

Origin labelling

Cost analysis for producers and consumers



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Preface

By stating the origin of a foodstuff, producers can provide consumers with information about where the food comes from. Country of origin labelling is the subject of debate from two different policy areas. One debate takes place in the framework of EU quality policy for agricultural products, the other in the framework of EU consumer policy. In one debate, origin labelling is regarded as a trade norm, while the other considers it part of food information which allows consumers to make well-founded choices between foodstuffs.

The Ministry of Economic Affairs is concerned about these developments. Despite the planned effect judgements in the various regulations, there is a fear that extending mandatory origin labelling will obstruct trade and damage the free traffic of goods and services between EU member states. Against this background, the Ministry of Economic Affairs requested the LEI to assess the influence of origin labelling in the dairy and processed fruit and vegetable sectors on the free traffic of goods and services between EU member states. This report presents the most important results of this research; LEI report 2012-123 contains the appendices with the detailed analyses which also form the basis of this report.

The study was carried out on behalf of D.M.S. Lutz from the Ministry of Economic Affairs. The researchers wish to thank the members of the supervisory committee, consisting of R.C.M.M. Strik (Economic Affairs), R. Brouwer (Economic Affairs), N. Quaedvlieg (Horticultural Product Board), O. Meuffels (NZO), G. de Rooij (FNLI) and A. Vlaardingerbroek (CBL). They discussed and commented on the results at different moments during the research. The researchers also thank various employees in the dairy, pea and mixed salad industry, who provided valuable information for this research. The final responsibility for the texts lies with the authors.

1 Introduction

By stating the origin of a foodstuff, producers can provide consumers with information about where the food comes from. Country of origin labelling is the subject of debate from two different policy areas. One debate takes place in the framework of EU quality policy for agricultural products, the other in the framework of EU consumer policy. In one debate, origin labelling is regarded as a trade norm, while the other considers it part of food information which allows consumers to make well-founded choices between foodstuffs. Within both policy areas, there are different interpretations of the term 'origin' such as place of provenance, country of origin and place of farming.

Origin labelling to improve the competitive position of farmers

EU quality policy for agricultural products - which is part of the Common Agricultural Policy (CAP) – aims to inform purchasers and consumers about the product features and agricultural characteristics (EC, 2009). These include ingredients, agricultural production methods, processing technology, place of provenance, etc. Consumers can use this information to choose authentic products, whilst producers can improve their competitive position if it appears that it concerns a product with a certain quality (EC, 2011a). The quality policy mainly consists of marketing standards for the EU agricultural market and certification regulations for products with a protected designation of origin or protected geographical indication and for guaranteed traditional specialities (EC, 2010).

EC researches mandatory origin labelling as a marketing standard for dairy - sector

Since the turn of the century, the private sector has introduced many new quality certification regulations. This prompted the EC's decision to organise an EU conference on the subject in 2007 (EC, 2010). This was followed by the Green Paper about the quality of agricultural products in 2008 and a series of quality regulations for agricultural products. Proposals were also made to amend the marketing standards. An initial proposal for this in 2010 (EC, 2010) was later included in a proposal for the integral Common Market Organisation (CMO) (EC, 2011a). In this regulation, the EC is authorised to set up specific marketing standards for all sectors and/or products concerning, among others, a mandatory reference to the place of the agricultural production and/or the place of origin. However, before the EC can implement such an obligation, it must first

conduct an impact assessment and determine a suitable geographic level for the origin designation of each individual product. In the explanation relating to the proposal, the dairy sector is mentioned as one of the first sectors for which mandatory origin labelling will be studied (EC, 2010). Marketing standards incorporating mandatory origin labelling already exist for fruit and vegetables (Regulation (EC) no. 543/2011), olive oil (Regulation (EC) no. 29/2012) and wine (Regulation (EC) no. 607/2009).

New regulation about food information to consumers in force end 2014

EU consumer policy wants to make European consumers vocal by providing them with the right information, improve their welfare and effectively protect them from serious risks and threats (EC, 2007). In order to achieve these goals, new legislation is required. The regulation about the provision of food information to consumers (FIR) (Regulation (EU) no. 1169/2011) (EC, 2011b) is part of this ambition. It indicates which food information must be included on clear and understandable food labels from 13 December 2014. It also stipulates a list of ingredients and the amounts, nutritional value, best-by date and storage instructions. This information must include a statement of the place of origin of the food if its absence could mislead the consumer about the actual place of origin of the product. The place of origin must also be stated for pork, poultry, lamb and goat's meat. Such an obligation regarding the provision of information to consumers was already in place for beef and beef products (Regulation (EC) no. 1760/2000), fish (Regulation (EC) no. 104/2000) and honey (Directive 2001/110/EC).

EC must report on the feasibility of expanding mandatory origin labelling

In the new food information regulation (EC, 2011b), the EC is required to explore the extension of mandatory origin labelling to include other types of meat, milk, milk used as an ingredient in dairy products, meat used as an ingredient, unprocessed foodstuffs, products with only one ingredient, and ingredients which compose more than 50% of a food. For milk, the EC is required to submit a report to the European Parliament and the Council as soon as possible; a report for meat used as an ingredient must be submitted on 13 December 2013 and for the other products on 13 December 2014. In those reports, the EC must address the feasibility of mandatory country of origin labelling, performing a cost-benefit analysis of the introduction and indicating the consequences for the internal market and international trade.

Effects of mandatory place of origin labelling

Origin labelling has consequences. For example, it involves costs for the producer, which might or might not result in a price increase for consumers. Furthermore, origin labelling can cause problems for trade both within the EU and for trade with third countries because labelled products can be clearly distinguished from each other. Finally, origin labelling could harm trade on the internal market if member states start to stimulate consumption of products produced in their own country.

Research questions of this study

Bearing in mind the EU reports about the extension of mandatory origin labelling to include a wide range of agricultural products and the debates which will take place in EU circles, the Dutch Ministry of Economic Affairs needs insight into the impact of such labelling for important Dutch export sectors like dairy and processed fruit and vegetables on the free traffic of goods and services between EU member states. In order to analyse these effects, this study focuses on the following three research questions:

1. What are the economic consequences of origin labelling for the dairy and processed fruit and vegetables sectors in the Netherlands in terms of financial costs and impact on trade flows?
2. Can producers in these sectors recoup the additional costs of a form of origin labelling in the market?
3. What is the impact of initiatives currently being developed in various member states for voluntary origin labelling in combination with public support for regional products on trade between EU member states?

When answering the research questions, we only address the first order effects. Because there are no official statistics for the extra costs associated with origin labelling, we have largely had to rely on data provided by the industry itself to answer the research questions.

The precise conditions for origin labelling have not yet been elaborated. Thus it is not clear whether peas from two different countries are allowed in one tin. Nor is it clear exactly how to specify the origin if Dutch milk and Spanish strawberries are present in a yogurt drink. Does the food then come from the Netherlands and Spain, or is it necessary to indicate the origin per ingredient? In our calculations, we have assumed that only one origin is possible per product per raw material and that the origin of all raw materials must be specified per raw material. That means that a tin of peas may not include peas from the Netherlands and France and the label on the yogurt drink must state: milk from

the Netherlands and strawberries from Spain. If the assumptions for origin labelling are interpreted differently, the costs will change accordingly.

In consultation with the client, we chose to answer the research questions in this report in a concise way. Furthermore, a background report (Benninga et al., 2012) is available containing notes with more extensive information about dairy drinks and cheese, peas, mixed salads and consumer willingness to pay for origin labelling.

