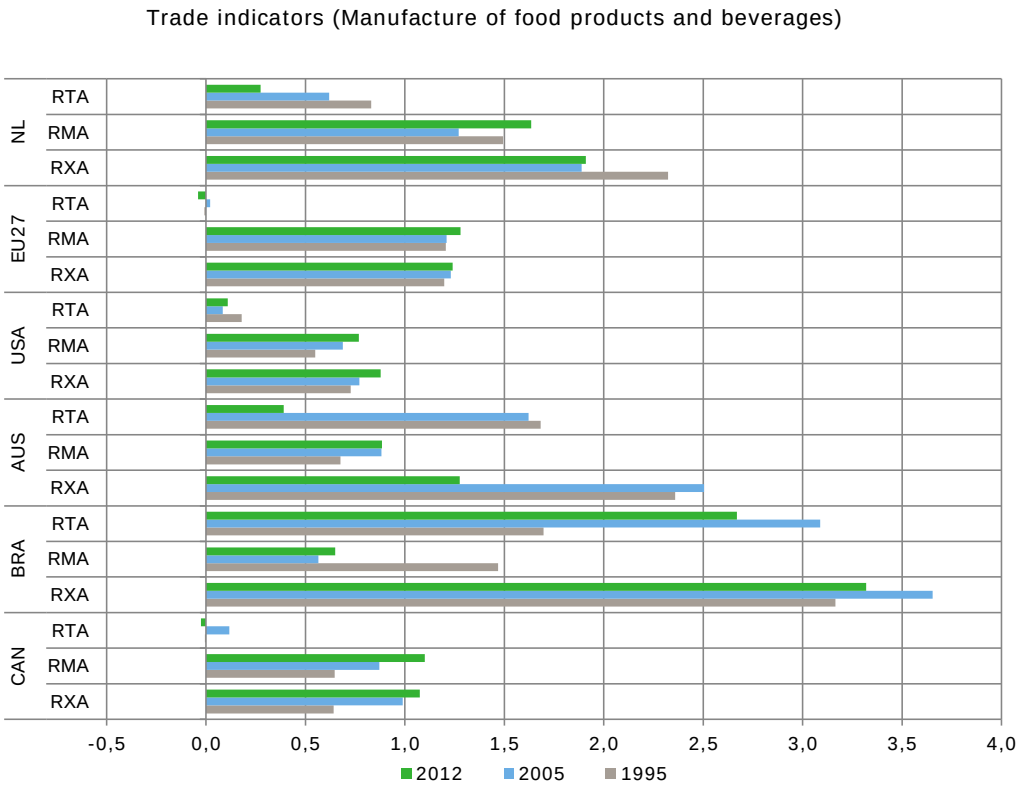


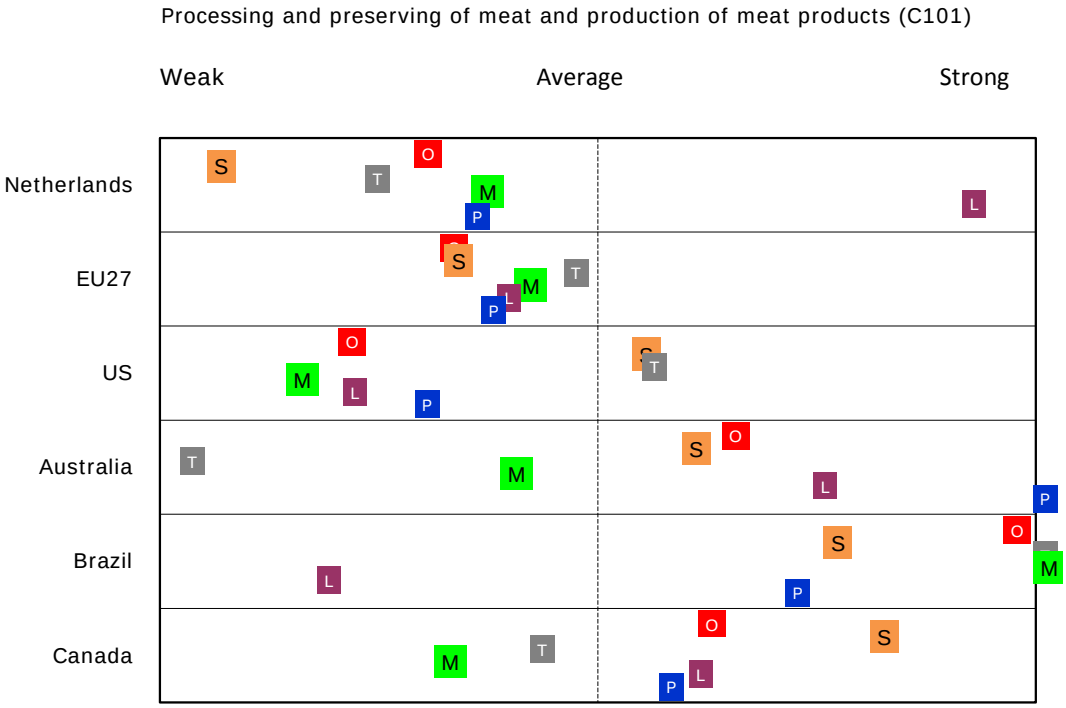
Figure 3.3 *Food trade indicators.*
Source: Own calculations, based on UNCOMTRADE.

3.4 Competiveness of the Dutch meat industry

3.4.1 3.4.1 Key findings

Key findings of our quantitative analysis of the competitiveness of the Dutch meat industry (including red and white meat) are presented in Figure 3.4 below. The overall competitive position (O) of the Dutch meat processing industry is below the average of the benchmark countries. The same holds for the US meat industry. Brazil is by far the best performing country. The main results show that:

- The Dutch meat industry scores very low with respect to the share of added value in total manufacture (S), showing that the meat industry has relative weak position against manufacturing industries in total). Also, the Dutch meat industry has a low ranking on growth in real value added (P);
- By contrast, labour productivity growth (real value added per employee (L)), is highest in the Netherlands. This indicator is also strong for the Australian meat processing sector. The US and Brazil show a weak score on labour productivity growth.
- On the two trade indicators, the Dutch meat industry is not performing well: it lost export share on the world market (M) and the Relative Trade Advantage (T) indicator deteriorated over time. The US performs above the average for the RTA indicator; Brazil outperforms all other countries.
- Of the other EU-countries Spain and Ireland are performing well. The meat processing industry in the UK, however, is rather weak, as well as the industry in France which shows scores on each indicator below average except for labour productivity growth (see Appendix 4, Figure 2).



Legend: O Overall competitiveness
S Annual growth of the share of the meat industry in the added value in manufacture industry (2001-2011); US (2002-2011) & Brazil (1999 -2011)
T Difference RTA indicator (2000 - 2012)
M Difference world market share 2011 minus 2000
L Annual growth rate labour productivity (2001-2011); US (2002-2011) & Brazil (2005-2011)
P Annual growth rate real added value (2001-2011); US (2002-2011) & Brazil (1999-2011)

Figure 3.4 *Competitiveness of the meat processing industry (NACE C101).*

3.4.2 The industry's production base: meat supply balances

In this section, we discuss the meat supply base for bovine, pig and poultry. In the competitiveness section below, we do not use the distinction between these types of meat, as available data are insufficient for a more detailed subsector analysis.

In volume, the US is the largest producer of beef and poultry meat, and the selected EU-countries together are the main pig meat producers. All non-EU countries showed significant production growth in the period 1991 to 2009 (Figure 3.5). For Brazil this holds for all three types of meat and with significant growth rates. At the same time, bovine meat production declined in all EU-countries as did pig meat production in the Netherlands and the UK. Poultry meat production grew strongly in almost all countries. These rather significant changes in production quantities indicate also the shift in the supply base for the meat processing industry, namely towards poultry meat.

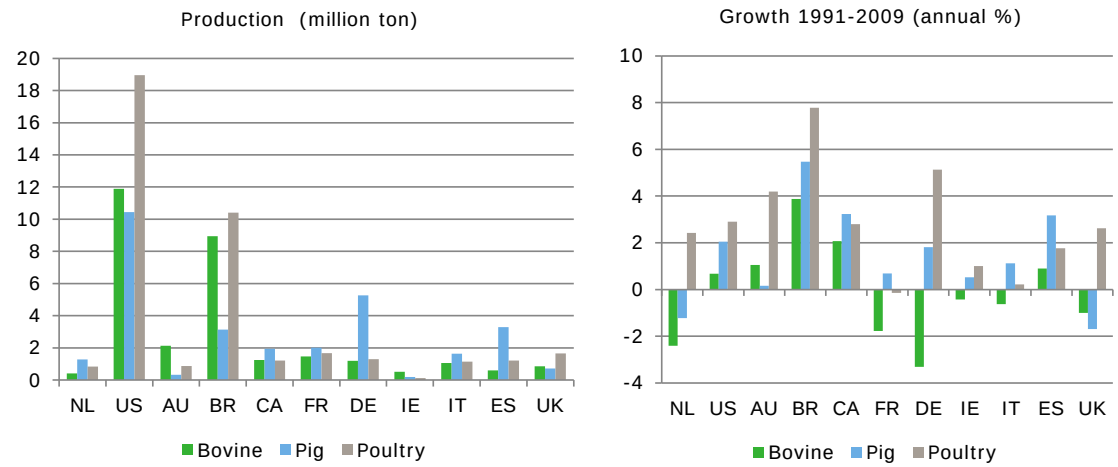


Figure 3.5 *Quantity (2009) and growth of meat production (1991-2009,% annual growth). Source: based on FAOStat commodity balances.*

3.4.3 Structure and economic indicators of the meat processing industry

The meat processing turnover in the Netherlands and US has been stagnant whereas turnover grew in all benchmark countries, except for the UK and France (Table 3.5). Structural change has been strongest in the Netherlands and France, as indicated by the significant decline of the number of firms and persons employed. The companies' scale of operation varies strongly between the countries as turnover per firm ranges from almost €4m in Germany to €60m in Brazil. Dutch firms show a steady growth in size, comparable to developments in other countries, except for the US where turnover per enterprise shows very little increase over the last ten years. Note that the average size of a meat company (i.e. turnover per enterprise) in EU countries is much smaller than in Brazil; only firms in Ireland come relatively close to the Brazilian average meat firm size.

Table 3.5

Structure of the meat processing industry in 2011.

Country	Turnover		Number of enterprises		Turnover / enterprise		Number of persons employed	
	2011	Annual growth 2001-2011	2011	Annual growth [a] 2001-2011	2011	Annual growth [a] 2001-2011	2011	Annual growth [a] 2001-2011
Netherlands	Billion €	%	#	%	Million €	%	(1,000)	%
EU-27	9.2	0.6	519	-4.5	17.8	5.4	14	-6.6
USA	200.7	2.1	38,388	-2.6	5.2	4.8	926	-1.1
Australia	132.5	0.2	3,195	-0.8	41.5	1.0	480	-0.7
Brazil	16.5	20.6	1,148	12.0	14.4	7.7	60	14.1
Canada	47.4	14.4	792	3.9	59.9	10.2	455	7.4
Germany	16.5	2.1	1,079	3.8	15.3	-1.7	70	0.3
Spain	20.9	3.7	4,062	-0.7	5.1	4.4	83	1.4
France	34.9	0.0	6,540	-5.9	5.3	6.2	128	-3.0
Ireland	4.8	2.8	131	-2.1	36.9	5.0	12	-1.1
Italy	19.8	1.6	3,601	-0.3	5.5	2.0	59	0.5
UK	16.9	-1.3	1,024	-1.2	16.5	0.0	75	-4.7

[a] Growth rates: US 2002-2010, Australia 2003-2011, Brazil1999-2011.

Source: Own calculation based on Eurostat and other national account statistics.

Despite the growth of turnover in many of the selected countries, the development of the share of the meat processing industry in total manufacturing varies. This share grew strongly in Canada, Spain and Brazil, yet declined significantly in the Netherlands (-4.2% annually, see Table 3.6). Labour productivity (real value added per employee) grew considerably in the Netherlands (also because employment declined substantially) and has the highest level of all selected countries. The US lost on the labour productivity indicator: it fell from the highest level in 2001/2002 to just below the Dutch level in 2011. Brazil and the UK showed a similar large decline as the US over the period 2001-2011.

Table 3.6

Share of meat processing in manufacturing and labour productivity.

	Share in manufacturing turnover			Labour productivity (€1,000real value added per employee)		
	2001 (%)	2011 (%)	Annual growth [a] (%) 2001-2011	2001	2011	Annual growth [a] (%) 2001-2011
Netherlands	2.3	1.5	-4.2	42.3	62.2	3.9
EU-27	2.0	1.8	-1.0	28.8	25.0	-1.4
USA [a]	2.2	2.3	0.9	81.4	60.1	-3.3
Australia	3.7	4.3	1.6	29.1	35.7	2.1
Brazil [a]	2.9	4.3	3.5	15.4	9.9	-3.6
Canada	2.0	3.0	4.2	44.2	46.5	0.5
Germany	1.6	1.3	-2.0	29.1	25.4	-1.4
Spain	2.3	3.5	4.1	33.5	32.4	-0.3
France	2.7	2.9	0.5	31.1	35.3	1.3
Ireland	1.9	2.1	1.0	41.3	47.1	1.3
Italy	1.1	1.2	0.8	39.6	33.2	-1.8
UK	2.1	1.7	-2.4	39.4	27.1	-3.7

[a] Annual growth rates: US 2002 -2011, Brazil 1999- 2011.

Source: Calculations based on Eurostat and other national accounts statistics.

3.4.4 Trade in meat products and trade indicators

With regard to their export position, the Dutch and US companies perform less well than the benchmark countries: their export market shares are decreasing (Table 3.7). In addition, Dutch imports of meat grew faster than the world average resulting in a higher import share. The world trade (export and hence also import) in meat-products grew annually about 11.7% in the period 1995 to 2012. The Brazilian, German and Spanish meat industry performed much better than this average resulting in an increasing export share for them.

Table 3.7

Trade and market shares in processed meat products (markets share on world market).

Country	Export				Import			
	2012 (Million USD)	Annual growth 2001-2012 (%)	Market share 2001 (%)	Market share 2011 (%)	2012 (Million USD)	Annual growth 2001-2012 (%)	Market share 2001 (%)	Market share 2011 (%)
Netherlands	11,013	8.8	9.5	8.0	6,034	15.0	2.8	4.8
EU-27	66,584	10.4	49.2	48.3	59,082	10.3	44.6	48.1
US	18,087	7.4	16.8	12.2	7,006	3.7	9.3	5.0
Australia	7,575	8.7	6.4	5.3	692	17.2	0.2	0.5
Brazil	15,818	20.7	4.3	11.3	464	9.3	0.3	0.3
Canada	4,961	6.0	5.8	3.6	3,314	9.7	2.2	2.2
Germany	12,753	16.9	5.1	9.3	9,432	8.8	8.6	8.0
Spain	5,753	13.7	2.9	3.9	1,981	9.4	1.7	1.7
France	5,465	5.0	7.4	4.2	6,919	7.9	6.4	5.4
Ireland	3,882	8.2	3.5	2.8	1,042	12.6	0.6	0.8
Italy	3,225	11.0	2.3	2.4	6,370	7.3	6.8	5.4
UK	2,583	9.8	2.1	2.0	8,998	8.8	7.9	7.3

Source: calculation based on UNComtrade

The aforementioned developments are reflected in the trade indicators presented in Figure 3.7 The Relative Export Advantage (RXA) of the Netherlands declined, although it is still at a relatively high level. The Dutch Relative Import Advantage (RMA) increased. Both trends resulted in a declining but still positive Relative Trade Advantage (RTA) indicating a competitive advantage of the meat industry in world trade. These trade indicators for the US showed just little changes, yet with a slightly increasing effect on the US RTA. Australia and Brazil have high levels of RTAs. Germany improved its export advantage (RXA) indicator and imports declined, resulting in a higher but still negative RTA from -0.9 to -0.1. Next to Germany, the meat industry in France, Italy and the UK have a competitive disadvantage. See Appendix 5, Figure 2, for more details on the performance of other EU countries).

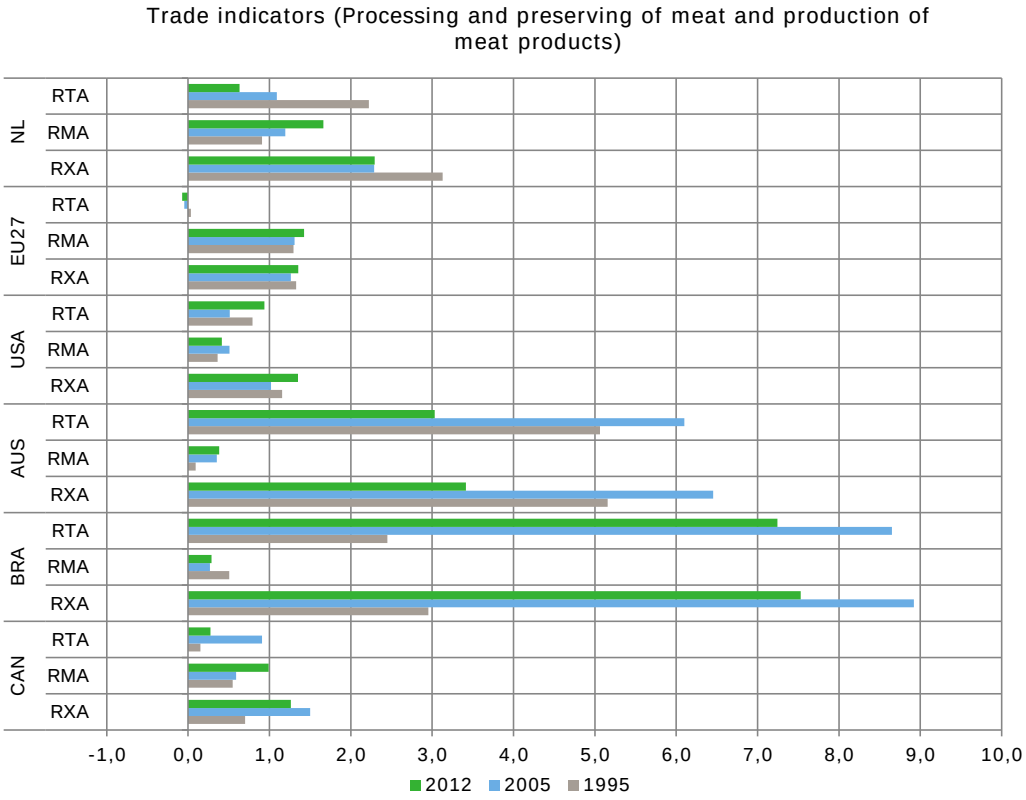


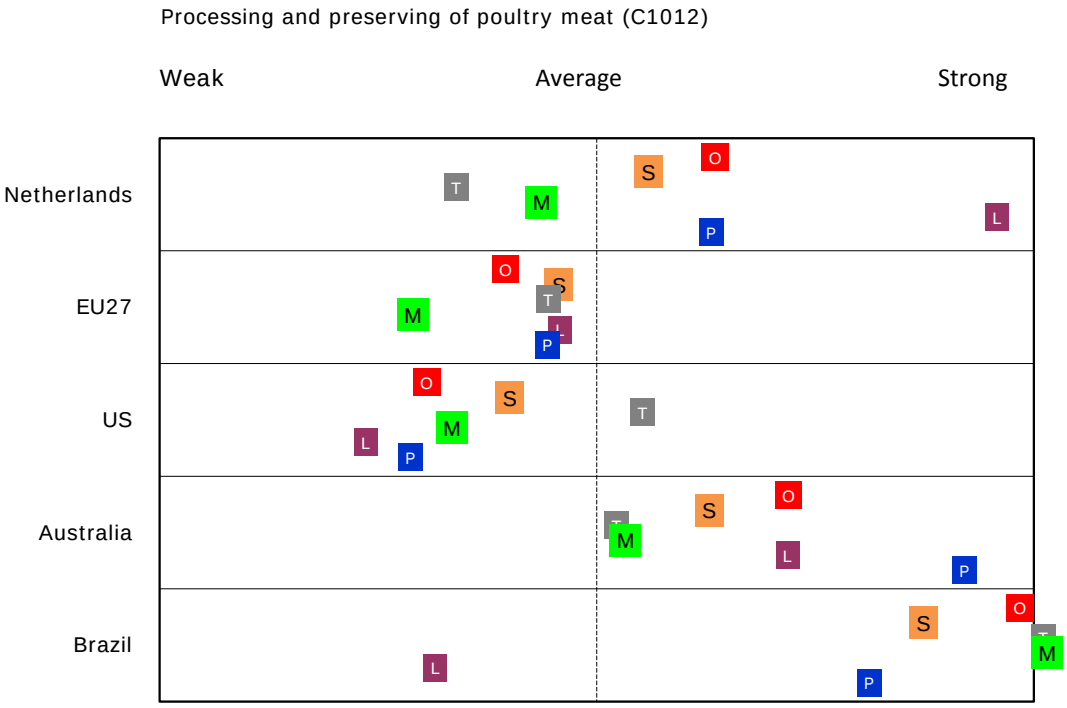
Figure 3.7 *Meat trade indicators.*
Source: Own calculations based on UNComtrade.

