



# SUFISA - DAIRY REPORT AN EXTENDED SUMMARY

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# SUFISA Dairy Report: An Extended Summary

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# 1. INTRODUCTION

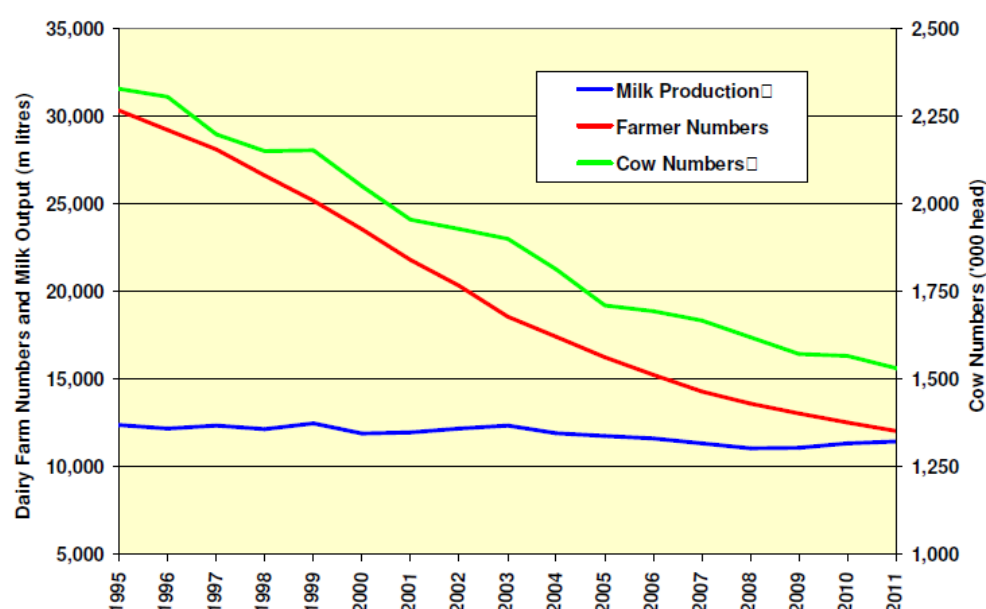
This report is part of the European Union (EU) funded Horizon 2020 project, SUFISA (Sustainable finance for sustainable agriculture and fisheries). This is an extended summary based on the full report, available at <http://www.sufisa.eu/>. SUFISA aims to identify practices and policies that support the sustainability of primary producers in a context of complex policy requirements, market imperfections and globalisation. Knowledge on market conditions and other driving forces exists, but in a fragmented way: relevant producer groups and regions have not yet been analysed or framework conditions and driving forces have changed in the meantime.

## 1.1 Structural change on UK dairy farms

The UK is the third-largest milk producer in the EU after Germany and France, and the tenth-largest producer in the world (Bates 2016). The dairy sector accounts for about 18% of the UK's total agricultural output. In the last ten years the number of dairy farms has declined at an average rate of 4% per year, combined with a 27% reduction in the total number of dairy cows (Figure 1). The process of concentration has been counterbalanced by an increase in average herd size from 75 cows in 1996 to 133 in 2014 (Bates 2016) and an increase in cow productivity.

As part of this restructuring process, there has been a concentration of dairy farms in the mid-west and western regions of England, although even established dairying areas have experienced a decrease in the total number of dairy farms. The spatial nature of this process of concentration and intensification is reflected in Figure 2.

Figure 1. Restructuring of UK dairy sector (milk production, farmers & cow numbers)

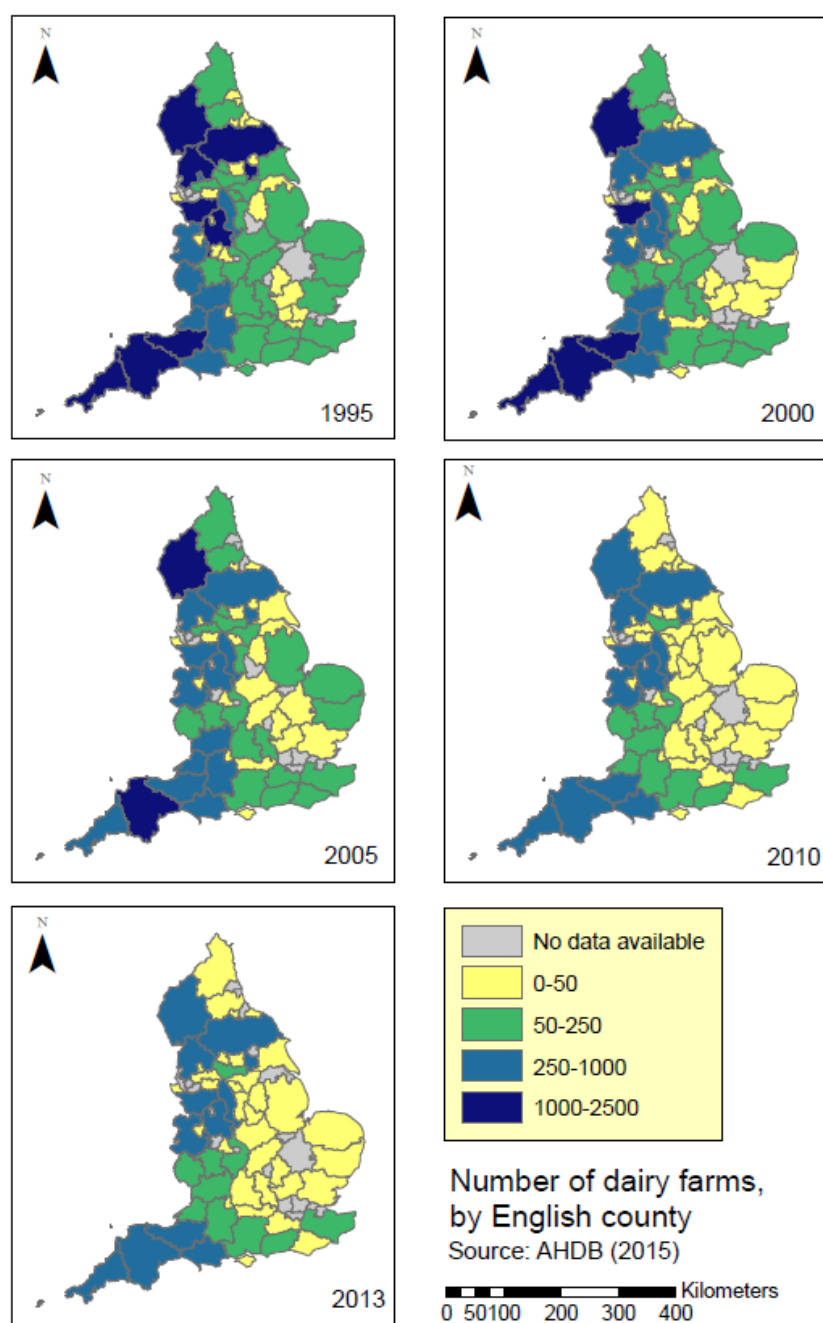


Source: Dairy UK (2013)

*This summary report focuses on the key market and regulatory conditions that potentially impact dairy farming businesses, including price volatility, and the key strategies emerging to manage these risks and pressures*



**Figure 2.** Number of dairy farms, by English county



Source: Data - AHDB (2015)

Various studies have been commissioned to examine the factors driving structural change in the UK dairy sector (e.g. DairyCo 2013), which are usually clustered into two main categories: 'social' (e.g. lack of succession, age of the farmer) and 'economic' (e.g. cost of production, milk price) factors. Poor milk price is the most significant factor. The milk market, particularly liquid milk, is dominated by supermarkets through which as much as 80% of milk produced is sold. In 2014/2015 dairy farms in the UK had an average Farm Business Income (FBI) of £83,904, which is 4.2% lower than the previous year (McHoul *et al.* 2016).

In 2015, there was a '*SOS Dairy Campaign*' and a number of well-publicised farmer protests at leading supermarkets and processors. Farmers argued that the price they were receiving for their milk was not sufficient to cover production costs. Milk prices in 2017 have significantly improved, but this may not last and the key challenge is how farmers deal with price volatility, particularly when prices are very low.