Structure of the report

This report is structured as follows. In chapter 2, we explain some of the definitions and terms used in this study and we describe the approach to the research. In chapter 3, we discuss what additional actions are required to be able to include the country of origin on the packaging of dairy drinks and cheese, peas and mixed salads and we estimate the costs of these additional actions. In chapter 4, we explore whether consumers are prepared to pay the additional costs of origin labelling. In chapter 5, we focus on the trade effects of origin labelling and use a simple model to explore whether producers can pass on the increased cost price resulting from origin labelling to consumers and whether domestic producers will be confronted with the same costs as foreign producers. In chapter 6, we make several closing comments.

2 Approach

2.1 Introduction

In this chapter, we discuss some of the definitions and terms used in this study and we explain the approach of the research. In paragraph 2.2, we list the various definitions of origin. In paragraph 2.3, we study the way in which we approach the costs of origin labelling, how we estimate consumer willingness to pay for origin labelling and how we chart the trade effects of origin labelling. In paragraph 2.4, we study the approach used in this study.

2.2 Definitions of origin

In the EU, various definitions of origin are used (table 2.1). These are briefly explained here.

Dutch term	English term	Where
Land van oorsprong	Country of origin	Regulation (EU) no. 2913/1992 relating to the Community Customs Code
Land van oorsprong or plaats van herkomst	Country of origin or place of provenance	Regulation (EU) no. 1169/2011 relating to provision of food information to consumers
Plaats van oorsprong	Place of origin	Directive 2000/13/EC relating to labelling and presentation of foodstuffs
Plaats van de landbouwproductie	Place of farming	COM (2011)626 def/2 relating to Common Market Organisation
Uit de EU/niet uit de EU afkomstig	EU/non EU	Implementing regulation (EU) no. 543/2011 for the fruit and vegetables and processed fruit and vegetables sectors

Country of origin

This refers to the country where 'all' the products have been sourced. This includes harvested products, born and bred animals, products from territorial waters, and processed products based on domestic raw materials. Even if

ingredients from other countries are used, for example meat from Brazil that is processed in the Netherlands into meat products, according to the Community Customs Code the country in which the foodstuff underwent its last processing is named as the country of origin, in this example the Netherlands.

Country of origin or place of provenance

In the FIR regulation, the term 'country of origin or place of provenance' is used without explaining the difference between 'country of origin' and 'place of provenance'. The country of origin or place of provenance must be stated on the label if its omission could mislead the consumer about the actual origin of the foodstuff. If the ingredients for the foodstuff come from another country than the country in which the business which has processed the ingredients is located, then according to the FIR regulation, both the country from which the ingredients come and the country in which they are processed must be listed on the label (art. 26 paragraphs 2 and 3). In the above example of meat from Brazil that is processed in the Netherlands into meat products, the label must state that the meat comes from Brazil and that it is processed in the Netherlands into meat products.

Place of origin

Place of origin in the directive for the labelling and presentation of foodstuffs must be listed if 'its omission could mislead the consumer regarding the actual origin of the foodstuff' (art. 8 paragraph 3). The same argument is also used for listing the country of origin or place of provenance in the FIR regulation (art. 26 paragraph 2a).

Place of farming

This refers to the place where crops were harvested, the place where the livestock was born and raised, the place where the cows were milked, etc.

EU/non EU

This may be listed on packaging with a mix of different types of fruit and vegetables from more than one member state or third country to replace the full names of the countries of origin where the products were harvested (Regulation 543/2011, art. 7 paragraph 3).

Further refining of origin

For beef, there are further instructions for listing the origin (Regulation (EC) no. 1760/2000). Besides the place of origin, the member state or the third

country where the animal was born, the member state of the third country where the animal was raised and the member state or the third country where the animal was slaughtered must be listed. The FIR regulation also introduces this nuancing in the origin statement for pork, poultry, lamb and goat's meat.

Use of origin in this report

In this report, we follow the approach of the FIR regulation and we assume that origin labelling means that the country in which the foodstuff is processed is listed on its packaging along with the origin of each ingredient. On a carton of yogurt drink made in a Dutch factory using Dutch milk and Spanish strawberries, the label will state the following: yogurt drink made in the Netherlands; milk from the Netherlands, strawberries from Spain. If a semi-manufacture is first made in Germany, incorporating strawberries originally from Spain in the dairy drink, then the label would need to state yogurt made in the Netherlands, milk from the Netherlands, strawberries from Germany. As a result of the processing in Germany, the origin changes, even if the strawberries still come from Spain and they are no longer recognisable as such.

2.3 Measuring costs, 'willingness to pay' and trade effects

Measuring the costs of origin labelling

The costs of origin labelling for producers are not restricted to attaching or printing a label with information on the foodstuff packaging. They can occur at any point in the production process. For example, they can relate to cleaning production lines if a Spanish batch is processed after a German batch, or if unprinted pots of conserves with conserves from different countries need to be stored separately. In order to obtain insights into the costs of origin labelling per foodstuff, we followed the following trajectory:

1. Identify which additional actions are required in each phase of the production process;
2. Estimate the costs of each action and assess how often that action takes place;
3. Express the total additional costs per unit foodstuff by multiplying the costs for all the additional actions by the number of times.

'Willingness to pay' for origin labelling

If a consumer wishes to buy a product - for example a carton of milk - and there are several alternatives available, his choice is determined by his purchase mo-

tives. These may include considerations concerning price, flavour, health, habit and perception. The country of origin of the product may be one of these motives. If the consumer has positive associations with the country of origin, such as safety and quality, the statement of the country of origin on the packaging is a bonus. However, the consumer may also have negative associations with the country of origin, which might dissuade him from buying. Whether the statement of the country of origin has positive or negative associations for consumers in different countries and whether these associations apply to all products equally is addressed in chapter 4. These associations indicate the possible trade effects of origin labelling.

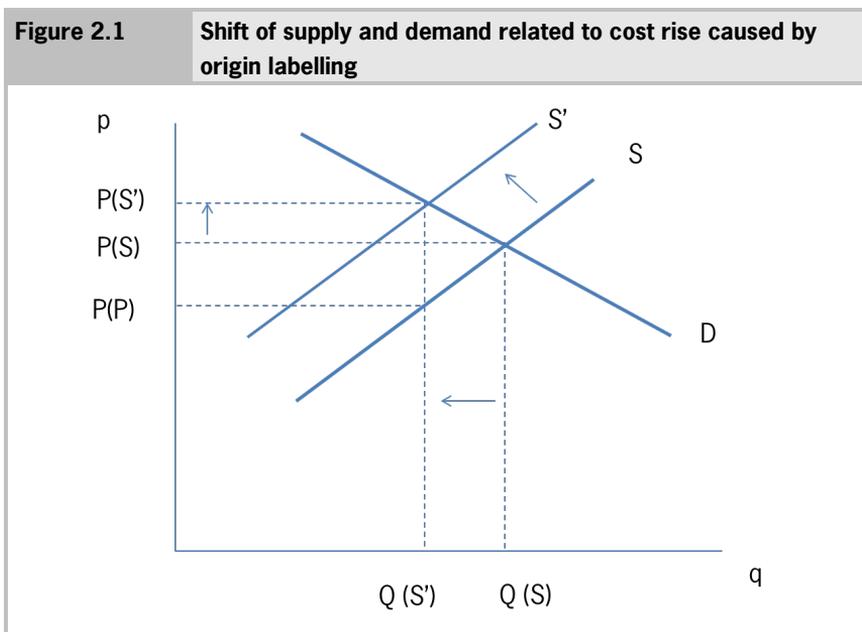
When consumers have positive associations with the country of origin, one might wonder whether they would be willing to pay extra for origin labelling. In the literature, this is called 'willingness to pay'. In consumer surveys, this question is often asked, usually followed by a question asking how much extra consumers are willing to pay. Whether consumers are willing to pay more, and how much more, for stating the country of origin on a product is addressed in chapter 4. If consumers are prepared to pay more, producers can partially or totally pass on the cost price increase of origin labelling to the consumer.