3.5 A closer look at the poultry processing industry

3.5.1 Key findings

Key findings of our quantitative analysis of the competitiveness of the Dutch poultry industry (C1012 which is a part of the meat processing industry C101) are presented in Figure 3.8 below. The main results show that:

- The overall competitive position (O) of the Dutch poultry meat processing industry is above average of the benchmark countries. In contrast, the US poultry processing meat industry is weak, which is the same for the EU27 as a whole. The latter is in line with the findings for meat overall. Brazil is by far the best performing country, followed by Australia and several EU countries like Spain and Germany (see Appendix 4, Figure 3).
- The Dutch poultry meat industry scores low on the two trade indicators. The Dutch poultry meat industry is not performing well in trade: it lost export share on the world market (M) and the Relative Trade Advantage (T) indicator deteriorated over time. The Brazilian performed very high on these indicators, with the US having an above average score on the RTA (T) indicator.
- Labour productivity (real value added per employee (L)), though, is highest in the Netherlands. Australia, France and Spain are good performers too. The US, Brazil, Ireland and the UK show a weak score on the growth of labour productivity.



Legend: O Overall competitiveness (Canada is omitted due to insufficient data)
S Annual growth of the share of the meat industry in the added value in manufacture industry (2001-2011); US (2002-2011) & Brazil (1999 -2011)
T Difference RTA indicator (2000 - 2012)
M Difference world market share 2011 minus 2000
L Annual growth rate labour productivity (2001-2011); US (2002-2011) & Brazil (2005-2011)
P Annual growth rate real added value (2001-2011); US (2002-2011) & Brazil (1999-2011)

Figure 3.8 *Competitiveness of the poultry processing industry (NACE C1012).*

3.5.2 The industry's production base: meat supply balances and prices

In a previous section (3.4.2), we already discussed the supply base of poultry. In volume, the US is the largest producer of poultry meat. Poultry meat production grew strongly in almost all countries. These rather significant changes in production quantities indicate also the shift in the supply base for the processing industry. This shift is to the benefit of the US and Brazilian poultry meat industry, with their relatively big size and strong growth figures.

The (incomplete) overview of chicken prices off-farm indicates that both the US and Brazil are price competitive compared to the EU countries. These lower prices may be caused by lower production costs per kg of meat produced due to lower feed prices in the US that follow from the relative abundance of feed commodities like maize and soy.

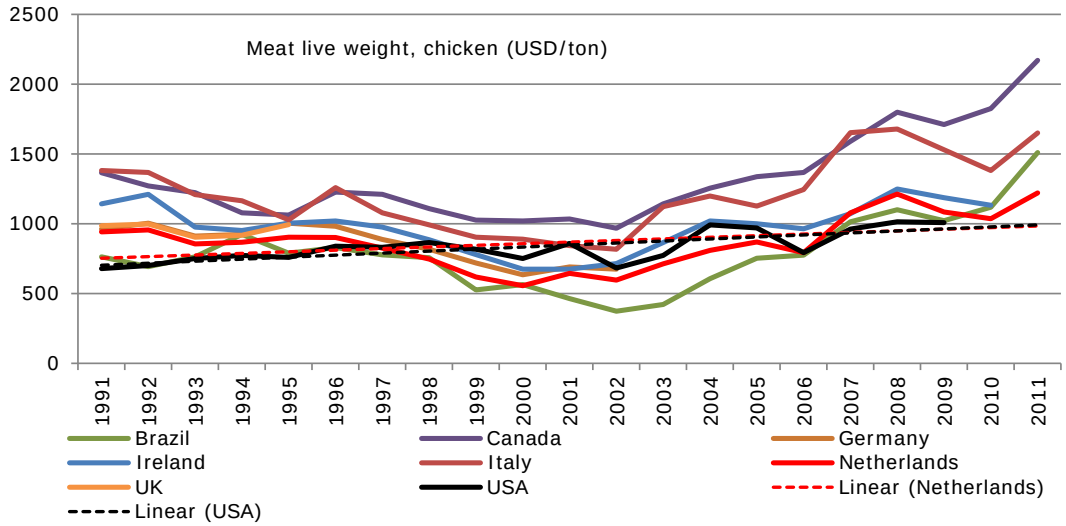


Figure 3.9 *Producers prices of chicken meat from 1991 to 2011.*
Source: Calculation based on FAOStat.

The prices poultry meat are converging between the US and the Netherlands, suggesting that the price advance of the US pig and poultry meat vis-a-vis the Dutch meat products is declining. In Italy you find the highest prices for chicken. The development in Brazil shows first higher prices around the turn of the millennium prices and the last ears higher prices.Due to insufficient data for several countries the price comparison is incomplete.

3.5.3 Structure and economic indicators of the poultry meat processing industry

The poultry meat processing turnover in the US, Ireland and Italy has been declining whereas turnover grew in all benchmark countries (Table 3.8). High growth rates could be observed in Brazil and Australia. Structural change has been strongest in the Netherlands, as indicated by the significant decline of the number of firms and persons employed. Furthermore the opposite structural changes have Australia and Brazil: significant positive growth rates. The companies' scale of operation varies strongly between the countries as turnover per firm ranges from almost €12m in Australia to €118m in Brazil. Dutch firms show a steady growth in size, comparable to developments in other countries, except for the US and Ireland where turnover per enterprise declined over the last ten years. Note that the average size of a poultry meat company (i.e. turnover per enterprise) in EU countries is much smaller than in the USA and Brazil; only Dutch and German firms come have on average half the size of those in the US and Brazil.

Table 3.8

Structure of the poultry meat processing industry (C1012) in 2011.

Country	Turnover		Number of enterprises		Turnover/enterprise		Number of persons employed	
	2011	Annual growth a 2001-2011	2011	Annual growth a 2001-2011	2011	Annual growth a 2001-2011	2011	Annual growth a 2001-2011
	Billion €	%	#	%	Million €	%	(1,000)	%
Netherlands	2.5	1.8	47	-3.9	52.2	6.0	3	-4.1
EU-27	31.8	2.6	1,752	-1.2	18.1	3.9	145	-0.7
US	38.6	-0.5	326	0.6	118.4	-1.1	220	-1.3
Australia	4.0	20.9	340	14.8	11.9	5.3	19	14.7
Brazil	25.8	17.8	283	7.3	91.2	9.8	313	11.5
Canada	4.3	4.0	195	2.4	22.1	1.5	20	0.4
Germany	4.5	6.7	91	1.2	49.3	5.5	10	0.5
Spain	2.3	3.2	171	-1.4	13.6	4.7	9	0.6
France	6.9	0.1	377	-2.0	18.4	2.1	27	-3.1
Ireland	0.2	-8.5	11	-3.1	16.1	-5.6	1	-8.2
Italy	2.2	-3.0	137	-4.9	16.3	2.0	10	-3.3
UK	4.6	3.7	101	-1.6	45.1	5.4	24	0.4

[a] Growth rates: US 2002-2010, Australia 2003-2011, Brazil 1999-2011.

Source: Own calculation based on Eurostat and other national account statistics.

Despite the growth of turnover in many of the selected countries, the poultry meat processing industry did not gain a higher share in total manufacturing turnover. This share grew strongly in Brazil, Spain, and Australia, modestly in the Netherlands and declined in the US and several other EU countries (Table 3.9). Labour productivity (real value added per employee) grew considerably in the Netherlands (also because employment declined substantially). Labour productivity in the US declined significantly as it fell from the highest level in 2001/2002 far below the Dutch level in 2011. In many countries, including EU-27, the labour productivity declined.

Table 3.9

Share of poultry meat processing in manufacturing and labour productivity.

	Share in manufacturing turnover			Labour productivity (€1,000real value added per employee)		
	2001 (%)	2011 (%)	Annual growth [a] (%) 2001-2011	2001	2011	Annual growth [a] (%) 2001-2011
Netherlands	0.4	0.4	0.3	46.1	82.7	6.0
EU-27	0.3	0.3	-0.9	26.1	21.9	-1.7
USA [a]	1.0	0.8	-2.0	79.5	47.7	-5.5
Australia	1.2	1.4	1.7	30.3	36.7	1.9
Brazil [a]	1.3	3.0	6.9	16.4	9.8	-4.2
Canada	0.6			42.9		
Germany	0.1	0.1	-1.6	36.4	30.1	-1.9
Spain	0.2	0.3	4.2	27.1	28.9	0.7
France	0.5	0.6	0.6	27.3	31.9	1.6
Ireland	0.4	0.1	-11.9	50.8	31.2	-4.8
Italy	0.2	0.2	-2.3	26.1	23.7	-1.0
UK	0.4	0.4	-0.3	38.3	19.4	-6.6

[a] Annual growth rates: US 2002 -2011, Brazil 1999- 2011.

Source: Calculations based on Eurostat and other national accounts statistics.

3.5.4 Trade in poultry meat products and trade indicators

With regard to their export position, the Dutch, the EU-27 and US companies perform less well than the benchmark countries: their export market shares are decreasing (Table 3.10). The world trade (export and hence also import) in meat-products grew annually about 11% in the period 1995 to 2012. The Brazilian, Canadian and German and Spanish poultry meat industry performed much better than this average resulting in an increasing export share for them. The EU is net exporter, as most non-EU benchmark countries. Canada, Germany, Spain, Ireland and the UK in particular are net-importers of poultry meat.

Table 3.10

Trade and market shares in processed poultry meat products (markets share on world market).

Country	Export 2012 (Million USD)	Annual growth 2001-2012 (%)	Market share 2001 (%)	Market share 2011 (%)	Import 2012 (Million USD)	Annual growth 2001-2012 (%)	Market share 2001 (%)	Market share 2011 (%)
Netherlands	2,829	9.9	11.8	10.6	926	14.6	2.9	4.5
EU-27	10,698	9.7	46.6	41.2	8,651	10.8	40.1	42.6
US	5,026	8.8	21.4	17.2	204	21.9	0.3	0.8
Australia	48	11.9	0.1	0.2	0	0.0	0.0	0.0
Brazil	6,948	21.1	10.5	27.6	6	24.0	0.0	0.0
Canada	263	14.9	0.7	1.0	454	9.0	1.7	1.5
Germany	1,138	15.8	2.7	4.3	1,519	7.6	10.1	7.7
Spain	245	10.5	1.1	1.0	345	10.4	1.7	1.8
France	1,360	2.3	13.8	5.6	1,217	15.8	3.3	5.7
Ireland	116	-0.1	1.5	0.5	262	10.4	1.2	1.2
Italy	381	12.0	1.5	1.7	165	2.4	1.8	0.8
UK	447	8.0	2.5	1.9	1,479	7.1	11.0	8.0

Source: calculation based on UNComtrade.

The aforementioned developments are reflected in the trade indicators presented in Figure 3.10. The Relative Export Advantage (RXA) of the Netherlands declined slightly. The Brazilian indicators are very dominant: very high levels of the Relative Export Advantage indicator (RXA) and also for the Relative Trade Indicator, RTA).

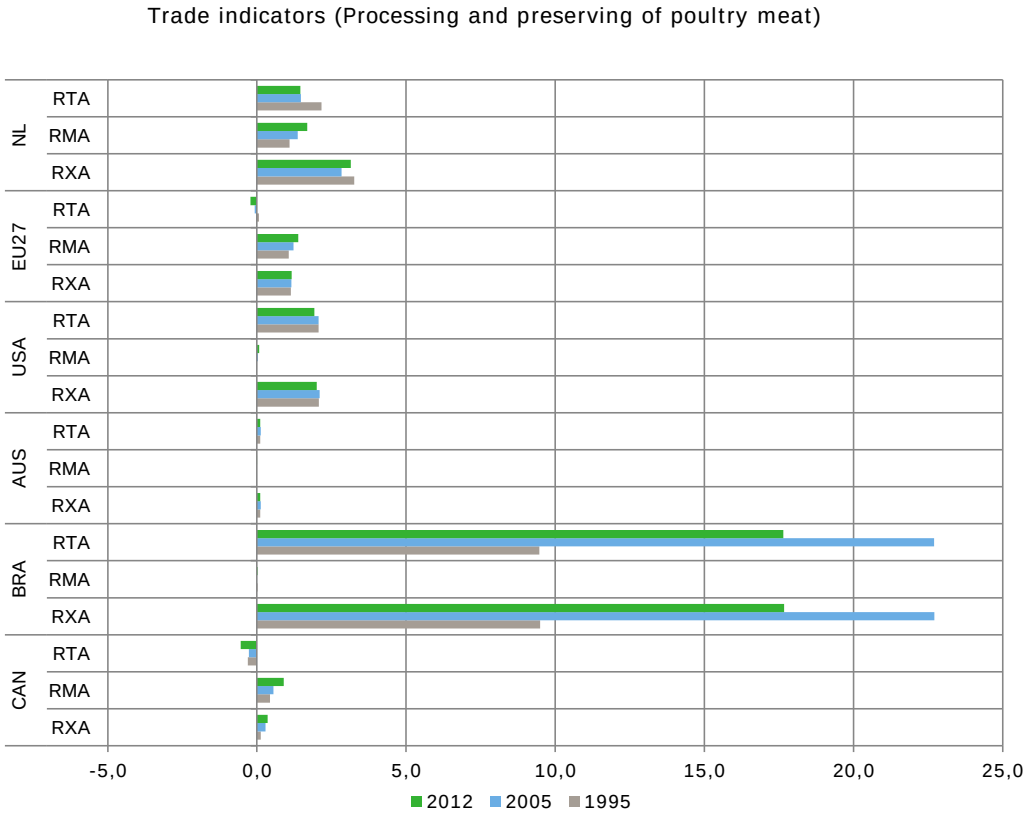


Figure 3.10 *Poultry meat trade indicators.*

3.5.5 Qualifying the quantitative analysis

LEI conducted several studies on the competitiveness of the Dutch poultry sector (e.g. Van Horne, 2009; Van Horne and Hoste, 2013; and Van Horne and Bondt, 2013). They demonstrate that compared to other European countries the Netherlands have cost advantages in primary production, but competition from countries like Poland increases. In addition, third countries like the USA or Brazil can produce and process poultry cheaper, hence have cost advantages compared to the EU. Brazil

has, according to Van Horne and Bondt (2013) the lowest production and processing costs, followed by Argentina and the USA.

EU's poultry sector is protected with tariffs and import quota with reduced import tariffs for (salted/cooked and natural) breast fillet, Van Horne and Bondt (2013) indicate that if import levies would be reduced by 50% and no additional levy would be charged anymore, Brazil, Argentina, the USA, Ukraine and Thailand would have a (much) lower offer price for breast fillet than the EU poultry meat industry. The US poultry meat sector, hence, would benefit from free trade with the EU, under the condition that the EU ban on US decontaminated meat would be lifted too. However, even if US meat could enter the EU market without this barrier and meat from Brazil would be still subject to import duties, Van Horne and Bondt (2013) question whether the US could outcompete Brazil in offering breast fillet. Brazil has a significantly lower cost price and might reduce its export price for breast fillet to the EU if its EU market share would be endangered by US exports to the Union. The US did export leg meat to Romania and Bulgaria before these countries entered the EU (and the EU ban on US decontaminated meat was applied). With a bilateral trade agreement the US might find some opportunities to export to these countries again. In case that happens, it will affect Dutch exports to these two countries (Dutch export value was in the range of €30-40m in the years 2010-2013). The EU imports only small amounts of leg meat from third countries; about 8,000 tonnes in 2012. In the world market, the USA is an important exporter of leg meat to Russia and countries in Asia and Africa.

Brazil and the USA are the largest broiler meat exporters of the world (UN Comtrade, 2013). Penz and Bruno (2012) foresee that the market will grow further in Brazil. An overview of the business activities of most of Brazil's poultry producers and processors is provided by the Brazilian Chicken Producers and Exporters Association (ABEF, unknown year). They give numbers about slaughters and employees but the stance of the ABEF on the companies is biased by their association status. The strengths of the industry are low production costs (labour, energy and feed), an integrated production chain and fast adoption of new technologies. Brazil is also the home country of the world's largest poultry processor: Brasil Foods, short form BRF (Bell and Kindred, 2012). BRF, which also produces a whole range of non-meat convenience products, is the second largest employer in Brazil and the third largest exporter after the oil and mining industry. Almost 20% of these exports are distributed to Europe.

Besides Brazil, the USA have according to Elam (2010) the second lowest production costs for chicken meat. Elam's study gives a broad outlook on the competitive potential of the US chicken producers and processors, both for the overall industry and single firms. The study concludes that the US poultry sector is price competitive with modest, but volatile, profit margins. The US poultry industry benefits from an overall increase of poultry demand. The major export destinations are China and Russia, however, mainly for dark chicken meat.

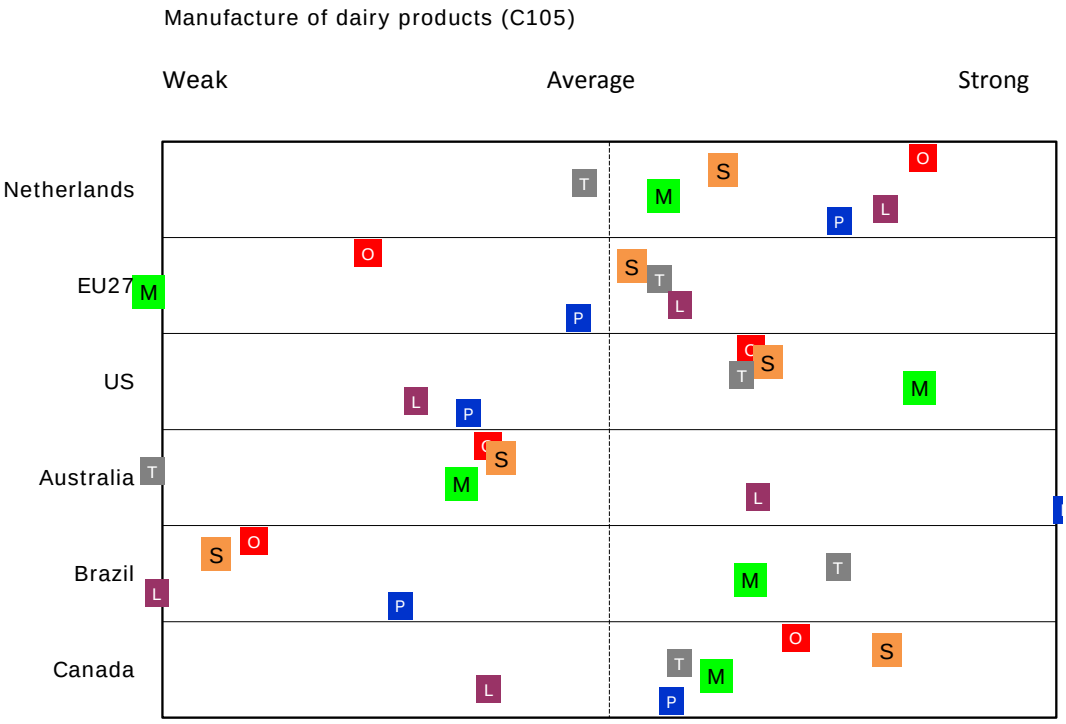
Literature primarily focuses on cost advantages for poultry processing firms. However, since companies grow or merge continuously, a few big players process a large amount of poultry meat and thus, firm structure and performance might have important influences on their ability to compete. In looking mainly at financial and productivity measures Böcker (2014) compared structures and performances of the poultry industry for 49 firms from 10 countries. Böcker finds that the two Dutch companies in his sample - Plukon and G.P.S. Nunspeet - generally show higher profitability results than their competitors, are flexible and efficient in selling and hence would be able to compete with European and non-European poultry producing firms. A study like this, focusing on firm specific features and performances is a welcome supplement to a broader sector or industry approach presented in this chapter.

3.6 Competitiveness of the Dutch dairy industry

3.6.1 Key findings

Key findings of our quantitative analysis of the dairy industry's competitiveness are presented in Figure 3.11 below. Main findings are that:

- The overall competitiveness (O) of the Dutch dairy processing industry is assessed the strongest of all countries presented, with the US dairy industry close to the Dutch position. The dairy industry in Brazil and Australia is not competitive. A similar conclusion holds for the dairy industry in Germany, Ireland and the UK (see Appendix 4, Figure 4, for the other EU countries).
- The Dutch dairy industry's positive evaluation is largely due to its high score on economic performance indicators, whereas on trade indicators the Dutch industry finds itself around average. The latter result is due to declining export market shares.
- For the US, the picture is the opposite: scores are highest on trade indicators, yet below average on labour productivity (L) and value added (P).



Legend: O Overall competitiveness
S Annual growth of the share of the dairy industry in the added value in manufacture industry (2001-2011); US (2002-2011) & Brazil (1999 -2011)
T Difference RTA indicator (2000 - 2012)
M Difference world market share 2011 minus 2000
L Annual growth rate labour productivity (2001-2011); US (2002-2011) & Brazil (2005-2011
P Annual growth rate real added value (2001-2011); US (2002-2011) & Brazil (1999-2011

Figure 3.11 *Competitiveness of the dairy industry.*
Source: Own calculations based.