*Even well-established dairy regions have experienced a decrease in the number of dairy farms. The decrease in the number of farms has been counterbalanced by increases in herd sizes and productivity levels*



## 1.2 Context: policy and milk price

The Common Agricultural Policy (CAP) has played a fundamental role in shaping UK agriculture and regulation of the dairy sector since the UK joined the then European Economic Community in 1973. The key policy changes that have had an influence on the UK dairy sector are: the introduction of milk quotas in 1984; the 1992 CAP Reform and farmers' payments for ecosystem services; the abolition of the Milk Marketing Board in 1994 (Banks and Marsden 1997); and the abolition of milk quotas in 2015. The CAP provides direct financial support to dairy farmers through its two pillars: the direct support package (Pillar I) and the rural development programme (Pillar II). In periods of poor milk price the basic payment is a lifeline, particularly for smaller farms and/or farms exposed to global market fluctuations.

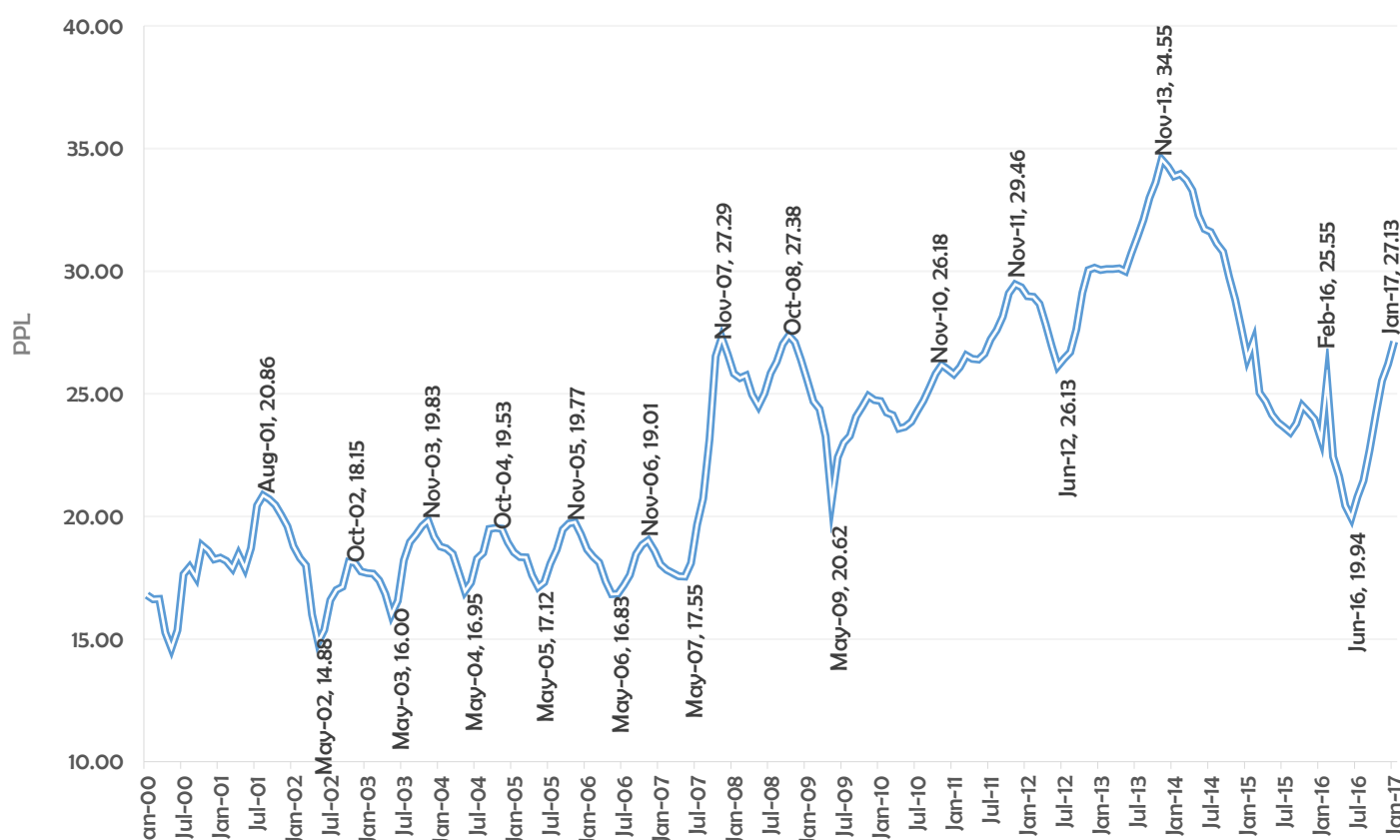
Milk quotas were abolished in March 2015. The decision to remove milk quotas was motivated by the increase in demand for dairy products globally, especially in emerging countries like China. The quota regime was viewed as a potential barrier to EU producers responding to this growing global demand, hence limiting the EU dairy sector's competitiveness and growth. Along with opportunities for expansion and intensification of production, the abolition of quota also created production and marketing issues that dairy farmers had to face.

With the abolition of milk quota, policy and regulation regarding milk price is now non-interventionist. With the current reduction of policy intervention at the EU level, the variability of milk prices has become more evident and the removal of the quota system has made the sector more susceptible to changes in international markets. As evident in [Figure 3](#), the average farm-gate milk price has fallen significantly from its peak of 34.55ppl in late 2013 – to a low of 19.44ppl in June 2016. At its lowest, some producers found it difficult to cover the cost of milk production.





**Figure 3. Farm gate milk prices, 2000-2016**



Source: Data – AHDB (2017)

No longer protected by quota, UK dairy markets are strongly integrated into the global market. Changes in production volumes, supply and prices anywhere in the world can have repercussions on UK dairy markets. Drops in milk price were linked to the EU Russian trade sanction and oversupply of milk on the global market, for example. Despite the loss in market share, both the EU as a whole and the UK in particular are still major global dairy producers. Higher production volumes in 2014/15 were followed by an increase in dairy exports, turning the overall UK dairy trade balance from negative to positive. The positive trade balance was mainly driven by liquid milk, while imports of cheese and butter exceeded UK exports (Bates 2016).

UK dairy farmers operate at higher average production costs than other global and EU producers. The extra cost in the UK is 4 pence per litre with respect to the global average. However, costs of production vary from farm to farm and they also change from year to year (DEFRA 2016). In the last ten years, total dairy production costs followed an upward trend, but since 2014 this trend has reversed. UK domestic milk production is not sufficient to fulfil demand for dairy products, with milk from UK dairy farms supplemented by imported milk. The bulk of available milk, including imports, is almost entirely transferred to dairy industries and cooperatives which transform half of the raw milk supplied into manufactured dairy products, with the remaining raw milk pool treated and sold as liquid milk.

Overall, the dairy sector comprises mainly fresh and highly perishable products which need adequate logistical organisation to be distributed daily. Whilst farmer engagement in processing is rising, almost 91% of UK milk is purchased and processed by dedicated processing facilities/companies. There are five major organisations leading the UK dairy industry. Three are UK co-ops: Arla Foods, First Milk, and United Dairy Farmers; one is a public UK company: Dairy Crest; and one is a German-based private company: Müller Wiseman Dairies. The UK dairy industry and supply chain is therefore characterised by a lower level of concentration compared to continental counterparts, hence further opportunities for industry rationalisation and merges still exist (Dairy UK 2013). UK dairy processors typically have direct links with dairy farmers and purchases are often ruled by specific contracts. but not all milk bought from farmers is processed by the purchaser; the purchaser can sell the liquid milk to other companies for processing. A substantial percentage of UK milk goes into the ingredients sector (as processed milk). This sector is diverse and fragmented but continues to grow as consumers eat more processed and prepared foods (Dairy UK 2013). The UK retail market is dominated by four major supermarkets (Tesco, Asda, Sainsbury's and Morrisons), accounting for 76% of all dairy sales. Only a small proportion of the industry's total output is sold directly to consumers via doorstep delivery service or through local markets.

## 1.3 The UK dairy supply chain: key features

To understand why UK dairy farmers are particularly exposed to price volatility, it is important to understand the peculiarities of the UK dairy market. About 65% of dairy production in the UK is sold as liquid milk, with only 25% is turned into cheese and 10% into powders and butter. This contrasts with the rest of Europe, where only 30% of dairy production is sold as liquid milk. Since liquid milk cannot be easily stored in the same way as milk powder or cheese or butter, UK farmers tend to be more affected by volatility and global market changes (Defra 2016). When prices are low, farmers' production decisions can be affected, influencing productivity. Milk demand in the UK is quite inelastic, meaning that the volumes of milk sold do not change dramatically if milk prices change, because milk supply in the UK is a staple good (Defra 2016). Supermarkets are transparent in stating that the retail price is not necessarily related to the farm-gate price.