Determining trade effects

In order to calculate the trade effects, we used 'equilibrium displacement modelling (EDM)'. A small partial equilibrium model is constructed per product, which is only filled with known information about behaviour and market response to those markets in which the main effects will occur, omitting all other markets. The model assumes a market form with perfect competition.

The costs of origin labelling are modelled as a cost shock in the supply which invokes a number of market responses. In the US, the EDM approach is used in several studies into origin labelling (Harrington and Dubman, 2008). In a graph, the EDM approach can be presented as a supply and demand curve (figure 2.1). Due to the cost increase resulting from origin labelling, the supply curve S rises to S' . This creates a new equilibrium price whereby both the supply and demand has declined. The producer is unable to charge all of the cost price increase $P(P)-P(S')$ to the consumer: the part $P(P)-P(S)$ is borne by the producer and the part $P(S)-P(S')$ falls to the consumer. Whether the consumer or the producers bears the greatest part of the cost price increase depends on how steep the supply and demand curve is. The smaller the demand elasticity (the degree to which demand changes due to a change in the price) and the steeper the demand curve, the more of the cost price increase can be charged to the consumer. This can also occur if the supply elasticity (the degree to

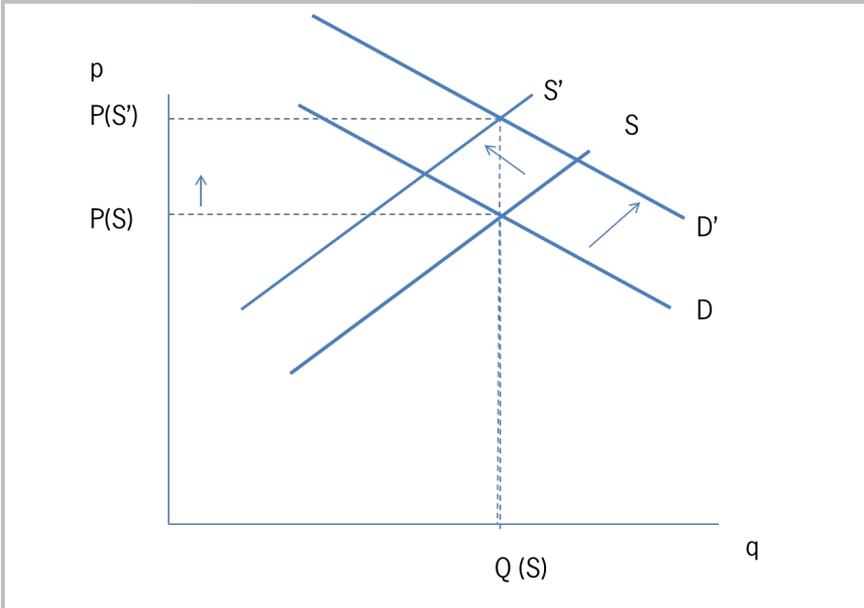
which the supply changes due to a change in the price) is lower and the supply curve is steeper. In the EDM approach, the supply can be modelled in such a way that it is possible to distinguish the supply from domestic and foreign producers from each other. It can thus be calculated whether there is a difference in the degree to which domestic and foreign producers are able to pass on the cost increase caused by origin labelling to consumers.



Imagine that the consumer is willing to pay for origin labelling. In that case, the demand curve D will rise so that there is a balance between supply and demand, whereby the producer can pass on the entire cost price increase to the consumer (figure 2.2).

Figure 2.2

Shift of supply and demand curve if consumers are prepared to pay the entire price increase associated with origin labelling



2.4 Approach of the study

Both the proposal for a Regulation for an integrated Common Market Organisation (EC, 2011a) and the Regulation for the provision of food information to consumers (FIR) (EC, 2011b) give the EC the task to study whether it is feasible to extend mandatory origin labelling. This concerns:

- the dairy sector;
- other types of meat besides beef, pork, poultry, lamb and goat's meat;
- milk and milk used as an ingredient in dairy products;
- meat used as an ingredient;
- unprocessed foodstuffs;
- products with only one ingredient;
- ingredients which make up more than 50% of a foodstuff.

In this study, in consultation with the client, we explore the consequences of mandatory origin labelling for a limited number of foodstuffs in this list, i.e.

cheese and dairy drinks, peas and mixed salads. These are important products from Dutch agriculture and horticulture. The two vegetables to be studied are different by nature: peas are a single product while mixed salad is composed of different products. In this way, insight into the differences in the feasibility of origin labelling for single and assembled products can be obtained.

In this study, we use a literature study, interviews with (representatives from) the processing industry in the Netherlands and model calculations. We endeavoured to focus on businesses from the processing industry which cover a large part of the market in the relevant product group. The willingness of the processing industry to cooperate in this study and to provide information about the extra costs of mandatory origin labelling varied considerably (table 2.2): some provided lots of figures, others provided more high quality information, while others were not prepared to cooperate. Consequently, there are variations in the degree in which we can go into detail about the extra costs involved in a mandatory origin labelling, into the willingness of consumers to pay for it, and into the trade effects between the three product groups in this study.

Table 2.2		Overview of the number of businesses in the Netherlands which cooperated in the study per product group
Product group	Approached to cooperate in the study	Cooperated in the study
Cheese and dairy drinks	1 branch organisation	1 (this covers the sector)
Mixed salads	3 biggest vegetable cutters in the Netherlands which cover around 80% of the market	2 of them
Peas/mixed products with peas	4 biggest processors in the Netherlands	3 of them

3 Costs of origin labelling

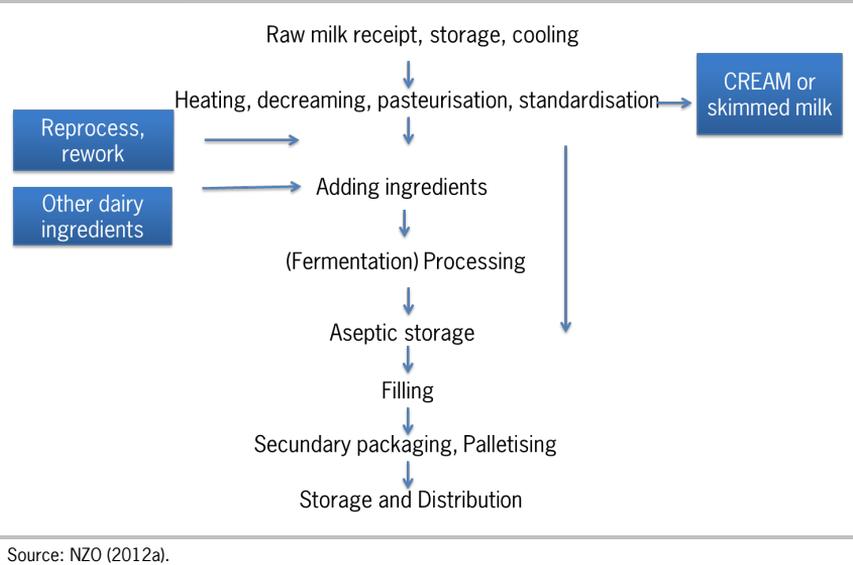
3.1 Introduction

In this chapter, we look at the costs of origin labelling for the three product groups in this study. In doing so, we restrict ourselves to the first order effects. For each product group, we first describe the products which compose the group and the production process. We then discuss the extra activities required during the production process to state the origin on the foodstuff and – where possible – we indicate the costs. In paragraph 3.2, the product group cheese and dairy drinks are addressed, followed by the product group peas in paragraph 3.3, and we conclude with the product group mixed salads in paragraph 3.4.