3.6.2 The industry's production base: milk production, self-sufficiency and prices

Due to the milk production quota in the EU, the overall growth of the milk production has been around zero over the last 20 years. Individual countries, though, show some positive and some negative trends, the latter in France and the UK in particular. Milk production in Brazil (3.5%), Australia (2%) and the US (2.0%) have the highest growth. The self-sufficiency rate in Netherlands increased up to 163% in 2009. Growth in milk production in the US over the last two decades resulted in a self-

sufficiency rate of 101% in 2009. Ireland has the highest self-sufficiency (231%), but in the early nineties it was even around 300%. Second is Australia (167%) that had a higher self-sufficiency rate around the turn of the millennium (230% in 2000). Italy, Spain and France have the lowest self-sufficiency rate; between 70 and 80%.

Table 3.11

Production and self-sufficiency of milk - 2009 levels and annual growth rates.

Country	Production 2009 (m tonnes)	Annual growth 1991-2009 (%)	Self-sufficiency[a] 2009 (%)	Annual growth 1991-2009 (%)
Netherlands	11.5	0.2	163	0.9
US	85.9	1.4	101	0.3
Australia	9.4	2.0	167	0.6
Brazil	29.2	3.5	99	0.3
Canada	8.2	0.3	97	-0.4
France	24.2	-0.6	128	0.4
Germany	29.2	0.0	121	-0.1
Ireland	5.2	-0.1	231	-1.0
Italy	11.4	-0.3	69	0.1
Spain	7.4	0.1	70	-1.2
UK	13.2	-0.6	78	-1.1

Source: based on FAOStat commodity balances: FAO item code 2848 'Milk - Excluding Butter'. [a] Self-sufficiency is the domestic supply (=supply for domestic utilization (FAO: http://faostat.fao.org/site/379/DesktopDefault.aspx?PageID=379) as percentage of the production.

Figure 3.12 below shows milk price levels and developments since 2001. Dutch producer prices are slightly higher than the levels in the US. The producers' prices in Canada (140% of the Dutch level) and Italy (120%) are among the highest during the period considered. Australia and Brazil have relatively low prices, reaching on average about 70% of the Dutch level. In the EU relatively low prices compared to those in the Netherlands can be observed in Ireland (85%) and the UK (90% of the average Dutch level).

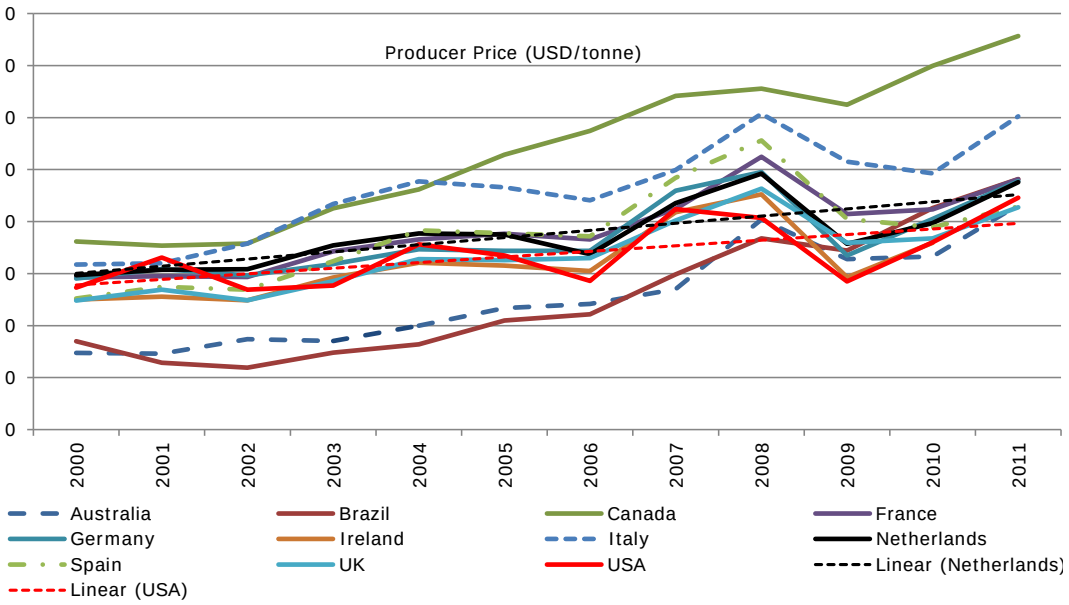


Figure 3.12 *Producers prices of milk from 2001 to 2011.*
Source: Calculation based on FAOStat.

3.6.3 Structure and economic indicators of the dairy processing industry

Australia shows the strongest (annual) growth in the turnover of the dairy processing industry (20%), followed by Brazil (Table 3.12). EU countries like Spain and the Netherlands, and Canada stay behind

these two. The average turnover in the Netherlands is half of the Irish and two-third of the German level. However, one should keep in mind that next to big companies like FrieslandCampina in the Netherlands (among the top 5 largest dairies in the world), small processors including artisanal producers are included. The latter affects the average turnover per enterprise very much.

Table 3.12

Structure of the dairy industry in 2011.

Country	Turnover		Enterprises		Average turnover per enterprise		Employees	
	Billion (€)	Growth[a] (%)	Number	Growth[a] (%)	Million (€)	Growth[a] (%)	1,000	Growth[a] (%)
Netherlands	10.5	3.4	304	2.6	34.7	0.8	12	-0.5
EU-27	141.6	1.8	12,617	0.0	11.2	1.8	368	-1.3
US[a]	71.9	0.3	1,095	-1.5	65.6	1.8	133	0.3
Australia[a]	9.0	20.2	391	9.9	23.0	9.4	17	10.7
Brazil	13.9	10.6	628	3.8	22.2	6.5	93	3.0
Canada[a]	9.5	3.2					23	1.9
Germany	27.5	2.1	472	3.9	58.2	-1.7	40	0.1
Spain	10.6	4.0	1,445	-0.3	7.3	4.3	27	0.5
France	27.2	0.9	1,958	2.7	13.9	-1.7	57	-1.2
Ireland	4.1	-1.0	58	-0.8	71.2	-0.1	5	-7.1
Italy	18.1	0.5	3,382	-1.2	5.4	1.7	44	-1.8
UK	9.9	-0.1	573	-0.5	17.3	0.4	26	-3.5

[a] Growth rates 2001-2011, US 2002-2010, Australia 2003-2011, Brazil1999-2011.

Source: Eurostat for EU countries.

Indeed, in some countries the dairy industry has been consolidated and is dominated by a handful of companies. Table 3.13 below shows the top 10 dairies in the world. The list includes 2 firms with headquarters in France (accounting for one-third of the country's dairy turnover) and 3 companies based in the US.

Table 3.13

Top10 Dairy companies.

	Company	Country	Turnover (billion €)
1	Nestlé	Switzerland	18.8
2	Danone	France	14.0
3	Lactalis	France	13.4
4	Fonterra	New Zealand	11.3
5	FrieslandCampina	Netherlands	9.7
6	Dairy Farmers	US	9.3
7	Dean Foods	US	8.4
8	Arla Foods	Denmark/Sweden	7.4
9	Kraft Foods	US	5.5
10	Meiji	Japan	5.3

Source: Productschap Zuivel 2012.

In the Netherlands and the US, the importance of the dairy industry in total manufacturing is growing (Table 3.14). Spain and Canada show the highest growth rate. In Brazil the dairy industry shows a very strong decline in its relative position against other industries.

The US has the highest labour productivity (real value added per employee) but the trend is one of decline. In 2011, the Netherlands is third in labour productivity performance, with the highest annual growth rate +3.7%. Also Ireland showed relatively high growth rates.

Table 3.14

Share of dairy in manufacturing and labour productivity.

	Share in manufacturing			Labour productivity		
	2000	2011	Annual Growth[a] 2001-2011	2000	2011	Annual Growth[a] 2001-2011
Netherlands	1.8	2.1	1.4	69.4	96.8	3.4
EU-27	1.1	1.2	0.3	39.9	41.1	0.3
US[a]	1.2	1.4	2.0	173.9	131.1	-3.1
Australia	2.3	2.1	-0.7	53.2	61.5	1.5
Brazil[a]	1.6	1.0	-4.1	25.2	10.6	-7.0
Canada	1.3	1.8	3.4	96.5	78.8	-2.0
Germany	0.6	0.6	-0.7	62.2	58.6	-0.6
Spain	1.2	1.9	4.2	50.2	53.8	0.7
France	1.5	1.8	1.7	45.6	49.1	0.7
Ireland	2.2	1.7	-2.7	63.3	93.3	4.0
Italy	1.4	1.3	-0.9	52.1	46.4	-1.2
UK	0.9	0.9	0.0	51.1	39.7	-2.5

Source: Calculations based on Eurostat and BFS.

[a] Annual growth rates: US, 2002 -2011, Brazil 1999- 2011.

3.6.4 Trade in milk products and trade indicators

The Netherlands has lost export market share despite the relatively high growth rate over the last ten years, indicating that the world export in dairy grew significantly with an annual 11.6% in the period 2000-2011. The US dairy industry gained shares at the international markets. All other benchmark countries had a growth rate below world average, resulting in lower market shares. Canada and Australia had the lowest growth rates and lost a significant part of the export market. Brazil, Canada, Spain, Italy and the UK are net importers of dairy products. All others countries are net exporters.

Table 3.12

Trade and market shares in processed dairy products.

Country	Export 2012 (Million USD)	Annual growth 2000-2011 (%)	Market share 2000 (%)	Market share 2011 (%)	Import 2012 (Million USD)	Annual growth 2000-2011(%)	Market share 2000 (%)	Market share 2011 (%)
Netherlands	7,633	9.5	11.8	10.7	3,930	7.5	7.3	5.5
EU-27	48,381	9.3	74.0	65.9	37,745	9.2	61.8	56.4
US	3,880	17.2	2.5	4.8	1,757	4.5	4.0	2.2
Australia	2,245	3.3	5.9	2.8	649	13.7	0.7	0.9
Brazil	92	17.7	0.1	0.1	641	4.8	1.5	0.9
Canada	256	3.1	0.7	0.3	436	5.4	1.0	0.6
Germany	9,928	9.2	15.4	13.7	6,694	10.2	10.1	10.2
Spain	1,158	7.9	1.9	1.5	2,336	9.5	3.7	3.5
France	7,915	7.6	14.0	10.5	3,725	7.0	7.8	5.7
Ireland	2,087	8.1	4.0	3.1	668	9.1	1.0	0.9
Italy	3,128	11.5	3.7	4.1	4,577	7.5	9.5	7.3
UK	1,735	6.6	3.6	2.4	3,838	7.7	6.8	5.4

Source: calculation based on UNComtrade.

The aforementioned developments are reflected in the trade indicators presented in Figure 3.13. The Relative Export Advantage (RXA) for Netherlands declined from over 4 to 3, still indicating that the Netherlands is relatively specialised in dairy export as the value is above unity (=1). The overall trade indicator, the Relative Trade Advantage (RTA), is positive and increasing for the Netherlands as well as for the US, indicating that the dairy industries from these countries have a competitive advantage on international markets. This is not the case for Brazil, Canada, Spain, Italy and the UK (see Appendix 5, Figure 4 for the other EU countries).

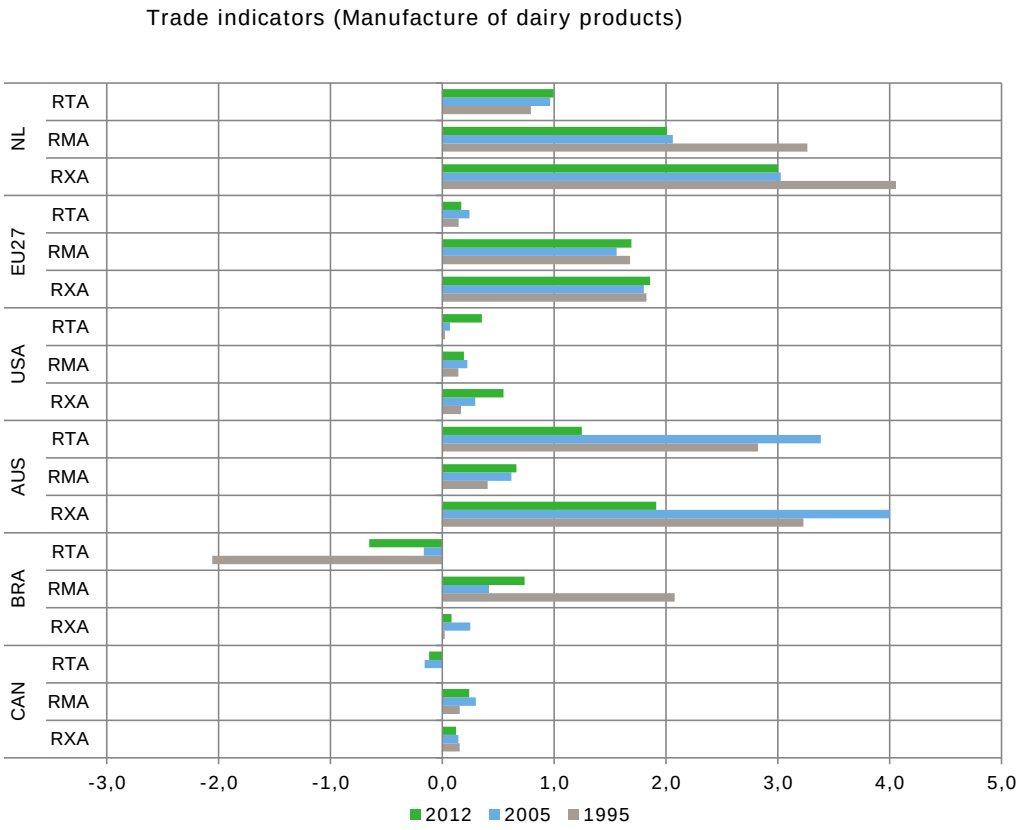


Figure 3.13 *Dairy trade indicators.*
Source: Own calculations based on UNComtrade.

3.6.5 Qualifying the quantitative analysis

The EU dairy industry dominates the world market (with shares of 45% for cheese and between approximately 20 and 30% for butter and milk powder; Dairy Board statistics 2013). However, although the export value is increasing, its world market share is declining, since the world market demand is growing faster than the EU can meet. New Zealand and the US profit most from this increasing demand in recent years. Brazil is not yet an important player in the world market, but in the local food industry the importance of the dairy industry is increasing very fast. Due to increasing competition of especially New Zealand in the milk powder market, the EU has started specialising more in cheese.

Within the EU, dairy companies innovate mostly on products and less in marketing, organisation and process (Tacken et al, 2009). Product innovations are mostly done on varieties, but also very important are innovations on new ingredients (in functional foods). SMEs as well as large companies, including the packaging and ingredients industry, all contribute to innovation. In northwestern Europe the dairy industry is dominated by a few large firms, especially from the Netherlands, France and Germany. Italy has a high number of medium and small firms.

The EU dairy industry can be characterised as innovative and a global player, but it is losing market share. The improvement in labour productivity and the growth in value added compensate for the loss in market share.

EU's raw material base has been restricted by the milk quota established in 1984. The quota system will be abolished in 2015. In anticipation to the lift of the production quota, dairy farmers in countries like the Netherlands already increased their production levels. The actual elimination of the quota is expected to boost production in a number of EU countries such as Austria, Belgium, Ireland, the Netherlands, parts of Germany, Spain and Italy, whereas it will decline in other regions of the EU. A study by IPTS and EuroCare (2012) projects an overall milk production increase by about 4.4% in the EU-27, and EU raw milk prices decline by 10% as the effect of the abolition of EU's milk quota system by 2020.

In an Ernest & Young report (2013), experts expect that in the period following quota removal, international competitiveness of the European Union in the world market will be enhanced. Experts predict that an increasing share of milk will be processed into high value products, with a lesser share devoted to industrial products. They add that the abolishment of milk quotas will allow for more innovation with positive effects on the variety and added value of dairy products. This will result from enhanced level of competitiveness on the market, where demand of dairy products is projected to be favourable over 2012-2020 (European Commission (2012a) and from OECD-FAO (2013)). Favourable market trends are mainly due to increased demand of EU dairy products in foreign countries (e.g. Russia and China), where demand has increased substantially over the last decade and is projected to keep on increasing over the time horizon until 2020. Other markets with good potential for European exports could be countries in North-Africa and the Middle East (Algeria, Egypt, Saudi Arabia and Iran). European dairy products with the exception of butter have proved to be competitive also with respect to low cost products, such as those originating from Oceania.

3.7 Concluding remarks

The overall conclusion of the competiveness of the Dutch food industry is positive, showing good marks on almost all indicators included in our assessment. Of course, sub-industries do show different outcomes. The Dutch meat processing industry is performing below the average of the benchmark countries, especially because of relatively weak results in trade: it lost export share on the world markets while imports increased over the last decade. The Dutch dairy processing industry has the strongest competitive position of all countries presented, with the US dairy industry close to the Dutch position. The Dutch dairy industry's positive evaluation is largely due to its high score on economic performance indicators (on value added and labour productivity), whereas the Dutch industry performs less well in trade and loses export market shares.

Complementary literature review indicates that the poultry meat industry may have a problem in competing on price with low cost producers like Brazil and the US, the former probably able to outcompete the US also in case the US get better access to the EU. Dairy industry is more innovative and may benefit from an enlarged production base when the quota will be eliminated in 2015 and from good prospects for markets outside the EU.

4 Trade liberalisation scenario analyses

Key findings and observations:

- In scenario S1 in which we assume a 100% reduction of import tariffs on both the EU and the US side, Dutch exports of agro-food products will increase, in particular dairy products, meat products and oils & fats, followed by the fruit and vegetables product category. However, imports of dairy and meat products from the US will also increase significantly. The result is a negative trade balance of the Netherlands and the EU in their bilateral trade with the US in these product categories.
- The US will benefit especially from the improved access to the EU for dairy, red and white meat products. US exports to other regions than the EU will decline, yet overall US producers of animal products will benefit. These and the trade flow effects for the Netherlands and EU follow from the logic that both at the EU and the US side import tariffs in the animal product categories are highest.
- The EU and the Netherlands will gain market share in the US dairy market. Increased US exports of dairy and white meat to the EU will be at the cost of Dutch exports to other EU countries.
- Welfare effects in terms of GDP are generally low in case only tariffs are eliminated (Scenario S1). In case of significant reduction of trade costs associated with non-tariff measures (Scenario S3), GDP effects are substantial with a 4% higher GDP in 2027 for the Netherlands, the EU and the US.
- Third countries will only benefit from the bilateral trade agreement if their standards converge with those of the EU and the US (Scenario S4). If they do, global GDP will be almost 5% higher in 2027. GDP in the Netherlands will be 6.7%, or €70bn higher than it would have been without the S4 scenario.
- Future prospects of its competitiveness do not match up with the assessment of the current position of the Dutch food industry. With reference to economic (value added and labour productivity) and trade indicators (market shares), competitors of the Netherlands are doing better under each of the bilateral trade liberalisation scenarios projected.

4.1 Introduction

This chapter elaborates and analyses scenarios that demonstrate the likely impacts of a ‘free trade’ agreement between the EU and the US on the Dutch agro-food sectors in future. Using MAGNET, a global economic simulation model, the impacts of free trade scenarios of tariff liberalisation and reductions in NTMs will be projected compared to a continuation of current trade policies and trends. The focus will be on impacts in terms of trade flows (imports, exports), price levels, value added and incomes of the respective sectors, notably the Dutch agro-food sectors. Since NTMs are not included in the MAGNET model and database, we use assumptions on NTM-related trade costs and introduce these into the model.[10] Moreover, since specific cost estimates for individual EU member states such as the Netherlands are not available, we use estimates for the EU as a whole as proxies for the Netherlands.

Next to trade scenario impact analyses at sector level, we will assess the impact of the future scenarios on the competitive position of the Dutch food industry.

[10] As an alternative we may explore the option to use a complementary data source, such as from ECORYS (2010), Non-Tariff Measures in EU-US Trade and Investment – An Economic Analysis. Report for the European Commission, DG Trade. Brussels.

4.2 Model description and data used

4.2.1 The MAGNET model

MAGNET (Modular Applied GeNeral Equilibrium Tool) is a multi-sector, multi-region CompuTable General Equilibrium (CGE) model that has been widely used to simulate the impacts of agricultural, trade, land, and biofuel policies on global economic development (Banse et al., 2008, Banse et al., 2011, Francois et al., 2005 and Rutten et al., 2013). MAGNET is based on the Global Trade Analysis Project (GTAP) model and can be extended in various directions in a modular fashion, depending on the policy questions at hand.