Milk price crisis is not the only problem related to dairy prices. There are two further issues to consider: asymmetric price transmission and price volatility. In relation to the first issue, when discussing dairy prices in the UK, it is important to distinguish between three price categories: 1) farm gate prices; 2) wholesale prices and; 3) retail prices. These price categories are interlinked as they reflect three steps in the UK dairy supply chain. It is assumed that within the supply chain price transmission is symmetric – i.e. dairy prices evolve simultaneously passing from one node of the supply chain to the next. It is also assumed that prices are set at the farm-gate level, and that wholesalers (processors) and retailers add a fixed 'mark-up' to cover their costs and to enable profit. These assumptions are often far from the reality. The dairy supply chain is characterised by asymmetric price transmission – i.e. prices at different stages of the chain do not move up and down in line with each other (Ruslan 2011). Asymmetric price transmission is due to: differences in market power between supply chain actors; differences in market and cost structures across actors; government intervention; and the value added by manufacturing of dairy products with respect to liquid milk. For these reasons, the price received by farmers can be disproportionate to how milk is priced in the supermarket.

Regarding milk price volatility, in the last ten years it has increased in the EU and in the global market (Tangermann 2011), which coincided with a progressive reduction of farmers' protection towards a more market-oriented EU agricultural sector (Bardaji 2011). Price volatility can lead to market risks and to increased uncertainty that have undesirable effects on farmers' investment decisions (Tangermann 2011), sourcing strategies of retailers and/or processors, and food consumption (Hernandez *et al.* 2014). Among the factors that contribute to price volatility there are: trade restrictions in major producing countries; climate hazards; and animal health scares. These factors can provoke unexpected changes in the supply and demand of milk, and consequently lead to sudden increases/decreases in milk prices (Bardaji 2011). Price volatility is often considered a negative issue related to low prices and income instability. However, price volatility can also be advantageous to those who can seize opportunities and build strategies around it (Assefa *et al.* 2015).



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*Aim: The report seeks to better understand key market and regulatory conditions that potentially impact dairy businesses, including price volatility, and the key strategies emerging to manage these risks*

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## 2. METHODOLOGY

### 2.1 Data collection

Key to the approach taken has been to put the farmers and industry stakeholders at the centre of the research, in order to get their perspectives on the key issues that need to be considered. In the first instance, a *media analysis* was conducted (which covered national, regional and specialised media from 2005-2016), as well as a *desk-based analysis of market conditions and regulations* (sources reviewed included: academic publications; government/policy documents; market research and consultancy reports; industry reports and NGO documents), supplemented with expert interviews.

Following analysis of the resultant data, *3 focus groups* were held with Somerset/north Devon dairy farmers in March 2017. To complement the focus group data, *11 supply chain interviews* were completed with dairy processors, farmer co-operative representatives or individuals who were in some way involved in buying milk from dairy farmers and/or helping to set up milk contract arrangements. This helped to deepen the understanding of different supply chain arrangements available to dairy farmers. A *workshop* was conducted in May 2017, following reflection on the focus group and interview data, to firstly present the key findings of the research conducted for feedback and comments, and secondly, to discuss a range of scenarios regarding the future viability of dairy farming in Somerset, linked to the Brexit negotiations.

To complement the qualitative data, we conducted a *telephone survey of 200 dairy farms* (88 in Somerset and 112 in Devon) between November and December 2017. Information was collected for the latest completed financial year (e.g. 2016-2017). The survey was designed to achieve an in-depth knowledge of the supply chain arrangements in the dairy sector.

According to the most recent Department for Environment, Food and Rural Affairs (Defra) estimations, the current number of dairy farms in the two counties is 1,300. Given the current population size, the sample of 200 farms guarantees a margin of error of about 5%, which is statistically acceptable (the commonly accepted threshold is  $\leq 10\%$ ). Farmers were interviewed by telephone during the period November-December 2017, using a questionnaire composed of about 200 questions for an average interview length of 35 minutes. Farmers were asked to provide information about their dairy farm relative to the latest completed financial year (2016-2017). The questionnaire was composed of the following sections:

- A. Farm business characteristics
- B. Production and sales channels
- C. Characteristics of the sale agreement and sustainability
- D. Strategies and drivers of farming
- E. Farmer characteristics

For the purposes of this report, data are analysed using descriptive statistics. Analysis of the interview and focus group data revealed six key areas, as well as Brexit, which are summarised in the rest of the report. Where possible, survey data is integrated into the discussion.



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*Data collection included a media analysis, focus groups, workshops and a farmer telephone survey*

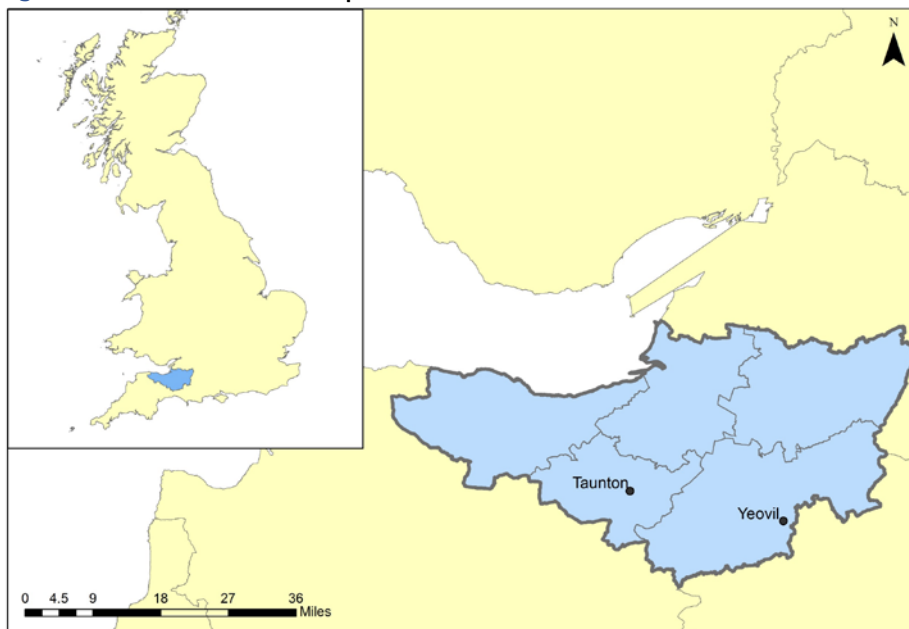
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## 2.2 Case study area

Somerset was selected as the central case study area. Somerset is a rural county located in south-west England with a strong tradition of agriculture, especially dairy and livestock farming. Dairy farms account for about 12% of Somerset's farms. The number of dairy farms has remained concentrated over time, although the sector locally has seen some exiting the sector. Herd size numbers in the county have increased, but the county retains a profile of mostly smaller-scale, family run dairy farms. Somerset is also home to a number of large processors and high-quality dairy industries, including Dairy Crest, Müller Wiseman Dairies, Wykes, Barber's, and Yeo Valley Organic. Among Somerset's traditional dairy products, West Country Farmhouse Cheddar was awarded a Protected Designation of Origin (PDO) label in 1996. Although data collection was largely focussed in Somerset, some elements of the data collection extended into neighbouring county – Devon.

Somerset was selected as a case study area because of its high representativeness in terms of agro-ecological and socio-economic characteristics and dairy farming structure. Somerset is a rural county located in south-west England (Figure 4). Somerset's climate is temperate and generally wetter and milder than the rest of England. The landscape is a combination of hills and flat levels. About 70% of the flat area is grassland and 30% is arable.

Figure 4. Somerset Location Map



Somerset has a strong tradition of agriculture, especially dairy and livestock farming. Half of Somerset's gross output is constituted by agricultural value added. The majority of the area is grassland, with a significant proportion also dedicated to arable crops. The county has heavy soils, which is one reason why there is a concentration of dairy farming (i.e. the land is suited to this form of production). Farms in the county were also small (Ilbery 1992), which further explains the traditional concentration of dairy farms in the county. About 60% of the farmed land is owner occupied. The total number of agricultural holdings in Somerset in 2007 exceeded 9000 units, of which about 30% were small farms lower than 50 hectares, and more than 50% were very small farms below 5 hectares. Dairy farms are quite numerous, accounting for about 12% of Somerset's farms. In short, herd size numbers in the county have increased but essentially the county retains a profile of mostly family run dairy farms.