3.2 Costs for dairy drinks and cheese

Dairy drinks consist of milk, cream, coffee creamer, sweetened and unfermented drinks. In the case of the two latter drinks, other ingredients are added to the milk. There are many varieties of cheese, and the production of cheese produces other products like whey. The basic ingredient milk comes from both home and abroad. The production process for dairy drinks is shown in figure 3.1; the production of cheese is difficult to present in a concise diagram because it consists of many more activities and takes longer.

Figure 3.1 Diagram showing the processing of milk into dairy drinks



Source: NZO (2012a).

Estimated labelling costs for cheese

Labelling involves extra costs because:

- the origin of the milk in each phase of the production process has to be registered. This requires an investment in a so-called Enterprise Resource Planning (ERP);
- extra storage space is required to store the batches of raw milk, buttermilk, skimmed milk, whey, start cultures and cream per country of origin;
- efficiency losses occur in the production of cheese and pasteurised cream because batches of different origin need to be processed separately;
- the milk and whey remaining at the end of a batch cannot be added to the next batch and are destined for animal feed;
- there are extra cleaning costs because more tanks need to be cleaned;
- road transport costs rise when batches of different origin cannot be combined;
- more energy (gas, electricity) is required;
- the environmental costs rise due to extra CO₂ emissions.

NZO (2012b) estimates the costs of mandatory origin labelling at over 57 euros per 1,000 kg cheese, corresponding to a cost increase of around 3%. However, when we take into account the fact that some of the costs are related to investments in sustainable production resources, for which it is reasonable to assume depreciation over a certain period, then the annual additional costs of origin labelling according to LEI calculations come to 2.3%.¹

Estimated labelling costs for dairy drinks

As with cheese, mandatory labelling for dairy drinks involves batches being stored and processed separately according to origin. This results in the same costs as described above for cheese. According to estimates by the NZO (2012a), this means a total cost increase of dairy drinks due to mandatory labelling by 2% to 3%. If we take into account the fact that some of these costs are related to extra investments and are thus long-term, the annual costs are calculated at around 1.5%.

3.3 Costs for peas

Peas are processed in pots and cans (conserves) or for freezing. Around 20% of the peas are processed in combination with other vegetables. In the case of pots, the other vegetable is usually carrots while frozen peas are often combined with other vegetables. In the processing of peas, processing speed is crucial as this determines the quality. This is also the reason why transport distances are minimised as far as possible. Among the companies surveyed, peas are either processed in two sub processes, whereby the peas are sorted for size, cleaned and washed before the pots are filled and labelled (figure 3.2); or in one process, whereby filling and labelling is done together (figure 3.3).

The processes also differ from each other because in the case of one process, the peas are delivered from one truck container, while the other process involves four delivery stations of truck containers, which are emptied at the same time.² In the second case (figure 3.3), in principle it is possible that four trucks of peas, originating from four different countries, are processed. In practice, two or three containers are processed at the same time, whereby the fourth unloading station is used to replace the truck with the container.

¹ The depreciation period is then 10 years.

² This is caused by the capacity of the processing line.

Estimated labelling costs

In the Dutch processing industry, nearly half the peas are processed in separate sub processes (figure 3.2) and the other half in one process (figure 3.3). Because these processes are so different, stating the place of origin involves very varying costs. In our estimate, we therefore make a distinction according to the type of processing process.

The extra costs for labelling in separate processing processes and labelling are caused by:

- stopping and cleaning the processing line when switching to processing a delivery from another country;
- separate storage of the unprinted pots of peas from different countries of origin;
- more frequent stopping of the label line in order to change the type of label. For frozen products, this also involves changing the printing plates to apply the text to blank packaging;
- making and ordering different types of labels, taking into account the fact that many different private labels are worked with;
- extra investments in buffers, whereby peas per country of origin can be stored in boxes of 10 m³.

Figure 3.2 Diagram showing processing of peas in separate sub processes of processing and labelling

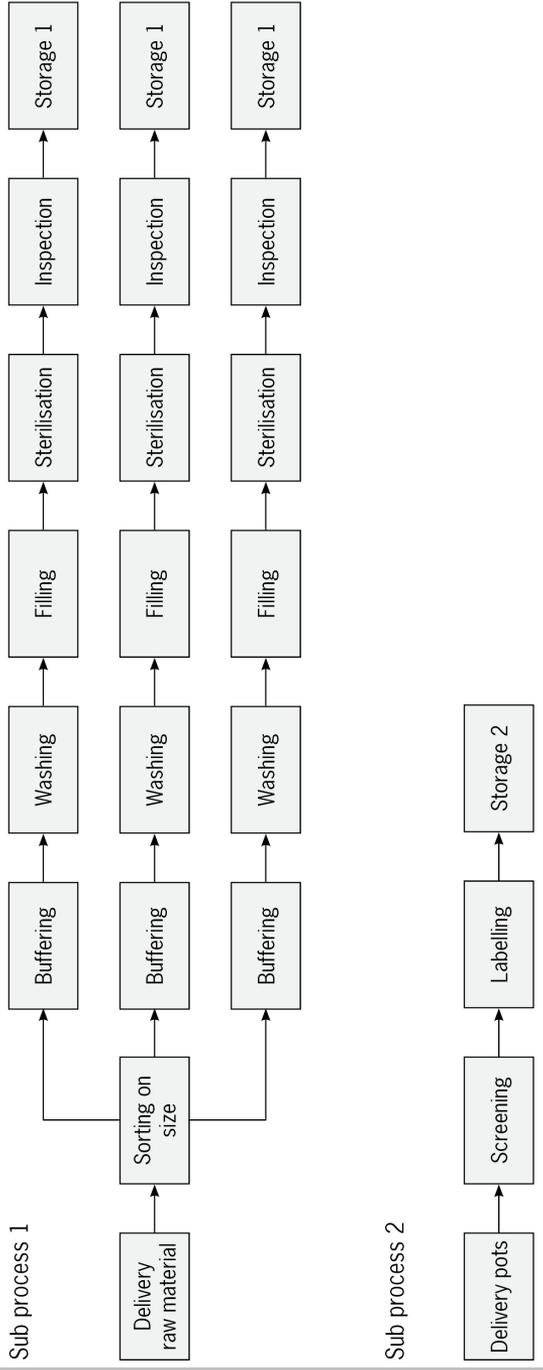
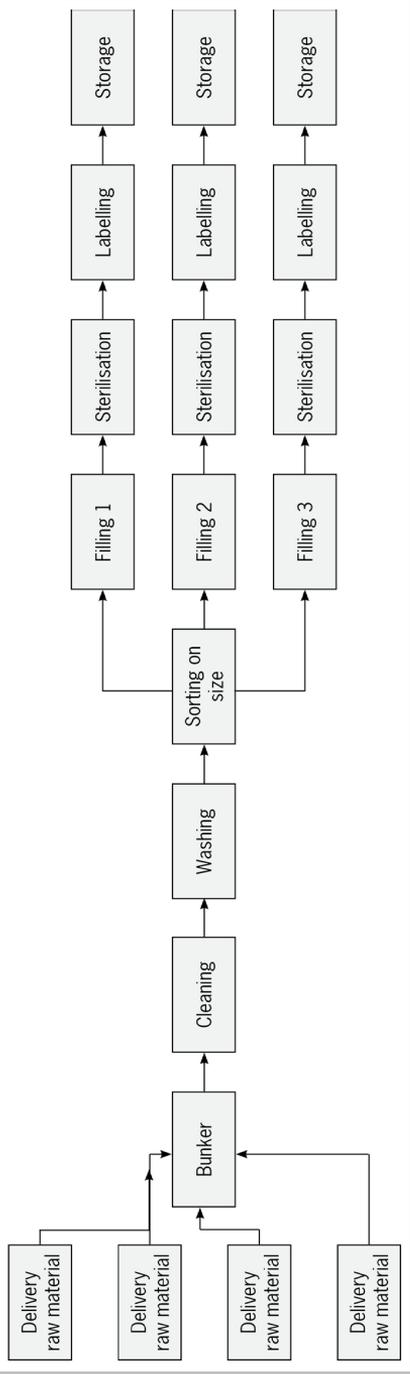