The GTAP core model accounts for the behaviour of households, firms, and the government in the global economy and how they interact in markets (Hertel, 1997). For the purpose of this study, MAGNET, compared to GTAP, employs a more sophisticated production structure, accounting for the inherent difference in the ease of substitution between land and non-land factors of production, a more sophisticated consumption structure, allowing for a better depiction of changes in diets observed over time, segmented labour and capital markets, allowing for differences in factor remunerations between agricultural and non-agricultural sectors, and an improved modelling of the land market, allowing for land supply to respond to changes in the land price (Woltjer et al., 2013a,b).

4.2.2 Model data

MAGNET is calibrated using the GTAP v8 with base year 2007, which distinguishes 129 countries/regions and 57 sectors. For the purpose of this study, MAGNET is set-up such that it distinguishes 8 regions, 15 sectors of production, and 5 factors of production (Table 4.1).

Table 4.1
MAGNET countries/regions, sectors and factors of production.

Countries, regions		Sectors		Production factors ofoduction
nld	Netherlands	CER	Cereals (rice, wheat and other grains)	Land
EU27	EU27	osd	Oilseeds	Unskilled labour
ROE	Rest of Europe	v_f	Vegetables, fruit, nuts	Skilled labour
USA	USA	ctl	Cattle, sheep, goats, horses	Capital
ROA	Rest of America	oap	Other animal products (incl. poultry, pig, eggs)	Natural resources
ASIA	Asia	rmk	Raw milk 1)	
AFR	Africa	OPR	Other primary sectors (incl. sugar cane and beet, plant based fibres, seeds, wool, forestry and fishing)	
OCE	Oceania	pcr	Processed rice	
		vol	VegeTable oils and fats	
		cmt	Meat: cattle, sheep, goats, horse	
		omt	Other meat products (pig and poultry meat)	
		mil	Dairy products (incl. milk, cheese, butter,...)	
		OFD	Other processed foods (incl. sugar, beverages, prepared vegetables and fruits, fish, flours and other cereal grain products)	
		MNF	Other manufacturing (incl. textile industry, minerals, metals, motor and transport vehicles and electronic equipment)	
		SVC	Services (incl. distribution, construction, trade and transport, communication, financial and business, recreation, government services and dwellings)	

Source: MAGNET.

Note: small letters represents GTAP detail whereas capital letters indicate an aggregation.

1) No bilateral trade between the EU and the US in raw milk. Therefore, this sector will be left out from the reporting of the scenario results in this chapter.

Regarding regions, the focus regions of this study, the EU and the US, are distinguished, with the Netherlands (nld) separated from the rest of the EU (EU27) so as to be able to derive impacts for the Dutch economy and agri-food sectors in particular. Asia (ASIA), Africa (AFR) and Oceania (OCE) have been distinguished as an important regional trading block, with the remaining regions categorised as rest of categories (Rest of America, Rest of Europe).

Regarding sectors, agricultural and processed food sectors that are important in trade between the EU and the US are distinguished (Table 4.1, second column). The remaining sectors are incorporated in a manufacturing sector (MNF), capturing other industry (excluding processed food sectors) and Services (SVC), capturing all service sectors.

Regarding factors of production, we retain the standard GTAP categories of five production factors, including skilled and unskilled labour, capital, land and natural resources (Table 1, last column).

4.2.3 Model dynamics: the baseline

Future projections for the world economy in the MAGNET model are obtained by allowing the exogenous factor endowments (labour and capital) and the productivity of factors, including that of land (yields), to grow according to a specific growth path. The baseline, most commonly referred to as the Business As Usual (BAU) scenario, services as the benchmark scenario for future growth projections to which alternative, in this case trade liberalisation, scenarios are compared. The BAU scenario reflects a future in which major socioeconomic drivers follow current trends. It assumes that there are no major policy changes (e.g. a WTO agreement or a CAP reform). GDP and population growth projection are taken from USDA-ERS (2012), which assumes a return toward long-run steady growth after the global recession and financial crisis, and decreasing population growth across the world. Labour supply follows the growth path of population, whereas capital follows that of GDP ensuring that the capital-output ratio is roughly constant over time, as we generally observe. Natural resources grow at a quarter of the rate of capital. Land productivity (i.e. yield) projections are derived from the IMAGE (Integrated Model to Assess the Global Environment) model and based upon FAO projections up to 2030 (Bruinsma, 2003; MNP, 2006). Technological progress is assumed to be labour saving and is fastest in manufacturing, followed by agriculture and services. Key drivers for the BAU are displayed in Figure 4.1.

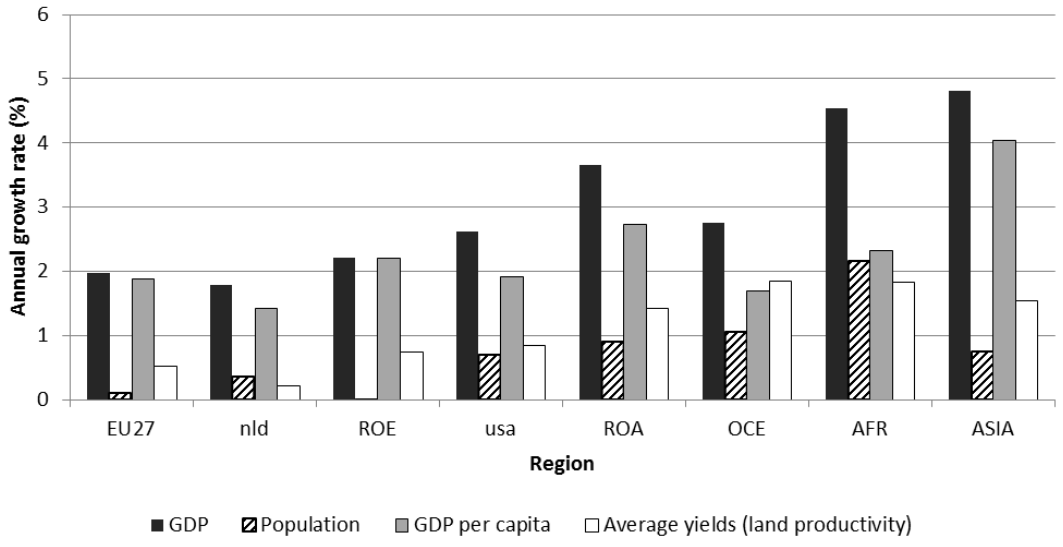


Figure 4.1 *Baseline drivers of growth in the MAGNET model.*
Source: MAGNET.

4.3 MAGNET simulations

4.3.1 Model scenarios

We conduct trade liberalisation scenarios in the MAGNET model. The first scenario (TTIP 1) examines the impact of bringing tariffs down between the EU member states and the US. More specifically, we depict a tariff rate of zero for EU imports from the US and for US imports from the EU in 2027 since the EU-US TTIP agreement can be expected to have been fully implemented then.

In the following scenarios we consider the impacts of NTMs. There are various ways of modelling NTMs (Fugazza and Maur, 2008). We model protection effects of NTMs at the border via efficiency effects representing a change in the price of imports from trading partners. The logic behind this approach is that NTMs add 'sand in the wheels' of trade and that by mutual recognition and, to some extent, harmonisation of standards, export of products, that previously would have had to undergo production processes in order to meet the other partner's standard, are now allowed, leading to efficiency gains (Fugazza and Maur, 2008). This approach does not capture beyond-the-border effects of NTMs which would require modelling increasing returns to scale and export-specific costs. Further supply shifting and demand shifting effects are also not modelled due to lack of data. The price differential between domestic and world prices is assumed to be entirely explained by the efficiency losses due to the presence of NTMs. While unlikely to be wholly true, the advantage of our approach is that it avoids issues related to tax revenues associated with the modelling of NTMs via taxes.

Following CEPR (2013), we assume a reduction of trade costs or increase in efficiency due to NTMs, of 25% for both the EU and the US, in TTIP S2. In the third scenario the trade costs reduction is differentiated between what we call the sensitive products dairy and meat and other products for which we assume a much higher trade cost reduction effect because of declining barriers of currently existing NTMs. The TTIP S3 is simulated for both the EU and the US, while in the fourth scenario other countries also benefit from lower trade costs by aligning towards the EU-US TTIP agreement. For an overview, the scenarios are summarised as follows:

- **TTIP S1 (scenario 1)**: all tariffs between the EU and US are reduced to zero - full tariff liberalisation of EU-US trade
- **TTP S2 (scenario 2)**: tariff liberalisation (as in TTIP S1) and a 25% reduction of NTM barriers between the EU and the US (reciprocal reduction)
- **TTIP S3 (scenario 3)**: tariff liberalisation (as in TTIP S1), a 25% reduction of NTM barriers between the EU and the US (as in TTIP S2) on the 'sensitive' products dairy and meat and a 75% reduction of NTM barriers on all other products
- **TTIP S4 (scenario 4)**: scenario 3 with spill-over effects of NTMs to the rest of the world

The scenarios are compared to the baseline, which constitutes the Business-as-Usual (BaU) scenario. The BaU scenario is run for the period 2007-2014 to project the MAGNET model towards the current year, and then up to 2027 (compare 4.2.3). The results are presented in terms of percentage changes in the year 2027.

Tariff liberalisation - scenario 1 (S1)
We quantify the impacts of reciprocal and full tariff liberalisation between the EU and the US.
Table 4.2 provides the details of the tariff rates as used in the MAGNET model. Note that the tariff rates are aggregated to groups of products and countries/regions, using the value of imports as the weight of the underlying import tariffs. The tariff data used in the MAGNET model are contained in the standard GTAP database for 2007 (GTAP version 8), and are presented in terms of ad valorem rates in percentages (which includes non-ad valorem tariffs, as ad valorem equivalents).[11] See Table 4.2 for data for the EU, the Netherlands and the US.

11 Tariffs in the GTAP database are from the MAcMap–HS6 (Market Access Maps) global tariff database prepared by CEPII (Paris) and the International Trade Centre (ITC) from Geneva. MAcMap Version 3 covers tariff data for the year 2007. It includes tariffs (ad valorem, specific, mixed, compound and antidumping duties), and tariff quotas. See https://www.gtap.agecon.purdue.edu/resources/download/5668.pdf for technical backgrounds.

Table 4.2

Import tariff schedules 2007, ad valorem tariffs (%).

	EU27 tariffs imposed on US products	NL tariffs imposed on US products	US tariffs imposed on EU27 products	US tariffs imposed on NL products
1 CER	4.59	1.73	0.72	-
2 osd	0.00	0.00	1.31	0.05
3 v_f	3.34	2.66	1.85	2.01
4 ctl	5.00	3.65	2.15	2.22
5 oap	0.48	0.47	0.48	0.58
7 OPR	6.03	6.53	7.46	2.07
8 vol	4.71	-	1.25	3.29
9 OFD	10.76	17.09	2.37	0.72
10 mil	41.40	28.37	18.53	19.35
11 pcr	23.06	24.02	6.39	-
12 cmt	39.29	65.84	1.13	2.03
13 omt	38.05	25.25	0.82	1.53
14 MNF	1.95	1.43	1.21	0.97
15 SVC	0.00	0.00	0.00	0.00

Source: GTAPv8. Note: '-' means: no imports (see also footnote 12).

Focusing on agri-food products, the ad-valorem tariff rates imposed by the EU27 (and the Netherlands, NL) tend to be higher than the ones imposed by the US. The EU and NL impose particularly high tariffs on processed agri-food products, for example dairy products (mil in Table 4.2), cattle meat (cmt) and other (white) meat products (omt). The tariff rates for primary agricultural products are considerably lower, with tariff rates for some products being even zero (for example oilseeds). Note that the information refers to the applied ad valorem tariff rates; in the absence of trade, tariffs are not reported.[12]

Reduction of non-tariff measures (NTMs) - (TTIP S2 and TTIP S3)

In addition to tariff liberalisation, we simulate the reduction of NTMs that hamper trade and are tackled in the EU-US TTIP agreement by reducing so-called 'iceberg trade costs', i.e. efficiency gains on products exported to the domestic market. The efficiency shocks affect the economy via two channels (Fugazza and Maur, 2008). First, the efficiency shocks lower the price of imports, which leads to an increase in demand for imports at the cost of domestic goods. Second, the efficiency gains increase the real production content of exports (which have become more productive). This implies that fewer exports are required in order to meet the demand of the importing country. Because in MAGNET, as in GTAP, this efficiency gain applies to all imports there are no trade diversion effects at work and is expected to lead to positive welfare effects for all countries.

In the second scenario, a reciprocal increase in efficiency, between the EU and US is modelled of 25%. In the third scenario, the same efficiency gain is assumed for sensitive products of dairy and meat, whereas for the other products the efficiency gains are assumed to reach further, namely 75%.

There are several different types of NTMs; for the commonly used classification of measures see UNCTAD (2007). In the simulation of the reduction of NTM barriers, the focus first and foremost is on the NTM barriers in trade between the EU and the US; SPS measures were discussed in detail in chapter 2.2.2 of this report and tariff rate quotas, which fall under the category of 'traditional' NTMs according to UNCTAD (2007).

[12] Import tariffs at the GTAP product aggregation level are calculated from the most detailed product level (10 digit in most cases) weighted by the actual import value (the higher the import value, the higher the weight of the tariff rate in the calculation of the average of the aggregate). This has the implication that GTAP import tariffs are not fully comparable with lists that use a different aggregation (e.g. the one in Section 2.2.1 of this report). Moreover, in case there is no import value, the calculated import tariff is zero, whereas there might be product lines with tariffs in the (aggregated) product category. A further implication of calculating average tariffs is that EU import tariffs differ from import tariffs applied by the Netherlands, although in reality there is a common external tariff of all EU member states.

Spill-over effects of NTMs to the rest of the world (TTIP 4)
Here we follow CEPR (2013) again, assuming that improved regulatory conditions negotiated between the EU and the US will also result in a limited fall in related trade costs for third countries exporting to the EU and US (direct spillovers), as 'firms in third countries may find it easier to meet either EU or US regulatory requirements if bilateral negotiations lead to simplifications that are not inherently discriminatory' (CEPR, 2013: 29). As done by CEPR we model this positive market access effect as being 20% of the bilateral fall in trade cost related to NTMs for the core scenarios (i.e. 20% of 25% and 75% respectively, which makes 5% for dairy and meat and 15% for the non-sensitive products).

Next to that we also (as CEPR does) include a second indirect effect involving third countries - the *indirect spillovers* - that follows from a global convergence on common standards as third countries are assumed to take over (at least partially) the standards set by the EU and the US. This will give the EU and US improved access to third countries *and* will lower costs and result in more trade between third countries as well. The indirect spill-overs are modelled as 50 per cent of the direct spill-over rate.

4.3.2 Model results

In this section we discuss the results of simulating the four scenarios which are described in the previous sub-section. We start with reporting the GDP effects of the scenarios, and continue with sketching the trade (for imports and exports) and agro-food production effects. We conclude with summarising the results and put these into perspective referring to key outcomes of other studies.

Changes in GDP
GDP impacts are presented in Table 4.3 as the percentage difference compared to the GDP that would occur under a business as usual scenario in 2027. Whereas the GDP effects of an 100% tariff reduction (S1) is quite modest, impacts are highly significant if trade costs associated with non-tariff measures are reduced. The 25% reduction of NTM barriers between the EU and the US (reciprocal reduction, scenario S2) will lead to 0.9% higher GDP for the Netherlands in 2027 (compared to what it would have been under a Business-as-usual scenario). GDP growth of the EU will be little less, and for the US a little more than for the Netherlands. Scenario 3 (25% reduction of NTMs on sensitive products, 75% on other products) will boost GDP growth in the Netherlands, the EU and the US, with a significant global GDP growth of almost 2% in 2027. The rest of the world will only benefit if their standards converge with those of the EU and the US, reducing trade costs in their trade with the two giant economies and among each other. Estimates indicate that in case other countries in the world would take over and harmonise with standards used by the EU and US in their bilateral trade after a TTIP, economic gains would be impressive across the board. Highest benefits, though accrue to the Netherlands and the EU.

US stands to gain much more relative to the EU from tariff liberalisation (GDP gain of 0.05% for the US as opposed to 0.02% for the EU) and additional NTM liberalisation: in S2 and S3 GDP gains are around 1% and 5% respectively for the US and 0.9% and 4% for the EU. However, when spill-over effects are involved (S4), growth figures for the Netherlands and the EU are higher than for the US. Part of the explanation may be that for the US, the EU is a relatively important trading partner viz-a-viz other regions in the world, whereas for the EU, regions other than the US are relatively more important.

Table 4.3

GDP levels in 2014 and in 2027 according a Business as usual (BaU) projection, and% difference of the 2027 BaU GDP in 2027 in each of the trade liberalisation scenarios.

	GDP (bn USD)		% Difference from BAU GDP in 2027			
	2014	2027 - BAU	TTIP_S1	TTIP_S2	TTIP_S3	TTIP_S4
Netherlands	797	1,002	0.02	0.89	4.29	6.70
EU27	16,501	21,297	0.02	0.81	4.06	6.85
Rest of Europe	1,051	1,396	0.01	-0.05	-0.28	6.59
USA	15,253	21,336	0.05	1.02	4.83	6.34
Rest of America	6,395	10,200	0.07	0.06	-0.03	3.09
Africa	1,778	3,167	0.12	0.07	-0.12	5.00
Asia	21,511	39,673	0.11	0.07	-0.07	3.37
Oceania	1,224	1,744	0.05	0.03	-0.07	2.52
World	64,509	99,815	0.07	0.44	1.9	4.84

Source: own calculations, model projections

Agro-food value added

The primary and food processing industry is only a small contributor to GDP in the Netherlands, the US and all other regions except Africa - see Table 4.4. Projections indicate that their share in GDP will not change in each of the scenarios compared to the BaU in 2027, except for the most ambitious scenario S4. In the latter the manufacturing and service sector grow faster which results in a lower GDP share of the processed food sector.

Table 4.4

Value added shares of primary agriculture and food processing sector in the overall economy (% of GDP).

Value added shares	Primary agriculture						Processed food					
	2014	2027 - BAU	2027 - TTIP S1	2027 - TTIP S2	2027 - TTIP S3	2027 - TTIP S4	2014	2027 - BAU	2027 - TTIP S1	2027 - TTIP S2	2027 - TTIP S3	2027 - TTIP S4
Netherlands	2	1	1	1	1	1	3	3	3	3	3	2
EU27	2	1	1	1	1	1	3	2	2	2	2	2
Rest of Europe	2	1	1	1	1	1	2	2	2	2	2	2
USA	1	1	1	1	1	1	2	1	1	1	1	1
Rest of America	4	2	2	2	2	2	4	3	3	3	3	3
Africa	13	9	9	9	9	9	5	4	4	4	4	4
Asia	6	3	3	3	3	3	2	2	2	2	2	2
Oceania	3	2	2	2	2	2	2	2	2	2	2	2
World	3	2	2	2	2	2	3	2	2	2	2	2

Source: own calculations, model projections.

The agro-food value added distribution over detailed sectors is presented for the Netherlands in Figure 4.2. Overall, shifts are very small to modest. In case of tariff liberalisation (S1) there is little to no effect on value added shares of the agro-food sectors; they have the same shares as under the BaU scenario. In case of bilateral NTM liberalisation (S2 and S3) several sectors see their shares declining; only the dairy sector and the (dominating) 'other processed foods' sector are gaining shares. Value added shares of the dairy, red meat and white meat sector will increase under the S4 scenario in which spillover effects to other countries results in higher demand for these animal products in the world, from which the Netherlands will benefit.

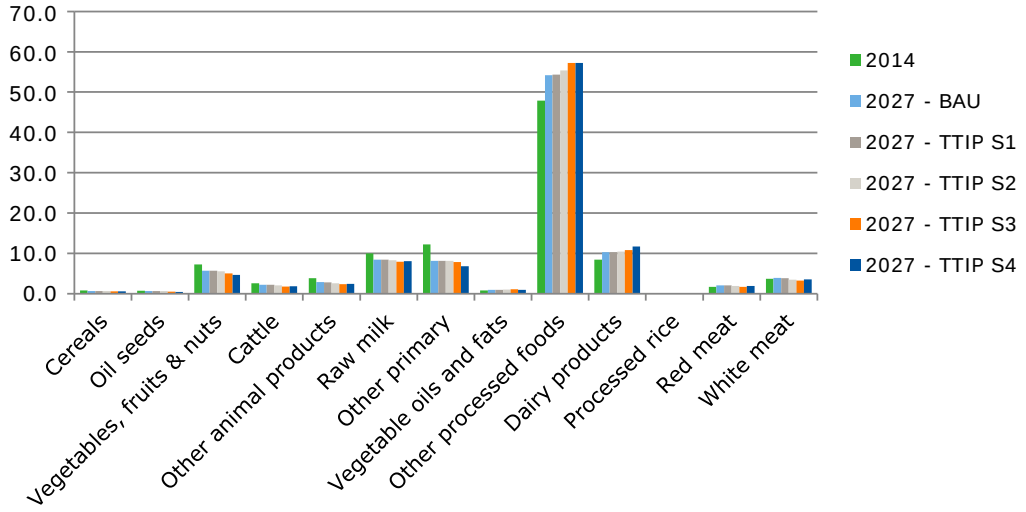


Figure 4.2 *Agro-food value added distributed over detailed sectors for the Netherlands (% of value added in agro-food).*

Trade effects

Table 4.5 shows that trade liberalisation under all four scenarios would induce an increase of the Dutch exports to but also more imports from the US. Reducing tariffs to zero (S1) and NTMs (S2 and S3) positively affects Dutch exports of agro-food products, most particularly for dairy products, meat products (processed and primary, though starting from a very low absolute level) and vegeTable oils and fats, followed by the fruit and vegetables product category.