*Dairy farms  
account for 12%  
of the farms in  
Somerset*



# 3. RESULTS

## 3.1 Milk price & price volatility

Farmers and stakeholders argued that milk price volatility was a key characteristic of the dairy industry. Volatility was intensifying, resulting in more dramatic highs and lows. Participants understood milk price volatility as the product of global issues, rather than an isolated national problem. Low milk prices in 2015, for example, were linked to lower global demand of milk combined with milk oversupply, the ban of dairy exports to the Russian market, and the deregulation of the EU milk quotas. As a dairy farmer, low milk price relative to the cost of production is the key issue and underlying concern, but price volatility is also significant because of the uncertainty it creates. Participants agreed that issues of oversupply and undersupply were the key cause of market volatility and that producers needed to be more sensitive to the market in order to maintain a stable price. The terms 'accommodation milk' and 'milk washing' (i.e. oversupply) emerged in the focus groups as a cause of price volatility. Price wars between supermarkets, started initially by 'Iceland', were also blamed.

"We are not isolated in milk anymore... So now you've got a situation where the market is quite fragile, and suddenly all this milk comes running forth out of Europe. Is it any surprise that the price bombed?"

(Interviewee 16)

"We mustn't let history repeat itself again and just, as an industry, go charging off into producing lots of extra milk, now that we've got a higher milk price, only to crash the market" (Interviewee 15)

Farmers' struggles with milk price were also evident in the survey results. Regarding prices, during the period surveyed, farmers received an average of 24.76 pence per litre (Table 1), which was lower than the average UK farm-gate price according to Defra for April 2016 to April 2017 (24.31 pence per litre). Concerns about the price received relative to the cost of production was also echoed in the survey. On average, production costs equated to nearly 82% of prices (Table 2), but in some circumstances were as high as 140%. The statistics reveal how prices did not differ significantly between collective and individual arrangements (see section 3.2). However, t-tests confirm costs for farmers selling to individual business were lower than those selling via collective arrangements.

Table 1 Milk price

Prices (£/l)	Mean	Min	Max
All farms	0.2476	0.18	0.41
Collective	0.2487	0.18	0.41
Individual	0.2468	0.18	0.37
Price difference – collective-individual: 0.0019			

Table 2 Milk production costs (as a % of price)

Costs	Mean	Min	Max
All farms	0.8172	0.01	1.4
Collective	0.8592	0.22	1.4
Individual	0.7874	0.01	1.4
Cost difference – collective-individual: 0.072 <sup>1</sup>			

A total of 5 key themes emerged from the data collection:

1. Milk price & price volatility

2. Institutional arrangements

3. Contractualisation

4. Market data and futures

5. The future (social drivers)

<sup>1</sup> Differences in cost between collective and individual arrangements were statistically significant at the 5% level



## 3.2 Institutional arrangements

The supply chain interviews identified a number of different supply chain arrangements for selling milk. These different arrangements can represent different strategies that potentially help dairy farmers to manage market volatility. For dairy, these arrangements are essentially different types of contract. Some have been in place for some time but there are developments within these arrangements (e.g. new pricing mechanisms) in response to volatility. The analysis suggests contractual relationships in the UK dairy industry are highly developed. Dairy farmers can engage with the dairy industry through a variety of contract types (see below). In general terms, it is possible to distinguish between collective and individual arrangements:

1. Collective organisational sales
  - (i) Co-operatives (e.g. Arla, OMSCo, First Milk)
  - (ii) DPO (Dairy Crest Direct)
2. Individual sales
  - (i) Supermarket aligned contracts (10% of sales)
  - (ii) Direct to processor/milk buyer (e.g. Muller non-aligned, Crediton Dairies, Barber's, Wykes)
  - (iii) Informal arrangements (direct to the consumer)

*Key arrangements identified*

### *1. Collective organisational sales*

According to the survey, to be a member of at least one farmer organisation was very common in Somerset and Devon. About three out of four farmers (74%) were members of a farmers' union, but membership in cooperatives and/or Dairy Producer Organisations (DPOs) were also quite frequent among dairy farmers (44.5% and 21.5% respectively).

#### *(i) Co-operatives*

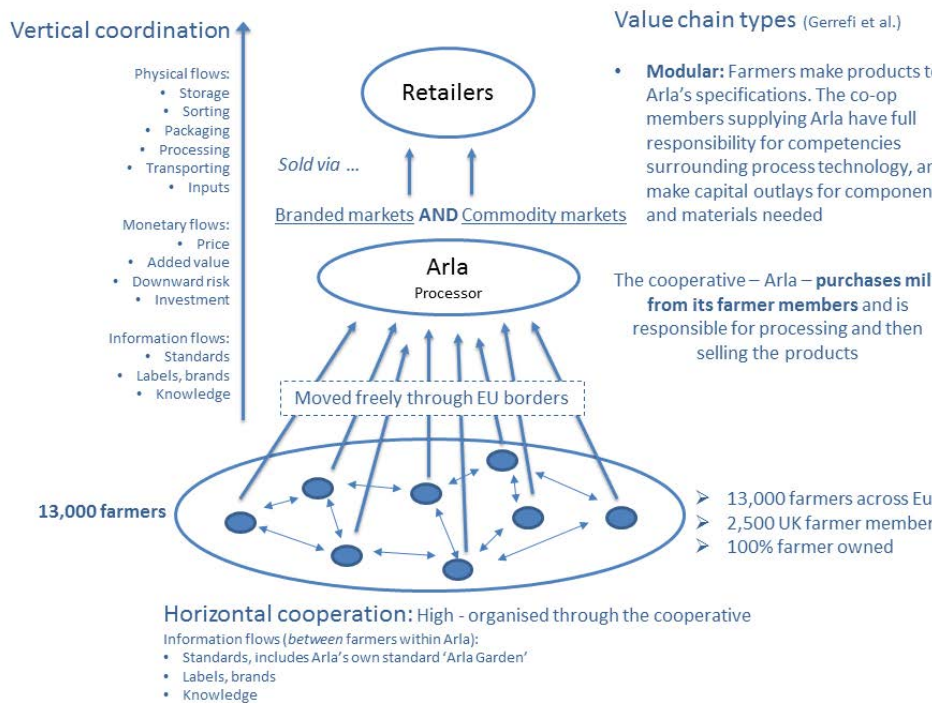
Cooperatives such as Arla and OMSCo (The Organic Milk Suppliers Cooperative), purchase milk from farmer members and are subsequently responsible for processing and then selling the products. The milk is covered by an obligation to deliver arising from the farmer's membership of the cooperative in accordance with the conditions set out by the cooperative.

### *Case Study: Arla*

Arla is a European dairy cooperative with around 13,000 farmer members across Denmark, Sweden, Germany, UK, the Netherlands and Belgium (Figure 5). Milk collected from farmer members is taken to one of their processing sites throughout Europe, where it is processed and sold. Money is pooled and redistributed through the monthly milk price. As a respondent from Arla explained, "that's the point about the co-op, there's nowhere else for the money to go. Ultimately it finds its way back to the farmers". As a European cooperative the 'Arla model' relies heavily on milk and associated products moving freely across European boundaries. For instance, Lurpak butter is made in Denmark before being imported into the UK and so the group currently takes advantage of the free movement of goods in the Single Market.



Figure 5. Arla cooperative arrangement



*Unlimited contracts guarantee to purchase all milk produced by the farmer. This is seen by many as an advantage as they can produce as much as they can and always get paid for it. But this freedom to produce can also mean the market can become diluted which has been linked to price decreases.*

Arla offer *evergreen, unlimited* contracts. For the Arla representative and some focus group participants this was important. For example:

“That’s one of the virtues of Arla over most of the other processors, is my contract with Arla is evergreen, so they can’t get rid of me [...] And another virtue of the Arla contract is that they will buy all my milk without restrictions, so I can go on expanding and they have guaranteed to buy all my milk on the same price, now that’s not widespread in the industry” (Interviewee 16)

“We could go and take on another 400 cow farm tomorrow, and ring up Arla and say ‘right, we’re going to put another million litres on our contract’, they’re quite good like that” (Young Farmers Focus Group)

As the largest UK cooperative, Arla described themselves as having the ability to ‘keep the market straight’, because as long as they are recruiting farmer members, other buyers cannot afford to be too far out of line. To avoid exposure to volatility, Arla supply milk via both commodity and branded markets, with branded market prices tending to be much more stable than pure commodity prices. As the representative from Arla explained, “it’s important for a farmer to look at the product mix of the business he’s supplying because that will have a bearing on the volatility or the level of volatility he’s going to be subject to going forward” (Interviewee 16).