Figure 3.3 Diagram showing processing of peas in one process of processing and labelling



The companies surveyed did not provide their own estimates of the extra costs of mandatory origin labelling. LEI estimates based on information from Dutch vegetable processing companies for the above extra activities suggest a rise in the cost price of around 0.4-1.2 eurocents per pot/tin/frozen packaging. This wide margin is due to the differences between the processing companies and is largely related to differences in the costs for the extra investments in buffer capacity. The estimate does not take into account the investment costs of other technical modifications in the production line. These could include equipping the product line with an instrument that applies a symbol on the pot when there is a change to a product from another country. Because we have no insight into the total costs of pea processing, we cannot express the extra costs of labelling as a percentage of the total costs.

When the peas are processed and labelled in one process (figure 3.3.), it is only possible to state the country of origin if the production process is radically changed. For example, buffers could be placed at the beginning of the production line, facilitating compartmentalisation according to origin. Another option would be to use separate processing lines per country of origin. Finally, the choice of plots to be contracted could change. The costs of such adjustments are extensive and difficult to estimate. We have therefore decided not to estimate a cost price for labelling for the peas which are processed and labelled in one process. In this case, what seems to be much more important is that this pea processing method indicates that production processes are used whereby labelling is only possible if a radical reorganisation of the production process takes place. That involves extensive investment costs.

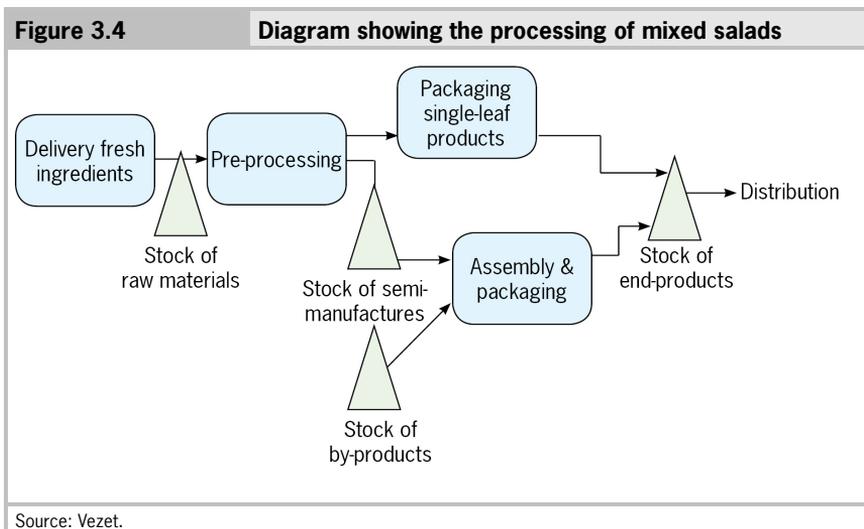
3.4 Costs for mixed salads

For mixed salads, various leaves are used as an ingredient such as: lettuce/bibb lettuce, rocket, iceberg lettuce, lollo rosso, lollo blond, oak leaf, romana, batavia, lamb's lettuce, fris , radicchio, watercress, Chinese cabbage, beetroot leaves and baby leaves (including spinach and endive). White cabbage, carrots and sweetcorn are other ingredients for mixed salads. The lettuce comes from the Netherlands and 6 other countries, whereby the origin varies per season. The main product groups in mixed salads are:

- single leaf salads (1 type of lettuce in packaging/sealing/bag);
- mixes (mix of 4-6 types of lettuce in a sealing/bag);

- meal salads (one or more types of lettuce with other vegetables and/or fruit, chicken, goat's cheese, herbs, dressing, etc.; these are usually packed in a dish or container).

Around a quarter of the mixed salads consist of single-leaf salads and the rest of assembled salads. Three weights are usually used: single, double and family packaging. Sometimes the label is pre-printed on the bag/package; in other cases, the label is attached to the bag as a sticker or a strip or foil with information is used. The steps in the processing are shown in figure 3.4.



Estimated labelling costs

At the moment, no origin is given on the packaging of mixed salads and the current production processes are not designed for them to be applied. The extra costs for labelling are related to:

- Modification of the production process, whereby the origin must be recorded on arrival and whereby the packaging line must be told if lettuce from another origin arrives on the belt. In that case, different pre-printed packaging must be used and the belt must be cleaned. One of the interviewees estimated the costs of the investment for this modification at around 1 million euros and pointed out that training would be required for the employees concerned.

- Stopping and cleaning the belt for lettuce from another origin takes around fifteen minutes, involving 4-5 people standing at a stopped belt. The number of times that the belt has to be stopped could double compared with the current situation.
- Keeping a large number of different types of packaging. In the current situation, the variety is caused by the different private labels supplied. When working with 7 countries of origin, this means seven times the number of packaging for single leaf salads. For salad mixes, this number is many times greater as the origin would have to be stated for each type of lettuce. This could rise to 7⁶ per unit and a multiple of that for the whole production assortment. Because less packaging is needed for each type, the processor incurs higher costs due to the scale disadvantages of printing and higher stock costs caused by higher stocks.

No estimates are available for the cost rise per unit of mixed salad as a result of origin labelling.

3.5 Costs of voluntary origin labelling

Some producers in the EU voluntarily include the country of origin on food packaging. For example, a group of producers in the UK launched the 'Buy British' campaign to promote the sale of British products (Buy British, 2012). As far as we know, the literature relating to the effects of origin labelling on trade in the EU does not make a distinction with regard to the nature of the labelling: mandatory or voluntary. Consequently it is difficult to give an answer supported by the literature to the third research question of this report into the effects of voluntary origin labelling on trade between EU members states (chapter 1). In the framework of this research project, we also lacked resources to perform our own empirical research into the effects of voluntary origin labelling. We therefore chose to make a number of comments about voluntary origin labelling based on available knowledge about origin labelling in general.

By voluntarily stating the origin on a product, the producer actually makes a product differentiation: a carton of milk stating the origin distinguishes itself from a carton of milk with no origin indication. Thus the producer hopes to market a product that is more attractive for the consumer than a product without origin labelling. From the previous paragraphs, we saw that origin labelling creates extra costs for producers. In general, it can be said that producers will only incur these costs voluntarily if they expect to recoup them in the market. To

speak in terms of figure 2.2: not only does the supply curve move upwards, the demand curve also shifts to the right, so that the demanded volume - despite a higher price - remains the same. Thus the nature of voluntary origin labelling differs from that of mandatory origin labelling: voluntary origin labelling is used as a marketing instrument and the costs can be passed on to the consumer, while mandatory origin labelling results from legislation and the costs cannot be passed on in full to the consumer. Introducing mandatory origin labelling also means that voluntary origin labelling can no longer be used as a marketing instrument.