Generally, tariff liberalisation between the EU and the US implies an increase of Dutch exports to the world, yet for some products (like dairy, meat and fruit and vegetables) it also implies a (small) reduction of exports to the rest of the EU (not shown). The net effects is, hence, a relatively small increase of (net) exports.

Table 4.5

Trade impacts of the four liberalisation scenarios -% change in Dutch exports to the US and imports from the US (% change relative to baseline projection in 2027).

	Dutch exports to the US					Dutch imports from the US				
	2027-BaU (million USD)	TTIP S1	TTIP S2	TTIP S3	TTIP S4	2027-BaU (million USD)	TTIP S1	TTIP S2	TTIP S3	TTIP S4
Cereals	0	2.6	232	1,716	1,297	46	6.6	147	549	406
Oil seeds	0	1.7	145	694	544	305	-1.8	64	140	56
Vegetables, fruits & nuts	44	8.6	99	364	222	65	7.9	65	149	86
Cattle	42	12	116	106	108	5	10	66	-0.4	1.1
Other animal products	10	2.9	49	46	45	7	-2.8	12	-25.2	-24
Other primary	282	12	182	731	463	174	36	186	504	308
VegeTable oils and fats	3	24	298	1,475	1,115	0	-2.5	140	457	238
Other processed foods	1565	2.3	64	203	139	439	71	159	274	246
Dairy products	61	194	670	872	803	44	476	1,532	677	745
Processed rice	0	0.7	168	1,051	709	0	197	490	948	549
Red meat	0	20	464	465	441	10	3,794	8,830	3,207	3,538
White meat	4	16	538	578	548	1	591	2,345	440	508
Manufacturing (other)	12,003	7.6	271	1,169	773	12,940	9.2	230	750	478
Services	11,738	0.6	58	207	161	6,073	-1.1	56	132	133

Source: own calculations. Note: raw milk left out as zero trade for Netherlands. '0' is a value below USD0.5m.

For the EU, impacts on exports to the US are positive for all product categories, and similar as for the Netherlands, with the percentage increase highest for dairy products (see Table 4.6). Note that the percentage changes have to be seen in the perspective of the (projected) 2027 export values (in the baseline).

At the Dutch and EU import side, our simulations indicate that the US benefit especially from the improved access to the EU for dairy, red and white meat products: the Dutch and the EU imports of these products will increase dramatically percentage-wise (see Table 4.5). US exports to other regions than the EU will decline, yet overall the US producers of animal products will benefit. These and the results for the Netherlands and EU follow from the logic that both at the EU and the US side import tariffs in the animal product categories are highest. Reducing tariffs across the board therefore will have biggest impacts on those sectors.

With spillover effects assumed (S4) the Dutch export growth to the US and its import growth from the US will be less than without these effects. This shows that trade with other countries (than the US) will increase too, once standards and regulations affecting trade are more harmonised.

Table 4.6

Trade impacts of the four liberalisation scenarios -% change in EU27 exports to the US and imports from the US (% change relative to baseline projection in 2027).

EU27 trade relations with US	% difference from BAU outcome in 2027					% difference from BAU outcome in 2027				
	2027 - BAU	TTIP S1	TTIP S2	TTIP S3	TTIP S4	2027 - BAU	TTIP S1	TTIP S2	TTIP S3	TTIP S4
Cereals	15	6.7	236	1,590	1,090	953	25.2	180	559	412
Oil seeds	5	7.8	150	650	478	755	-2	77	207	100
Vegetables, fruits & nuts	246	7.9	98	361	230	1317	10	70	170	127
Cattle	254	10.8	109	93	94	236	17	85	24	21
Other animal products	90	2.4	47	42	41	184	-1	22	-14	-15
Other primary	440	49	279	1,073	733	1,041	34	194	611	394
VegeTable oils and fats	475	8.4	204	756	491	214	32	242	783	417
Other processed foods	11,942	8.2	72	212	149	3,677	42	120	239	222
Dairy products	722	178	601	730	656	150	1070	3408	1,607	1,802
Processed rice	4	38	241	1,029	522	19	184	472	984	627
Red meat	26	11	396	341	298	83	1092	3472	1,207	1,352
White meat	171	8.4	471	424	367	341	1416	4902	1,673	1,880
Manufacturing (other)	285,433	9.4	267	1,076	708	231,983	14	264	990	682
Services	201,084	0.5	58	199	156	130,524	-1	55	128	127

Source: own calculations.

Market shares: shifts that follow from the scenarios

To illustrate the impact of the EU-US bilateral trade agreement on the (multilateral) trade flows the Figures 4.3., 4.4 and 4.5. below are presented with a focus on the changes in shares in imports by the Netherlands, the EU and the US.

Figure 4.3 shows the Dutch import market shares for dairy, red meat and white meat in 2014 (the base year) and for 2027 for all four scenarios. Tariff elimination under S1 indicates that the US increase dairy exports to the Netherlands and will gain market share, whereas other EU countries will lose. The US will increase its market share when uniform NTM reductions will be applied (S2) but under S3 (less trade costs for other than dairy and meat products) and especially S4 (spillover effects) Oceania will increase its market share at the cost of the US. Comparing S4 results with the 2014 base indicates that the US and Oceania have won market shares at the cost of other EU countries.

For red meat, the US will become a more important supplier of the Netherlands, under S1 also at the cost of other EU countries, a tendency that continues under S2. Yet, other American countries (especially beef producing and exporting Latin American countries) will take over important shares of the Dutch import market under S3 and S4 scenario. Similar as on the dairy market, the US has to give up market shares in the Netherlands imports when the bilateral agreement spills over to other countries, but the US still gains market shares compared to the initial situation in 2014.

Looking at the white meat imports, the US will play no role at the Dutch market. The other mainly Latin American countries and Asia are dominating the market already and will continue to do so under each of the scenarios. The other EU27 countries will have to give up a significant part of their share in the Dutch white meat imports.

To illustrate the impact of the EU-US bilateral trade agreement on the (multilateral) trade flows the Figures 4.3., 4.4 and 4.5. below are presented with a focus on the changes in shares in imports by the Netherlands, the EU and the US.

Figure 4.3 shows the Dutch import market shares for dairy, red meat and white meat in 2014 (the base year) and for 2027 for all four scenarios. Tariff elimination under S1 indicates that the US increase dairy exports to the Netherlands and will gain market share, whereas other EU countries will lose. The US will increase its market share when uniform NTM reductions will be applied (S2) but under S3 (less trade costs for other than dairy and meat products) and especially S4 (spillover effects) Oceania will increase its market share at the cost of the US. Comparing S4 results with the 2014 base indicates that the US and Oceania have won market shares at the cost of other EU countries.

For red meat, the US will become a more important supplier of the Netherlands, under S1 also at the cost of other EU countries, a tendency that continues under S2. Yet, other American countries (especially beef producing and exporting Latin American countries) will take over important shares of the Dutch import market under S3 and S4 scenario. Similar as on the dairy market, the US has to give up market shares in the Netherlands imports when the bilateral agreement spills over to other countries, but the US still gains market shares compared to the initial situation in 2014.

Looking at the white meat imports, the US will play no role at the Dutch market. The other mainly Latin American countries and Asia are dominating the market already and will continue to do so under each of the scenarios. The other EU27 countries will have to give up a significant part of their share in the Dutch white meat imports.

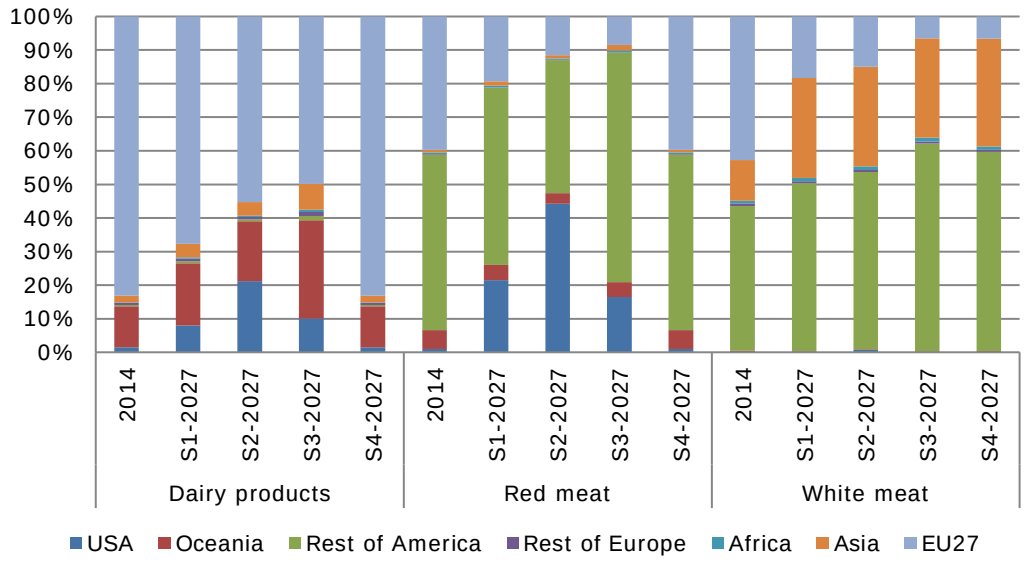


Figure 4.3 *Dutch imports of dairy and meat, market shares in 2014 and per scenario.*

Shifts in the EU import market shares resulting from the four scenarios are presented in Figure 4.4. For dairy the Netherlands has to give in whereas the US benefits from freer trade (S1, S2 and S3) but Asia and Oceania increase their market shares when standards and regulations converge in S4, apparently being more competitive than the US. The US gains market shares at EU's red and white meat markets but loses market shares to the Rest of America (red meat) and Asia (white meat) when third countries (partially) take over the EU/US standards in trade for these products. As with dairy, the Netherlands is losing shares on the EU market for both meat types.

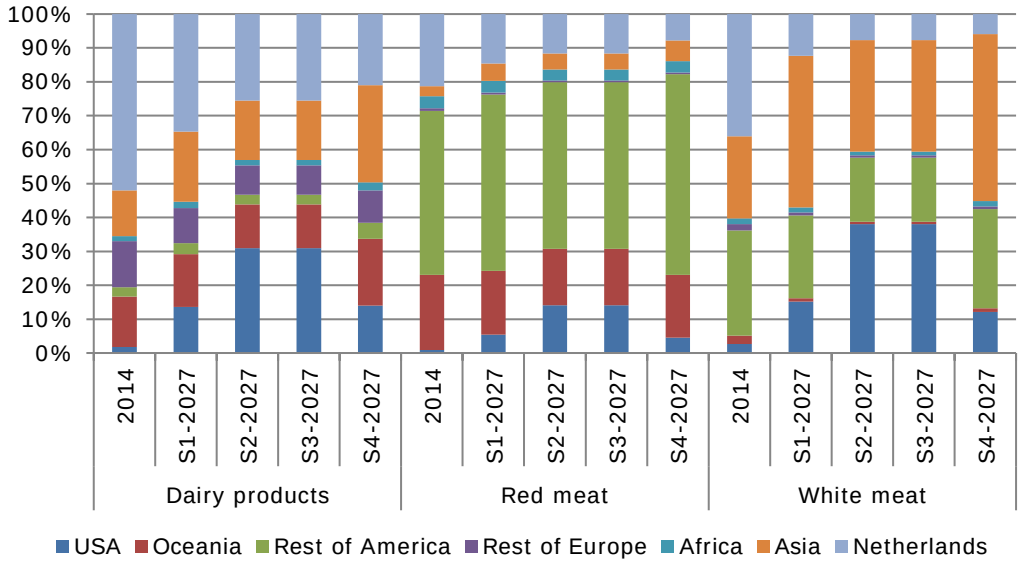


Figure 4.4 *EU27 imports of dairy and meat, market shares in 2014 and per scenario.*

At the US market, the EU27 and the Netherlands benefits from improved market access for dairy products. Oceania will lose market share under the liberalisation scenarios until it applies trade standards the EU and US agreed (S4). Oceania also loses ground at the US red meat market (where 'rest of America' wins), whereas Asia benefits from further opening up US markets for white meat.

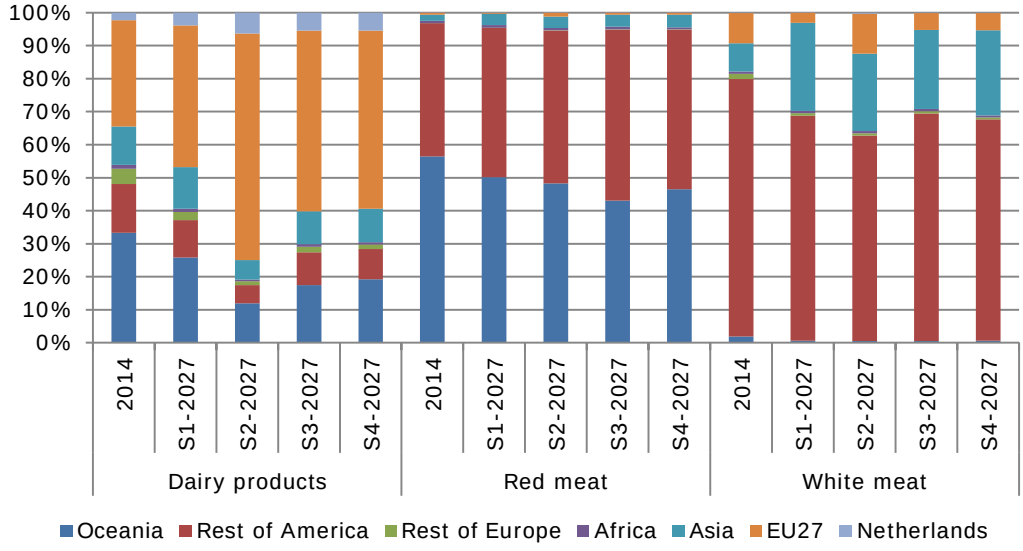


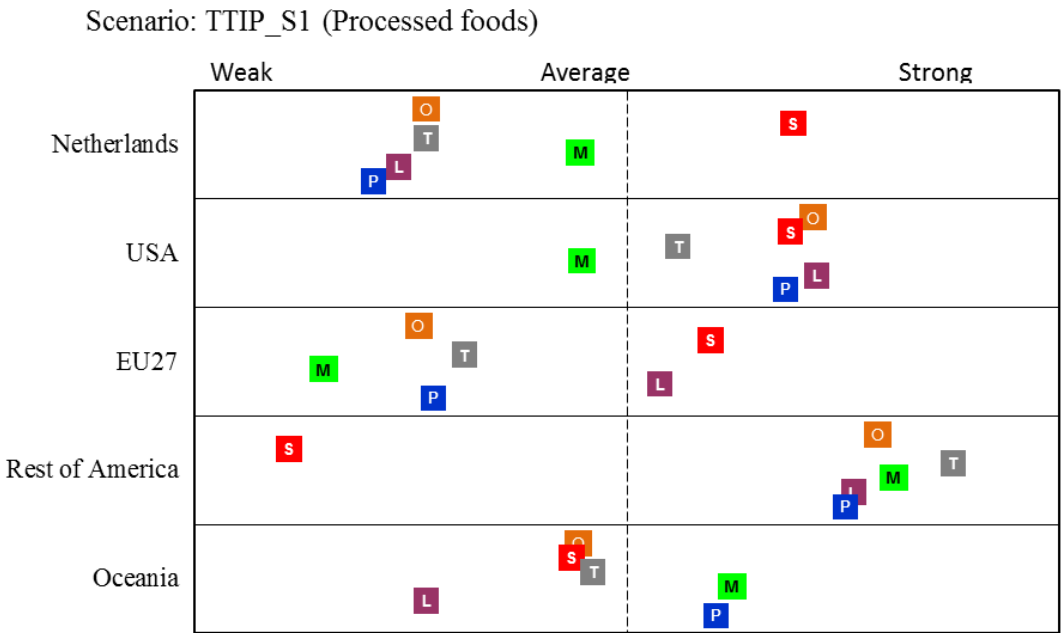
Figure 4.5 *US imports of dairy and meat, market shares in 2014 and per scenario.*

4.4 Impacts of policy scenarios on competitiveness

This section reports on the scenario outcomes for the competitiveness of the Dutch food industry. Current competitiveness of the industries were reported in chapter 3. Their positions will alter due to trade and production responses to the policy scenarios simulated in previous sections of this chapter. The effects of the trade policy scenarios were calculated again for the five indicators of competitiveness: (growth in) value added, labour productivity, value added share, export market share and relative trade advantage.[13]

The policy scenarios cover developments up to 2027 and deal with reductions in import tariff and trade costs associated with NTMs. In this section we report on the impacts of the trade elimination policy scenario (S1) and on the impacts of the most ambitious trade policy scenario, which is the diversified NTM reduction with spillover effects (S4). We present the outcomes of the two scenarios for (the aggregated) food processed products, for dairy and for white meat.

Figure 4.6 shows that outcome of Scenario 1 (tariff liberalisation) for processed foods. The Figure demonstrates that the US and Rest of America score better than the Netherlands and the EU27 on all indicators.

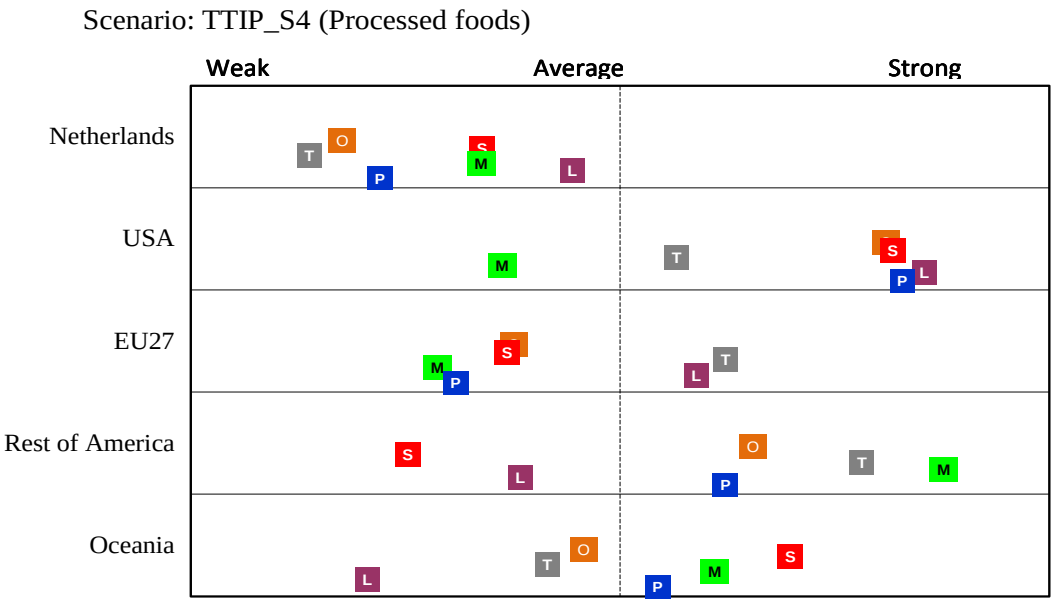


Legend:
O Overall competitiveness
S Annual growth of the share of the food industry in the added value in manufacture industry (2014-2027);
T Difference RTA indicator (2014-2027);
M Difference world market share 2027 minus 2014;
L Annual growth rate labour productivity (2014-2027);
P Annual growth rate real added value (2014-2027).

Figure 4.6 *TTIP S1 on processed foods.*
Source: Own calculations.

13 The evaluation of competitiveness in this section is not fully comparable with the one conducted in Chapter 3, in which the Dutch position was referenced against a much greater number of benchmark countries.

Figure 4.7 presents the competitiveness indicators for Scenario 4 (NTM reduction of 25 and 75%, with spillovers). The graph shows similar outcomes as for Scenario 1: the overall competitive position of the US food industry is stronger than the one in the Netherlands and the EU27, indicating that the US food industry is benefitting most from this scenario.