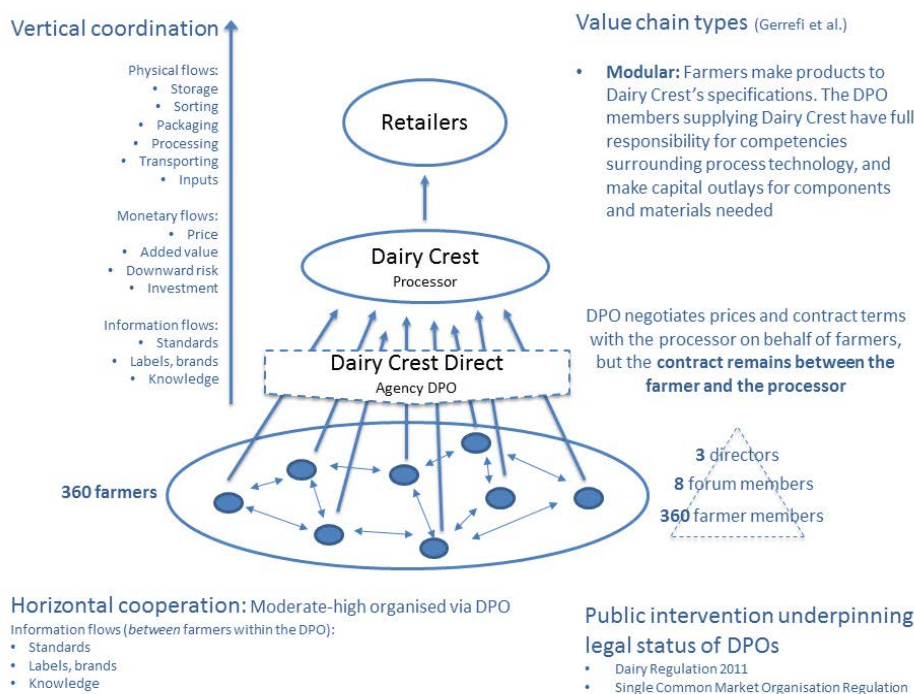
## (ii) Dairy Producer Organisations (DPOs)

### Case Study: Dairy Crest Direct

Dairy Crest Direct (DCD) is an agency DPO, which is formed to collectively negotiate terms (both with reference to prices and contract terms) with the processor, or in some cases, the retailer, on behalf of its members (Figure 6). The actual milk contract remains between the individual farmer and the processor. As the DCD representative put it,

*“We [Dairy Crest Direct] act on behalf of our members, but each member holds a contract with Dairy Crest to supply milk. They have a contract with us and a contract with Dairy Crest, but their milk supply contract is with Dairy Crest” (Interviewee 19)*

Figure 6. Dairy Crest arrangement



The DCD DPO currently represents 360 farmer members; it has eight elected geographically specific Forum Members and three Elected Directors. This highly formalised governance arrangement is characteristic of the DPO model, which some interviewees argued may not appeal to smaller groups or those where a strong supplier-buyer relationship already exists.

The DCD DPO essentially formalised a structure that already existed.

*“It legalised what we already doing” (Interviewee 19)*

Processors, such as Dairy Crest, benefit from the formalisation of the relationships/communication between themselves and their producers. “It provides them with a point of contact for them to discuss and consider ideas for the future” (Interviewee 19).

It is interesting to note the different roles that farmers' organisations have with respect to their sales arrangements. The main role of cooperatives was to buy farmers' milk (82%) (Table 3), while DPOs provided a wider range of services beyond purchasing milk, acting as intermediaries with other buyers in negotiating prices (44.2%) and supporting the design of terms of contracts between farmers and buyers (46.5%).

*DPOs collectively negotiate contracts with processors or retailers on behalf of farmers*

*“It gives the farmer confidence that his milk supply, or his agreement with his milk producer is being full represented by the people who have got his interest at heart” (Interviewee 19)*



**Table 3.** Services provided by farmers' organisations

	<i>Co-op</i>	<i>DPO</i>	<i>Union</i>
Buys the milk	82.0%	41.9%	4.1%
Puts me in contact with a buyer	9.0%	32.6%	2.0%
Negotiates the price for me with a buyer	30.3%	44.2%	3.4%
Supports the design the term of the contract with a buyer	31.5%	46.5%	11.5%
Legal advice	0.0%	0.0%	39.2%
Insurance	0.0%	0.0%	46.6%

## 2. Individual sales

### (i) Supermarket-aligned contracts

Although supermarket-aligned contracts represent a relatively small proportion of the milk buying market – accounting for around 10% – they are an important arrangement. Examples include Tesco Sustainable Dairy Group (TSDG), which is supplied via Müller. Retailer-aligned contracts emerged as a response to the negative PR supermarkets received about the prices they were paying to dairy farmers, and out of a desire on the part of the supermarkets to secure milk supply.

*“They wanted to ring fence a group of producers that they knew they could look after [...] and guarantee future supplies” (Interviewee 16)*

In retailer-aligned contracts, farmers sell their milk, via a processor, to a supermarket retailer such as Tesco or Sainsbury's. The price they receive covers the cost of production and includes a premium. It protects farmers from market volatility and prices are set in advance to ensure a stable income for dairy farmers.

*“The only guys that are isolated [from price volatility] are the guys that have retailer aligned contracts... So they've been doing OK throughout this ... kind of haloed ground [...] if you are on them, they are fantastic [...] when we were getting 18/19 pence, they were still getting 29 pence” (Interviewee 16)*


*“If you can get on them and you can stay on them you are on to a winner, aren't you?” (Young Farmers Focus Group)*

### (ii) Direct processor/milk buyer

Farmers selling their milk direct to the processor or milk buyer are also a key individual sales arrangement. In the Somerset and North Devon case study examples included arrangements with large processors, such as Müller (direct supply contracts), to arrangements with smaller dairies / specialist cheesemakers, such as Barbers, Crediton Dairies and Wykes.

During the survey, farmers were asked to break down the milk's sales among a variety of possible channels, distinguishing between sales to collective organisations (e.g. cooperatives and DPOs) and individual businesses (e.g. processors, retailers).

Despite opportunities for diversification among different buyers, sales channels were dominated by cooperatives (81.2%) and processors/the food industry (93.9%) (Table 4).



*“If you can get on them and you can stay on them you are on to a winner” (Young Farmers Focus Group)*

Table 4. Sales channels

<i>Sales to collective organisations</i>		<i>Sales to individual businesses</i>	
Cooperative	81.2%	Local markets or final consumers	0%
Producer organisation	15.3%	Independent small businesses	0%
Inter-branch organisation (IBOs)	0%	Processors/agri-food industry	93.9%
Farmers' union	0%	Supermarkets/retailers	1.7%
Other collective	0%	Traders/Wholesalers	1.7%
Mix of the above	3.5%	Exporters	0.9%
		Mix of the above	1.7%
<i>Total collective sales</i>	<i>42.5%</i>	<i>Total individual sales</i>	<i>57.5%</i>

### 3.3 Contractualisation and pricing instruments

Contracts are an increasingly important feature of dairy supply chains. Six attributes were used to analyse and compare contracts (listed to the right of this text).

The main pricing mechanisms used are as follows.

First, *cost of production plus*, in which the farmer receives a price for their product that covers cost of production as a minimum, plus a bit more, ensuring sustainable profitability of their business. They applied in supermarket-aligned contracts and account for about 10% of the industry.

Second, *A and B pricing*, which is a pricing matrix with a core price and a market realisation price. This was used by DCD and some of the smaller dairies and cheese producers, such as Crediton and Barber's. There is some debate about whether A and B pricing is the best way forward, or whether it would be better to just have one price.

Third, *formulaic or basket pricing*, where dairy farmers are offered one price for their milk for a period, which is derived from four or five prices currently offered by processors in the market. This pricing mechanism was used, for example, by Müller (non-aligned contracts), the Arla co-operative as well as one smaller milk broker. There is some debate about offering future prices for milk but currently only one dairy, Yew Tree Dairies, offer this hedging option, although Müller plan to introduce this option for one of their manufacturing contracts.