4 Consumer willingness to pay for origin labelling

4.1 Introduction

In the last chapter, we reflected on the costs which producers have to incur for origin labelling. In this chapter, we explore whether they can pass on these extra costs to the consumer. When shopping, consumers apply so-called purchase motives. The origin of the product may be one of these. If the country of origin invokes a positive association with the consumer, in some cases he may be prepared to pay extra for the origin labelling. In paragraph 4.1, we examine the extent to which origin plays a role as a purchase motive. In paragraph 4.2, we then discuss whether consumers are willing to pay more for country of origin labelling on the packaging of foodstuffs.

4.2 The role of origin as purchase motive

The decision whether to buy a certain foodstuff depends on the consumer's purchase motives. These motives may relate to price, taste, health, habit as well as the origin of the product. The consumer may associate the country of origin with a certain quality level or food safety, but there may also be a preference for products from their own country as a way of supporting their own economy or farmers or because it means lower transport costs and thus CO₂ emissions, whereby the product is considered to be more sustainable (Van Haaster-de Winter and Ruissen, 2012). The image that the consumer has of the country of origin may be based on previous experiences with the same or other products from the country, on advertisements, other forms of product information such as word of mouth advertising, TV programmes or newspaper articles (Verlegh et al., 2005).

Influence of the country of origin on consumer purchase behaviour

The extent to which the country of origin plays a role in the purchase of a product depends on the following factors (Van Haaster-de Winter and Ruissen, 2012):

1. the type of product and the consumer's commitment to the product: in the purchase of cars, origin plays a greater role than in the purchase of clothing or food;
2. the consumer's knowledge about the product: the less the consumer knows about a product, the more important the country of origin is for the purchase;
3. the way in which the information about the country of origin is interpreted and valued: does this invoke positive, neutral or negative feelings?;
4. the consumer himself: the degree of ethnocentricity varies among consumers, which is expressed in stronger or weaker preferences for products from their own country.

Weight of origin labelling as purchase motive varies among countries

Bearing the above factors in mind, it may be expected that the reactions to origin labelling vary per consumer, per product and per country. This expectation is expressed in the literature. A meta-analysis of international studies into origin appreciation, for example, shows that appreciation of origin labelling varies from country to country and that appreciation in Europe is generally lower than in North America and other parts of the world (Ehmke, 2006). Origin labelling plays a particularly important role as a purchase motive of beef, whereby origin is mainly associated with food safety (Shimp and Sharma, 1987; Roosen et al., 2003; Verbeke and Ward, 2006; Loureiro and Umberger, 2007). In the case of pork, origin is hardly considered as a purchase motive (Ehmke, 2006). Dutch eggs are valued highly in Germany because they are associated with freshness (Van Wijk et al., 2010), while Dutch tomatoes are valued much less in Germany for quality reasons (Verlegh et al., 2005). From one of the few studies performed into the appreciation of origin labelling by Dutch consumers, it appears that nearly half of the respondents indicated that they use the information about the country of origin when choosing a foodstuff (Van Haaster-de Winter and Ruissen, 2012). All these differences in the degree to which origin labelling plays a role in the purchase with regard to different countries, products and consumers could affect trade if mandatory origin labelling is extended, as proposed by the Regulation about the provision of food information to consumers (FIR) (EC, 2011b).

Origin labelling not decisive purchase motive in the Netherlands

The Dutch study referred to above, involving 894 Dutch food consumers, also provides insight into the importance of the different purchase motives in food shopping. It appears that many respondents value origin labelling on the packag-

ing, but that this does not play a decisive role for buying food (Van Haaster-de Winter and Ruissen, 2012). This is determined by other purchase motives like taste, price, health or familiarity. Incidentally, around half of the respondents do not read the origin labelling at all; they only look at information about the best-by date, price, weight and user and storage instructions.

Lack of knowledge about origin labelling among Dutch consumers

Interestingly, two thirds of the respondents who took part in the Dutch study did not know that origin labelling on products like beef and fresh fruit and vegetables was the result of EU legislation (Van Haaster-de Winter and Ruissen, 2012). This group was under the impression that producers or supermarkets did this voluntarily or that it was related to Dutch legislation. For the rest, over half of the consumers were not aware that origin labelling involved extra costs for the producer. They thought it was just a question of a little more ink and were unaware of the additional effort involved.

4.3 Consumer willingness to pay for origin labelling

From research by Van Haaster-de Winter and Ruissen (2012), it appears that only 10% of Dutch consumers are prepared to pay extra for origin labelling on food. This low willingness among consumers to pay for country of origin labelling on food is also demonstrated in international literature (Agrawal and Kamakura, 1999; FSA, 2010). According to respondents from the Dutch survey, among the reasons why people are unwilling to pay more for origin labelling on food are that food is already expensive enough and should not be made more expensive; they do not feel the need for it; origin labelling should be provided as an additional free service; they do not consider that origin labelling should involve extra costs; they have not asked for it (Van Haaster-de Winter and Ruissen, 2012). When asked who should pay for the costs of labelling, Dutch consumers pointed to the producer, the government, the supermarket or the EU. Respondents did not seem to feel it logical that they or the farmers should contribute to the costs. Among the small group of Dutch consumers prepared to pay more for origin labelling are people who are generally more highly educated, who tend to buy organic products, are more concerned with food and its quality and who recognise that there are differences in products from different countries of origin.

5 Trade effects of origin labelling

5.1 Introduction

In this chapter, we explore whether producers can pass on the cost price increase resulting from origin labelling to consumers and whether domestic producers are confronted with the same costs as foreign producers. For dairy drinks and cheese, we also use the EDM approach (see paragraph 2.3); for peas and mixed salads, we use the expectations of the processing industry. In paragraph 5.2, we look at dairy drinks and cheese, followed by peas and mixed salads in paragraph 5.3.

5.2 Trade effects for dairy drinks and cheese

Starting points in the EDM calculation for dairy drinks

Every year, the Dutch dairy industry produces around 1.25 billion kg in dairy drinks, most of which is sold on the domestic market (Product Board Dairy). Dutch consumption amounts to 1.74 billion kg. Thus nearly 0.5 billion kg is imported. These imports mainly come from Belgium and Germany. Both Dutch and foreign producers are faced with extra costs to include the place of origin on the product. Because Dutch producers use more foreign milk as a raw material for dairy drinks than foreign producers, we assume that the cost price increase caused by labelling abroad will be half of that in the Netherlands. Based on our calculations, the cost increase caused by origin labelling for dairy drinks for Dutch producers is 1.6%. Dividing by 2 means that for foreign producers of dairy drinks we work with a cost price increase of around 0.8 % (table 5.1). In that cost increase, we have taken into account investments with a depreciation term of around 10 years. In order not to make the calculations too complex, we concentrate on the main product dairy drinks and we omit the labelling costs for milk components, incurred during the production of dairy drinks. In the EDM calculations, we assume that the supply elasticity for dairy drinks is 0.65 (Jongeneel, 2000) and the demand elasticity -0.65 (Bouamra et al., 2008). We assume that consumers do not have a preference for dairy drinks of a certain origin: in this case their 'willingness to pay' is zero. In order to explore the scope on the market for dairy drinks, we conducted a sensitivity analysis,

whereby we assumed in the most unfavourable scenario that Dutch producers would incur and foreign producers will not incur extra costs for origin labelling.

Results of the EDM calculation for dairy drinks

From a comparative statistical comparison of the situation before and after the introduction of origin labelling, our model calculations show that the price of dairy drinks rises by 1.45% (table 5.1). From this you could deduce that Dutch producers can pass on nearly 90% of the cost price increase of the labelling (1.65%) to the consumer. However, that conclusion is too simple. The model calculation reflects the long-term equilibrium situation and assumes perfect competition. Among a limited demand and supply, there is often market power in the chain, which may be unequally distributed. In that case, passing on extra costs to the end user is not self-evident. In the case of a (too) weak market position, the costs cannot be (sufficiently) calculated.¹ In that case, it is obvious that the extra costs will be at the expense of the payment price for the milk.