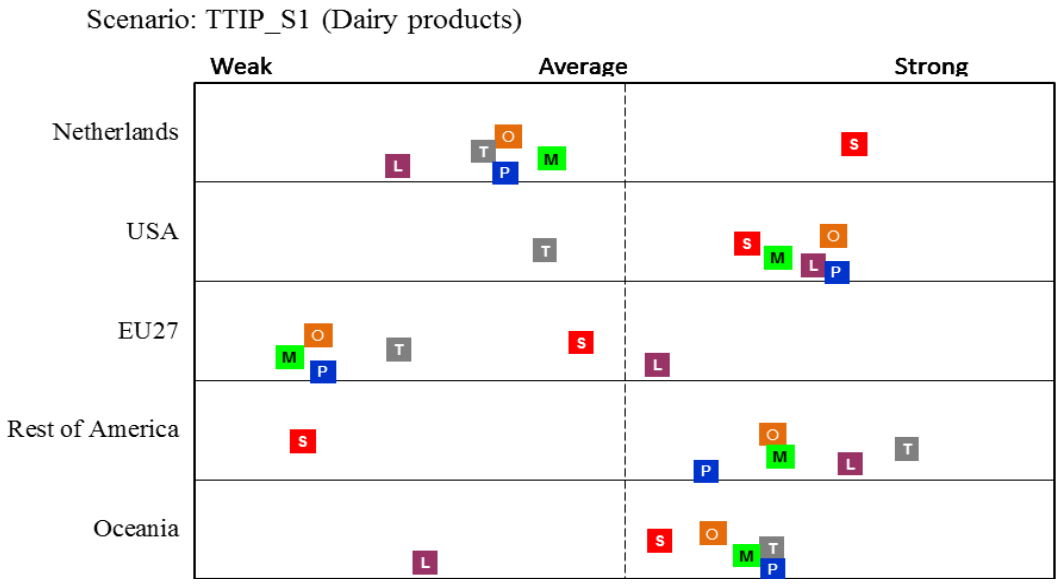


Legend:

O Overall competitiveness
S Annual growth of the share of the food industry in the added value in manufacture industry (2014-2027);
T Difference RTA indicator (2014 - 2027);
M Difference world market share 2027 minus 2014;
L Annual growth rate labour productivity (2014-2027); US (2002-2011) & Brazil (2005-2011)
P Annual growth rate real added value (2014-2027).

Figure 4.7 *TTIP S4 on processed foods.*
Source: Own calculations.

The dairy market shows almost a similar outcome as for processed foods. With only the tariff elimination (Scenario 1 - see Figure 4.8), the Netherlands and the EU27 dairy industry perform weakly as they have much lower scores than the US and the other regions included in the overview. The only strong indicator is the value added of the dairy industry compared to the overall manufacturing industry. The EU dairy industry has a reasonable labour productivity growth which, however, cannot prevent other indicators from falling into the low score end of the spectrum. The situation does not change much for the Netherlands and the EU27 when trade liberalisation is encompassing a reduction of NTM costs of trade, a scenario from which also third countries are benefiting. Figure 4.9 is showing the results on competiveness in case of Scenario 4. The US is again doing well and performing much better than the Netherlands and the EU27. The Rest of America, though, is largely on the weak side of the spectrum, whereas Oceania is strong (as is the case in Scenario 1).



Legend:

O Overall competitiveness

S Annual growth of the share of the dairy industry in the added value in manufacture industry (2014-2027);

T Difference RTA indicator (2014 - 2027);

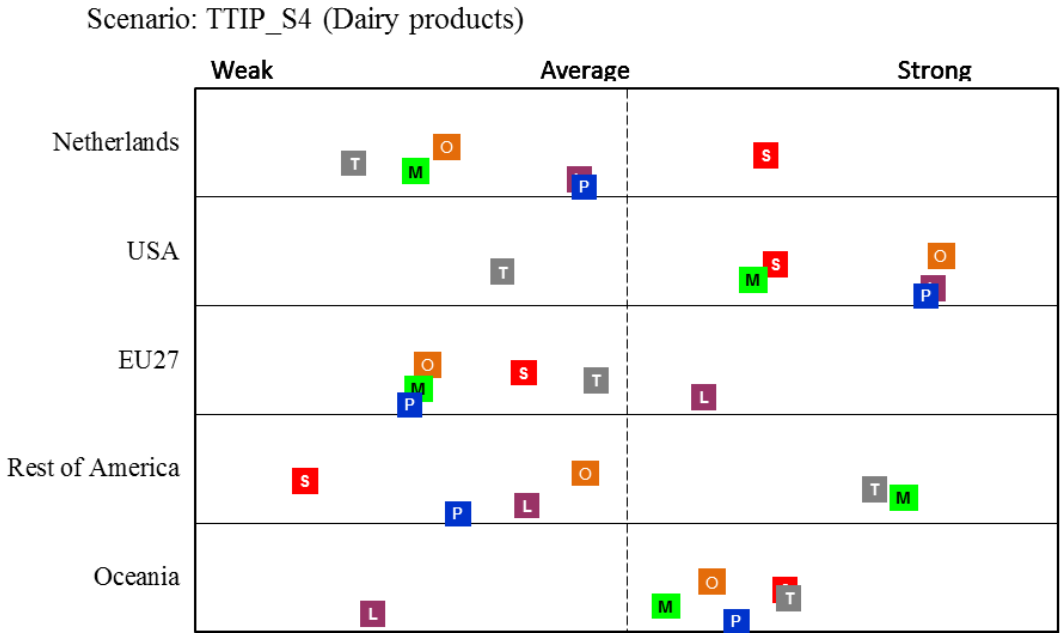
M Difference world market share 2027 minus 2014;

L Annual growth rate labour productivity (2014-2027); US (2002-2011) & Brazil (2005-2011)

P Annual growth rate real added value (2014-2027).

Figure 4.8 *TTIP S1 on dairy products.*

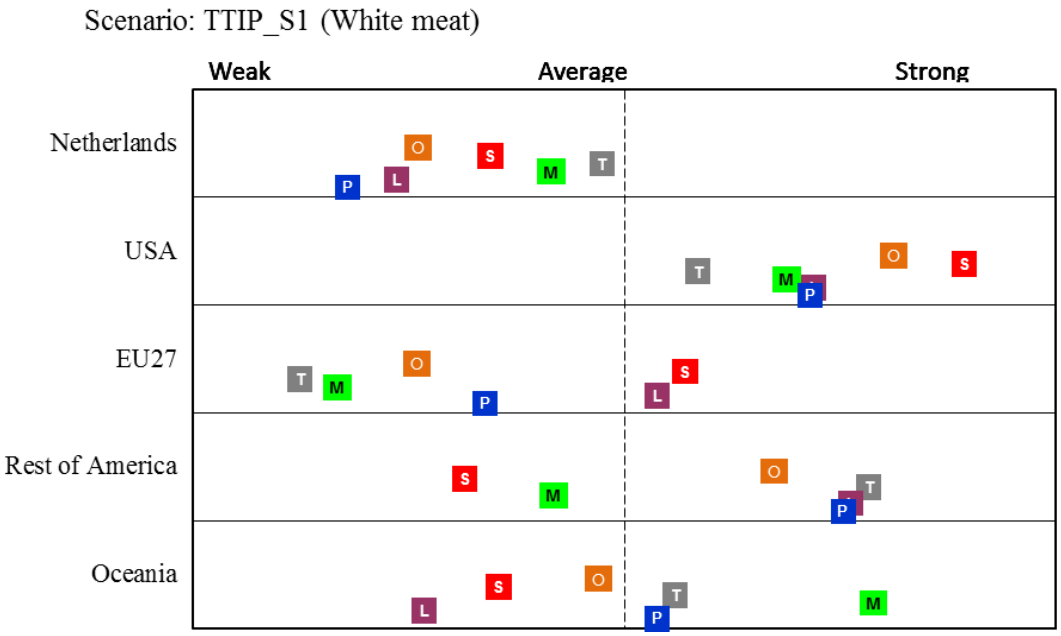
Source: Own calculations.



Legend: see Figure 4.8.

Figure 4.9 *TTIP S4 on dairy products.*

For white meat, again the impact of trade liberalisation is not positive for the Netherlands and the EU27 - see Figure 4.10 for Scenario 1 and Figure 4.11 for Scenario 4. All indicators of competiveness score on the weak end for the Netherlands. By contrast, the US white meat industry performs well under both scenarios. The Rest of America (which includes Brazil among others) shows a strong position, especially under scenario S4.



Legend:

O Overall competitiveness

S Annual growth of the share of the white meat industry in the added value in manufacture industry (2014-2027);

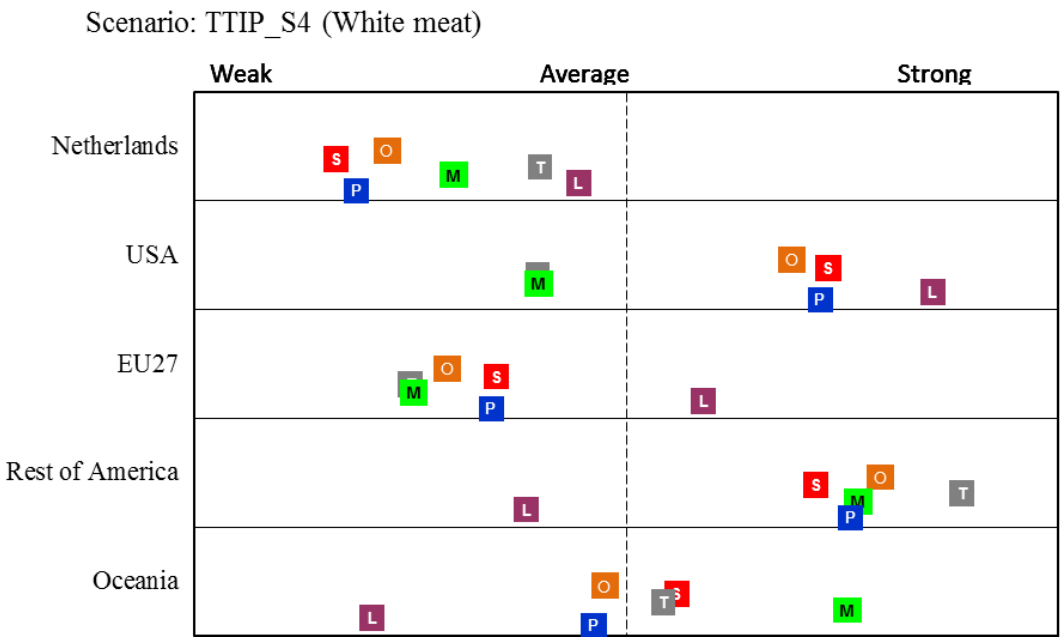
T Difference RTA indicator (2014-2027);

M Difference world market share 2027 minus 2014;

L Annual growth rate labour productivity (2014-2027); US (2002-2011) & Brazil (2005-2011)

P Annual growth rate real added value (2014-2027).

Figure 4.10 *TTIP S1 on white meat products.*
Source: Own calculations.



Legend:

O Overall competitiveness

S Annual growth of the share of the white meat industry in the added value in manufacture industry (2014-2027);

T Difference RTA indicator (2014-2027);

M Difference world market share 2027 minus 2014;

L Annual growth rate labour productivity (2014-2027); US (2002-2011) & Brazil (2005-2011)

P Annual growth rate real added value (2014-2027).

Figure 4.11 *TTIP S4 on white meat.*
Source: Own calculations.

The figures above show that competitors of the Dutch food industry are doing better under each of the trade liberalisation scenarios. This does not mean that the Dutch food industry will lose market in absolute terms; the assessment merely shows that the food industry will perform less than the benchmark countries. The Dutch exports of food products (among them the meat and dairy products) are projected to increase. However, other countries' exports will grow faster, resulting in growing market shares of these countries. Partly this has to do with the markets the countries are most active in. The Dutch export markets are mainly in the EU. These are generally saturated markets, showing a slow or even stagnant growth in food products. The EU is a highly competitive market in which consumers demand high quality, convenience, safe and healthy food.

Hence, enterprises should innovate in products and marketing in order to stay in business. This also calls for economies of scale. Generally the Dutch and EU food industries operate on a small scale level, compared to the US food industry. This may be a disadvantage in terms of innovative power. Innovation and the application of new technologies in food processing will help to increase value added to food products, and enhance the Dutch export position in products with high value added. This strategy will contribute to the growth of labour productivity, an indicator that develops less favourably compared to benchmark countries under each of the scenarios discussed in this study. See Wijnands et al (2007 and 2008) for a number of key success factors to enhance the competitiveness of the EU food industry. Also in these studies, emphasis is put on innovation and increasing labour productivity in order to remain strong in the two dimensions of competitiveness: the comparative advantage of products and the competition with other industries in the economy for production factors.

5 Conclusions

This report provides estimates of the impact of removing tariff and non-tariff barriers to trade between the EU and the US on the Dutch food industries. Several scenarios are analysed in this study. On the one hand, a trade liberalisation scenario with only (ad valorem and specific) tariff reductions is discussed. On the other hand we consider the impacts of a reduction of trade costs associated with NTMs between the EU and the US only, and in a scenario in which other countries also benefit from lower trade costs by aligning with the EU-US standards and regulations.

The results indicate positive gains for the food industry in the Netherlands, the EU and the US. In the most ambitious scenario (with spillover effects of NTMs to the rest of the world), the Dutch (overall) GDP will be 6.7% higher in 2027 (the date all adjustments have been applied) compared to a business as usual situation. GDP growth in the EU and the US will be 6.9% and 6.3% respectively, and the GDP impact on global scale is estimated 4.8%. Impacts on GDP and trade flows in agricultural and food products are much larger when the trade liberalisation focus includes the reduction of costs related to NTMs.

Currently, average applied tariffs on agri-food products at the EU and US borders are not high, although behind these averages one finds a wide range of ad valorem and substantial specific duties for detailed products. However, and more importantly, both sides complain about the many regulatory hurdles exporters are facing when entering the partner's market. For instance, EU dairy export is subject to an US import quota system. The EU does not approve the use of growth hormone and pathogen reduction treatment in US meat. Estimates by other studies indicate that reducing costs of these impediments on cross-border trade would result in significant potential economy wide welfare gains at both sides. This study confirms this conclusion for the food industries.

This study also adds a comprehensive competitiveness analysis of the food industries and compares current with future situations under the scenarios set in this study. Currently the Dutch food processing industry has a relative strong competitive position. By contrast, the US food industry is on the bottom end of the performance spectrum compared to benchmark countries. Both the Dutch and US meat processing industries are below the average of the benchmark countries, among which Brazil is by far the best performing country. The Dutch dairy processing industry has the strongest competitive position of all countries presented, with the US dairy industry close to the Dutch position. An overall observation is that the Dutch industries are losing export market shares; despite increasing Dutch exports the world exports grew faster than the Dutch food (meat and dairy) industry could meet.

The analysis of the impacts of the policy scenarios on competitiveness further underlines these developments: a further trade liberalisation provides significant economic growth but in the evaluation framework of competitiveness the Dutch (and EU-27) food industries score below average. This is because other exporters of processed food products increase their exports more than the Netherlands (and the EU27), but is also due to value added and labour productivity developments in the food industry that are lagging behind the developments in these indicators in other parts of the economy. The latter shall be counteracted by strategies of innovation to enhance quality and product differentiation, and of exploitation of economies of scale.

References

Banse, M., van Meijl, H., Tabeau, A., & Woltjer, G. (2008). Will EU biofuel policies affect global agricultural markets? European Review of Agricultural Economics, 35(2), 117-141.

Banse, M., J.C.M van Meijl, A. Tabeau, G. Woltjer, F. Hellmann and P.H. Verburg (2011). Impact of EU biofuel policies on world agricultural production and land use. Biomass and Bioenergy, 35(6), 2385-2390.

Bruinsma, J. (2003). World agriculture: Towards 2015/30, an FAO perspective. London: Earthscan and Rome: FAO.

CEPR (2013). Reducing Transatlantic barriers to trade and investment. An economic assessment. Final project report, March 2013. Prepared for the European Commission, under implementing Framework contract Trade 10/A2/A16.

ECORYS (2009). Non-tariff Measures in EU-US Trade and Investment - An Economic Analysis. Report prepared by K. Berden, J.F: Francois, S. Tamminen, M. Thelle and P. Wymenga for the European Commission, Reference OJ 2007-S 180-219493.

ECORYS, Teknologisk Institut, Cambridge Economics, CES ifo, Idea consult and LEI (2011). Study on the Competitiveness of the European Meat Processing Industry. Catalogue number: NB-32-11-640-EN-N, European Commission, Luxembourg. Online: http://ec.europa.eu/enterprise/sectors/food/files/report_compmeat_en.pdf (accessed 8 January 2014).

ECORYS, 2012. Study on 'EU-US High Level Working Group'. Final report October 2012. Rotterdam

Elam, T.E. (2010). Competition in the U.S. Chicken Sector. FarmEcon LLC. Online: http://www.foodliabilitylaw.com/uploads/file/ChickenSectorCompetitionStudyFARMECONLLC5-19-2010.pdf (accessed 9 January 2014).

Francois, J., J.C.M. van Meijl and F. van Tongeren (2005). Trade liberalization in the Doha development round. Economic Policy, 20(42),349-391.

Fugazza, M, and J-C Maur (2008). Non-tariff barriers in compuTable general equilibrium modelling. UNCTAD, Policy issues in International Trade and commodities study series no. 38. New York and Geneva.

Hertel, T. W. (1997). Global trade analysis: Modelling and applications. Cambridge: Cambridge University Press.

Horne, P.L.M. van (2009). Productiekosten van kuikenvlees - Een internationale vergelijking. LEI-rapport 2009-004, LEI Wageningen UR, Den Haag.

Horne, P.L.M. van (2013). Concurrentiekracht van de Nederlandse pluimvleessector. LEI-rapport 2013-037, LEI Wageningen UR, Den Haag.

Horne, P.L.M. van, and Bondt N. (2013). Competitiveness of the EU poultry meat sector. LEI-Report 2013-068, LEI Wageningen UR, Den Haag.

Ollinger, M., J. MacDonald and M. Madison, 2000. Poultry plants lowering the costs and increases variety. Food review 23(2) pp. 2-7.

Penz, A.M.jr. and D.G. Bruno, D.G. (2012). Where Broiler Production is Heading in Brazil. Cargill Animal Nutrition. Online: http://www.thepoultryfederation.com/public/userfiles/files/Penz_Where%20Broiler%20Production%20is%20Heading%20in%20Brazil_abstract.pdf (accessed 9 January 2014).

Netherlands Environmental Assessment Agency (MNP) (2006). Integrated modelling of global environmental change: An Overview of IMAGE 2.4.Bilthoven: MNP.

Rabobank (2012). What Next for UK Poultry - Shaping the Industry for Future Competitiveness. Rabobank Industry Note #298. Online: http://www.rabobank.de/uploads/media/FarmingUK.com_Knowledge_centre_-_Rabobank_IN298_What_Next_for_UK_Poultry_Mulder_January2012_1_.pdf (accessed 9 January 2014).

Rutten, M., L. Shutes and G. Meijerink (2013). Sit down at the ballgame: How trade barriers make the world less food secure. Food Policy, 38,1-10.

Schneff, R. (2013). Dairy policy proposals in the next farm bill, Congressional Research Service, 7-5700, R42736, July.

United States Department of Agriculture (USDA) - Economic Research Service (ERS). (2012). International macroeconomic data set. <http:// www.ers.usda.gov/data-products/international-macroeconomic-dataset.aspx#BaselineMacroTables>.

USDA Foreign Agricultural Service (2013): EU-28 - Poultry and Products Annual - EU-28 Poultry sector to grow again in 2013 and 2014. GAIN Report Number: FR9146. Online: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Poultry%20and%20Products%20Annual_Paris_EU-27_9-16-2013.pdf (accessed 9 January 2014).

Woltjer, G., M. Rutten and M. Kuiper (2013a), 'Working with MAGNET: User Guide'. Internal document, LEI Wageningen UR, The Hague.

Woltjer, G., M. Kuiper, A. Kavallari, H. van Meijl, J. Powell, M. Rutten, L. Shutes, A. Tabeau (2013b), 'The MAGNET Model: Module description'. Internal document, LEI Wageningen UR, The Hague.

Wijnands, J.H.M., B. van der Meulen and K.J. Poppe (2007). Competitiveness of the European Food Industry - An economic and legal assessment. Report commissioned by DG Enterprise, European Commission, Brussels. http://ec.europa.eu/enterprise/sectors/food/files/competitiveness_study_en.pdf

Appendix 1 Benchmark countries

The benchmark countries in chapter 3 are selected on the following criteria:

1. EU countries with an important food industry. We selected all EU countries that have a share in the total EU27 food industry turnover of at least 5%.
2. Countries with strong trade relationship with the USA. A 'strong' trade relationship is defined as export by the US to a country above 2% of the total exports or the imports by the US from a country above 2% of the total imports of the US.

Table A.1 provides an overview of the EU countries that meet afore mentioned criteria. In addition, we included countries, that have an important trade position on the world of agricultural and food products. In this respect, we follow the study of Wijnands et al. (2007). In that study Australia, Brazil and Canada are selected. Some major trade partners of the USA, such as China, Mexico and Japan, are not selected for this study due to insufficient access to data within the time frame of this research.

Table A.1

Turnover and import by and from the US (Average 2009-2011).