Most contracts examined were *exclusive and evergreen* and producers are usually notified 12 months in advance if a contract will be cancelled. In terms of price changes, the notice is usually 30 days. The biggest difference in contracts is in terms of the quantity supplied. Processors who favoured A and B pricing argued it was a good way to control supply. This was critical for smaller cheese processors and dairies. Co-operatives like Arla have no limit and guarantee to take whatever a farmer produces. Muller require farmers to notify them if they will exceed 10% of their previous milk year.

There is some debate about what mechanism is best, with some arguing no limit contracts were one of the reasons why oversupply happens.



Price determination

Length of contract in years

Cancellation/notice period

Quantity to supply buyer

Exclusivity

Price change notice period

Based on data from the survey, [Table 5](#) demonstrates the differences between collective and individual contractual agreements.

**Table 5.** Characteristics of sale agreements

		<i>Collective</i>	<i>Individual</i>	<i>All</i>
<i>Type</i>	Formal before delivery	30.1%	70.9%	54.0%
	Formal at delivery	2.4%	7.7%	5.5%
	Informal before delivery	4.8%	12.0%	9.0%
	Informal at delivery	0.0%	0.9%	0.5%
	Membership rules	62.7%	8.5%	31.0%
<i>Duration</i>	Less 3 Months	0.0%	0.7%	0.4%
	3 to 6 Months	3.0%	4.3%	3.7%
	7 to 12 Months	18.8%	13.6%	15.8%
	13 to 24 Months	0.0%	0.7%	0.4%
	25 to 60 Months	5.0%	3.6%	4.1%
	More 5 Years	55.4%	60.7%	58.5%
	Evergreen contract	17.8%	16.4%	17.0%
<i>Payment moment</i>	Before delivery	0.0%	0.5%	0.2%
	At delivery	0.0%	0.5%	0.2%
	After delivery	37.4%	32.2%	34.7%
	Middle and end season	18.2%	11.4%	14.7%
	On regular basis	41.4%	54.5%	48.2%
	Other	3.0%	0.9%	2.0%

Farmers were also asked for details of the content of such agreements. These details are shown in [Table 6](#). The most frequent features for both collective and individual sales agreements concern sales exclusivity (i.e. the buyer requests that the farmer sells milk exclusively to him and not to other buyers); the possibility to obtain price premiums for higher quality milk; the provision of logistic services for the milk, such as collection, storage and transportation, from the buyer.

**Table 6.** Attributes and services in dairy sale agreements

	<i>Collective</i>	<i>Individual</i>	<i>All</i>
The agreement requires exclusivity	37.5%	51.0%	88.5%
There are penalties if fail to deliver the agreed quantities	12.5%	20.5%	33.0%
There are safeguards if the buyer fails to fulfil the agreement	16.5%	15.5%	32.0%
Price premiums for higher quality products	38.0%	54.5%	92.5%
Interest in case of delayed payments from buyer	2.5%	2.5%	5.0%
Services like collection, storage, transport, handling	38.5%	52.0%	90.5%
Managerial support or technical assistance	26.5%	34.0%	60.5%
Credit assistance	1.5%	3.5%	5.0%
Special assets, technology, machinery	2.5%	1.0%	3.5%

The figures for exclusivity are surprising, in that interviews and discussions with dairy processors and dairy analysts indicated that most agreements were exclusive. The figures may thus reflect a misinterpretation of the question by survey participants.



*Nearly 90% of agreements required exclusivity and over 90% offered some kind of premium for higher quality products*



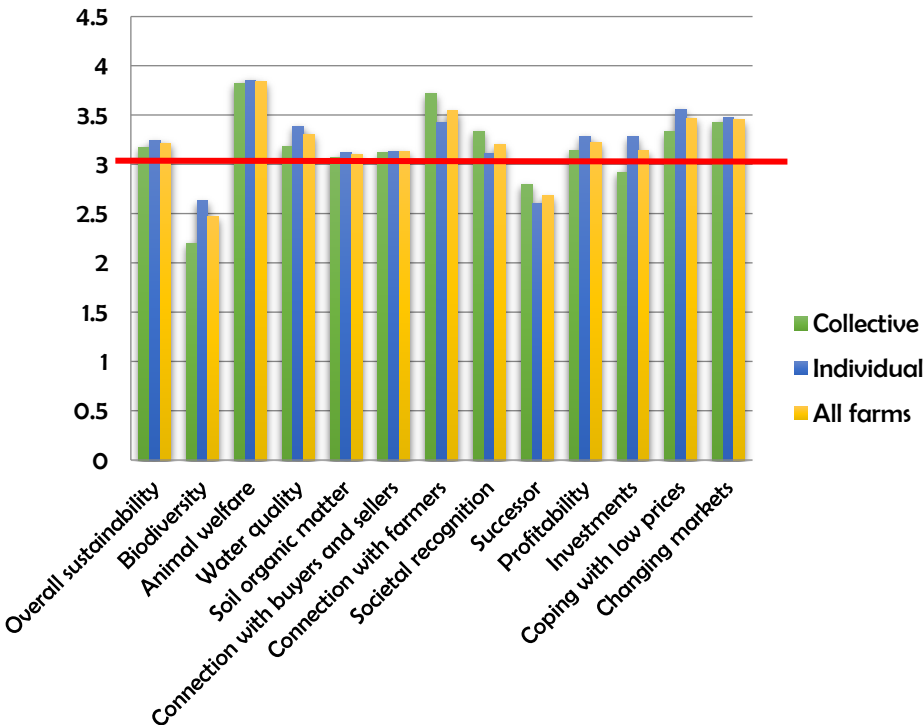
To supplement this data, farmers were asked about how they perceive the sustainability of their sales agreements. Therefore, farmers were asked to assign a score from 1 (strongly disagree) to 5 (strongly agree) regarding the potential impact to sustainability of the sale agreement.

More specifically, with respect to three groups of sustainability indicators (environmental, social and economic sustainability), farmers were asked to assign a score on the following statement “The production choices you made in relation to your main sale agreement/membership in collective organization helped you to”:

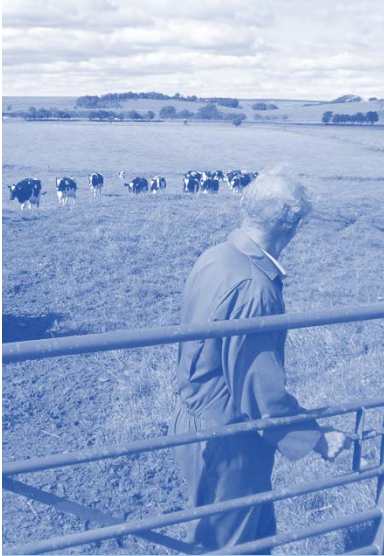
- 1. Environmental sustainability
  - a. Maintain biodiversity
  - b. Support animal welfare
  - c. Maintain water quality
  - d. Maintain soil organic matter
- 2. Social sustainability
  - a. Create a good connection with buyers and input providers
  - b. Connect with other farmers
  - c. Achieve societal recognition of your farming activities
  - d. Secure a successor
- 3. Economic sustainability
  - a. Maintain profitability
  - b. Invest in the farm business
  - c. Sell the products in periods of greater difficulty where prices were low
  - d. Cope with changing market conditions

The results are shown in Figure 8. On average, the overall sustainability of their sales arrangements is just above the threshold 3, for both arrangements with collective and individual organisations.

Figure 8. Sustainability of contracts



Looking at the green column (All farms), animal welfare was the strongest driver of environmental sustainability, while connection with other farmers was the strongest driver of social sustainability. Coping with low prices and changing markets were the two main drivers for economic sustainability.



*The overall sustainability of sales arrangements was rated at just over 3 for both collective and individual sales arrangements*



*Coping with low prices and changing markets were the two main drivers for economic sustainability*



## 3.4 Market data & futures

A wealth of market data and statistics exist to support dairy farmers and processors in their decision-making. In the literature the high degree of one-way transparency and information asymmetry in favour of the retailers has been described as 'highly unfair' (Lehman *et al.* 2013), positioning retailers in a stronger position to assert price claims against dairy companies. However, with reference to the availability of such information, some focus group participants and dairy processors argued farmers can, and should, use this information to their advantage. Although this data is widely available, a number of interview participants noted farmers' lack of engagement with such material.