In the event of higher prices due to origin labelling, consumers buy less and producers sell less: the demand for dairy drinks declines by 0.6%, supply by Dutch producers declines by 0.8% and that of foreign producers by 0.3%. The welfare loss for consumers and producers caused by origin labelling of dairy drinks is almost the same and for both parties over 7 million euros per year. When only Dutch producers are confronted with a cost increase for origin labelling, the welfare loss of consumers is smaller (5.4 million euros per year) while that of producers is greater (8.3 million euros per year).

¹ In the analysis, the market power factor could not be included further. Accurate information on this was not available and the model used was strongly focused on an analysis of situations of perfect competition (not market power). From a recent statement by the CBS (2012), it appears that the consumer price of food has risen less steeply than the cost price in recent years. 'For milk, cheese and eggs, it can be observed that the consumer price only increases slowly alongside rising cost prices and only declines slowly when the cost price goes down.'

Table 5.1 Shifts in supply and demand of dairy drinks and cheese due to origin labelling according to the EDM calculations a)

	Dairy drinks		Cheese	
	change due to origin-labelling	sensitivity analysis	change due to origin-labelling	sensitivity analysis
<i>Cost increase (%)</i>				
The Netherlands	1.65	idem	2.31	idem
EU	0.83	0	1.16	0
<i>Market results (% changes)</i>				
Price the Netherlands	1.45	1.32	1.79	1.12
Total demand from the Netherlands	-0.63	-0.54	-1.35	-1.56
Supply in the Netherlands	-0.78	-0.86	-0.79	-1.27
Import the Netherlands b)	-0.25	0.26		
Export from the Netherlands b)			-0,36	-1.04
<i>Welfare effects (€1,000/year)</i>				
Dutch consumers	-7,191	-5,432	-18,787	-18,520
Dutch dairy industry	-7,480	-8,330	-21,545	-40,299
Total	-14,671	-13,672	-40,332	-58,819
a) As reference, the situation without origin labelling is used; b) Note that the market for dairy drinks and that for cheese differ in the sense that the Netherlands is a net importer of dairy drinks and a net exporter of cheese. For dairy drinks, it is therefore important to include changes due to origin labelling in the import and for cheese to include them in the export. Source: LEI.				

Starting points in the EDM calculation for cheese

In the EDM calculation for cheese, we assumed the same starting points as for dairy drinks, except that the data applied are different. The Dutch dairy industry produces around 750,000 tonnes of cheese per year, over half of which is exported, mainly to other EU member states (Product Board Dairy). Based on LEI calculations, the cost price increase caused by origin labelling for cheese is around 2.3% for Dutch producers and 1.2% for foreign producers (table 5.1). We assume a supply elasticity for cheese of 0.4 (Jongeneel, 2000) and a demand elasticity of -0.6 for Dutch users and -1.3 for foreign consumers (Bouamra et al., 2008).

Results of the EDM calculation for cheese

From the comparison of the situation before and after the introduction of origin labelling, our calculations show that the price of cheese increases by 1.8% (table 5.1). Dutch producers can pass on over three quarters of the cost price increase of labelling to the consumer. For that higher price, consumers buy less and the producers can sell less: the domestic demand for cheese declines by 1.4%, foreign demand by 0.4%, and supply by Dutch producers by 0.8%. Consumers are also at a disadvantage with origin labelling of cheese, but they lose less in an absolute sense than the producers: the welfare loss for consumers is nearly 19 million euros per year and that for the Dutch dairy industry over 21 million euros. When only the Dutch producers are confronted with a cost increase for origin labelling, the welfare loss doubles for the Dutch dairy industry.

Reflections on the calculation consequences of origin labelling for dairy drinks and cheese

The results of our model calculations of the consequences of origin labelling on the markets for dairy drinks and cheese give rise to the following reflections:

- According to an initial estimate, the additional costs related to origin labelling are somewhere between 1.5 and 2.5%. According to the model calculation, the market prices for users/consumers then rise by a slightly lower percentage. The related welfare loss for consumers is, calculated per Dutch consumer, over 40 eurocents for dairy drinks and for cheese slightly over 1 euro per person.
- The model calculation suggests that the dairy industry succeeds in limiting its welfare loss because it is able to pass on a large part of the costs to consumers. That is because we have assumed a market form of perfect competition. However, if there is a dominant market power on the side of the users/buyers such as the wholesaler (which is the case for daily fresh), then the possibility of passing on the costs is much smaller than emerges from our calculations. Such a dominant position of the wholesaler has been the case in recent years in the Dutch dairy chain (CBS, 2012).
- If the costs cannot be passed on, or only to a limited extent, the dairy industry will be forced to deduct the extra costs from the payment price for the raw milk. However in this way, the proposal for the new regulation for the Common Market Organisation (EC, 2011a), which aims to improve the competitive position of agricultural producers, misses its goal.
- The costs that producers have to incur for origin labelling may vary according to the amount of foreign raw materials used. If producers in the Netherlands produce relatively more cheese based on milk produced abroad than

foreign producers, then Dutch producers will be at a disadvantage because they face higher costs for origin labelling. On the export market, they can pass on less of the cost price increase in the price, otherwise they would be pushed out of the market by their competitors. In the EDM calculations, we see this effect occur in cheese: the welfare loss for the Dutch dairy industry nearly doubles if foreign producers do not need to incur extra costs for origin labelling.

- We have found no indications that consumers attach value to the extra information they receive about the origin (see also Van Haasteren-De Winter et al., 2012). Due to origin labelling, they are faced with more expensive products with no extra gains for them. In this case, the consumers are also worse off.
- If the consumers/end users did have a preference for the Dutch product, they must – as appears from simulations with the EDM-model - pay at least around 3.5% of the production costs in order for the Dutch dairy industry to break even. Consumer willingness to pay extra then compensates the extra costs incurred by the industry.¹

5.3 Trade effects for peas and mixed salads

Due to lack of data, we have not made an EDM calculation of the consequences of origin labelling for supply and demand of peas and mixed salads. However, the processing industry itself has a picture of the changes on the market caused by origin labelling. We discuss these below.

Trade effects for peas particularly determined by wholesaler

The costs of origin labelling vary according to the processing industry because the foreign share in the total quantity of peas to be processed varies between the companies and because the production process is different. The companies in the Dutch processing industry are not therefore affected in the same way by origin labelling. The processing industry supplies the peas under different private labels to the wholesaler. Whether the processing industry can pass on the cost price increase caused by origin labelling of 0.4-1.2 eurocents per

¹ The welfare loss of the consumers would then be smaller: although they still need to pay a higher price, they do get something in return, namely the 'enjoyable' experience of consuming a Dutch product.

pot/tin/freezer packaging – which according to our estimates applies to around half of the processed peas – partially or totally to the consumer, mainly depends on the wholesaler. The wholesaler has the most market power in the pea chain and can therefore have an important impact on the consumer price.

In the processing industry, there is a certain fear that origin labelling might have a negative effect on the export of Dutch peas. This fear is based on the assumption that wholesalers abroad might express a preference for peas originating from their own country. The Dutch processing industry could supply these, but they experience a competitive disadvantage compared with the producers in the other country because the Dutch producers are confronted with higher labelling costs. The Dutch producers then suffer a welfare loss according to the same system that we showed with the EDM approach for cheese.