	Country	Population (Million)	GDP (Billion USD)	GDP/capita (1,000 USD)	Agricultural land (in 2011)	
					(Million Ha)	Sq. Metres/ capita
1	*Netherlands*	*16.8*	*771*	*46.0*	*1.9*	*1,130*
2	France	65.7	2,613	39.8	29.1	4,428
3	Germany	81.9	3,428	41.9	16.7	2,042
4	Ireland	4.6	211	45.9	4.6	9,926
5	Italy	60.9	2,015	33.1	13.9	2,287
6	Spain	46.2	1,323	28.6	27.5	5,957
7	United Kingdom	63.2	2,472	39.1	17.2	2,715
	EU total	**509.0**	**16,687**	**32.8**	**187.9**	**3,691**
8	*United States*	*313.9*	*16,245*	*51.7*	*411.3*	*13,101*
9	Australia	22.7	1,532	67.6	409.7	180,603
10	Brazil	198.7	2,253	11.3	275.0	13,845
11	Canada	34.9	1,821	52.2	62.6	17,946
	World total	**7,046.4**	**72,440**	**10.3**	**4,905.4**	**6,962**

Source: (Calculation based on) UNComtrade.

Table A.2 presents some key characteristics of the Netherlands, United States of America and the selected benchmark countries. GDP/capita is in most selected countries in the range of 40-50,000 USD, except for Brazil and Spain. Ireland (4.6m) and the Netherlands (16.8m) have the smallest population, the USA the largest (314m) followed by Brazil (almost 200m). A relatively small population indicates a relatively small demand for food and hence generally a small industry. The land area per capita indicates the domestic production possibilities of raw materials: in the EU countries this is relatively low compared to non-EU Countries. Australia - with over 400m hectares - has about 160 times more agricultural land per capita than the Netherlands.

The selected EU countries cover two-thirds of the population, three-quarters of the GDP and 60% of the agricultural land of the total of the EU. All selected countries, account for just 13% of the population, 48% of the GDP and 26% of the agricultural land of the world's total.

Table 2.3

Characteristic of the economies of the selected (benchmark) countries, EU total and world's total in 2012.

	Country	Population (Million)	GDP (Billion USD)	GDP/capita (1,000 USD)	Agricultural land (in 2011)	
					(Million Ha)	Sq. Metres/ capita
1	*Netherlands*	*16.8*	*771*	*46.0*	*1.9*	*1,130*
2	France	65.7	2,613	39.8	29.1	4,428
3	Germany	81.9	3,428	41.9	16.7	2,042
4	Ireland	4.6	211	45.9	4.6	9,926
5	Italy	60.9	2,015	33.1	13.9	2,287
6	Spain	46.2	1,323	28.6	27.5	5,957
7	United Kingdom	63.2	2,472	39.1	17.2	2,715
	EU total	**509.0**	**16,687**	**32.8**	**187.9**	**3,691**
8	*United States*	*313.9*	*16,245*	*51.7*	*411.3*	*13,101*
9	Australia	22.7	1,532	67.6	409.7	180,603
10	Brazil	198.7	2,253	11.3	275.0	13,845
11	Canada	34.9	1,821	52.2	62.6	17,946
	World total	**7,046.4**	**72,440**	**10.3**	**4,905.4**	**6,962**

Source: World Development Indicators

Appendix 2 Competitiveness indicators

The starting point for assessing the competitiveness of the food industry is the approach of Wijnands et al. used in their study on the competitiveness of the European food industry (Wijnands, 2008; Wijnands, 2007). In this section we will discuss some additional indicators that might be used in assessing the competitiveness. We did not perform an extensive literature review and the indicators are derived from a few papers that are mentioned in the section below. So the overview below is far from exhaustive. Furthermore, we make a distinction between trade respectively business economic performance measures of competitiveness. Below, after we discussed the indices, we will present that we use growth rates between two periods of these indices.

Trade related indicators

Exchange rate and inflation

Tartuffe (2010) indicates the real exchange rate as a measure for competitiveness. In this research this indicator will not be included because the food industry takes a small part in the GDP of the economies. To determine the real value added we use the development of consumer prices also indicated as inflation. The inflation measures the change in the costs that the average consumer has to pay for a basket for services and goods. For our purpose we use the consumer price index (2005=100) of the World Development Indicators database.

CP_{ct} is consumer price index for country c in period t

Market shares on the world market

The export share on the world market is a straightforward performance indicator and it reflects the outcome of the international competitive process. We will take the difference between two periods of a country's export share on the world market. The growth we measured is the change and not an annual growth rate between two periods as we will propose for other indicators. Growth rates between two periods have a strong flaw. Very small exporters can have large growth rates, but remaining small exporters. Even with small growth rates, large exporters will have a larger impact on the market. The definition of this indicator reflects the strong interdependency between the exports of the different countries. By taking the absolute deviation, the real impact on the world market is taken into account. Furthermore the total sum of all changes is by definition zero. Table A2 gives an example of the discussion above taken from (Wijnands, 2007).

Table A2

Example of impact of indicators and market shares development.

	Market share (%)			
	1996-1998	2002-2004	Deviation	Growth
Country A	1	2	1	100%
Country B	50	51	1	2%
Country C	20	20	0	0%
Country D	29	27	-2	-7%

(1) $GES_{ict} = MS_{ict} - MS_{ict}$

GES_{ict} Growth export share on the world market for industry i for country c in period t

MS_{ict} Export share on the world market for industry i for country c in period t

C Selected country

i Selected industry according to classification of NACE

t Selected year

(2) $MS_{ict} = X_{ict} / X_{iwt}$

X_{ict} The export value of industry i, country c in period t.
X_{iwt} The export value of industry i of the world (as a whole) in period t.

Revealed comparative advantage indices
The relative importance of an industry in the total trade is usually measured by the Revealed Comparative Advantage (RCA) or Balassa index or specialisation index (Fertö and Hubbard, 2003; Latruffe, 2010; Wijnands, 2008). If it is related to the export, it measures the export share of a product of one country in the total export of the world relative to the country's export share in the world of all products. The relative export advantage index is as follows:
The relative export advantage index is as follows:

(3) $RXA_{ict} = \dfrac{X_{ict} / X_{iwt}}{XT_{ct} / XT_{wt}}$ Export value of specific industry i from country c in period t.

RXA_{ict} the relative export advantage index for industry i, country c in period t.
X_{ict} The export value of industry i, country c in period t.
X_{iwt} The export value of industry i of the world w in total in period t.
XT_{ct} The total export value of all industries of country c in period t.
XT_{wt} The total export value of all industries in the world in period t.

The total export value of all industries from one country is the total of all export: unprocessed or processed agriculture commodities, or industrial products or services.
The flaw of this index is that re-export might suggest high competitiveness of one industry. These transit activities might be influenced by a good performance of another sector i.e. logistics or by beneficial natural and infrastructural conditions like sea or airports.

A RXA index of 1 indicates that a country is equally specialised as the total world exports. A level below 1 means relatively unspecialised and above 1 relatively specialised. The latter indicates an export advantage, as relative more is exported than the world avarage. In fact it indicates the export focus of an industry and is therefore externally oriented. Again the annual growth between the first and last time period will be used. The index is only relevant for exporting industries.

The opposite of the relative export advantage index is the relative import advantage index:

(4) $RMA_{ict} = \dfrac{M_{ict} / M_{iwt}}{MT_{ct} / MT_{wt}}$ import value of specific industry i from country c in period t.

RMA_{ict} The relative import advantage index for industry i, country c in period t.
M_{ict} The import value of industry i of country c or of the world w in total in period t.
M_{iwt} The import value of industry i of the world w in total in period t.
MT_{ct} The import value of all industry i of country c in total in period t.
MT_{wt} The total import value of all industries in the world in period t.

The interpretation of the index is reversed from that of RXA. A value below unity (=1) shows that country imports relatively less than the world average and can be indicated as a competitive advantage; a value above unity indicates a relative higher import level.
A high value might be explained by high levels or re-export of products, due to comparative advantage of other sectors or countries location.

The Relative Trade Advantage index is defined by Scott and Vollrath as difference between the RXA and RMA (Scott and Vollrath, 1992).

(5) $RTA_{ict} = RXA_{ict} - RMA_{ict}$

A positive RTA indicates a competitive advantage: the exports exceed the imports. Negative values signify competitive disadvantages (Scott and Vollrath, 1992).

The advantage of these indices is the simplicity to calculate these indicators based on an available and well accessible database. In this report the values of all three indices will be presented. As metrics in the assessment of the competiveness the annual growth between 2 periods of the Relative Trade Advantage will be used as this index summarises the export and import developments. The is index has advantage above the indices based on either export or imports ((Frohberg and Hartmanm, 1997)This indicator is modification of the approach of Wijnands et al. (2008)

Other indices based on trade
Several other indicators related to international trade are available such as the Net Trade Ratio that expresses the ratio between imports and exports of a country or the Grubel-Loyd intra-industry trade index, Porter-adapted index of RXA or the Dunning adapted RXA. Furthermore several modifications of the indices mentioned above are discussed in the literature ((Frohberg and Hartmanm, 1997; Gellynck, 2002; Latruffe, 2010). We do not consider these indices because above we already mentioned the export and import advantage indices whose interpretation is less complicated in terms of competitiveness. The Porter and Dunning indices include outward an inbound production. We do not consider these indices as we will present below, because as we are using data from national accounts that include only domestic production.

Economic indicators
The selected indicators for quantifying the industry's competitiveness are taken from Wijnands et al., 2008.

Real value added
Creating added value is an important economic indicator. It is related to the industrial dynamism. Total value added is not only based on the production factor labour but also on the production factor capital and land. Again the growth is taken, so that countries can be compared easily. Annual growth in real value added of the food industry (or subsector). Their growth is taken as an indicator, so that countries can be compared despite differences in PPP.

To derive the real value added at factor costs, the nominal value added is deflated by the consumer price index.

(6) $RVA_{ict} = \frac{VA_{ict}}{CP_{ct}}$

RVA_{ict} Real value added for industry i in in country c for period t
VA_{ict} Nominal value added for industry i in country c for period t
CP_{ct} Consumer price indicator for country c in period t

Real value added shares
The importance of a specific sub-industry is derived from its share in the food industry. A growth in the share reflects a competitive advantage. The industry is then able to attract resources for their production. This reflects the competition for production factors (labour and/or capital) between different industries within a country.
The food industry is used for comparison, if a sub-sector of the food industry, e.g. dairy processing, is evaluated. Where the food industry as whole is evaluated, the manufacturing industry has been used. The metrics is the growth of the share of the specific industry in the food industry. A positive growth

shows a better than average performance than the food industry as a whole.

(7) $$SRVA_{ict} = \frac{RVA_{ict}}{RVA_{mct}}$$

$SRVA_{it}$ Share of the real value added for industry i in total manufacture industry (m) in country c for period t

m Manufacture industry as a whole

Labour productivity

Labour productivity affects prices in the market. Growth of labour productivity improves industrial competitiveness in international markets. Labour productivity is often seen as a crucial determinant of competitiveness. The labour productivity is the real value added divided by the number of employees. This indicator cannot be compared between different countries due to different levels of Purchasing Power Parities. As we take the growth of the labour productivity, the indices of different countries can be compared. This indicator can be seen as measurement of the potential competitiveness.

(8) $$RLP_{ict} = \frac{RVA_{ict}}{E_{ict}}$$

RLP_{ic} is real labour productivity for industry i in country c for period t

E_{ict} is number of employees in industry i in country c for period t

Exchange rates

All indicators are growth percentages. Growth percentages are not influenced by exchange rates, so they can be calculated in the original currency. The nominal values in the descriptive parts are all converted to euros with the exchange rate as mentioned by Eurostat and DNB.

Competitiveness assessment

Annual growth rates of the indices

According to Porter sustainable competitive advantage is the fundamental source for above-average performance in the long run (Porter, 1980; Porter, 1990). In line with Porter's viewpoints, competitiveness of the food industry is defined as the sustained ability to achieve profiTable gain and market share in domestic and export markets in which the industry is active. Annual growth rates (except for market shares on the world market) between 2 periods are used as indicators. High growth rates indicate high ex-post performance, compared to other industries of a particular country.

Appendix 3 Production effects of scenario S1 (zero tariffs)

Table A3.1

Production volume% difference from the base year outcome in 2027 - scenario S1

% difference from the base year outcome in 2027															
Production volume (2027) (TTIP_S1) (perc. difference relative to Base)															
	Cereals	Oil seeds	getables, fruits & n	Cattle	ıer animal prod	Raw mill	ther prima	getable oils and f	ner processed fo	airy product	Processed rice	Red meat	White meat	ufacturing (ot	Services
OCE	0.02	0.11	-0.02	0.10	-0.08	-1.03	0.01	0.05	-0.01	-1.17	-0.05	0.15	-0.14	0.07	0.05
USA	0.25	-0.55	-0.05	1.05	2.11	0.32	-0.04	-0.01	0.23	0.36	0.91	1.03	3.41	-0.04	0.04
Rest of Amer	0.06	0.08	0.08	-0.02	-0.19	-0.16	-0.05	0.01	0.00	-0.14	0.00	-0.08	-0.34	0.09	0.06
Rest of Europ	-0.12	0.05	-0.05	-0.05	-0.23	-0.22	-0.13	-0.06	-0.09	-0.28	-0.03	-0.03	-0.26	-0.05	0.03
Netherlands	-0.51	0.22	0.06	-1.39	-1.93	0.02	-0.04	-0.20	-0.25	0.09	-0.32	-1.81	-3.15	0.07	0.02
AFR	0.11	0.11	0.06	0.06	0.04	0.02	0.06	0.29	0.13	0.06	0.12	0.11	0.06	0.06	0.12
ASIA	0.00	0.07	0.01	-0.01	-0.04	0.00	0.03	0.06	0.05	-0.07	0.00	0.05	-0.18	0.10	0.09
EU27	-0.46	0.06	-0.08	-0.77	-1.14	0.02	-0.01	-0.07	-0.06	0.07	-0.61	-0.79	-1.56	0.04	0.02

Appendix 4 Competiveness' assessments of selected benchmark countries

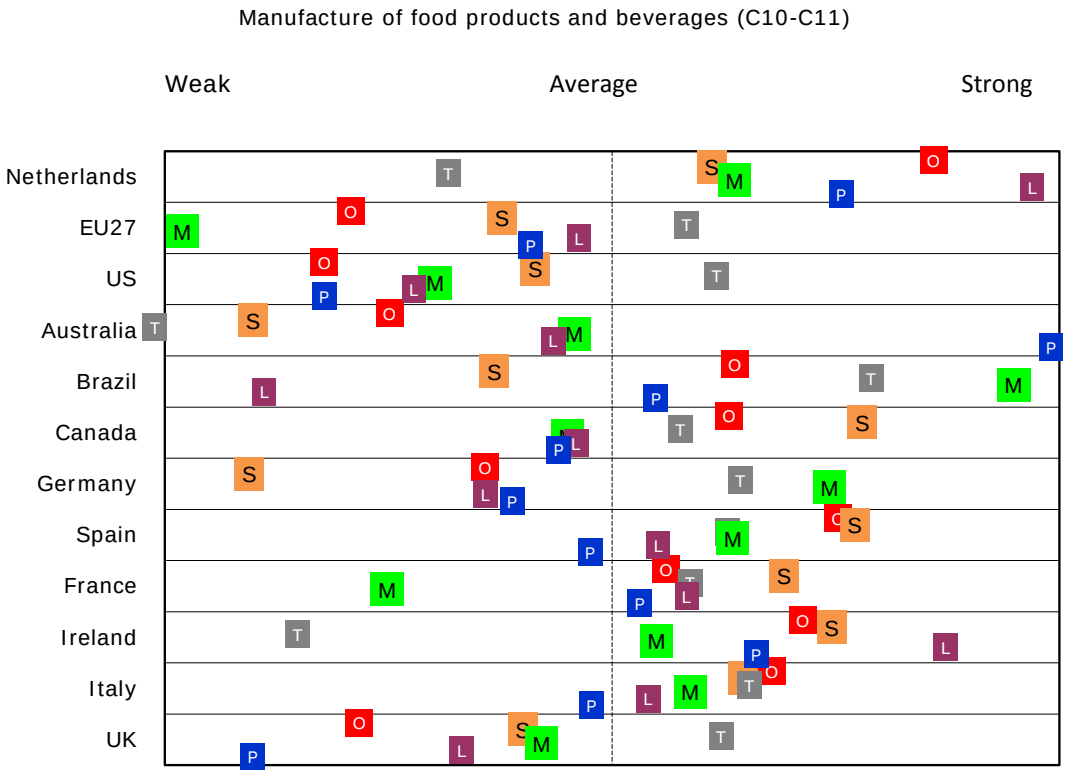


Figure A4.1 *Countries' competitiveness in the Food products and beverages (NACE C10 + C11). For legend see Figure 3.1 in the main text.*

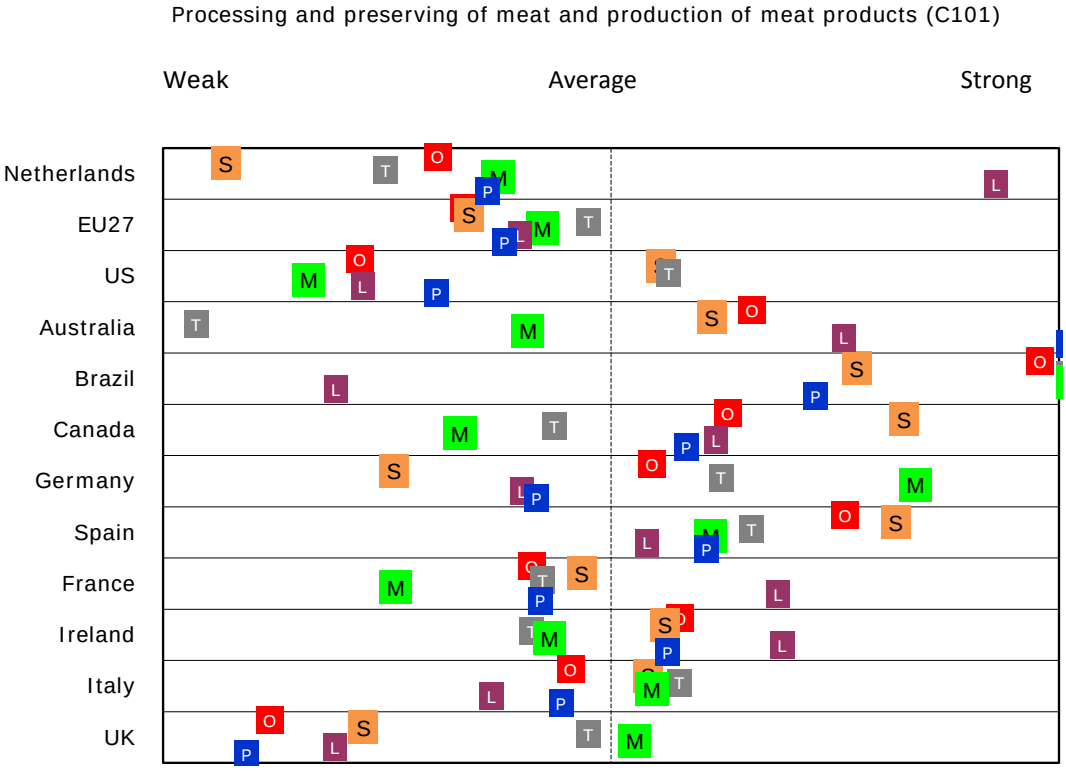


Figure A4.2 *Countries' competitiveness in the meat processing industry. For legend see Figure 3.1 in the main text.*

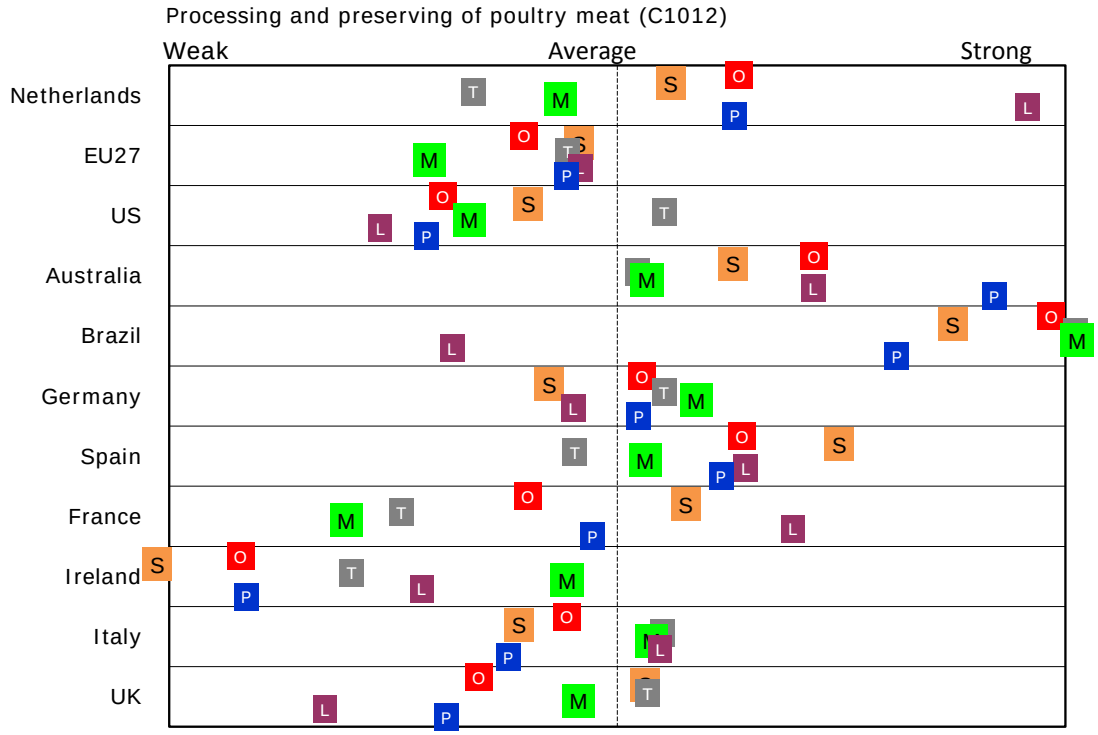


Figure A4.3 *Countries' competitiveness in the poultry meat processing industry. For legend see Figure 3.1 in the main text.*