Interestingly, some dairies and processors were making efforts to get farmers to engage with such material. Workshop participants and interviewees were positive about the use of futures data as a means of controlling milk price volatility.

### *Case Study: Barber's Assured agreement*

Barber's has established a milk pool that purchases milk from 145 farmers across Somerset and Dorset. They have recently launched a new milk contract. The "Barber's Assured" agreement is voluntary code compliant, encourages farmer forecasting and introduces a base milk volume for 2017, with an 8% added threshold for producers, based on volumes set in December 2016.

The contract, which utilizes an A and B pricing mechanism, claims to be more market sensitive and transparent. It requires farmers to supply Barber's with a quarterly forecast to enable them to understand what volumes of milk they will need to sell. The new contract is a response to overproduction.

The arrangement ensures stability for Barber's as a business, as well as their farmers, as overproduction only impacts on those who have exceeded their base volume, rather than the whole milk pool. Central to the way in which Barber's milk pool operates is an exchange of information between the supplier (the farmer) and the processor (Barber's). As part of the contract, farmers are required to supply Barber's with a production forecast, four times a year. Equally, farmers receive key market information from Barber's enabling them to make informed decisions about production levels (Figure 9).

"I want farmers to start looking at markets closer [...] Because they are affected by them and if more farmers looked at markets it would help them make more informed [...] I want our farmers to become match fit with this sort of stuff, and the AMPE and forecasting" (Interviewee 22)

Figure 9. Example of futures data provided by Barber's

**UK Milk Futures Equivalent – update 17<sup>th</sup> October 2016**  
Converts trades in actual dairy futures into pence per litre value

TRADE DATE	MM&J STD	MAR 16	APR 16	MAY 16	JUNE 16	JULY 16	AUG 16	SEP 16	OCT 16	NOV 16	DEC 16	JAN 17	FEB 17	MAR 17	APR 17	MAY 17	JUN 17	JUL 17	AUG 17	SEP 17	OCT 17	NOV 17
2015/16	PPL	20.69	19.34	18.49	18.00	18.00	18.00	18.00	19.19	20.93												
25 APR 16	19.34			16.86	17.04	17.49	17.86	18.07	18.41	18.82	19.33	19.45	19.95	20.57	20.88	21.20	21.62					
23 MAY 16	18.49				17.86	18.57	18.69	18.98	19.45	19.99	20.31	20.66	20.98	21.29	21.61	21.92	22.24	22.55				
27 JUN 16	18.00					21.73	22.51	22.55	22.75	23.32	23.57	23.99	24.24	24.45	25.08	25.51	25.84	26.61	26.67			
25 JUL 16	18.00						23.36	23.84	24.38	24.74	25.01	25.30	25.53	25.76	26.56	27.00	27.22	27.47	27.70	27.93		
22 AUG 16	18.00							28.08	28.71	28.88	29.02	29.45	29.52	29.75	29.89	30.13	30.36	30.18	30.20	30.23	30.68	
19 SEP 16	19.19								30.42	30.53	30.73	30.92	31.03	31.41	30.80	30.83	30.85	30.67	30.70	30.72	30.74	30.77
17 OCT 16	20.93									31.81	32.14	31.34	31.66	31.31	31.28	31.07	30.89	31.36	31.27	31.19	31.22	31.25
										+1.28	+1.41	+0.42	+0.63	-0.10	+0.48	+0.24	+0.04	+0.69	+0.57	+0.47	+0.48	+0.48

Source: Barber's – personal communication

*Barbers is one of the world's oldest cheddar makers. It supplies milk to over 100 different branded and own label farmhouse cheeses. Their cheeses have Protected Designation of Origin (PDO) status.*



## 3.5 The future (social drivers)

A wealth of market data and statistics exist to support dairy farmers and processors in their decision-making. In the literature the high degree of one-way transparency and information asymmetry in favour of the retailers has been described as 'highly unfair' (Lehman *et al.* 2013).

There was significant concern that opportunities in dairy farming remained limited for young people without familial connections to the industry because of the high start-up costs. Whilst participants recognised opportunities to be employed as a non-familial employee were abundant, they feared entry into the industry in any other way was typically impossible because of the capital required to do so. This concern prompted participants to appeal for innovative start up initiatives such as share farming schemes developed in New Zealand. Participants recognised an increase in interest in and enthusiasm towards agricultural work in contrast to recent years. This positivity ties in with wider observations in the academic literature of a renewed interest in agricultural careers, attributable to the (re-)emergence of food security in the political agenda in developed market economies.

Whilst there was significant positivity about interest in the industry, others described dairy farming as generally unappealing – mainly relating to the unsociable working hours required, but also relating to the hard work required. Whilst a familial connection to the industry had been recognised as often the only way into farming, the family structure was also identified as problematic for the progression of young people in the industry. This issue – also known as the 'farmer's boy problem' – has previously been recognised in the family farming literature (Chiswell 2016) and is considered highly debilitating for the younger generation. There is scope here to think about how to facilitate succession in the dairy industry, so as to allow 'young blood' to come through and benefit the industry.

The focus of the survey was on producers' sales agreements with buyers; however, additional questions regarding future farming strategies and the drivers of potential farming changes were also asked.

Initially farmers were asked to indicate how a series of environmental, policy and market factors were likely to influence their future decisions regarding production and farming strategies for milk, assigning a score from 1 (not at all) to 5 (strongly influenced). Results are shown in [Figure 10](#).

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*A lack of opportunities in dairy farming for young people was a big concern for participants*

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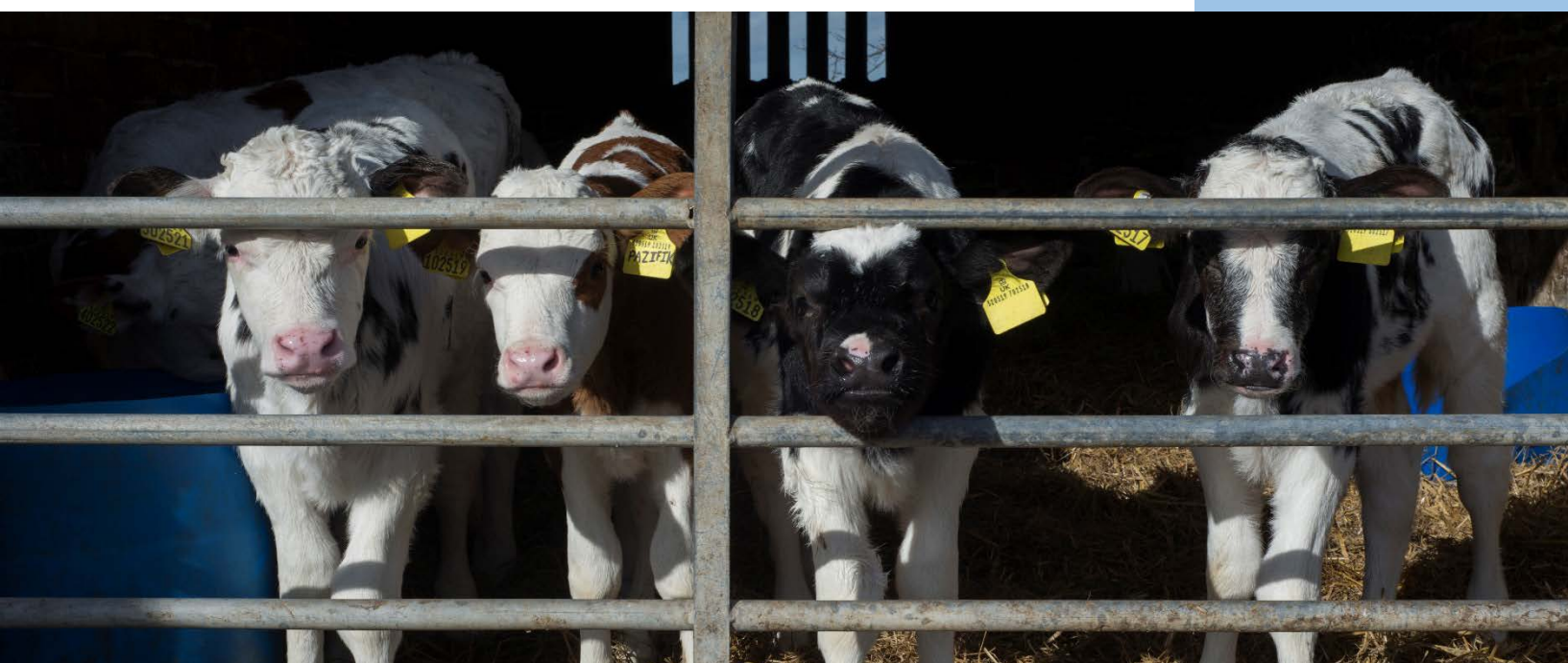
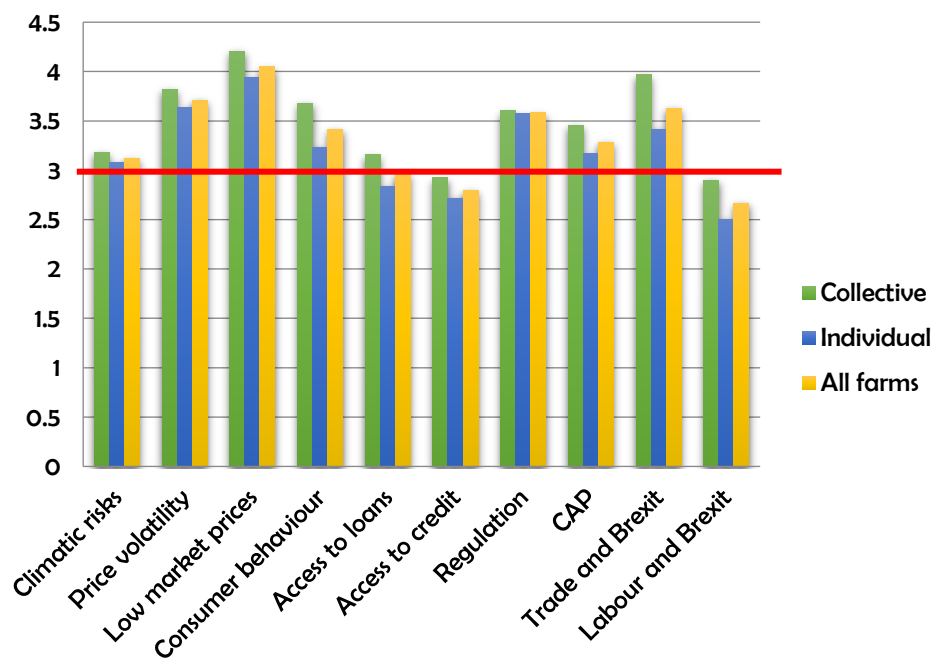