Producers of mixed salads expect to be able to charge cost price increase to consumers

Introduction of origin labelling for mixed salads is very complex because there can be seven different countries of origin per product, as we discussed in paragraph 3.4. The processing industry involved in this study therefore feels that origin labelling according to country is 'impossible' to implement. Due to the complexity of origin labelling for mixed salads, no estimate is known of the costs involved. However producers do feel that they can pass on the extra costs associated with origin labelling to the consumer. They point out that their target group consists of consumers who are used to buying convenience products and who will not tend to change to an unprocessed product. To use the terms of the EDM approach: the demand elasticity is very low, meaning that a very large part of the cost price increase comes back to the consumer.

6 Conclusion

At the moment, there are discussions on two policy areas in EU circles - EU quality policy for agricultural products and EU consumer policy – about the extension of mandatory origin labelling. In both areas, the EC has been tasked with exploring the feasibility for a group of foodstuffs. In EU quality policy for agricultural products, that assignment is in the proposal for a regulation for the integral Common Market Organisation (EC, 2011a) and concerns the extension of mandatory origin labelling for the dairy sector. Studies into the extension of mandatory origin labelling for other sectors may follow later. In EU consumer policy, that assignment was formulated in the new EU regulation about the provision of food information to consumers (FIR) (EC, 2011b) and the expansion relates to other types of meat (other than beef, pork, poultry, lamb and goat's meat), milk, milk used as an ingredient in dairy products, meat used as an ingredient, unprocessed food, products with only one ingredient, and ingredients which constitute over 50% of a food. With an eye on EC studies and the discussions taking place in EU circles, on behalf of the Dutch Ministry of Economic Affairs, in this study we have focused on answering the following three research questions:

1. What are the economic consequences of origin labelling for the dairy and processed fruit and vegetable sectors in the Netherlands in terms of financial costs and impact on trade flows?
2. Can producers in these sectors recoup the additional costs of a form of origin labelling in the market?
3. What is the impact of initiatives currently being developed in various member states for voluntary origin labelling in combination with public support for regional products on trade between EU member states?

In order to answer the research questions, we used a literature study, interviews with (representatives from) the processing industry in the Netherlands and model calculations. We restricted ourselves thereby to four products: cheese, dairy drinks, peas and mixed salads and only looked at first order effects. In this chapter, we address the main findings of our study.

Origin labelling requires considerable modifications to the production process
Including a reference to the country of origin on the packaging involves modifications to the production process as well as a number of additional activities

such as changing the label roll and cleaning the production line. This all requires investments. These modifications are mainly related to the separate storage of the ingredients of different origin in warehouses/boxes and their separate processing. More warehouses often require an expansion of the business premises. The question is whether that is possible at the current location and whether businesses will be granted a permit to extend their premises. In the pea processing industry, it appeared that for half of the processed peas the production process would have to change so radically that it was not very meaningful to include that part in the cost price calculation. This case shows that there are production processes which are not (very) suitable for introducing origin labelling. Finally, the costs of origin labelling can relate to raw material losses which occur when the remainder of one batch cannot be processed with the next batch. These losses occur on a larger scale for dairy drinks and cheese, because here - in contrast to peas and mixed salads – by products are created during the production process.

Origin labelling not possible for assembled products like mixed salads

For mixed salads, no calculation of the costs for origin labelling was made because introduction of origin labelling is practically impossible to implement. Mixed salads are normally packed in pre-printed bags, containing four to six different types of lettuce leaf. In the Dutch processing industry, these types of lettuce leaves come from seven different countries. If it is assumed that the origin per type of leaf has to be mentioned, then per mixed salad 7⁶ (117,649) different types of packaging would be necessary to show the correct origin of the lettuce leaves. The case of mixed salads therefore shows that origin labelling is practically impossible if food products are composed of several ingredients which may originate from different countries.

Cost price dairy drinks, cheese and peas several per cent higher due to labelling

It is estimated that, due to origin labelling, the cost price of dairy drinks in the Netherlands will rise by 1 to 2%, that of cheese by around 2 to 3% and that of half of the peas processed in the Netherlands by around 0.4-1.2 eurocents per pot/can/freezer packaging. Although this cost price increase may not seem very much initially, we must remember that the margins in the food industry are generally very small and often even negative for own brands and private label products.

Market power determines who pays the bill for origin labelling

From the international literature, it appears that consumers are not (very) willing to pay more for the mention of the origin on food packaging. On the other hand, the producers do want to pass on the extra costs of mandatory origin labelling to the consumer. Which party is ultimately landed with what share of the costs is determined by the division of market power in the chain, which varies from product to product. In our model calculations for dairy, we assumed that the dairy market is a market with perfect competition. In that case, Dutch dairy producers will succeed, certainly in the longer term, in passing on a large part of the cost price increase (around 75-90%) to the consumer. In the Dutch dairy practice, however, wholesalers play a major role, particularly in the fresh market, so that the dairy producers will not be able to pass on as much as our model calculations indicated. Also for peas, there are signs that the power in the chain mainly lies with the wholesalers, and the degree to which the Dutch pea industry can pass on the cost price increase to the consumer largely depends on this wholesaler. Mixed salads are traded on the market for convenience products. Consumers in this market will not easily switch to the market for unprocessed products. Because the power in the chain actually lies in the lettuce processing industry here, Dutch mixed salad producers expect that they will be able to pass on all the extra costs of origin labelling in the consumer price.

Agricultural producers also face extra costs of origin labelling

The proposal for the new regulation for the Common Market Organisation (EC, 2011a) aims at improving the competitive position of agricultural producers with origin labelling. However, if producers cannot (fully) pass on the extra costs of origin labelling to consumers, they will try to recoup the costs in a lower price for farmers; in the case of cooperatives, this will be at the expense of the effective payment price to the member suppliers. In the sectors we studied, it is probable that this will be the case for dairy and peas, and as a consequence dairy farmers and pea growers will have to be content with a lower yield price. Thus origin labelling works to the disadvantage of agricultural producers.

Competitive position may shift through origin labelling

The degree to which origin labelling plays a role as purchase motive varies among consumers, products and countries. Origin labelling can therefore hamper the competitive position of Dutch producers on foreign markets if the consumers in that country do not have a preference or have a low preference for Dutch products. Furthermore, the degree to which producers use foreign raw

materials varies among producers in a country; we saw this in the pea processing industry, for example. It can also vary among producers in different countries, as is the case in the dairy industry. Generally speaking, the Dutch dairy industry gets its milk from various countries and thus faces higher additional costs than dairy farmers who only use local raw materials. Finally, there is a greater chance that producers located in a border region or in a small country will process more foreign raw materials than producers in large countries. Due to these differences in the use of foreign raw materials, the costs incurred by producers in the EU for applying origin labelling on the packaging may vary significantly. The producer who uses the most foreign raw materials in relative terms is thus at a disadvantage.

Voluntary origin labelling only if producer can pass on the costs

As far as we know, the literature into the impact of origin labelling on trade in the EU makes no distinction regarding the nature of the labelling: mandatory or voluntary. In the framework of this research project, we also lacked the resources to perform our own empirical research into voluntary origin labelling. It is therefore difficult to answer the third research question of this report about the impact of voluntary origin labelling on trade between EU member states. However we can extrapolate some findings about mandatory origin labelling in this study to voluntary origin labelling.

Firstly, producers will be aware that consumers have varied preferences for countries of origin. They can respond to this by introducing voluntary origin labelling as a marketing instrument. Producers will only apply this if they think it will not harm their competitive position relating to foreign producers. Introducing mandatory origin labelling means that voluntary origin labelling can no longer be used as a marketing instrument.

Secondly, origin labelling generates extra costs for producers. Producers will only do this on a voluntary basis if they expect to be able to recoup these costs in the market.

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