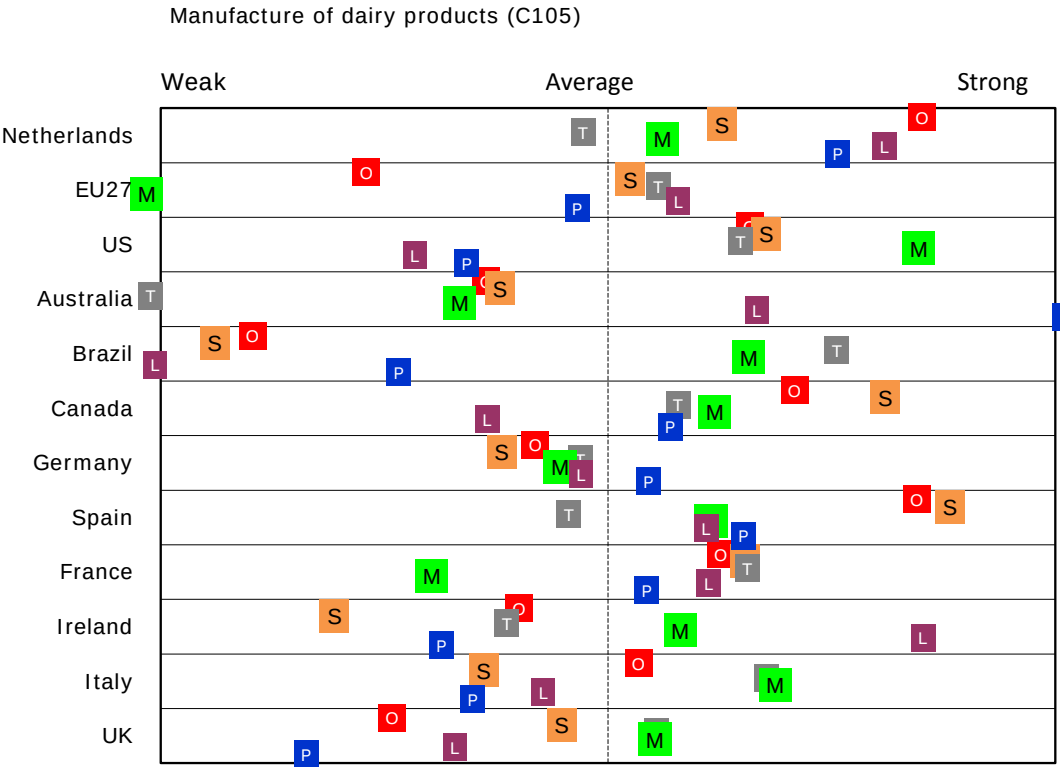


Figure A4.4 *Countries' competitiveness in the dairy industry. For legend see Figure 3.1 in the main text.*

Appendix 5 Trade indicators for all selected countries

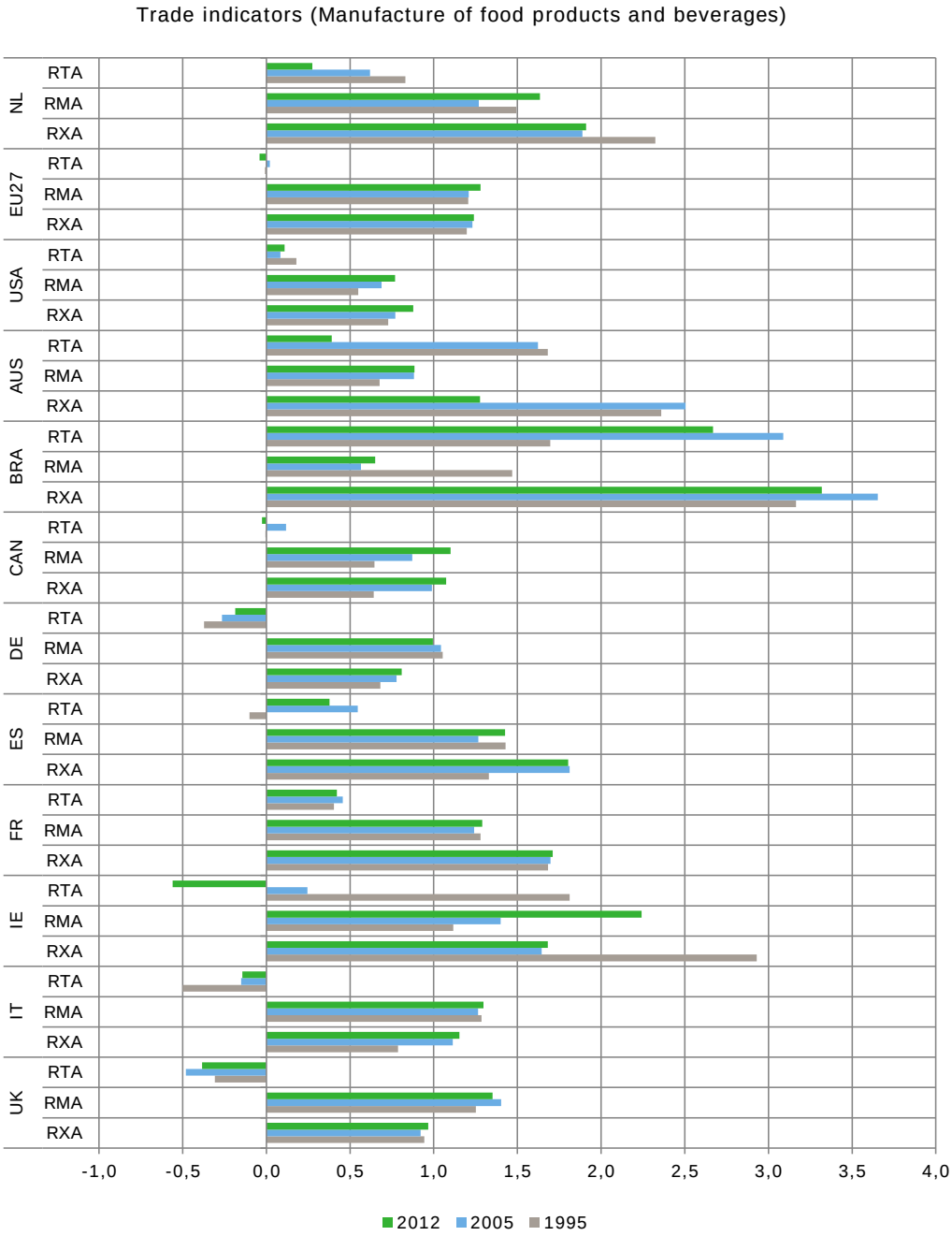


Figure A5.1 *Trade indicators for Food products and beverages (NACE C10 + C11).*

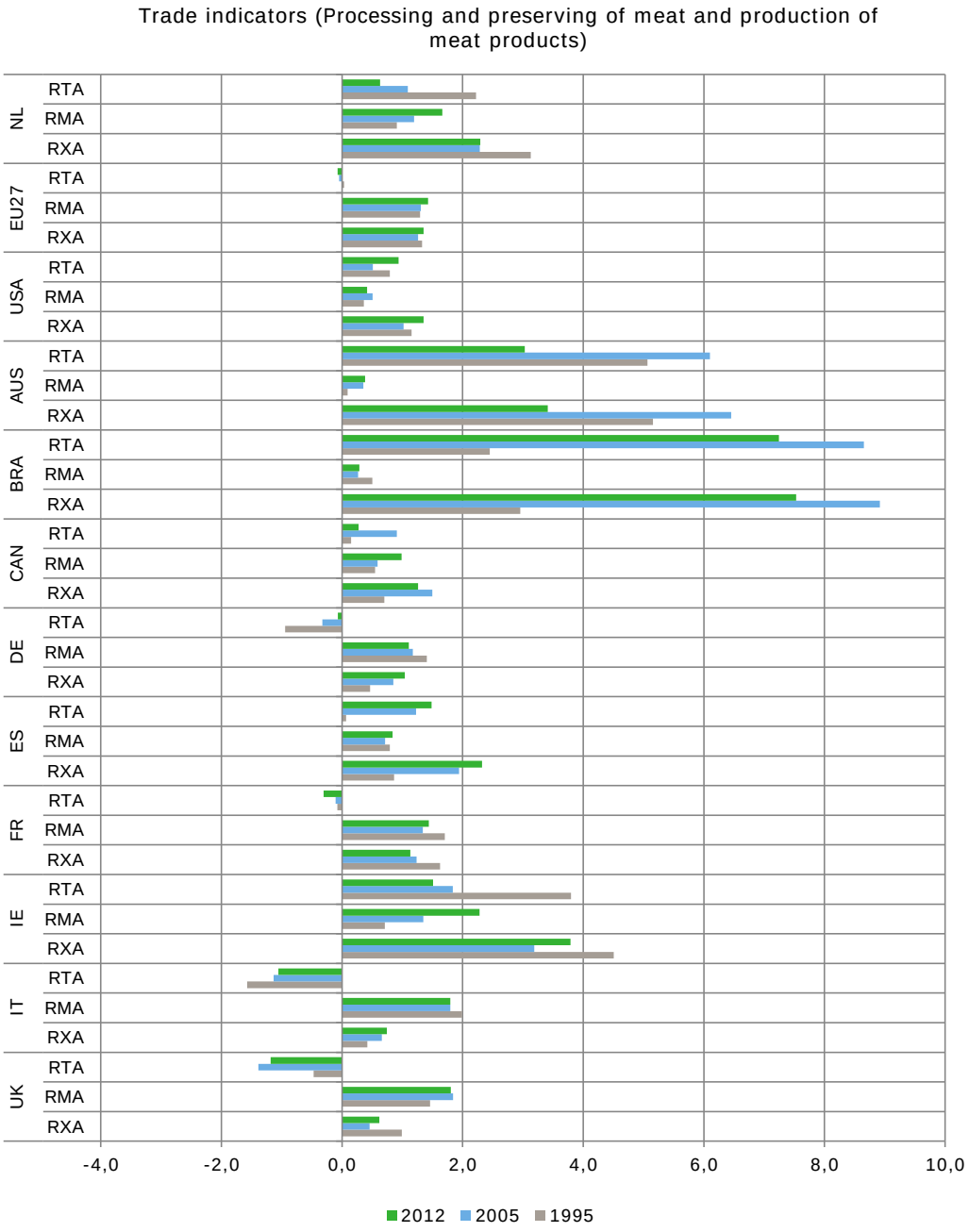


Figure A5.2 *Trade indicators of meat products.*

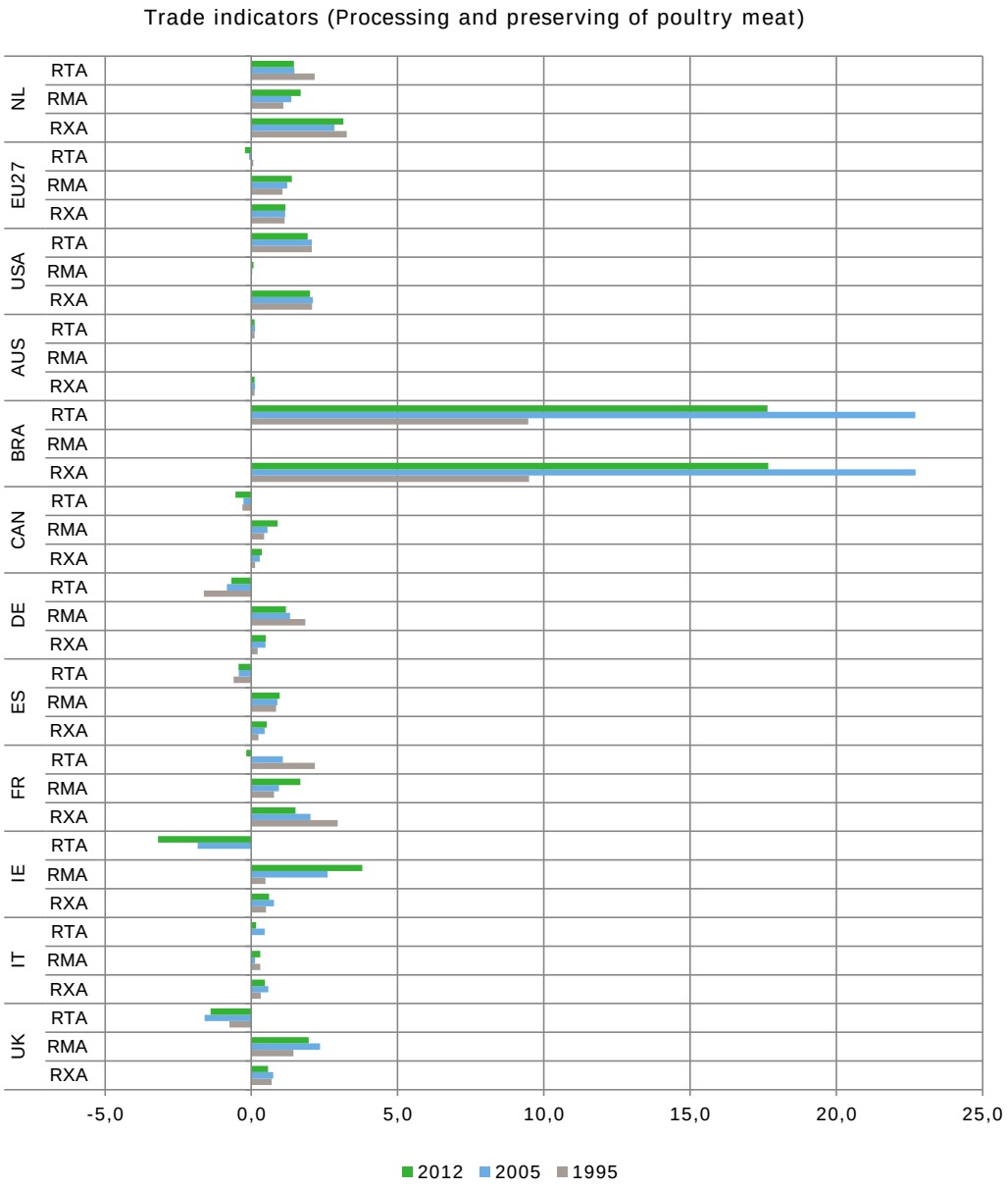


Figure A5.3 *Trade indicators of poultry meat.*

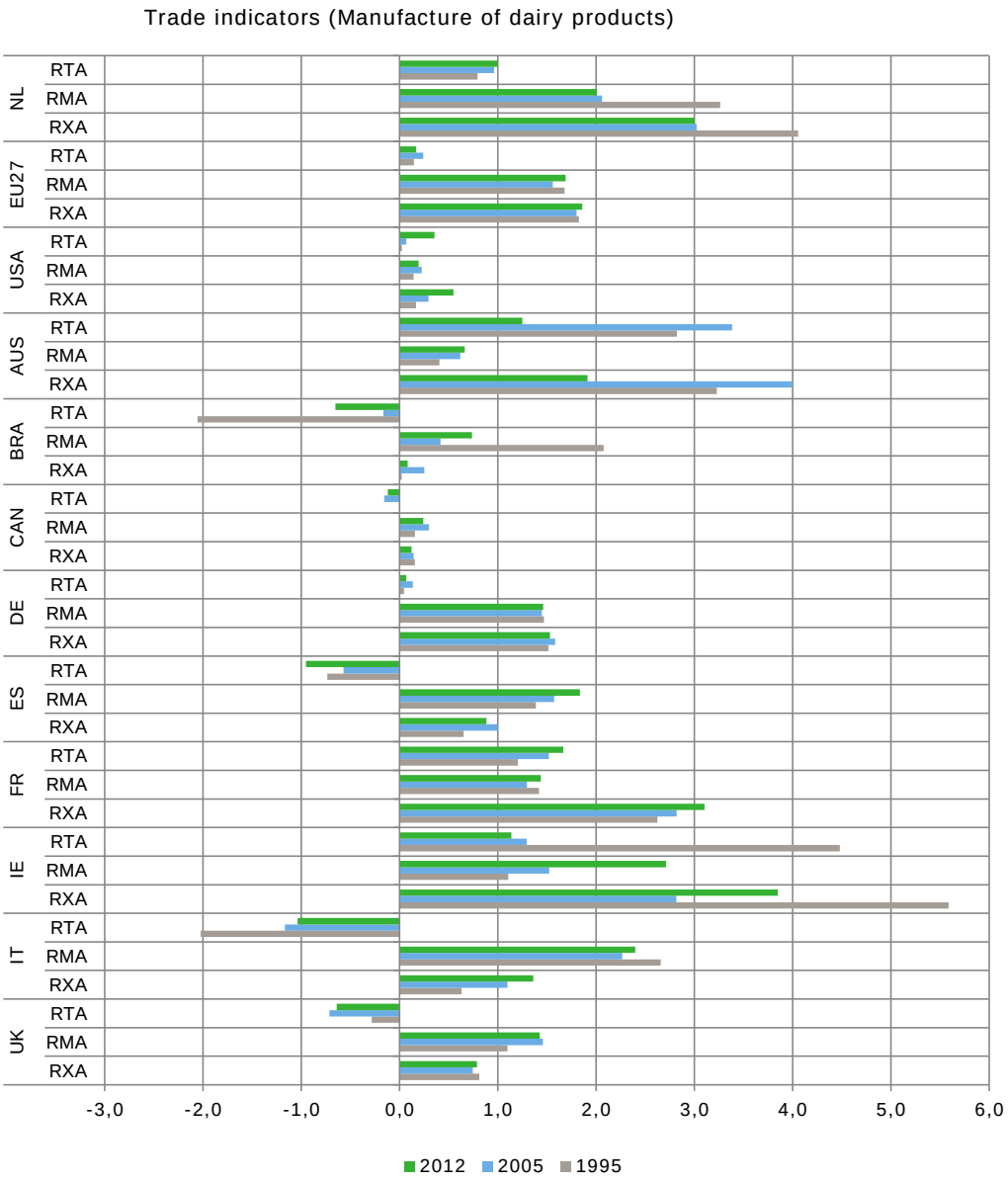


Figure A5.4 *Trade indicators of dairy products*

LEI Wageningen UR
P.O. Box 29703
2502 LS Den Haag
The Netherlands
T +31 (0)70 335 83 30
E publicatie.lei@wur.nl
www.wageningenUR.nl/en/lei

LEI Report 2014-021

LEI Wageningen UR carries out socio-economic research and is the strategic partner for governments and the business community in the field of sustainable economic development within the domain of food and the living environment. LEI is part of Wageningen UR (University and Research centre), forming the Social Sciences Group together with the Department of Social Sciences and Wageningen UR Centre for Development Innovation.

The mission of Wageningen UR (University & Research centre) is 'To explore the potential of nature to improve the quality of life'. Within Wageningen UR, nine specialised research institutes of the DLO Foundation have joined forces with Wageningen University to help answer the most important questions in the domain of healthy food and living environment. With approximately 30 locations, 6,000 members of staff and 9,000 students, Wageningen UR is one of the leading organisations in its domain worldwide. The integral approach to problems and the cooperation between the various disciplines are at the heart of the unique Wageningen Approach.

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

LEI Wageningen UR
P.O. Box 29703
2502 LS Den Haag
The Netherlands
E publicatie.lei@wur.nl
www.wageningenUR.nl/en/lei

REPORT
LEI 2014-021
ISBN 978-90-8615-680-1

LEI Wageningen UR carries out socio-economic research and is the strategic partner for governments and the business community in the field of sustainable economic development within the domain of food and the living environment. LEI is part of Wageningen UR (University and Research centre), forming the Social Sciences Group together with the Department of Social Sciences and Wageningen UR Centre for Development Innovation.

The mission of Wageningen UR (University & Research centre) is 'To explore the potential of nature to improve the quality of life'. Within Wageningen UR, nine specialised research institutes of the DLO Foundation have joined forces with Wageningen University to help answer the most important questions in the domain of healthy food and living environment. With approximately 30 locations, 6,000 members of staff and 9,000 students, Wageningen UR is one of the leading organisations in its domain worldwide. The integral approach to problems and the cooperation between the various disciplines are at the heart of the unique Wageningen Approach.