Figure 10. Future drivers for dairy farming



Low market prices and price volatility were key drivers of production strategies

On average, all farms (green column) individuate low market prices and price volatility as key drivers of dairy farming production strategies; this reflects the prominence of price volatility and low market prices that emerged in the interviews and focus groups.

In the light of potential drivers of future dairy farming strategies, producers were also asked about what changes to their dairy farm business they expect to implement in the coming 5 years. Results are shown in Table 7.

Table 7. Expected farming strategies for the next 5 years

Strategy for next 5 years	Collective	Individual	All farms
Maintain the existing scale of operations	44.6%	59.8%	53.5%
Expand the scale of operations	37.3%	27.4%	31.5%
Downscale the scale of operations	4.8%	4.3%	4.5%
Abandon farming	8.4%	5.1%	6.5%
I do not know	4.8%	3.4%	4.0%

The majority of dairy farms (53.5%) do not have particular strategies in mind and they expect to maintain their existing scales of operation; with trend was consistent regarding both farmers selling to collective (44.6%) and individual organisations (59.8%). Interestingly, in the sample 6.5% of farms expected to abandon the sector. This percentage increased to 8.4% for farmers selling to collective organisations, which is relatively high, suggesting that in the coming years a number of farms may exit the UK dairy sector.





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*Just over half of farmers do not have particular strategies in mind and expect to maintain their existing scales of operation over the coming 5 years*

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## 4. BREXIT

Brexit represented a divisive topic. Participants had a range of views and responses to the Brexit vote and cited a range of potential implications for the dairy industry after the UK exits the EU. Some respondents refused to speculate on Brexit impacts because of the uncertainties surrounding future trading options. In general terms, focus group discussions identified three key concerns:

- Trade and a trade deal
- The availability of labour
- Subsidies and competitiveness

Trade, and specifically whether a trade deal with the EU would be secured, was the biggest post-Brexit concern amongst participants. Unsurprisingly, groups that were reliant on exports and/or the ability to move products across European boundaries were most concerned about the impacts of no trade deal. In the participatory workshop, four Brexit scenarios (adapted from van Berkum et al. (2016) and Buckwell (2016)) were developed relating to trade and policy support:

Under this scenario the UK leaves the EU, but continues to have free access to the Single Market and continues to have full access to the four EU 'freedoms' (labour, capital, goods and services). As part of this scenario, the UK would adopt a British Agricultural Policy (BAP), requiring the same budget contributions as the CAP. Direct support would remain the same as current levels.

### Scenario 1

Under this scenario the UK seeks a Free Trade Agreement (FTA) with the EU. This option is not as advantageous as free access to the Single Market that EU membership confers but inclusion in the EU Customs Union is a possibility. Whilst some products will not be subject to tariffs, 'sensitive products' such as milk may be subject to some form of tariff. Agricultural matters are normally the most difficult part of any FTA, so a functioning FTA may take many years to be agreed. As part of this scenario, levels of direct support would be 50% of their current levels.

### Scenario 2

If no deal were to be agreed, the UK would revert to the World Trade Organisation (WTO)-default position and would trade with the EU on the same basis as other WTO members. In other words, UK imports/exports would fall under the WTO's non-discrimination Most Favoured Nation (MFN) rules and would be subject to a 36% tariff. The EU would apply a Common Customs Tariff (CCT) to UK imports and border and customs controls would increase. As part of this scenario, levels of direct support would be 50% of their current levels.

### Scenario 3

In this scenario, the UK allows wider access to UK markets by reducing tariff rates by 50% across the board (i.e. removes barriers to trade). This scenario is similar to the WTO-default scenario, including increased trade facilitation costs, with the only difference that the UK and the EU have different border tariffs: the UK applies 50% MFN tariffs to all imports and the EU applies CCT to UK exports to the EU. As part of this scenario farmers would no longer receive any agricultural support.

### Scenario 4

The four scenarios were designed to facilitate a discussion with key stakeholders from the industry on the future of the dairy industry and more specifically the potential impacts of Brexit (depending on the final outcome) on the dairy industry in Somerset and beyond.




## 5. CONCLUSIONS

The Somerset dairy case study has aimed to understand key market and regulatory conditions that impact on dairy businesses and the strategies and arrangements that farmers are utilising to manage difficulties and risks.

This report has established how UK dairy farming has undergone significant restructuring, characterised by the concentration of milk production in fewer but more intensive farming units. The reasoning behind this structural change is complex but can be largely organised into 'social' and 'economic' factors. Poor milk price emerges as the most significant factor, forcing many farmers to stop dairy farming or even farming altogether. Farmers believe the price they have been receiving for the milk was not sufficient to cover their production costs. This summary report has briefly explored the reasons for the economic challenges and attributed to the abolition of milk quota and the subsequent exposure of milk prices to global trends and challenges – please refer to the full report for a full analysis.

Using interviews, focus groups and a producer survey, the research highlights and explores five key themes, including milk price and price volatility; institutional arrangements for milk; contractualisation and price instruments; market data and futures and the future (succession and social drivers). Overall, the emerging issues highlight the many difficulties UK dairy farmers face going forward, but also identifies how there are an increasing number of different ways and arrangements which farmers can explore to strengthen their position and ultimately resilience, e.g. collective arrangements, different contractual arrangements and market/futures data.

Understandably Brexit represented a divisive topic and the topic elicited a range of views and responses. Whilst the FTA was considered the most desirable option, participants felt it was not an easy nor quick option. Overall, it was anticipated that dairy farming following would need to be more competitive regardless of the exact scenario adopted. Introduction of the different scenarios revealed that the outcome of Brexit – whatever the scenario – will have different implications for the different institutional and contractual arrangements identified in this report. Critically, any policy decisions need to take into consideration these different arrangements and account for the different potential outcomes.



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*Overall the report has highlighted many of the issues facing UK dairy farmers, but also identifies the increasing number of ways and arrangements which are available to farmers wanting to strengthen their position and resilience*

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